Self-Winding Clocks

SELF-WINDING CLOCK CO.

NEW YORK

SELF-WINDING CLOCKS

As manufactured by the

SELF-WINDING CLOCK COMPANY

General Offices and Factories:

161-163-165 Grand Avenue, cor. Willoughby Avenue

Borough of Brooklyn, New York

Index

Foreword

THE object of this catalogue is to furnish a more general knowledge regarding the merits of our Self-Winding and Synchronized Clocks, Secondary Systems, Automatic Program Devices, Watchman's Time Detectors, Tower, Post and Bracket Clocks, etc.

Self-Winding Clocks of all styles and designs, with or without synchronizing attachment, for the Office, Factory or Home.

Time Plants, either Primary or Secondary Systems, for Public and Office Buildings, Railroads, Factories, Universities, Colleges and Schools. Tower and Street Clocks to meet all requirements.

The Western Union Telegraph Company's Hourly Time Signals of correction as furnished by the United States Observatory, Washington, D. C., can be applied to any of the Self-Winding Clock Co.'s Controling Clocks, if desired.

General Description of

Self-Winding Movements

THE SELF-WINDING CLOCK movement derives its motive power from the action of a fine spring, as in the ordinary key-winding clock. It is self winding in that this spring is automatically wound once every hour by a small electrical motor attached to the movement; the electric current for driving the motor being obtained from two small cells of battery placed in the clock case.

The motor connects with a spring barrel on the center arbor enclosing the spring, which has its inner end attached to the arbor, its outer end to the periphery of the spring barrel. The spring is coiled around the arbor, but not so close as to produce friction between the coils; as th center arbor turns, the inner end of the spring will unwind one turn every hour.

By a simple mechanical attachment the electric current is made to pass from the battery into the motor, and the spring barrel is turned around once, winding the other end of the spring with it.

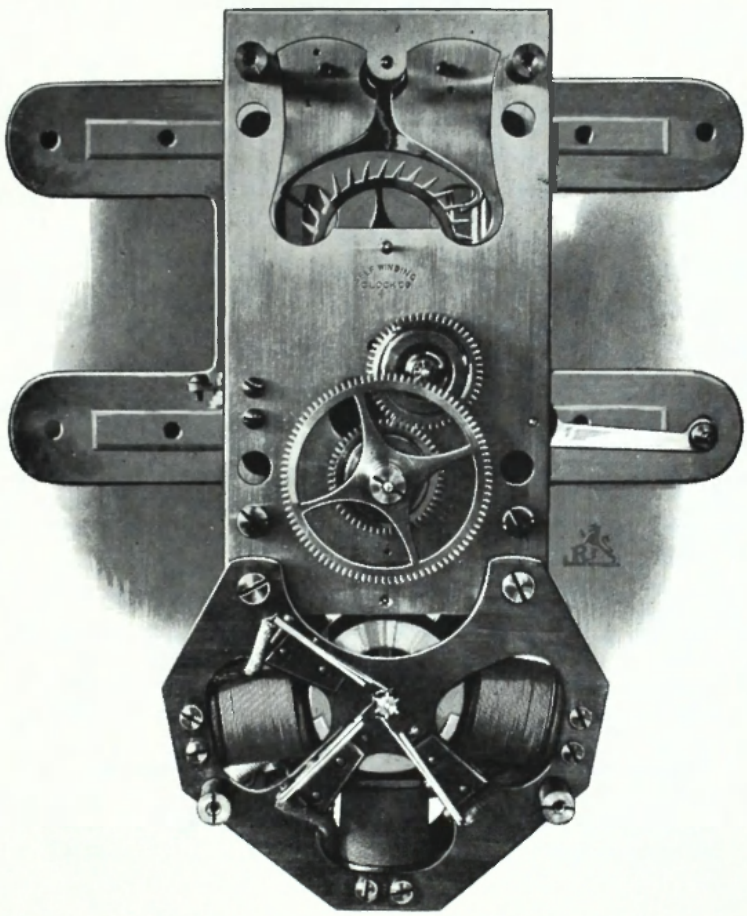
By this arrangement the spring is wound in the same direction as the hands of the clock are moving. An even tension upon the clock is thus secured AT ALL TIMES, and does away with the necessity of maintaining power.

Clocks always wind to the same degree and will not overwind.

Clocks will wind themselves for more than one year.

Style "B" Self-Winding Movement

with Graham Escapement



For general description of this movement see page 8.

General Description of

Style "B" Self-Winding Movement

with Graham Escapement

THIS movement is of high grade construction. The pinions and arbors are cut from the best tool steel, hardened, tempered and highly polished.

The wheels are accurately cut and mounted. The plates are made of extra heavy hard rolled sheet brass.

The escapement is of the Graham type with extra large pallet and escape wheel.

The winding motor is of the rotary type with three pairs of magnets. These are wound with silk-covered magnet wire.

The motor and frame plates are highly polished and ground.

This movement is furnished in 72 and 60 beat only.

If desired it can be furnished with escape wheel arbor bearings and pallet jewelled.

Extreme Dimensions

Height from center arbor to top of frame	4½"
" " " " to bottom of motor	4¼"
Width	4⅜"
Depth from back of bracket to top of minute stud	3¾"

Distance from center arbor of movement to bottom of pendulum:

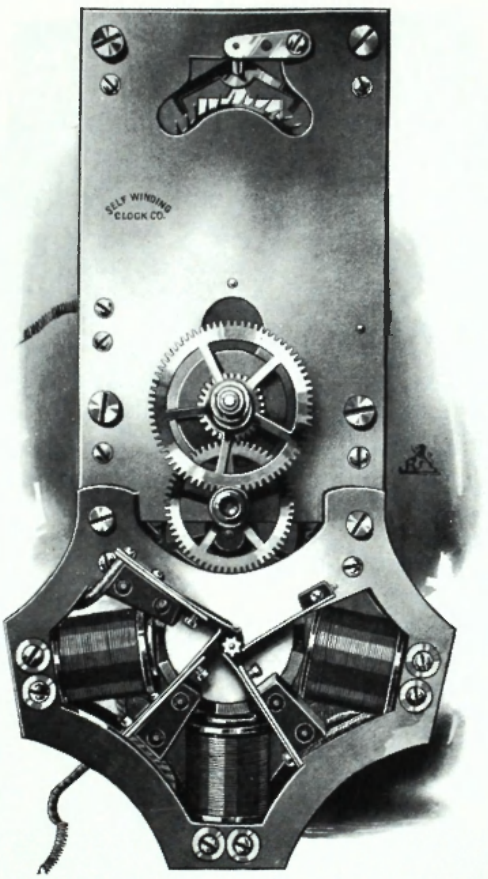
72 beat	28⅝"
60 beat, wood rod, brass bob	40⅝"
60 beat mercurial	42⅝"

This movement is used only in high grade regulators and master clocks, where synchronizing attachment is not required.

If synchronizer is required on this type of movement style "A" is used.

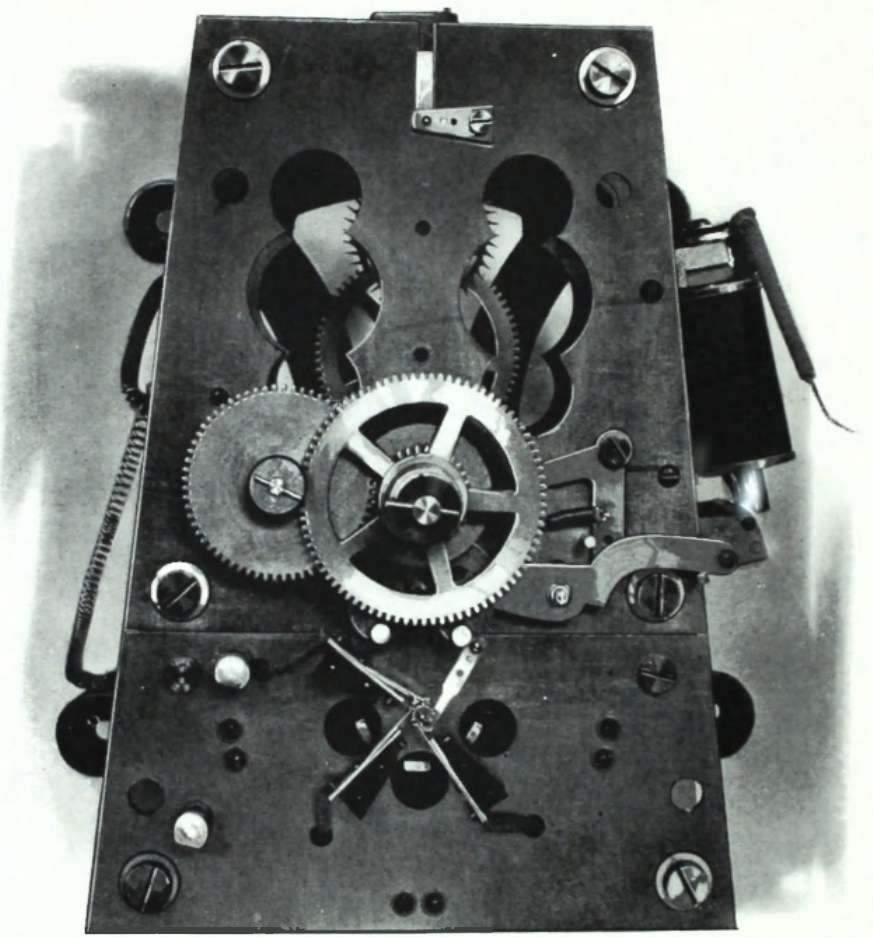
Style "A" Self-Winding Movement

with Graham Escapement



This type of movement can be furnished plain or with Synchronizer; in all other respects general description of style "B" movement applies. See opposite page.

Style "E" Self-Winding Movement



For general description of this movement see opposite page.

General Description of

Style "E" Self-Winding Movement

THIS is the largest type primary movement which we manufacture. It has solid cut steel pinions. The train wheel, center arbor and dial works are extra large and heavy. It has a Graham escapement and the winding motor is of the rotary type. The mainspring is extra heavy. The synchronizing attachment is correspondingly larger and very powerful.

The movement is furnished in 84 and 60 beat only.

Extreme Dimensions

Height from center arbor to top of movement	5⅛″
" " " " " bottom of movement	4⅜″
Width	7⅛″
" from center to left side	3⁹⁄₁₆″
" " " " right "	4¼″
Depth " bottom of bracket to top of minute stud	5⅝″
Extreme width of bracket	9⅛″

Distance from center arbor of movement to bottom of pendulum:

84 beat, wood rod, brass bob	20¾″
60 " " " " "	40⅛″
60 " Mercurial	42⅛″

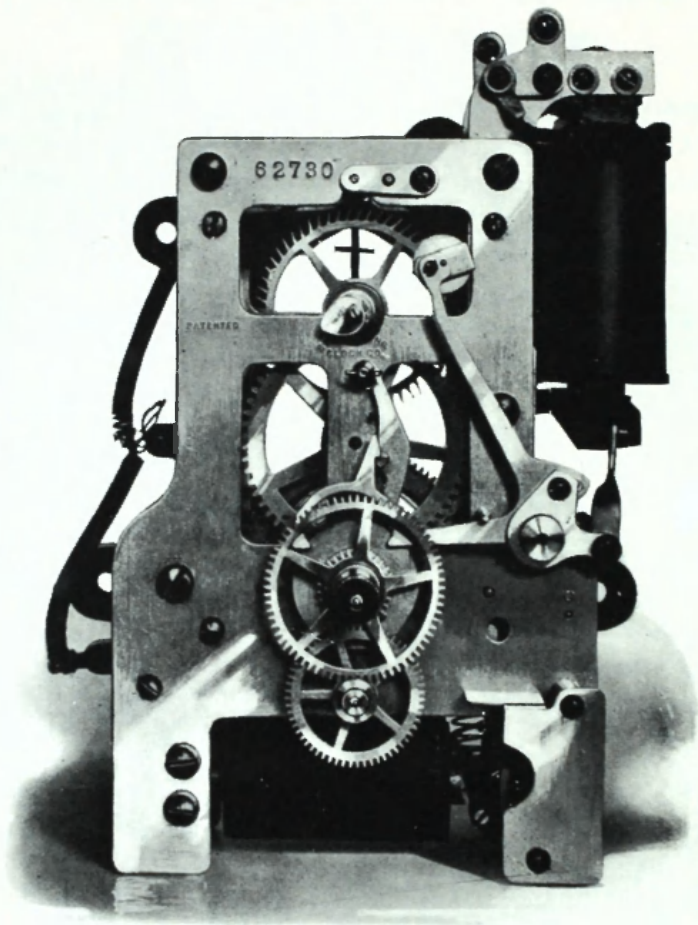
This movement will operate light aluminum hands for dials up to and including 50″. It is furnished regularly with 1″ center arbor and can be used with dials 1¼″ thick.

Other lengths of arbor will be made to order only.

This movement can be furnished either plain or with synchronizing attachment.

Style "F" Self-Winding Movement

Equipped with Synchronizing Attachment



For general description of this movement see opposite page.

General Description of

Style "F" Self-Winding Synchronized Movement

THIS movement has the well-known Graham escapement, with solid cut steel pinions nicely polished. The wheels are accurately cut from hard rolled sheet brass. The winding motor is of the oscillating type with a single pair of magnets. The motor contacts however, are compounded, that is one set is arranged on the front and the other on the back of the movement, thus insuring absolute response to the current when the hourly circuit closer completes the electric circuit. This motor has no dead point and will never fail to start.

The synchronizing attachment is a very simple device, positive in its action and can readily be adjusted. All parts are made interchangeable, requiring but little fitting.

This movement is furnished in 140, 120, 80, 72 and 60 beat.

Extreme Dimensions

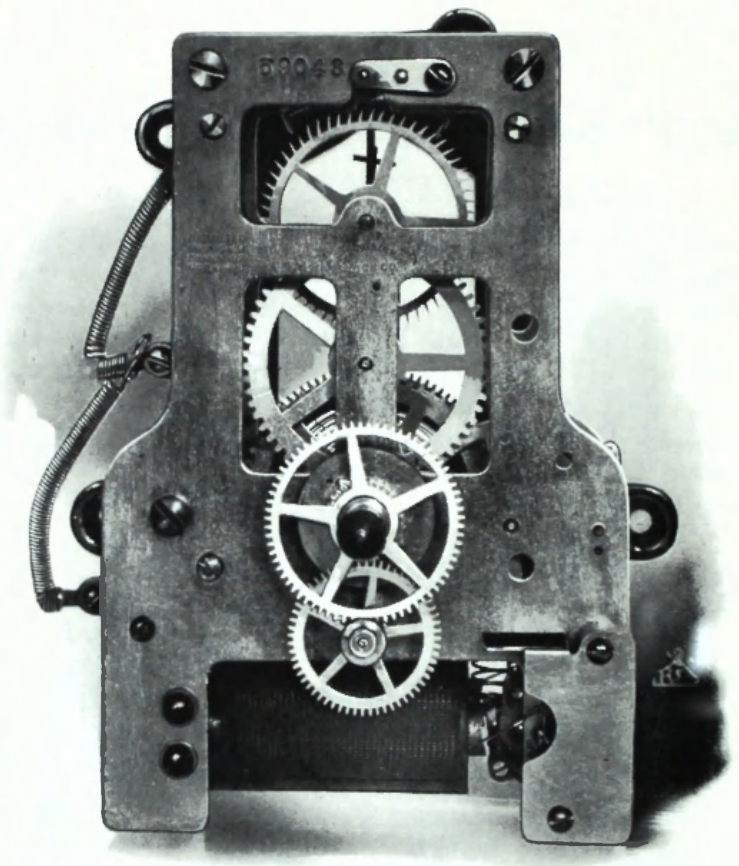
Height from center arbor to top of synchronizing magnet	5¼"
" " " " " bottom of frame	2½"
Width from center to left side	2½"
" " " " right "	2¾"
Depth from back of bracket to top of minute stud	3¾"
Extreme width of iron bracket	5¾"

Distance from center arbor of movement to bottom of pendulum:

140 beat	6⅝"
120 "	9¼"
80 "	21¾"
72 "	27⅝"
60 "	40⅝"
60 " mercurial	42⅝"

This movement will operate light aluminum hands for dials up to and including 20 inches. It is furnished regularly with one-half, one, and one and one-half inch center arbors and can be used with dials up to and including one inch in thickness. Other lengths of arbors will be made to order only.

Self-Winding Movement Style "F" Plain



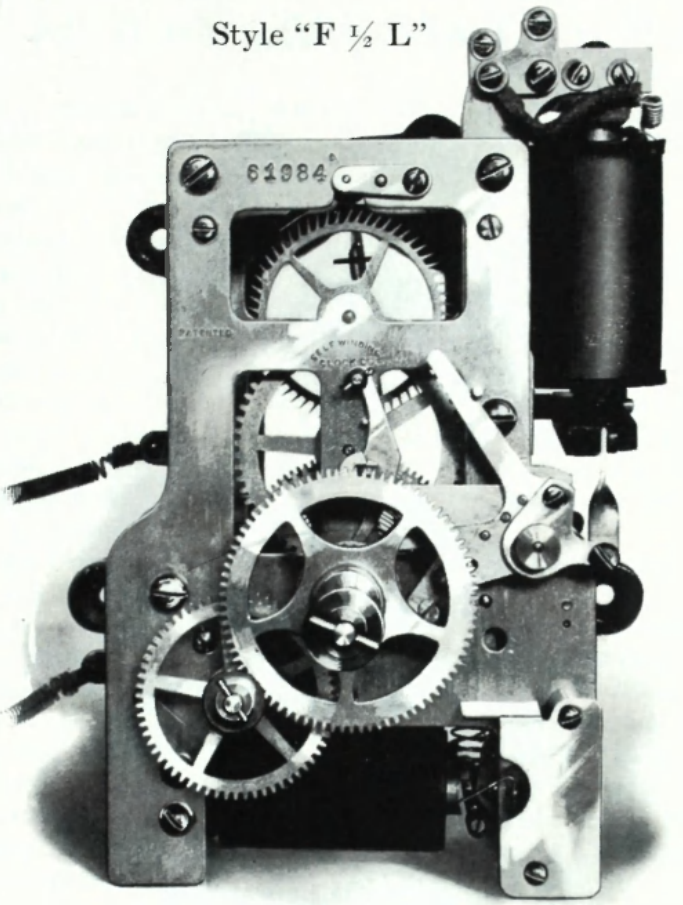
General description of our style "F" synchronized movement will also apply to this type, excepting that the synchronizing attachment is eliminated.

Extreme Dimensions

Height from center arbor to top of bracket	4¼"
" " " " " bottom of frame	2½"
Width	4¼"
Depth from back of bracket to top of minute stud	3¾"
Extreme width of bracket	5¾"

This movement can be furnished in "F" or "F½L" type.

Our Latest Type of
Self-Winding Synchronized Movement
Style "F ½ L"



General description of our style "F" movement will also apply to this movement, excepting as to the center arbor, dial train and mainspring. These parts are made very much heavier for the purpose of carrying larger and heavier hands.

The synchronizing mechanism is also somewhat different, being designed to control the hands more effectively than the style "F". It is furnished in the same beats as our type "F".

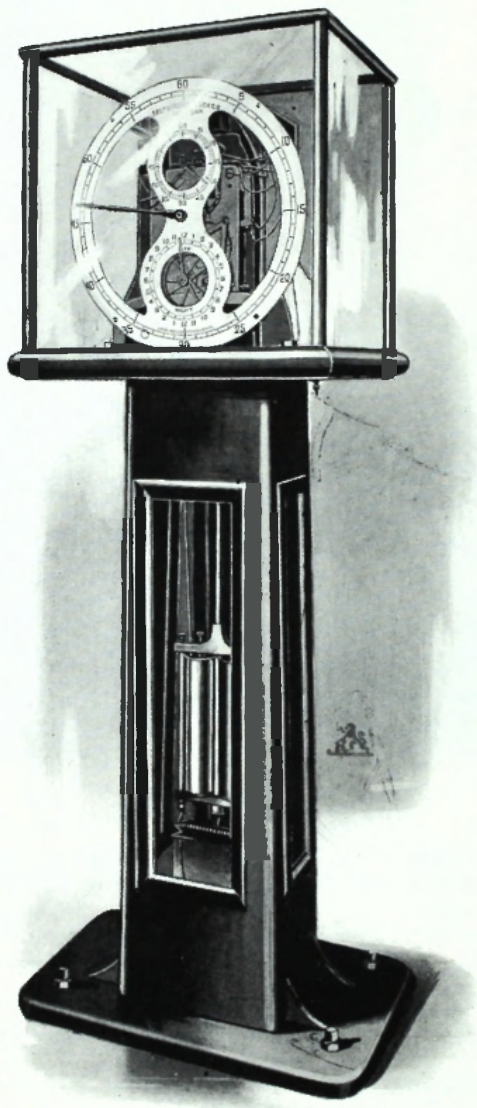
Extreme Dimensions

Height from center arbor to top of synchronizing magnets	5¼"
" " " " " bottom of frame	2½"
Width from center to left side	2½"
" " " " right "	2¾"
Depth from back of bracket to top of minute stud	4⅛"
Extreme width of bracket	5¾"

This movement will operate light aluminum hands for dials ranging from 22 inches up to and including 36 inches. It is furnished regularly with one inch and one and a half inch center arbor and can be used with dials up to and including one inch in thickness. Other lengths of arbors will be made to order only. This movement can be furnished without synchronizing attachment.

Astronomical Regulator

Gerry Gravity Escapement



60 Beat Movement

For general description see opposite page.

General Description of the

Self-Winding Astronomical Regulator

THE lower part of the case is a heavy iron casting supplied with leveling screws, and having strong plate glass in front and at the sides; on top of this is bolted a strong iron stand formed in two arches: on the lower one is secured the movement, and in the other (which is a high Gothic) the pendulum is suspended.

The movement is large and strong, the plates and pillars being made of aluminum bronze; the usual weights, pulleys, drum, etc., are omitted, and in their place is put a small electric motor connected by gearing to the spring box. Once each hour the forward movement of the train closes the circuit and starts the motor, winding the spring the amount used during the hour just passed, the forward motion of the spring box breaking the circuit at the proper time.

The spring is very long and thin and is coiled many times around in the spring box, but not so close as to cause the coils to rub together; only one turn of the spring being used, the power is very uniform; as the spring is wound in the same direction the clock is running, there is no need of a "maintaining spring" and in the recoiling shock of winding is entirely obviated. Both the train and escapement are jeweled throughout, having in all nineteen (19) sapphire jewels.

The escapement is a Gerry Gravity having the impulse and detent on separate arms, but improved by the addition of a very light arbor with the locking arms and fly.

This additional arbor with the locking arms reduce the locking force to a minimum, and makes tripping an impossibility; the gravity arms give a constant and easy impulse to the pendulum.

For sending signals to the chronograph, a circuit brake is provided; it consists of a rubber insulator mounted on trunions and held in V bearings by springs, which allow it to be taken out and replaced correctly; a light lever hung on a delicate spring carries near the front end a platinum point, resting on a platinum table; at the extreme end of the lever is a fine sapphire jewel; on the escape arbor is a small steel wheel having sixty (60) teeth. As each of these teeth passes under the jewel the lever is raised, making a break in the circuit, closing again when the tooth has passed. The fifty-ninth (59th) tooth is cut away to mark the beginning of every minute.

The dial is engraved and silvered; it is cut away in part so that the electric contacts may be examined, cleaned and adjusted without disturbing the hands, or affecting the running of the clock. It has three (3) circles, one near the outer edge for the minutes, one in the lower half for hours from 1 to 24, and the usual seconds circle in the upper half. The movement is protected by a strong plate glass hood.

The pendulum has a mercury compensation. It is made in the usual stirrup form, with the mercury in two jars hermetically sealed. The jars are of steel, two (2) inches in diameter, nine (9) inches long, and sixty-two thousandths (.062) of an inch thick; this divides the mercury into two (2) parts, and the jars being extremely thin, changes in the temperature act very promptly.

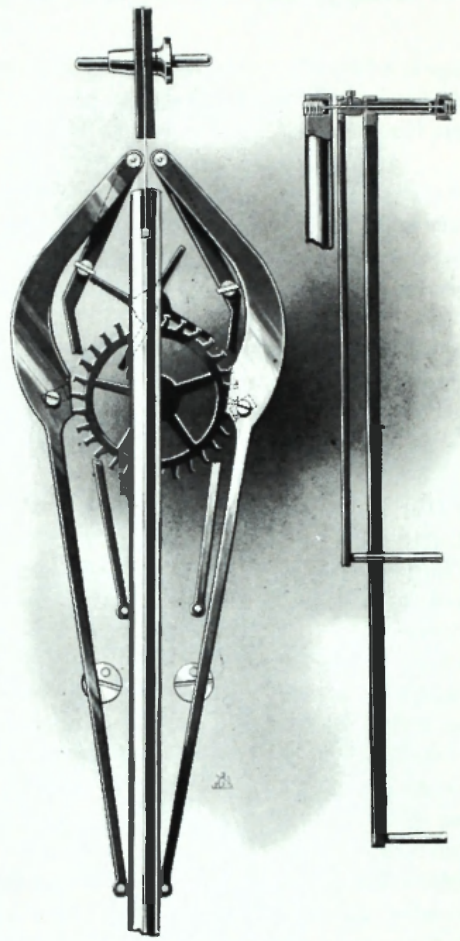
The rod is three-tenths (.3) of an inch in diameter, and the action of the rod and mercury coincide very nicely.

Extreme Dimensions

Cast iron air tight case:

Glass hood . .	Height,	20″	Width,	21¾″	Depth,	17¾″
Pendulum case .	"	42½″	"	12″	"	9½″
Cast Iron Base .	"	1″	"	26″	"	16″
Extreme	"	63½″	"	26″	"	17¾″

Gerry Gravity Escapement



The great advantage of this escapement over the old Denison gravity type is obtained by separating the impulse and detent and placing them on separate arms. This insures a positive lock, reduces to a minimum the possibility of tripping and also greatly reduces friction in the unlocking operation of the pendulum. The arc through which the pendulum swings is disturbed less in this than in any other known form of Gravity escapement.

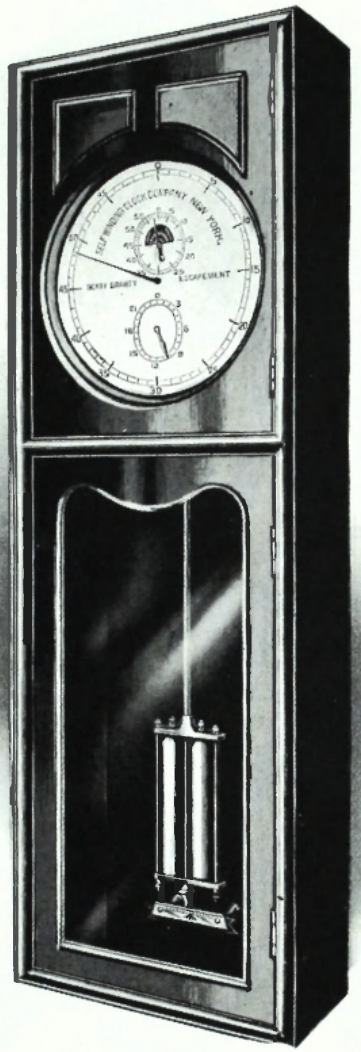
The engraving clearly shows the mechanical construction of the two separate arms. The latter swings on a hardened and tempered steel arbor which has four jeweled bearings.

The bushings carrying the impulse arms have hollow chambers which are filled with oil, one filling lasting for several years. The impulse and detent faces are all made of heavy sapphire jewels.

This escapement is furnished only with our Astronomical Regulator.

Astronomical Regulator

Wood Case



60 Beat Movement

Above regulator is equipped with our astronomical movement or our style "B" movement.

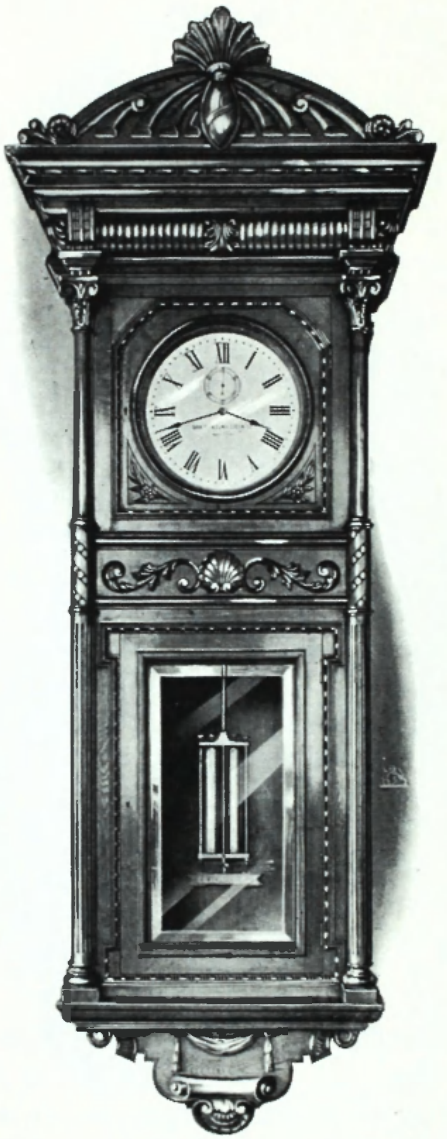
The case can be furnished in finely finished mahogany, oak, cherry or any other wood to match trim or furnishings.

Silvered or white enameled dial. Made only in 15 inch dial, with twelve or twenty-four hours.

Extreme Dimensions

Height 62" Depth 8½" Width 20½"

No. 1 Self-Winding Regulator



60 Beat Movement

Made only with 15 inch dial.
Equipped with mercurial compensated pendulum.
Can be furnished in hand carved mahogany, oak or cherry case.

Extreme Dimensions

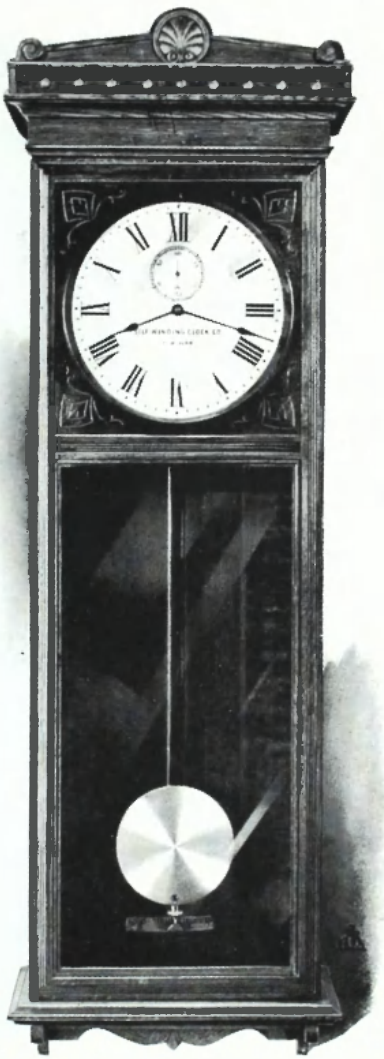
Height	102″		
Width at top	38″	Depth at top	17″
" base	30″	" base	13″

No. 9 Self-Winding Regulator

with Mercurial Compensated Pendulum

60 Beat Movement

with Wood Rod and Brass Bob Pendulum



60 Beat Movement

Made with 14 inch enameled zinc or silvered metal dials.

Equipped with mercurial compensated pendulum or with wood rod and brass bob pendulum.

This case is made of best selected cherry, oak or walnut or any other kind of wood to match trim or furnishings. It is substantially constructed with the finest cabinet finish.

Extreme Dimensions

Total height 69½" Width 22⅛" Depth 8¼"

No. 18 Self-Winding Clock

80 Beat Movement

Made with 12 inch enameled zinc or silvered metal dial with or without seconds. Equipped with wood rod, brass bob pendulum.

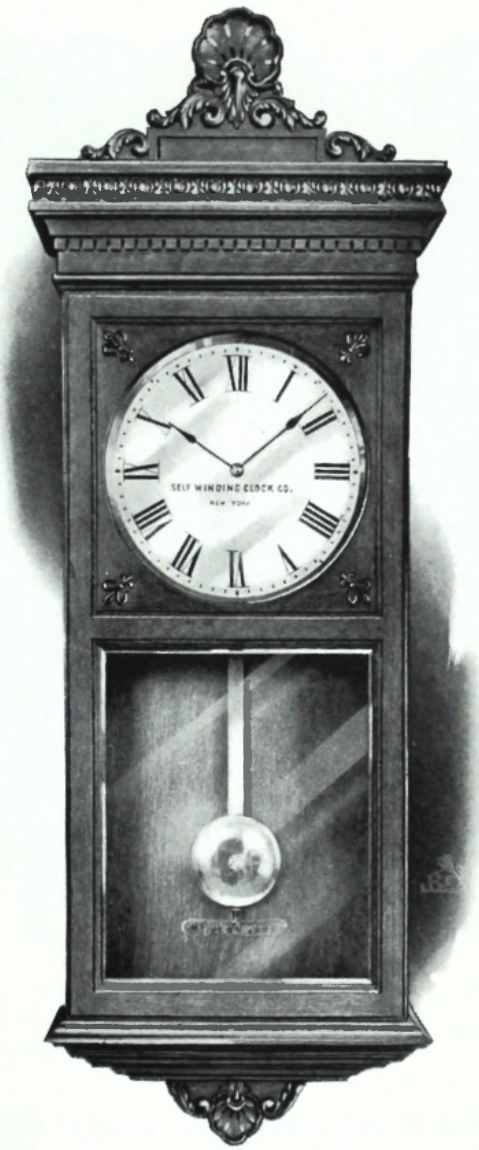
This case is made of the best selected cherry, oak or walnut or any other kind of wood to match trim or furnishings. It is substantially constructed with the finest cabinet finish.

Extreme Dimensions

Height 50" Width 19¼" Depth 7¾"

No. 19 Self-Winding Clock

Ornate wooden wall clock



80 Beat Movement

Made with 12 inch enameled zinc or silvered metal dial with or without seconds. Equipped with wood rod, brass bob pendulum.

This case is made of the best selected cherry, oak or walnut or any other kind of wood to match trim or furnishings. Is similar in design to our No. 18, but with moulded ornaments top and bottom.

Extreme Dimensions

Height 56" Width 20½" Depth 8½"

No. 10 Self-Winding Clock

120 Beat Movement

This case is made of the best selected cherry, oak or walnut or any other kind of wood to match trim or furnishings, and can be supplied without ornamentation when specified.

Furnished with 14 inch enameled zinc dial with or without seconds.

Extreme Dimensions

Height 30¼" Width 20¼" Depth 7¼"

No. 24 Self-Winding Clock

120 Beat Movement

This case is made of the best selected mahogany, cherry, oak, walnut or any other kind of wood to match trim or furnishings, and has dentil moulding top and bottom, fluted columns and handsomely ornamented wreath design bezel.

Made with 18, 20 and 24 inch enameled zinc, silvered metal, steel enameled or marble dials with raised bronze numerals.

Extreme Dimensions

18″ dial.	Height 39½″	Width 38″	Depth 11¾″
20″ "	" 45″	" 40″	" 11¾″
24″ "	" 51″	" 46″	" 11¾″

No. 29 Self-Winding Clock

120 Beat Movement

This case is made of the best selected mahogany, cherry, oak or walnut or any other kind of wood to match trim or furnishings. The corners have raised wood carving and the finish is of the best.

No. 29, 29 "A," 29 "B" Self-Winding Clocks

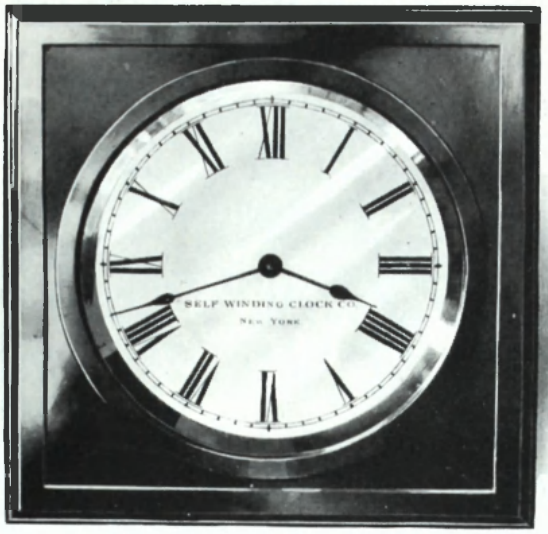
Dials up to 24 inch inclusive can be furnished in enameled zinc, silvered metal or steel enameled, with or without seconds.

Dials 36 and 48 inches in steel enameled only, without seconds.

Extreme Dimensions

14" dial.	Square 21⅛"	Depth 5"
18" "	" 25"	" 5"
24" "	" 33½"	" 5¾"
36" "	" 52"	" 6½"
48" "	" 58⅜"	" 7⅛"

No. 29 "A" Self-Winding Clock

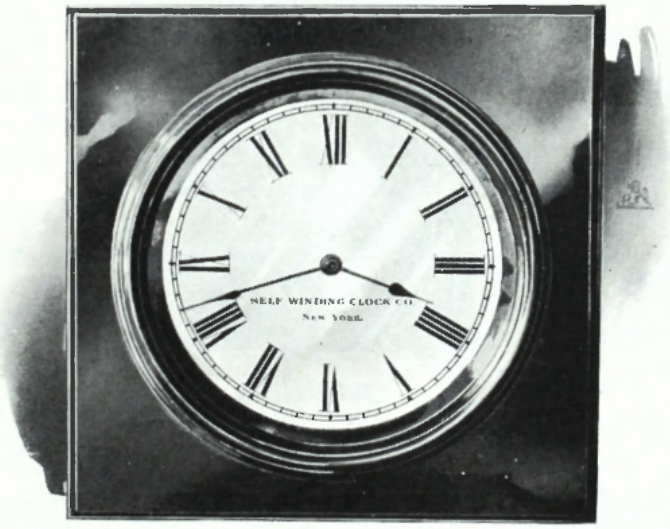


120 Beat Movement

This case is made of the best selected mahogany, cherry, oak or walnut or any other kind of wood to match trim or furnishings, and has raised cleats around the front and dial.

For dimensions see opposite page.

No. 29 "B" Self-Winding Clock



120 Beat Movement

This case is made of the best selected mahogany, cherry, oak or walnut or any other kind of wood to match trim or furnishings. The front is perfectly plain with moulded edge and turned bezel, and although plain, the case makes a very rich appearance.

For dimensions see opposite page.

No. 30 Self-Winding Clock

120 Beat Movement

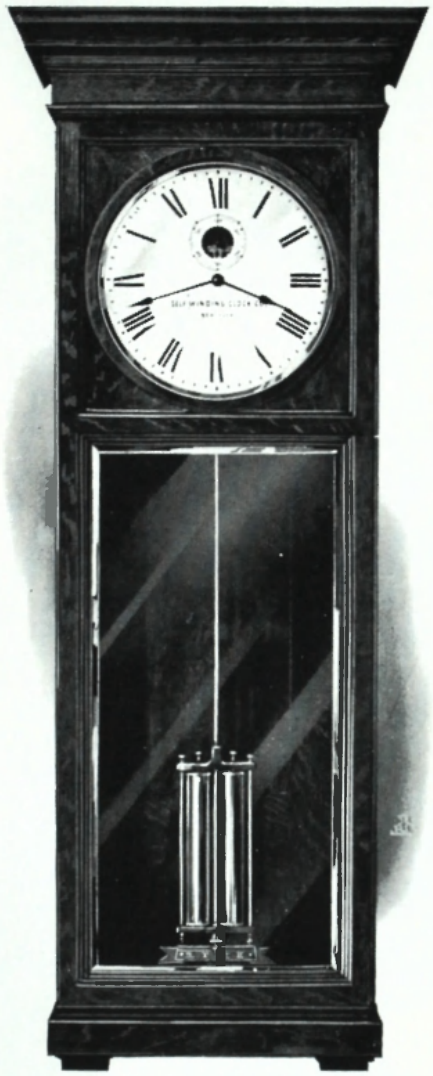
This case is made of the best selected mahogany, cherry, oak, walnut or any other kind of wood to match trim or furnishings and is so designed that its graceful curves take away any appearance of heaviness usually found in round cases.

Made with 14, 18 and 24 inch enameled zinc, silvered metal, steel enameled or marble dials with raised bronze numerals.

Extreme Dimensions

14″ dial.	Outside diameter 24″	Depth 6½″
18″ "	" " 29″	" 6½″
24″ "	" " 34″	" 7″

No. 41 Self-Winding Regulator



60 Beat Movement

Made with 14 inch enameled zinc or silvered metal dials.

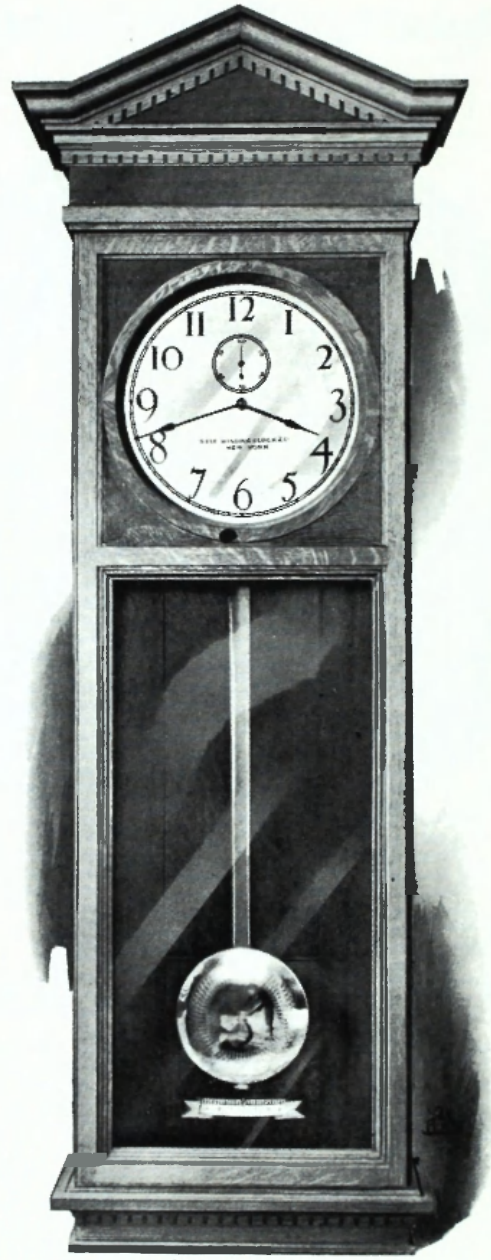
Equipped with mercurial compensated pendulum or with wood rod and brass bob pendulum.

This case is made of the best selected mahogany, cherry, oak, walnut or any other kind of wood to match trim or furnishings.

Extreme Dimensions

Total height 63" Width 23¼" Depth 9½

No. 50 Self-Winding Regulator



60 Beat Movement

Made with 14 inch enameled zinc or silvered metal dials.

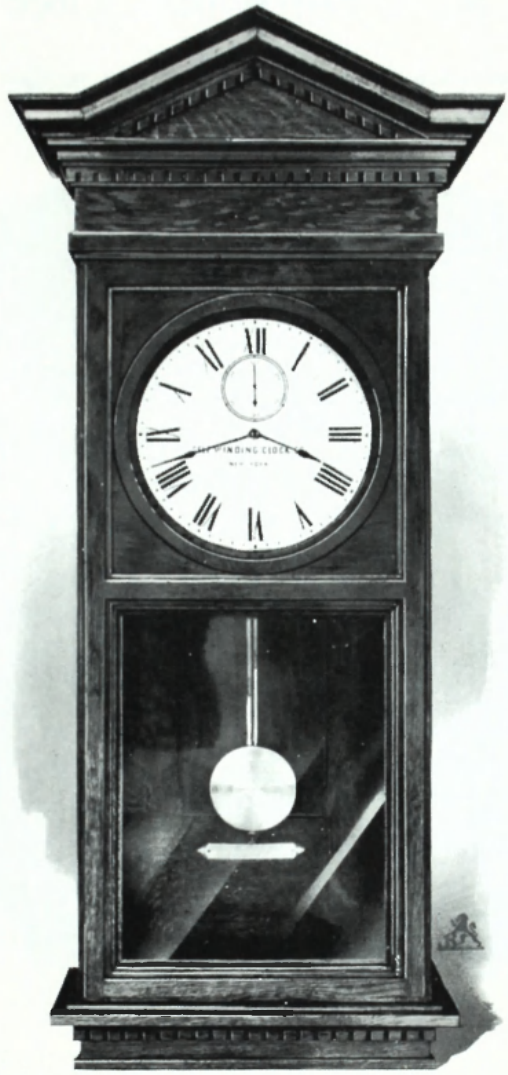
Equipped with mercurial compensated pendulum or with wood rod and brass bob pendulum.

This case is made of the best selected mahogany, cherry, oak, walnut or any other kind of wood to match trim or furnishings. Is of graceful Corinthian design and of the best cabinet finish.

Extreme Dimensions

Total Height 69½" Width 25¼" Depth 10¼"

No. 53 Self-Winding Clock



80 Beat Movement

Made with 12 inch enameled zinc or silvered metal dial with or without seconds, equipped with wood rod and brass bob pendulum.

This case is made of the best selected mahogany, cherry, oak, walnut or any other kind of wood to match trim or furnishings. Is similar to our No. 50 in design and finish, but being fitted with our 80 beat movement takes up less wall space.

Extreme Dimensions

Height 52" Width 23½" Depth 10"

No. 55 Self-Winding Clock

120 Beat Movement

This case is made of the best selected mahogany, cherry, oak, walnut or any other kind of wood to match trim or furnishings. Is similar to our No. 53 in design and finish, but being fitted with our 120 beat movement takes up less wall space.

Furnished with 14 inch enameled zinc dial with or without seconds.

Extreme Dimensions

Height 34¾" Width 25¾" Depth 9¾"

Manhattan

Ornamental bronze case, onyx or marble dial, raised bronze numerals (Roman or Arabic) minute marks and fancy hands.

120 Beat Movement

This design of case can be equipped with either primary or secondary movement; with the latter a controling clock is necessary.

Extreme Dimensions

18″ dial.	Diameter 22″	Depth 6″
20″ "	" 24″	" 6″
24″ "	" 28″	" 6″
30″ "	" 32″	" 6″

On clocks with larger than 20″ dials provision must be made for removable center disc outlined with narrow bronze rim for convenient access to clock movement.

Any style of bronze finish can be furnished.

Germantown

Plain bronze Drop clock, onyx or marble dial, raised bronze numerals (Roman or Arabic) minute marks and fancy hands.

120 Beat Movement

This design of case can be equipped with either primary or secondary movement; with the latter a controling clock is necessary.

Extreme Dimensions

18″	dial.	Diameter of case			20″	Total height			24″	Depth		6″	Spread of bracket			30″
20″	"	"	"	"	22″	"	"		26″	"		6″	"	"	"	33″
24″	"	"	"	"	26″	"	"		30″	"		6″	"	"	"	39″
30″	"	"	"	"	32″	"	"		37″	"		6″	"	"	"	45″

This clock can be furnished in either single or double dial.

On clocks with larger than 20″ dials provision must be made for removable center disc, outlined with narrow bronze rim for convenient access to clock movement.

Any style of bronze finish can be furnished.

Metropolitan

Ornamental bronze case, onyx or marble dial, raised bronze numerals (Roman or Arabic), minute marks and fancy hands.

120 Beat Movement

This design of case can be equipped with either primary or secondary movement; with the latter a controling clock is necessary.

Extreme Dimensions

18″ dial.	Height 30″	Depth 6″
20″ "	" 34″	" 6″
24″ "	" 40″	" 6″
30″ "	" 50″	" 6″

On clocks with larger than 20″ dials provision must be made for removable center disc, outlined with narrow bronze rim for convenient access to clock movement.

Any style of bronze finish can be furnished.

Pittsburgh

Ornamental bronze Pediment clock, onyx, marble or steel enameled dial, raised bronze numerals (Roman or Arabic) minute marks and fancy hands.

120 Beat Movement

This design of case can be equipped with either primary or secondary movement; with the latter a controling clock is necessary. Furnished in 14 inch dial only.

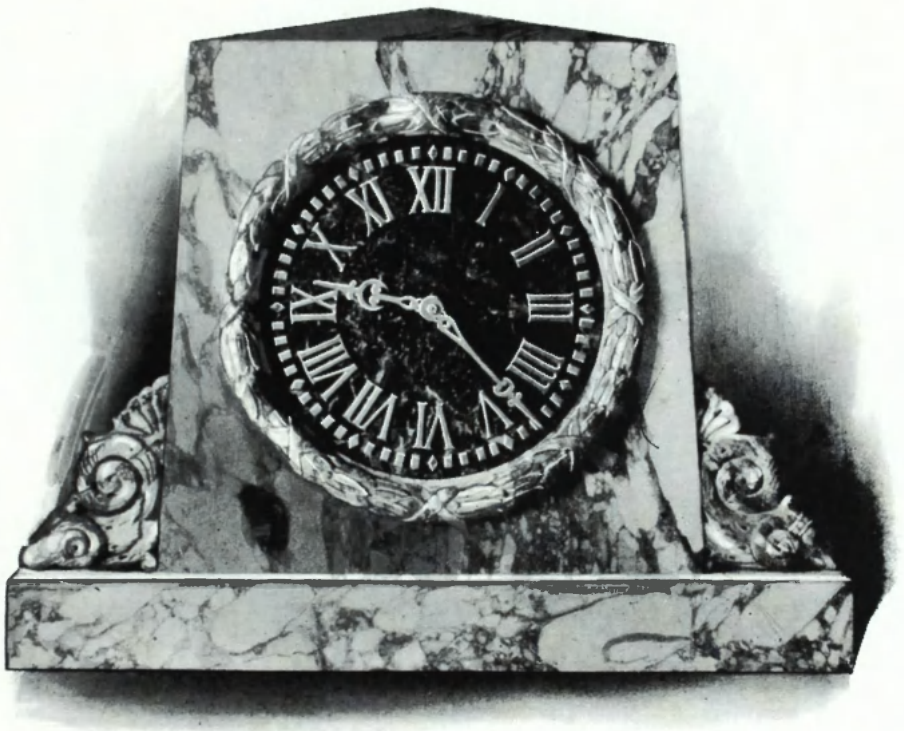
Extreme Dimensions

Height 50″ Width at base 38″ Depth 10″

Any style of bronze finish can be furnished.

Egyptian

Carved Egyptian Breche Violette marble mantel clock. Dial verde antique, raised gold finished numerals, minute marks and fancy hands.



120 Beat Movement

This design of case can be equipped with either primary or secondary movement; with the latter a controling clock is necessary.

Furnished in 12 inch dial only.

Extreme Dimensions

Height 25′ Width at base 30″ Depth at base 12″

Plain Marble Dial

Plain marble dial, etched Roman numerals or Arabic figures, plain or fancy hands.

120 Beat Movement

This clock can be equipped with either primary or secondary movement; with the latter a controling clock is necessary.

Extreme Dimensions

Made in 14, 18, 24, 30, and 36 inch sizes, all 7/8" thick

Circular box containing clock movement one-half inch less than diameter of dial, depth 5½" not including dial.

Can be furnished in any kind of marble.

On dials of larger diameter than 20" provision must be made for removable center disc, outlined with narrow bronze rim for convenient access to clock movement.

Marble Dial Clock

Marble dial, raised bronze Roman numerals or Arabic figures and minute marks.
Fancy metal hands finished to match bronze.

120 Beat Movement

This clock can be equipped with either primary or secondary movement, with the latter a controlling clock is necessary.

Extreme Dimensions

Made in 14, 18, 24, 30 and 36 inch sizes, all ⅞″ thick.

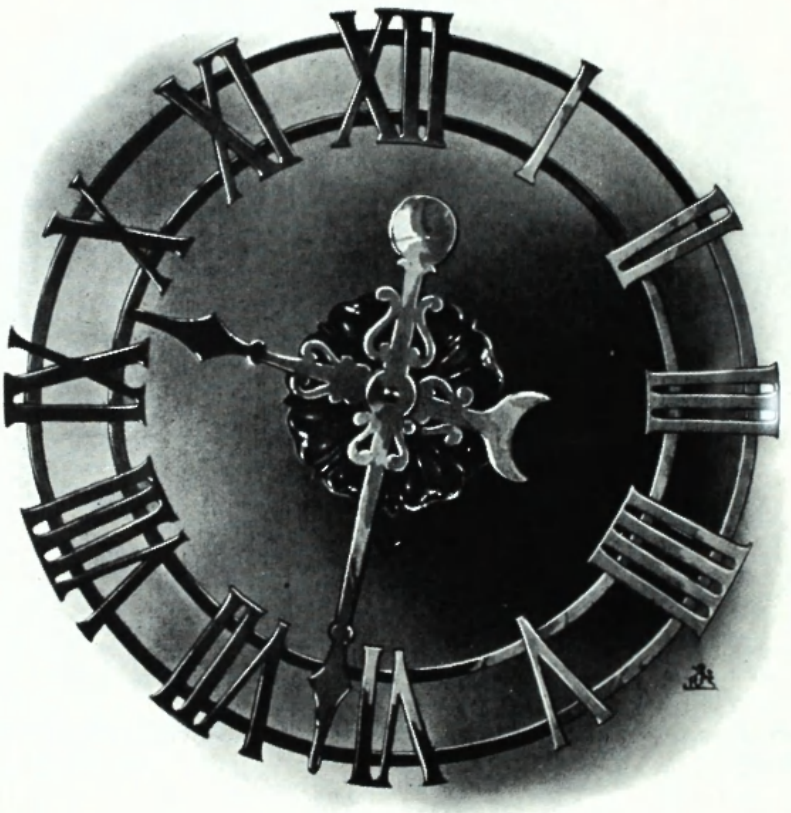
Circular box containing clock movement one-half inch less than diameter of dial, depth 5½″ not including dial.

Can be furnished in any kind of marble.

On dials of larger diameter than 20″ provision must be made for removable center disc, outlined with narrow bronze rim for convenient access to clock movement.

Skeleton

Bronze Skeleton Dial Clock



Can be furnished in 14, 18, 24, 30, 36 and 48 inch dials.

Box containing secondary movement is attached to the rosette. Where space is available in back wall a primary movement may be used.

Trojan

Ornamental bronze Pediment clock, silvered or gilded Arabic figures, fancy hands.

120 Beat Movement

This design of case can be equipped with either primary or secondary movement. With the latter a controling clock is necessary.

Extreme Dimensions

14″ dial.	Height	17″	Length of base	23″	Depth	6½″
18″ "	"	22″	" " "	31″	"	6½″
24″ "	"	29″	" " "	40″	"	7″
30″ "	"	36″	" " "	51″	"	7½″

This clock can be furnished in mahogany or any other wood.

Rococo

Ornamental square bronze case clock (either hanging or wall clock); any kind of marble or onyx dial; raised bronze Roman numerals or Arabic figures, minute marks, fancy hands.

120 Beat Movement

This design of case can be equipped with either primary or secondary movement; with the latter a controling clock is necessary. Can be furnished in either single or double dial.

Extreme Dimensions

18″ dial.	Square 27″	Depth 7″
24″ “	“ 36″	“ 8″
30″ “	“ 45″	“ 8″

As a wall clock top ornaments would be made to correspond with bottom.

Any finish of bronze can be supplied.

On clocks with larger than 20″ dials provision must be made for removable center disc, outlined with narrow bronze rim for convenient access to clock movement.

Albany

Ornamental square bronze case clock (either hanging or wall clock); any kind of marble or onyx dial; raised bronze Roman numerals or Arabic figures, minute marks, fancy hands.

120 Beat Movement

This design of case can be equipped with either primary or secondary movement; with the latter a controling clock is necessary.

Can be furnished in either single or double dial.

Extreme Dimensions

18″ dial.	Square 20″	Depth 5″
24″ "	" 27″	" 6″
30″ "	" 34½″	" 6½′

Any finish of bronze can be supplied.

On clocks with larger than 20″ dials provision must be made for removable center disc, outlined with narrow bronze rim for convenient access to clock movement.

Genoa

Ornamental circular bronze rim clock, any kind of marble or onyx dial, raised bronze Roman numerals or Arabic figures, minute marks and fancy hands.

120 Beat Movement

This design of case can be equipped with either primary or secondary movement; with the latter a controling clock is necessary.

Extreme Dimensions

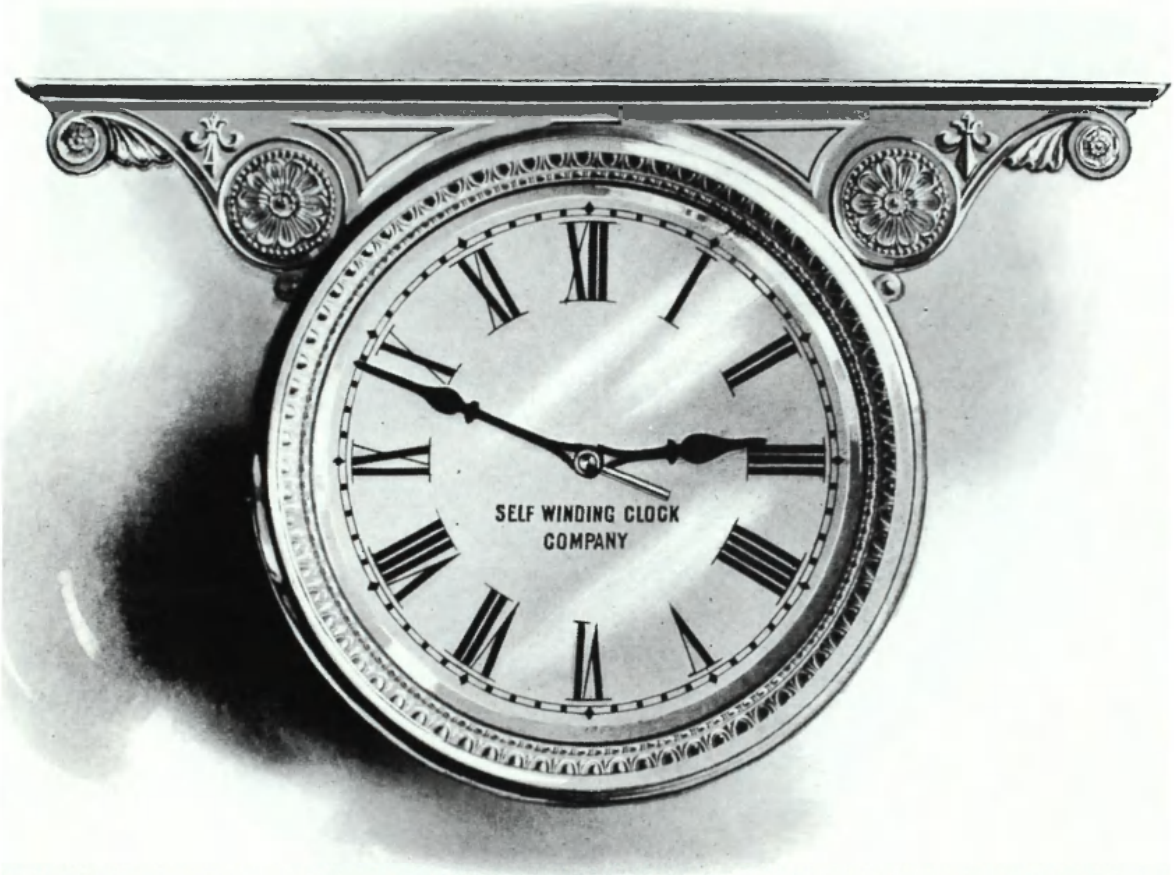
18″ dial.	Diameter 23″	Depth 6″
24″ "	" 31″	" 7″
30″ "	" 39″	" 7″

Any finish of bronze can be supplied.

On clocks with larger than 20″ dials provision must be made for removable center disc outlined with narrow bronze rim for convenient access to clock movement.

Lyons

Single or double dial hanging or pediment clock. Case can be furnished in any kind of wood or bronze metal and any style of dial to match case. Etched or raised bronze numerals.



120 Beat Movement

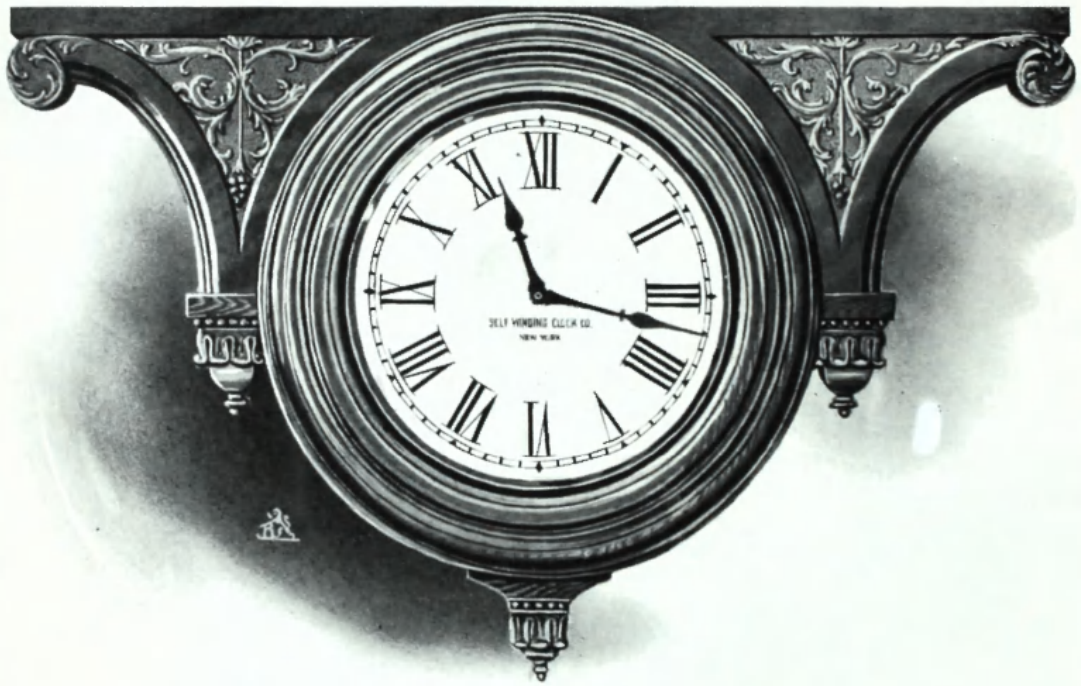
This design of case can be equipped with either primary or secondary movement; with the latter a controling clock is necessary.

Extreme Dimensions

14″	dial.	Height	19″	Length	31″	Average Depth	9″
18″	"	"	24″	"	40″	" "	9″
24″	"	"	32″	"	52″	" "	9″
30″	"	"	40″	"	65″	" "	9″

Camden

Single or double dial hanging or pediment clock. Can be furnished in any kind of wood and any style of dial.



120 Beat Movement

This design of case can be equipped with either primary or secondary movement; with the latter a controling clock is necessary.

Extreme Dimensions

14"	dial.	Height	24"	Length	45"	Average Depth		9"
18"	"	"	32"	"	60"	"	"	9"
24"	"	"	43"	"	70"	"	"	9"
30"	"	"	54"	"	85"	"	"	9"

Baltimore

Ornamental bronze and enameled dial, gilt numerals.

120 Beat Movement

This dial can be equipped with either a primary or secondary movement; with the latter a controling clock is necessary.

Can be furnished in 18, 24 and 30 inch dials.

Consul

Pediment or drop clock, single or double dial. Can be furnished in any kind of wood and any style of dial to match case. Etched or raised bronze numerals.

120 Beat Movement

This design of case can be equipped with either primary or secondary movement; with the latter a controling clock is necessary.

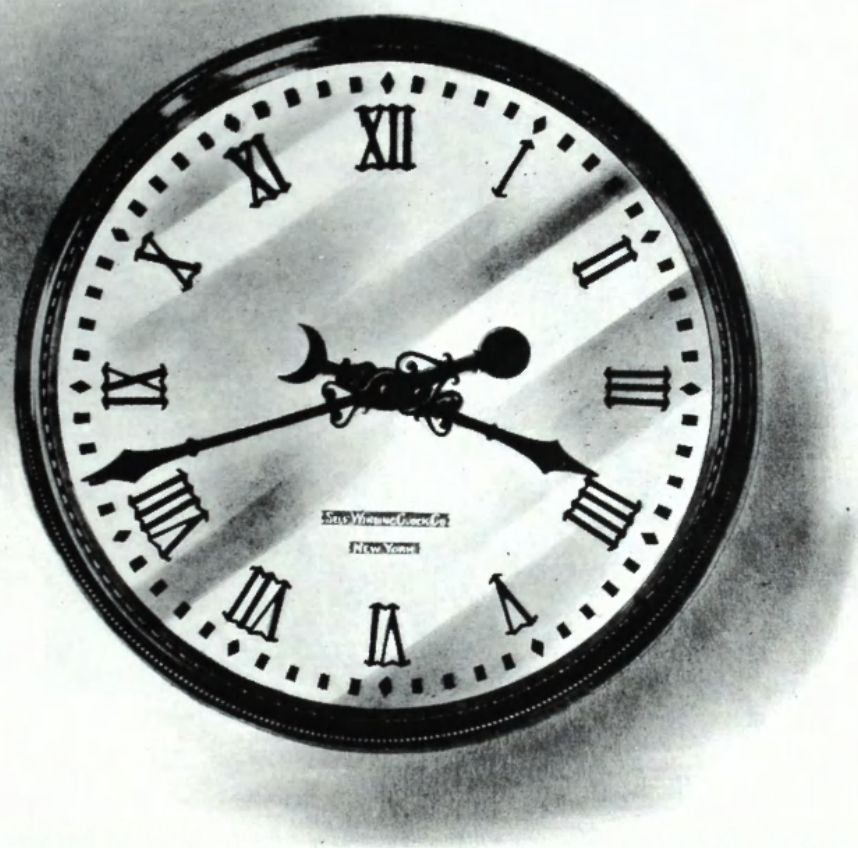
Wooden pediment or drop clock, single or double dial. Has handsome hand carved brackets and bezel.

Extreme Dimensions

18″ dial.	Height 36″	Length 52″
24″ "	" 40″	" 69″
30″ "	" 60″	" 86″

Allegheny

Marble dial, plain bronze rim, raised bronze Roman numerals, minute marks and fancy hands.



120 Beat Movement

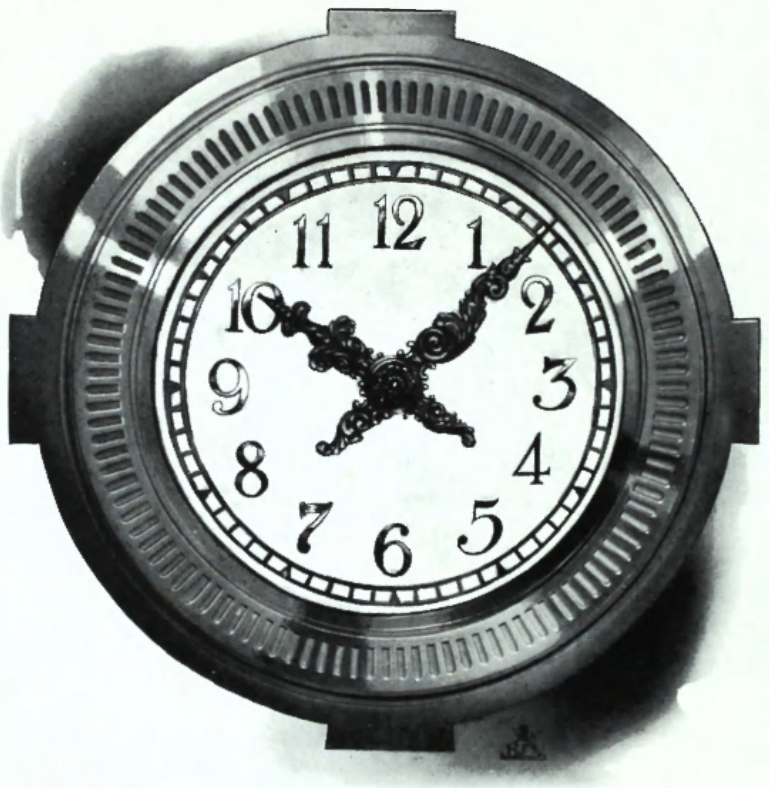
This design of case can be equipped with either primary or secondary movement; with the latter a controling clock is necessary.

Can be furnished in 14, 18, 24, 30 and 36 inch dial.

On clocks with larger than 20″ dials provision must be made for removable center disc outlined with narrow bronze rim for convenient access to clock movement.

Broadway

Circular carved wood clock, steel enameled dial, raised bronze Arabic figures and minute circles, very ornate bronze hands.



120 Beat Movement

This design of case can be equipped with either primary or secondary movement; with the latter a controling clock is necessary.

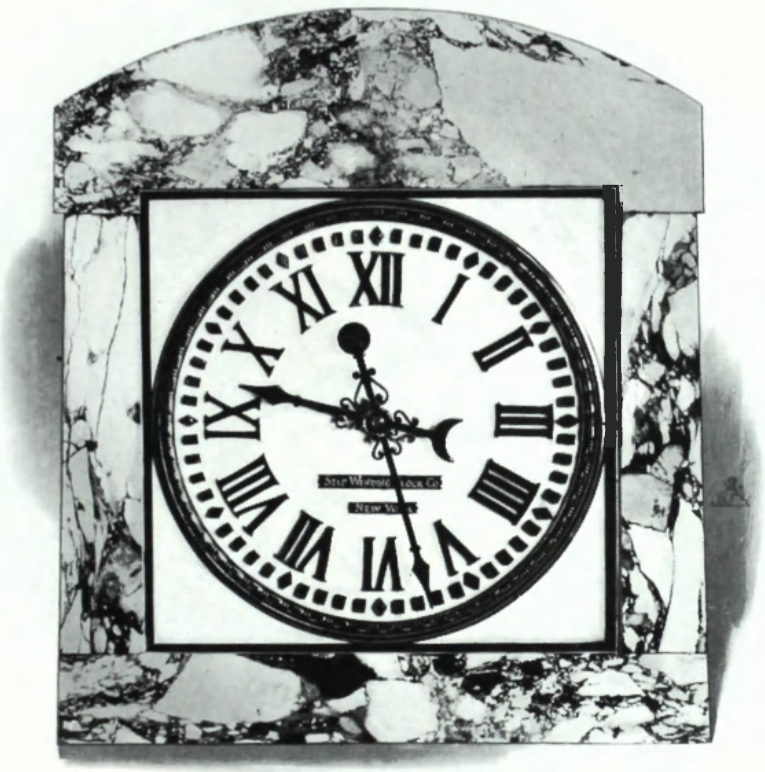
Circular carved wood case with fluted bezel. Can be made of any kind of wood to match trim or furnishings.

Extreme Dimensions

14″ dial.	Diameter 21″	Depth 6″
18″ “	“ 27″	“ 6″
24″ “	“ 36″	“ 6½″
30″ “	“ 46″	“ 7″

Plymouth

Pediment Breche Violette marble case, white marble center and dial, raised bronze border and rim, bronze Roman numerals, minute marks and fancy hands.



120 Beat Movement

This design of case can be equipped with either primary or secondary movement; with the latter a controling clock is necessary.

Extreme Dimensions

14″ dial.	Height 26″	Width 22″	Depth 8″
18″ “	“ 33¾″	“ 28″	“ 8″
20″ “	“ 37½″	“ 32½″	“ 10″
24″ “	“ 45″	“ 39″	“ 10″

Can be furnished in any variety of marble.

Riviera

Circular clock, silvered dial, raised metal arabic figures and minute circles, spade hands.

120 Beat Movement

This design of case can be equipped with either primary or secondary movement; with the latter a controling clock is necessary.

Circular wood case with bezel ornamented egg and dart design. Can be furnished in any kind of wood to match trim or furnishings.

Extreme Dimensions

14″ dial.	Diameter . . .	25″	Depth . . .	7½″
18″ “	“ . . .	32″	“ . . .	7½″
24″ “	“ . . .	43″	“ . . .	8″
30″ “	“ . . .	54″	“ . . .	8″

Can be furnished also with marble dials.

Cambridge

Circular wood clock, knurled bezel with egg and dart carving. Any style of dial and hands.

120 Beat Movement

This design of case can be equipped with either primary or secondary movement; with the latter a controling clock is necessary.

Extreme Dimensions

14″ dial.	Diameter 22″	Depth 7½″
18″ "	" 28″	" 8″
24″ "	" 36″	" 8″
30″ "	" 45″	" 9″

Lenox

Carved mahogany mantel clock, fancy silvered dial.

120 Beat Movement

Carved mantle clock with raised pearl bezel and empire wreath decoration. Can be made in any kind of wood to match trim or furnishings.

This design of case can be equipped with either primary or secondary movement; with the latter a controling clock is necessary.

Extreme Dimensions

5″ dial. Height 18¾″ Width 13″ Depth 6¼″

Pavonia

Black enameled iron mantel clock (non-striking) with marbleized trim, porcelain dial, French sash and bezel fitted with beveled plate glass.

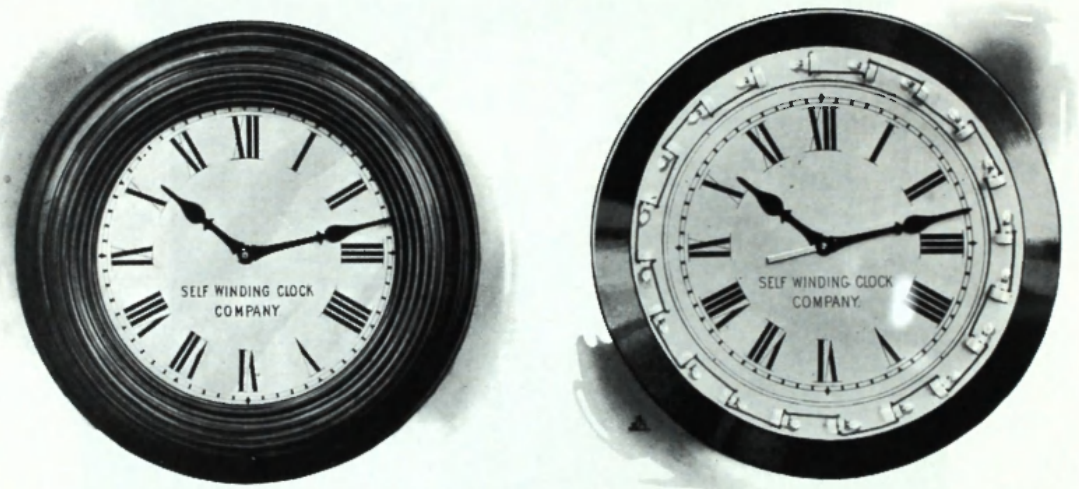
156 Beat Movement

Extreme Dimensions

Diameter of dial 5″ Height 11″ Length of base 16″

Illinois

Circular wooden clock, single or double zinc enameled dial with exterior illumination, regular spade hands. Can be furnished in any wood, or in copper or bronze.



120 Beat Movement

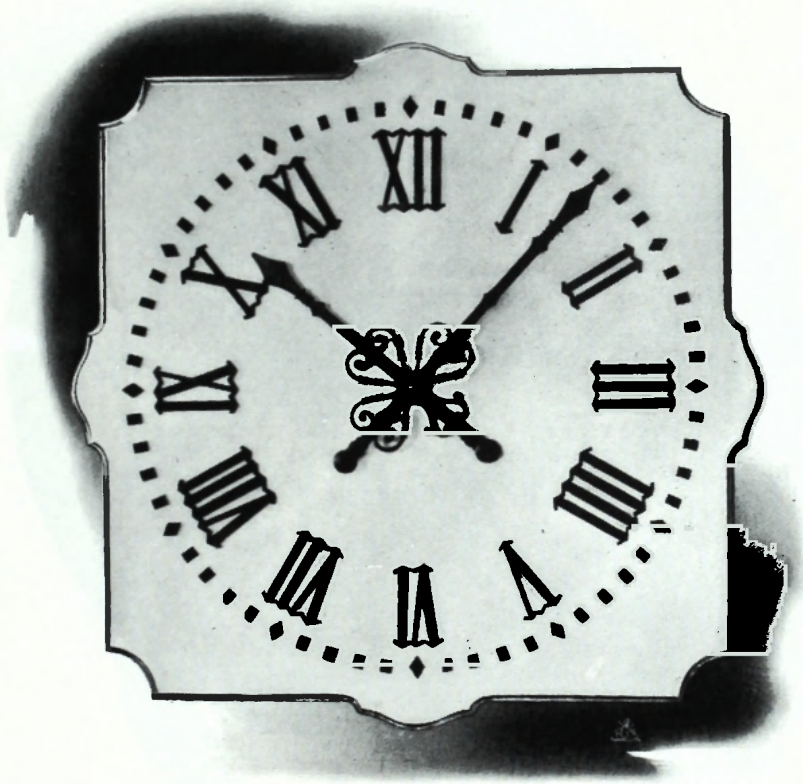
This design of case can be equipped with either primary or secondary movement; with the latter a controling clock is necessary.

Extreme Dimensions

18″ dial.	Diameter 27″	Depth 11½″
24″ "	" 36″	" 12½″
30″ "	" 40″	" 14″

Detroit

Square marble dial wall clock, raised bronze numerals and minute dots, fancy hands.
Any kind of marble can be furnished.



120 Beat Movement

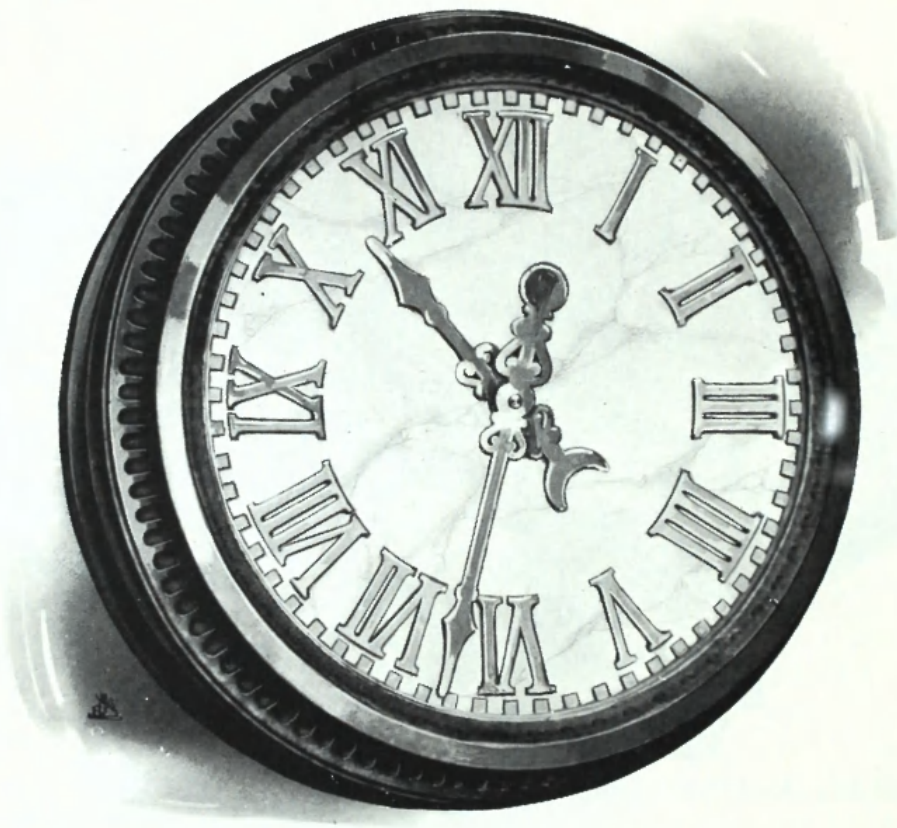
This clock can be equipped with either primary or secondary movement; with the latter a controling clock is necessary.

Extreme Dimensions

18″ dial.	22″ square.	Movement case	18″ square.	5½″ deep.	
20″ “	24″ “	“ “	20″ “	5½″	“
24″ “	28″ “	“ “	24″ “	5½″	“

Oxford

Ornamental bronze case clock with silvered metal or marble dial, raised gilt metal numerals, minute dots and fancy hands.



120 Beat Movement

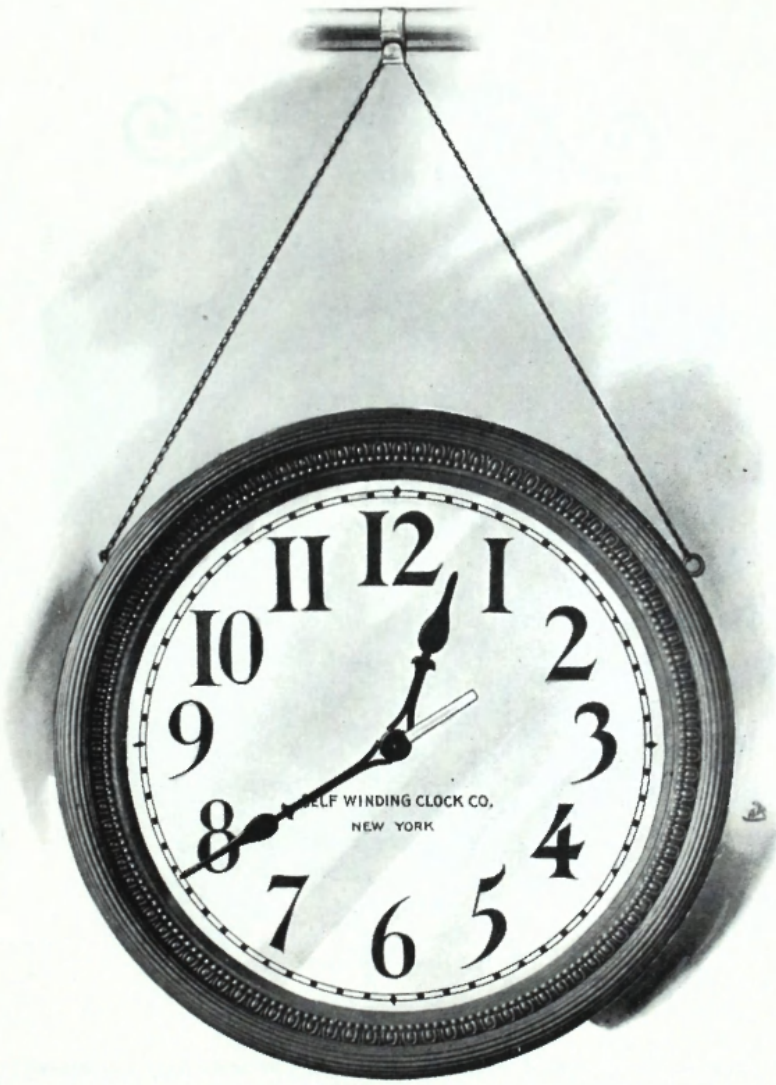
This design of case can be equipped with either primary or secondary movement; with the latter a controling clock is necessary.

Extreme Dimensions

18″ dial.	Diameter 26″	Depth 6″
20″ "	" 30″	" 6½″
24″ "	" 35″	" 7″

Continental

Hanging window clock, either metal or wooden frame, zinc enameled single or double dial, regular spade hands. Can also be furnished with illuminated glass dial.



Marine Movement

This design of case can be equipped with either primary or secondary movement; with the latter a controling clock is necessary.

Extreme Dimensions

18″ dial.	Diameter	22½″
24″ “	“	30″

Jamaica

Metal "Shield" hanging clock, double dial, for interior or outside use. Can be furnished with any style of dial, fancy or plain hands.

120 Beat Movement

This design of clock can be equipped with either primary or secondary movement; with the latter a controling clock is necessary.

Extreme Dimensions

14" dial.	Height, including bracket, 37"	Width 30"
18" "	" " " 47"	" 38"
24" "	" " " 63"	" 51"

Duane

Ornamental hanging bronze clock, any style single or double dial, fancy or plain hands.

120 Beat Movement

This design of case can be equipped with either primary or secondary movement; with the latter a controling clock is necessary.

Extreme Dimensions

18″ dial.	Height, including bracket, 54″	Width 35″
24″ "	" " " 72″	" 47″
30″ "	" " " 90″	" 59″

York

Ornamental bronze bracket clock for banking room. Illuminated skeleton double dials and signs. Can be furnished with Westminster tubular chimes and hour strike.

This design of case can be equipped with either primary or secondary movement; with the latter a controling clock is necessary.

Extreme Dimensions

Height, 16 feet Width including bracket, 8 feet Depth, 13½ inches

Furnished only with 48″ dials.

Globe

Four-dial solid bronze spherical pedestal clock, raised bronze numerals gold plated.
Furnished only with a controling clock.

Operated only with secondary movements.

Extreme Dimensions

13″ dials.	Height 29″	Diameter of sphere 20″
18″ "	" 40″	" " " 28″
24″ "	" 54″	" " " 37″
30″ "	" 67″	" " " 46″

Windsor

Ornamental bronze and glass hanging globe clock. Etched Roman numerals or Arabic figures, bronze finish. Three or four dials. Illuminated.

Extreme Dimensions

18″	dials.	Total distance from base ornament to top ornament							3′ 9″	Diameter of globe			27″
24″	“	“	“	“	“	“	“	“	5′	“	“		36″
30″	“	“	“	“	“	“	“	“	6′ 3″	“	“		45″

For convenience of access to movement, recommend secondary mechanism operated from a controling clock.

Universal

World's variation of time as shown by nine-dial marble self-winding clock.

Small Dials, 140 Beat Movements
Center Dial, 120 Beat Movement

Extreme Dimensions

Center dial 24" in diameter. Smaller dials 10" in diameter. Extreme diameter of marble disc 48"

Any variation of the above can be furnished.

Massachusetts

Ornamental bronze emblematic clock. Bronze dial, raised bronze numerals, fancy hands.

120 Beat Movement

Made only in 14 inch dial.

Extreme Dimensions

Height 29¾″ Width 25″ Depth 6″

Empire

Ornamental bronze gold plated mantel clock; polished steel dial, bronze gold plated numerals.

140 Beat Movement

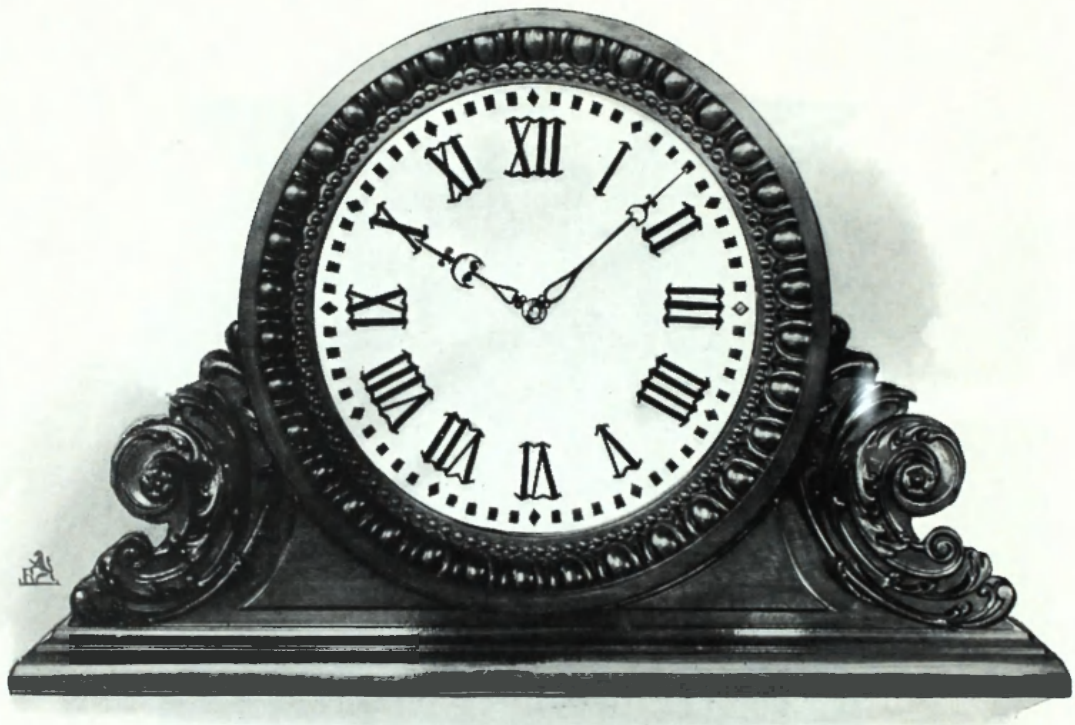
This design of case can be equipped with either primary or secondary movement; with the latter a controling clock is necessary.

Extreme Dimensions

Length of Base 18″ Height 17½″ Depth 6″

Serano

Ornamental carved wood or hammered bronze pediment or hanging clock, with any style of dial.



120 Beat Movement

This design of case can be equipped with either primary or secondary movement; with the latter a controling clock is necessary.

Extreme Dimensions

14"	dial.	Length of base	38"	Height	21"	Depth	6"
18"	"	"	50"	"	27"	"	6½"
24"	"	"	63"	"	36"	"	7"
30"	"	"	70"	"	45"	"	7"
36"	"	"	85"	"	54"	"	8"

Hudson

Wall clock, dark mahogany dial, bright bronze numerals, minute marks, fancy hands.

120 Beat Movement

This design of case can be equipped with either primary or secondary movement; with the latter a controling clock is necessary.

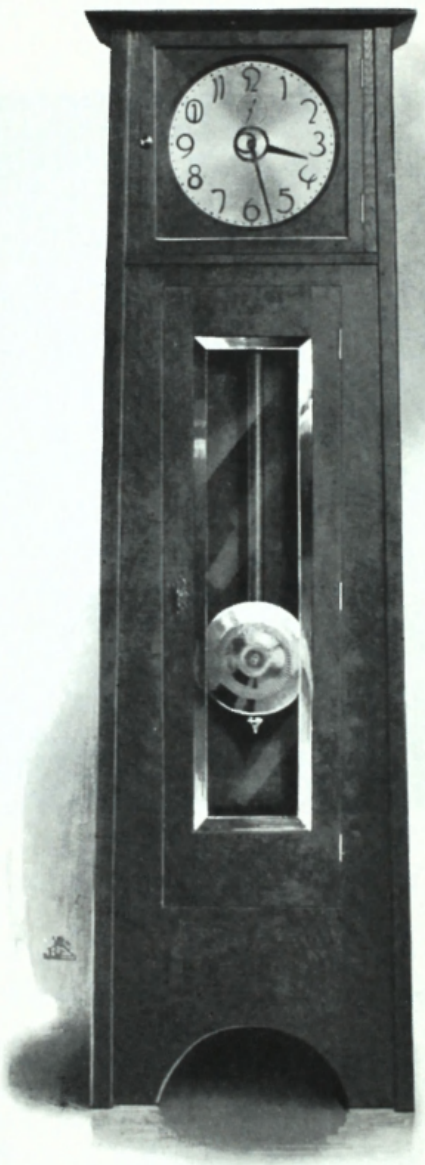
Extreme Dimensions

14″ dial.	16″ square.
18″ “	20″ “
24″ “	27″ “
30″ “	34″ “
36″ “	41″ “

Box containing movement at back of dial and placed in wall, the dial being flush with wall.

Amsterdam

Old Dutch design standing clock, silvered dial with raised hob-nail antique figures, seconds circle and minute dots, concentric hands. Finished in black oak.



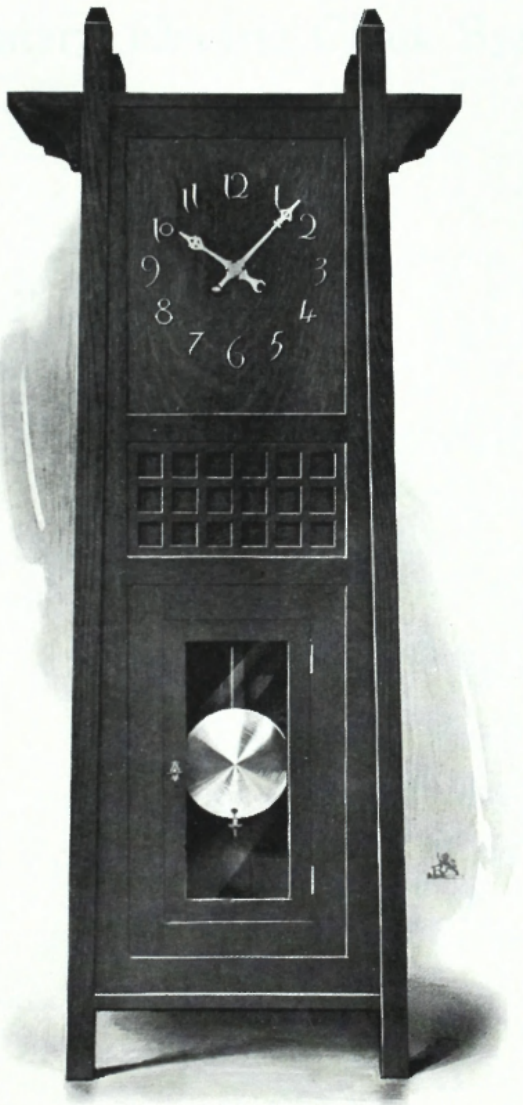
12 Inch Dial. 60 Beat Movement.

Extreme Dimensions

Height 73½" Width 21" Depth 10

Mission

Mission design standing clock, wooden dial, cast bronze Arabic figures, minute dots, plain hands. Can be furnished in dark or weathered oak.



12 Inch Dial. 60 Beat Movement.

Extreme Dimensions

Height 73″ Width at base 21″ Depth 10″

Secondary Electric Clock Systems

Secondary Electric Clock System

Operated by a Primary Self-Winding Master Clock

THIS system consists primarily of a master clock, a transmitting instrument, a mechanism for propelling the clock hands and a source of current supply.

Master Clock

The master clock is one of our well-known primary type self-winding clock movements, with a twelve or fourteen inch metal dial finished in matte silver, and having engraved thereon numerals and minute circles, black enameled. The movement is furnished plain or with sapphire jeweled pallets and with escape arbor bearings jeweled. The arbor and pinions are made from the best quality steel hardened and tempered. The wheels are of hard drawn brass and are perfectly cut. The movement has a dead beat Graham escapement and is equipped with either a 15 or 30 pound two-jar mercurial compensated pendulum, guaranteed to run within five seconds per month, and closer if specially regulated and the clock placed on a solid foundation free from vibration. This movement is equipped with a lever operated from a ratchet wheel on the center arbor. The function of this lever is to mechanically release an automatic circuit-closing transmitter, for the purpose of sending powerful minute or half-minute impulses over the various secondary clock circuits. From this description it can be seen that the ordinary delicate starting contacts usually placed on the seconds arbor are entirely eliminated in this system.

Transmitter

This transmitter is a device arranged to be mechanically actuated once every minute or half-minute from the master clock. Its function is to powerfully close the various secondary clock circuits and to reduce the impulse periods to about one-tenth of one second, thereby greatly reducing the current consumption.

The transmitter is capable of operating any number of clocks by simply increasing the voltage or adding transmitters.

Therefore, the master controling clock, through the operation of these transmitters, can control an unlimited number of secondary clocks.

Each transmitter has a capacity of eight circuits and the switchboard is equipped for operating twenty secondary clocks in series on one circuit, making a total of 160 clocks. From one to twenty clocks can be operated on one circuit. This is based on a battery having approximately 24 volts. The line resistance in the building, however, may slightly increase this voltage. The current discharge per circuit does not exceed one-tenth of one ampere.

In conjunction with this transmitter is furnished a switchboard located in the bottom of master clock case. It is equipped with telltale clocks, one for each circuit, switches, strap keys and all terminal connections necessary.

Secondary Clocks

Each secondary clock is provided with a mechanism for propelling the hands, which is of the most perfect construction so far produced in an electro-mechanically operated step by step device.

These movements are positively locked both before and after propelling has taken place, and they cannot be disturbed by vibrations or other causes.

They are mechanically perfect and highly efficient electrically, and are very simple in construction. They will operate on from .9 to one volt.

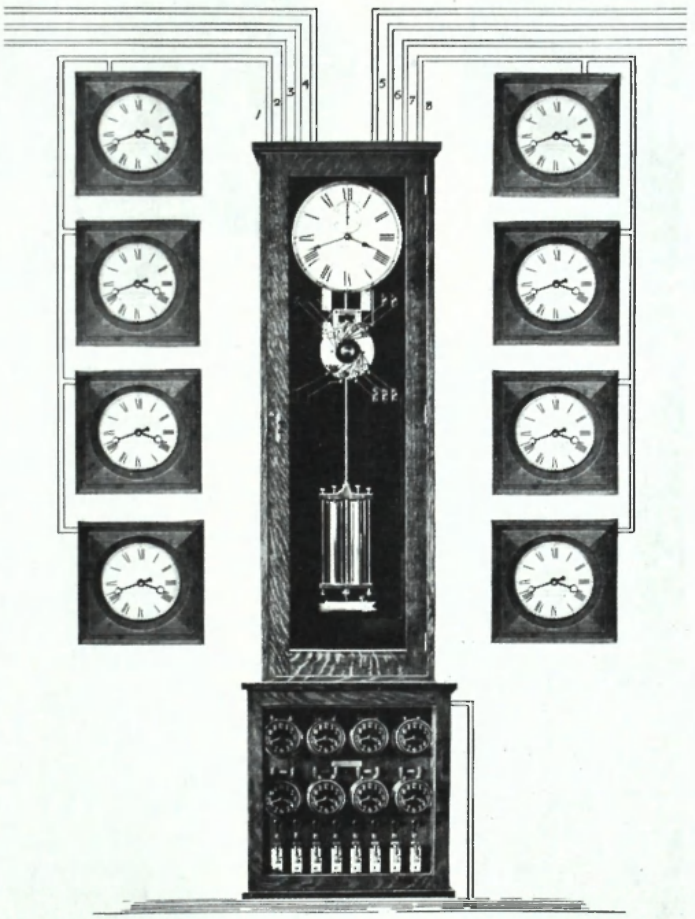
Each clock is provided with a special hanger and switch with binding plates, to which the secondary clocks are connected with special metal tipped flexible cords. This cord permits the removal of the clock, turning the switch and then taking it off the wall without opening the circuit. These clocks are connected in series on each circuit, the number per circuit depending on the voltage. The various circuits are tapped in multiple from the battery or other current source.

Current Supply

The source of current supply may be either a primary battery, a storage battery, or a direct lighting current, if available in a building. Such a current, however, can only be used if the wiring for the clock circuit be such as to conform to the rules and regulations of the Board of Fire Underwriters.

Primary Self-Winding Master Clock

Of least expensive design, with automatic transmitter, telltale dials and complete switchboard connections.



Master Clock with 8 circuit Transmitter
Showing Wiring Diagram

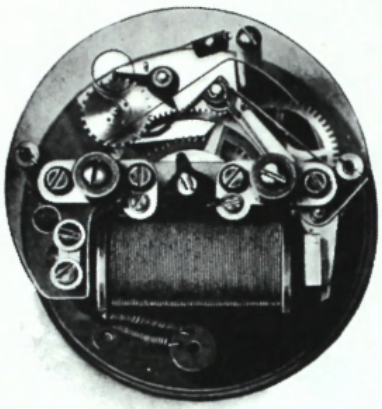
Capacity on 24 Volt Battery, 160-12″ Dial Units.
Capacity on 48 Volt Battery, 320-12″ Dial Units.

Extreme Dimensions

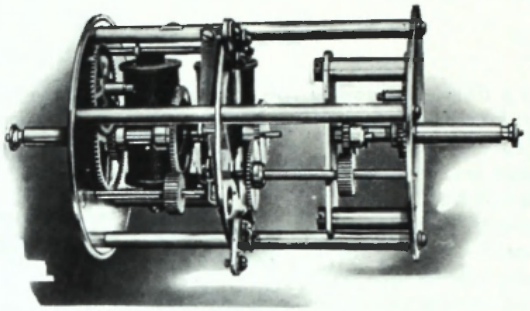
Height 81″ Width 24½″ Depth 10½″

Any design of case for controling clock can be furnished, which case will include switchboard installation.

General Description of Secondary Movements



Single Dial



Double Dial

Single Dials

No. 1 Secondary Movement

This movement has a capacity for operating hands on dials up to and including 30 inches diameter. It can be furnished regularly from stock for dials up to and including one inch thick.

Extreme Dimensions

Diameter . . . . . 3⅜" Depth to dial supports, 2¼"

No. 2 Secondary Movement

This movement has a capacity for operating hands on dials from 30 to 60 inches in diameter. It can be furnished regularly from stock for dials up to and including 1½ inches thick.

Extreme Dimensions

Diameter . . . . 5 15/16" Depth to dial supports, 4 1/16"

No. 3 Secondary Movement

This movement has a capacity for operating hands on dials from 60 to 96 inches in diameter. It can be furnished regularly from stock for dials up to and including 1½ inches thick.

Extreme Dimensions

Diameter . . . . . 8" Depth to dial supports, 5¾"

Double Dials

These movements are equipped with duplicate dial works operated by our regular actuating mechanism. The dial works are geared with intermediate wheels, pinions and connecting rod, to the main driving shaft.

This arrangement makes a very simple, compact and efficient form of double dial drive.

The construction of the No. 1, 2 and 3 type of double dial movement is identical.

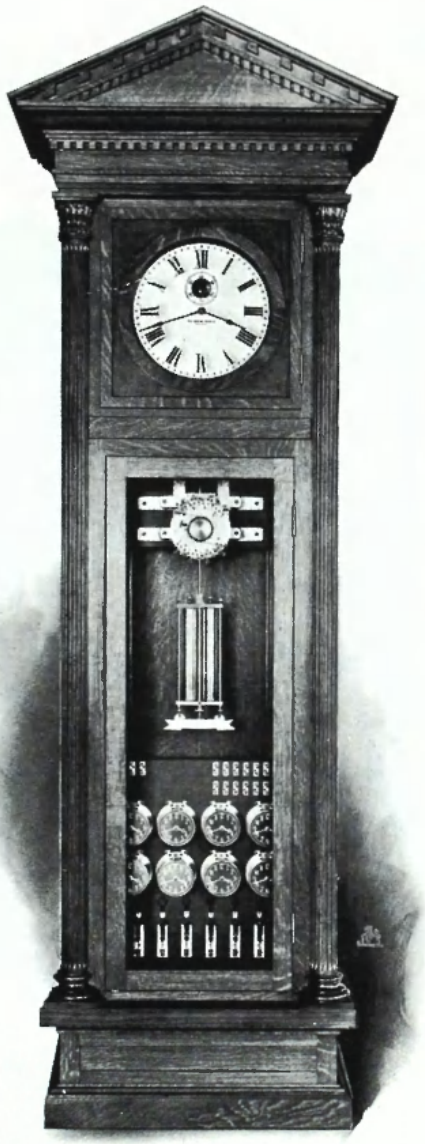
The dimensions are the same as for the single dial movements except as to depth.

Capacity of movements is same as for single dial movements.

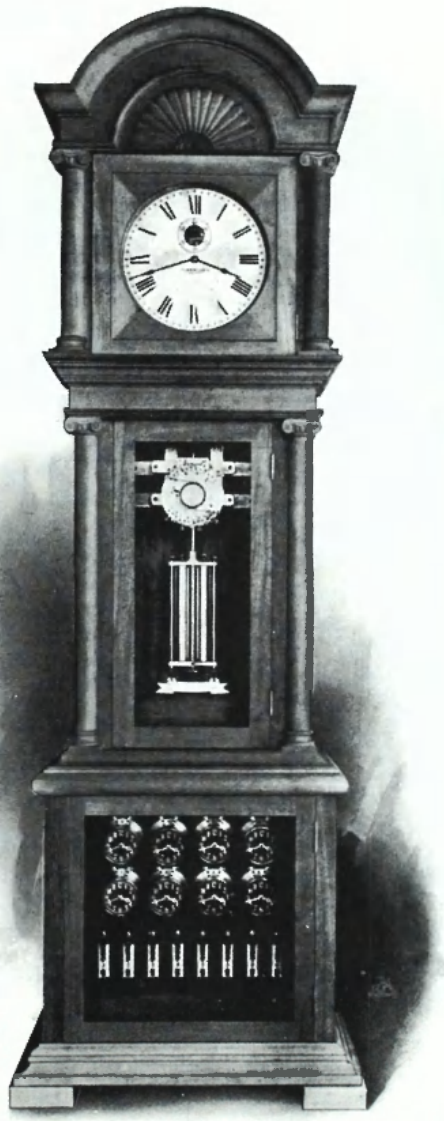
Extreme Dimensions

Depth No. 1, 4½" Depth No. 2, 6" Depth No. 3, 10"

Ionic and Norman Designs of Master Clock Cases



Ionic



Norman

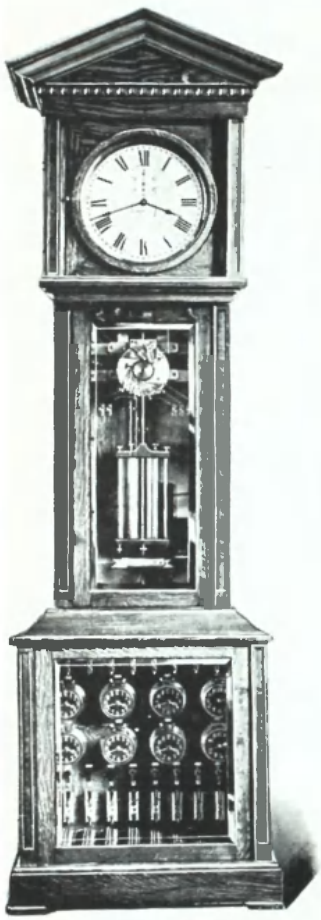
These cases are made with beveled glass doors, and can be supplied in mahogany, oak, cherry or walnut.

Extreme Dimensions

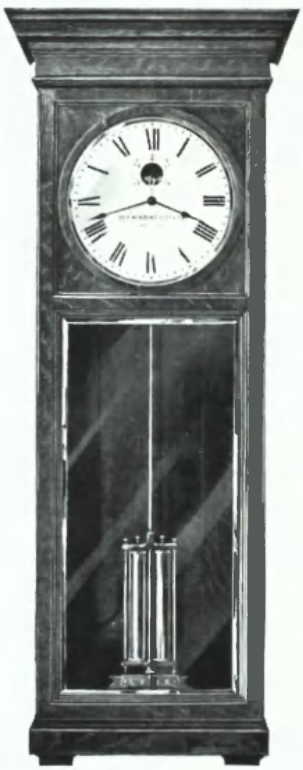
Ionic.	Height 109″	Width 37″	Depth 16″
Norman.	“ 100″	“ 32″	“ 18″

Other Designs of Self-Winding Master Controling Clocks

Used with our Secondary Clock Systems

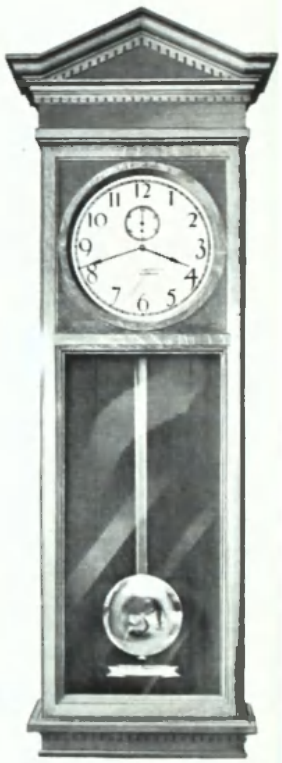


Corinthian



No. 41

No. 9



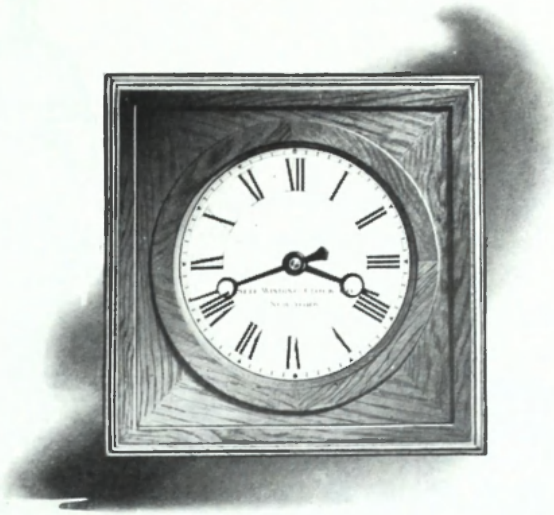
No. 50

Extreme Dimensions

Corinthian.	Height	Width	Depth
No. 41,	63"	23¾"	9½"
No. 9,	69½"	22⅛"	8¼"
No. 50,	69½"	25¼"	10¼"

Round and Square Secondary Clocks

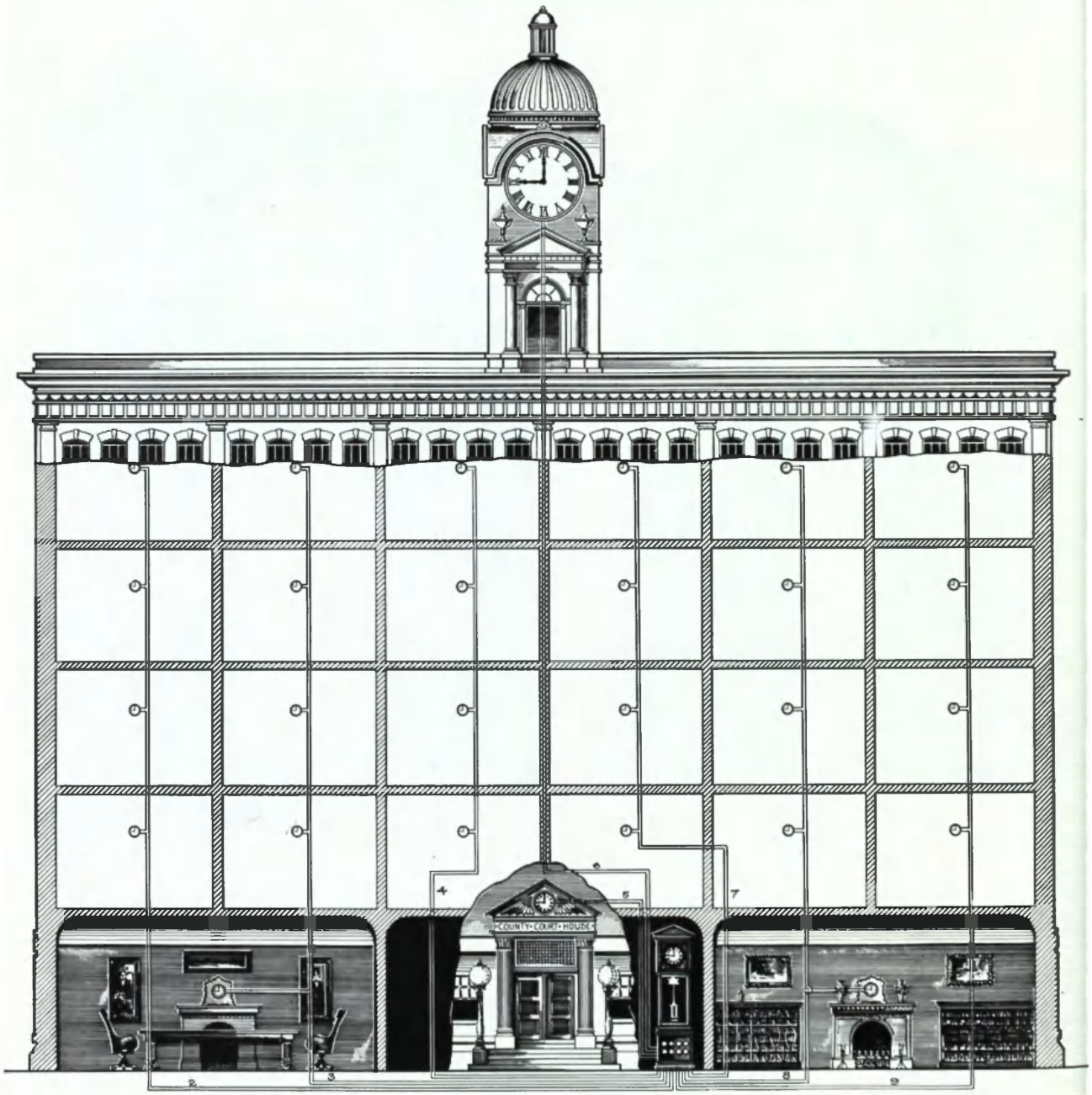
Made in Wood or Metal



Extreme Dimensions

Round			Square		
Diameter of Dial	Diameter of Case	Depth of Case	Diameter of Dial	Square of Case	Depth of Case
6″	10″	4½″	6″	10″	4½″
8″	12½″	4½″	8″	12½″	4½″
12″	17″	4½″	12″	18″	4½″
14″	19″	5″	14″	21″	4½″
18″	23″	5″	18″	27″	5″
24″	31½″	6½″	24″	34″	5½″
30″	39″	6½″	30″	40″	6½″
36″	46″	6½″	36″	44″	6½″
42″	53″	7″	42″	50″	6½″
48″	60″	7″	48″	58″	6½″
60″	75″	11″	60″	70″	11″
72″	90″	11½″	72″	84″	11″
84″	101″	12″	84″	98″	12″
96″	115″	12″	96″	110″	12″

Diagram Showing an Eight-circuit Secondary Clock Installation



For general description see opposite page.

Description of an Eight-circuit Secondary Clock Installation

Engraving on opposite page is a diagram showing an eight-circuit secondary clock installation, to be used in large public buildings, such as Court Houses, City Halls, Office Buildings and Hotels. The number of clocks that may be installed in any building is practically unlimited.

Figure No. 1 represents the master or controling clock, usually located in a main hall or office. From this master clock eight circuits are run through the building. Each circuit controling a certain number of clocks.

The actual number of clocks to be operated on any one circuit is determined by the local conditions found in each installation.

However, the number to be used on any one circuit is limited only by the voltage and ampere capacity of current supply. This supply may consist either of a primary or a secondary type of battery, or it may be tapped from the electric light current direct.

If electric light current is used, it should be fed direct from the buss bars to the transmitter for operating the clock circuits.

Figures No. 2, 3, 4, 7, 8 and 9 indicate each circuit for operating a given number of clocks.

No. 5 indicates a circuit operating an outside clock above main entrance of building.

No. 6 indicates a circuit arranged to operate a tower clock, which may have 1, 2, 3, or 4 dials.

The size of dials is unlimited.

Each circuit of clocks is connected in a straight series loop starting and terminating at the transmitter.

The eight circuits are fed from the transmitter in multiple.

For illustration see opposite page.

Designs Suitable for House and Apartment Plants

"London"

A house plant of this kind is fully described on opposite page.

Primary self-winding master clock, with various designs of secondary mantel clocks. Almost any type of clock, from the simplest to the most ornate, can be equipped with our secondary movement, and operated from a master clock.

Extreme dimensions of "London" design Master Clock

Height . . 104" Width . . 22¾" Depth . . 15"

Description of a House Clock Plant

Illustrated on opposite page.

THE illustration on opposite page shows various designs of ornamental clocks suitable for house and apartment buildings where it is recognized as desirable to have each and every clock record uniform time.

It is becoming more and more acknowledged by those interested in complete building construction, whether of residence, apartment or office building, that time systems are no longer a luxury but an important necessity, adding not only to the convenience of the occupants but as a revenue earning auxiliary for such buildings, in event of their being constructed as an investment.

The system which we herewith describe comprises a master clock ot Grandfather design, to be located preferably in the Entrance Hall or Library. The design of such clock can be varied to suit any requirement and is equipped with one of our high grade self-winding master clock movements, which in turn actuates secondary clocks located elsewhere throughout the building by means of one minute or half minute impulses, the hands of the secondary clocks moving forward at either of the above intervals, thereby recording time in exact synchronism with the master clock.

The self-winding feature as applied to our master clock, the simplicity and positive operation of our secondary system and most important of all, the low cost of maintenance for such a plant, is well worthy the attention of those who are sufficiently progressive to recognize the necessity of departing from old methods and past customs which permitted of every clock throughout the building recording a variance of time.

Clocks equipped with our secondary movements can be furnished in any design from the simplest to the most ornate, and in fact if the prospective purchaser prefers to retain the clock cases already in use, our secondary movements can be installed therein though such clocks formerly were equipped with key winding movements.

Is it not surprising that in these days of modern invention people are content in their homes not only to tolerate the variations shown by clocks of key-wind mechanism, but are content to pay their jewelers to periodically wind and maintain their house clocks, or attend to this exacting detail themselves, while with any clocks furnished of our manufacture we guarantee same to wind themselves for a period of from twelve to eighteen months without renewal of battery and without care or maintenance for that period.

The method of installation is as follows: From the master clock location a small wire is run to each and every clock in a straight series loop; another wire is run from the master clock location to the battery.

This battery, if of the primary type, can be placed in the cellar or other convenient location. If electric house current is available, our secondary clock system can be operated therefrom by means of a storage battery or otherwise.

A most important feature in conjunction with either our primary or secondary clock systems is the fact that we are the only firm of clock manufacturers whose product can be equipped to receive the hourly signals of correction from the U. S. Observatory at Washington, D. C., over the lines of the Western Union Telegraph Company.

Description of

Mantel Secondary Clocks

No. 1. Empire style with highly polished brass frame, French plate glass front, back and sides, enamel or porcelain 3½″ dial, fancy hands. Height 9″; width 5½″; depth 5½″.

No. 2. Dull finished solid mahogany case with fluted columns, 5½″ enameled or silvered dial, fancy hands, French silver gilt sash, and fitted with fine beveled plate glass. Height 14″; width 10¾″; depth 8¼″.

No. 3. Inlaid mahogany case, highly polished, 5½″ silvered dial, fancy hand , silver gilt sash and beveled plate glass. Height 15¼″; width 12″; depth 10″.

No. 4. Inlaid mahogany butterfly case with three-quarter fluted columns ornamented in brass, 7½″ silvered dial, fancy hands, silver gilt sash with beveled plate glass. Height 17½″; width 13″; depth 9″.

No. 5. Highly polished mahogany case, inlaid corners, 7½″ silvered dial, fancy hands, silver gilt French sash with beveled plate glass. Height 11″; width 11¼″: depth 7⁄8″.

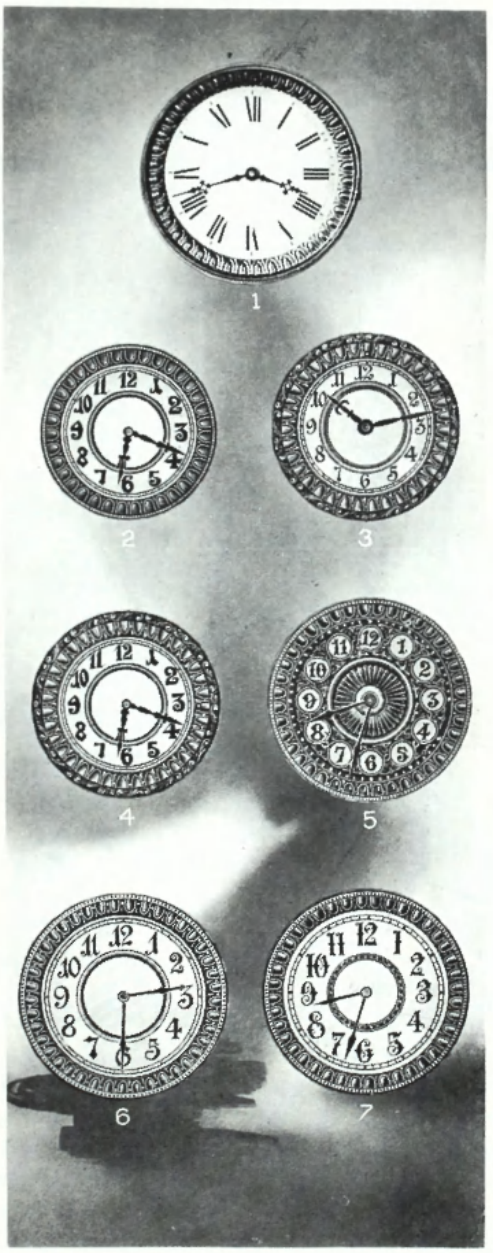
No. 6. Onyx case with bronze ornaments, fancy dial, fancy hands and beveled plate glass. Height 9¾″; width 9″.

No. 7. Empire style of finest selected mahogany with pure Empire gilt bronze mountings, fancy or plain enameled dial, fancy hands. Height 17½″; width 6¼″; depth 5¼″.

When ordering it is important to refer to the clocks by number.

Shown on page 82.

Ornamental Dials for Secondary Wall Clocks

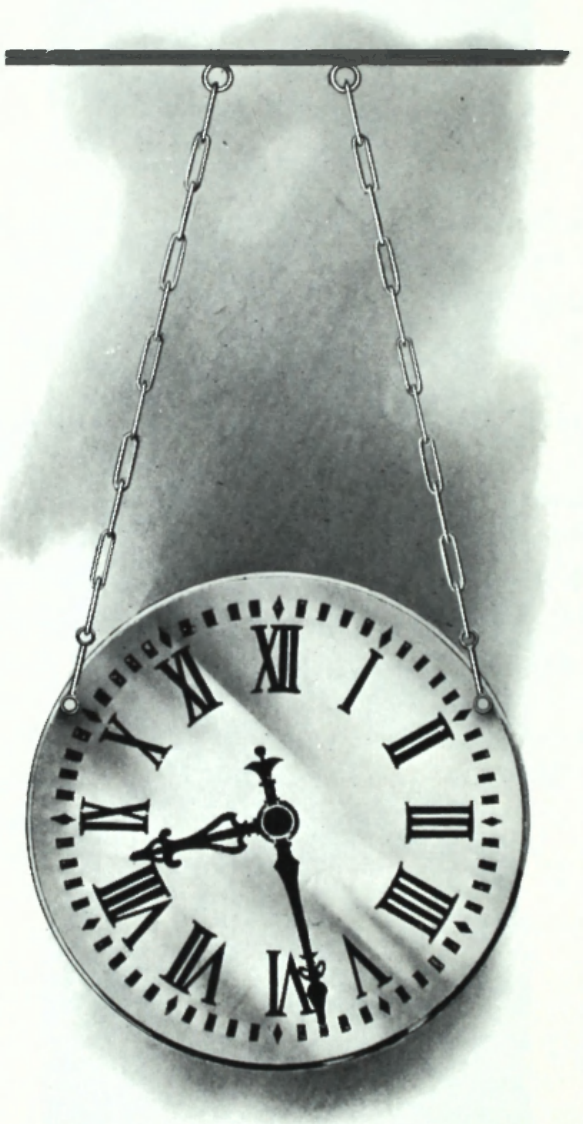


Porcelain dials, 5½″ and 7½″ diameter, with solid brass sash any finish desired, heavy beveled French plate glass, Roman numerals or Arabic figures hand painted on the porcelain.

When ordering, please designate dial by its number.

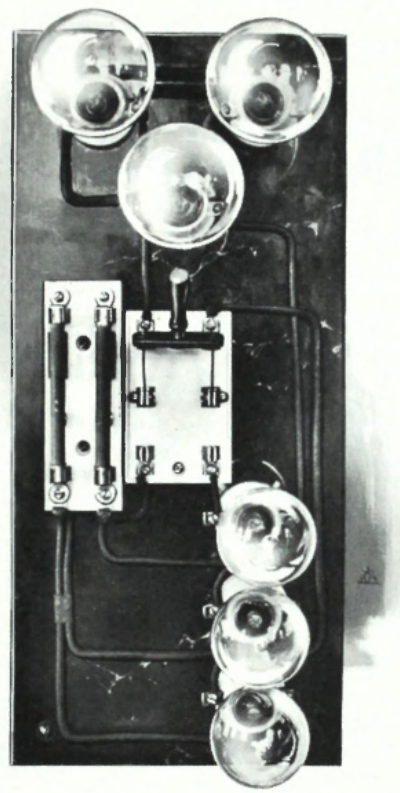
Hanging Transparent Glass Dial

Equipped with Secondary Movement



Can be furnished in following sizes: 14″, 18″, 20″, 24″ and 30″.
Any length of chain furnished to suit requirements.

Storage Battery Charging Panel



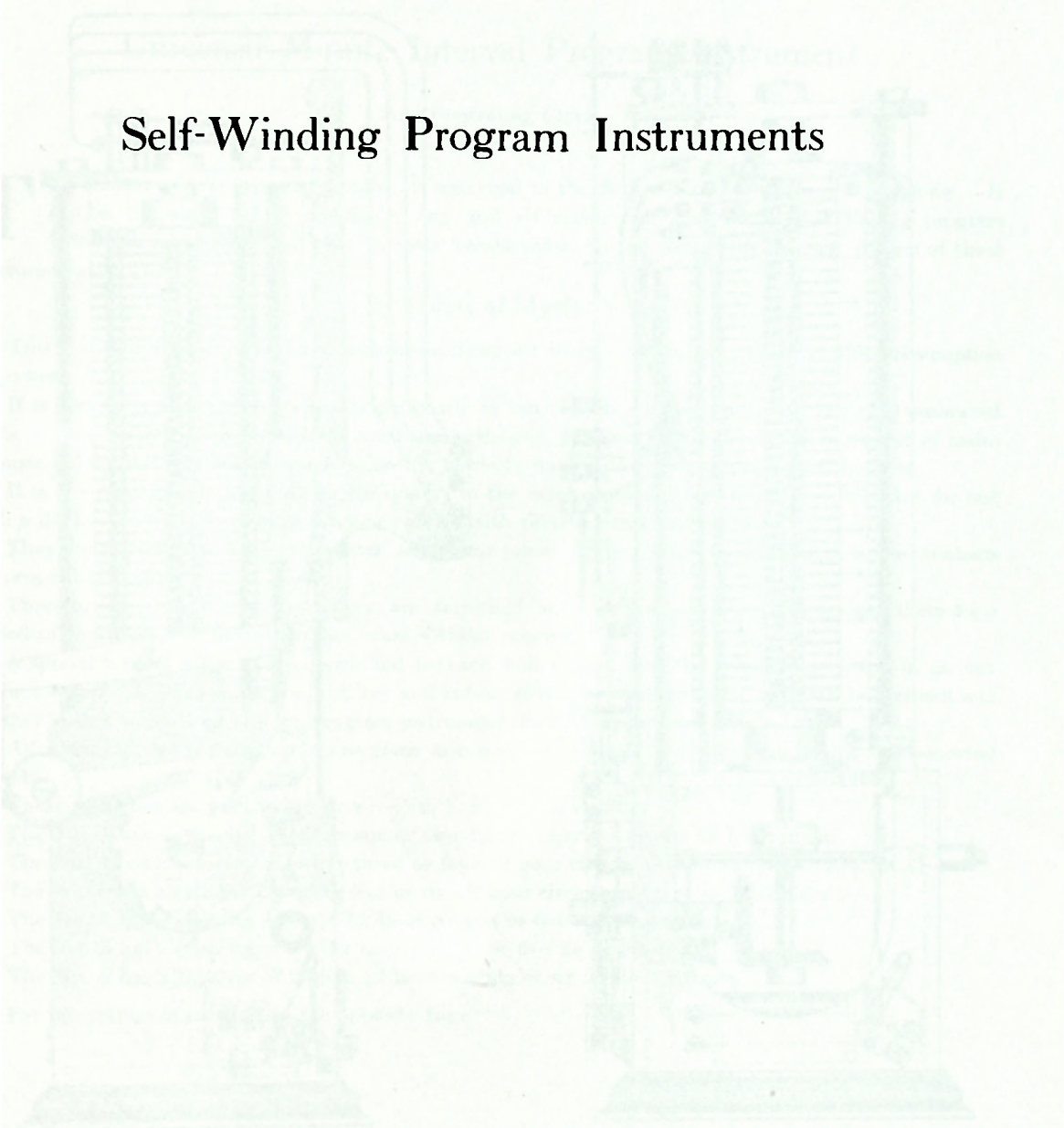
For Secondary Systems

Description of Charging Panel for Storage Batteries

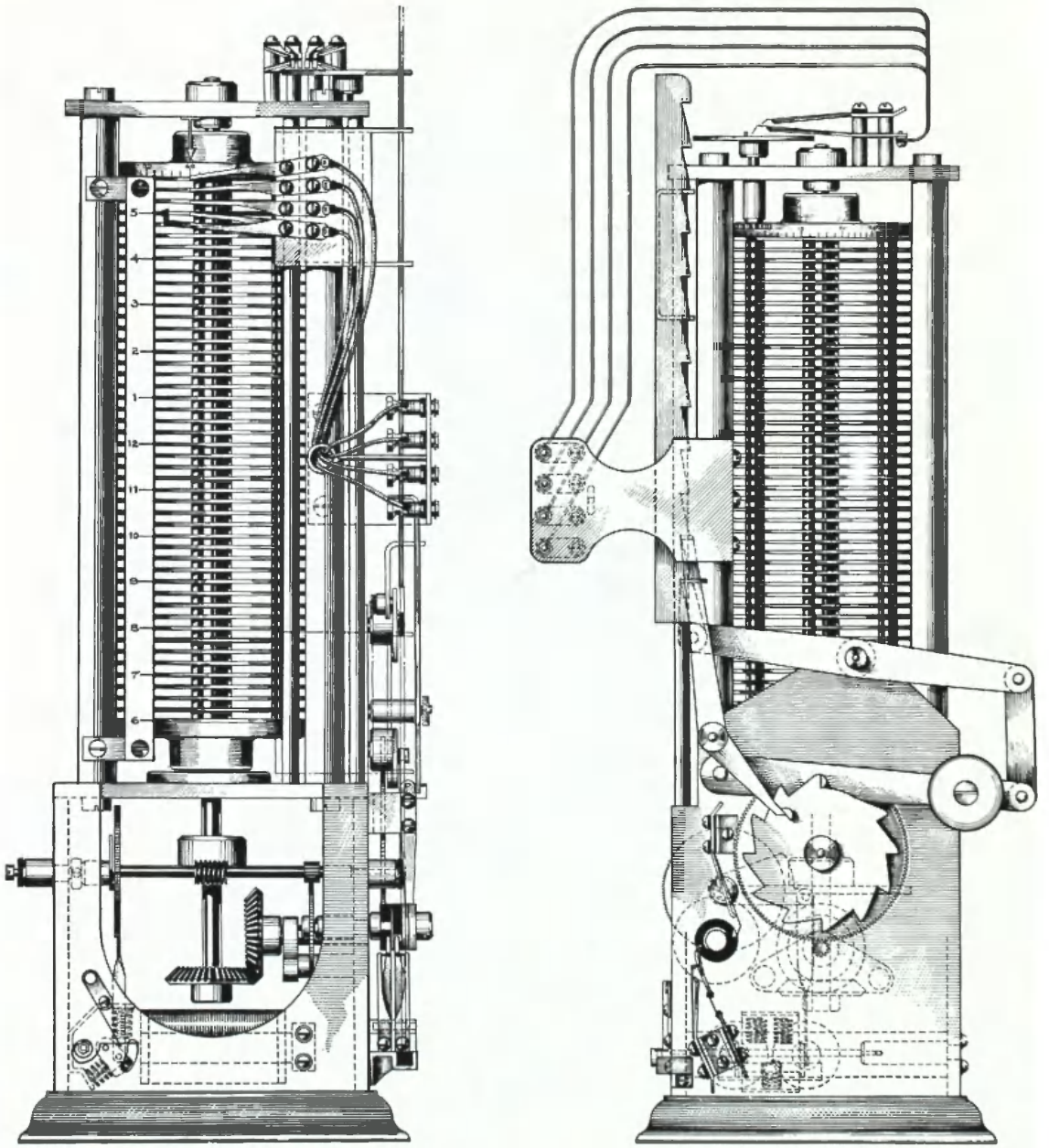
This panel consists of a slate base, upon which is mounted a double pole, double throw knife switch, a double pole fuse block and two banks of lamps; enclosed in a galvanized sheet iron case with hinged covers, provided with conduit openings on four sides, for ready access in connecting up feed wires.

The switch in its present position, permits the full charging current to enter the battery, and is used only for the initial charge. After batteries have been fully charged the switch is thrown to the lower position, putting the high resistance lamps in circuit, permitting a continuous charge to feed into the storage batteries. The operation is entirely automatic, as the battery is charged with the same amount of current that it discharges. This arrangement requires very little attention.

Self-Winding Program Instruments



Universal Minute Interval Program Instrument



For general description see opposite page.

General Description of

Universal Minute Interval Program Instrument

And Controling Clock

THIS instrument, as its name implies, is universal in the fullest sense of the word's meaning. It can be furnished to fill practically any and all requirements in the way of ringing program bells. A schedule of the most complex combination can be rung with the use of one of these instruments.

Points of Merit

This is a thoroughly up-to-date mechanism, designed to operate with the least possible consumption of power.

It is certain in action, being entirely automatic is not liable to get out of order, has no complicated parts, can be easily understood by the most inexperienced, requires little attention and its cost of maintenance is less than any similar machine on the market: finally, the workmanship is of the best.

It is of comparatively low cost for the quality of the mechanism and supplies a long-felt want for just such a device. The cost of these machines varies with their capacity and range.

They are furnished in conjunction with any of our primary type clocks, arranged with special contacts for propelling them.

Three to four cells of primary battery are furnished with the instruments which operate them for a period of from eighteen months to two years without renewal.

A special type of relay is also furnished for each bell circuit, and the whole is mounted in an oak cabinet with glass sides and door. A key and cutout switch is also furnished for each bell circuit and another switch for cutting out the program instrument during the vacation months.

All wires are run to terminal connections in top of case and all line wires can readily be connected thereto.

These machines are built in six sizes:—No. 1, 2, 3, 4, 5 and 6.

The No. 1 has a capacity of either one or two 12 hour circuits or one 24 hour circuit.

The No. 2 has a capacity of either three or four 12 hour circuits or two 24 hour circuits.

The No. 3 has a capacity of either five or six 12 hour circuits or three 24 hour circuits.

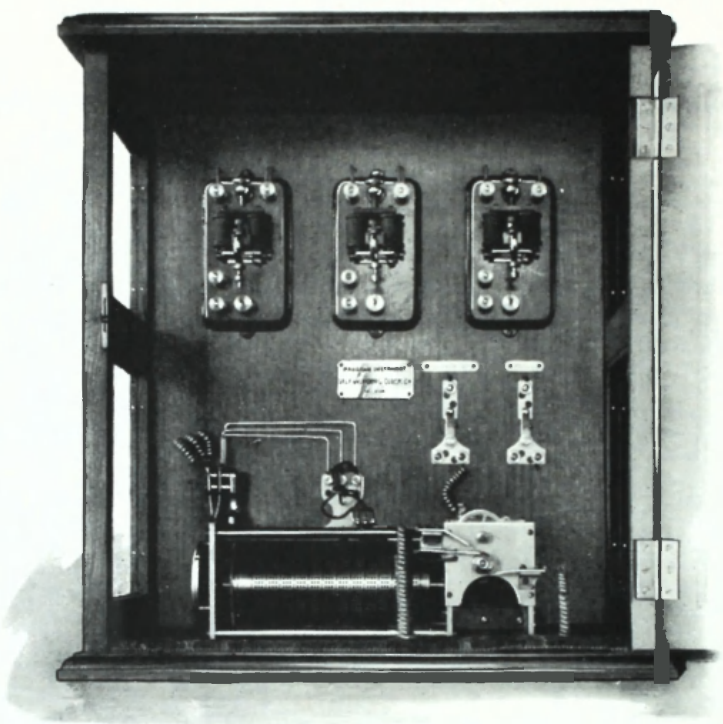
The No. 4 has a capacity of eight 12 hour circuits or four 24 hour circuits.

The No. 5 has a capacity of ten 12 hour circuits or five 24 hour circuits.

The No. 6 has a capacity of twelve 12 hour circuits or six 24 hour circuits.

For illustration of mechanism see opposite page.

Cylinder Program Instrument used with Controling Clock



Cylinder Program Instrument, Relays and Switches Installed in Special Cabinet.

Our Cylinder Program clock consists of a special instrument actuated by a self-winding clock movement. The instrument has two cylinders spirally grooved; each cylinder arranged with three circles of holes: each circle representing all the MINUTES in twenty-four hours. Small plugs may be screwed into the holes to conform with the program to be rung.

The Self-Winding clock movement is arranged with contacts to move the cylinders forward each minute. By means of the plugs a circuit is closed which rings the bells at the desired time. The instrument is capable of ringing from one to three separate programs, and, if compounded, can be arranged to ring six separate circuits.

By a simple arrangement the instrument is made to run quietly during the night, taking up the day program each morning at a predetermined time. THIS IS ALL DONE AUTOMATICALLY.

Points of Merit

Simplicity of construction; parts are all interchangeable; bells may be rung at intervals of one minute; three separate programs on the one instrument; programs may be readily changed without expense, or in any way interfering with the clock movement, and as often as desired.

These instruments are furnished mounted in oak cabinets with a relay for each of the three or six circuits, as the case may be. Flat binding post terminal connections are used for all the circuits.

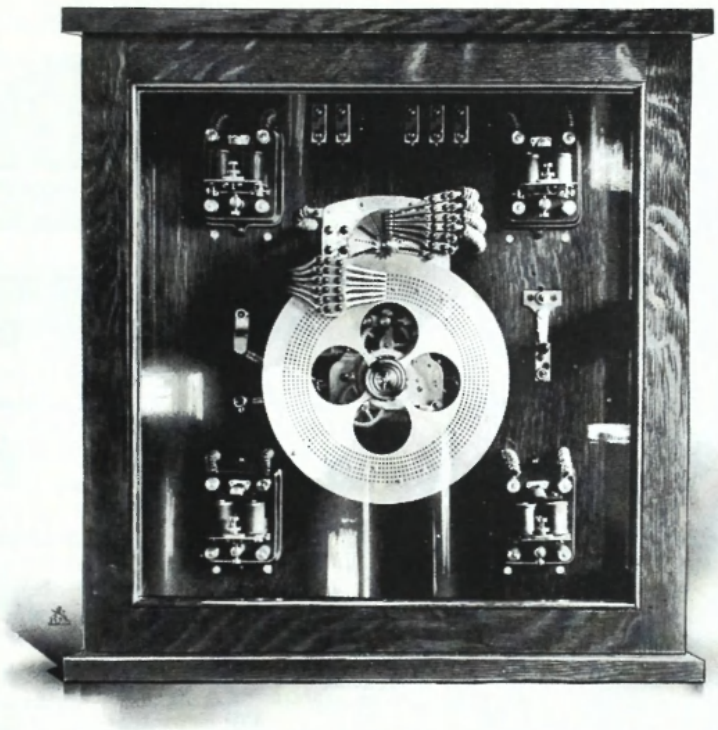
The battery supplied will operate the instrument from one and a half to two years without renewal.

Any of our 60, 72 or 80 beat regulators may be used to operate the instrument, thereby combining a fine regulator and program clock.

Extreme Dimensions of Cabinet

Height 22" Width 21½" Depth 10½"

Self-Winding Commutable Disc Program Instrument



Points of Merit of Our Self-Winding Commutable Disc Program Instrument

Great simplicity of construction and durability.

Bells may be rung at five minute intervals.

From one to six separate programs can be set up on one instrument.

Programs may be readily changed without expense or in any way interfering with the clock movement; also each instrument is equipped with a seven-day cutout that can be changed at will and as often as desired.

Usually the instrument is furnished mounted in an oak cabinet and with a relay for each circuit.

Flat binding post terminal connections are furnished for all the circuits.

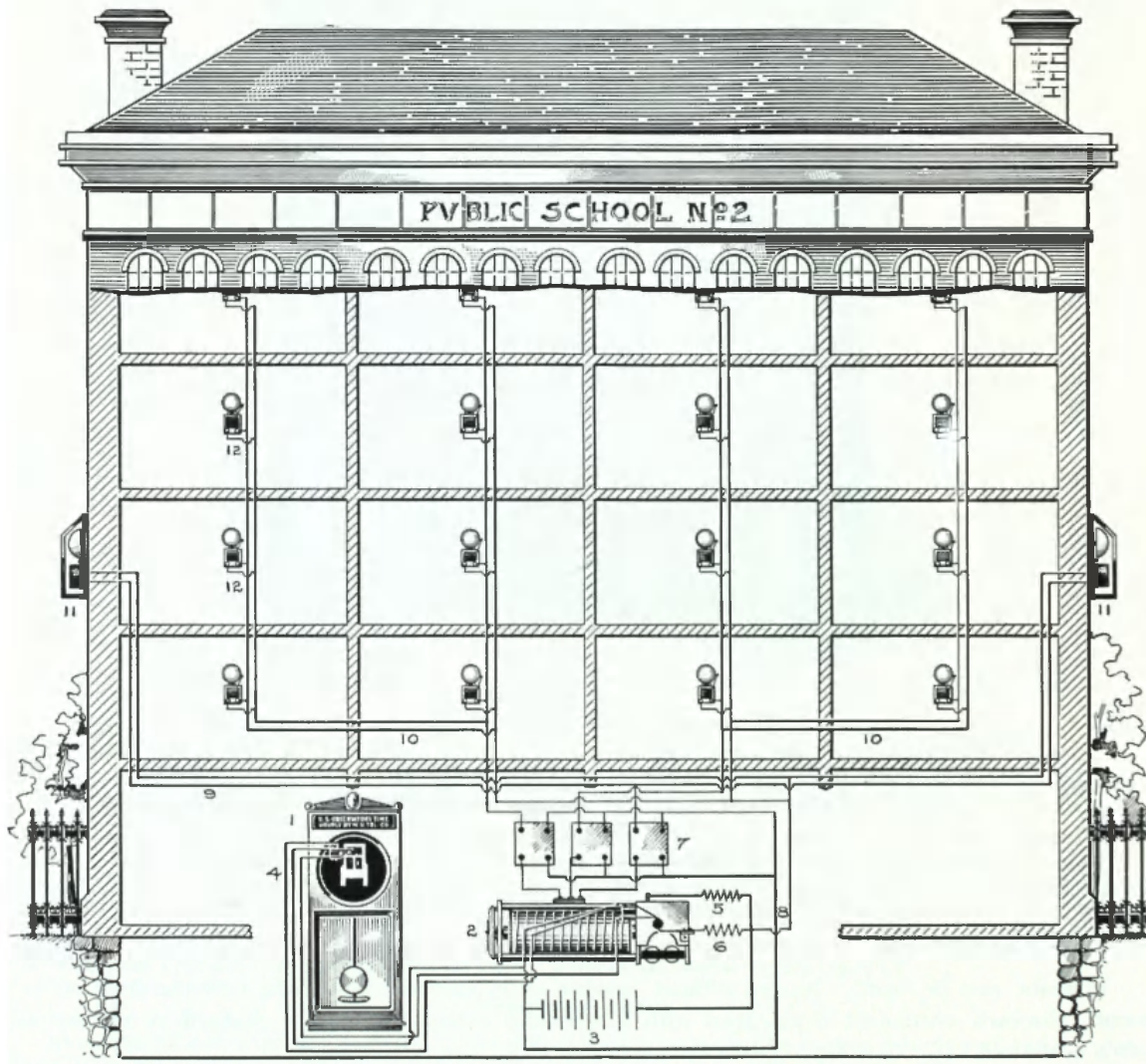
Any of our Primary clocks can be used for a controling clock to actuate the program instrument.

Extreme Dimensions of Cabinet

Height 22" Width 21½" Depth 10½"

Diagram of Self-Winding Program Installation

with Master Clock, 3 circuit Program Instrument and Bell System.



Clocks and instruments enlarged to show detail.

For complete description see opposite page.

General Description of Program Bell System

Illustration on opposite page shows by diagram a complete program bell system installed in one of our modern school buildings.

Figure No. 1 represents the master clock.

Figure No. 2 the program instrument.

Figure No. 3 the battery.

Figure No. 4 contact for starting program instrument.

Figure No. 5 artificial resistance for reducing current for operating program instrument.

Figure No. 6 artificial resistance for reducing current for operating relays.

Figure No. 7 relays used for closing various bell circuits.

Figure No. 8 the relay circuit.
Figure No. 9 the recess bell circuit.
Figure No. 10-10 class-room bell circuits.
Figure No. 11-11 recess or outside gongs.
Figure No. 12-12 class-room bells.

The system shown is operated by what is known as a central energy system. This implies that all the various devices, such as program instrument, relays and bells are all operated from one central battery.

As these different devices, however, require a different strength of current to operate them, it is necessary, as illustrated in the diagram, to insert an artificial resistance between them and the central battery for the purpose of reducing the current strength to the amount required.

A constant potential primary or a storage battery is usually furnished for operating the entire system. Where a constant electric light current is available for charging purposes, a storage battery installation is preferable and the most practicable. It will give the best possible service with the least possible trouble. However, our program can be operated on any battery combination desired.

The master clock is one of our well-known primary type with either wood rod or mercurial pendulum. The program instrument is usually mounted in an oak cabinet or other wood to match trim in building. It is generally placed directly under or beside the master clock. In this cabinet are mounted cutout switches both for bells and program instruments; also all terminal connections for bell and battery circuits.

Installation

In installing a program bell system it is of the utmost importance that the wiring be done in the best possible manner. No. 16 damp proof office, or preferably rubber covered wire, should be used. This should be run in moulding or in iron pipe. If moulding be used and the wires pass through walls or floors, porcelain tubing must be installed and all joints well spliced, soldered and taped.

The master clock should be hung on wall plumb and be solidly fastened thereto. This also applies to the program instrument cabinet.

Run all circuits and make connections as indicated in diagram.

Care and Maintenance

The master clock needs cleaning and oiling only once every two years. The program instrument motor mechanism should be oiled once every two or three months. Care, however, must be taken not to spill oil on either the motor or circuit controling contacts. The driving ratchet wheel should always be well oiled.

Battery of the primary type should be renewed once every year, and if of the storage type, same should be charged once every two weeks.

A supply of screw plugs and a small screw driver will be furnished with each cylinder program instrument. Changes in schedule can easily be made by simply removing the screw plugs and placing them in new locations, or inserting or removing them as the schedule may require.

The brass screw plugs are for the cylinder and the rubber plugs for the seven-day cutout. In our Universal program instruments brass clamps are furnished in place of the screw plugs.

Once every two years the motor make-and-break contacts on the program instrument should be replaced by new ones. As these are all made to a standard size and can be furnished from our regular stock, they can easily be fitted to the instrument at a trifling expense.

The master clock and program instrument are illustrated on an enlarged scale for the purpose of better showing the mechanism.

Self-Winding Commutable Disc Program Clock

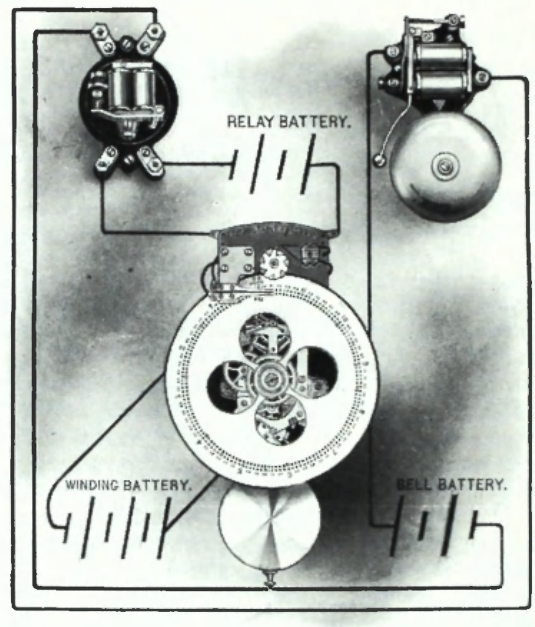


Diagram of Commutable Program Clock, Bell, Relay, Batteries and Wiring.

THIS consists of our style "F" self-winding movement, equipped with a disc placed upon the hour wheel socket. This disc is provided with from two to six circles of holes, each representing every five minutes in twelve hours.

With six circles of holes six distinct circuits of bells, covering a period of twelve hours, can be operated—the remaining twelve hours being made silent by an automatic cutout. By a unique device and simply changing the wire connections, a number of changes can be made.

For example: A six circuit twelve hour instrument can readily be changed to a three circuit 24 hour instrument, capable of sending a signal every five minutes in 24 hours and operating three distinct circuits. It may also be changed to operate a one 24 hour circuit and four 12 hour circuits, or two 24 hour circuits and two 12 hour circuits respectively.

Each instrument is also provided with a seven-day cutout, arranged so any combination of days can be effected by the simple method of inserting or removing a screw plug from the seven-day cutout disc.

Two holes are provided for each 24 hours, and, by omitting the two screw plugs, signals will be sent for the full 24 hour period. By inserting one screw plug 12 hours are made silent, and by inserting two plugs the entire 24 hours are made silent. This change can readily be effected for each or for any one of the seven days in the week and for any one circuit on the instrument.

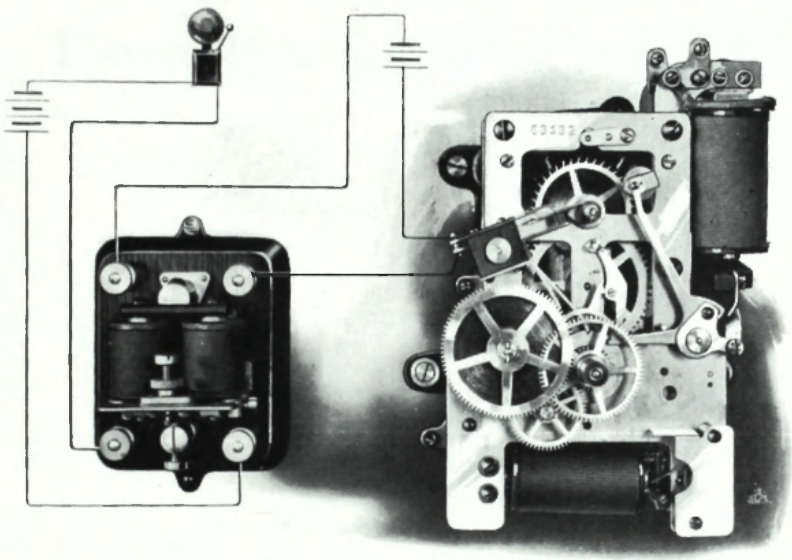
The following changes can be effected on the different instruments:

Style "A" 1—is a 24 hour circuit instrument and can be changed to two 12 hour circuits.

Style "A" 2—is a 24 hour two circuit instrument, and can be changed to one 24 hour and two 12 hour circuits, or to four 12 hour circuits.

Style "A" 3—is a 24 hour three circuit instrument and can be changed to one 24 hour and four 12 hour circuits or to two 24 hour and two 12 hour circuits. or to six 12 hour circuits.

Standard Clock Movement Equipped with Fixed Program Schedule



This consists of one of our standard movements with a 24 hour dial train and a disc or wheel blank into which is cut notches to correspond to schedule required to be rung.

A tilting contact is fixed on the clock frame, having two projecting arms, one riding on the cannon socket and the other on the 24 hour disc. As these arms drop into the notches on the discs, two contact fingers drop on a couple of rubber cams, which latter are fastened to seconds sockets on the escape wheel arbor of the movement. Exactly on the even minute one of these fingers drops into a notch on one of these cams, closing an electric circuit by falling on top of the other finger. This actuates a relay which in turn, through its contact points, closes another circuit, which after being closed sets a gong or a number of them ringing, as the case may be.

The schedule once cut into the disc is fixed and cannot be changed except by replacing the discs with a new one. The duration of contact, as usually furnished is from 3 to 5 seconds; this however, if required, can be increased to about 20 seconds, if so ordered originally.

The above engraving fully illustrates the device and also shows connections, relays, bells and batteries.

We also furnish with this same device a changeable Summer and Winter factory schedule. A special sector is provided and attached to the 24 hour disc, which, by either turning to the left or right changes the Summer to the Winter schedule and vice versa.

This attachment, however, is not shown in engraving. (No signals closer than 5 minutes can be sounded from this device unless there be a pause of 10 minutes before and after such signals are to be sounded.)

Tower, Post and Bracket Clocks

General Description of

Tower Clocks

THE tower clock mechanism manufactured by us is the most recent improvement in large clocks. Heretofore it has been necessary to provide a heavy, cumbersome machine weighing thousands of pounds and operated by enormous weights, the whole requiring a large amount of space, besides constant care and attention.

Our movement, on the contrary, is simple and automatic, requires little attention and occupies the smallest possible amount of space.

The ordinary hands and dials are used, together with dial works and center clusters. Here the similarity between our movement and the old style ceases.

A simple gearing is attached to the center cluster, if a number of dials are used, and if only one dial is used it is attached to the dial works direct. This gearing is put in motion by means of a small electric motor operated by a sufficient number of cells of battery, the number of cells used varying according to the size of the clock and the power required to move the hands.

This motor is set in motion once every half minute by means of an electric impulse which is sent from the controling clock situated in some convenient place in the building, generally the main office, where it serves the purpose of a regular time-keeper. The motor is in motion from two to three seconds, during which time it slowly moves the hands of the tower clock forward one half minute.

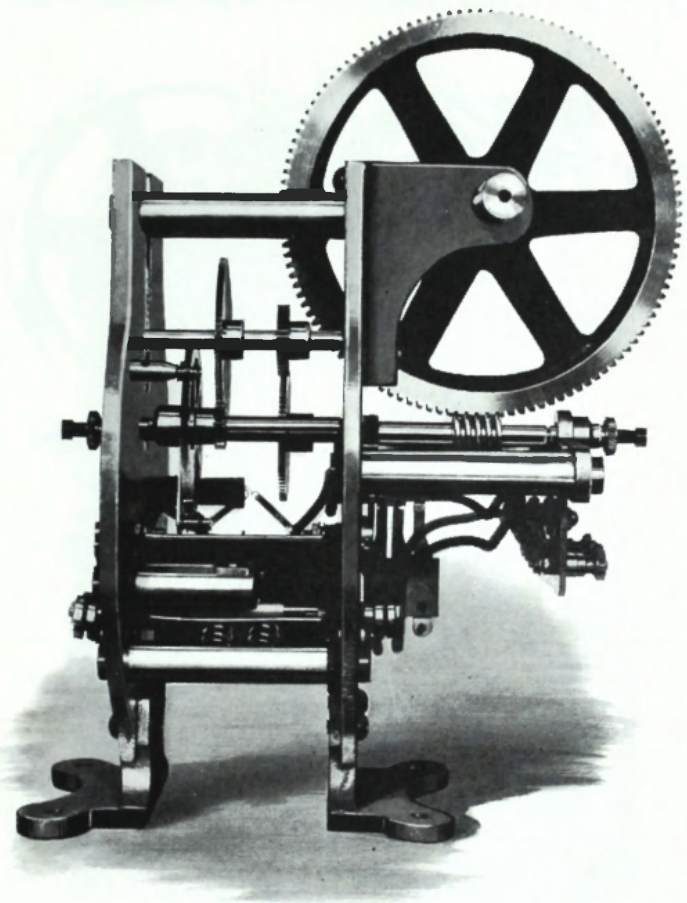
The controling clock can be connected with the Time Service and is corrected hourly by the U. S. Observatory signals sent over the Western Union Telegraph Company's time wires.

These clocks are less expensive than the old type and are absolutely to be relied on as accurate time-keepers.

This general description also applies to the operation of our outside bracket and post clocks.

Electric Tower Clock Movement

Showing Worm-driven Mechanism



No. 0 Tower Movement

Height . . 6⅞" Width . . 5⅞" Depth . . 5⅛"

This movement has a capacity for operating hands on single and double dial clocks up to and including 30 inches; four dials up to and including 24 inches.

No. 0-A Tower Movement

Height . . 8" Width . . 5⅞" Depth . . 6⅛"

This movement has a capacity for operating hands on single and double dial clocks up to and including 48 inches; four dials up to and including 36 inches.

No. 1 Tower Movement

Height . . 10¼" Width . . 7⅜" Depth . . 8⅜"

This movement has a capacity for operating hands on single dials up to and including 96 inches; double dials up to and including 60 inches; four dials up to and including 48 inches.

No. 1-A Tower Movement

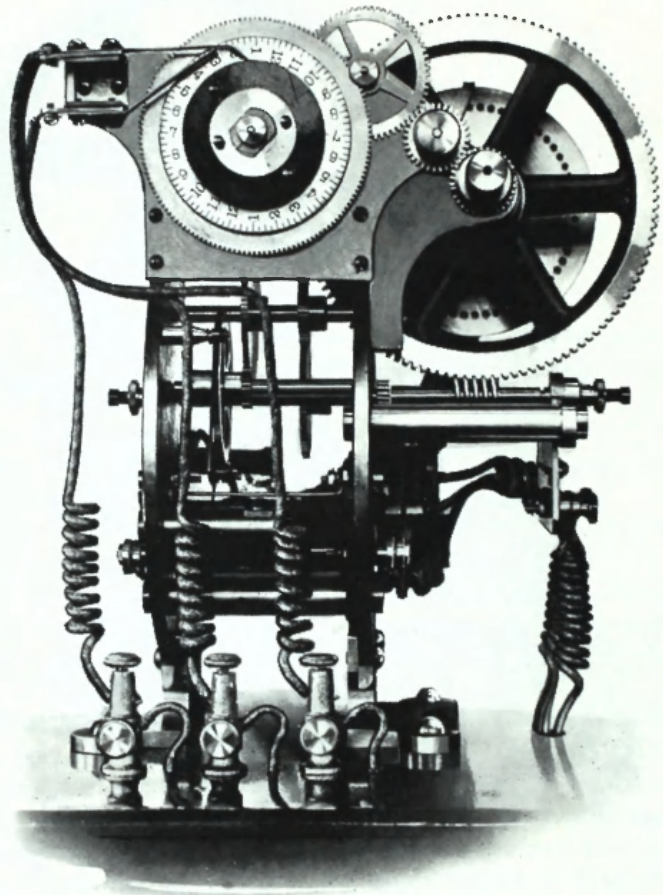
Height . . 11½" Width . . 7⅜" Depth . . 8⅜"

This movement has a capacity for operating hands on single dials up to and including 144 inches.

For two, three or four-dial tower clocks, for the larger size dials, a separate movement is used for each dial. These movements are simultaneously actuated from the controling clock.

Automatic Lighting Contacts

Tower clock movement with contacts for operating automatic illuminating device.
This attachment can be furnished with any of our tower clock movements.



This device is used for periodically actuating an automatic electric rotary snap switch, for the purpose of lighting and extinguishing lamps in back of tower, post or bracket clock dials.

For tower clocks it is attached directly to the hand-propelling mechanism, and for post and bracket clocks it is attached to the controling or master clock.

It consists of a set of gears arranged to turn an arbor one revolution in 24 hours. To this arbor is attached a 24 hour dial, two hard rubber discs and two sets of contact brushes. The rubber discs make one revolution in 24 hours and each one has one notch cut into it.

As these discs revolve the contact brushes which bear on the periphery of the discs alternately drop in one of these notches. In doing so they drop on the lower contact finger and thus close an electric circuit which sets the rotary snap switch in motion.

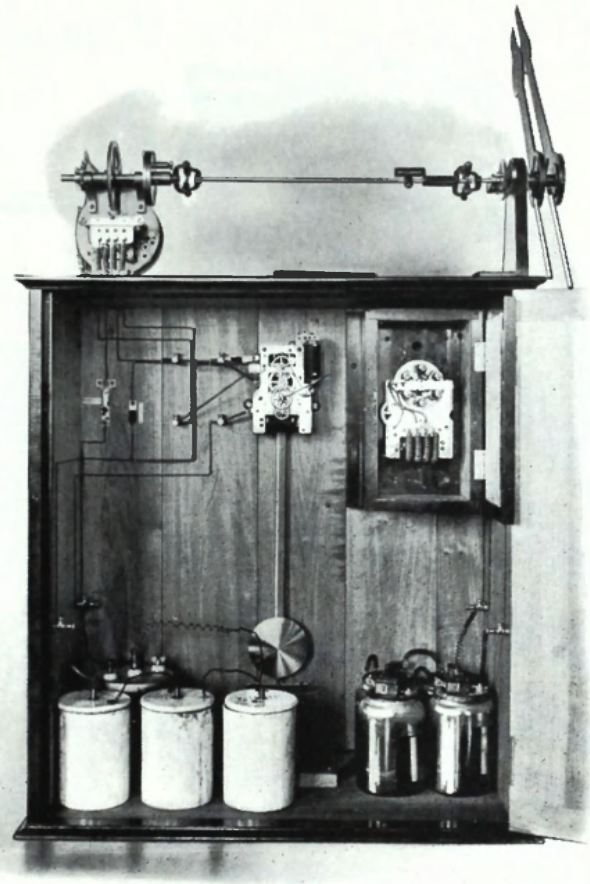
This latter in its revolution closes the lamp circuit, which remains closed until such time as the opposite contact finger drops in notch on its own disc. This again starts the motor switch going and the lamp circuit is interrupted, the lamps having been lighted for the number of hours to which the cams had been set. These rubber cams or discs are frictionally fastened to the 24 hour dial and may be set so lamps can be lighted from 1 to 23 hours. This mechanism is furnished in one size only.

Extreme Dimensions

Height 3⅝" Width 5¾" Depth 1¼"

Automatic Rotary Snap Switch

No. 1 tower clock outfit complete, including controling movement, tower mechanism and automatic illuminating device. Contained in battery cabinet.



This device consists of a commercial rotary snap switch attached to one of our regular oscillating type motor devices. This motor is geared directly to the switch and is equipped with a set of circuit controlers which permit it to revolve one-quarter turn only at each impulse, which it receives from the starting contact. The first move will turn on the lights and the second will extinguish them.

The switch is of the three-pole type, 220 volts, and has a capacity up to and including 35 amperes.

It is furnished mounted on a slate base in a wood box, iron lined and fully covers the requirements of the Board of Fire Underwriters. This is a positive, efficient and compact mechanism. It will operate on three or four cells of dry battery from one year to eighteen months.

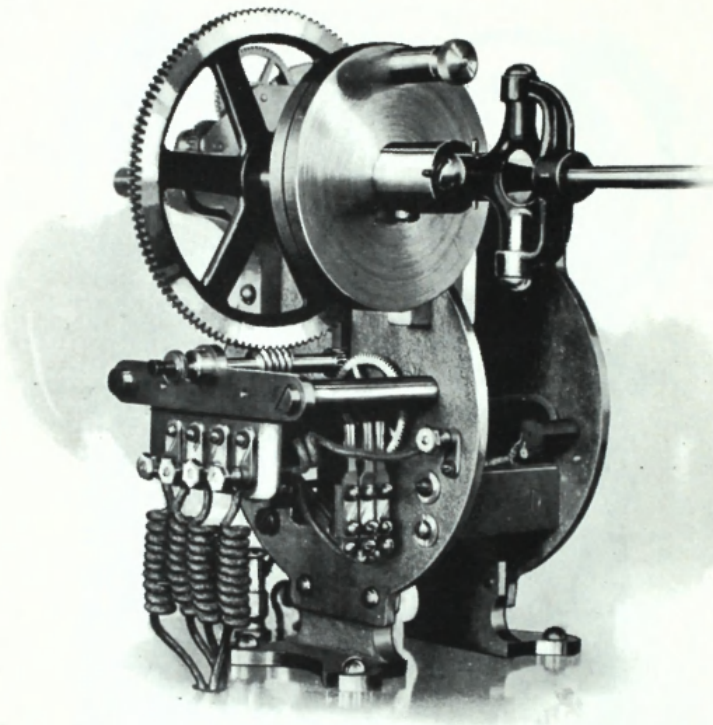
When desired we will also furnish this switch mounted and connected with one of our style "F" 140 beat plain movements in a special case or cabinet. In this form it serves the purpose of a complete automatic light switch. It can be used for the purpose of turning on and off the lights in store windows or on illuminated signs.

The switch will safely operate 70 16-candle or 140 8-candle lamps, or any divisional number of candle power dividing 1120. Mounted in iron lined wood box.

Extreme Dimensions

Height 14½" Width 10" Depth 8"

Tower Clock Movement with Hand-setting Device



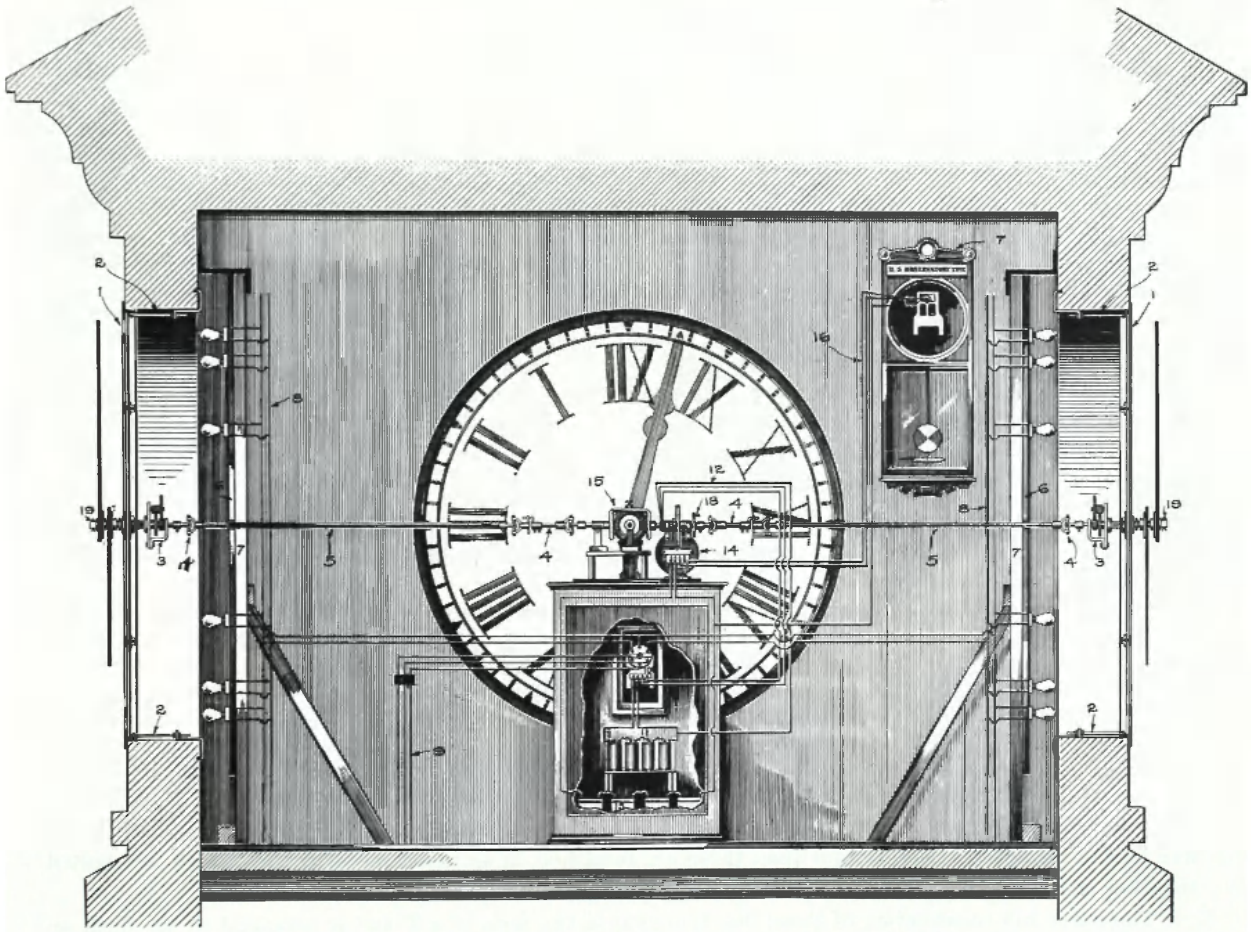
This attachment is furnished for the purpose of setting the hands on tower and post clock movements.

It consists of two discs and a spring locking pin. One of these discs is permanently fastened to the tower movement and the other turns loosely on the center arbor, but is fastened through the universal and expansion joints and extension dial works directly to the hands.

The inner disc is provided with sixty (60) holes and engages the spring actuated locking pin. Pulling out this pin and slightly turning same to either right or left will separate it from the inner disc, the hands can now be turned backward or forward at will. After the hands are set to time the pin is turned until it slips into one of the holes and the hands are thus again connected with the tower clock mechanism.

As many of the dials in use are opaque and the hands cannot be seen from the inside, the inner disc is intersected and provided with numbers corresponding to the minute marks on the dial, thus insuring the correct setting of the hands.

Diagram Showing Complete Tower Clock Installation



For general description see pages 106 and 107.

Installation, Care and Maintenance of Tower Clocks

Description

REFERRING to engraving on page 105, a general view is illustrated showing a complete tower clock installation. It consists of the following parts:

Numbers	1-1-1	represents the dials.
"	2-2-2-2	fastenings for the dials.
"	3-3	the dial works.
"	4-4-4-4	universal and expansion joints.
"	5-5	connecting rods.
"	6-6	reflector boards.
"	7-7	frame structure for reflector boards.
"	8-8	electric lamp circuits for illumination.
"	9	electric feeder wires.
"	10	automatic light switch.
"	11	battery for operating automatic light switch.
"	12	controling circuit for operating automatic light switch.
"	13	battery for operating tower clock.
"	14	tower clock movement.
"	15	4-way cluster arranged for operating a four-dial tower clock.
"	16	a circuit running from controling clock contact to tower clock movement.
"	17	controling clock.
"	18	hand-setting device.
"	19	nuts and cotter pins for holding hands to dial works.

Installation

Proceed with the placing of the dials first. They are furnished in solid plate glass up to and including five feet in diameter. Dials larger than these are furnished in sectional metal frames which are bolted together and the various sections filled in with ground glass.

The outer rim construction of these dial frames is in the form of a T and is arranged to set flush on the face of a building. It is held in place by a number of bolts and angle irons which are sunk into the inner face of the wall and are drawn tight with nuts. This method of fastening is the most practicable and the most positive for holding dials and is clearly shown in the illustration.

The dials, after being placed in position, must have all joints and openings filled in with putty and cement so as to make them water tight.

With the dials properly placed in position, proceed to bolt the dial works to center glass section. These dial works are provided with two large brass nuts and soft rubber washers. One of these nuts is placed on the inside and the other on the outside of the dial. These nuts must be set up tight against the faces of the dials.

Having left one of the glass sections out of each dial, the hands can now be passed out through the opening and slipped on to their arbors, fastened with screws and nuts furnished with the dial works. The nuts holding down the minute hands must be set down firmly and the small cotter pins furnished must be passed through these nuts and their ends spread so as to avoid any possibility of the nuts coming loose.

The dial works and hands being in position now proceed to erect the reflector boards with their frame construction. These boards should usually be made six inches larger than the dial opening all around. They should be set, if possible, two and one-half to three feet back of the dials. The boards should be given two or three coats of paint, either zinc white or cold water paint.

From six to twelve 8 or 16 candle power incandescent lamps should be placed in a circle, equal distances apart, on the board. This circle should be placed about the middle of the numerals.

This method of placing the lamps and reflector boards will produce a clear, even illumination and the electric light bulbs cannot be seen from the outside.

The number and size of lamps naturally will vary with the size of dials and the density of illumination required. From six to eight 16 candle power lamps are required to light nicely a six foot dial, providing the space back of dial is entirely enclosed.

The next step will be to place the tower clock cabinet with movement and cluster in the center of the tower room, in such a position that the center of the cluster or tower movement will be in line with the center of the dials. Fasten cabinet firmly to floor or platform as the case may be. Then fasten universal joints to dial works and expansion joints to cluster and tower movement. Cut connecting rods or tubing, whichever may be furnished, to the proper lengths. Slip same into the joints on both ends, tighten down firmly with set screws and see that rods play freely in the expansion joints.

Now proceed to hang the master clock and run the various circuits as indicated in the diagram. The clock having been hung, start the pendulum and set the hands to proper time. Then make connections to battery for operating tower clock movement and automatic light switch as indicated.

All electric light wiring must be done to conform to the rules and regulations of the Board of Fire Underwriters.

Next set all the tower clock hands to twelve, turn the switch which is provided in the controling clock and the hands will commence to move forward one half minute at each impulse received from the master clock. Now release setting pin on hand-setter, turn hands to proper time, replace hand-setting pin and clock is now in complete operation.

It can readily be seen that the master or controling clock need not be located in tower clock room. It may be placed in any room or office, practically any distance away from the tower movement, it being simply necessary to run the controling wires from the master clock to the tower clock mechanism, in the same manner as indicated in the diagram.

On account of the low voltage battery used for operating the tower movements, it is necessary that a comparatively large wire be used for starting it from the master. Nothing less than No. 16 wire must be used, preferably No. 14.

If the tower clock room is very cold and there is a possibility of the battery freezing, it would be well to locate it in a more protected room. This, of course, requires additional wires to be run from such a location to the tower room.

Care and Maintenance

The tower clock mechanism should be oiled once every six months, care being taken not to drop any oil on the motor or the circuit controling contacts.

Once every two years the motor contacts should be replaced by new ones, (a trifling expense). These contacts are all made to a standard size, can be furnished from our regular stock and may easily be fitted.

Once every two years the master clock movement should be cleaned and re-oiled. The battery on the larger type clocks needs to be renewed once every twelve months and on the smaller type and single dial clocks once in two years.

General Description of

Method of Operating Post and Bracket Clocks

THESE clocks are equipped preferably with our tower clock or secondary movements. The hands are propelled once every half minute from an impulse sent from a master or controling clock. This is the most recent method of operating clocks exposed to the weather or located in places comparatively inaccessible; and permits the use of the least number of parts and of a mechanism which requires the least amount of attention.

We recommend the use of our small type tower clock movement in connection with a double dial cluster and universal and expansion joints. This makes a very satisfactory outfit and a powerful hand drive.

We also furnish our No. 1 and No. 2 secondary movements which somewhat cheapen the cost, but are not so powerful. If, however, the case be made weatherproof so that the movements are thoroughly protected from water they will give excellent service.

We now furnish with all our post and bracket clocks protection glasses over the hands which prevent any trouble from snow or sleet accumulating on the dials and stopping the hands.

With hands propelled in this manner and the controling clock located inside of a building a more perfect system of post and bracket clock operation cannot be conceived, as all troubles arising from the time piece being placed in the post or bracket clock case is entirely eliminated.

Dreicer

Ornamental iron double dial post clock. Black or white enameled steel or ground glass illuminated dials.

Extreme Dimensions

Furnished only in 30-inch dials. Height from base to top of ornament 14 feet. Width at base 18 inches. Depth at base 14 inches.

For convenience of access to movement recommend secondary mechanism operated from a controling clock.

Double Dial "Tavern" Post Clock

Black or white enameled steel or ground glass illuminated dials.

Extreme Dimensions

24"	dials.	Height from base to top of ornament				. . . .	14	feet
30"	"	"	"	"	"	. . . .	14	"
36"	"	"	"	"	"	. . . .	14	"

Measurement of post at base 12 inches square.

For convenience of access to movement recommend secondary mechanism operated from a controling clock.

Exchange

Exchange design double dial post clock. Black or white enameled steel or ground glass illuminated dials.

Extreme Dimensions

24″ dials.	Height from base to top of ornament . . .	14 feet
30″ “	“ “ “ “ . . .	14 “
36″ “	“ “ “ “ . . .	14 “

Measurement of post at base 24 inches square.

For convenience of access to movement would recommend secondary mechanism operated from a controling clock.

NOTE. This clock installed in Wall Street Financial District of New York City, and maintained by voluntary contributions of the Board of Curb Brokers.

Standard

Standard design double dial and four-dial post clock, with ornaments. Black or white enameled steel or ground glass illuminated dials. Double dial can be furnished without ornaments if desired.

Extreme Dimensions

	Double Dial	Four Dial
24″ dials. Height from base to top of ornament,	14 ft. . . .	14 ft.
30″ " " " " " "	14 " . . .	15 "
36″ " " " " " "	14 " . .	not furnished
Measurement of post at base	12″ square. . .	20″ square.

For convenience of access to movement recommend secondary mechanism operated from a controling clock.

Standard

Double dial bracket clock. Sheet bronze or copper case. Zinc enameled or illuminated ground glass dials. Plain or fancy iron brackets. Can be furnished with or without ornaments and signs.

Extreme Dimensions

18″	dials.	Diameter of case	23″	Depth	11″	Height	40″
24″	"	"	30″	"	12″	"	46″
30″	"	"	36″	"	12″	"	52″
36″	"	"	42″	"	13″	"	58″
48″	"	"	54″	"	14″	"	70″

Standard distance from house line to center of dial is three feet for an 18″ dial, any other length of brackets however can be furnished.

For convenience of access to movement recommend secondary mechanism operated from a controling clock.

Colonial

Colonial design double dial bracket clock. Sheet bronze or copper case. Square ground glass illuminated dials and signs.

Extreme Dimensions

18" dials.	Width 36½"	Height 47"	Depth 12½"
24" "	" 42½"	" 53"	" 14"
30" "	" 48½"	" 59"	" 16"
36" "	" 54½"	" 65"	" 16"

For convenience of access to movement recommend secondary mechanism operated from a controling clock.

Windsor

Ornamental bronze and glass hanging globe clock. Etched Roman numerals or Arabic figures, bronze finish. Three or four dials. Illuminated.

Extreme Dimensions

18″	dials.	Total distance from base ornament to top ornament							3′ 9″	Diameter of globe		27″
24″	"	"	"	"	"	"	"	"	5′	"	"	36″
30″	"	"	"	"	"	"	"	"	6′ 3″	"	"	45″

For convenience of access to movement, recommend secondary mechanism operated from a controling clock.

Lincoln

Three-dial lantern design bracket clock. Sheet bronze or copper case. Ground glass illuminated dials. Plain or fancy brackets.

Extreme Dimensions

14″ dials.	Square 24″	Height 54″
18″ "	" 28″	" 58″
24″ "	" 34″	" 64″

For convenience of access to movement recommend secondary mechanism operated from a controling clock.

Riverside

Plain double dial bracket clock, signs top and bottom. Sheet bronze or copper case, with bezel and protection glasses.

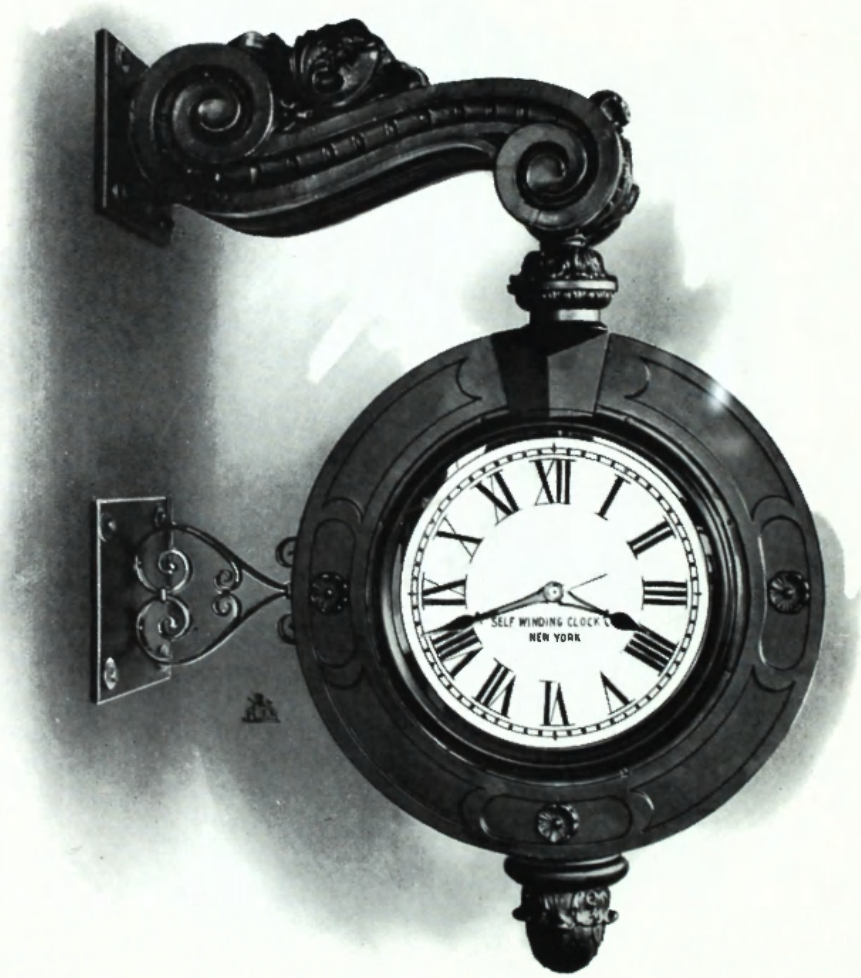
Extreme Dimensions

18″ dial.		Outside diameter	36″	Depth	11″
24″ “		“	40″	“	12″
30″ “		“	46″	“	12″

For convenience of access to movement we recommend secondary mechanism operated from a controling clock.

Crescent

Crescent Design Sheet Metal Bracket Clock



Extreme Dimensions

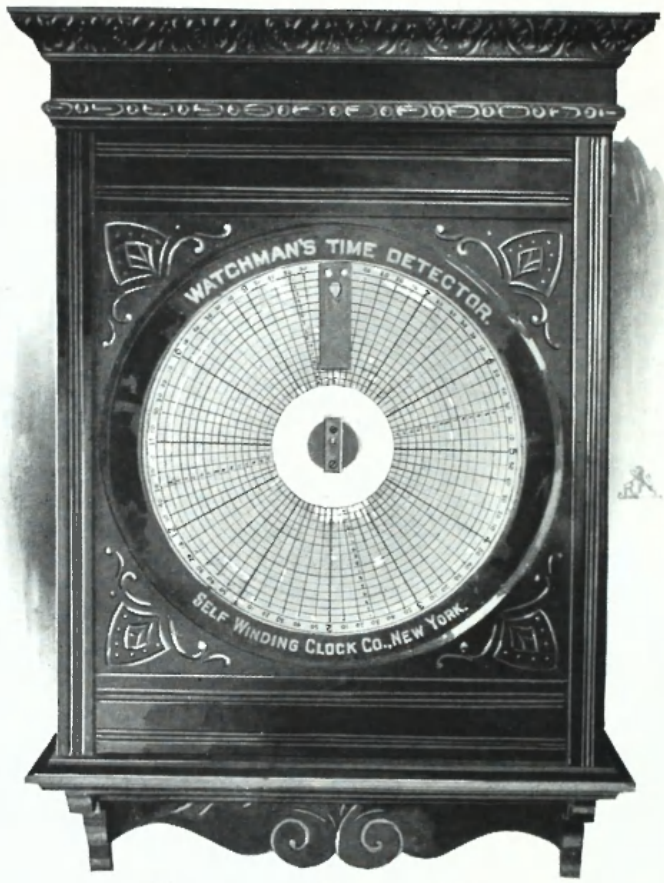
14″ dials.	Diameter 23″	Height 30″
18″ “	“ 30½″	“ 39″
24″ “	“ 40″	“ 52″

For convenience of access to movement we recommend secondary mechanism operated from a controling clock.

Watchman's Time Detectors

Self-Winding Watchman's Clock

Style No. 10



Cherry. Oak. Walnut.

Can be furnished with 4, 6, 8, 10 and 15 stations.

Extreme Dimensions

Height 31″ Width 20¼″ Depth 7½″

The only watchman's clock that may be connected with the Western Union Telegraph Co.'s Time Signal Wires and corrected hourly to U. S. Standard Time.

Pins or punches are attached to a rigid center piece and not to magnet levers, so that if levers are thrown out of adjustment, watchman's signal will still continue to register on paper dial.

Dial registers when clock door is opened, thereby preventing watchman tampering with instrument.

All working parts are mounted on heavy brass plate, thus securing solidity and durability.

May be operated by either magneto or battery stations. These and numerous other improvements combine to place this clock first in the market in style, variety, workmanship and durability.

It is the longest lived, most accurate and durable instrument manufactured.

For more than ten years we have been devoting our time and money developing and manufacturing automatic electrical apparatus, especially in the line of time saving and recording devices.

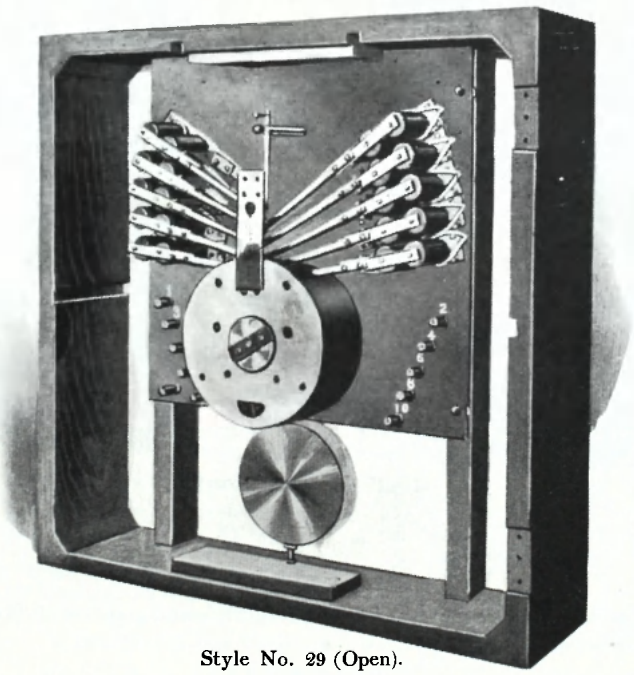
We offer you the result of our best thought and experience as devoted to perfecting a watchman's clock.

This instrument is entirely automatic, not only keeping accurate record of your watchman's work, but does so without any winding or attention on your part.

No argument is needed to convince you of its worth as a system. It will constantly guard your property against fires, burglary and unfaithful performance of duty by your watchman, and reduces your insurance rates.

Self-Winding Watchman's Clock

Style No. 29 (Closed).



Style No. 29 (Open).

Showing improved and simple arrangement of magnets and levers, also clearly numbered posts for connecting wires from stations. Scientific in construction, simple in operation.

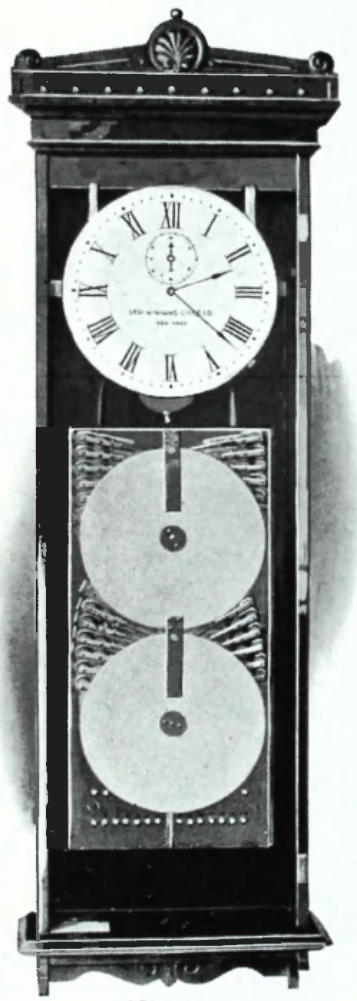
All parts are interchangeable. Can be furnished with 4, 6, 8, 10, 15, 20 and 25 stations.

Extreme Dimensions

	Height	Width	Depth
Cases up to and including 15 stations	21¼"	21¼"	5½"
Cases for 20 and 25 stations	27"	27"	5½"

Self-Winding Watchman's Clock

Style No. 9



(Open)

(Closed)

Cherry. Oak. Walnut.

Showing mechanism and electric movement for operating watchman's dials connected with time dial Can be furnished with 4, 6, 8, 10, 15, 20, 25, 30, 40 and 50 stations.

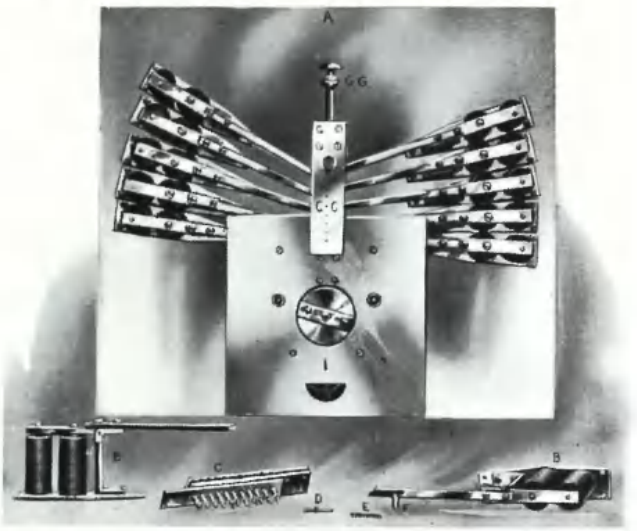
Extreme Dimensions

Height . . . 70" Width . . . 22¼" Depth . . . 10⅛"

Self-Winding Watchman's Clock

Style No. 18

Cherry. Oak. Walnut



Description of **Operating Mechanism** of the Self-Winding Magneto Watchman's Clock

The movement is protected from injury by a polished brass plate. All working parts are mounted upon a heavy brass plate, keeping the **adjustment permanent** and making the whole **mechanism substantial** and rigid.

A separate electro-magnet is used for each station. The punch points or needles are mounted independently of the lever arms, each point being enclosed in the small brass tube containing the spiral spring which draws the needle back after it has pierced the dial. This form of construction permits a short pin, that is not liable to become bent or thrown out of alignment, or stuck in such a manner as to tear the record. The lever arms are so pivoted that they move some distance before striking the pins, and thus are able to give a quick and powerful blow.

The whole mechanism is finished after the fashion of high-**class electrical instruments**. All brass parts are polished and lacquered, and the armatures and iron parts are copper-plated to prevent rusting. The magnets are wound with a silk-covered wire in even layers. Our clocks will be found to show a higher grade of workmanship than any similar appliances in the market.

Operating Mechanism

A Brass base plate holding all working parts.

B Magnet with the armature and striking rod.

C and CC Row of needles and cases with guide for dial. (Note the grooves for the punched portions of the paper to travel in, so that there is no possibility of the dial sticking.)

D Steel needle point for making record.

E Spring for withdrawing needle.

F Individual casing for needle and spring.

G and GG Device for making record whenever door is opened or closed.

H Disc clamp for holding on dial.

I Plate **covering block movement.**

Important Notice

Recorders are **regularly furnished with** a year's supply of 12-hour dials, but we are prepared to supply 24 and 48-hour dials if desired.

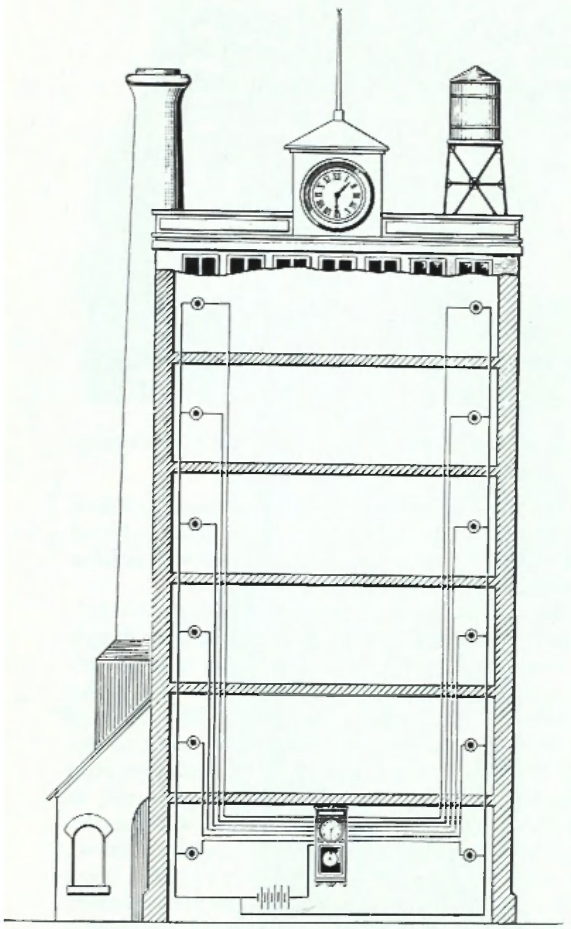
Can be furnished with 4, 6, 8 and 10 stations.

Extreme Dimensions

Height . . . 50" Width . . . 19⅛" Depth . . . 9¾"

Instructions for the Installation of the

Self-Winding Magneto Watchman's Clock



The clock movements used in the Self-Winding Magneto Watchman's clocks are of a very high grade, and must be unpacked and handled very carefully.

Wiring

The installation of the clock system must be given careful attention. Satisfactory service cannot be expected unless the wiring is properly done, no matter how well the detector is constructed.

Annunciator wires should not be used under any circumstances, nor should the wiring be put up with staples. In offices, warehouses and other places which are thoroughly dry and clean, office wire or a wire with an inner weatherproof insulation and outer office braid will answer. In the latter case the wiring must be supported by wooden cleats. In rough buildings, factories, mills, etc., which are free from dampness, weatherproof wire supported on porcelain knobs or cleats may be used. But if the circuits are run in damp places such as stables or dye-houses, or in locations where the lines will be exposed to acid fumes, the best grade of No. 16-gauge rubber-covered wire should be used, and it should be supported on porcelain knobs or cleats.

In passing through floors or walls or running through elevator shafts porcelain tubing should be used. Care should be taken to keep the detector wires well away from the electric light or other high potential circuits, but if this cannot be done special precautions must be taken. In running through shafts where such high potential lines are present, the detector wires should be enclosed in iron conduits, and where they cross high potential lines additional precaution should be taken.

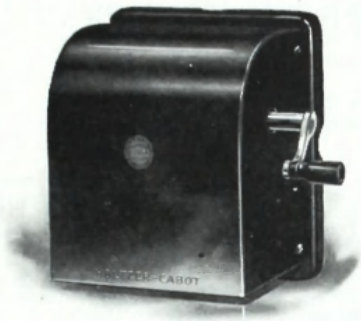
The joints should be carefully soldered and taped, and the various wires should be bunched and taped from the point where they come together to the clock. If more convenient, cable may be used for such a strip of wiring. Where more than two wires are run together for any distance the same plan should be followed, or such wires may be run in moulding with capping. These precautions will prevent the insulation from being rubbed off, and the wires from being tampered with.

Magneto stations located in places particularly exposed to storm, acid fumes or extreme heat should be of the waterproof type, such as shown on page 125.

In any case the wiring must be done to conform in all respects to the rules and requirements of the National Board of Fire Underwriters.

Remember that careful attention to the above instructions regarding installation is necessary in order to secure satisfactory service.

Magneto Stations

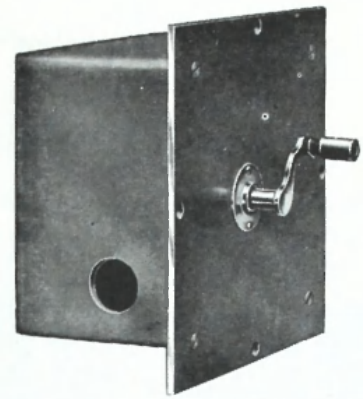


Metal Case Weatherproof Pattern

This illustration shows our new style metal case weatherproof magneto station, which has a cast-metal back, provided with a bead about ¼″ deep, over which the sheet-metal cover is fastened. This prevents water from running into the interior of the station. The back is recessed and grooved for the wires, the terminals are inside the case. This station can be used to advantage for both inside and outside work.

Extreme Dimensions

Height . . 6½″ Width . . 6¾″ Depth . . 5″



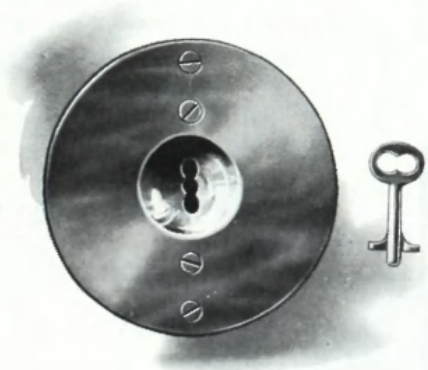
Flush Pattern

We are now prepared to furnish our well-known generator in a flush iron box, as shown in the accompanying illustration. The case is finished in aluminum and heavily lacquered.

Plate Height . . 7⅞″ Width . . 5⅜″ Depth . . ⅛″

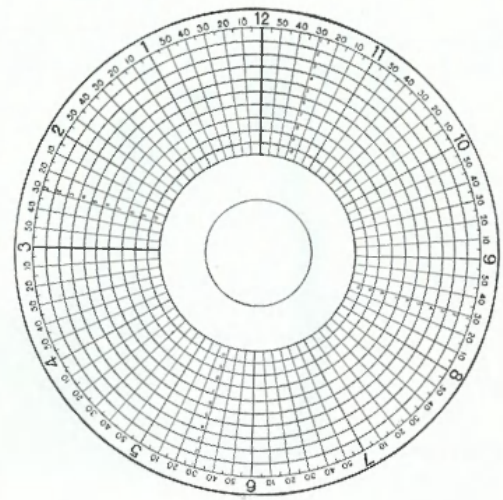
Extreme Dimensions

Height . . 7⅛″ Box width . . 4⅝″ Depth . . 4″



Flush Bronze Key Station and Key

Extreme Dimensions: Diameter 4″; Depth 1″

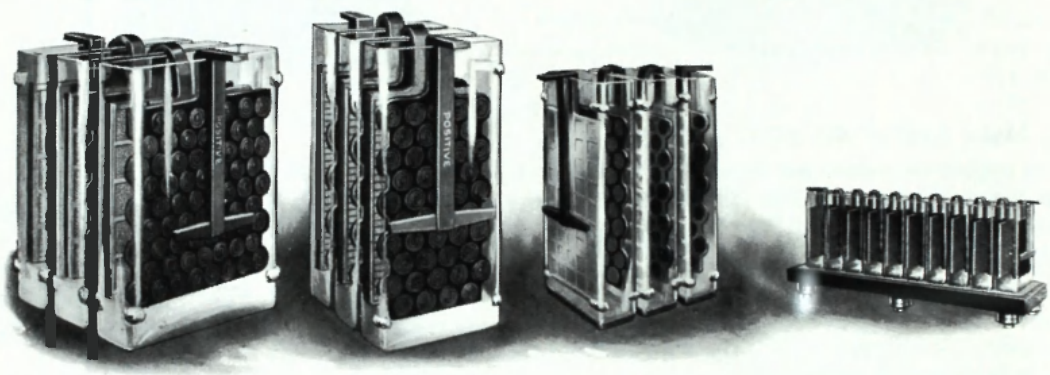


The Self-Winding Watchman's Magneto-Clock Dial Sheet

Registrations simple, accurate, distinct, and cannot be altered or effaced.

Several Types of Storage and Primary Batteries

Used with our Clocks and Clock Systems



Storage Cells

Gordon Cells | Le Clanche Cells | Dry Cells

General Description of Batteries and their Uses

WE use four standard types of cells in connection with our clocks, viz:

Gonda LeClanche Battery
Columbia Dry Battery
Gordon Battery
Chloride Accumulator

Description of Gonda LeClanche Battery

These cells are used in all of our primary type of Self-Winding clock movements. With our types "A", "B", and "F" movements equipped with .008 main springs we furnish 2 cells; if equipped with .010 main spring we furnish 3 cells and if equipped with either .012 or .015 mainspring we furnish from 4 to 5 cells.

Our type "E" movement requires from 5 to 8 cells according to size and weight of hands. The cells used for this type of movement are usually furnished with a ½" zinc rod instead of the ordinary ⅜" size. On account of this difference these cells are known as our No. 1 Gonda LeClanche and with the ⅜" zinc rod as our No. 2.

Dimensions of these cells are:

Height 8" Width 5" Depth 4" Voltage 1.3 Amperes 1.5

Description of Dry Cells

They are used for the same type of primary movements, as are the Gonda LeClanche. They are used, however, mostly in clocks with limited space or for convenient handling. They are not as reliable as wet cells.

Dimensions of these cells are:

No. 6 type. Height 6" Diameter 2½"
No. 8 " " 8" " 3½"
Voltage 1.3 Amperage 15 to 25

Description of Gordon Battery

These cells are used primarily for operating tower, post and bracket clocks, secondary clock plants and program instruments. They are furnished in three sizes the types "A", "B", and "H." The type "A" has a capacity of 300 ampere hours.

Dimensions are: Height . . . . . 11" Diameter . . . . . 5"

The type "B" has a capacity of 600 ampere hours.

Dimensions are: Height . . . . . 13½" Diameter . . . . . 7½"

The type "H" has a capacity of 150 ampere hours.

Dimensions are: Height . . . . . 7" Diameter . . . . . 5½"

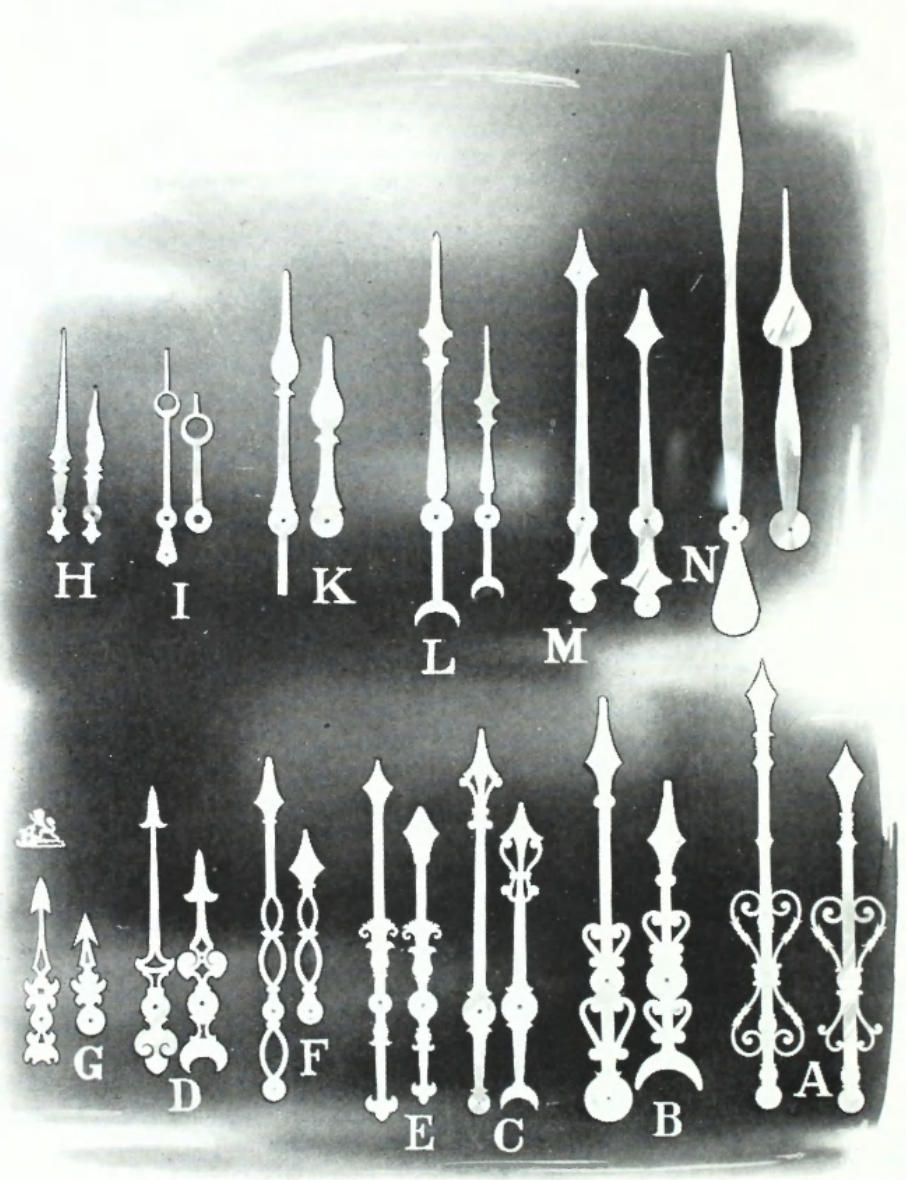
The working voltage of these cells is only .6 of one volt.

Chloride Accumulator

These cells are used for the same purpose as are the Gordon Battery, viz., for operating tower, post and bracket clocks and secondary clock plants and program instruments. Where it is possible to obtain a direct lighting current for charging the storage battery, we strongly recommend their use in preference to using a large number of primary cells. They take up less room, give a higher voltage and amperage, are more constant and require less attention. For illustration of these cells see opposite page.

We strongly recommend the use of the Chloride Accumulator type of battery as illustrated. In this type of cell the negative and positive elements are fused, not bolted together. With this method only two connections need be made, no matter how large a bank of cells is used. This is an important factor in a small storage battery installation, as trouble from loose connections is reduced to a minimum.

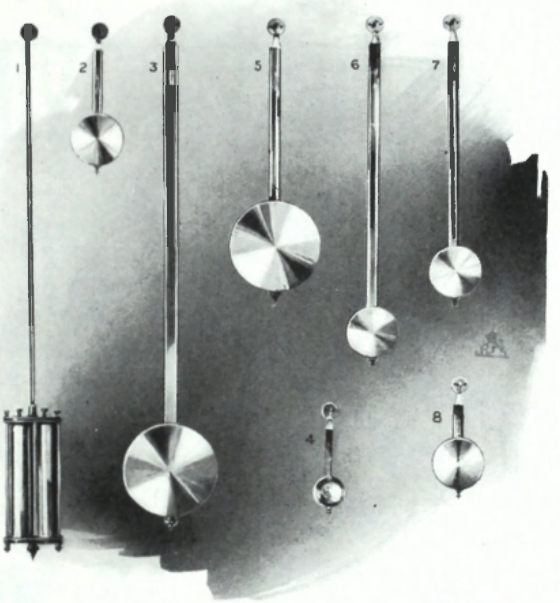
Standard Designs of Hands Furnished with our Clocks



When ordering please refer to design by initial letter.

Standard Types of Pendulums

with which our clocks are equipped



No. 1 is a mercurial compensated pendulum and is made in two sizes weighing 15 lb. and 30 lb. respectively. The 15 lb. is known as No. 1 mercurial and the 30 lb. as No. 2 mercurial compensated pendulum. These pendulums can be used with all types of 60 beat movements.

No. 2 is a 2 lb. wood rod 120 beat pendulum and can be used with all types of 120 beat movements.

No. 7. is a 2 lb 80 beat wood rod pendulum and can be used with all types of 80 beat movements. It can also be furnished with a 4 lb. bob.

No. 8 is our extra heavy 140 beat pendulum with wood rod and 2 lb. bob. It can be used with all types of 140 beat movements.

All of the above pendulum bobs can be furnished either in brass or nickel finish.

No. 3 is a 10 lb. wood rod 60 beat pendulum and can be used with all types of 60 beat movements. It can also be furnished with a 6 lb. bob.

No. 4 is a ¾ lb. 140 beat wood rod pendulum and can be used with all types of 140 beat movements.

No. 5 is a 10 lb. 84 beat wood rod pendulum and is used only with type "E" 84 beat movement.

No. 6 is a 2 lb. 72 beat wood rod pendulum and can be used with all types of 72 beat movements. It can also be furnished with a 4lb. or 6 lb. bob.

When ordering please refer to style by number.

Standard Designs of

Raised Bronze Numerals and Arabic Figures

When ordering please refer to design by title.

Time Service Section

Self-Winding
Synchronized Clocks

used exclusively in the

Western Union Telegraph Co.'s
Time Signal Service

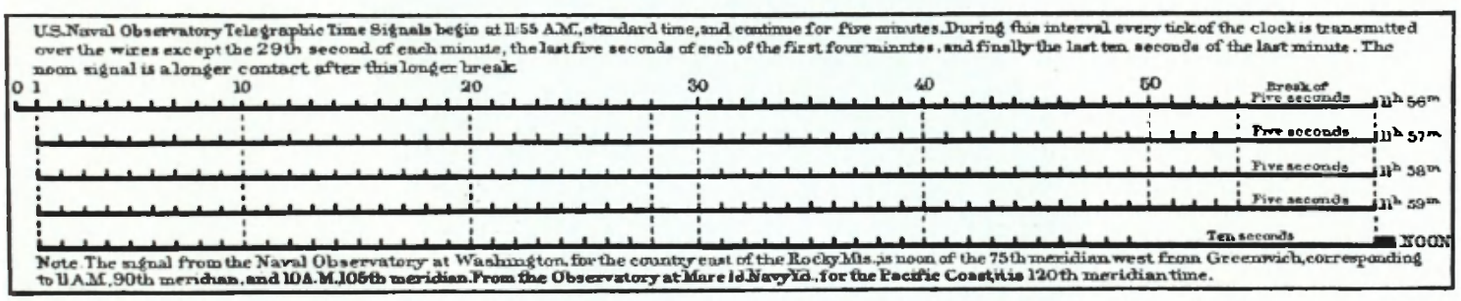
Standard Time

Furnished by signals over the lines of the Western Union Telegraph Company

Telegraphic Time Signals

Sent out at Noon daily, except Sundays and Holidays, by the U. S. Naval Observatory

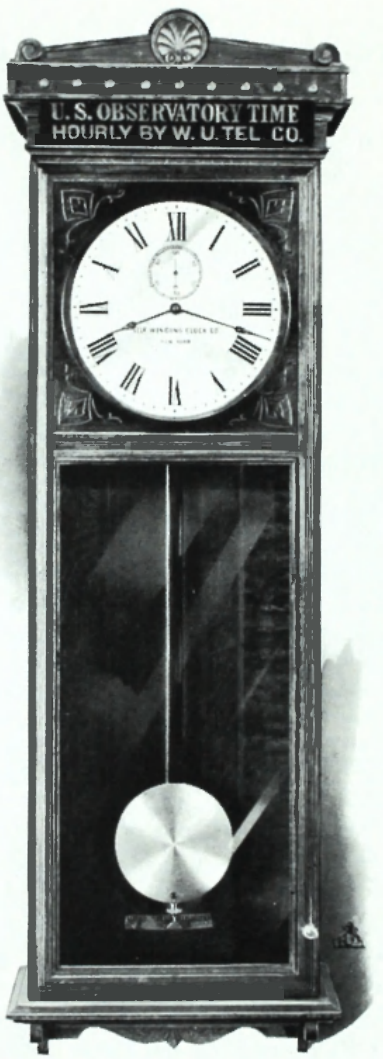
THE entire series of noon signals sent out daily over the wires is shown graphically in the accompanying diagram. This represents the signals as they would be recorded on a chronograph, where a pen draws a line upon a sheet of paper moving along at a uniform rate beneath it and is actuated by an electro-magnet so as to make a jog at every tick of the transmitting clock. The electric connections of the clock are such as to omit certain seconds, as shown by the breaks in the record. These breaks enable anyone who is listening to a sounder in a telegraph or telephone office to recognize the middle and end of each minute, especially the end of the last minute, when there is a longer interval that is followed by the noon signal. During this last long interval, or 10-second break, those who are in charge of time balls and of clocks that are corrected electrically at noon throw their local lines into circuit so that the noon signal drops the time balls and corrects the clocks.



This series of noon signals is sent continuously over the wires all over the United States for an interval of five minutes immediately preceding noon. For the country east of the Rocky Mountains the signals are sent out by the Observatory at Washington and end at noon of the 75th meridian, standard time, corresponding to 11 a. m. of the 90th meridian and 10 a. m. of the 105th meridian. For the country west of the Rocky Mountains they are sent out by the Observatory at the Mare Island Navy Yard, California, and end at noon of the 120th meridian, the standard time meridian of the Pacific Coast. The transmitting clock that sends out the signals is corrected very accurately, shortly before noon, from the mean of three standard clocks that are rated by star sights with a meridian transit instrument. The noon signal is seldom in error to an amount greater than one or two tenths of a second, although a tenth more may be added by the relays in use on long telegraph lines. Electric transmission over a continuous wire is practically instantaneous. For time signals at other times than noon, similar signals can be sent out by telegraph or telephone from the same clock that sends out the noon signal.

(From the Annual Report of the Superintendent of the U. S. Naval Observatory for the Fiscal Year ending June 30, 1902.)

No. 9 Self-Winding Regulator



60 Beat Movement

Made with 14″ enameled zinc dial.
Equipped with wood rod and brass bob pendulum.
This case is made of the best selected cherry, oak or walnut.

Extreme Dimensions

Height 69½″ Width 22⅛″ Depth 8¼″

No. 18 Self-Winding Clock

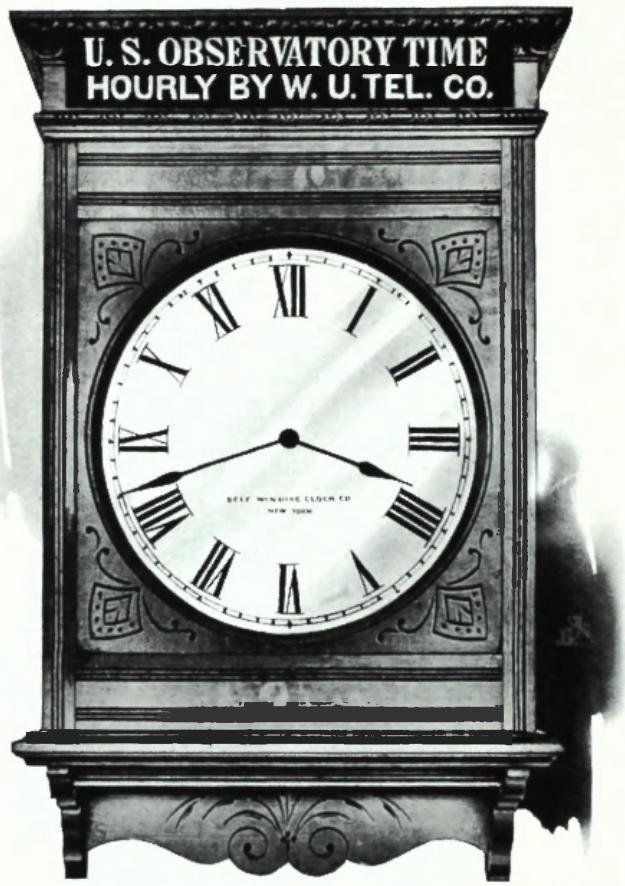
80 Beat Movement

Made with 12″ enameled zinc dial, with or without seconds. Equipped with wood rod and brass bob pendulum. This case is made of the best selected cherry, oak or walnut.

Extreme Dimensions

Height 50″ Width 19¼″ Depth 7¾″

No. 10 Self-Winding Clock



120 Beat Movement

Made with 14″ enameled zinc dial, with or without seconds. This case is made of the best selected cherry, oak or walnut.

Extreme Dimensions

Height 30¾″ Width 20¼″ Depth 7¼″

No. 29 Self-Winding Clock (Carved)

120 Beat Movement

This case is made of the best selected cherry, oak or walnut.

Extreme Dimensions

14″ dial.	Square 21⅛″	Depth 5″
18″ “	“ 25″	“ 5″
24″ “	“ 33½″	“ 5¾″

Time Service

THE following revised schedule of rates for Self-Winding Clock rentals is now in force. Rates for each clock, under yearly contracts, payment quarterly in advance, where there are three or more clocks in any one city or town.

Style of Clock, Number	Dimensions of Case, Inches	Diameter of Dial, Inches	Without Seconds Hand	With Seconds Hand	Generally Used for
18	50 x 18	12	$12.00	$15.00	House or Office
Calendar 18	50 x 18	12	18.00	21.00	House or Office
10	30 x 19	14	12.00	15.00	House, Office or Gallery
29	30 x 30	18	18.00	18.00	House, Office or Gallery
12	41 x 34	18	24.00	24.00	Large Rooms or Gallery
12	49 x 43	24	30.00	30.00	Large Rooms or Gallery
29	36 x 36	24	30.00	30.00	Large Rooms or Gallery
9	70 x 18	12	Not furnished	30.00	Jewelers' Regulator
9	70 x 18	14	Not furnished	30.00	Jewelers' Regulator

At places where there are only two clocks, add $3 per clock to the $12 and $15 rate.

Where there is only one clock, any style, the charge will be $30 per year.

Standard cases: walnut, oak, cherry.

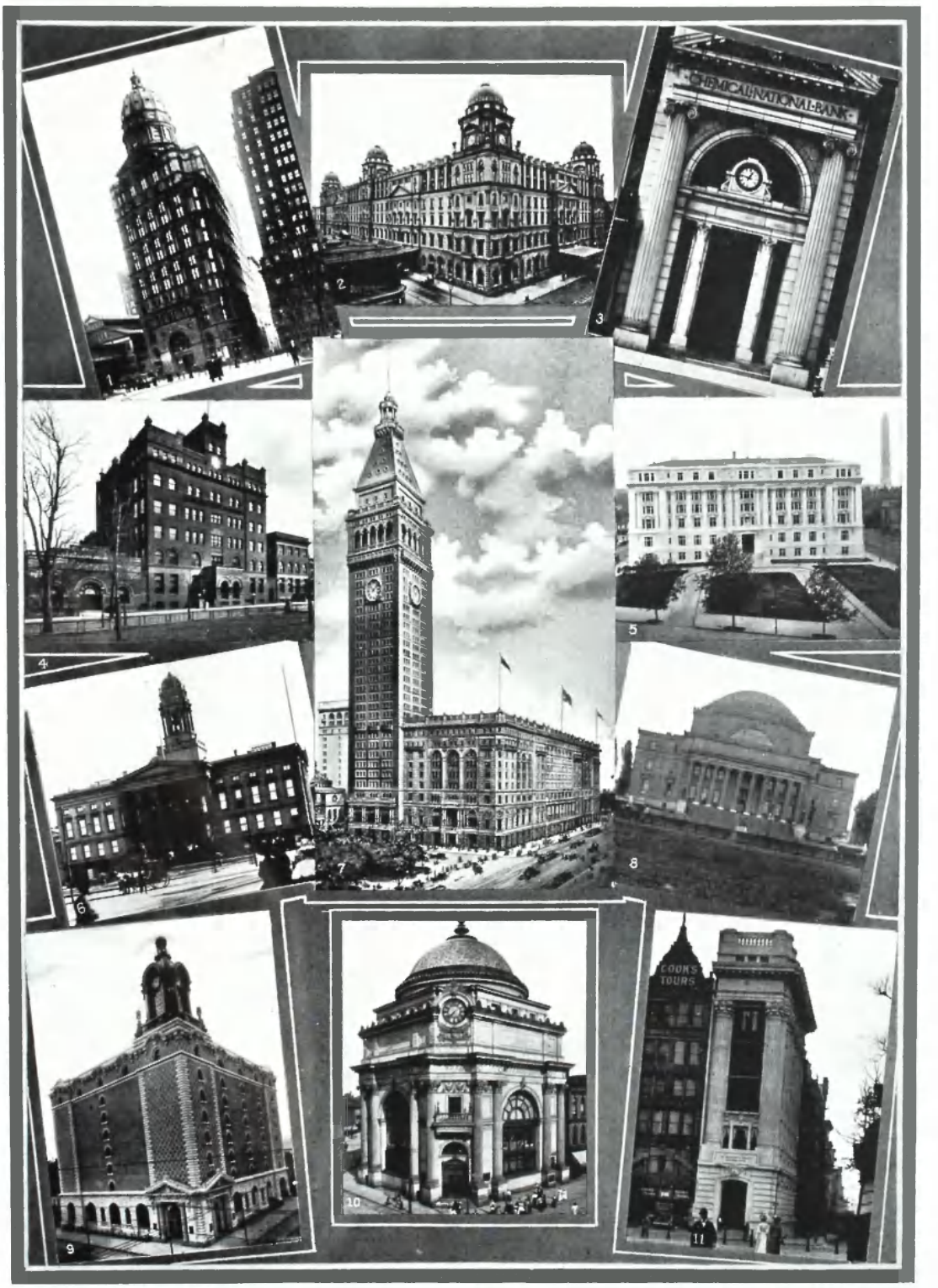
Where time stamp is connected to any of above clocks one dollar per month per stamp will be charged.

ROBERT C. CLOWRY,

President and General Manager.

New York, July 1, 1905.

Illustrations of Some Prominent Self-Winding Outside Clock Installations



1. World Building, New York.
2. Grand Central Depot, New York.
3. Chemical National Bank, New York.
4. Pratt Institute, Brooklyn, N. Y.
5. Municipal Building, Washington, D. C.
6. Borough Hall, Brooklyn, N. Y.
7. Metropolitan Life Insurance Building, New York.
8. Law Library, Columbia University, New York.
9. Long Island Storage Warehouse, Brooklyn, N. Y.
10. Buffalo Savings Bank, Buffalo, N. Y.
11. Importers and Traders Bank, New York.

Partial List of

General Clock Plant Installations

Metropolitan Life Insurance Bldg.	New York
Teachers College	"
Barnard College	"
Columbia University	"
Dun Building	"
Wool Exchange	"
Vincent Building	"
New York University	"
Cornell Medical College	"
B. Altman & Company	"
Stern Bros. & Company	"
American Locomotive Company	"
Lying-In Hospital	"
Aeolian Company	"
Commercial Cable Company	"
American Express Company	"
Singer Building (original Bldg.)	"
Interboro Railway (N. Y. Subway)	"
Grand Central Station	"
New York Athletic Club	"
Greenhut & Company	"
Union Club	"
Hispanic Society Building	"
Empire Building	"
Erie Ferry House	"
Mission of Immaculate Virgin	"
Importers & Traders National Bank	"
Bourne Building	"
Lawyers Title Insurance & Trust Co.	"
Museum Building, Bronx Park	"
Hudson & Manhattan R. R.	"
Hudson Terminal Buildings	"
New York World Building	"
Colored Orphan Asylum (Mt. St. Vincent)	"
New York & New Jersey Telephone Co.	Brooklyn, N. Y.
Chelsea Fibre Mills	" "
U. S. Printing Company	" "
L. I. Storage Warehouse	" "
Astoria Light, Heat & Power Company	Astoria, L. I.
Power Station	Long Island City, L. I.
Pratt Estate	Glen Cove, L. I.
Albany Station	Albany, N. Y.
U. S. Military Academy	West Point, N. Y.
Court House	Troy, N. Y.
Frear's Bazaar	"
Union Station	"
First National Bank	Boston, Mass.
Boston & Maine R. R. Station	"
Mass. State House	Boston, Mass.
Boston Terminal Station	"
Municipal Building	"
Terminal Hotel	"
Amherst College	Amherst, Mass.
U. S. Custom House	Providence, R. I.
Rhode Island Company	Providence, R. I.
N. Y., N. H. & H. R. R. Station	Naugatuck, Conn.
Travelers Insurance Company	Hartford, Conn.
Aetna Insurance Company	" "
Blair Hall—Princeton	Princeton, N. J.
Court House	Camden, N. J.
R. & H. Simon	Union Hill, N. J.
D. L. & W. R. R. Terminal	Hoboken, N. J.
Hyatt Roller Bearing Company	Harrison, N. J.
Allegheny Court House	Pittsburg, Pa.
Filtration Plant	" "
Wabash Station	" "
Pennsylvania R. R. Station	" "
D. L. & W. R. R. Station	Scranton, Pa.
Carnegie Steel Company	Pittsburg, Pa.
Frick Building	" "
Ferguson Building	" "
Meridian Terminal Station	Meridian, Miss.
State Capitol	Jackson, Miss.
Atlanta Terminal Station	Atlanta, Ga.
Gulf Terminal Station	Mobile, Ala.
Wayne County Court House	Detroit, Mich.
City Hall	" "
Ireland & Matthews Mfg. Co.	" "
Home Telephone Company	" "
Municipal Building	Washington, D. C.
Union Saw Mill Company	St. Louis, Mo.
Union Station	" "
Great Northern Hotel	Chicago, Ill.
Marshall, Field & Company	" "
Carson Price Scott Company	" "
C. R. I. & P. R. R. Station	" "
Union Station Association	" "
Steptol Valley S. & M. Co.	Ely, Nev.
Oakland Bank of Savings	Oakland, Cal.
Wm. C. Temple	Pt. Lome, Cal.
London Underground Railway	London, Eng.
Can. Niagara Power Company	Niagara Falls, Can.
Ontario Power Company	" " "
Gt. N. W. Tel. Company	Toronto, Can.
Merchants Rubber Company	Berlin, Ont.
A. C. Smith, for Mex. Ry.	City of Mexico
J. G. White & Company	for Manila, P. I.
Panama R. R.	Colon
St. John Observatory	St. John, N. B.

Partial List of Banks using

Clocks of Special Design

Corn Exchange Bank	New York
Chemical National Bank	"
Shoe & Leather Bank	"
Fourteenth Street Bank	"
Fiske & Robinson, Bankers	"
Germania Bank	"
Windsor Trust Company	"
Bank of Commerce	"
Colonial Trust Company	"
Flower & Company (Bankers)	"
Merchants National Bank	"
Colonial Safe Deposit Co.	"
Morton Trust Company	"
Bank of the Manhattan Company	"
American Exchange National Bank	"
Seaboard Bank	"
Bowery Bank	"
Central Realty Bond & Trust Company	"
Liberty National Bank	"
Continental Trust Company	"
Oriental Bank	"
Knickerbocker Trust Company	"
Equitable Trust Company	"
National Park Bank	"
Hudson River Bank	"
Italian-American Bank	"
German Savings Bank	"
Seaboard National Bank	"
Northern National Bank	"
Van Norden Trust Company	"
Broadway Savings Institution	"
New Netherlands Trust Company	"
Nineteenth Ward Bank	"
Carnegie Trust Company	"
Night and Day Bank	"
Flower & Company	"
Astor Trust Company	"
Tailer & Company	"
Colonial Bank	"
Lincoln Trust Company	"
Importers & Traders Bank	"
Columbia Bank	"
Bronx Savings Bank	"
Columbia Trust Company	"
Second National Bank	"
Commercial Trust Company	"
Produce Exchange Bank	"
Blair & Co., Bankers	"
Speyer & Co., Bankers	"
Mechanics Bank	Brooklyn, N. Y.
Dime Savings Bank of Williamsburg	" "
Bedford Bank	" "
Williamsburg Trust Company	" "
Peoples Trust Company	" "
Brevoort Savings Bank	" "
Title Guarantee & Trust Company	" "
L. I. Loan & Trust Company	" "
Dime Savings Bank	" "
National Savings Bank	Albany, N. Y.
New York State Bank	" "
National State Bank	" "
Albany Trust Company	" "
Albany Savings Bank	" "
First National Bank	" "
Utica Savings Bank	Utica, N. Y.
First National Bank	" "
Commercial Bank	Syracuse, N. Y.
Syracuse Trust Company	" "
Onondaga County Bank	" "
Alliance Bank	Rochester, N. Y.
Union Trust Company	" "
Rochester Trust & Safe Deposit Co.	" "
Manufacturers & Traders Bank	Buffalo, N. Y.
Buffalo Savings Bank	" "
Marine Bank	" "
Fidelity Trust Company	" "
Erie County Bank	" "
Columbia National Bank	" "
Power City Bank	Niagara Falls, N. Y.
Columbus Trust Company	Newburg, N. Y.
First National Bank	Mt. Vernon, N. Y.
National Bank Mt. Vernon	" "
National City Bank	New Rochelle, N. Y.
Mutual Trust Company	Port Chester, N. Y.
National Bank of Le Roy	Le Roy, N. Y.
Cayuga National Bank	Auburn, N. Y.
Exchange National Bank	Olean, N. Y.
Poughkeepsie Trust Company	Poughkeepsie, N. Y.
First National Bank	Boston, Mass.
Old Colony Trust Company	" "
Provident Institute for Savings	" "
Bay State Trust Company	" "
Union Safe Deposit Vaults	" "
City Trust Company	" "
Institution for Savings	Springfield, Mass.
New Bedford Institution	New Bedford, Mass.
Yale National Bank	New Haven, Conn.
First National Bank	Bridgeport, Conn.

Peoples Savings Bank	Bridgeport, Conn.
Mariners Savings Bank	New London, Conn.
Home National Bank	Meriden, Conn.
Travelers Insurance Company	Hartford, Conn.
Washington Trust Company	Westerly, R. I.
Portland Trust Company	Portland, Maine
Merchants National Bank	Newark, N. J.
Howard Savings Institution	" "
North Ward National Bank	" "
Clinton National Bank	Clinton, N. J.
Central Trust Company	Camden, N. J.
Peoples National Bank	Hackensack, N. J.
Peoples Safe Deposit & Trust Co.	Union Hill, N. J.
New Jersey Trust Company	Hoboken, N. J.
Colonial Trust Company	Pittsburg, Pa.
City Deposit Bank	" "
Union Trust Company	" "
Mercantile Trust Company	" "
Pennsylvania National Bank	" "
National Trust Company	" "
Farmers Deposit National	" "
Homeward Peoples Bank	" "
Germania Savings Bank	" "
Central Trust Company	" "
Dauphin Bank	" "
West End Trust Company	" "
German National Bank	" "
Guarantee Title & Trust Company	" "
West End Savings Bank	" "
Luzerne County Trust Company	Wilkes-Barre, Pa.
Second National Bank	" "
First National Bank	Wilkinsburg, Pa.
Wilkinsburg Bank	" "
Central National Bank	" "
Fayette City National Bank	Fayetteville, Pa.
Penn National Bank	Reading, Pa.
Centennial Bank	Philadelphia, Pa.
West End Trust Company	" "
Germantown Trust Company	Germantown, Pa.
First National Bank	Erie, Pa.
National Bank of Fayette County	Uniontown, Pa.
First National Bank	Tyrone, Pa.
National Bank of Lawrence County	New Castle, Pa.
National Bank	Catasauqua, Pa.
First National Bank	Connellsville, Pa.
Altoona Trust Company	Altoona, Pa.
First National Bank	Easton, Pa.
North Hampton National Bank	" "
Second National Bank	Altoona, Pa.
Clearfield National Bank	Clearfield, Pa.
Dauphin Deposit Bank	Harrisburg, Pa.
National Mechanics Bank	Baltimore, Md.
American National Bank	Washington, D. C.
National Metropolitan Bank	" "
National Bank of Virginia	Richmond, Va.
American National Bank	Lynchburg, Va.
Bank of Hampton	Hampton, Va.
National Bank	Newport News, Va.
Appomattox Trust Company	Petersburg, Va
Citizens National Bank	Charleston, W. Va.
Old National Bank	Martinsburg, W. Va.
Fourth National Bank	Fayetteville, N. C.
Atlanta National Bank	Atlanta, Ga.
Fourth National Bank	" "
Georgia Bank	" "
Planters Loan & Savings Bank	Augusta, Ga.
Bank of Mobile	Mobile, Ala.
Birmingham Trust & Savings Bank,	Birmingham, Ala.
First National Bank	Montgomery, Ala.
First National Bank	Pensacola, Fla.
First National Bank	Nashville, Tenn.
Chattanooga Savings Bank	Chattanooga, Tenn.
Security Trust & Safety Vault	Louisville, Ky.
City National Bank	Lexington, Ky.
Southern National Bank	Louisville, Ky.
Commercial Bank & Trust Company	" "
Prudential Trust Company	Cleveland, O.
Forest City Savings & Trust Co.	" "
Equity Savings & Loan Company	" "
National Exchange Bank	Steubenville, O.
Dayton National Bank	Dayton, O.
Penfield Avenue Savings Bank	Lorain, O.
Bankers Construction Company	Cincinnati, O.
Cincinnati Citizens Bank	" "
Queen City Savings Bank	" "
Western German Bank	" "
First National Bank	" "
Fifth National Bank	" "
American Trust & Savings Bank	Chicago, Ill.
Chicago National Bank	" "
Peoples Trust & Savings Bank	" "
Union Trust Company	" "
Hibernian Bank	" "
Northern Trust Company	" "
Commercial National Bank	" "
First National Bank	Englewood, N. J.
State Savings Bank	Detroit, Mich.
State Savings Bank	Jackson, Mich.
Grand Rapids National Bank	Grand Rapids, Mich.
American National Bank	Indianapolis, Ind.
Security Bank	Minneapolis, Minn.
St. Anthony Falls Bank	" "
First National Bank	St. Paul, Minn.
National Farmers Bank	Owatonna, Minn.
First National Bank	Davenport, Ia.
First National Bank	Marshalltown, Ia.
Citizens National Bank	Deaumont, Texas
American Exchange National Bank	Dallas, Texas
Farmer & Mechanics Bank	Fort Worth, Texas
Third National Bank	St. Louis, Mo.
National Bank of Commerce	Kansas City, Mo.
National Bank	St. Joseph, Mo.
American National Bank	San Francisco, Cal.
Security Savings Bank	" "
California Safe Deposit Company	" "
Bank of California	" "
Crocker National Bank	" "
Metropolis Bank	" "
Union Savings Bank	Oakland, Cal.
Oakland Bank for Savings	" "
First National Bank	" "
Security Savings Bank	Los Angeles, Cal.
First National Bank	Monterey, Cal.
Bank of Commerce	Boise, Idaho

Partial List of Important Railroads in the United States using

Self-Winding Synchronized Clocks

New York Central & Hudson R. R. R.
West Shore R. R.
Rome, Watertown & Ogdensburg R. R.
Lehigh & Hudson R. R.
Central Railroad of New Jersey
Delaware, Lackawanna & Western R. R.
Lehigh Valley R. R.
Delaware & Hudson R. R.
Pittsburg & Lake Erie R. R.
Pittsburg & Western R. R.
Pennsylvania Lines West of Pittsburg
Pittsburg, Bessemer & Lake Erie R. R.
Wabash Terminal Railway
Southern Railway
Seaboard Air Line
Norfolk & Western R. R.
Chesapeake & Ohio R. R.
Atlanta & West Point R. R.
Plant System
Atlanta & Birmingham R. R.
Central Railroad of Georgia
Florida East Coast R. R.
New Orleans & Northwestern R. R.
Cincinnati, New Orleans & Texas R. R.
Cincinnati, Portsmouth & Virginia R. R.
Baltimore & Ohio Southwestern R. R.
Cincinnati, Hamilton & Dayton R. R.
Mobile & Ohio R. R.
Erie R. R.
Chicago & Great Western R. R.
Columbus, Hocking Valley & Toledo R. R.
Illinois Central R. R.
Wisconsin Central R. R.
Chicago, Rock Island & Pacific R. R.
Chicago, Burlington & Quincy R. R.
Chicago & Eastern Illinois R. R.
Louisville & Nashville R. R.
Missouri, Kansas & Texas R. R.
Iowa Central R. R.
Minneapolis & St. Louis R. R.
Missouri-Pacific R. R.
Union Pacific R. R.
Chicago, Milwaukee & St. Paul R. R.
Oregon Short Line R. R.
Oregon R. R. & Navigation Co.
Salt Lake & San Pedro R. R.
Colorado-Southern R. R.
California & Northwestern R. R.
Southern Pacific R. R. (Central Pacific)
Chicago & Alton R. R.
Chicago & Northwestern R. R.
Chicago, Cincinnati & Louisville R. R.
Illinois Southern Railway
Terminal R. R. Association of St. Louis
Fort Worth & Denver City R. R.
Chicago, Indiana & Western R. R.
Southern Indiana R. R.
Detroit Southern R. R.
Toledo & Ohio Central R. R.
Kanawha & Michigan R. R.
Cincinnati, Dayton & Toledo R. R.
Ulster & Delaware R. R.
Long Island R. R.

Partial List of

School Installations

Horace Mann School	New York, N. Y.
Cornell Medical College	" "
The Wetmore School	" "
Teachers College	" "
Barnard School for Girls	" "
Girls Technical High School	" "
Speyer School	" "
Hebrew Technical School	" "
General Theological Seminary	" "
Stuyvesant High School	" "
Charlton School	" "
Columbia University	" "
University of New York	" "
Polytechnic Institute	Brooklyn, N. Y.
Adelphi College	" "
Heffley School	" "
Manual Training High School	" "
Pratt Institute	" "
Brooklyn Heights Seminary	" "
Teachers Training School	" "
Euclid School	" "
Boys High School	" "
Commercial High School	" "
L. I. Business College	" "
Public School No. 152	" "
Public School No. 143	" "
Bennett School	Boston, Mass.
Winchell School	" "
High School	" "
Brown School	Hartford, Conn.
Ladies Seminary	" "
Noah Webster School	" "
School for the Blind	" "
High School	Middletown, Conn.
Misses Ely's School	Greenwich, Conn.
Miss Porter's School	Torrington, Conn.
Yale University	New Haven, Conn.
Amherst College	Amherst, Mass.
State Normal School	Oneonta, N. Y.
Syracuse University	Syracuse, N. Y.
High School	Lewiston, N. Y.
State Normal School	Fredonia, N. Y.
Oakside School	Peekskill, N. Y.
U. S. Military Academy	West Point, N. Y.
High School	Jersey City, N. J.
Gasbrouck Institute	" "
Sacred Heart Academy	Hoboken, N. J.
St. Elizabeth's Academy	Convent, N. J.
St. Vincent's Academy	Newark, N. J.
Morristown School	Morristown, N. J.
Cherry Street School	Elizabeth, N. J.
Blair Presbyterial Academy	Blairstown, N. J.
School No. 85	Long Branch, N. J.
Public School No. 20	Port Richmond, N. Y.
Penn Charter School	Philadelphia, Pa.
University of Pennsylvania	" "
Wistar Institute	" "
Drexel Institute	" "
Carnegie Technical Schools	Pittsburg, Pa.
Tome Institute	Port Deposit, Md.
Johns Hopkins University	Baltimore, Md.
Sidwell Select School	Washington, D. C.
Baptist University	Raleigh, N. C.
Central High School	Detroit, Mich.
Oberlin College	Oberlin, O.
Case School Applied Science	Cleveland, O.
Lincoln High School	" "
Eastern High School	" "
Western Reserve University	" "
High School	Kalamazoo, Mich.
High School	Ann Arbor, Mich.
State Normal School	Emporia, Kan.
St. Benedict's College	Atchison, Kan.
High School	La Crosse, Wis.
University of Minnesota	Minneapolis, Minn.
State Normal School	Kearney, Neb.
High School	Marshalstown, Ia.
Lewis Institute	Chicago, Ill.
Throop Polytechnic Institute	Pasadena, Cal.
Shaw School	St. Louis, Mo.
Webster School	" "
Gardenville School	" "
Baden School	" "
Oak Hill School	" "
Monroe School	" "
Elliott School	" "
Sherman School	" "
Jackson School	" "
Municipal Technical Schools	England

Partial List of

Prominent Installations of our Tower Clock Outfits

Metropolitan Life Insurance Building	New York	Union Station	Pittsburg, Pa.
Grand Central Station	"	Wabash Station	" "
Times Building	"	Princeton University	Princeton, N. J.
City Hall	Brooklyn	Syracuse University	Syracuse, N. Y.
Wallabout Market	"	C. R. I. & P. Railway Station	Chicago, Ill.
George P. Jacobs & Co.	"	Peoples Trust & Savings Bank	" "
Eagle Warehouse & Storage Co.	"	City Hall	Pensacola, Fla.
Long Island Storage Warehouse	"	Court House	Pomeroy, Wash.
Robert Gair Company	"	Buffalo Savings Bank	Buffalo, N. Y.
Pratt Institute	"	Town Hall	Greenwich, Conn.
U. S. Military Academy	West Point, N. Y.	St. Matthias Church	Philadelphia, Pa.
N. Y. C. & H. R. R. R. Station	Albany, N. Y.	Centennial National Bank	" "
Albany Savings Bank	" "	Rhode Island Company	Providence, R. I.
D. L. & W. R. R. Terminal	Hoboken, N. J.	H. King Sturdee	Saugerties, N. Y.
N. Y., N. H. & H. R. R. Station	Naugatuck, Conn.	F. Ambrose Clark	Cooperstown, N. Y.
Boston Terminal Station	Boston, Mass.	First National Bank	Davenport, Ia.
Boston Herald	" "	Houston Post	Houston, Texas
City Hall	Detroit, Mich.	Miss Porter's School	Farmington, Conn.
Pratt Estate	Glen Cove, L. I.	Tribune Publishing Company	San Francisco, Cal.
D. L. & W. R. R. Station	Scranton, Pa.	Massachusetts Real Estate Co.	Taunton, Mass.

Partial List of

Post and Outside Bracket Clocks

J. Dreicer & Son	New York	Fourteenth Street Bank	New York
Board of Curb Brokers	"	Colwell Lead Company	"
A. Hawkins	"	Brooklyn Daily Eagle	Brooklyn, N. Y.
Charles Simon's Sons	"	Title Insurance Company	" "
Colonial Bank	"	Post Publishing Company	Pittsburg, Pa.
Lincoln Trust Company	"	Henry Wilkens & Company	" "
Acker, Merrall & Condit	"	Filtration Plant	" "
Bass Ratcliff & Gratton, Limited	"	Luzerne County Trust Company	Wilkes-Barre, Pa.
Northern National Bank	"	Gardner News Company	Gardner, Mass.
Schinasi Brothers	"	R. M. Rose Company	Jacksonville, Fla.
Van Norden Trust Company	"	W. O'Keefe & Company	Denver, Colo.
Corn Exchange Bank	"	C. C. Patton	Canon City, Colo.
Windsor Trust Company	"		

Medals awarded this Company at the

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