

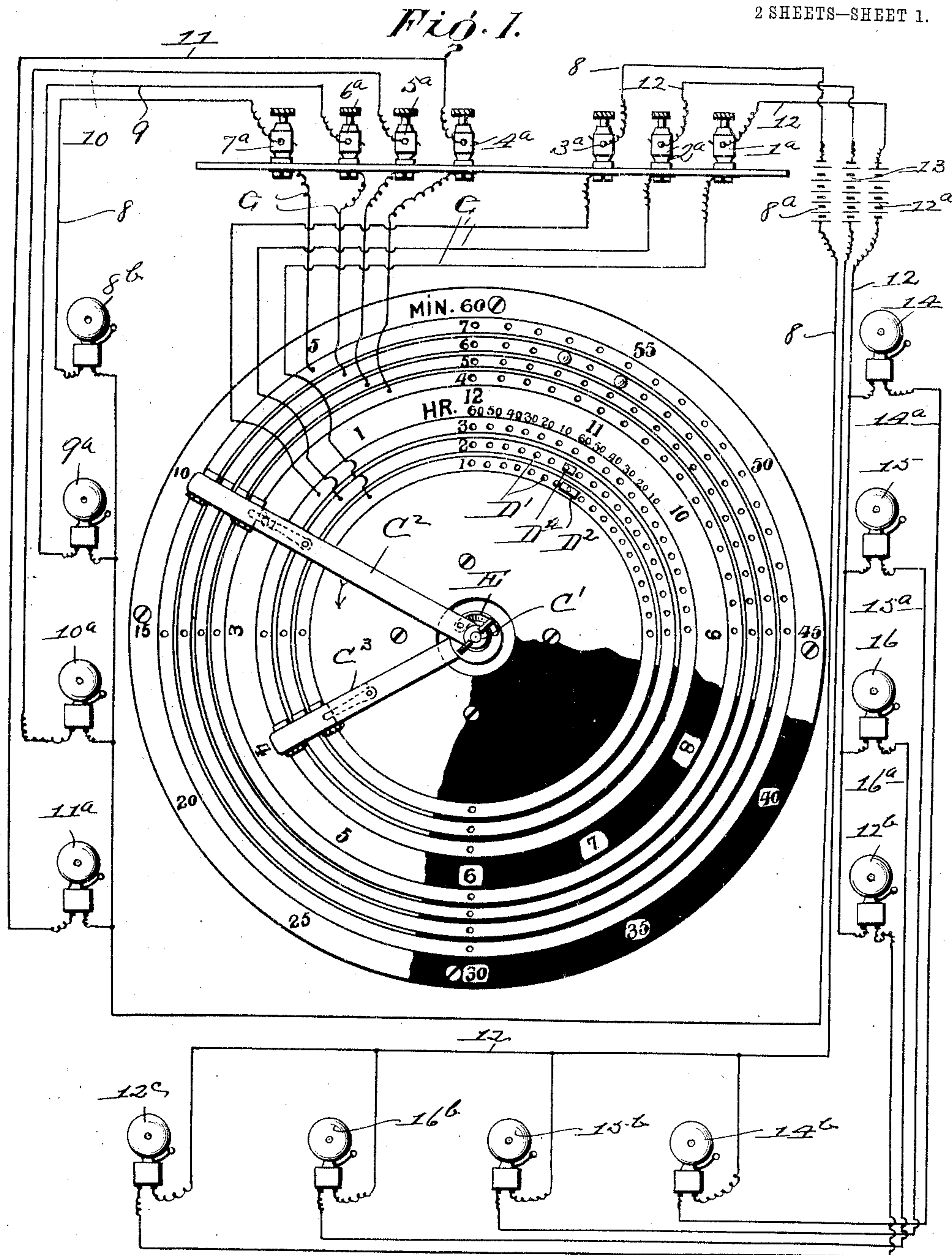
No. 885,953.

PATENTED APR. 28, 1908.

O. P. RAGAN.  
ELECTRICAL ATTACHMENT FOR CLOCKS.

APPLICATION FILED MAR. 6, 1906.

2 SHEETS—SHEET 1.



WITNESSES

W. W. Williams.  
E. B. McBath

INVENTOR

O. P. Ragan.  
By E. Meara & Brock  
Attys.

No. 885,953.

PATENTED APR. 28, 1908.

O. P. RAGAN.  
ELECTRICAL ATTACHMENT FOR CLOCKS.

APPLICATION FILED MAR. 6, 1906.

2 SHEETS—SHEET 2.

Fig. 2.

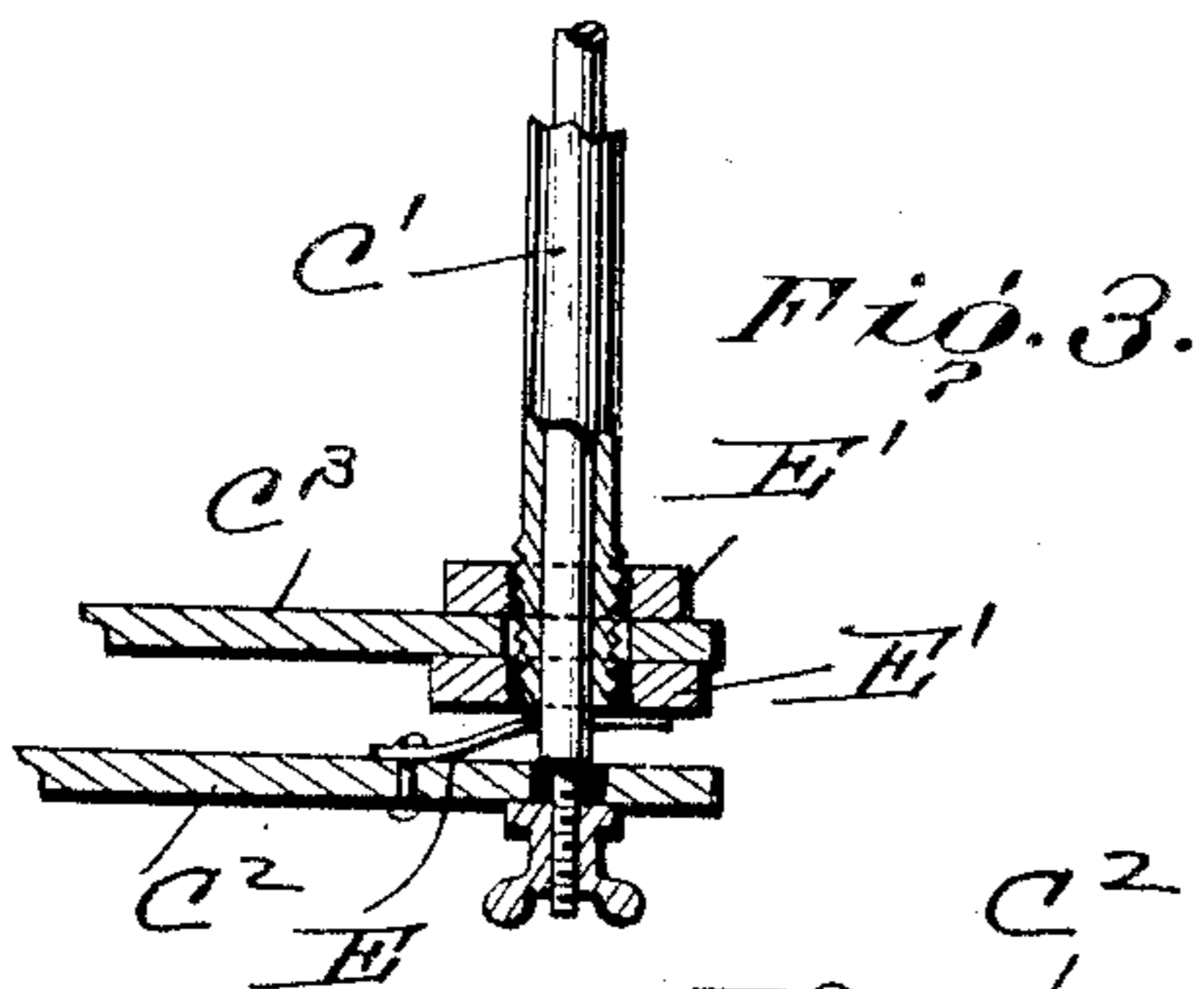
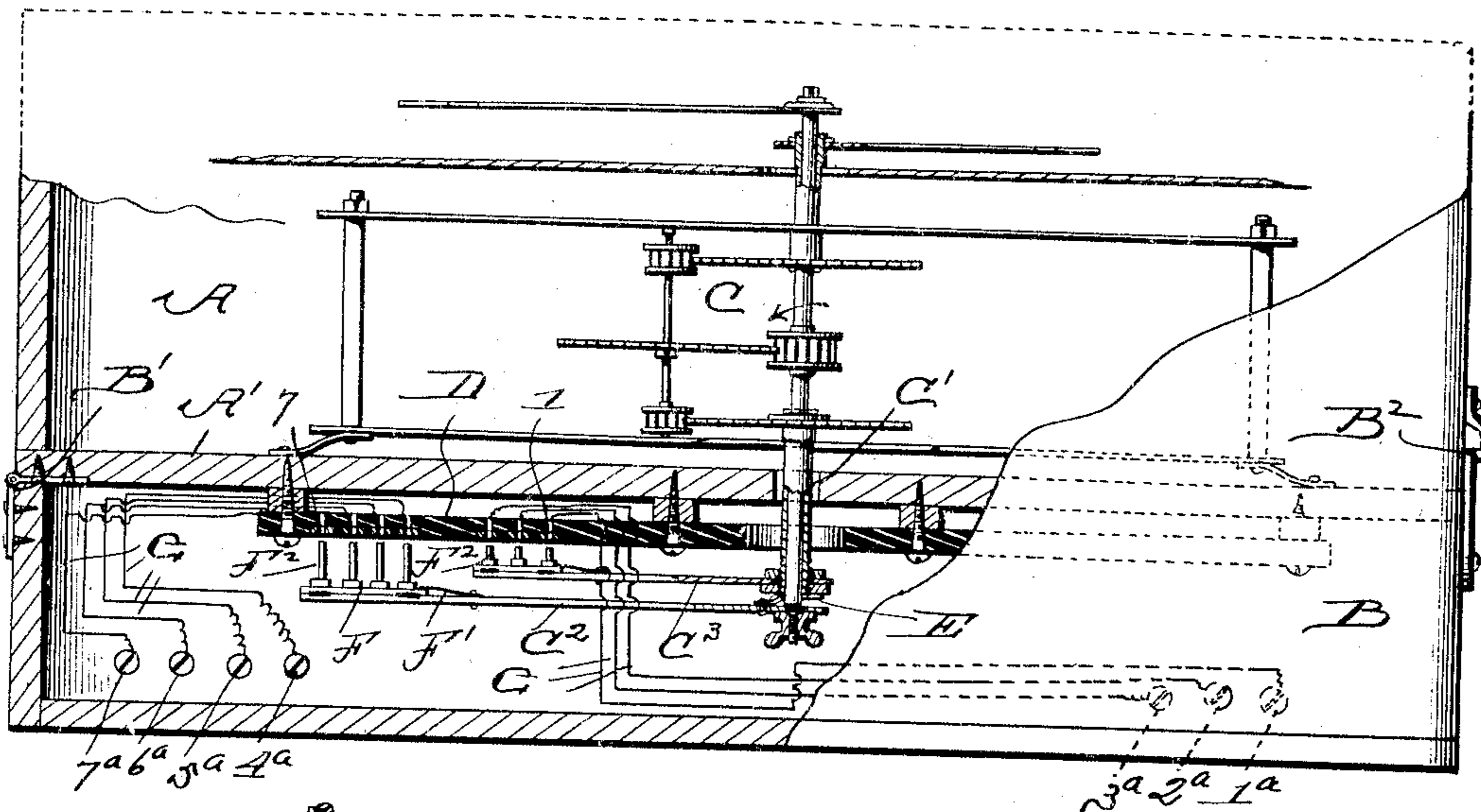


Fig. 3.

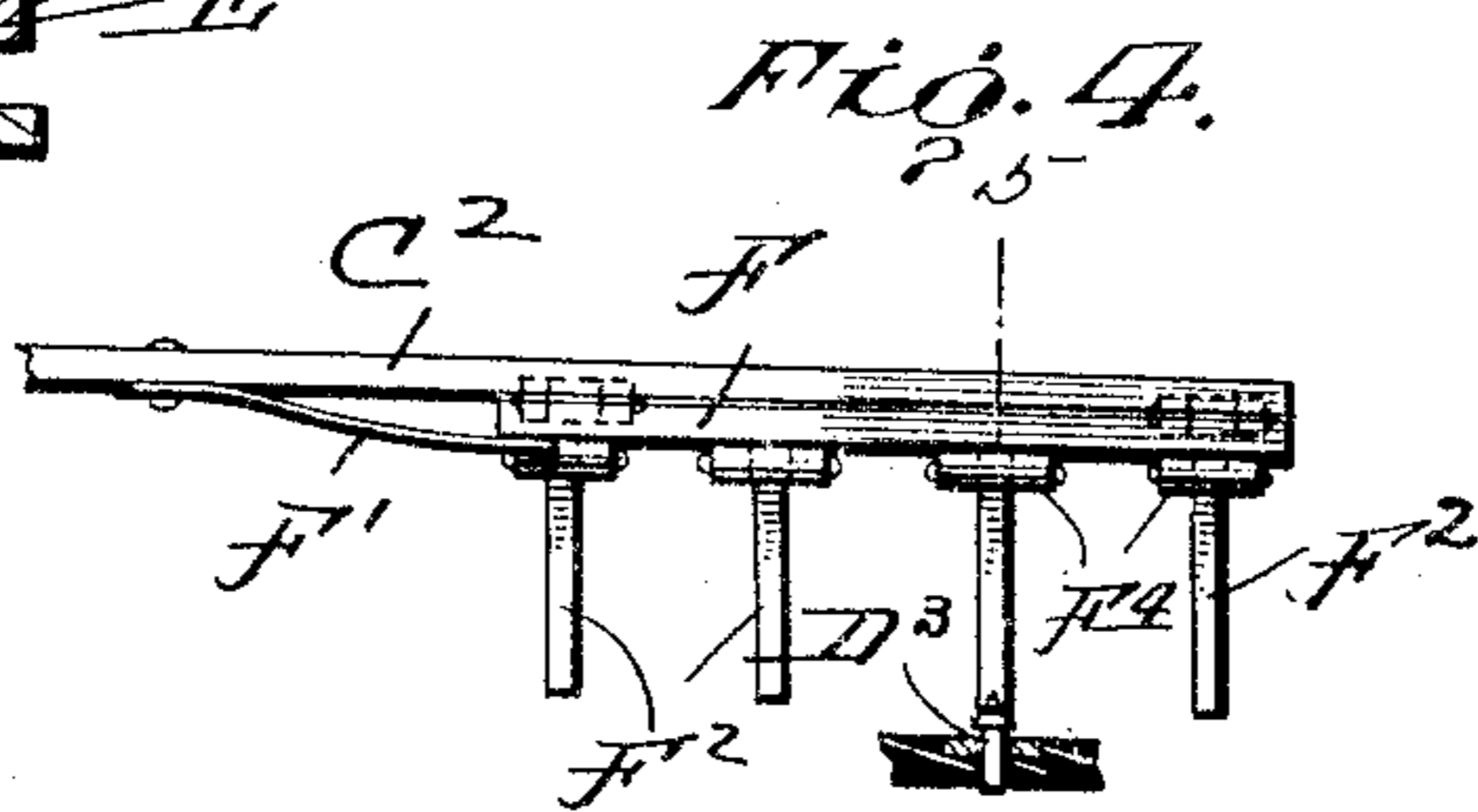


Fig. 4.

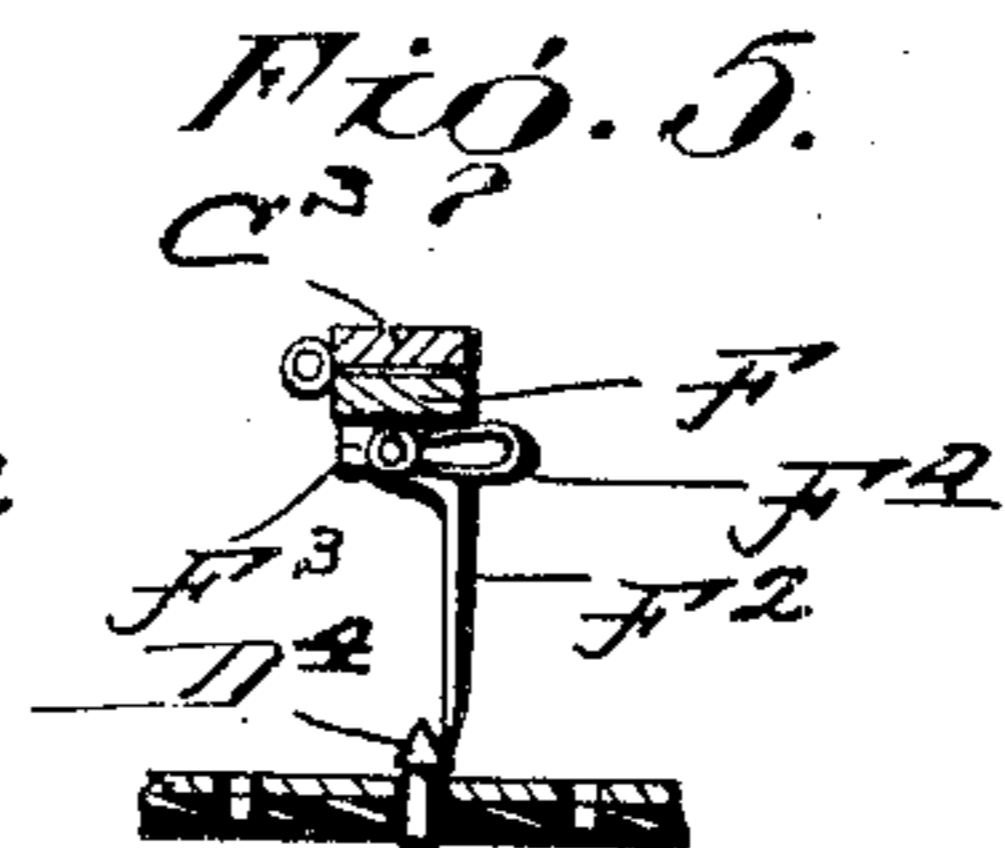


Fig. 5.

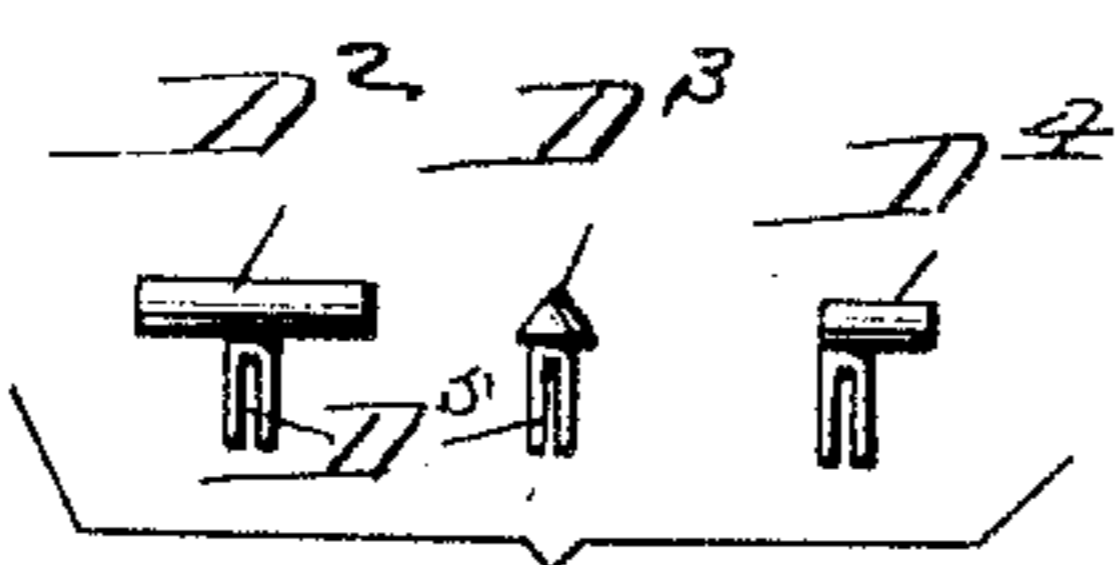


Fig. 6.

WITNESSES

W. A. Williams.  
E. B. McBath.

INVENTOR

O. P. Ragan.

By O. Mearns Brock  
Attys.

# UNITED STATES PATENT OFFICE.

OWEN P. RAGAN, OF RIDGEWAY, MISSOURI.

## ELECTRICAL ATTACHMENT FOR CLOCKS.

No. 885,953.

Specification of Letters Patent.

Patented April 28, 1908.

Application filed March 6, 1906. Serial No. 304,572.

*To all whom it may concern:*

Be it known that I, OWEN P. RAGAN, a citizen of the United States, residing at Ridgeway, in the county of Harrison and State of Missouri, have invented a new and useful Improvement in an Electrical Attachment for Clocks, of which the following is a specification.

This invention relates to that class of electrical clocks commonly known as program clocks, in which one or more alarms are electrically sounded at predetermined times.

While the invention herein described is not limited to the sounding of alarms in any particular place or for any special purpose, the invention is especially adapted for the use in large schools where a regular daily schedule is carried out in a number of different rooms and it is common to sound certain bells to indicate the time for changing classes.

The object of this invention is a clock provided with mechanism for making and breaking at predetermined times, certain electrical circuits the various bells in different rooms being placed in said circuits so that one or more of the bells will be sounded at certain hours during the day, and the object of the invention is also to provide a clock of this kind in which changes in the program can readily be made by removing or inserting plugs in suitable sockets formed in a portion of the mechanism.

The invention consists also in the novel features of construction hereinafter described and claimed, and shown in the accompanying drawings, in which,

Figure 1 is a diagrammatic representation of the mechanism circuits, and bells. Fig. 2 is a horizontal section taken centrally through the clock casing on the line of the cannon pinion, a portion of the top of the casing being broken away, in order to show the interior construction. Fig. 3 is a detail enlarged view partly in section illustrating the manner of securing certain indicating hands to an extra cannon pinion and means for electrically connecting the said hands. Fig. 4 is a side elevation illustrating the manner of connecting certain contact brushes to the free end portion of one of said hands. Fig. 5 is a section on the line 5—5 of Fig. 4. Fig. 6 is a detail view showing in side elevation, a number of plugs.

In these drawings, A represents a clock casing and A' represents the back of the said casing. To this clock casing is hinged a sup-

plemental casing B one of the hinges being shown at B' and the casing is locked in closed position, by a suitable catch or fastening device B<sup>2</sup>. The clock casing A contains the usual clock mechanism, a portion of which is shown at C and which is of the ordinary construction the only change being that the center pinion is extended through the back A' of the clock casing and is provided with an extra hour hand arbor C', which extends into the supplemental casing B. It will be obvious that this supplemental casing B is upon the rear face of the ordinary clock casing, the usual clock dial and hands being of course upon the front side.

Upon the rear face of the back A' and within the casing B is secured a disk D of a suitable insulating material, such as hard rubber and this disk has upon its face a series of rings 1, 2, 3, 4, 5, 6 and 7, which rings are arranged in two sets concentric with respect to each other and which will for convenience be termed the inner and outer sets. In a clock of the size indicated, the inner set consists of three concentric rings and the outer set of four rings. These rings are provided with a plurality of perforations or sockets D' to receive suitable plugs D<sup>2</sup> and D<sup>4</sup>, the plugs being of various lengths as clearly shown in Fig. 6, and having spring bifurcated shanks D<sup>5</sup> by means of which they are securely held in the sockets D'. Upon the cannon pinion C', and insulated therefrom are two hands C<sup>2</sup> and C<sup>3</sup> and as these hands are upon what may be termed the rear face of the clock, they travel from right to left instead of left to right, as is the case with the dial hands.

From Figs. 1 and 2 it will be noted that the hand C<sup>2</sup> is the longer and its outer end portion travels over the outer set of rings, while the end portion of the shorter hand C<sup>3</sup> travels over the inner set of rings. The hand C<sup>3</sup> is mounted loosely upon the hour hand arbor C' and is held between metal nuts E', which are threaded upon said cannon pinion and which are insulated from the same. A contact spring E is secured at one end upon the hand C<sup>2</sup> and its free end is in dragging contact with the adjacent nut E' and an electrical contact is therefore maintained at all times between the hands C<sup>2</sup> and C<sup>3</sup>. Upon the outer end portion of each of the hands C<sup>2</sup> and C<sup>3</sup> is hinged the plate F, which is normally held folded in contact with the hand by a spring F'.

Each of the hinged plates F has pivotally

suspended from it, a plurality of brushes  $F^2$ , which may be of copper strips and these brushes are normally held in a vertical position by a spring  $F^4$  the brushes being  
 5 mounted upon the pivoted pins  $F^3$ . The number of brushes carried by each hand will be equal to the number of rings in the set over which the free end portion of said hand travels. These brushes register with the  
 10 rings 1, 2, etc. and aline with the perforations  $D'$ . Upon any suitable portion of the clock frame or casing are mounted a plurality of binding posts  $1^a, 2^a, 3^a, 4^a, 5^a, 6^a, 7^a$ , each of which is connected by a conductor wire  $G$   
 15 to one of the rings 1, 2, etc., and in the order named. The following electrical circuits are then formed:—A conductor wire 8, leads from a battery  $8^a$  to the binding post  $3^a$ , and from the battery  $8^a$  through a bell  $8^b$  to the  
 20 binding post  $7^a$ . It will be obvious therefore, that as the binding post  $3^a$  is electrically connected to ring 3, which is the outer ring of the inner set and the binding post  $7^a$ , is connected to the ring 7, which is the outer ring  
 25 of the outer set, that the outer ring of the two sets are connected together through the said circuit, and that all that is necessary to bridge and complete the said circuit is a connecting strip from one ring to the other.  
 30 This connecting strip is formed by the brushes  $F^2$  hands  $C^2$  and  $C^3$ , spring  $E$ , and the plugs  $D^2, D^3$  or  $D^4$ . As the brushes do not contact directly with the rings it will be obvious that if no plugs are inserted in any of  
 35 the sockets  $D'$ , there will be no complete electrical circuit formed as the circuit will be broken in two places, that is, at the gaps between the lower ends of the brushes and rings.  
 40 In the diagram shown in Fig. 1, no plugs are shown in either rings 3 and 7, and there is therefore no complete circuit formed through the wire 8, battery  $8^a$  and bell  $8^b$ . Other circuits are formed as follows:—From  
 45 the binding post  $2^a$  by a wire 12, which circuit includes a battery 13, and also a battery  $12^a$  and bells  $12^b$  and  $12^c$ . It will be noted that the two batteries are in series and that the circuit includes two bells. The circuit  
 50 formed by the wire, 12, leads back to the binding post  $1^a$  and rings 1 and 2, are included in the said circuit. Shunt circuits  $14^a, 15^a, 16^a$  are also connected to the circuit 12 and include bells 14 and  $14^b, 15$  and  $15^b,$   
 55  $16$  and  $16^b$ , respectively. A circuit 9, is formed from the binding post  $6^a$  and includes a bell  $9^a$  after which it taps the wire 8. A shunt circuit 10, leads from the binding post  $5^a$  around the bells  $8^b$  and  $9^a$  to a bell  
 60  $10^a$  and then to the wire 8. A similar circuit 11, leads from the binding post  $4^a$  around the bells last mentioned and to a bell  $11^a$  and then to the wire 8. It will be noted that the binding posts  $4^a, 5^a, 6^a$  and  $7^a$ , all of  
 65 which are connected by the wires  $G$  to the

rings of the outer set are in circuit with the battery  $8^a$ , while all of the binding posts in electrical connection with the rings 1, 2 and 3, are in circuits which include the two batteries  $12^a$  and 13.

Suitable numerals designating the hours are placed upon the disk  $D$  as upon an ordinary clock dial with the exception that these numerals read in the reverse direction.

Numerals are arranged adjacent the sockets  $D^1$  and read 10, 20, 30, etc. up to 60, the said sets of numerals being arranged to follow each hour numeral and indicate minutes past the hour. It will therefore be obvious that the distance between the sockets  $D'$ ,  
 75 represent intervals of ten minutes duration and that the brushes  $F^2$  will occupy ten minutes in traveling from one socket to the other. It will also be obvious that when plugs are inserted in any two rings so as to connect  
 80 those rings in an electrical circuit, that the duration of such circuit will depend upon the length of the plug, and that by using plugs of various lengths a circuit can be formed when the brushes are between the  
 90 sockets. For example, in Fig. 1, I have shown a plug  $D^2$ , which is of considerable length arranged in a socket  $D'$  which the hour and minute numerals 10 and 50 is in a position to be registered with by one of the  
 95 brushes  $F^2$  at 50 minutes past ten. But it will be noted that owing to the length of the plug, the brush  $F^2$  which travels over the ring 1, will come into contact with said plug, about 10:45. No alarm however, will be  
 100 sounded at this time as two plugs are necessary to complete an electrical circuit. A plug  $D^4$  which is much shorter than the plug  $D^2$ , is inserted in a socket of the ring 2 at a point which is indicated by the numerals to  
 105 be 60 minutes past 10, or 11 o'clock. This plug however, is taken so as to extend toward the socket alining with the numerals 50 and overlaps the adjacent end portion of the plug  $D^2$ . After the brush  $F^2$  carried by  
 110 the arm  $C^3$  and traveling over the disk 1, has contacted with the plug  $D^2$  for a period of about 10 minutes, the brush  $F^2$  and also carried by said arm and traveling over the ring 2, will engage the plug  $D^4$ , and a circuit will  
 115 therefore be completed at 10:55. This circuit will be as follows:—from the battery  $12^a$ , through the wire 12, to the binding post  $1^a$ , by the connecting wire  $G$  to the ring 1, the plug  $D^2$ , brush  $F^2$  of the hand  $C^3$ , plug  $D^4$ ,  
 120 ring 2, the connecting wire  $G$ , leading to the binding post  $2^a$ , wire 12, battery 13, and through the shunt circuits  $14^a, 15^a$ , and  $16^a$  and ringing bells 14, 15, 16,  $12^b, 14^b, 15^b, 16^b$  and  $12^c$ . It will be obvious therefore that  
 125 these two plugs so arranged will cause 8 bells placed in different rooms of the school building, to ring at a certain predetermined time. It will also be obvious that if a plug  $D^3$  were inserted in ring 3, opposite the hour numeral  
 130

10, and in the fourth socket past the minute numeral 50 of the ring 7, a circuit would be established at 54 minutes past 10 which would include the rings 3 and 7 and the circuit 8 including battery 8<sup>a</sup> and bell 8<sup>b</sup> and that the bell 8<sup>b</sup> only would ring at 10:54. It will be obvious therefore that by a similar arrangement of plugs a single bell can be rung, at a predetermined time and one minute afterwards 8 bells may be simultaneously rung, all of the bells being arranged in different portions of the building. It will also be obvious that where a daily program is carried out, the various plugs can be put into position and the casing B closed and the program will be rung off day after day without any further attention upon the part of an attendant other than the usual winding of the clock mechanism. Also that this program can be changed in whole or in part at any time, by simply removing some of the plugs, changing their position, or inserting one or more additional plugs.

Having thus fully described my invention, what I claim as new and desire to secure by Letters Patent, is:—

1. The combination with a clock, a center pinion of said clock, extending through the rear portion of the clock casing, of an extra

cannon pinion secured to said extended portion of the center pinion, hands carried by the extra hour hand arbor, means for completing electrical circuits through said hands, a nut threaded upon the hour hand arbor and insulated therefrom and engaged with one of the hands, and a spring secured to the other hand and having its free end dragging upon said nut.

2. A device of the kind described comprising a disk having two sets of concentric conducting rings, carried thereby, each ring having a plurality of sockets formed therein, electrical circuits, including said rings, the said circuits being broken between the rings, movable plugs adapted to fit in said sockets, hands adapted to travel over the disk synchronously with the hands of the clock, plates hinged to the hands, brushes pivoted to the plates, means for holding the plates parallel to the hands, each brush alining with one of the rings, and means for electrically connecting the said rings when two or more brushes are in engagement with two or more of the said plugs.

OWEN P. RAGAN.

Witnesses:

A. A. GUTTERRIDGE,  
J. A. LINTHACUM.