Book 5.

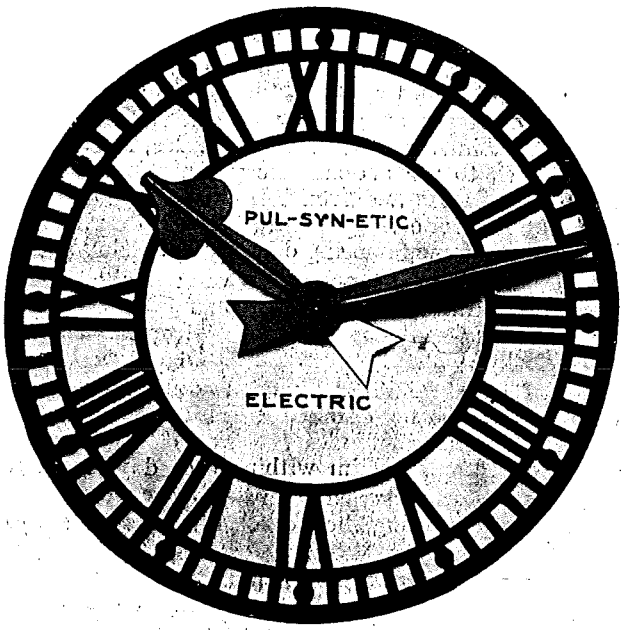
Section 4.

THE
"PUL-SYN-ETIC"
SYSTEM OF
ELECTRIC IMPULSE AND TURRET CLOCKS

CONTROL BY OBSERVATORY

(GREENWICH OR OTHER)

TIME SIGNALS.



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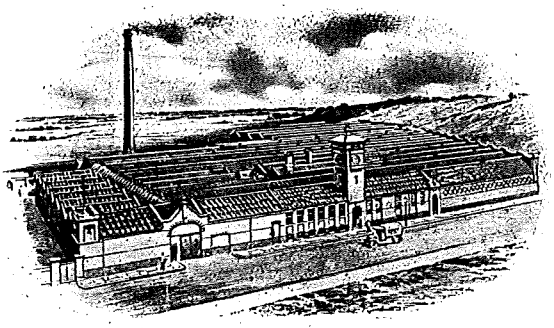
PUL-SYN-ETIC ELECTRIC.



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Terms and Conditions of Sale.

THIS LIST CANCELS ALL PREVIOUS ISSUES, and is subject to alteration without notice.

THE ILLUSTRATIONS show generally the appearance of the respective articles; but instruments may vary from the illustrations as improvements and alterations occur.

CARRIAGE. We pay carriage, at goods rate, on orders of the net value of £5 and upwards for delivery in England, Scotland, Wales, Northern Ireland and to Dublin Quay. This applies to all articles except Insulators and Ironwork, Leclanche Cells, Lead-covered Cables and Iron Wire, which are despatched carriage forward, unless specially quoted for carriage paid. Supplies despatched by passenger train are sent carriage paid, the amount being charged on the invoice.

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TIME OF DELIVERY is always reckoned from the date at which all particulars necessary are in our hands for executing the work. Promises are subject to the usual Strike and Accident Clauses.

GUARANTEE. All apparatus is carefully examined and tested before leaving the works, and is sent out in perfect order and condition. We, therefore, give the following Guarantee which takes the place of any Guarantee implied by Statute, common law or otherwise:—

If within 12 months from date of despatch, any defect or fault is discovered in any instrument of our manufacture, due to faulty material, or bad workmanship, we undertake to make good the defect without charge, provided that notice is given to us immediately on the discovery of the defect, and the defective instruments, or parts thereof, are forwarded to us carriage paid.

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Our responsibility in all cases is limited to the cost of making good any such defects in our own workshops.

TERMS OF PAYMENT. Accounts are opened with responsible people upon receipt of approved trade references, and are subject to 2½% discount for payment during month following date of invoice: after then all Accounts are net.

Book 5.
Section 4.

THE
"PUL-SYN-ETIC"
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CONTROL BY OBSERVATORY
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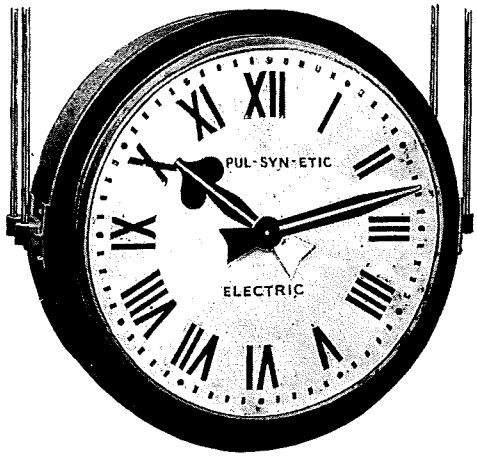

INDEX.

TELEGRAPHIC CODES.

WE USE THE FOLLOWING :—

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TANGENT

CONTROL OF "PUL-SYN-ETIC" TIME TRANSMITTERS BY OBSERVATORY TIME SIGNAL (GREENWICH OR OTHER).

Control by " Heart-shaped cam " has been fitted by us to " Pul-syn-etic " Time Transmitters for many years, but after an extended trial we put forward our " See-Saw Control " of Transmitters with every confidence, in preferne to all other types, because this control is gradual and not sudden, and further because it is not materially affected by false signals as are sometimes received. These false signals caused irregular readings in the older method of control by heart-shaped cam and the like.

"SEE-SAW CONTROL."

The " See-Saw Control " operates automatically by giving the Transmitter a slight gaining rate when it is found by the Time Signal Standard to be " Slow," and inversely a losing rate if the Transmitter is " Fast." The rate of the Pendulum by " The See-Saw " is thus altered automatically by the Observatory Time Signal itself.

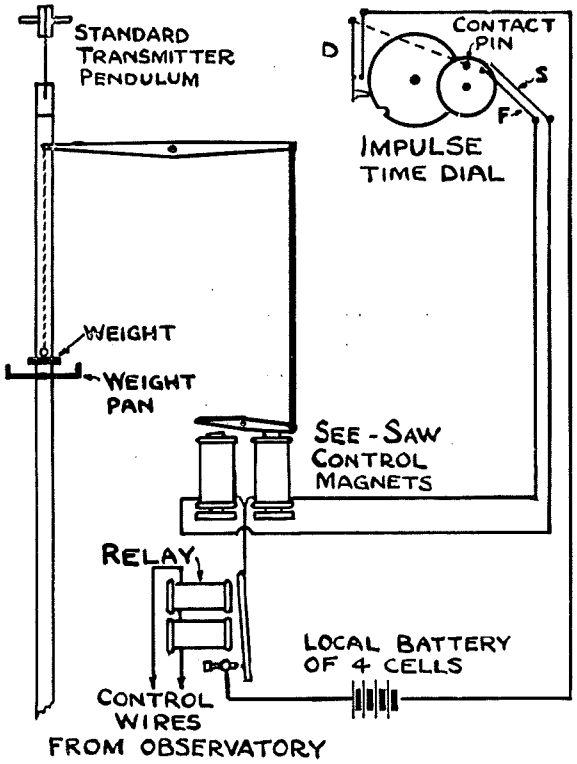
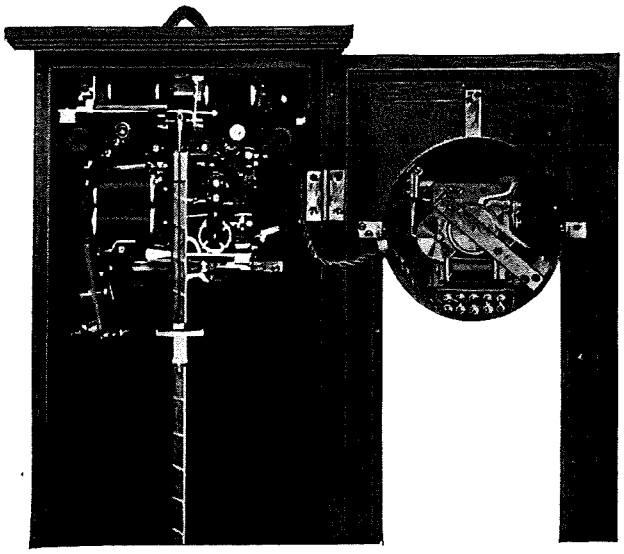


Diagram No. C512.
Diagrammatic Illustration of a Standard Transmitter Pendulum fitted with " See-Saw Control."

This signal passes through one contact spring (marked " S " in the Drawing) of the Impulse Time Dial on the Transmitter only if the Impulse Time Dial is " Slow " on the arrival of the Standard Time Signal, or through another Contact Spring (marked " F ") only if the Impulse Time Dial is " Fast." These Contact Springs are connected respectively to two Coils of Electro-Magnets, one of which " drops " a small weight on a tray fixed to the Pendulum Rod if the Impulse Time Dial is " Slow," with the result that the vibrations of the Pendulum are accelerated, while the other Electro-Magnet " lifts " the said weight off the tray if the Impulse Time Dial is " Fast."

CONTROL OF "PUL-SYN-ETIC" TIME TRANSMITTERS—*continued.*



The Impulse Time-dial of the Transmitter is fitted in addition to the two Contact Springs mentioned) with a cut-out contact (marked " D " on Drawing) controlled by a 24-hour wheel so that the Observatory Control can only become effective once per day, say 10 a.m. (or other time of the Observatory Signal). The Circuit is broken at all other times and so prevents stray currents from interfering with the "See-Saw Control." This Control is, therefore, only open for operation from one minute to 10-0 to one minute past. Any false currents that may come on even during this two-minute interval, instead of wrongly affecting the time of the impulse, can at their worst only delay the operation of the Correcting Control for that day.

The normal weight provided and fixed on each " See-Saw," as delivered, is of such proportion that it quickens the period of vibration of the Pendulum to the extent of Two Seconds per day so that the Transmitter when installed must be given a losing rate of approximately One Second per day when the weight is raised clear of the Tray.

This Normal weight sent hung to the " See-Saw " Movement is marked " N " and control is effected by it within one second per day. An even closer rate can be obtained if desired, and in case this closer regulation is required, a smaller weight is provided for this finer control, which is marked " F." In case a coarser regulation will suffice, a larger weight marked " C " is also provided.

In England Daily Time Signals are sent from Greenwich through the Local Post Office, daily at 10 a.m., where application must be made regarding charges for the service. In other Countries Time Signals of varying characters are sent from Observatories or similar Institutions at other times, but all such as are known are suitable for operating the " See-Saw " Movement.

PRICE, " See-Saw Control," fitted to any Standard Home Transmitter with Impulse Time Dial (such as Fig. C7) .. .. .. *add* **£5 - 0 - 0** (E)

Codeword .. .. **zojno**

Relay fixed in Clock case and wound to 200 ohms for receiving observatory current (if same is required) .. .. .. *add* **£1 - 5 - 0**

Codeword .. .. **zojon**

CONTROL OF "PUL-SYN-ETIC" TIME TRANSMITTERS—*continued.*

The gradual correction given by the " See-Saw Control " is particularly desirable for Circuits which include " Reflex " as, for instance, where a Prime Transmitter controls Sub-Transmitters by " Reflex," as shown in Diagram No. 510 below.

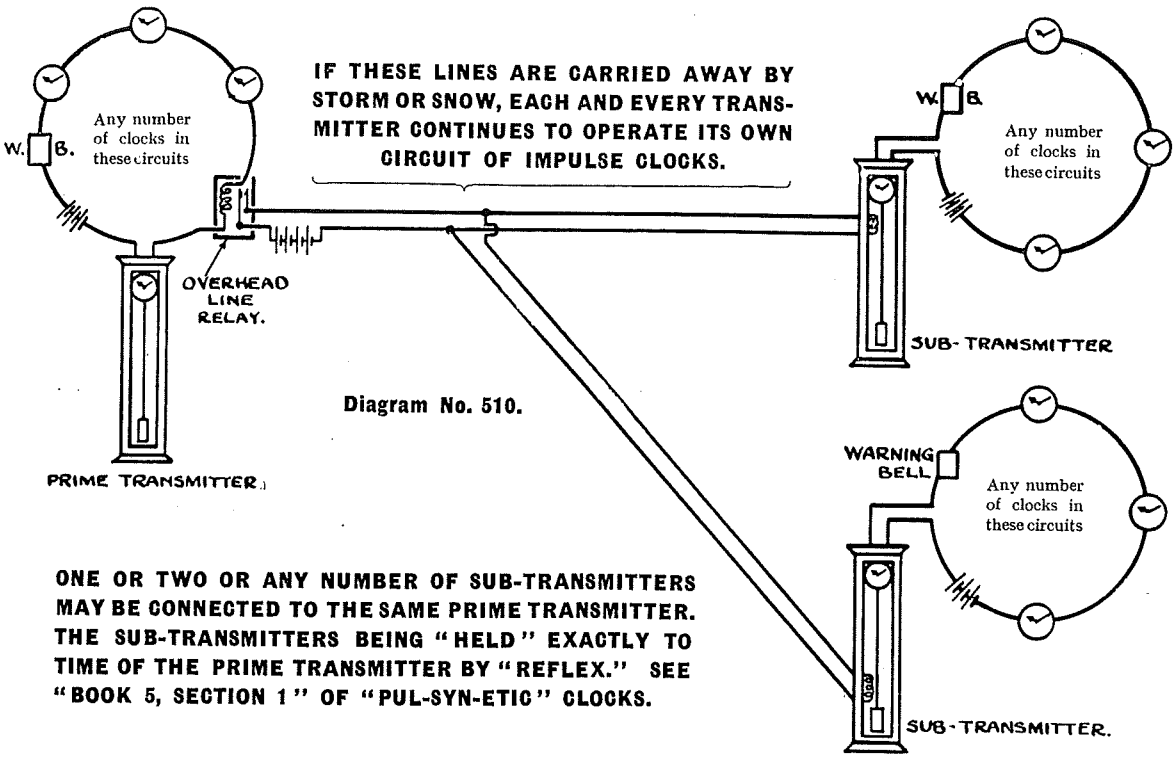


Diagram No. 510.

ONE OR TWO OR ANY NUMBER OF SUB-TRANSMITTERS MAY BE CONNECTED TO THE SAME PRIME TRANSMITTER. THE SUB-TRANSMITTERS BEING "HELD" EXACTLY TO TIME OF THE PRIME TRANSMITTER BY "REFLEX." SEE "BOOK 5, SECTION 1" OF "PUL-SYN-ETIC" CLOCKS.

It will be understood if the Prime Transmitter is suddenly advanced by a heart-shaped cam 20 seconds on its 'scape wheel, the " Reflex " Movement in the Sub-Transmitters would not be acting at the right time, and therefore, the 'scape wheels of these Sub-Transmitters would also have to be advanced 20 seconds, in order to bring them to time.

With the " See-Saw " correction, however, any Sub-Transmitters would be **gradually** advanced to time, because the " Reflexes " of the Sub-Transmitters are able to cope with any slight acceleration or deceleration of the Prime Transmitter.

CONTROL OF "PUL-SYN-ETIC" TIME TRANSMITTERS—*continued.*

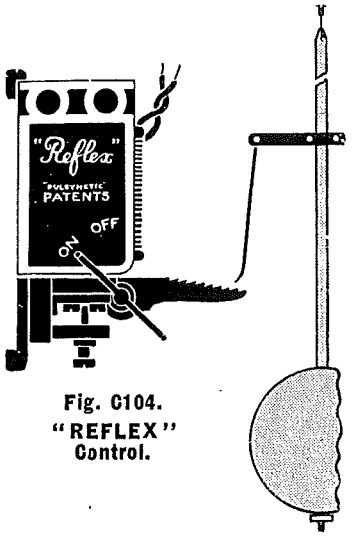
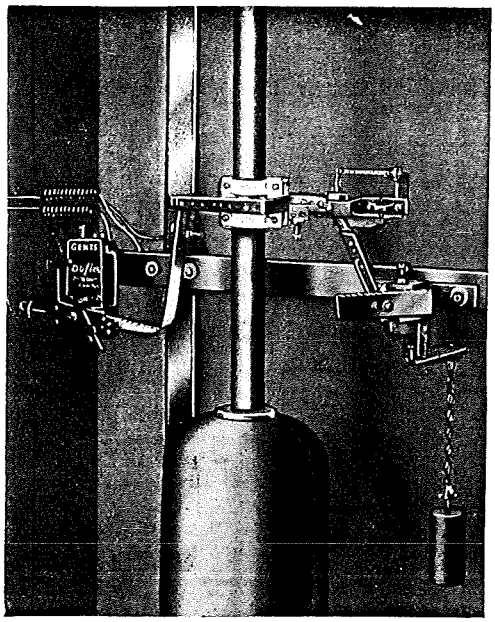


Fig. C104.
"REFLEX" Control.

Existing pendulum.

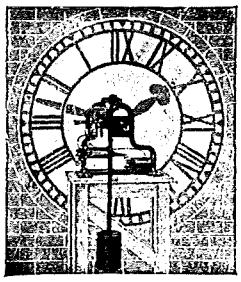
The " Reflex " can be fittcd to the Pendulum, either of an Electric Transmitter or Workmen's Recorder, or **any** existing Pendulum. The Pendulum is given a slightly losing rate when ungoverned, and the " Reflex " fitment governs it to correct time. It is not thrown out by the " See-Saw Control."

See " Book 5, Section 1 " of " Pul-syn-etic " Electric Clocks.



" Duflex " Control can be fitied to any existing Turret Clock, Church Clock, or to any heavy Pendulum, and keeps the Clock attached thereto to time where the Pendulum inclines to go fast or slow when ungoverned. It is not thrown out by the " See-Saw Control."

See " Book 5, Section 2 " of " Pul-syn-etic " Electric Clocks.



"Waiting-Train" Movement for driving any form of Turret Clock. It is not thrown out by the "See-Saw Control."

See "Book 5, Section 2" of " Pul-syn-etic" Electric Clocks.

The gradual Correction induced into a time circuit in which the Transmitter is " controlled from Greenwich " (or its equal in other countries) by the " See-Saw " Control, enables " The Reflex," " The Duflex " and " The Waiting-Train " turret clock, all illustrated, to still keep in beat, and no adjustments of these mechanisms are necessary after the Greenwich signal has operated effectively.

GRADUAL CORRECTION BY HAND.

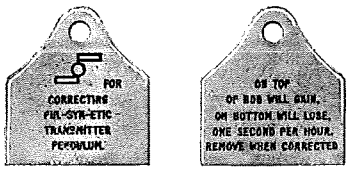


Fig. C108.

If, for any reason, the Observatory Control is not adopted, the equivalent of the " See-Saw " can be operated by a weight, as shown at Fig. C108, manipulated by hand.

To make the Pendulum go fast, place the Weight on the top of the Pendulum Bob.

To make the Pendulum go slow, the Weight should be placed on the Rating Nut, below the Pendulum Bob.

When the System is brought to time, remove the Weight, and hang on the Hook provided for its reception in the Transmitter Case (See " Book 5, Section 1a.")

PRICE, each .. 1/-. Code word : zohpy (E)

TANGENT

PUL-SYN-ETIC ELECTRIC

"ONE CITY ONE TIME"

on Public Clocks.

By means of the Apparatus detailed here, all the Turret Clocks, the Public Clocks, and Clocks, Small and Large, of any City can be controlled by Overhead Wires, and if these are fouled or carried away by snow or interference, no ill-effect is produced.

The Clocks carry on as before under their own power until the Control Wires are attended.

Chesterfield, England, has adopted this System designed by us, and shows Universal Greenwich Observatory Time on all its Public Clocks. The System has also been adopted by many Towns abroad, notably in South Africa.

Extract from "The Daily Express." October 12th, 1925.

should insure against the risk

TRUE-TIME TOWN.

CHESTERFIELD MAKES ITS CLOCKS AGREE.

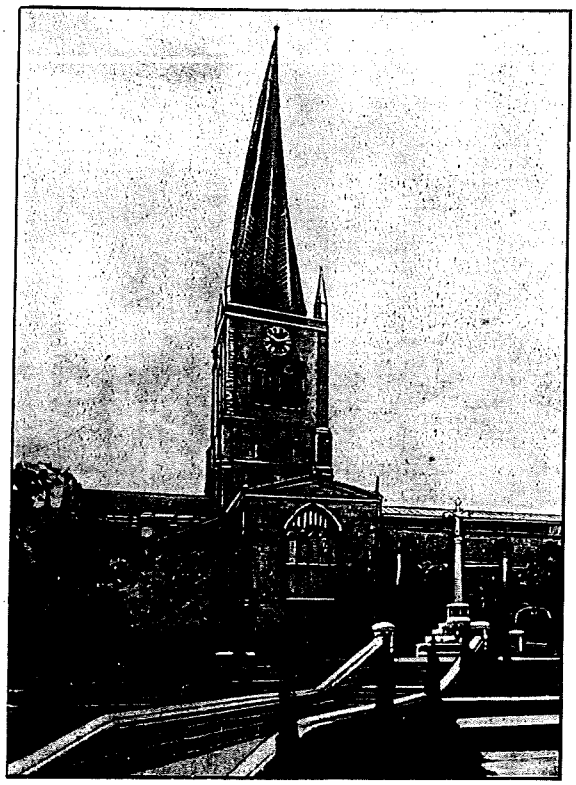
"Daily Express" Correspondent.

CHESTERFIELD, Sunday.

All public clocks in Chesterfield, including that in the parish church tower, with its famous twisted steeple, are now synchronised with Greenwich time.

A master-clock which has been installed at the tramway depot, receives the signal from Greenwich each morning, and transmits pulsations every half-minute to four clocks in different parts of the town.

The instalment of the system, at a cost of £250, has relieved Chesterfield of the long-standing reproach that its public clocks never agreed with one another.



Chesterfield's noted Crooked Spire, which shows Greenwich Observatory time, as do all the Public Clocks in Chesterfield.

Write for full particulars.

TANGENT