

S. R. WRIGHT.  
SELECTIVE SIGNALING DEVICE FOR RAILWAYS.  
APPLICATION FILED AUG. 24, 1908.

928,570.

Patented July 20, 1909.  
4 SHEETS—SHEET 1.

FIG. 1.

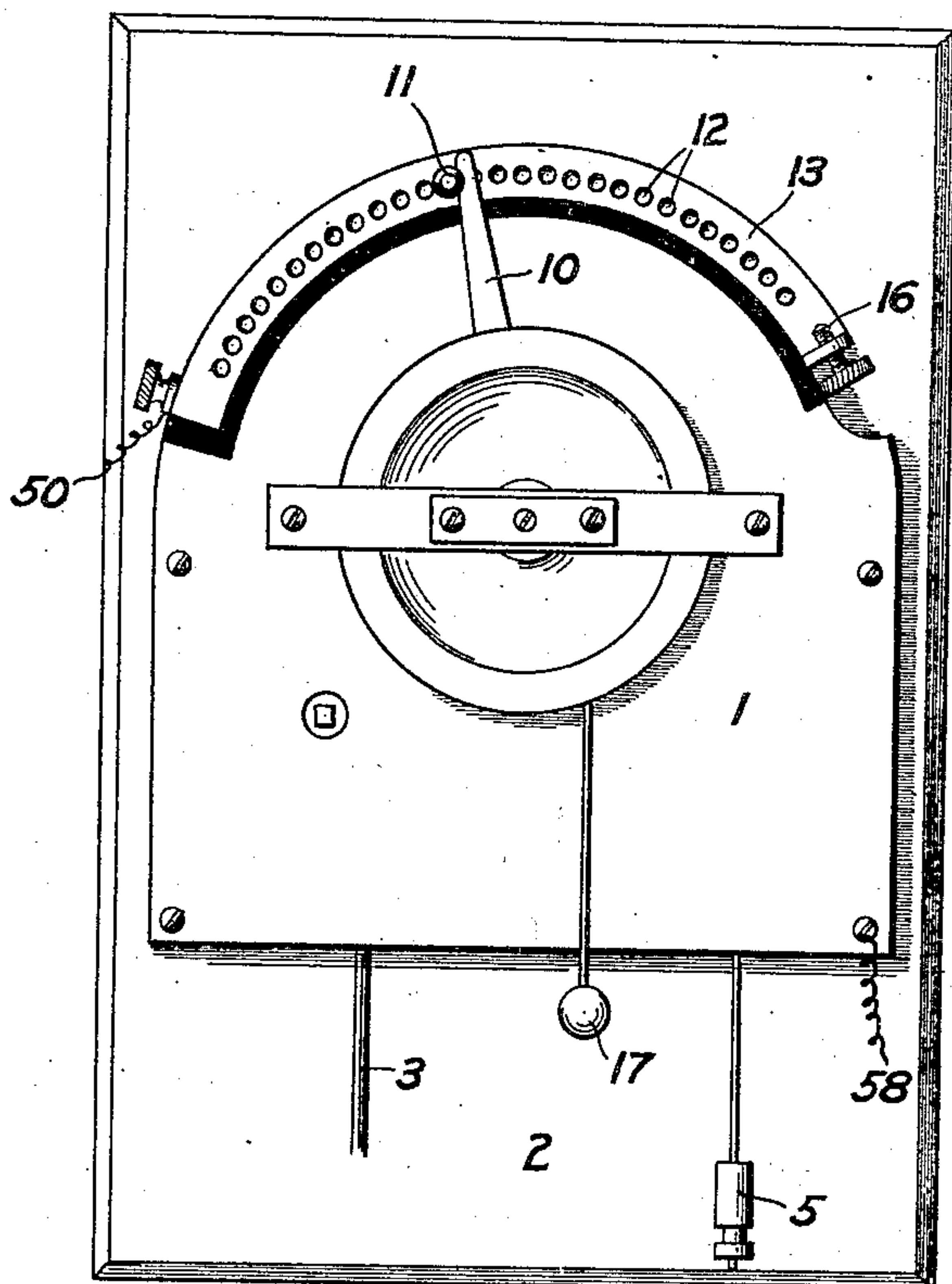
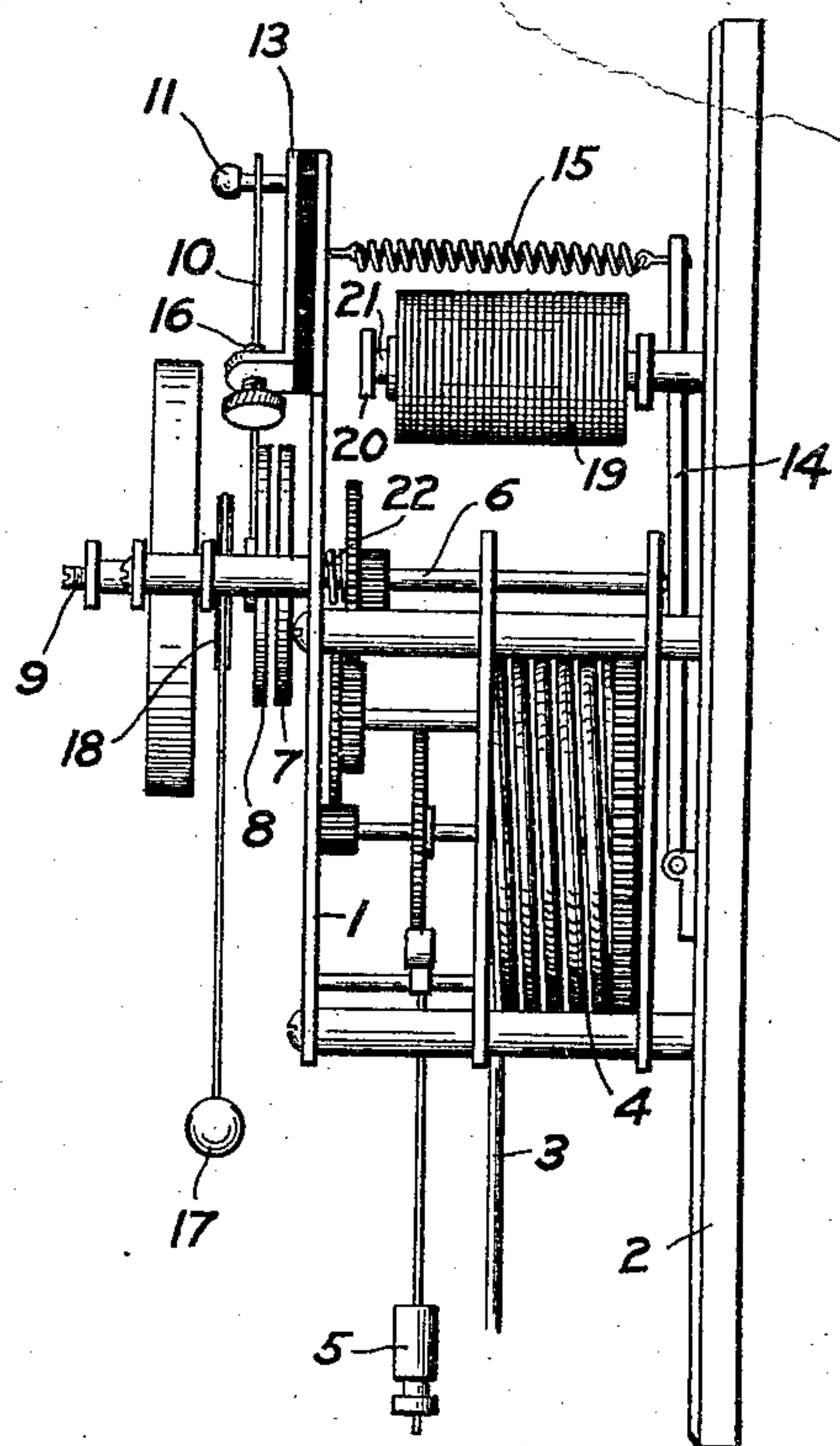


FIG. 2.



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FIG. 3.

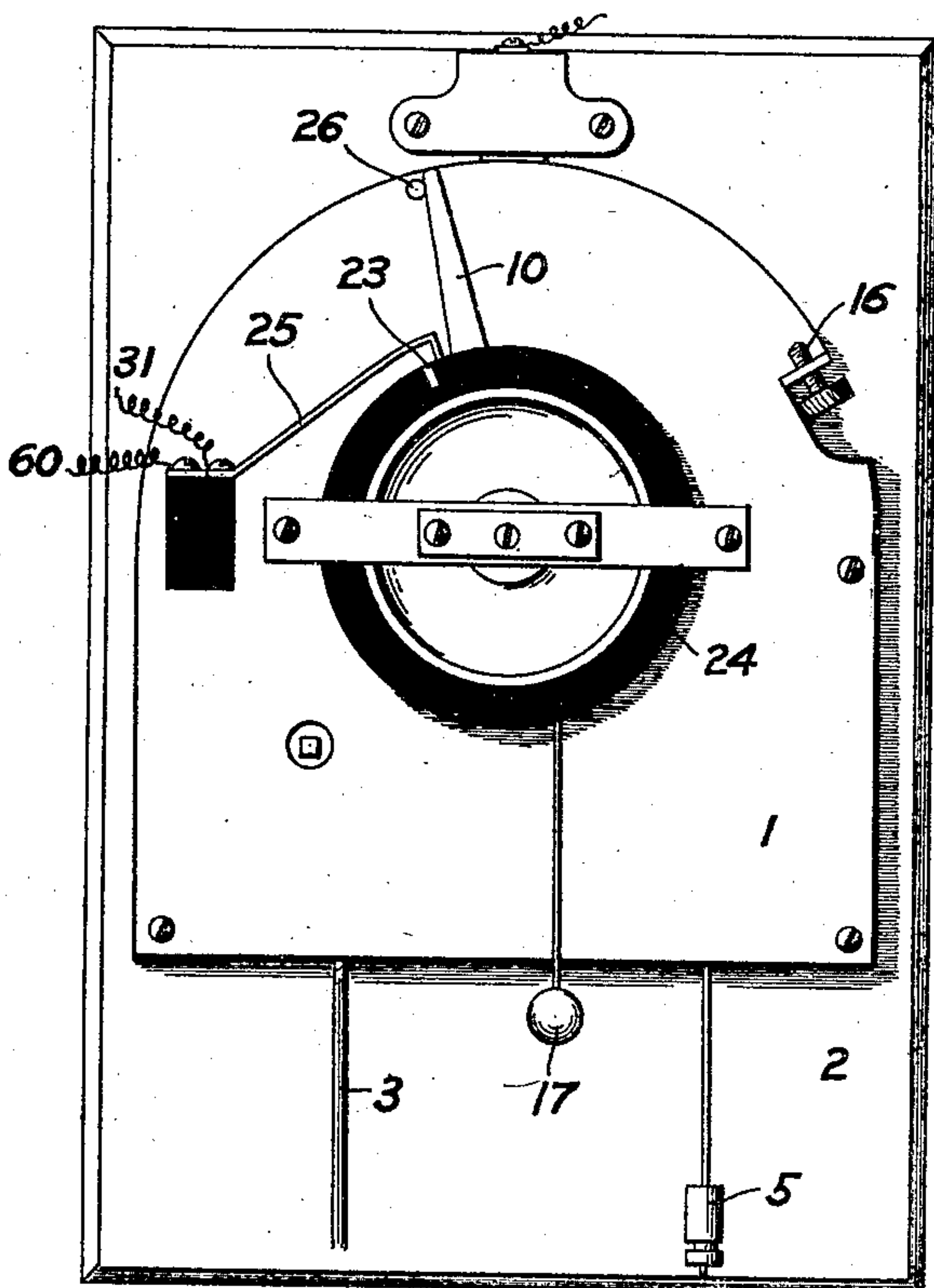


FIG. 4.

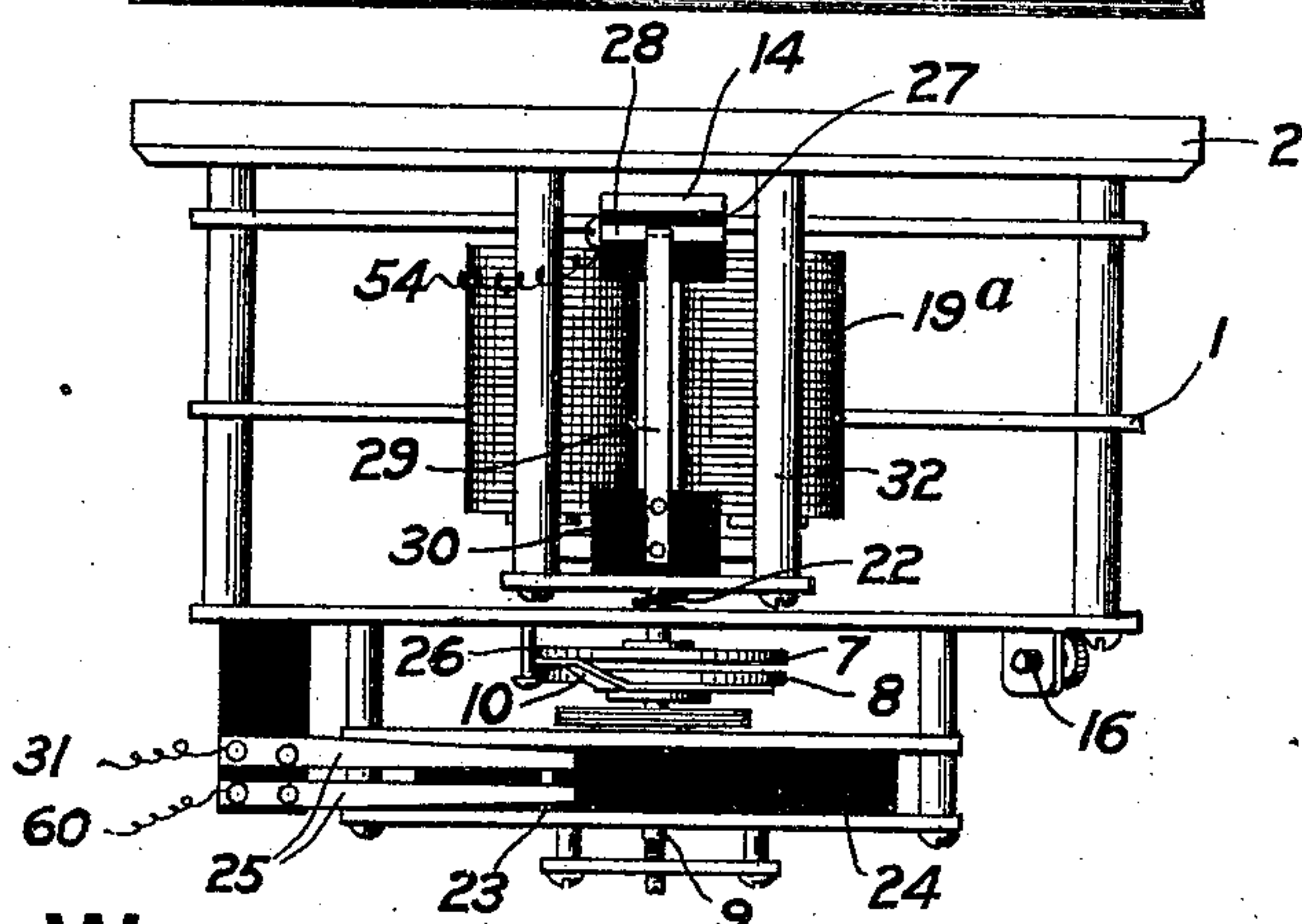
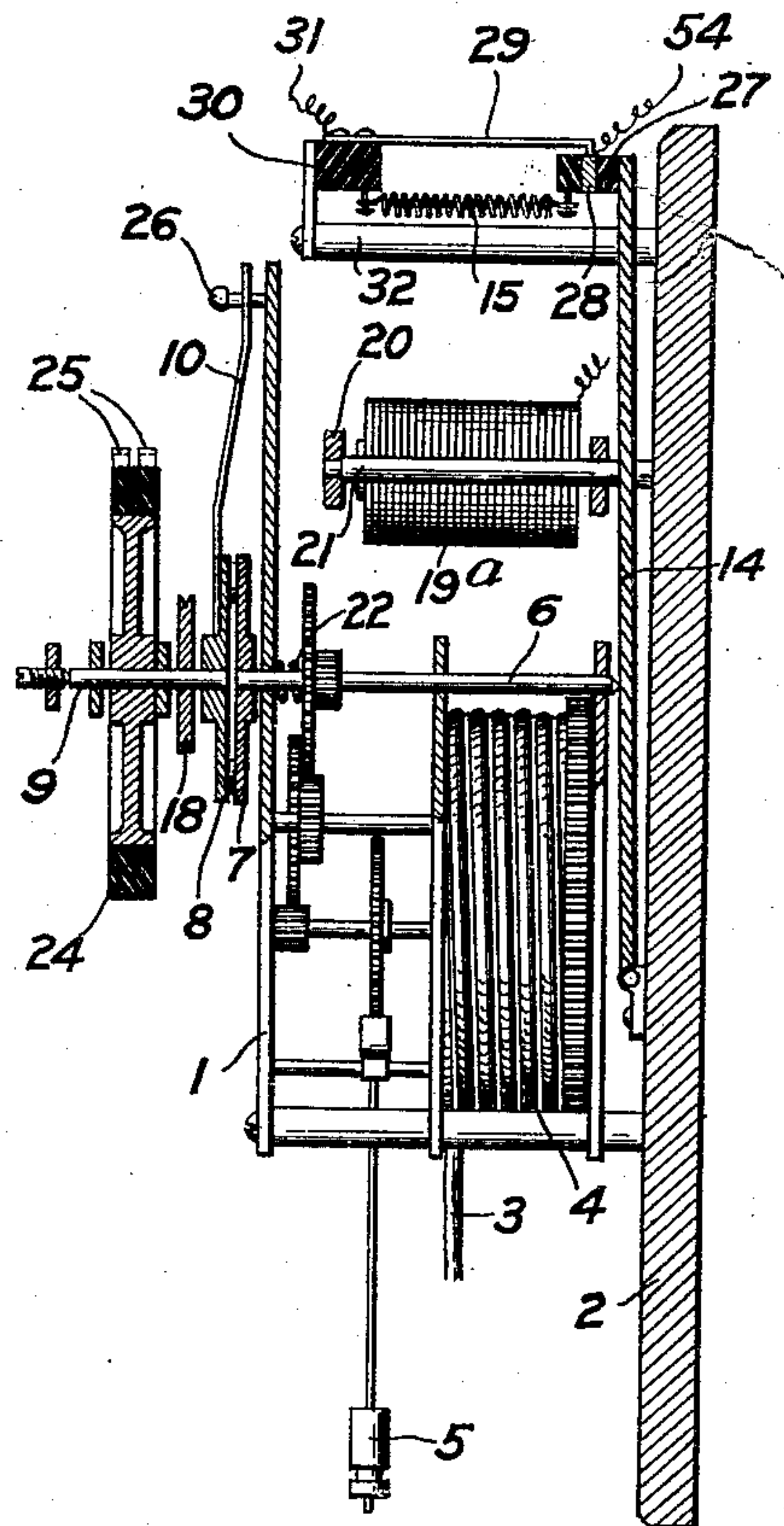


FIG. 5.

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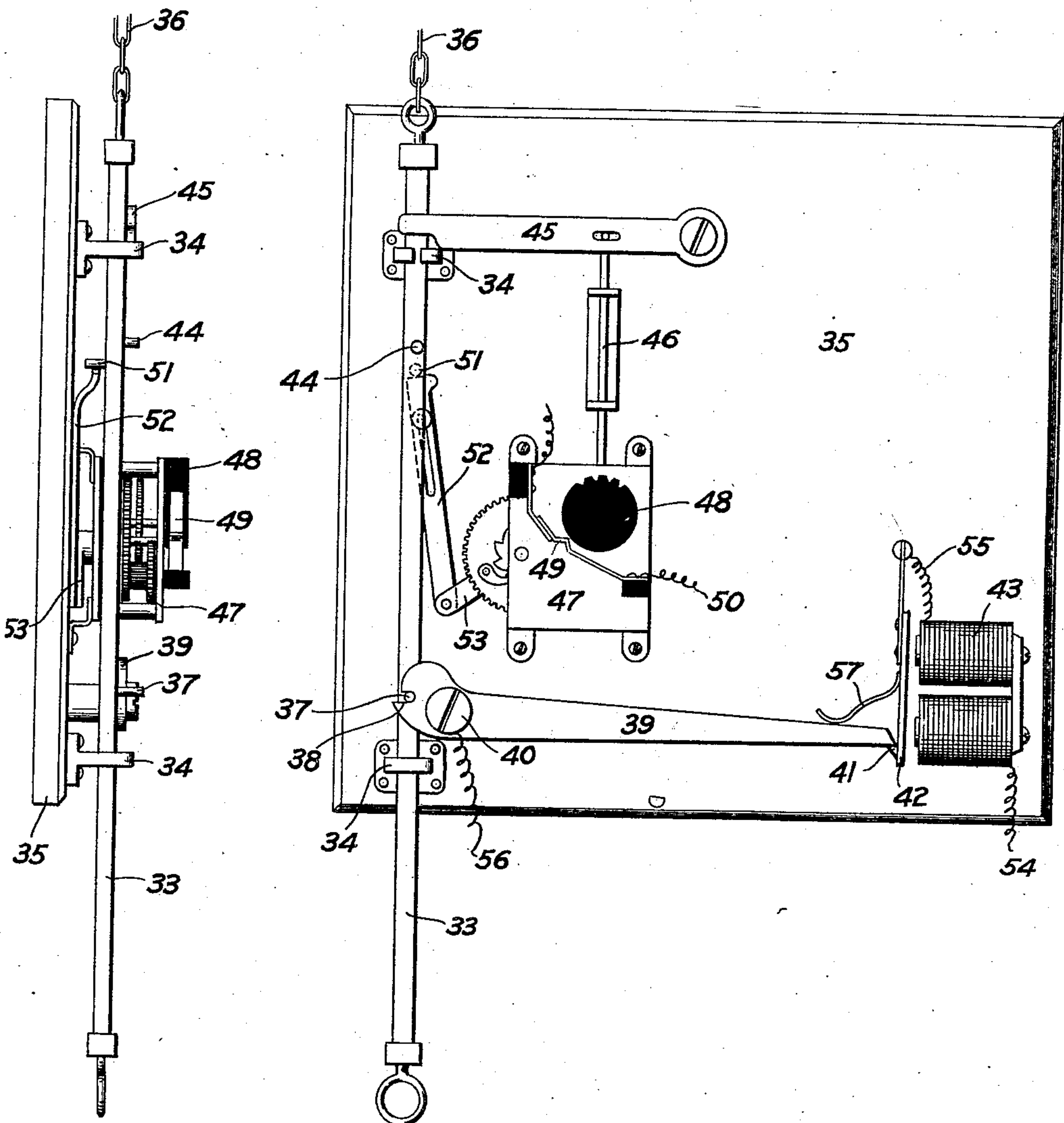
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4 SHEETS—SHEET 3.

FIG. 7.

FIG. 6.



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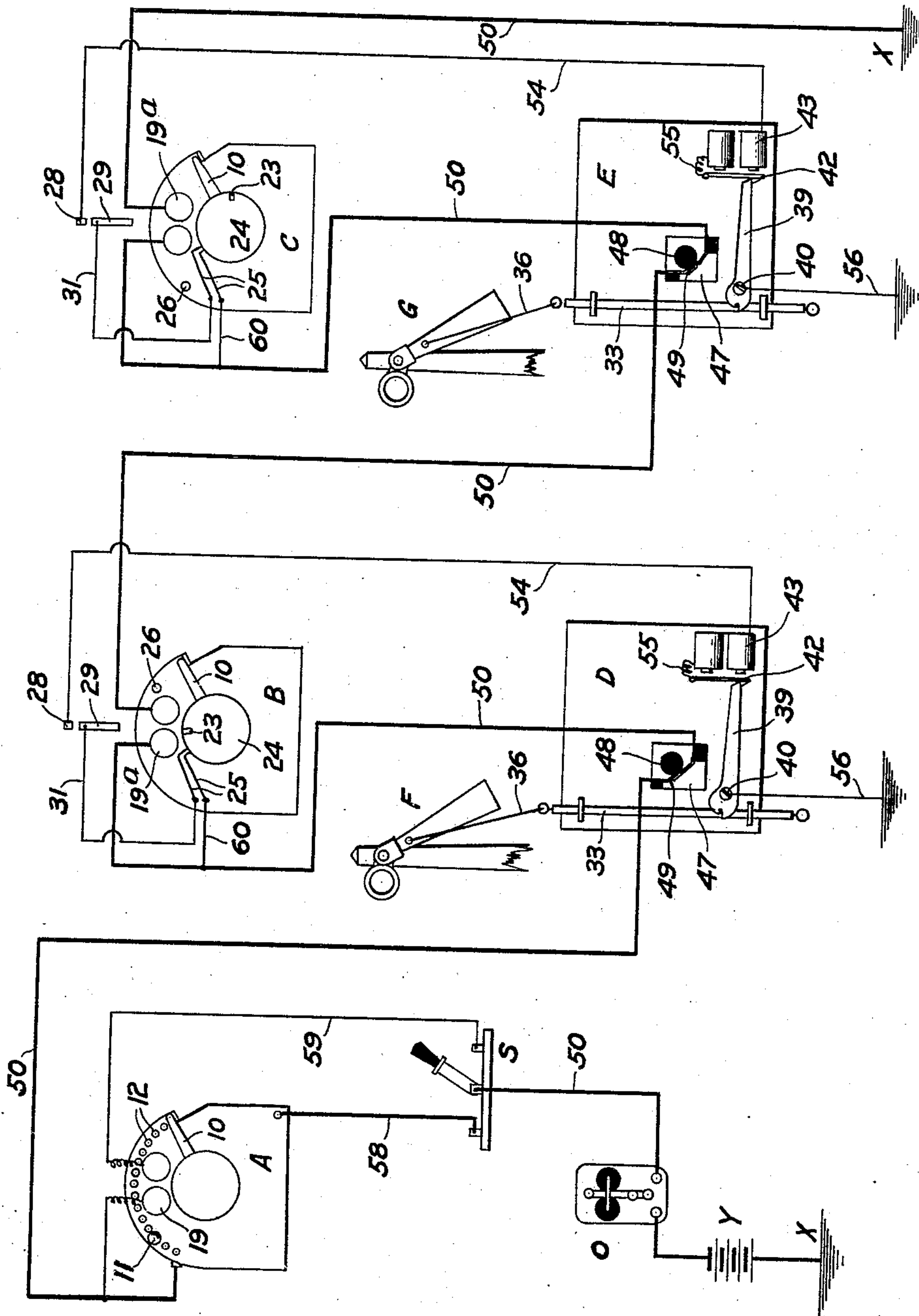
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4 SHEETS—SHEET 4.

FIG. 8.



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# UNITED STATES PATENT OFFICE.

SELDEN R. WRIGHT, OF ROCHESTER, NEW YORK, ASSIGNOR TO TELEGRAPH SIGNAL COMPANY, OF ROCHESTER, NEW YORK, A CORPORATION OF NEW YORK.

## SELECTIVE SIGNALING DEVICE FOR RAILWAYS.

No. 928,570.

Specification of Letters Patent.

Patented July 20, 1909.

Application filed August 24, 1908. Serial No. 450,041.

*To all whom it may concern:*

Be it known that I, SELDEN R. WRIGHT, a citizen of the United States, and resident of Rochester, in the county of Monroe and State of New York, have invented certain new and useful Improvements in Selective Signaling Devices for Railways, of which the following is a specification.

This invention relates to selective signaling devices, and consists in the construction and combined operation of the apparatus herein described and claimed.

In the drawings: Figure 1 is a front elevation of the selector; Fig. 2 is a side elevation thereof; Fig. 3 is a front elevation of a local instrument; Fig. 4 is a central vertical section of the same; Fig. 5 is a top plan view; Fig. 6 is a front elevation of the signal releasing mechanism, or "trip;" Fig. 7 is a side view of the same; and Fig. 8 is a diagram of the electrical connections of the system.

The system comprises a line wire grounded at each end, and a number of instruments connected therewith in series, the "selector" being at the controlling or operating station, and a "local" instrument being at each line station. The line is normally in open circuit, but when current is placed upon it, movable contact-making devices on all the local instruments and the selector are carried to a "zero" point, and occupy identical positions. When the line is again opened, said movable contact-makers travel synchronously through identical paths, and in so doing are each carried across a stationary contact, which occupies a different position relatively to the "zero" point, on each local instrument.

On the selector is a variable contact, which may be placed at will by the operator in a position corresponding to that occupied by any one of the aforesaid stationary contacts on the local instruments. Therefore, with said variable contact placed in a given position on the selector, and the movable contact-makers on all the instruments moving together through identical paths, it is evident that the movable contact-maker on the selector will strike the variable contact placed thereon, at the same instant that the contact-maker on a local instrument strikes the stationary contact of said instrument. The latter is the instrument in which the position of the stationary contact corresponds

to the position of the variable contact placed on the selector. When the action just described occurs, a circuit is completed through a signal-operating mechanism at the selected station, and said signal is operated without affecting any of the other instruments or signals. Immediately upon the movement of the signal, the line is automatically broken, and becomes dead again. Means are also provided whereby the movement of the signal is indicated at the controlling station.

The selector (Fig. 1) comprises a motor 1, mounted on a wall-panel 2. A clock mechanism is employed as a motor in the present case, and is operated by a weighted cord 3 that is wound on a drum 4. The mechanism is governed by a suitable regulator, as, for instance, the pendulum 5. A secondary shaft 6 of the motor carries on its outer end a disk 7, that is adapted to frictionally engage a similar disk 8 on the inner end of a shaft 9 that is concentric with said shaft 6. The shaft 8 carries the movable contact-maker aforesaid, which is a hand or bar 10. It is apparent that movement is communicated from the motor to the hand 10 when the clutch disks 7 and 8 are in engagement. The variable contact of the selector is a metal plug 11, that may be inserted in any one of a series of holes 12 in a metal arc 13. The latter is insulated from the motor 1 and the hand 10 moves parallel with and a short distance in front of it (Fig. 2). The clutch disks 7 and 8 are normally held in engagement by a pivoted bar 14 that is pulled forward by a spring 15 and presses on the inner end of the shaft 6. When the said disks are separated (by means about to be described), the hand 10 is brought to the "zero" point 16 by the action of a weight 17 hanging on a cord that is wound about a pulley 18 on the shaft 9. The means for disconnecting the clutch disks 7 and 8 is an electromagnet 19. The armature 20 of said magnet is carried on a stud 21 that projects from the bar 14. When the magnet is energized, the action of the spring 15 is overcome, and the clutch disks are separated by the action of a coiled spring 22 that presses upon the front side of the pinion on the shaft 6.

The mechanism of the local instruments (Figs. 3, 4 and 5) is identical with that of the selector. All local instruments used in the system are exact duplicates. In the drawings, corresponding parts of the se-



lector and local instruments bear the same reference numerals, with the exception of the electromagnet which is designated 19<sup>a</sup>. Therefore, no further description of the motor and connected parts is necessary.

The movable contact on the local instruments is a metal block 23, set in the edge of a nonconducting disk 24 on the shaft 9. A pair of brushes 25 lie in contact with the periphery of the disk 24, and are insulated from each other, so that electrical connection is established between them when the block 23 touches their ends.

A pin 26 is placed in the front plate of the motor and acts as a stop for the hand 10. As the motor is normally connected to the hand 10 through the clutch disks 7 and 8, the said hand is carried up against the pin 26 and the motor is thus compelled to stop until said clutch disks are disengaged. The block 23 in this position is just beyond the ends of the brushes 25.

On the upper end of the bar 14 is a piece of insulating material 27, in which is set a strip of metal 28. When the magnet 19<sup>a</sup> is deenergized (its normal condition), the strip 28 touches the end of a brush 29 that is fastened on a nonconducting block 30. A wire 31 leads from said brush to one of the brushes 25. The block 30 is supported on the end of studs 32 that project from the panel 2. When the magnet 19<sup>a</sup> is energized, the bar 14 is carried backward as before described, and connection is broken between the brush 29 and the strip 28.

The signal-operating device in the present instance is an apparatus which normally maintains a semaphore in the "safety" position, but allows the same to assume the "danger" position through the action of its counterweight when the device receives an electrical impulse.

A rod 33 is slidably mounted in guides 34 on a wall-panel 35, and has a cable 36 at its upper end which is connected to a semaphore blade, or to means adapted to move said blade to "safety" position. A pin 37 on said rod engages a notch 38 in a lever 39 that is pivoted at 40. The long end of said lever rests on a lug 41 that projects from the armature 42 of an electromagnet 43, and thereby maintains the rod 33 in the position shown against the pull of the semaphore on the cable 36. When the latter is energized, the armature 42 is moved and the lug 41 can no longer support the end of the lever 39. The continuous pull on the cable 36 from the semaphore then raises the bar 33. A pin 44 on the latter strikes the under side of a pivoted arm 45 and raises it. A rod 46 is hooked into a slot in said arm, and is carried upward therewith, and releases a clock mechanism 47. A nonconducting disk 48 is rotated as the clock mechanism unwinds, and a series of notches in its periph-

ery cause an alternate make-and-break between two spring brushes 49. The line wire 50 is connected to the latter, and current flowing thereon is interrupted by this action. When it is desired to reset the signal, the man in charge thereof pulls down the rod 33, and the pin 37 strikes the lower edge of the notch 38 and tilts the lever 39 until its long end again rests on the lug 41. The parts remain in this position until the magnet 43 is again energized. In the downward movement of the bar 33, a pin 51 thereon strikes the upper end of a pitman 52, and a crank 53 is moved thereby and winds up the clock mechanism 47 for another operation.

In order to prevent a false operation of any signal-operating device other than the selected one, the circuit through the magnet 43 is broken as soon as the lever 39 slips off the lug 41. Current is conducted by the wire 54 through the windings of the magnet, and thence through the wire 55 and the armature 42 to the lever 39, and then to the ground through the wire 56. The armature 42 moving away from the lever 39 thus causes a break.

In order to prevent an arc at the lug 41, which would after a time render it incapable of supporting the lever 39, a spring 57 is provided, which follows up the said lever a slight distance after it leaves the lug 41, and any arc which occurs at the end of said spring can do no harm.

The line wire 50 (Fig. 8) is grounded at each end X and extends through the battery Y and an indicating device O to the middle pole of a double-throw switch S. From one pole of said switch the wire 58 extends to the motor of the selector A and continues from the arc 13 thereof. The wire 59 leads from the opposite pole through the magnet 19 and joins the line 50 beyond said magnet. The line 50 then extends in series through the brushes 49 on the signal-operating device and the magnets 19<sup>a</sup> on the local instruments B and C to the ground X at the opposite end. At each local instrument B and C, a wire 60 connects the line 50 with one of the brushes 25, and a wire 54 leads from the strip 28 to the magnet 43 on the signal-operating devices D and E, respectively, that control the semaphores F and G. The latter are grounded through the wires 56. As hereinbefore stated, the line is normally open, and the motors on all the instruments have been stopped by the hands 10 striking the pins 26.

When the operator wishes to release a signal at a certain station, say B, he throws the switch S to cut in the wire 59, and then places the plug 11 in the proper position on the arc 13. This movement of the switch closes the line circuit, and current flows through it and energizes all the magnets 19<sup>a</sup> and the selector



magnet 19. This causes all the clutch disks to disengage, and the hands 10 all drop back to zero, where they remain as long as the switch S is closed. The motors immediately  
 5 begin to move. The operator next throws the switch S to the opposite side, and the line is then opened, for the circuit is not completed through the selector until the hand 10 thereon touches the plug 11. There-  
 10 fore, the clutch disks are all engaged simultaneously, and the disks 24 begin a synchronous rotation. As soon as the hand 10 on the selector touches the plug 11, current flows therethrough and through all the mag-  
 15 nets 19<sup>a</sup> on the line up to the selected station B, in which station the movable contact-maker 23 at that instant occupies the same position as the plug 11. Then the current, instead of passing on through the line, takes  
 20 an easier path, and travels through the wire 60, the brushes 25 (which are at that instant connected by the said movable contact-maker 23), and into the wire 31, thence through the brush 29 and strip 28 (which  
 25 are in contact because the magnet 19<sup>a</sup> on that instrument is not energized), and through the wires 54, 55 and 56 to the ground as before described, operating the magnet 43 and releasing the selected signal. All the line  
 30 beyond the selected local instrument B, including the magnet 19<sup>a</sup> of said instrument, is thus cut out. The current having passed through all the magnets 19<sup>a</sup> between the selected instrument B and the selector A, said  
 35 magnets are energized and the hands on those instruments drop back to zero. No operation of the other signals can occur, however, as said hands return, because the brushes 29 and strips 28, through which cur-  
 40 rent must pass to reach the magnets 43, are separated because of the energization of the magnets 19<sup>a</sup>. The ground wire 56 at the selected signal is broken as soon as it is made, as before described, and then the cur-  
 45 rent takes the path through the remaining portion of the line to the ground at X, passing through all the other magnets 19<sup>a</sup>, including the one on the selected instrument. The hands 10 on all the other instruments  
 50 drop back to zero again, where they remain until the line is again broken at the switch S. Then said hands move upward again to their stops 26. The hand 10 on the selector remains against the plug 11 until the switch  
 55 S is thrown into connection with the wire 59, because in the signaling operation no current flows through the magnet 19.

What I claim is:—

1. In an electric selecting apparatus for  
 60 railway semaphores, a conductor, a master selector comprising automatic selecting means for effecting current change in said conductor on the expiration of any selected one of a plurality of predetermined time  
 65 intervals, and manual means for effecting a

current change in said conductor; a series of local selectors each having a controlling electromagnet in said conductor, an indicator controller in said conductor between  
 said electromagnet and the master selector, a  
 70 motor having a predetermined rate of movement, a ground connection extending from between said electromagnet and said indicator controller, a circuit closer in said  
 75 ground connection operated by said motor after a predetermined time interval different at each local selector from that of any other local selector, means for controlling the mo-  
 tor action by said electromagnet, a circuit breaker in said ground connection controlled  
 80 by said electromagnet, a translating device controlled by said circuit closer and by said circuit breaker; and a semaphore controlled by said translating device.

2. In an electric selecting apparatus for  
 85 railway semaphores, a conductor, a master selector comprising automatic selecting means for effecting a current change in said conductor on the expiration of any selected one of a plurality of predetermined time in-  
 90 tervals, and manual means for effecting a current change in said conductor; a series of local selectors each having a controlling electromagnet in said conductor, an indicator controller in said conductor between  
 95 said electromagnet and the master selector, a motor having a predetermined rate of movement, a ground connection extending from between said electromagnet and said indicator controller, a circuit closer in said  
 100 ground connection operated by said motor after a predetermined time interval different at each local selector from that of any other selector, a clutch mechanism operated by  
 said electromagnet for connecting and dis-  
 105 connecting the motor and the circuit closer, a circuit breaker in said ground connection operated with said clutch, a translating device controlled by said circuit closer and by  
 said circuit breaker; and a semaphore con-  
 110 trolled by said translating device.

3. In an electric selecting apparatus, the combination of a conductor, a master selector comprising automatic selecting means  
 115 for effecting a current change in said conductor on the expiration of any selected one of a plurality of predetermined time intervals, and manual means for effecting a current change in said conductor; a series of  
 local selectors each having a controlling  
 120 electromagnet in said conductor, an indicator controller in said conductor between said electromagnet and the master selector, a motor having a predetermined rate of movement, a ground connection extending from  
 125 between said electromagnet and said indicator controller, a circuit closer in said ground connection operated by said motor after a predetermined time interval different at  
 each local selector from that of any other  
 130



local selector, means for controlling the motor action by said electromagnet, a circuit breaker in said ground connection controlled by said electromagnet, and a translating device controlled by said circuit closer and by said circuit breaker.

4. In an electric selecting apparatus, the combination of a conductor, a master selector comprising automatic selecting means for effecting a current change in said conductor on the expiration of any selected one of a plurality of predetermined time intervals, and manual means for effecting a current change in said conductor; a series of local selectors each having a controlling electromagnet in said conductor, an indicator controller in said conductor between said electromagnet and the master selector, a motor having a predetermined rate of movement, a ground connection extending from between said electromagnet and said indicator controller, a circuit closer in said ground connection operated by said motor after a predetermined time interval different at each local selector from that of any other local selector, a clutch mechanism operated by said electromagnet for connecting and disconnecting the motor and the circuit closer, a circuit breaker in said ground connection operated with said clutch, and a translating device controlled by said circuit closer and by said circuit breaker.

5. In an electric selecting apparatus, the combination of a conductor, a master selector comprising automatic selecting means for effecting a current change in said conductor on the expiration of any selected one of a plurality of predetermined time intervals, and manual means for effecting a current change in said conductor; a series of local selectors each having a controlling electromagnet in said conductor, an indicator controller in said conductor between said electromagnet and the master selector, a motor having a predetermined rate of movement, a ground connection extending from between said electromagnet and said indicator controller, a circuit closer in said ground connection operated by said motor after a predetermined time interval different at each local selector from that of any other local selector, means for controlling the motor action by said electromagnet, a circuit breaker in said ground connection controlled by said electromagnet, a translating device controlled by said circuit closer and by said circuit breaker, and means for restoring the circuit closer to a zero position when released from the motor, the said circuit breaker being constructed and actuated by said electromagnet to break the ground circuit while the circuit closers are returning to zero.

6. In an electric selecting apparatus, the combination of a conductor, a master selector comprising automatic selecting means for

effecting a current change in said conductor on the expiration of any selected one of a plurality of predetermined time intervals, and manual means for effecting a current change in said conductor; a series of local selectors each having a controlling electromagnet in said conductor, an indicator controller in said conductor between said electromagnet and the master selector, a motor having a predetermined rate of movement, a ground connection extending from between said electromagnet and said indicator controller, a circuit closer in said ground connection operated by said motor after a predetermined time interval different at each local selector from that of any other local selector, a clutch mechanism operated by said electromagnet for connecting and disconnecting the motor, and the circuit closer, a circuit breaker in said ground connection operated with said clutch, a translating device controlled by said circuit closer and by said circuit breaker, and means for restoring the circuit closer to a zero position when released from the motor, the said circuit breaker being constructed and actuated by said electromagnet to break the ground circuit while the circuit closers are returning to zero.

7. In an electric selecting apparatus, the combination of a conductor, a master selector comprising automatic selecting means for effecting a current change in said conductor on the expiration of any selected one of a plurality of predetermined time intervals, and manual means for effecting a current change in said conductor; a series of local selectors each having a controlling electromagnet in said conductor, an indicator controller in said conductor between said electromagnet and the master selector, a motor having a predetermined rate of movement, a ground connection extending from between said electromagnet and said indicator controller, a circuit closer in said ground connection operated by said motor after a predetermined time interval different at each local selector from that of any other local selector, means for controlling the motor action by said electromagnet, a circuit breaker in said ground connection controlled by said electromagnet, a translating device controlled by said circuit closer and by said circuit breaker, means for operating the indicator controller after action of the translating device; and an indicator at the master selector operated responsively to said indicator controller.

8. In an electric selecting apparatus, the combination of a conductor, a master selector comprising automatic selecting means for effecting a current change in said conductor on the expiration of any selected one of a plurality of predetermined time intervals, and manual means for effecting a current



change in said conductor; a series of local selectors each having a controlling electromagnet in said conductor, an indicator controller in said conductor between said electromagnet and the master selector, a motor having a predetermined rate of movement, a ground connection extending from between said electromagnet and said indicator controller, a circuit closer in said ground connection operated by said motor after a predetermined time interval different at each local selector from that of any other local selector, a clutch mechanism operated by said electromagnet for connecting and disconnecting the motor and the circuit closer, a circuit breaker in said ground connection operated with said clutch, a translating device controlled by said circuit closer and by said circuit breaker, means for operating the indicator controller after action of the translating device; and an indicator at the master selector operated responsively to said indicator controller.

9. In an electric selecting apparatus, the combination of a conductor, a master selector comprising automatic selecting means for effecting a current change in said conductor on the expiration of any selected one of a plurality of predetermined time intervals, and manual means for effecting a current change in said conductor; a series of local selectors each having a controlling electromagnet in said conductor, an indicator controller in said conductor between said electromagnet and the master selector, a motor having a predetermined rate of movement, a ground connection extending from between said electromagnet and said indicator controller, a circuit closer in said ground connection operated by said motor after a predetermined time interval different at each

local selector from that of any other local selector, means for controlling the motor action by said electromagnet, a circuit breaker in said ground connection controlled by said electromagnet, a translating device controlled by said circuit closer and by said circuit breaker, and means for breaking the ground connection upon operation of said translating device.

10. In an electric selecting apparatus, the combination of a conductor, a master selector comprising automatic selecting means for effecting a current change in said conductor on the expiration of any selected one of a plurality of predetermined time intervals, and manual means for effecting a current change in said conductor; a series of local selectors each having a controlling electromagnet in said conductor, an indicator controller in said conductor between said electromagnet and the master selector, a motor having a predetermined rate of movement, a ground connection extending from between said electromagnet and said indicator controller, a circuit closer in said ground connection operated by said motor after a predetermined time interval different at each local selector from that of any other local selector, a clutch mechanism operated by said electromagnet for connecting and disconnecting the motor and the circuit closer, a circuit breaker in said ground connection operated with said clutch, a translating device controlled by said circuit closer and by said circuit breaker, and means for breaking the ground connection upon operation of said translating device.

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