PATENT SPECIFICATION

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COMPLETE SPECIFICATION.

Improvements in Electric Clock and Time Signal Installations.

We, SCHWEIZERISCHE MAGNETA A.-G., of Zug, Switzerland, a Swiss firm, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

For some time electric clock and time signal installations have been used, in which a master clock operated secondary clocks and signals by means of current impulses radiated from this master clock at certain time intervals mostly one minute.

In an earlier arrangement of an electric clock installation in which a primary clock regulates the secondary clocks through the medium of an induction current it has been suggested to arrange an induction coil between the poles of a steel magnet and to rotate this coil by a weight through the medium of gearing so as to generate an induction current which flows through a conductor wherein the secondary clocks are included and which changes its direction in every half revolution of the coil; the axis of the coil carries a double armed lever engaging with a toothed wheel driven by the main clockwork in such a manner as to release the lever every minute.

Now the present invention relates to an electric clock and time signal installation of this character which can be extended without altering the main clock by providing the existing installation with a releasing device adapted to control a source of energy for supplementary clocks, this source of energy being adapted to supply current impulses for the supplementary clocks in synchronism with the current impulses produced by the main clock. According to the present invention the releasing device consists of an oscillating lever co-operating with a rotary lever which is arrested at each half revolution by the oscillating lever. The source of energy for the supplementary clocks preferably consists of an inductor of which the movements are controlled by the rotary lever and crank mechanism for the purpose of controlling the current impulses to the supplementary clocks. These supplementary clocks may control time alarm mechanisms in the usual manner.

The drawings show diagrammatically two forms of construction of the subject of the invention.

In Fig. 1, 1, 2 indicate coils placed on iron cores 3, 4 which are connected by leads 5 to the master clock not shown, 6 is an armature arranged in the manner of a tilting device, which acts by means of a flat spring 7 on a releasing lever 8. The releasing lever 8 oscillates between stops 9 and in its end positions always engages with a bent part underneath the bent end of one arm of a two arm oscillating lever 10. On the spindle of the oscillating lever 10, are mounted a crank 11 and a toothed wheel 12 which is in mesh with a toothed wheel 13. To the crank 11 is connected an inductor 14. A weight 15 acts on the spindle of the toothed wheel 13. The current impulse coming from the master clock energises the cores 3, 4 and as there is a change of polarity on each current impulse, produces each time a reversal of the releasing lever 8, so that this releases the oscillating lever 10 for half a revolution and then arrests it again. By releasing the oscillating lever 10, the weight 15 can actuate the inductor 14 so that this produces a current impulse which is conducted by the lead 16 to further secondary clocks.

In the second example of construction the parts 1—10, 12, 13 and 15 correspond to the similarly numbered parts of the first example of construction. A toothed wheel 16^1 gears with the toothed wheel 13 and drives a contact roller or drum 17. This roller or drum 17 is provided with contact portions against which bear con-

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tacts 18 included in a circuit 19, containing a suitable source of current and leading to secondary clocks. The contact surfaces on the drum 17 are so arranged that when the lever 10 is released by the arm 8 the circuit 19 will be closed by reason of the engagement of the contacts 18 with a contact portion of the drum. The contact surfaces on the drum 17 are of such dimensions that the circuit 19 remains closed until the oscillating lever 10 has made nearly half a revolution, that is until the lever 10 is again stopped by the arm 8. The connection between the contacts 18 is then broken as they will now be in contact with an insulated portion of the drum 17. The contact portions of the drum 17 may be so arranged that one of the contacts 18 is always in engagement with the contact portions whilst the other contact 18 has insulated portions in its path which are so arranged that the second contact 18 will be in engagement with an insulated portion when the lever 10 is at rest.

With the toothed wheel 13 also gears a gear 20 which drives an air propeller 21, for retarding the whole mechanism illustrated by the toothed wheels 12, 13, 16^1 and 20. When the lever 10 is released by the lever 8, the mechanism is turned by the action of the weight 15, as hereinbefore described. When the second arm of the oscillating lever 10, after half a revolution thereof is again arrested by the lever 8 and thus again brings the mechanism to rest, the current in the circuit 19 is again interrupted.

The arrangement according to the second example of construction serves to actuate a signal installation.

With the arrangements described at least one part of the current impulse of the master clock is used to produce a further current impulse, which, in addition to the current produced by the master clock enables further secondary clocks to be actuated. According to the invention it is therefore possible to use a master clock for installations which contain more secondary clocks than can be supplied by the master clock, so that an enlargement of an existing clock installation is possible whilst retaining the original master clock.

Several such installations could also be actuated by the current impulse, produced by the master clock. Also when arranging several such installations, only one thereof need be actuated by the current impulse coming from the master clock, whilst the other installations could be actuated by the current impulse of the first or one of the other installations.

The arrangements described in the examples of construction for releasing and arresting the oscillating lever 10 represent a releasing device as is used for control devices (workmen's control devices). For releasing the further current impulse the driving device of a secondary clock-work could, however, also be used.

The weight 15 can, in both examples of construction be provided with hand winding device as well as an automatic winding device, for example an electrical winding device.

The actuation of secondary clocks and signals could also be effected by a single device.

The master clock may be a clock provided with a battery or it may be a clock without a battery in which case it would be provided with an inductor similar to inductor 14, shown in Fig. 1, the inductor being controlled by a suitable releasing device arranged and controlled by the clock work of the main clock.

Having now particularly described and ascertained the nature of our said invention and in what manner the same is to be performed, we declare that what we claim is:—

1. An electric clock and time signal installation provided with a releasing device adapted to control a source of energy for supplementary clocks, this source of energy being adapted to supply current impulses for the supplementary clocks or signals in synchronism with the impulses produced by the main clock, characterised by the fact that the releasing device consists of an oscillating lever adapted to co-operate with a rotary lever which is arrested at each half revolution thereof by the oscillating lever, substantially as described.

2. In an electric clock and time signal installation, as claimed in Claim 1, the construction wherein the source of energy for the supplementary clocks consists of an inductor of which the movements are controlled by the rotary lever and crank mechanism for the purpose of controlling the current impulses to the supplementary clock, substantially as described.

3. A device for controlling current impulses to supplementary clocks substantially as described in connection with Fig. 1 or Fig. 2 of the accompanying drawings.

Dated this 9th day of September, 1921.

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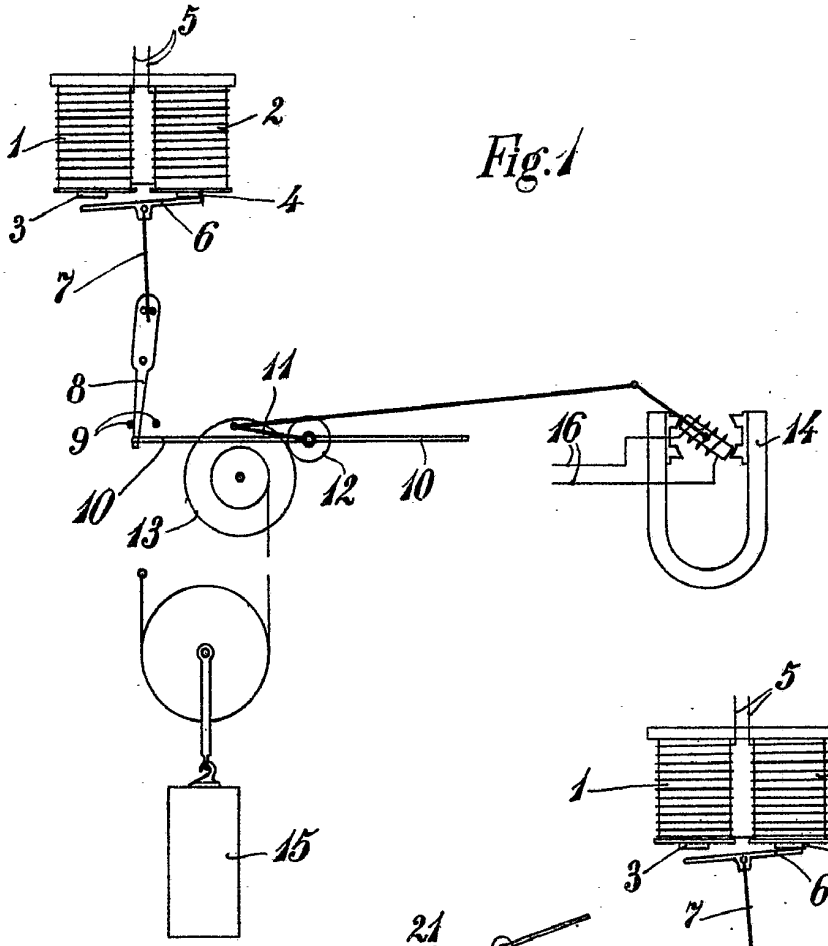

Fig. 1

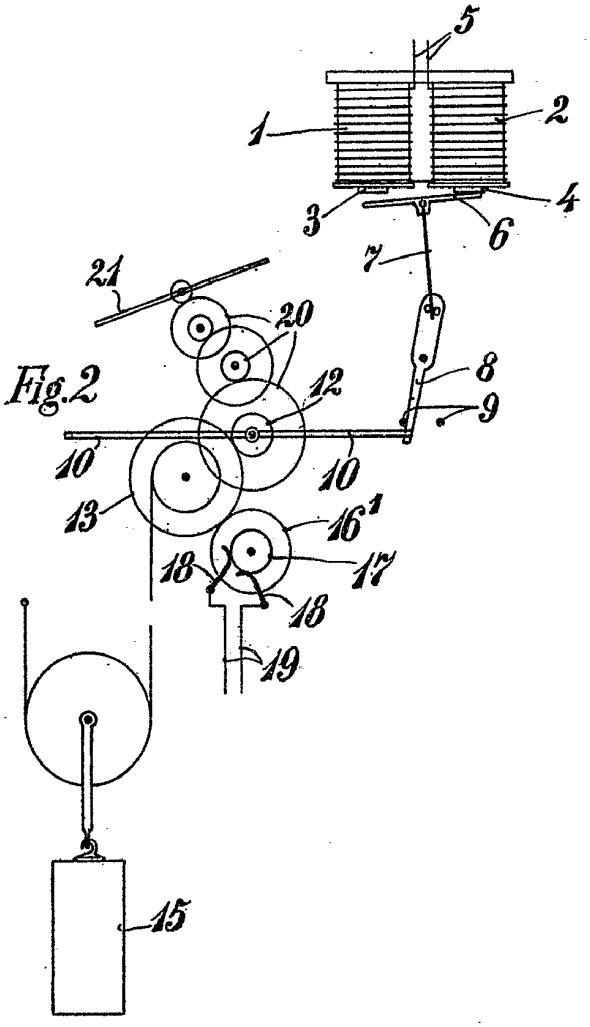

Fig. 2

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