

(No Model.)

3 Sheets—Sheet 1.

A. OVENDEN.
ELECTRIC ALARM SYSTEM.

No. 606,076.

Patented June 21, 1898.

Fig. 1.

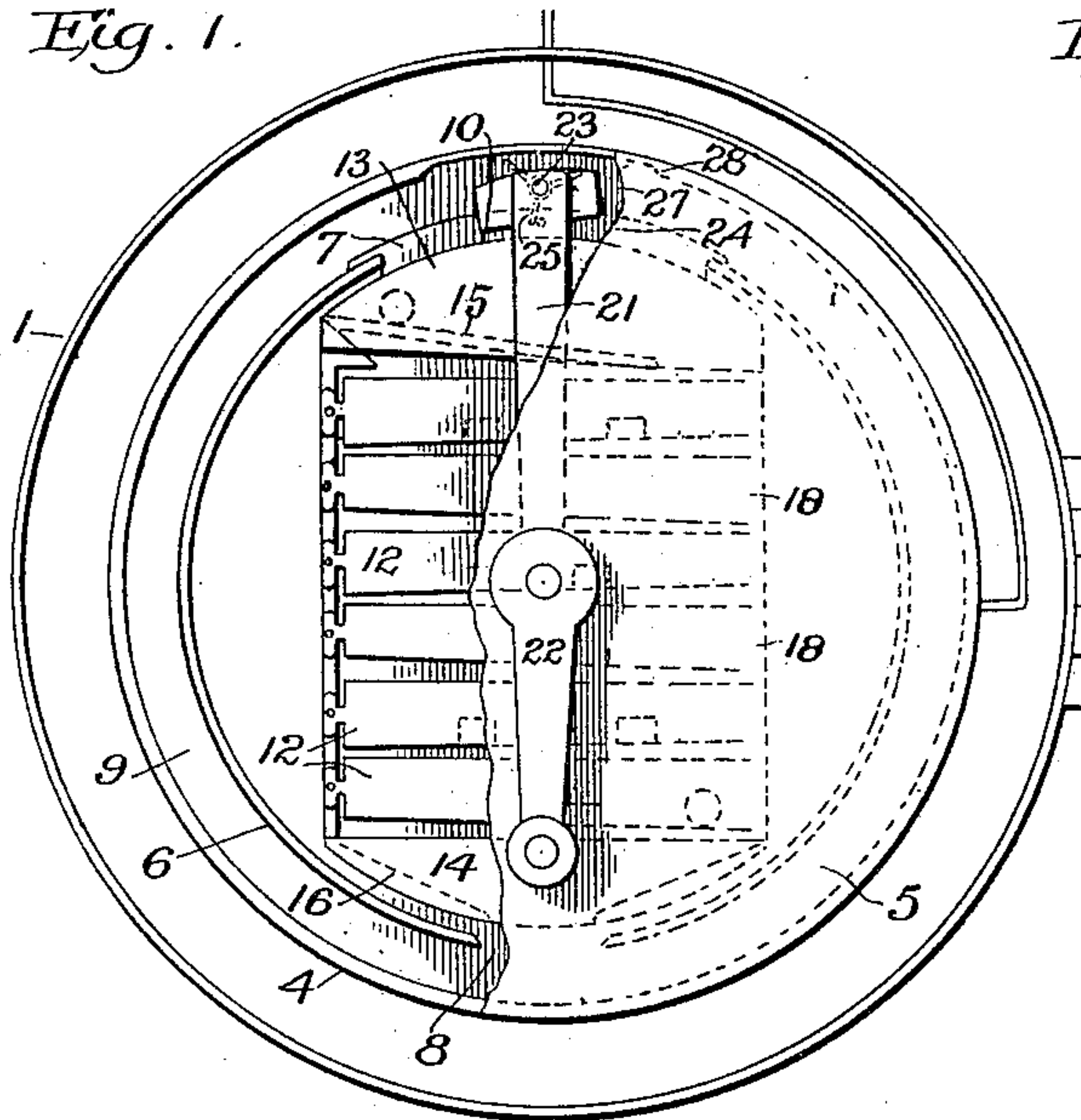


Fig. 2.

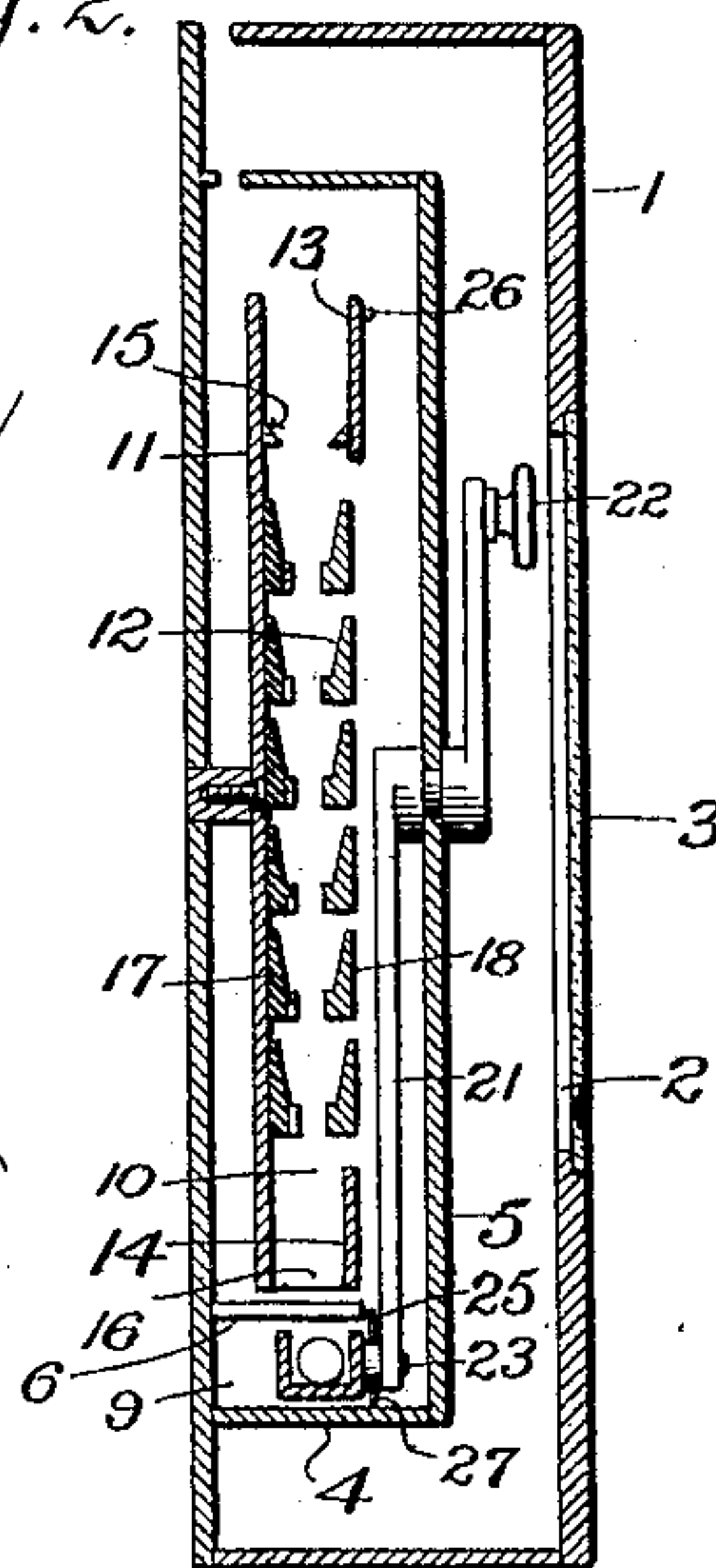
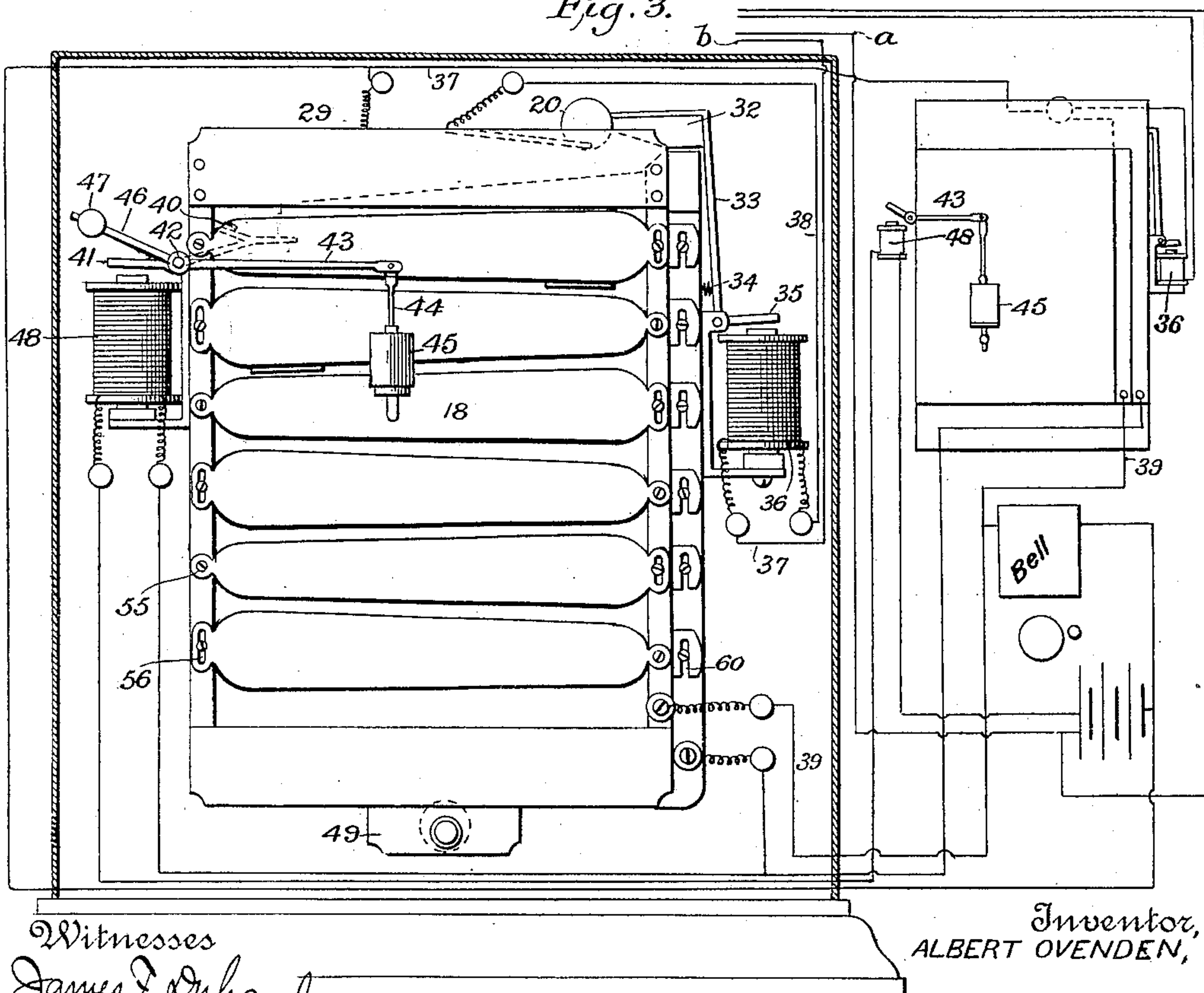


Fig. 3.



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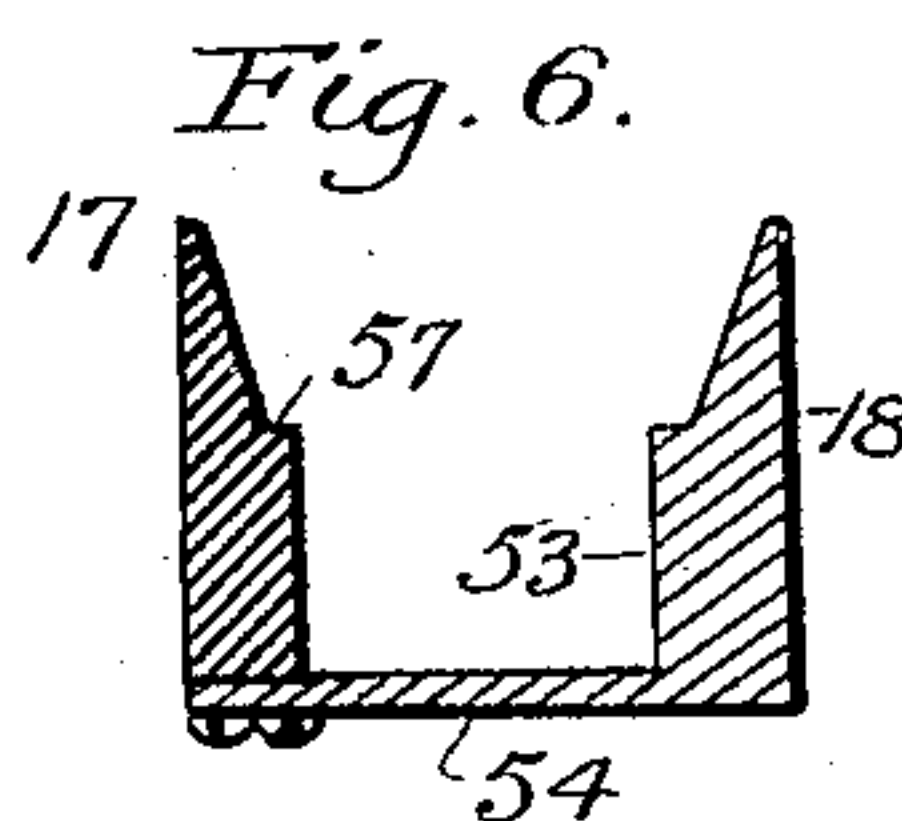
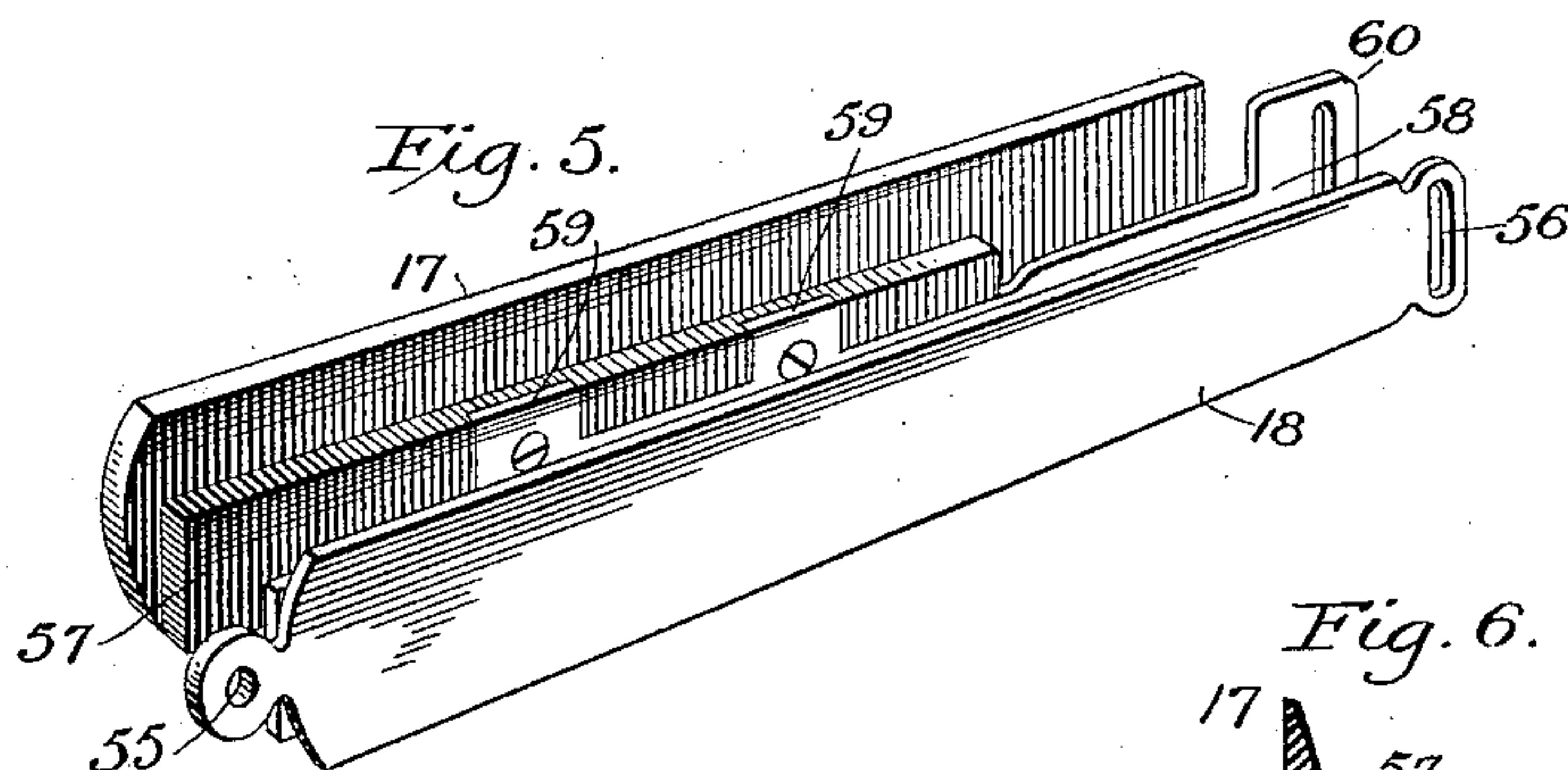
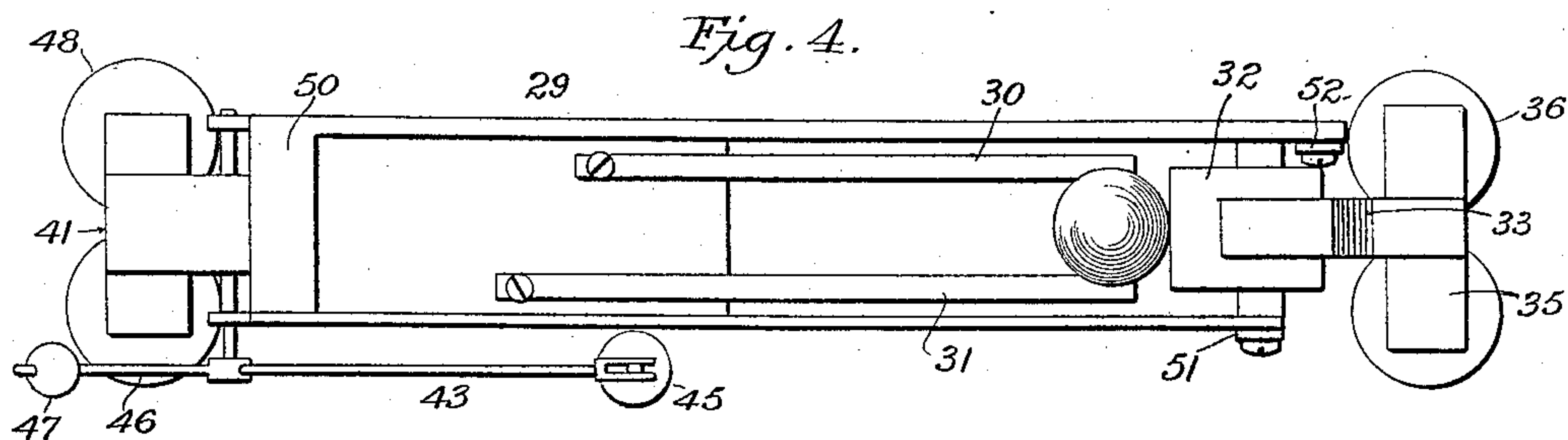


Fig. 7.

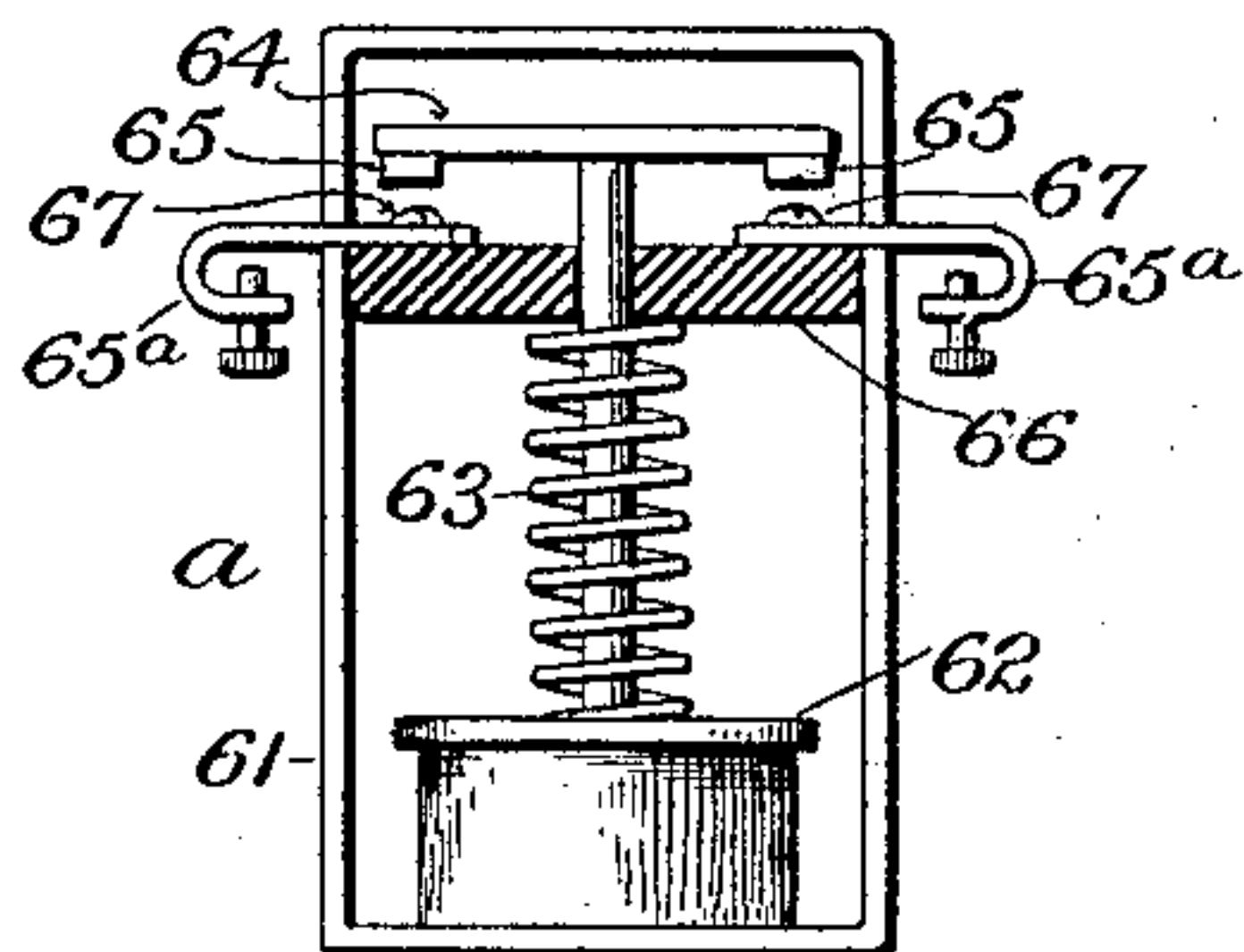
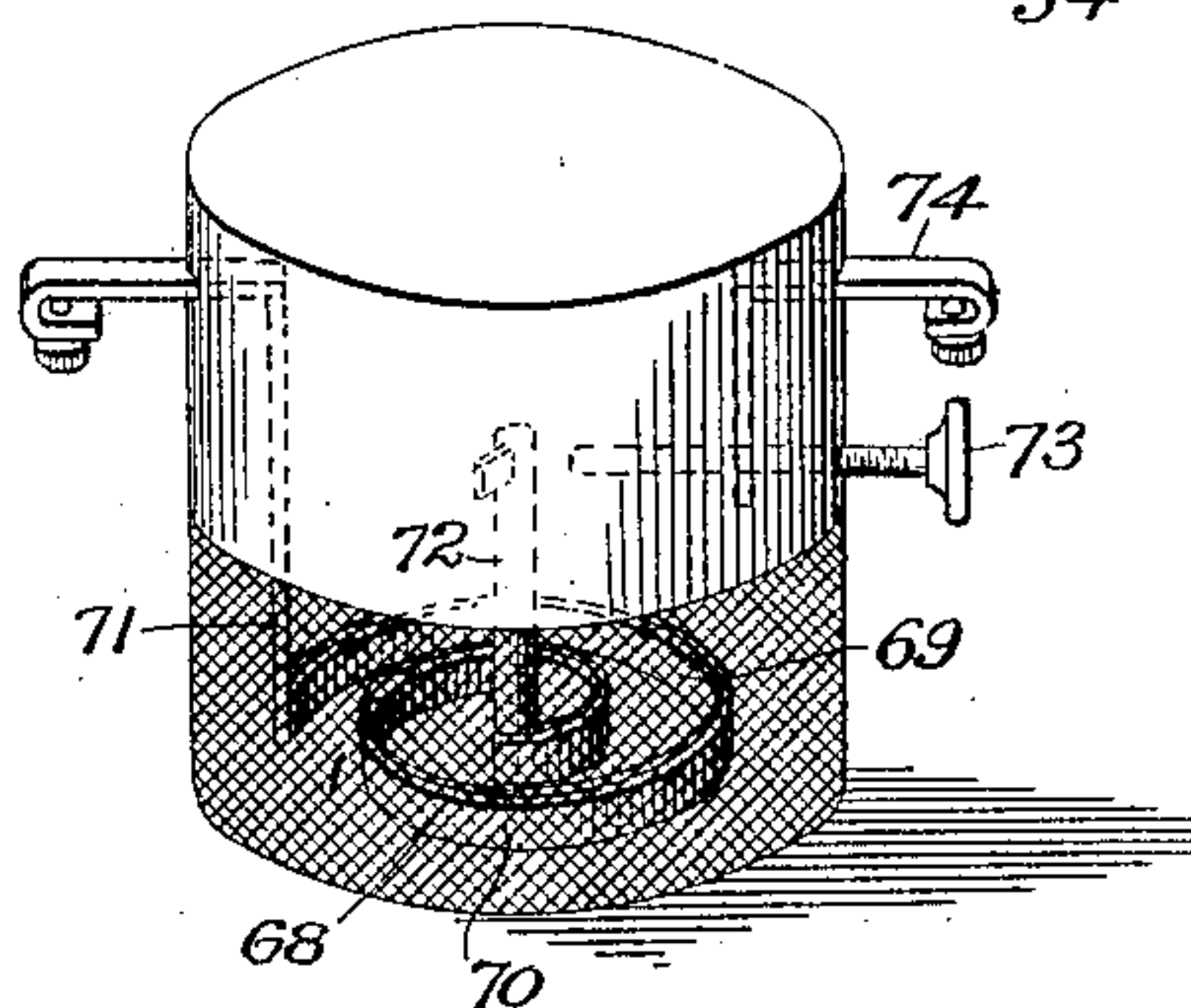


Fig. 8.



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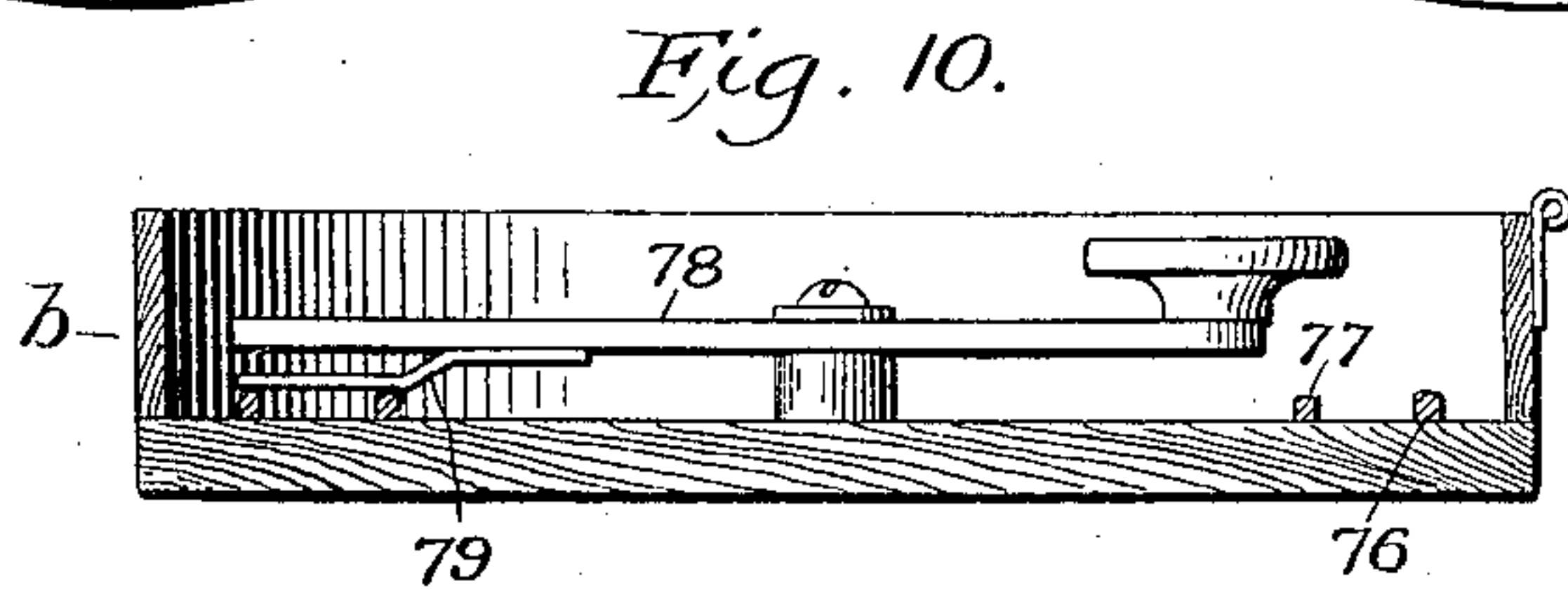
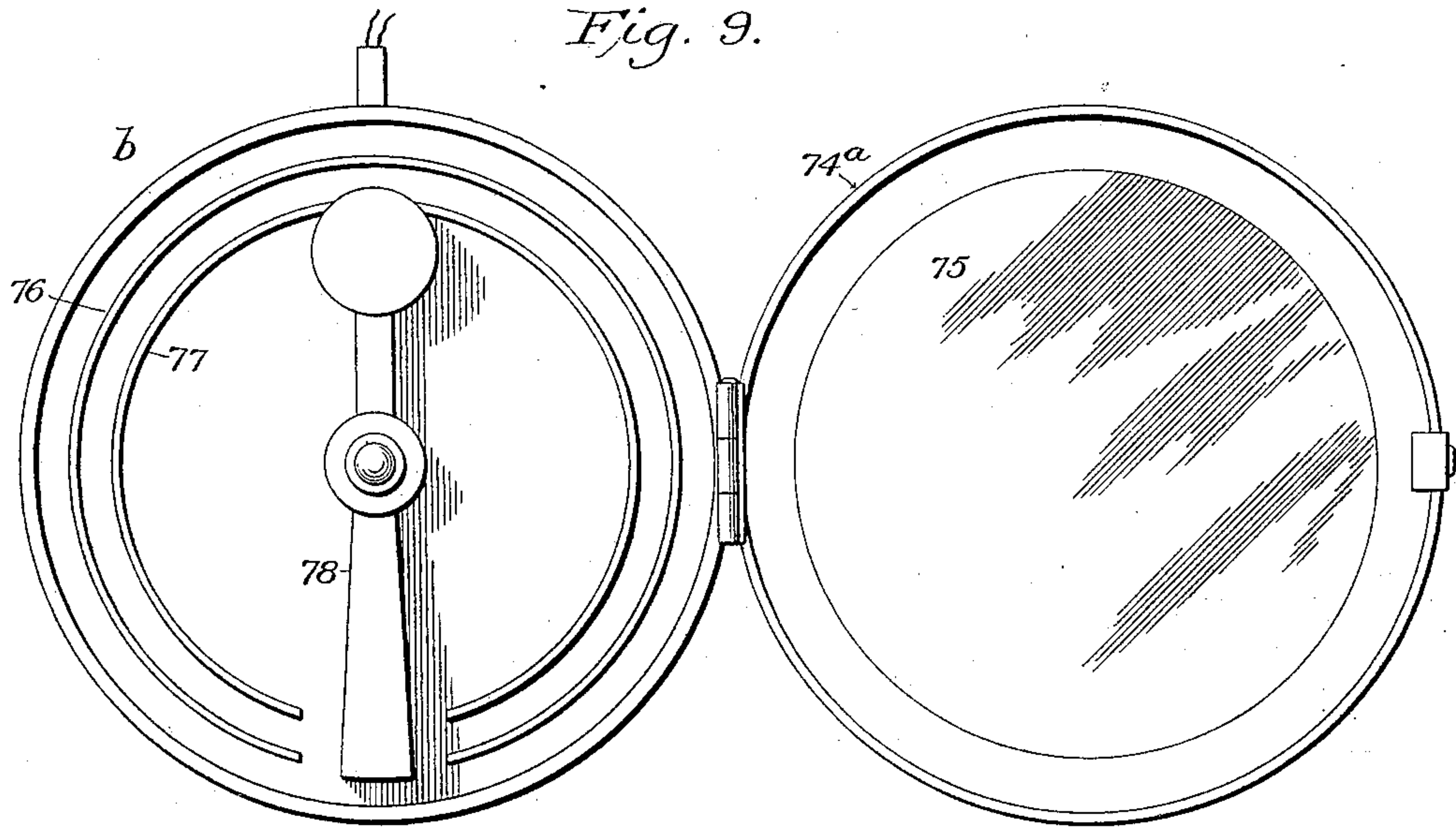
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3 Sheets—Sheet 3.

A. OVENDEN.
ELECTRIC ALARM SYSTEM.

No. 606,076.

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Witnesses

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UNITED STATES PATENT OFFICE.

ALBERT OVENDEN, OF AKRON, OHIO.

ELECTRIC ALARM SYSTEM.

SPECIFICATION forming part of Letters Patent No. 606,076, dated June 21, 1898.

Application filed September 24, 1897. Serial No. 652,898. (No model.)

To all whom it may concern:

Be it known that I, ALBERT OVENDEN, a citizen of the United States, residing at Akron, in the county of Summit and State of Ohio, have invented certain new and useful Improvements in Electric Alarm Systems; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to certain improvements in electrical alarms, and more particularly to the construction and arrangement of the mechanism for forming the contact, the object being to dispense with clock-movements, springs, weighted pulleys, or other intricate, delicate, and cumbersome mechanism and to provide in a simple and inexpensive manner an electrical alarm which may be used in connection with fire-alarm boxes, police-patrol boxes, watchmen-detectors, and other alarm mechanism and which may be operated by hand or so arranged that when used in houses, factories, or asylums—as a fire-alarm, for instance—the contacts may be made automatically when the heat rises to a predetermined degree.

The invention also contemplates the use of means whereby the mechanism in all boxes arranged upon any one line or circuit may be operated in a manner to prevent more than one signal being sent in at the same time, but providing for the sounding of the second signal after the first is completed.

To these ends the invention comprises certain novel features of construction and arrangement of parts whereby the above and other important advantages are attained and whereby it is simplified and better adapted for the purposes for which it is intended, as will be hereinafter fully described, and specifically defined in the appended claims.

In the accompanying drawings, forming a part of this specification, Figure 1 is a front elevation, partly in vertical section, of an alarm-box constructed in accordance with this invention. Fig. 2 is a vertical transverse section of the same. Fig. 3 is a front elevation of an alarm-box, illustrating the construction employed when used as an interlocking alarm-box. Fig. 4 is a top plan view. Fig. 5 is a perspective view of one of the in-

clined tracks, taken on an enlarged scale. Fig. 6 is a vertical transverse section of the same. Fig. 7 is a vertical section of one form of automatic circuit-closing device. Fig. 8 is a perspective view of another form. Fig. 9 is a face view of a hand-controlled circuit-closer. Fig. 10 is a sectional view of the same.

The alarm-box forming the subject of this invention is designed to be employed in streets or buildings for the purpose of sending an alarm to a central station, in which case it is operated by hand, or it is to be located at a central station for the purpose of sounding an alarm therein, but to be operated by the closing of a circuit controlling the same, which closing may occur at a remote point. The alarm is given by reason of the making and breaking of the circuit by means of a rolling circuit maker and breaker consisting of a roller that passes over and along inclined tracks forming part of the circuit, in which, however, is inserted at intervals insulated portions which serve to break the circuit as the roller passes thereover.

In Figs. 1 and 2 is shown the embodiment of the alarm-box when it is to be used, for instance, in the street and when operated sends the alarm to a bell at a central station. The box (indicated by 1) is circular and is provided with an opening 2 in the front side thereof, that is conveniently closed by a piece of glass 3, that is to be broken when the alarm is sounded, as will be obvious. Situated within this box 1 is a circular frame 4, extending from the rear side of the box, to the front end of which is attached the plate 5. Secured also to the rear side of the box and within the frame 4 is a circular flange 6, concentric with said frame. This flange 6 is not continuous, but is broken away at its upper side to form the opening 7 and at its lower side to form the opening 8, so that an annular passage 9 is formed between the frame 4 and the flange 6, that opens into the space inclosed by the flange at the upper and lower ends of the same. Mounted upon the rear side of the box and within the flange 6 is a frame 10, comprising a rear plate 11, that is swiveled to the rear side of the box and concentric with the flange 6 and the inclined tracks or circuit-formers 12. The rear plate 11 is swiveled to the rear side of the box in order that

the said rear plate, carrying the frame 10 and holding the circuit-formers or tracks, shall always hang in a perpendicular position. The box being round, it is very likely that in some cases in fitting or hanging up the alarm upon walls or posts the mechanic will not take sufficient time and exercise sufficient patience and skill to place the box in the proper position, allowing it to tilt a little to the left or the right. By swiveling the plate 11, however, the tracks will always stand at the proper pitch, the rear plate 11 being of course weighted or heavier at the bottom. The upper and lower ends of the frame are provided with the front plates 13 and 14, between which and the plate 11 are the inclined guides 15 and 16, forming hoppers at the upper and lower ends of the frame. The inclined guides 15 at the upper end of the frame are not of equal length—that is, one of the guides is longer than the other—but both guides end adjacent to one side thereof, so that the opening in the hopper formed thereby is at one side of the frame. The guides 16 at the bottom of the frame, however, are all of equal length, so that the opening in the bottom of the hopper formed thereby is in the center of the frame. The frame is so weighted that the opening in the hopper at the lower end thereof is situated normally opposite to the opening 8 in the flange 6. The circuit-formers 12, secured to the plate 11, each comprise two inclined rails 17 and 18, insulated from each other, but in circuit with the alarm. The circuit is to be made by a roller resting upon the edges of the rails. One of the rails is made of conducting material, so that it presents a continuous conducting edge, while the edge of the other rail is composed of non-conducting material with interposed conducting portions, so that as the roller passes over the same the circuit is closed only as it rolls across the conducting portion of the last-mentioned rail. In this way it is seen that the inclined circuit-formers can be provided with any particular number of interposed insulated edges, so as to sound the desired alarm at the station. In said Figs. 1 and 2 pauses between the numbers are made by the arrest of the roller at the lower ends of the inclined tracks and also by the insulated portions of the tracks, it being noted that all of the tracks incline alternately in reverse directions. It is seen that as the roller passes from the inclined tracks the circuit is closed at intervals to make the alarm, but there is a pause between the numbers sounded by the alarm as the roller is arrested at the lower end of each track. The most convenient form of roller is a ball 20, and an elevator is employed for raising this ball and depositing it in the hopper at the upper end of the frame 10. This elevator comprises an arm 21, that is pivoted concentrically with the annular passage 9 and upon the plate 5. The handle 22 on the outside of the plate serves as a means for rotating the arm, it being noted that this handle is situated in the

rear of the opening 2, so that it can be reached by breaking the glass. The arm 21 extends downwardly to the plates 9, and to the inner side thereof is a pivoted pin 23, carrying a cup at its inner end, said cup being situated opposite the frame 10, so that it can be brought to deliver the ball into the hopper at the upper end and to receive it from the lower hopper. The cup is open on its inner side, and it is seen that the weight of the cup and the arm 21 normally causes the cup to hang below the opening 8 in the flange 6, so that the ball 20 after passing through the circuit-formers and chutes enters the cup. To deliver the ball to the upper hopper and thence to the upper inclined track, the handle is turned so that the cup passes upwardly, and when it reaches the opening 7 the ball drops therefrom and into the hopper. To insure the dropping of the ball—for instance, should the handle be turned rapidly enough to cause the ball to remain upon the outer side of the cup by centrifugal force—the pin 23 is provided with a projection 25, that engages a stop 26 upon the plate 13 and situated in the center of the opening 7. The said pin is also provided with outwardly-extending guide-fingers 27, while upon opposite sides of the opening 7 curved stop-faces 28 are arranged that project inwardly from the outer side of the annular passage. When the arm is turned to bring the cup to the upper limit of its movement, the projection 25 thereon strikes the stop 26 and tilts the cup, as shown in dotted lines in Fig. 1. This gives a reverse impetus to the ball and causes the ball to fall, and when the movement of the arm continues the guide-finger 27, that is in the rear, strikes the inner end of one of the stop-faces 28, as also illustrated in dotted lines, and throws the cup to its radial position, in which position it is held by the ends of the guide-fingers and the said stop-faces, so that it can pass into the annular passage. It is understood, of course, that rotation in the opposite direction causes a reverse of the above operation.

In Fig. 1, for the purpose of illustration, the alarm-box is arranged to deliver the signal-number 21—that is to say, the upper track has two contact-faces upon the non-conducting rail and the next track below only one. The two succeeding pairs of tracks are arranged in the same order, and in operation it is seen that by breaking the glass and turning the handle the cup is raised to the upper hopper to deliver the ball. The ball passes onto the first track and completes the circuit twice, then drops onto the first chute 19, making a pause, then onto the second track to complete the circuit once, so as to sound the alarm, as is obvious. As it passes over the succeeding pairs of tracks the alarm is repeated twice, after which the ball drops into the hopper and through the opening 8 into the cup 24, which falls to its normal position when released.

In Figs. 3 and 4 is shown an alarm-box that

is to be operated by the closing of a circuit and which in use is designed more particularly for use in a central station, so that the circuit-wires can lead therefrom to any point from which it is desired to sound the signal. For the purpose of illustration it is supposed that two office-buildings are to be protected by fire-alarms and in different rooms of these office-buildings automatic or hand-controlled circuit-closers are placed, while from each office-building two wires lead to the central station where the signal-boxes are situated, it being noted that there is a signal-box for each office-building. In said Fig. 3 one of the signal-boxes is illustrated in detail and the other by a diagram, while the circuit-wires and alarm-bell are also illustrated by a diagram and will be referred to hereinafter. In this construction the roller is placed at the upper end of the frame by hand, although it is understood that the elevator described above can be employed for the purpose. The roller is held in its elevated position above the inclined tracks and forms part of the circuit, so that when the circuit for this particular alarm-box is closed and releases the ball such circuit is broken. Interlocking devices are also employed in connection with a plurality of circuit-boxes which are so arranged that when one signal-box has been operated and is sounding a signal another box cannot be operated until the signal first started is completed, and, further, when more than two signal-boxes are operated at the same time the parts are so arranged that each signal is given only after the completion of another. When the circuit of any particular box is closed, the roller is released, but the path of the roller to the inclined tracks is blocked when the first roller completes the circuit by rolling upon these tracks, and means are provided, which are described hereinafter, for releasing the said rollers in the order that each of the alarm-boxes is operated. In said Figs. 3 and 4 the inclined tracks differ from the tracks shown in Figs. 1 and 2 in that they are longer and the pauses are made by the extended portion of the track. The tracks are inclined in opposite directions and situated next to each other. At the upper end of the series of tracks is an inclined guide 29, that leads to the upper end of the upper track, while the upper end of this inclined guide is situated beneath the lower ends of two circuit-terminals 30 and 31. Opposite the ends of these terminals 30 and 31 is a valve 32, comprising a block that is mounted upon the upper end of an arm 33 and held normally close to the ends of the terminal by the spring 34. This arm 33 is pivoted to the framework and is connected with the armature 35, that is situated above the electromagnet 36. One of the main-line wires 37 is connected to the coils of the electromagnet 36, while the other end of the coil is electrically connected with the terminal plate 30 by the circuit-wire 38. The terminal plate 31 is in the main circuit conveniently by being electrically connected

with the plate connecting the front set of rails 18, which plate is connected directly with the signal by the line 39. The lower end of the inclined guide 29 is just above the upper end of the upper track, and the roller passes therefrom onto the side track, the opening at the lower end of the guide being controlled by a valve 40. This valve comprises a plate that is situated between the rails in the upper track and is pivoted to the end of the frame and provided at its outer end with an armature 41. The pivot 42 for the armature and plate is also provided with an arm 43, that is connected at its outer end with a stem 44 of a dash-pot 45, said dash-pot being pivotally connected to the framework. Extending also from the pivot 42 is a screw-rod 46, having an adjustable weight 47, by means of which the opening and closing of the valve and the operation of the dash-pot are regulated. Mounted upon the frame is an electromagnet 48, opposite which the armature 41 is situated, while this electromagnet is in the circuit completed by the roller as it completes the circuit by rolling upon the inclined tracks. The valves 40 are normally held open by gravity and are closed only when the roller of any of the signal-boxes passes over the upper inclined track and completes the circuit. Referring now to Fig. 3, in which two of these interfering signal-boxes are illustrated, it is seen that when the main circuit of one is closed, said circuit passing through the roller 20, the magnet 36 is energized and withdraws, the valve 32 permitting said roller to fall upon the inclined guide 29. The main circuit is broken when the roller leaves the terminal plates 30 and 31, and said roller passes onto the upper end of the first inclined track, it being noted that the valve 40 is open. As the roller completes the circuit by rolling over the inclined tracks to sound the alarm the magnet 48 of each of the signal-boxes is energized, whereby the valves 40 are closed. The roller continues and passes over the different inclined tracks until it falls into the drawer or pocket 49 at the lower end of the frame. It is understood, of course, that the tendency of the valve 40 to open is resisted by the plunger of the dash-pot, so that between the closing of the circuit by the roller as it passes along the tracks the said dash-pot prevents the valve from opening, since the pause between the successive closing and breaking of the circuit of the magnet is not sufficient to permit this. In this way it is seen that should a second signal-box be operated while the first is sounding an alarm the roller 20 is arrested by the valve 40 and is not allowed to pass onto the inclined track until the first roller has completed the circuit of the tracks and sufficient time has elapsed to allow the valves to open against the resistance of the dash-pot.

The arms 43 between the pivots of the valves and the stems of the dash-pot in the different signal-boxes vary in length, so that

the valves 40 open at different times. In this way should several signal-boxes be operated at one time the variation in the time of the opening of the different valves causes the valves of the different signal-boxes to be held closed until the signal given by any box in which the valve opens is completed. The roller in this case is placed at the upper end of the frame by hand.

In Figs. 5 and 6 the construction of the inclined track is illustrated in detail. At one end of the frame is an upright 50, to which one end of the rails is connected. At the opposite end of the frame is an upright 51, to which the ends of the front rail 18 are connected. The corresponding ends of the rails 17 are connected with an upright plate 52, that is insulated from the remaining portion of the frame and in the main circuit. The front plate 18 is of metal and provided on its inner sides with a ridge 53, upon which the roller runs, while it is also provided with a laterally-extending plate 54, by means of which the two rails are united, it being noted that the opposite rail rests and is secured upon this plate. At the ends of the rail 18 is an eye 55 and a loop 56, the said eye being secured to one of the uprights 50 or 51, and by means of the loop 56 the rail can be adjusted vertically. The rear rail 17 is provided with a ledge 57, which is composed of conducting and non-conducting material. The main portion is composed of non-conducting material, while the plate 58 is inlaid within the ledge 57 and is provided with upwardly-projecting portions 59, that reach to the upper edge of the ledge and which lie flush therewith. The end of this plate 58 is provided with a slotted end portion 60, that is connected with the upright 52 in an adjustable manner, as is obvious. It is seen from the foregoing description that these inclined rails can be removed and replaced without interfering with the remaining portion of the machine, so that it is possible to substitute rails having other contact-points, whereby the signal to be given by the box is changed.

In connection with the signal-box last described it is preferable to employ automatic circuit-closers, and in Fig. 7 is shown one form of automatic circuit-closers, (indicated as a whole by *a*,) which consists of a vessel 61, in which is placed a composition of paraffin or animal fat in a solidified state, and upon this paraffin or solidified fat is placed a disk 62, having a central stem 63, the upper extremity of which is provided with a bar 64, having two contact-pieces 65, arranged at each end thereof. A spring retaining-plate 66 is arranged immediately below the bar 64, and the upper side of this plate is provided with two projecting arms 65^a, to which the wires of the main circuit are attached, the said projecting arms being held in place upon the plate 66 by the screws or rivets 67, the heads of which lie in a direct line with the contact-pieces 65 of the bar 64, but normally out of

engagement therewith. Thus as the paraffin or animal fat melts through the action of the heat the plate 62 descends into the vessel 61 and causes the contact-pieces 65 and 67 to engage, thus closing the circuit.

In Fig. 8 is shown another form of an automatic circuit-closer device, which consists of a narrow band 68, composed of a steel central portion 69 and outer portion 70. One end of this band 68 is fastened to a suitable metallic support 71, to which is fastened one of the circuit-wires, and the intermediate portion of the band 68 is turned in the form of a volute or spiral, its extremity being provided with an upright contact-piece 72, which lies within a direct line with a screw 73, carried by a suitable bracket 74, with which the other wire is connected. The strength of the band 68 may be regulated so as to expand at any degree of heat, so that the contact-piece 72 may be brought into contact with the screw 73 to close the circuit.

In Figs. 9 and 10 is shown a device for closing the main circuit by hand and which is indicated as a whole by *b*. This device comprises a base having a cover 74^a, provided with a glass front 75, which is to be broken when the circuit is made. Upon the base are the circuit-terminals 76 and 77, consisting of concentric annular flanges, while mounted upon the base is a rotatable arm 78, having a spring-finger 79, that bears upon the edges of these circuit-terminals 76 and 77. The ends of the circuit-terminals permit the spring-finger to stand between the same when the circuit is open, and when it is desired to close the circuit by turning the arm one revolution the spring-finger 78 establishes a circuit between these terminals, it being noted that the extent to which the spring-finger passes over the edges of such terminals insures the closing of the circuit.

Having thus described the invention, what is claimed as new is—

1. In an electric-circuit closer, an inclined way composed of a plurality of oppositely-extending superimposed separate members, one side of which is composed of conducting material throughout, while the other side is composed of non-conducting material having a portion of the engaging face formed of conducting material, and a roller circuit-closer.

2. In an electric-circuit closer, an inclined way consisting of a plurality of independent superimposed members each comprising a conducting-rail and a non-conducting rail having a portion of its face composed of conducting material, and a roller circuit-closer.

3. In an electric-circuit closer, an inclined way consisting of a plurality of independent superimposed members, each comprising a conducting-rail and a non-conducting rail, and having a plurality of conducting portions flush with the face thereof, and a roller circuit-closer.

4. In a circuit-closer for an electric alarm, a plurality of inclined ways independent of

each other and extending in opposite directions, each of said inclined ways having one side composed of conducting material, and the other side composed of non-conducting material having conducting portions, a roller circuit-closer, and means for guiding said roller circuit-closer from the lower termination of one inclined way to the upper beginning end of the next.

5 5. In a circuit-closer for an electric alarm, a plurality of inclined ways independent of each other, and extending in opposite directions, and having conducting and non-conducting portions, a roller circuit-closer, an inclined guide extending from the lower end of one way to the upper end of the next.

10 6. A circuit-closer for an electric alarm, comprising a frame composed of inclined ways superimposed and independent of each other, said ways extending in opposite directions and having conducting and non-conducting portions, a roller circuit-closer, and a movable elevator adapted to receive said roller circuit-closer from the lower way and to deliver it to the upper way.

15 7. A circuit-closer for an electric alarm, comprising a plurality of inclined ways superimposed and independent of each other, the said ways extending in opposite directions and having conducting and non-conducting portions, a roller circuit-closer, hoppers at the upper and lower ends of said inclined ways, and a movable elevator to receive said roller circuit-closer from the lower hopper and to deliver it to the upper hopper.

20 8. A circuit-closer for an electric alarm, comprising a plurality of inclined ways having conducting and non-conducting portions, a roller circuit-closer, an elevator comprising a pivoted arm having a cup at one end thereof that normally stands below the lower inclined way to receive said roller circuit-closer, and adapted to swing above the upper inclined way to deliver said circuit-closer.

25 9. A circuit-closer for an electric alarm, comprising a plurality of inclined ways having conducting and non-conducting portions, a roller circuit-closer, an annular passage surrounding said inclined ways having openings above and below the same, a pivoted arm having a cup at one end that is situated within said annular passage, and which normally stands with the cup below the lower opening therein.

30 10. A circuit-closer for an electric alarm, comprising a plurality of inclined ways having conducting and non-conducting portions, a roller circuit-closer, an annular passage surrounding said inclined ways, having openings above and below the same, guide-faces at the upper side of said annular passage and opposite the upper opening therein and situated at opposite sides of the center thereof, a swinging arm having a swinging cup at one end that is situated within said annular passage, a projection upon said swinging cup, a projection in said annular passage situated

at the upper side of the same and in the path of the projection upon said cup, and guide-fingers upon said cup situated to engage the stop-faces of said passage.

11. A circuit-closer for an electric alarm, comprising a swiveled frame carrying a plurality of inclined ways independent of each other and extending in reverse directions, and having conducting and non-conducting portions, a roller circuit-closer, and an elevator for delivering said circuit-closer from the lower to the upper end of said inclined ways.

12. In an electric-circuit closer, a frame provided with a plurality of inclined ways, superimposed and independent of each other, the said ways extending in reverse directions, each of which is composed of two rails, one of conducting material, and the other of non-conducting material having conducting portions, said conducting-rails and conducting portions of the non-conducting rails being connected in an electric circuit, and a roller circuit-closer.

13. In an electric-circuit closer, a frame having a plurality of inclined ways independent of each other and extending in opposite directions, the lowermost end of one being located adjacent to the highest end of the one next succeeding, and provided with conducting and non-conducting portions, said inclined ways being adjustably secured to said frame, and a roller circuit-closer.

14. In an electric-circuit closer, a frame having uprights, a plurality of inclined ways having conducting and non-conducting portions and slotted ends, fastening devices passing through the slotted end portion of the inclined ways for adjustably securing the same to said uprights, and a roller circuit-closer.

15. In an electric-circuit closer, an inclined way, consisting of a plurality of independent superimposed members, each comprising a conducting-rail and a non-conducting rail having a removable conducting-strip inlaid therein.

16. In an electric-circuit closer, an inclined way comprising a conducting-rail having a laterally-extending plate, a non-conducting rail secured to said plate, and having conducting portions.

17. In an electric alarm, a circuit in which are situated the alarm mechanism and a circuit-closer, said circuit-closer comprising inclined ways superimposed and independent of each other, said ways extending in reverse directions, and having conducting and non-conducting portions, a valve above the upper inclined way adapted to retain the roller circuit-closer which forms a part of the circuit, and an electromagnet for controlling said valve situated in the circuit formed by said roller circuit-closer.

18. In an electric alarm, a circuit in which are situated the alarm mechanism and a circuit-closer, said circuit-closer comprising a plurality of inclined ways having conducting and non-conducting portions, circuit-termi-

nals situated above the upper inclined way, a movable valve at the ends of the said terminals, a circuit-closer resting upon said terminals and held thereon by said valve, and
 5 an electromagnet controlling said valves and situated in the circuit formed by said roller circuit-closer.

19. In an electric alarm system, a circuit having a plurality of branch circuits, an alarm
 10 mechanism in said circuit, a plurality of circuit-closers in said circuit and from which the branch circuits lead, said circuit-closers comprising inclined ways and a roller circuit-closer controlled by the branch circuits, and
 15 a valve for each of said circuit-closers controlling the passage of the roller circuit-closer to the inclined ways, said valve being controlled by an electromagnet situated within the circuit in which said inclined ways are
 20 placed.

20. In an electric alarm system, a circuit having a plurality of branch circuits, an alarm
 mechanism in said circuit, a plurality of circuit-closers in said circuit and from which
 25 the branch circuits lead, said circuit-closers comprising inclined ways and a roller circuit-closer controlled by the branch circuits, and a valve for each of the said circuit-closers controlling the passage of the roller circuit-closer to the inclined ways, said valve being
 30 controlled by an electromagnet situated within the circuit in which said inclined ways are placed, and devices to permit said valve to close quickly but which retard the opening
 35 of the same.

21. In an electric alarm system, a circuit having a plurality of branch circuits, an alarm
 mechanism in said circuit, a plurality of circuit-closers in said circuit and from which
 40 the branch circuits lead, said circuit-closers comprising inclined ways and a roller circuit-closer controlled by the branch circuits, and a valve for each of the said circuit-closers controlling the passage of the roller circuit-closer to the inclined ways, said valve being
 45 controlled by an electromagnet situated within the circuit in which said inclined ways are placed, and devices to permit said valve to close quickly but which retard the opening
 50 of the same, the connections between said valves and said device being arranged to cause the valves to open at different periods.

22. In an electric alarm system, a plurality

of circuit-closers composed of inclined ways having conducting and non-conducting por- 55
 tions, a roller circuit-closer, a valve comprising a plate situated at the upper end of the upper inclined way of each of said circuit-closers, an armature connected with the valve, an
 60 electromagnet in the circuit controlled by said inclined ways and roller circuit-closers, and an arm upon the pivot of the valve and connected with the dash-pot.

23. In an electric alarm system, a plurality of circuit-closers composed of inclined ways 65
 having conducting and non-conducting portions, a roller circuit-closer, a valve comprising a plate situated at the upper end of the upper inclined way of each of said circuit-closers, an armature connected with the valve, an
 70 electromagnet in the circuit controlled by said inclined ways and roller circuit-closers, and an arm upon the pivot of the valve and connected with the dash-pot, said arms in the different circuit-closers varying in length. 75

24. In an electric alarm system, a plurality of circuit-closers, composed of inclined ways having conducting and non-conducting por-
 tions, a roller circuit-closer, a valve comprising a plate situated at the upper end of the upper 80
 inclined way of each of said circuit-closers, an armature connected with the valve, an electromagnet in the circuit controlled by said inclined ways and roller circuit-closers, an arm upon the pivot of the valve and con- 85
 nected with the dash-pot, and a counterbalance-weight.

25. In an electric alarm system, a plurality of circuit-closers composed of inclined ways having conducting and non-conducting por- 90
 tions, a roller circuit-closer, a valve comprising a plate situated at the upper end of the upper inclined way of each of said circuit-closers, an armature connected with the valve, an
 95 electric magnet in the circuit controlled by said inclined ways and roller circuit-closers, an arm upon the pivot of the valve and connected with the dash-pot, and an adjustable counterbalance-weight.

In testimony whereof I have signed this 100
 specification in the presence of two subscribing witnesses.

ALBERT OVENDEN.

Witnesses:

S. E. WEEGAR,
 CHAS. E. MUSSER.