

No. 616,136.

B. OEHMEN.

Patented Dec. 20, 1898.

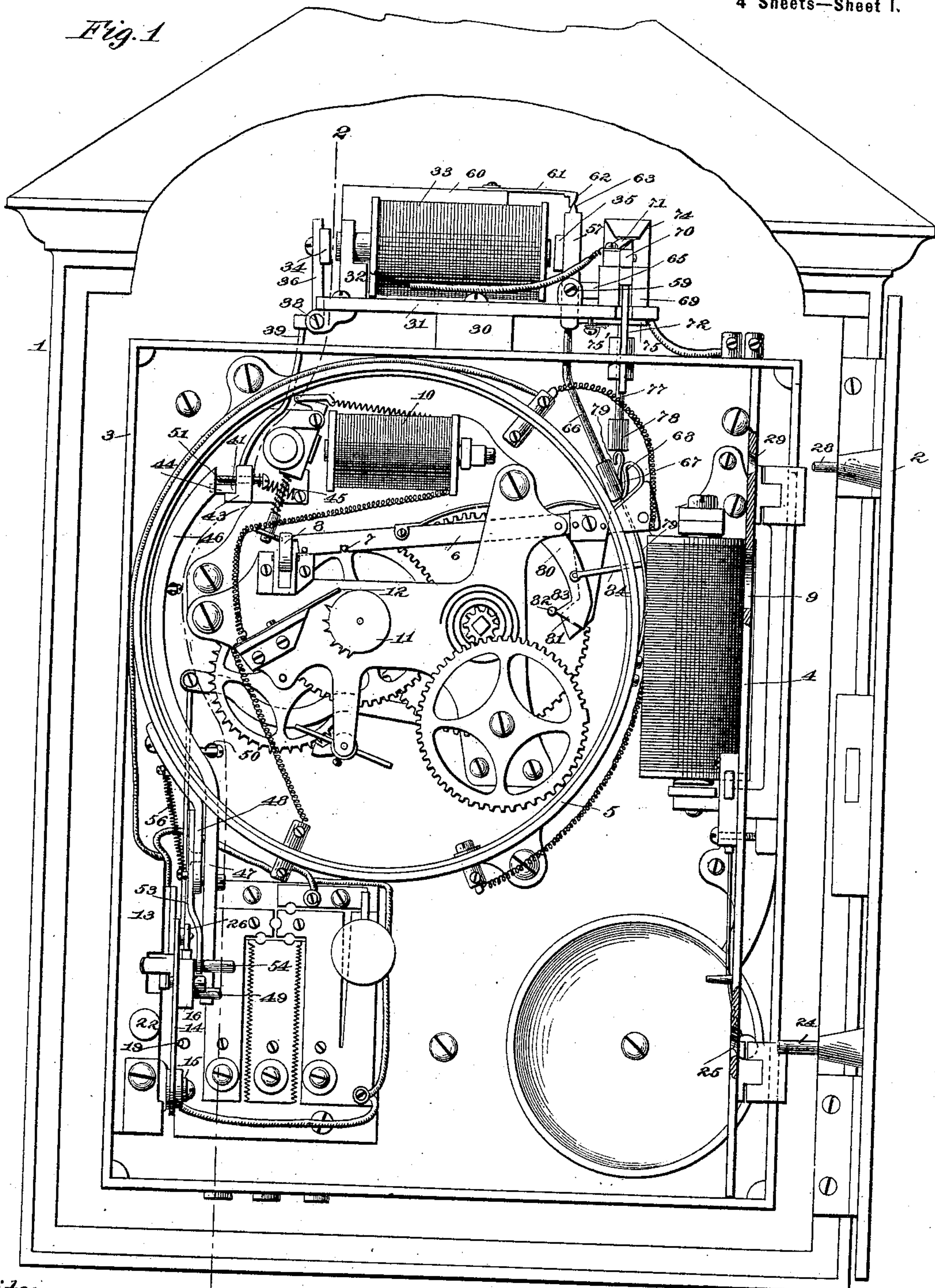
AUXILIARY FIRE ALARM TELEGRAPH APPARATUS.

(Application filed Jan. 14, 1898.)

(No Model.)

4 Sheets—Sheet 1.

Fig. 1



Witnesses:

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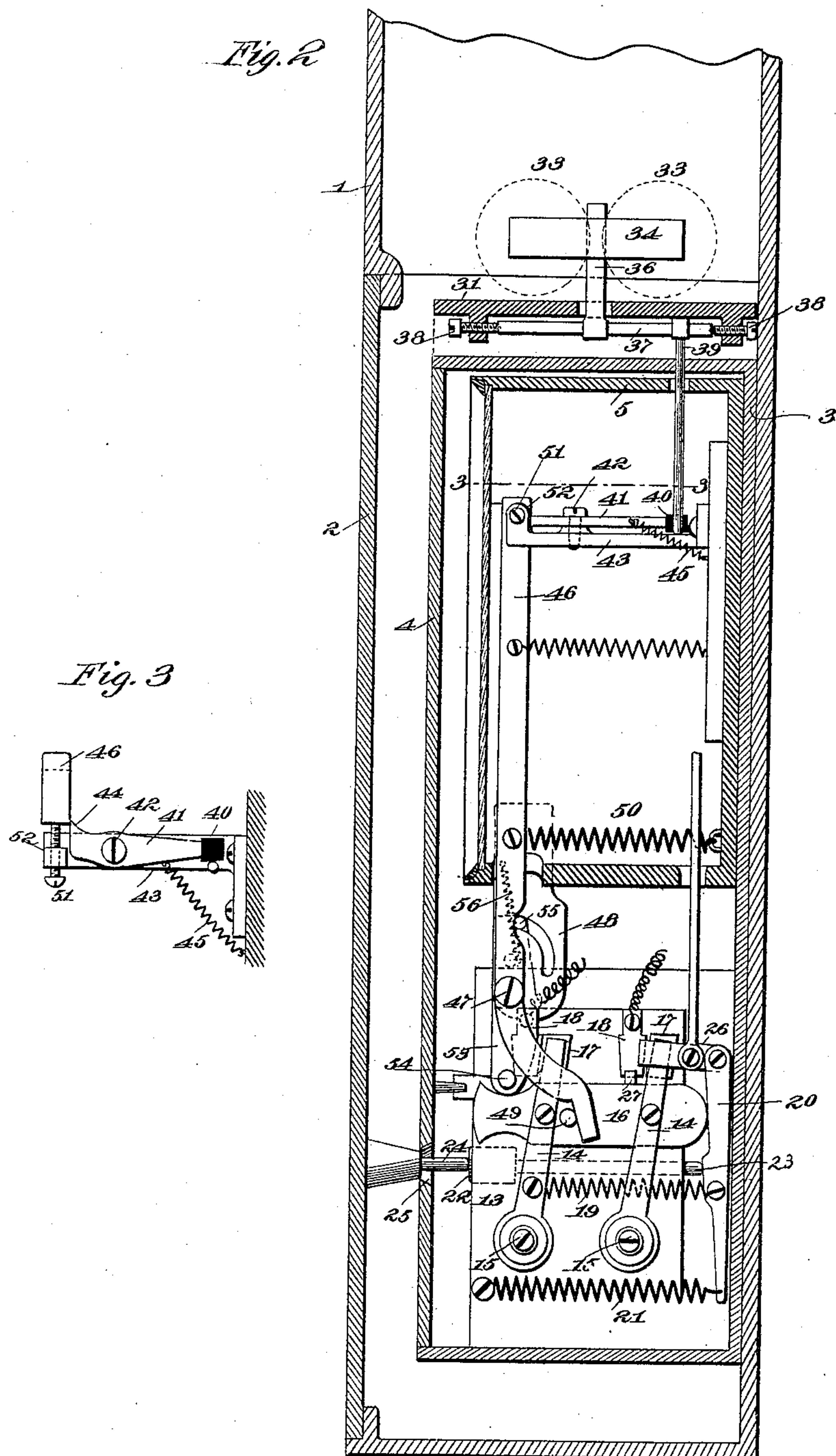
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AUXILIARY FIRE ALARM TELEGRAPH APPARATUS.

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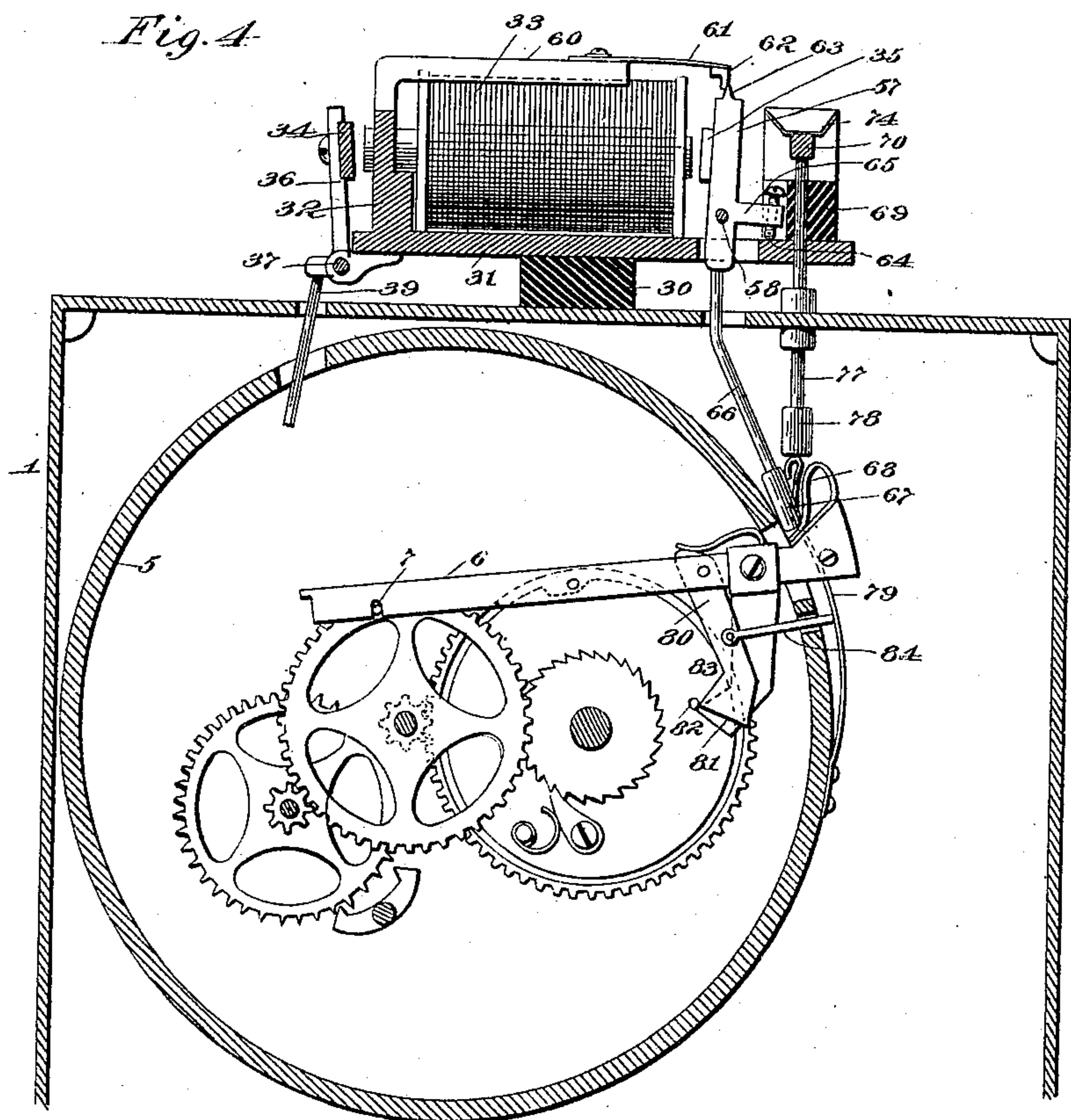
B. OEHMEN.

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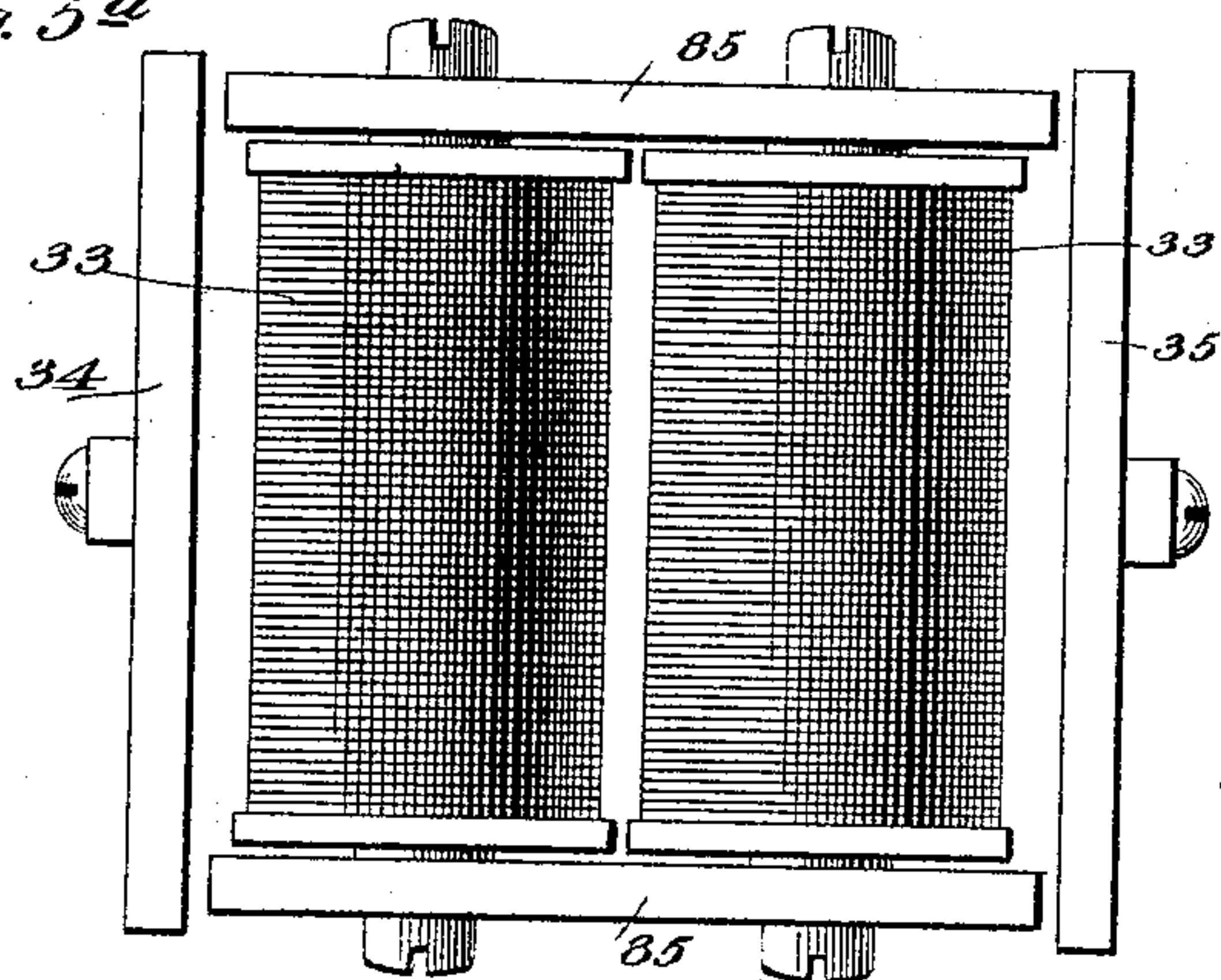
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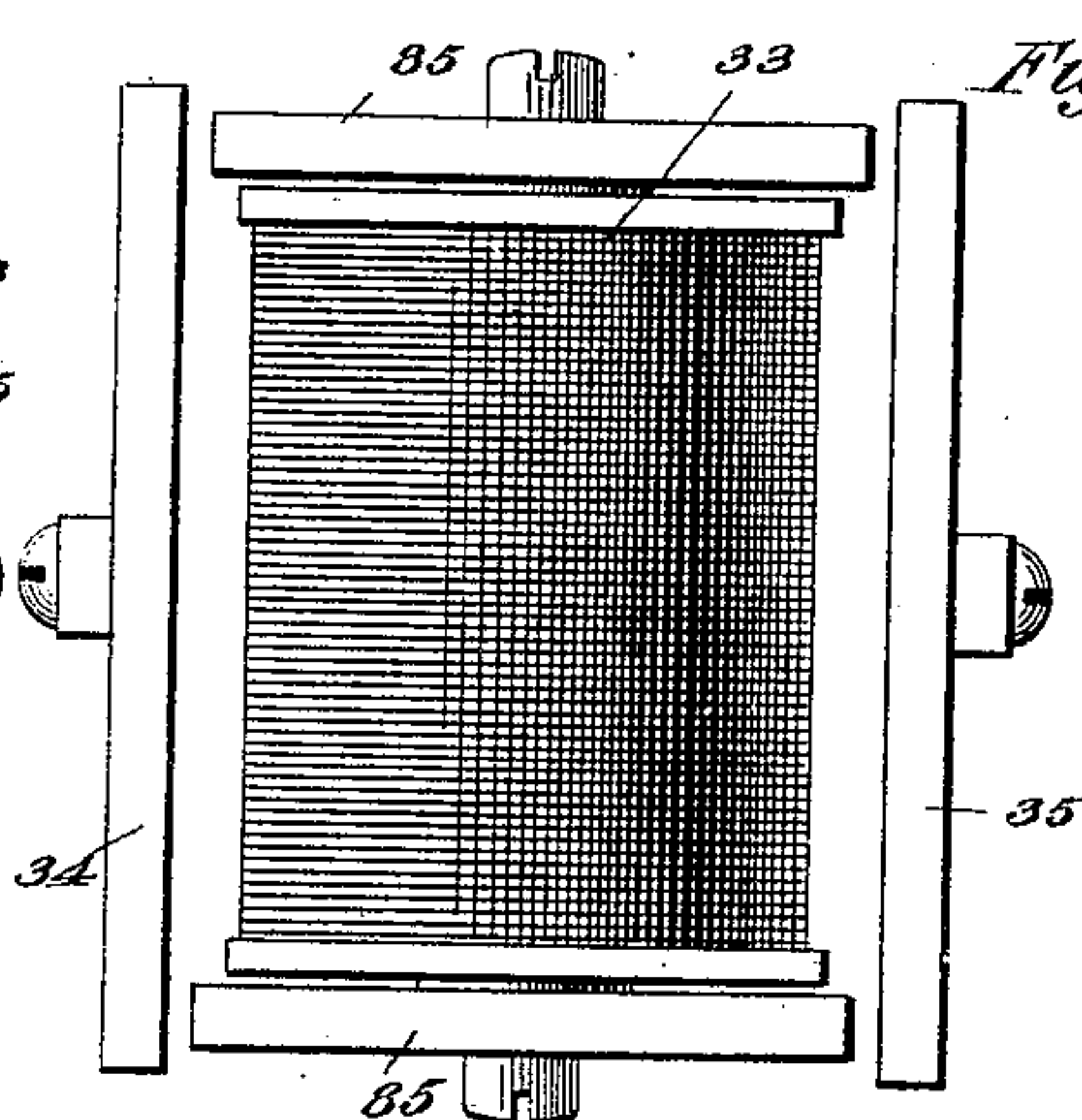
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*Fig. 5a*



*Fig. 5b*



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AUXILIARY FIRE ALARM TELEGRAPH APPARATUS.

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Fig. 5

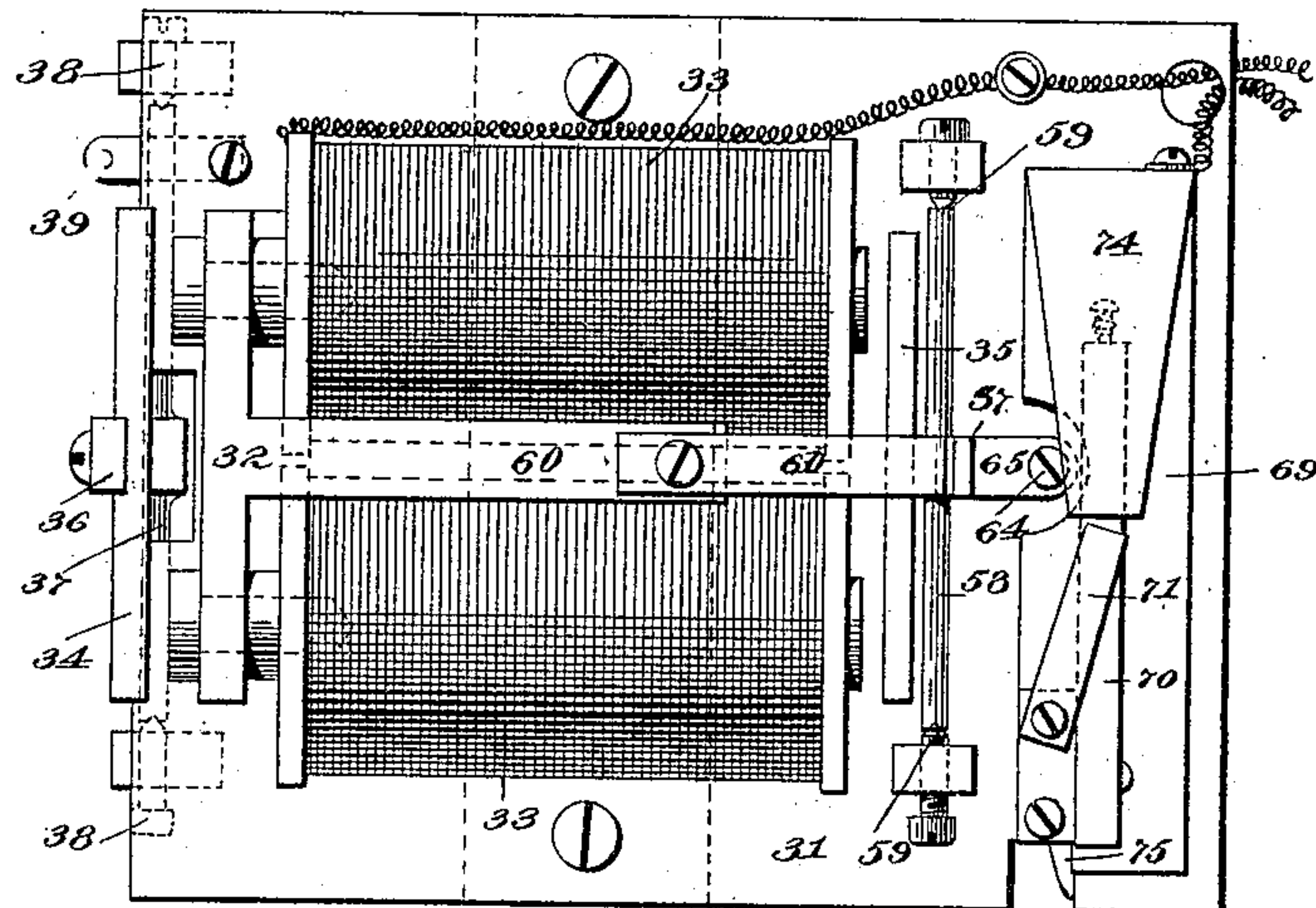


Fig. 6

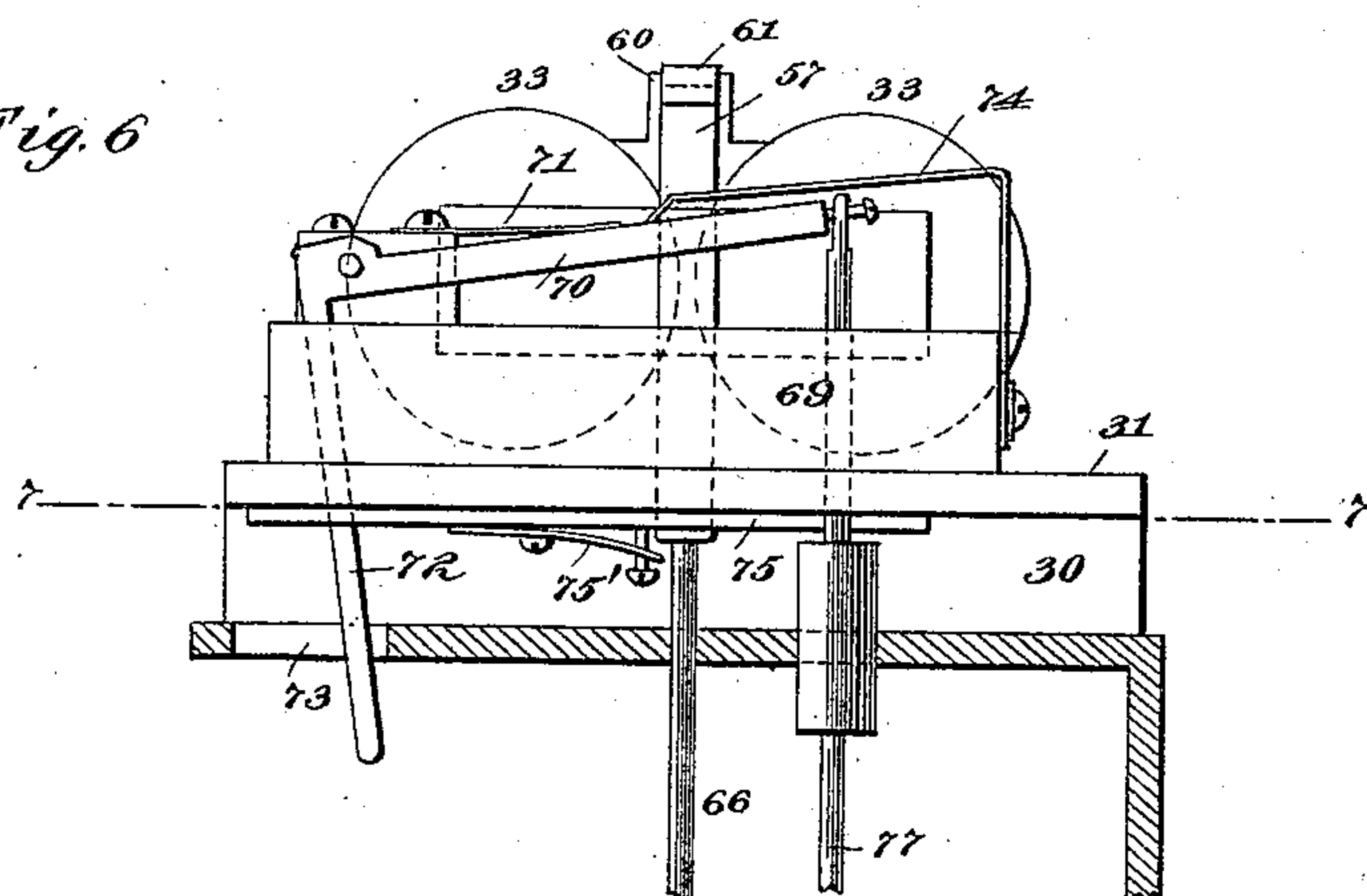
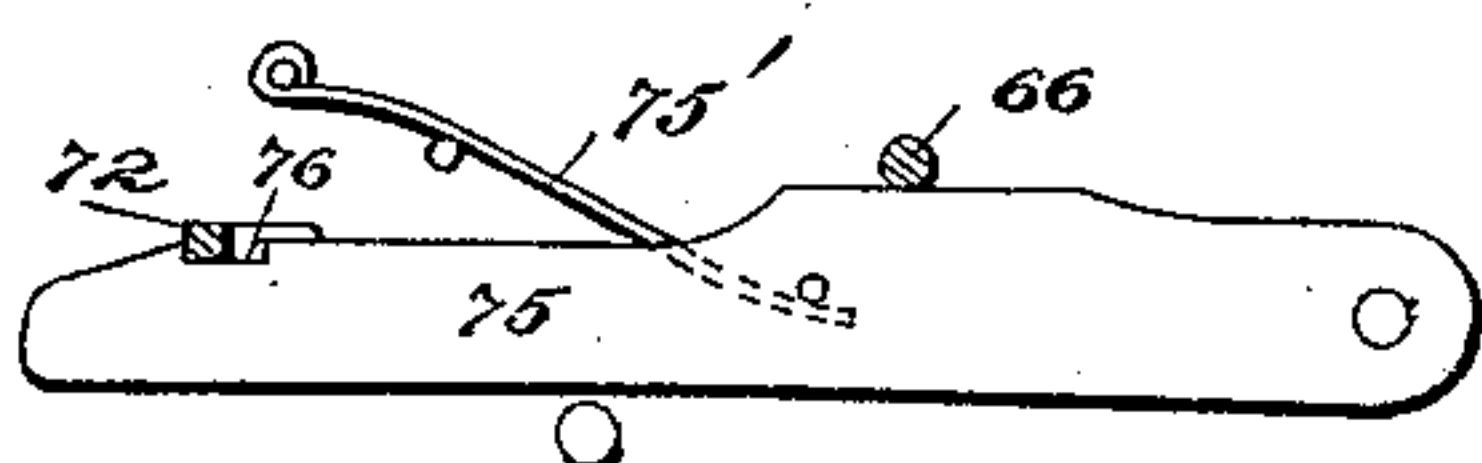


Fig. 7



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# UNITED STATES PATENT OFFICE.

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## AUXILIARY FIRE-ALARM-TELEGRAPH APPARATUS.

SPECIFICATION forming part of Letters Patent No. 616,136, dated December 20, 1898.

Application filed January 14, 1898. Serial No. 666,597. (No model.)

*To all whom it may concern:*

Be it known that I, BARTHOLOMEW OEHMEN, a citizen of the United States, residing at New York city, in the county and State of New York, have invented certain new and useful Improvements in Auxiliary Fire-Alarm-Telegraph Apparatus, of which the following is a specification.

My invention relates to new and useful improvements in auxiliary fire-alarm-telegraph apparatus, and more particularly to novel mechanism for use in connection with the ordinary street or patrol box and by which said box may be started from the auxiliary circuits.

The principal objects of my invention are to produce apparatus which shall be simple in construction and capable of adjustment to and employment with the ordinary street or patrol boxes of a fire-alarm system and to provide means by which such auxiliary apparatus may be employed in connection with those street or patrol boxes employing cut-out switches which when the outer door of the box is closed normally cut the box out of the main circuit.

A further object of the invention is to so arrange the elements comprising the auxiliary mechanism that when employed with a street or patrol box using such cut-out switches the auxiliary mechanism will cause the patrol-box to be cut into the line before the train thereof is started, thereby not only insuring absolute certainty of operation, but enabling the auxiliary circuit to operate on a lighter current and to use a smaller operating magnet or magnets in the auxiliary mechanism.

A further object is to provide auxiliary mechanism for use with the ordinary street or patrol box and which will be of such a character as to be used within the inclosing casing of such boxes, so as not to require any remodeling or enlargement of the same.

A further object of the invention is to provide auxiliary mechanism for a street or patrol box by which, after the train has actually started and not before, the auxiliary circuit will be broken at the box, so as to sound an alarm, as is common, at the house or other

establishment where the auxiliary circuit was completed, thereby indicating to the occupants that the alarm has gone in, means being provided in connection with the auxiliary mechanism by which the parts may be restored to their normal positions, reestablishing the auxiliary circuit.

A further object of my invention is to employ an improved form of double magnet for operating two armatures, the resistance of one armature to the magnetic attraction being greater than the resistance of the other armature, whereby the armature having the least resistance will be first attracted into contact with its pole, thereby closing the magnetic field of the double magnet at that end, so as to strengthen the same and allow for the attraction of the armature having the greater resistance. When such a magnet is employed in connection with an auxiliary fire-alarm system such as I have described, the armature having the least resistance is connected with and trips the switch for cutting the box into the line and the armature having the greatest resistance to the magnetic attraction acts to start the train of the box, whereby such operations will take place successively, and thereby insure the positive operation of the street or patrol box. I shall, however, claim such form of magnet broadly, since while it is especially advantageous for the specific apparatus indicated it is nevertheless capable of other and important uses.

A further object of my invention is to provide means for attachment to a street or patrol box employing a cut-out switch, by reason of which upon the opening of the inner door of the box that door will be prevented from being closed unless the switch-operating means controlled by the auxiliary mechanism have been reset.

A still further object of the invention is to provide means in connection with an auxiliary mechanism for a street or patrol box intended to transmit a signal over the auxiliary line to indicate that the street-box had been started, such means sounding the auxiliary signal only upon the starting of the box and allowing for the restoration of the auxiliary circuit at the box.



A further object of the invention is to provide auxiliary mechanism capable of especial use in connection with those street or patrol boxes employing cut-out switches and by reason of which at no time will the street or patrol boxes be disabled or incapable of transmitting the desired signal thereof to the central office.

A final object of my invention is to so arrange and construct the parts of an auxiliary mechanism by which the same will be always effectively insulated from the main parts of the box.

In devising my auxiliary mechanism I have in mind the especial adaptation of the same to street or patrol boxes of the Gamewell type; but the invention is nevertheless well adapted for use with other varieties of fire-alarm-telegraph systems. With the Gamewell box there is employed an outer casing the door of which may be opened not only by the patrolman, but by the citizen. Within this outer casing is an interior box containing the signal devices, and within said interior box is a cylindrical casing having a glass front and containing the clock-train, non-interference mechanism, and the signal-wheel. Upon opening the door of the outer box a hook is disclosed projecting through a slot in the door of the inner box, which is pulled down to elevate a lever having a slot therein with which a pin on the clock-train engages, the disengagement of said slot from the pin allowing the train to start. Within the cylindrical casing is generally mounted the non-interference mechanism; but this need not be described. Beneath the cylindrical casing is mounted a cut-out switch for normally cutting out the box. Said cut-out switch is engaged by a spring-actuated lever, the actuating-spring of which is of greater tension than the actuating-spring of the cut-out switch, whereby said lever tends to move the cut-out switch against the tension of its spring to cut the box into the line. On the door of the outer box is a pin which projects through an opening in the door of the inner box and which engages with a stud connected to said spring-actuated lever, whereby upon the closing of the outer door the said lever will be moved away from the cut-out switch and the spring of the latter will actuate the same to cut out the box. Upon the opening of the door of the outer box and the disengagement of said pin from the stud connected to the spring-actuated lever the spring of the latter, having greater tension than the spring of the cut-out switch, will move the cut-out switch so as to cut the box into the line. The employment of the cut-out switch, as explained, is of importance, as it tends to protect the box from injury due to power-currents which may accidentally flow on the line. In using my improved auxiliary mechanism with a box of this type I mount a magnet, or, more properly speaking, two bar-magnets arranged side by side in the space be-

tween the top of the inside box and the outside box. Working adjacent to and influenced by two of the poles of said magnets is an armature connected to a latch or trip mechanism. The said latch is engaged by a spring-actuated lever, the lower end of which when released engages a pin or stud on the cut-out switch and moves the latter to cut the box into the line. The said armature referred to is adapted to be brought into actual contact with the poles, so as to bridge over the same and close the magnetic field at that end of the magnets, so that the two bar-magnets referred to are converted into a horseshoe-magnet of manifestly greater strength. Coöperating with the other poles of the magnets is an armature connected to a lever, the lower end of which coöperates with a cam on the trip-lever of the box, so that upon the operation of the last-mentioned armature the said lever will engage the cam referred to and trip the box. Carried adjacent to said magnets is a circuit-breaker in the auxiliary circuit. The said circuit-breaker is normally maintained in its closed position by means of a latch actuated by the trip-armature, whereby upon the attraction of said armature the latch referred to will be withdrawn. Instead of allowing the auxiliary circuit to be broken by the disengagement of this latch I prefer to connect with the circuit-breaker a plunger extending down through the top of the inside box and coöperating at its lower end with a spring, normally keeping said plunger elevated and closing the auxiliary circuit. The said spring is connected to a cam-lever actuated by a pin on the clock-train, so that upon the starting of the train the said cam-lever will be actuated to remove the spring from its engagement with the plunger and allow the auxiliary circuit to be broken. This breaking of the auxiliary circuit, as is common, sounds the alarm at a residence or other establishment where the auxiliary signal was sent in, which alarm will sound until the fireman is able to reach the box and reset the auxiliary mechanism.

In order that my invention may be understood, I have illustrated the same in the accompanying drawings, as it will be used in connection with a box of the well-known Gamewell type. The adaptation of the invention to boxes of other types and the possible modifications in the mechanical and electrical parts will be obvious to those skilled in the art.

In the drawings, Figure 1 is a front elevation of an ordinary Gamewell box, the outer and inner doors being open and illustrating my present improvements applied thereto; Fig. 2, a section on the line 2 2 of Fig. 1, illustrating particularly the preferred means for automatically actuating the cut-out switch upon the closing of the auxiliary circuit; Fig. 3, a section on the line 3 3 of Fig. 2; Fig. 4, a section taken on a line through the trip-lever of the box; Fig. 5, a plan view illustrating



particularly the double magnet which I prefer to use in carrying out my invention; Figs. 5<sup>a</sup> and 5<sup>b</sup>, modifications thereof; Fig. 6, a front elevation of the said double magnet, illustrating the circuit-breaker for the auxiliary circuit; and Fig. 7, a section on the line 7 7 of Fig. 6.

In all of the above views corresponding parts are represented by the same numerals of reference.

1 represents the outer box, having a door 2, which can be opened by the citizen or patrolman. Within the outer box is an inner box 3, having a door 4, which can be opened only by the fireman or chief. Within the inner box is a cylindrical casing 5, containing the clockwork mechanism. This clockwork mechanism is normally locked by a trip-lever 6, having a slot with which a pin 7 on one of the wheels of the clock-train engages. The trip-lever 6 is operated by a hooked lever 8, projecting through an opening 9 in the cover of the inner box. The box shown is provided with a non-interference magnet 10, operating in the well-known way for preventing interference of the signals. A break-wheel 11 is used, with which coöperate contact-pins 12 in the main circuit and by which the desired signal, in the form of makes and breaks, will be sent over the line. By depressing the hooked lever 8, so as to disengage the trip-lever 6 from the pin 7, the train will be started and the signal sent in. The box illustrated is provided with a cut-out switch, which normally—i. e., when the outer door is closed—cuts the box out of the line, so that the box cannot be damaged by the accidental presence of power-currents on the line. This switch is carried on an insulated base 13 within the inner box, and its construction will be more clearly understood by reference to Fig. 2. It comprises two switch-arms 14 14, mounted on pivots 15 and connected together by an insulating-bar 16. The switch-levers 14 14 normally coöperate with contact-plates 17 17 in the main line, but out of circuit with the box mechanism. Upon moving the switch-levers to the left in Fig. 2 they will coöperate with two contact-plates 18 18, so as to throw the box in the main line. A light spring 19 tends to move the switch-levers 14 14 into normal contact with the plates 17 17.

20 is a lever pivoted at one end of the switch and bears against the inner end of the connecting-bar 16. This lever 20 is connected to a heavy spring 21 at its lower end, which spring is of greater tension than the spring 19, so that when the lever 20 is free to move the spring 21 will actuate the same to move the switch-arms 14 14 onto the contact-plates 18 18, and thereby cut in the box.

22 is a stud secured to the end of a sliding rod 23, working in the base 13, the inner end of said sliding rod engaging the lever 20, so as to move said lever away from the switch. A pin 24 on the cover 2 of the outer box passes through an opening 25 in the cover of the in-

ner box and engages said stud 22, so as to force the same inwardly, thereby actuating the lever 20 and allowing the spring 19 to move the switch-arms into contact with the plates 17 17 to cut out the box. Upon the opening of the door 2 of the outer box the pin 24 will be disengaged from the stud 22, and the spring 21 will therefore operate the switch to cut in the box.

26 is a latch pivoted to the base 13, said latch being normally elevated above a stud 27 on the connecting-bar 16 by the clockwork, as is common. Upon the starting of the clockwork the latch 26 will be immediately depressed so as to engage behind said stud 27, whereby the switch will keep the box cut in on the line while the clockwork is operating, even if the outer door is closed to withdraw the lever 20 from engagement with said connecting-bar 16; but upon the reengagement of the trip-lever 6 and the pin 7 the clockwork will again elevate the latch 26, so as to allow the spring 19 to move the switch-arms 14 14 into engagement with the contact-plates 17 17.

When the box is of the non-interference type, a pin 28, carried on the door 2 and passing through an opening 29 in the inner door 4, engages with the armature of a non-interference magnet, as is common. Carried upon the top of the inner box 3, on a suitable insulated bar 30, is a light supplemental frame 31, and a bracket-arm 32 on said frame carries the two parallel magnets 33 33. Coöperating with the poles of these magnets, which extend through the bracket-arm 32, is an armature 34, controlling the trip mechanism for the cut-out switch. Coöperating with the other poles of said magnets is an armature 35 for tripping the box, as will be explained. The armature 34 is carried on the upper end of an arm 36, mounted on a horizontal shaft 37, working between the pivot-pins 38 38, directly beneath the frame 31. Secured to the horizontal shaft 37 is a downwardly-extending arm 39, passing through openings in the top of the inner box and the cylindrical casing 5. The lower end of this arm 39 engages with an insulated stud 40, carried on the inner end of a horizontally-mounted lever 41. This lever is carried on a vertical pivot 42, secured to a bracket-arm 43, said arm being fastened to the frame of the clockwork mechanism or to the back of the cylindrical casing 5. The lever 41 is provided with a latch-head 44 at its forward end and is maintained in its normal position by a spring 45. Engaging the latch-head of the lever 41 is the upper end of a lever 46, the upper portion of which extends into and is substantially concentric with the cylindrical casing 5. This lever 46 is pivoted at 47 to a suitable bracket 48, secured to the outside of said cylindrical casing 5. The lower end of said lever is adapted to engage with a pin 49, carried by the connecting-bar 16, so that upon the tripping of the lever 46 by the withdrawal of the



latch-head 44 from engagement with its upper end the lower end of said lever 46 will engage the pin 49 and move the switch-arms 14 14 against the tension of the spring 19 into engagement with the contact-plates 18 18, so as to cut the box into the circuit. Lever 46 is actuated in its movement by a heavy spring 50, which may be carried within the cylindrical casing 5. In order to prevent the upper end of the lever 46 from following the latch-head 44 when the same is withdrawn by the effect of the auxiliary magnets, I employ an adjusting-screw 51, passing through an ear 52 on the bracket 43, said lever 46 engaging said screw and being thus prevented from moving with the latch-head 44. Mounted on a pivot behind the bracket 48 is a finger-lever 53, having a finger-piece 54 at its lower end and a pin or stud 55 at its upper end engaging the lever 46, so that upon the moving of the finger-piece 54 downward the lever 46 will be returned to its normal position, with its upper end in engagement with the latch-head 44. A light spiral spring 56 connects with the finger-lever 53 and exerts its stress directly over or slightly back of the pivot-point of that lever, so that when the parts are in their normal positions the finger-lever 53 will be maintained by the spring 56 in the position shown in Fig. 2. Upon the tripping of the lever 46, however, said lever will engage the pin 55 and move the finger-lever 53, so that the spring 56 will exert a stress in front of the pivot of the last-mentioned lever, whereby the finger-piece 54 will be moved out into engagement with the door 4 of the inner box. If, therefore, the door of the inner box is opened for the purpose of resetting the auxiliary mechanism, the spring 56 will move the finger-lever 53 into a substantially horizontal position and prevent the closing of the door of the inner box so long as the lever 46 is not reset.

The armature 35 for tripping the box is carried on a lever 57, which is secured to a horizontal shaft 58, mounted in pivot-bearings 59, carried on the supplemental frame 31. Extending out from the bracket 32 is an arm 60, carrying a light leaf-spring 61, having a wedged head 62, engaging on either side of a ridge-shaped projection 63 on the upper end of the lever 57, said engagement maintaining the lever 57 in either its attracted or unattracted position. Movement of the lever 57 toward the unattracted position is regulated by an adjusting-screw 64, passing through an arm 65, carried by the lever 57. Extending down from the shaft 58 and preferably carried by the lower end of the lever 57 is a tripping-arm 66, having an insulated head 67 at its lower end. Said insulated head 67 engages a suitable cam 68, carried by the tripping-lever 6 and passing through the wall of the cylindrical casing 5, whereby upon the attraction of the armature 35 the tripping-arm 66 will engage the cam 68 and trip the box.

With auxiliary systems of the kind which

I am now describing and with which my invention may very conveniently be applied the auxiliary apparatus is so arranged that upon the closing of the auxiliary circuit to actuate the box a small buzzer will sound, indicating to the operator that the circuit is in active condition, and said auxiliary circuit will be subsequently broken, so as to sound an alarm at the auxiliary station, thereby indicating that the signal has been received. Since auxiliary boxes possessing these characteristics are well-known and in common use, I do not illustrate the same in the drawings. When, however, such an auxiliary box is employed, I provide a circuit-breaker in the auxiliary circuit and so controlled by the clock-train that upon the actual starting of the train, and not before, the auxiliary circuit will be broken, so as to give the desired indication of the reception of the signal. Carried upon the auxiliary frame 31 is an insulated block 69. Mounted upon this block at one end is a lever 70, upon which bears a spring 71, tending to move said lever downward. Secured to the lever 70 near its point is an arm 72, which works in a slot cut in the block 69 and in the auxiliary frame 31 and passing through an opening 73 in the top of the inner box, so that upon the opening of the door of that box the lower end of the arm 72 will be disclosed and can be moved inward by the fireman or the chief to reset the circuit-breaker. Coöperating with the lever 70 is a contact-spring 74, with which the lever normally engages, so as to close the auxiliary circuit, it being understood that the lever 70 and contact-spring 74 are in such auxiliary circuit. To keep the lever 70 in its normal engagement with the contact-spring 74, I employ a locking device which is adapted to be tripped by the movement of the armature 35 and which is shown more particularly in Fig. 7. This locking device comprises a light latch 75, carried on the under side of the frame 31 and made conveniently of ivory, bone, hard rubber, or other insulating material. This latch is provided with a notch 76, which normally engages the arm 72, the latch being held in its normal position by a light spring 75'. The tripping-arm 66 is arranged in close proximity to the latch 75, so that upon the operation of said tripping-arm the latch will be moved, so as to free the arm 72. This releasing of the arm 72 allows the lever 70 to move slightly downward, but does not break the auxiliary circuit at the contact-spring 74. I consider this of importance, because if the auxiliary circuit were broken upon the first movement of the armature 35 such movement might not be sufficient to trip the box, yet the return-signal would be sent in to the auxiliary station. I prefer, therefore, to give to the circuit-breaker of the auxiliary circuit a subsequent movement which will result in the actual breaking of that circuit, but which does not take place until the clock-train has actually started. I



therefore in the present instance pivotally connect a plunger 77 to the inner end of the lever 70 and extend said plunger vertically down through the block 69, frame 31, and the top of the inner box into proximity with the cylindrical casing 5, said block being provided at its lower end with an insulating-head 78. Engaging beneath this head 78 is a spring 79, secured to the casing 5, and said spring is adapted to be disengaged by the actual movement of the clock-train. To secure this operation, I illustrate a lever 80 carried by the frame of the clockwork mechanism and having an inclined cam 81 at its lower end, with which a pin 82, carried on one of the clockwork-wheels, engages. Above the cam the lever 80 is cut out at 83, so that upon the upward movement of the pin 82 the lever 80 will be free to move inward. Pivotally connected to the lever 80 is a small plunger 84, extending through the cylindrical casing 5, engaging the spring 79, and normally keeping said spring beneath the insulating-head 78 of the plunger 77. The parts are so arranged that when the box is inactive the pin 82 will be in engagement with the upper part of the cam-surface 81, so that an instant after the starting of the box the pin 82 leaves said cam-surface and allows the spring 79 by its tension to be disengaged from the insulating-head 78, whereby the plunger 77 is free to drop downward and break the auxiliary circuit between the lever 70 and the contact-spring 74.

The operation of my invention is as follows: When the box is operated by the patrolman or citizen at the box, the outer door 2 is opened, removing the pin 24 and the stud 22 and subsequently, if an interference device is used, withdrawing the pin 28 from said interference mechanism, as is common. The disengagement of the pin 24 from the stud 22 allows the heavy spring 21 to move the switch-arms 14 14 into engagement with the contact-plates, so as to cut the box into the circuit. The hook 8 is now pulled down, elevating the trip-lever 6 and starting the clockwork, whereupon the main circuit will be broken by the contact-wheel 11, so as to send in the desired signal. Immediately upon the starting of the train the latch 26 will be thrown down behind the pin 27, so that the outer door can be immediately closed, the lever 20 moving out of engagement with the cross-bar 16, but said cross-bar being prevented from following this movement by the latch 26. Immediately before the stopping of the box-train the latch 26 is withdrawn from engagement behind the pin 27 and the spring 19 moves the switch-arms 14 14 to cut out the box. The operations referred to are well known, and it will be observed that they do not in any way interfere with the auxiliary mechanism. When the box is to be operated from the auxiliary circuit, that circuit is closed through the magnets 33 33. The resistance of the armatures 34 and 35 to the magnetic attraction will be so proportioned (and, in fact, the work which

such have to perform will provide for it) that the armature 34 will be attracted, so as to come into actual engagement with the poles of said magnets, whereby the magnets 33 33 will be converted into a horseshoe-magnet of manifestly greater strength, which will attract the armature 35. The attraction of the armature 34 operates to swing the lever 39 and trip the latch-head 44 to release the lever 46. This releasing of the latter lever causes its lower end to engage the pin 49 and to move the switch-arms 14 14 into engagement with the contact-plates 18 18, so that the box will be cut into the line and will be ready to transmit the signal. As soon as the armature 34 engages with the poles of the magnet 33 and said magnet therefore is converted into a horseshoe-magnet the armature 35 will be attracted, elevating the leaf-spring 61 and causing the wedged head 62 to engage on the other side of the projection 63. The first movement of the armature 35 actuates the latch 75 to release the lever 72. The movement of this armature engaging the trip-lever 66 with the cam 68 trips the box, which thereupon sends in the signal. Immediately after the clockwork is started the pin 82 will leave the cam-surface 81, so as to free the spring 79, which will by its tension be disengaged from beneath the lower end of the plunger 77, and the lever 70 will thereupon drop by its weight, so as to break the auxiliary circuit and sound the alarm at the auxiliary station. This breaking of the auxiliary circuit, it will be observed, does not take place until after the clock-train has actually started, so that there can be no failure of operation whatever. The purpose of employing the latch 75, which is controlled by the armature 35 and the auxiliary magnet, is to prevent the auxiliary circuit from becoming broken by the disengagement of the spring 79 from the lower end of the plunger 77 during the operations of the box by the patrolman or citizen at the box. When the alarm has been transmitted from the street or patrol box by the closing of the auxiliary circuit, the fireman or other authorized person must reset the auxiliary mechanism before it can be again used. These operations are accomplished by opening the inner door, whereupon the finger-piece 54 will be immediately thrown out to a horizontal position by the spring 56, so that the inner door cannot be again closed unless the lever 46 has been reset. The finger-piece 54 is therefore pressed downward, causing the pin 55 to engage the lever 56, and the end of said lever is again moved into engagement with the latch-head 44. At the same time the lower end of the lever 72 is moved inward, so as to elevate the plunger 77 into engagement with the top of the spring 79 and cause said lever 72 to be engaged by the slot 76 of the latch 75.

The modified forms of double magnet shown in Figs. 5<sup>a</sup> and 5<sup>b</sup> may in some instances be considered preferable; but in operation they



are identical with the form already described. With the first modification the two coils are arranged side by side and extend crosswise of the box instead of lengthwise thereof, poles of like polarity being adjacent. Connecting the like poles of the two coils are the bars 85, which are arranged parallel with each other and extend slightly beyond the circumference of the coils. The ends of these bars constitute magnetic poles which are energized by the coils. The two armatures cooperate with these poles, one armature being brought into actual contact with two of the poles, so as to bridge the magnetic field at one end, after which the other armature will be attracted. The modification shown in Fig. 5<sup>b</sup> is very similar to the form just described, differing therefrom only in the use of a single coil, but operating in precisely the same way.

Having now described my invention, what I claim as new, and desire to secure by Letters Patent, is as follows:

1. In fire-alarm or analogous systems, the combination with a street or patrol box, of auxiliary mechanism for operating said box comprising an auxiliary magnet located adjacent to the box, connections between said magnet and the tripping mechanism of the box, a circuit-breaker in the auxiliary circuit, a latch for normally closing said circuit-breaker, and connections between the auxiliary magnet and said latch, substantially as set forth.

2. In fire-alarm or analogous systems, the combination with a street or patrol box, of auxiliary mechanism for operating said box comprising an auxiliary magnet located adjacent to the box, connections between said auxiliary magnet and the tripping mechanism of the box, a circuit-breaker in the auxiliary circuit, a latch operated by the auxiliary magnet for keeping said circuit-breaker normally closed, and means controlled by the box for actuating said circuit-breaker upon the starting of the clock-train, substantially as set forth.

3. In fire-alarm or analogous systems, the combination with a street or patrol box, of auxiliary mechanism for operating said box comprising an auxiliary magnet located adjacent to the box, connections between said magnet and the tripping mechanism of the box, a circuit-breaker in the auxiliary circuit, a latch controlled by the auxiliary magnet for keeping said circuit-breaker normally closed, said latch being released when said magnet is energized, and means controlled by the clock-train for subsequently operating said circuit-breaker, substantially as set forth.

4. In fire-alarm or analogous systems, the combination with a street or patrol box, of auxiliary mechanism for operating said box comprising an auxiliary magnet located adjacent to the box, connections between said magnet and the tripping mechanism of the box, a circuit-breaker in the auxiliary circuit, a latch controlled by the auxiliary magnet for keeping said circuit-breaker normally closed, said latch being released when said magnet is energized, means controlled by the clock-train for subsequently operating said circuit-breaker, and a resetting device for the circuit-breaker, substantially as set forth.

5. In fire-alarm or analogous systems, the combination with a street or patrol box, of auxiliary mechanism for operating said box comprising an auxiliary magnet located adjacent to the box, connections between said auxiliary magnet and the tripping mechanism of the box, a circuit-breaker in the auxiliary circuit, a plunger connected to one element of said circuit-breaker, a spring for normally keeping said plunger elevated to close the auxiliary circuit, and means controlled by the clock-train for releasing said plunger to allow the auxiliary circuit to be broken, substantially as set forth.

6. In fire-alarm or analogous systems, the combination with a street or patrol box, of auxiliary mechanism for operating said box comprising an auxiliary magnet located adjacent to the box, connections between said magnet and the tripping mechanism of the box, a circuit-breaker in the auxiliary circuit, a plunger connected to one element of said circuit-breaker, a spring for keeping said plunger normally elevated, a cam-lever, the movement of which is controlled by the clock-train, and connections between said cam-lever and spring for operating the latter, substantially as set forth.

7. In fire-alarm or analogous systems, the combination with a street or patrol box, of auxiliary mechanism comprising an auxiliary magnet located adjacent to the box, connections between said magnet and the tripping mechanism of the box, a circuit-breaker located adjacent to said magnet, a lever connected to one element of said circuit-breaker, a latch for engaging said lever, and connections between said latch and the armature of the auxiliary magnet, substantially as set forth.

8. In fire-alarm or analogous systems, the combination with a street or patrol box, of auxiliary mechanism comprising an auxiliary magnet located adjacent to the box, connections between said magnet and the tripping mechanism of the box, a circuit-breaker located adjacent to said magnet, a lever connected to one element of said circuit-breaker, a latch for normally locking said lever, connections between said latch and the armature of the auxiliary magnet, a plunger connected to the same element of the circuit-breaker, a spring normally engaging beneath said plunger, and means operated by the clock-train for releasing said spring from engagement with said plunger, substantially as set forth.

9. In a fire-alarm or similar system, the combination with a street or patrol box having a switch by which the box is normally



cut out of the line, of an auxiliary magnet located adjacent to the box, mechanism operated by said magnet for actuating said switch to cut the box into the main line, and mechanism operated from the auxiliary circuit for tripping the box subsequent to the actuation of the switch, substantially as set forth.

10. In a fire-alarm or similar system, the combination with a street or patrol box having a switch by which the box is normally cut out of the line, of an auxiliary magnet located adjacent to the box, mechanism controlled by said magnet for actuating said switch for cutting the box into the line, and mechanism controlled by said magnet for subsequently tripping the box, substantially as set forth.

11. In a fire-alarm or similar system, the combination with a street or patrol box having a switch by which the box is normally cut out of the line, of a double magnet located adjacent to the box, an armature cooperating with two poles of said magnet for actuating said switch, and an armature cooperating with the other poles of said magnets for tripping the box, substantially as set forth.

12. In a fire-alarm or similar system, the combination with a street or patrol box having a switch by which the box is normally cut out of the line, of a double magnet in the auxiliary circuit located adjacent to said box, an armature cooperating with two poles of said magnet for actuating said switch, said armature engaging said poles so as to close the magnetic field thereat, and an armature cooperating with the other poles of the magnet for tripping the box, the operation of said armatures taking place successively, substantially as set forth.

13. In a fire-alarm or similar system, the combination with a street or patrol box having a switch by which the box is normally cut out of the line, of an auxiliary magnet located adjacent to the box, an armature controlled by said magnet for actuating a trip, a lever cooperating with said trip for actuating the switch to cut the box into the line, a finger-lever for resetting the switch-operating lever, and a spring tending to normally move said finger-lever to a horizontal position upon the

operation of the switch-actuating lever, substantially as set forth.

14. In a fire-alarm or similar system, the combination with a box having a door, of an auxiliary magnet located adjacent to the box, a trip actuated by said magnet, a cut-out switch normally cutting the box out of the line, a lever engaging said trip and operating said switch to cut the box into the line, a finger-lever carried by the switch-operating lever, and a spring tending to move said finger-lever to a horizontal position when the switch-operating lever has been actuated, whereby said finger-lever will act as a stop for preventing the closing of the door of the box until the switch-actuating lever has been reset, substantially as set forth.

15. An improved double magnet, comprising two parallel energized magnets, an armature cooperating with the poles of said magnets at one end and being attracted so as to actually engage said poles to close the magnetic field, and a second armature cooperating with the poles of the magnets at the other end, substantially as set forth.

16. An improved double magnet, comprising two parallel coils, an armature cooperating with the poles of said coils at one end and being attracted so as to actually engage said poles to close the magnetic field, and a second armature cooperating with the poles of the magnets at the other end, substantially as set forth.

17. An improved double magnet comprising two parallel coils, an armature cooperating with the poles of said coils at one end and being attracted so as to actually engage said poles to close the magnetic field, and a second armature cooperating with the poles of the magnet at the other end, the resistance to the magnetic attraction of the first armature being less than that of the second armature, substantially as set forth.

This specification signed and witnessed this 21st day of December, 1897.

BARTHOLOMEW OEHMEN.

Witnesses:

FRANK L. DYER,  
EUGENE CONRAN.