

W. F. STRAUB.
SWITCHING DEVICE.
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1,176,178.

Patented Mar. 21, 1916.

Fig. 1.

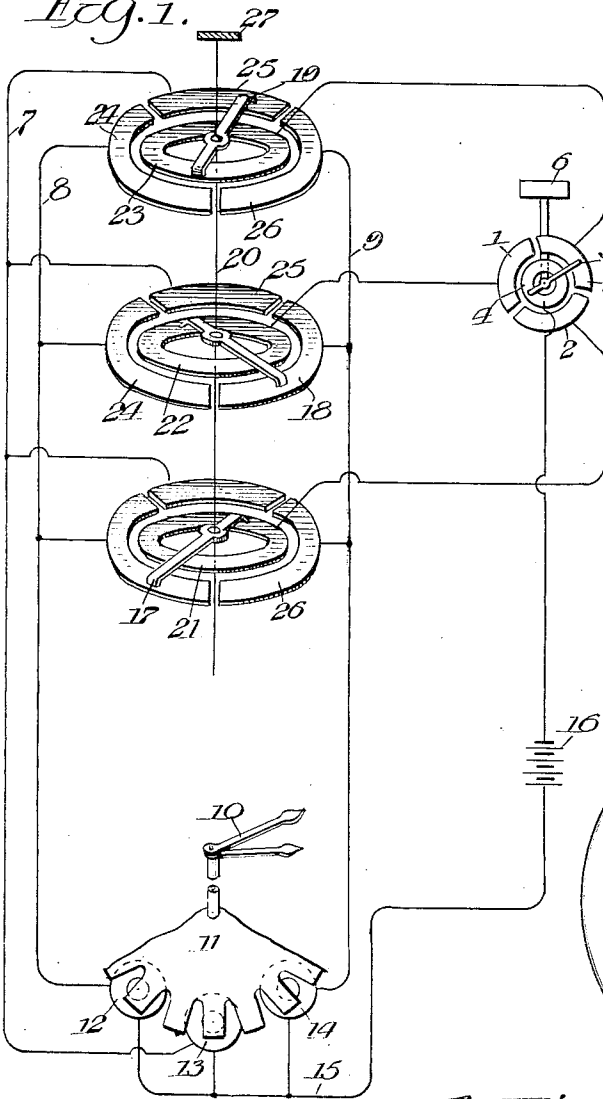


Fig. 2.

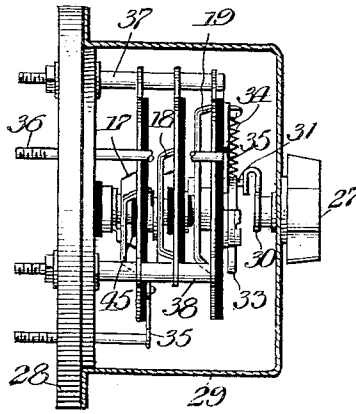


Fig. 3.

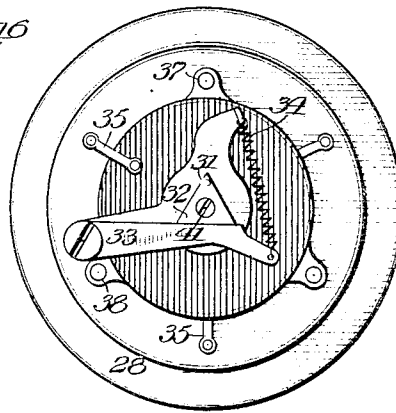
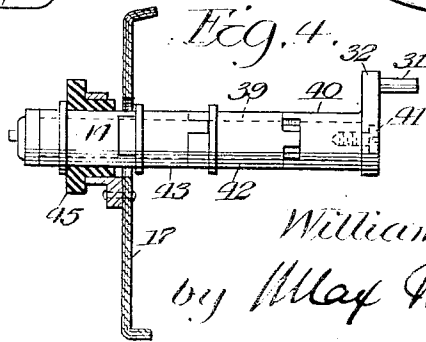


Fig. 4.



Witnesses
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UNITED STATES PATENT OFFICE.

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SWITCHING DEVICE.

1,176,178.

Specification of Letters Patent.

Patented Mar. 21, 1916.

Original application filed December 9, 1912, Serial No. 735,720. Divided and this application filed October 10, 1914. Serial No. 866,032.

To all whom it may concern:

Be it known that I, WILLIAM F. STRAUB, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in Switching Devices, of which the following is a full, clear, concise, and exact description, reference being had to the accompanying drawings, forming a part of this specification.

My invention relates to switching devices and has for its particular object the provision of a switching device adapted to control progressively a plurality of circuits, the switching device in its preferred form consisting of a plurality of synchronously movable switching elements.

One use to which my invention has been satisfactorily put is in connection with signaling systems such as disclosed in my copending application Serial No. 735,720, filed December 9, 1912, of which parent application this present application of mine is a division.

In order that my switching device may be best understood I will explain it as being part of a signaling system such as disclosed in my said co-pending application. In that particular system a secondary clock is provided with an armature, which armature controls the hands of the secondary clock, and which armature is under the influence of three electromagnets which periodically rotate said armature in accordance with impulses received over a line circuit from a prime mover or master clock. In devices of this kind it is frequently true that either the master clock has lost time or that on account of the stoppage of current or for other reasons the impulses have not been properly transmitted to set the secondary clocks. The master clock of course does not need to have any hands to indicate the time, the master clock serving merely to send the impulses at prescribed times. If therefore the secondary clocks do not indicate the correct time it is of great utility to have some device interposed between the master clock and the secondary clocks by reason of which additional impulses may be transmitted so that the secondary clocks may be properly set to indicate the correct time. My invention is designed to accomplish this result in such a manner that the master clock does not need to be changed at all or reset in order to reset the secondary clocks.

My improved switching device may of course be used to transmit the primary impulses direct if so desired.

I will describe one form which my invention may take by referring to the accompanying drawing in which—

Figure 1 is a diagrammatic view of apparatus arranged in accordance with my invention; Fig. 2 is a side view of the particular switch employed; Fig. 3 is a top view thereof with the cover removed, and Fig. 4 is a detail view of the shaft and its associated brushes.

Referring more particularly to Fig. 1, I set forth three contact segments 1, 2 and 3 which are adapted periodically to be connected with a central contact segment 4 through the agency of a brush 5, which brush 5 is rotated through the agency of any suitable master clock mechanism indicated at 6. The rotation of the brush sends impulses over the line wires 7, 8 and 9 through the interposition of suitable mechanism to be presently explained to actuate a secondary clock 10 whose hands are controlled through the agency of a suitable armature 11 under the control of three electromagnets 12, 13 and 14. A further line wire 15 having a source of current such as a battery associated therewith leads to a common terminal of the electromagnets 12, 13 and 14 and connects with the central contact member 4 of the master clock mechanism.

It will be seen that the position of the brush 5 governs as to which electromagnet is energized and the armature 11 moves progressively in one direction of rotation as in my said co-pending application in accordance with this cycle of energizations of the said electromagnets. Now if the secondary clocks do not indicate the proper time it is not necessary to interfere at all with the master clock which is a delicate mechanism, but I have provided means whereby impulses may be transmitted without interfering with the master clock. These means consist of three brushes respectively 17, 18 and 19 all mounted upon a common shaft 20, but insulated therefrom. These brushes bear respectively continuously upon centrally located contacts 21, 22 and 23 and are adapted to engage at their opposite extremities with three segmental contacts, each to each respectively 24, 25 and 26, all segments 24 being connected together to the conduc-

tor 8 and all segments 26 being connected together to the conductor 9. A suitable handle 27 is provided to rotate the shaft 20. Now whenever the shaft 20 is rotated it carries all of the brushes with it. In the position of the parts as shown, only the central contact 23 is alive. Now, rotating the shaft 20 will bring brush 19 respectively over the contacts 24, 25 and 26, and thereby successively energize magnets 12, 13 and 14 in the order named to thereby actuate the armature 11 and change the indication of the secondary clock 10. Should the brush 5 be on any other segment 2, for instance, then the brush 17 would perform the same service as the brush 17 under the conditions assumed. Similarly brush 18 would be operative if the brush 5 were temporarily in association with the segment 1. From this it will be seen that intermediate mechanism is provided to set the secondary clocks independently of the master clock.

The particular switch mechanism employed is shown more clearly in Figs. 2, 3 and 4 in which a suitable base portion 28 is provided with a cover 29, which cover has secured thereto the handle 27. This handle has a projection 30 adapted to engage a pin 31 provided upon the triangular element 32. This triangular element 32 is adapted to secure rotation of the brushes as will presently appear, an arm 33 held by a spring 34 in the position shown preventing the element 32 from occupying any but one of three normal resting positions to insure having the brushes 17, 18 and 19 at some point on the respective segmental contacts. The position of the parts as described in connection with Fig. 1 will be readily found in Fig. 2, projections such as 35 and contact posts such as 36 serving to conduct the terminals to the central segments 21, 22 and 23 respectively. The outer contact segments of which the corresponding ones are connected together are shown as connected together by the posts such as 37 and 38.

By referring to Fig. 4 it will be seen that the shaft 39 is controlled by the sleeve 40, which sleeve is secured to the element 32 by the screw 41. This sleeve 40 engages a projection on a sleeve 42, there being two additional sleeves 43 and 44, each interlocking by means of projections as shown. The sleeves 42, 43 and 44 are provided with an insulating collar 45 respectively to which the brushes associated with the particular sleeve are attached, the brushes of course being insulated from the respective sleeves upon which they are mounted.

From what has been described, the nature of my invention will be apparent to those skilled in the art, and the invention is of course capable of considerable modification from the structure herein disclosed.

Having however described herein one form which my invention may take, what I claim as new and desire to secure by Letters Patent is:

1. A device of the character described having a plurality of contact plates concentrically located in different planes, a plurality of contact segments circumferentially arranged about each plate and in the corresponding plane therewith, means for connecting the superposed contact segments together, a brush for the contact devices of each plane, and a shaft for moving said brushes.

2. A device of the character described having a plurality of contact plates concentrically located in different planes, a plurality of contact segments circumferentially arranged about each plate and in the corresponding plane therewith, means for connecting the superposed contact segments together, a brush for the contact devices of each plane, each brush being respectively in contact continuously with its associated contact plate and successively in contact with its various allotted contact segments, and a shaft for moving said brushes.

3. In a device of the character described the combination with a shaft, a plurality of insulating sleeves mounted upon said shaft and dovetailed together, and a switch spring mounted upon each insulating sleeve.

4. A device of the character described having a plurality of contact plates concentrically located in different planes, a plurality of contact segments circumferentially arranged about each plate and in the corresponding plane therewith, means for connecting the superposed contact segments together, a brush for the contact devices of each plane, a shaft for moving said brushes, and means whereby said shaft is automatically directed to and held in any one of a plurality of normal resting positions, said means including a triangular cam and a spring controlled arm associated with said cam.

In witness whereof, I hereunto subscribe my name this 26th day of September, A. D. 1914.

WILLIAM F. STRAUB

Witnesses:

FRED G. STRAUB,
J. A. LJUNGGREN.