

(No Model.)

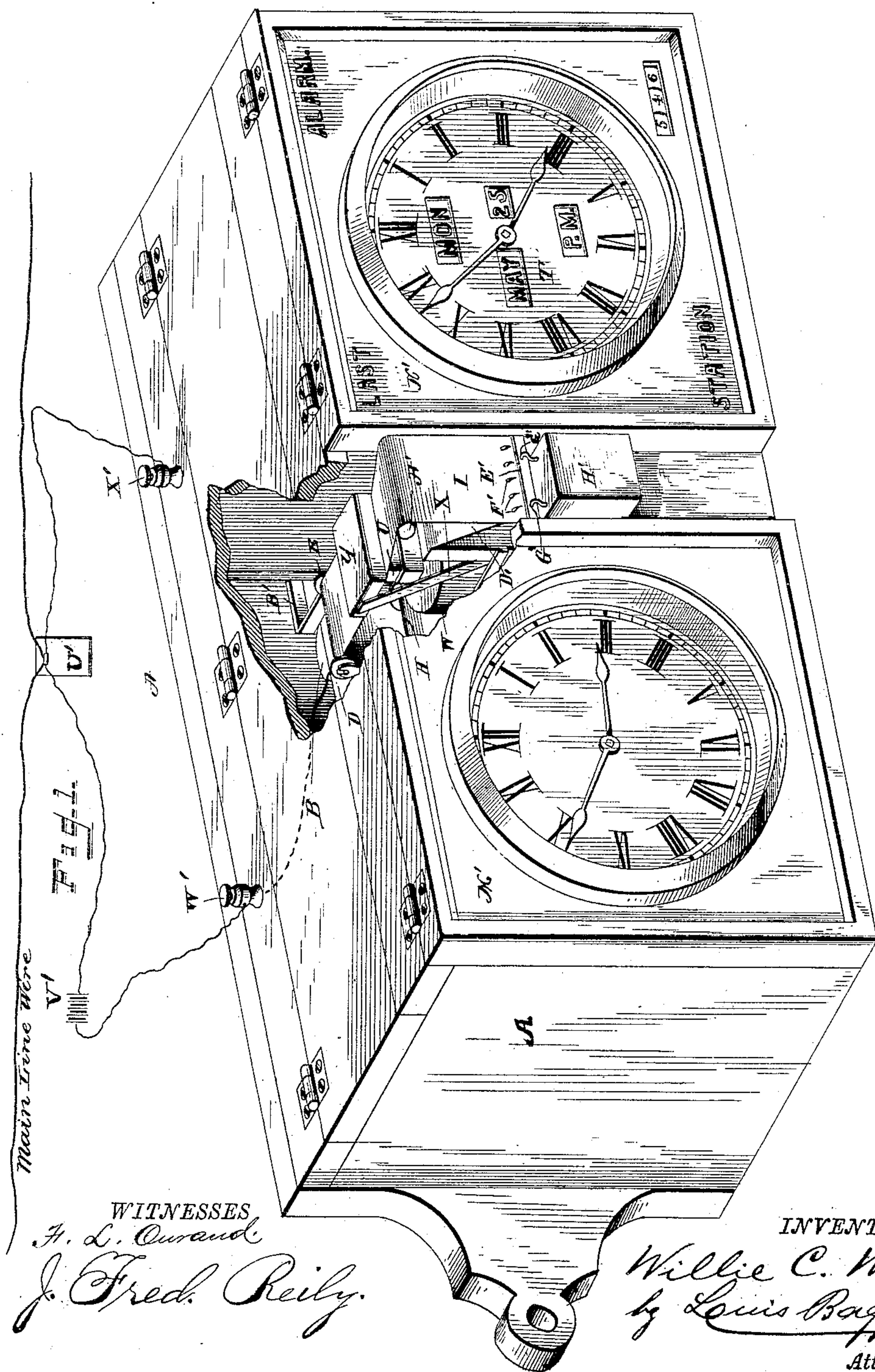
4 Sheets—Sheet 1.

W. C. WALTER.

FIRE ALARM INDICATOR.

No. 334,399.

Patented Jan. 12, 1886.

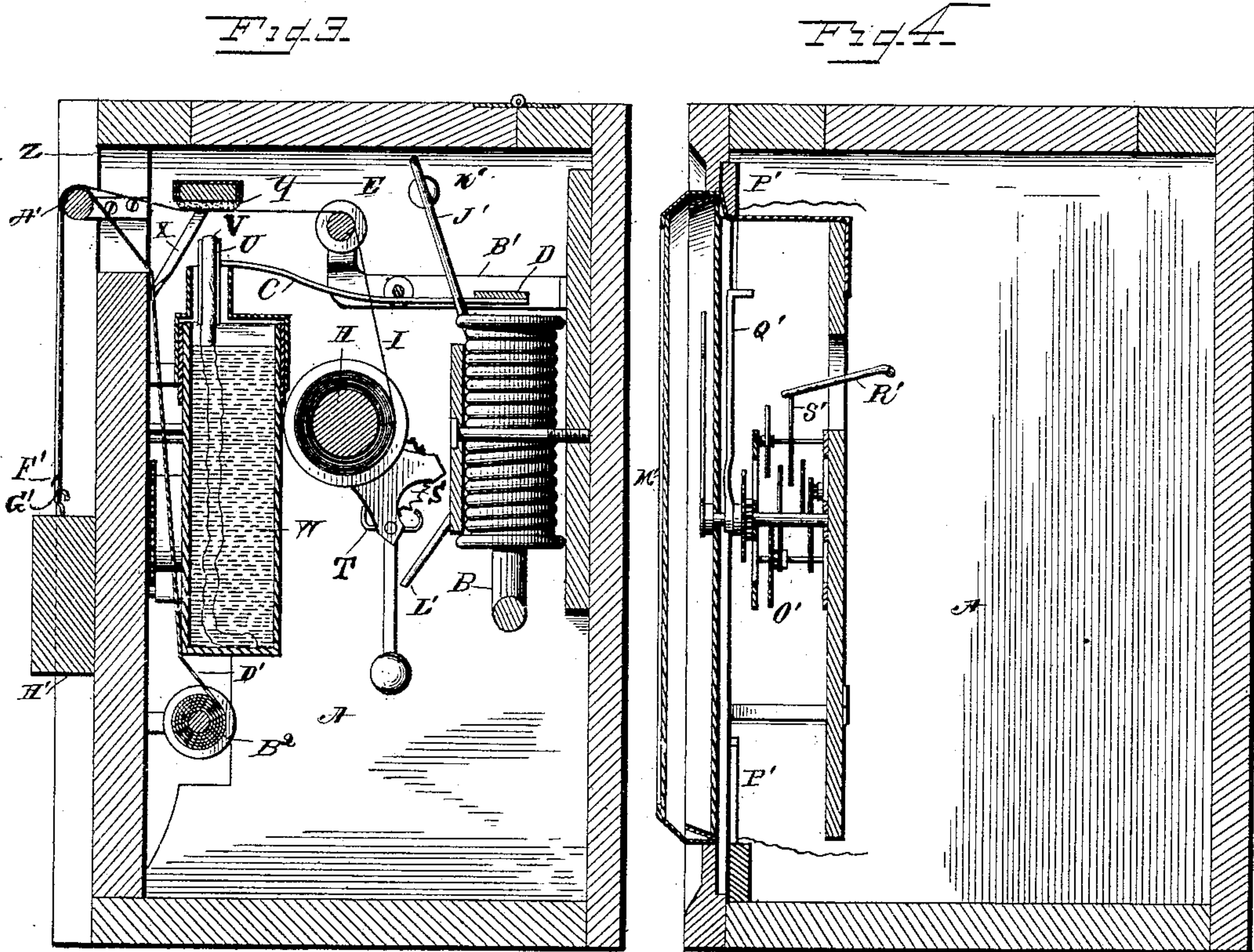
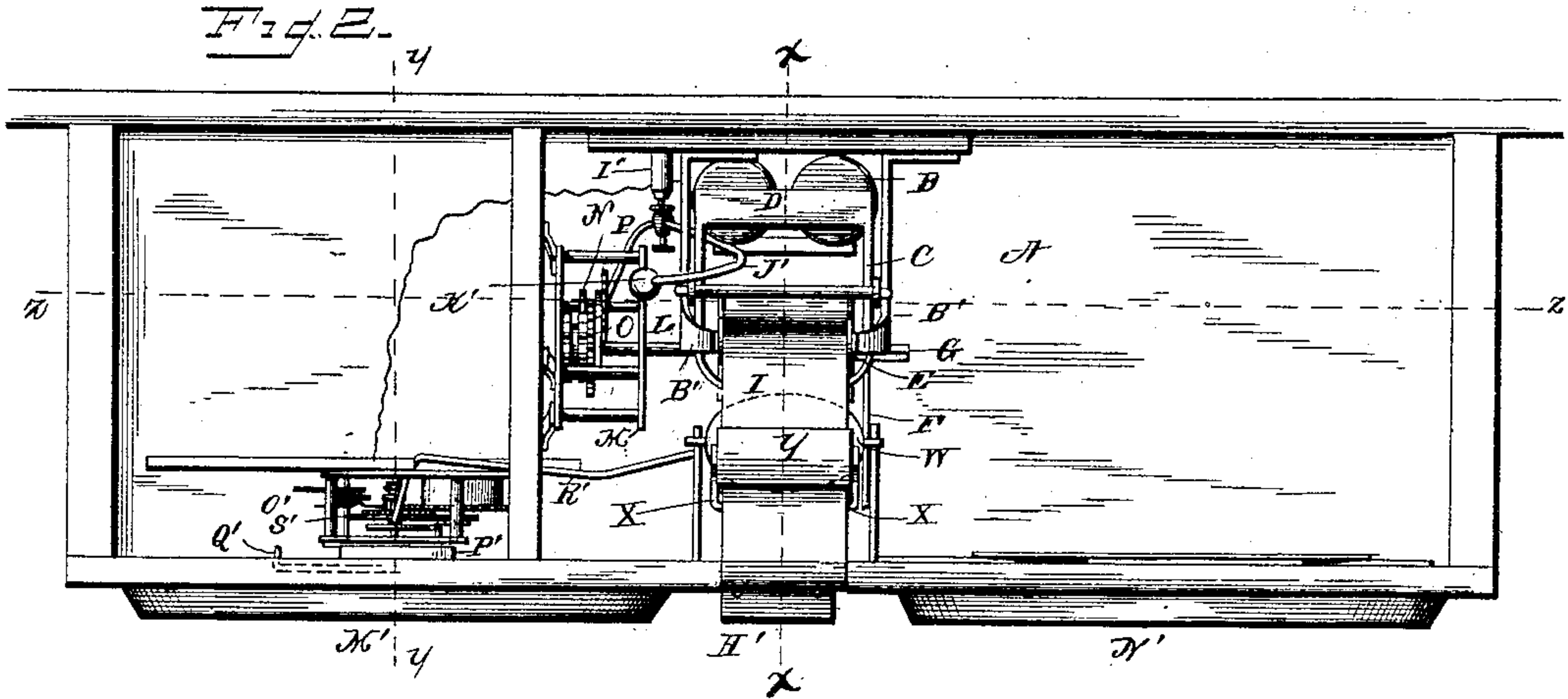


N. PETERS, Photo-Lithographer, Washington, D. C.

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WITNESSES
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J. Fred. Reily.

INVENTOR
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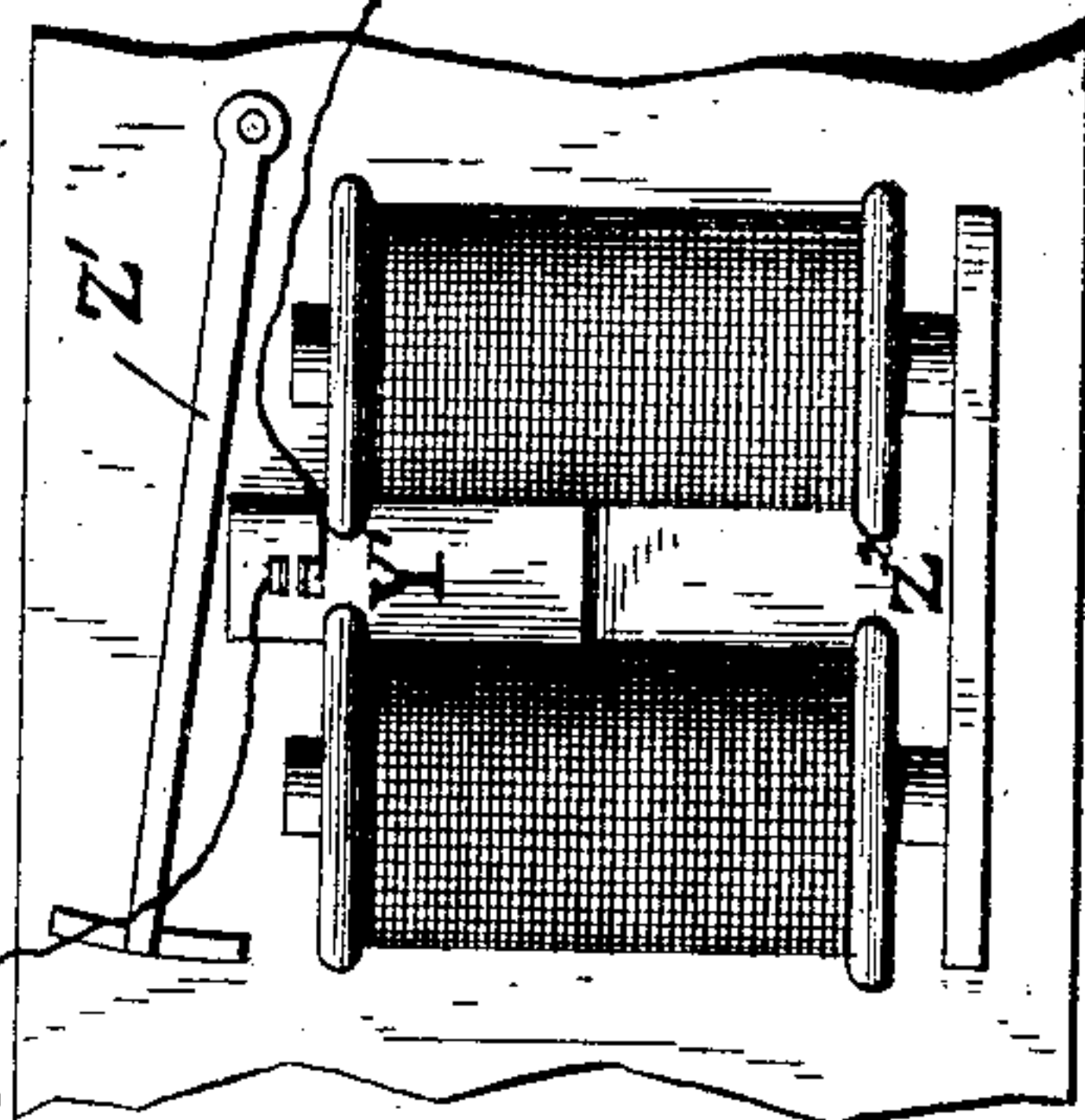
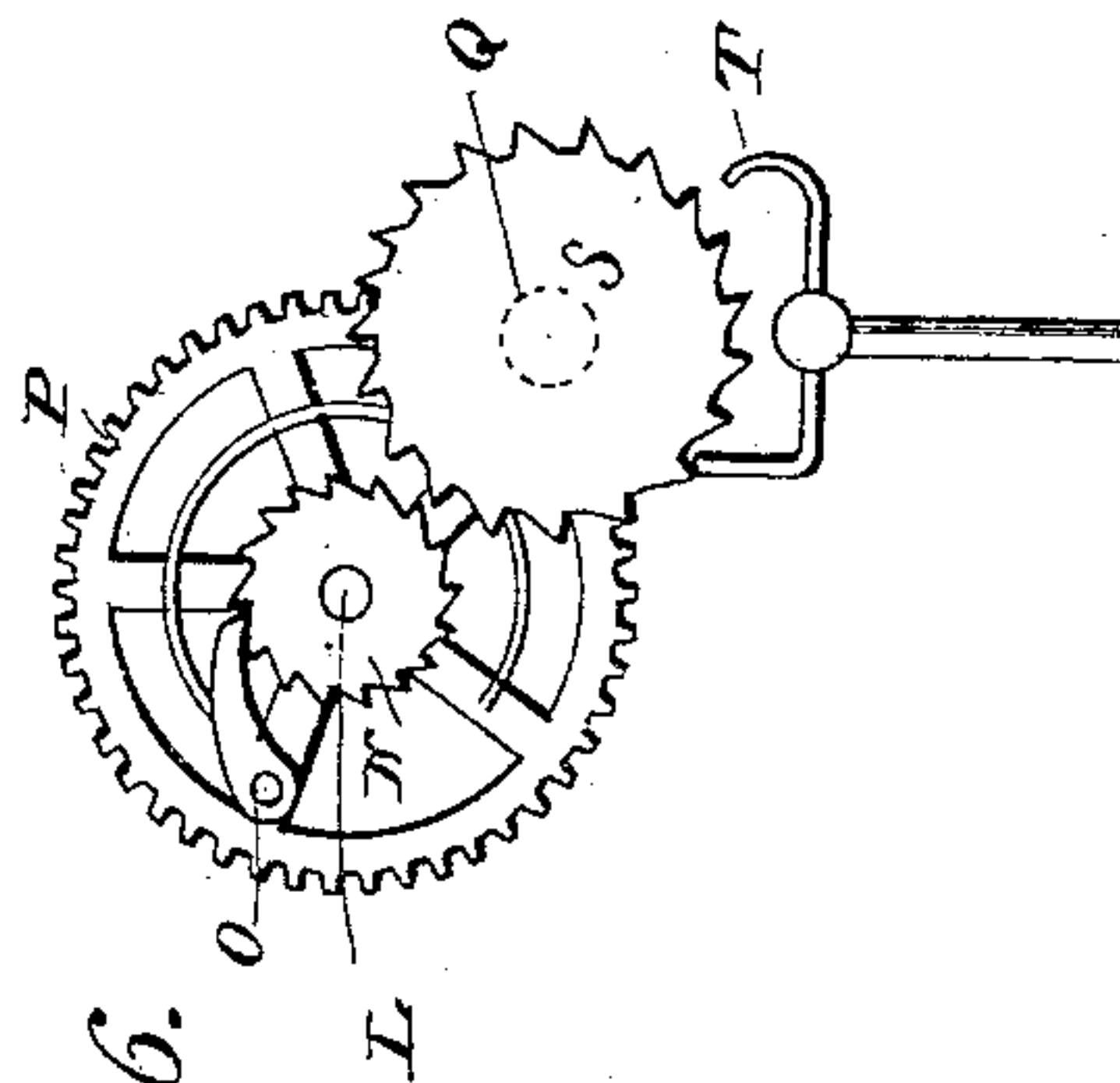
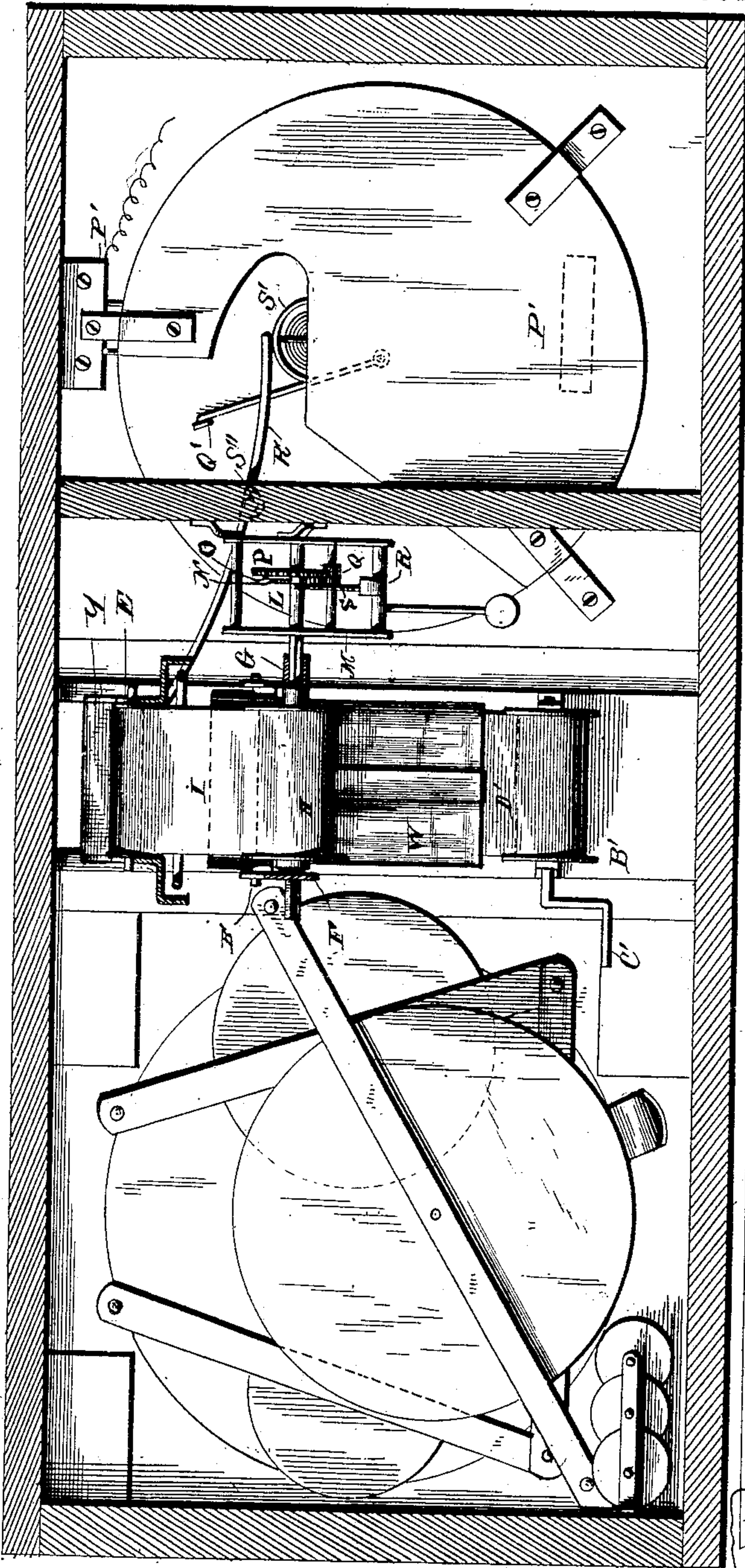
(No Model.)

4 Sheets—Sheet 3.

W. C. WALTER.
FIRE ALARM INDICATOR.

No. 334,399.

Patented Jan. 12, 1886.



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Fig. 8.

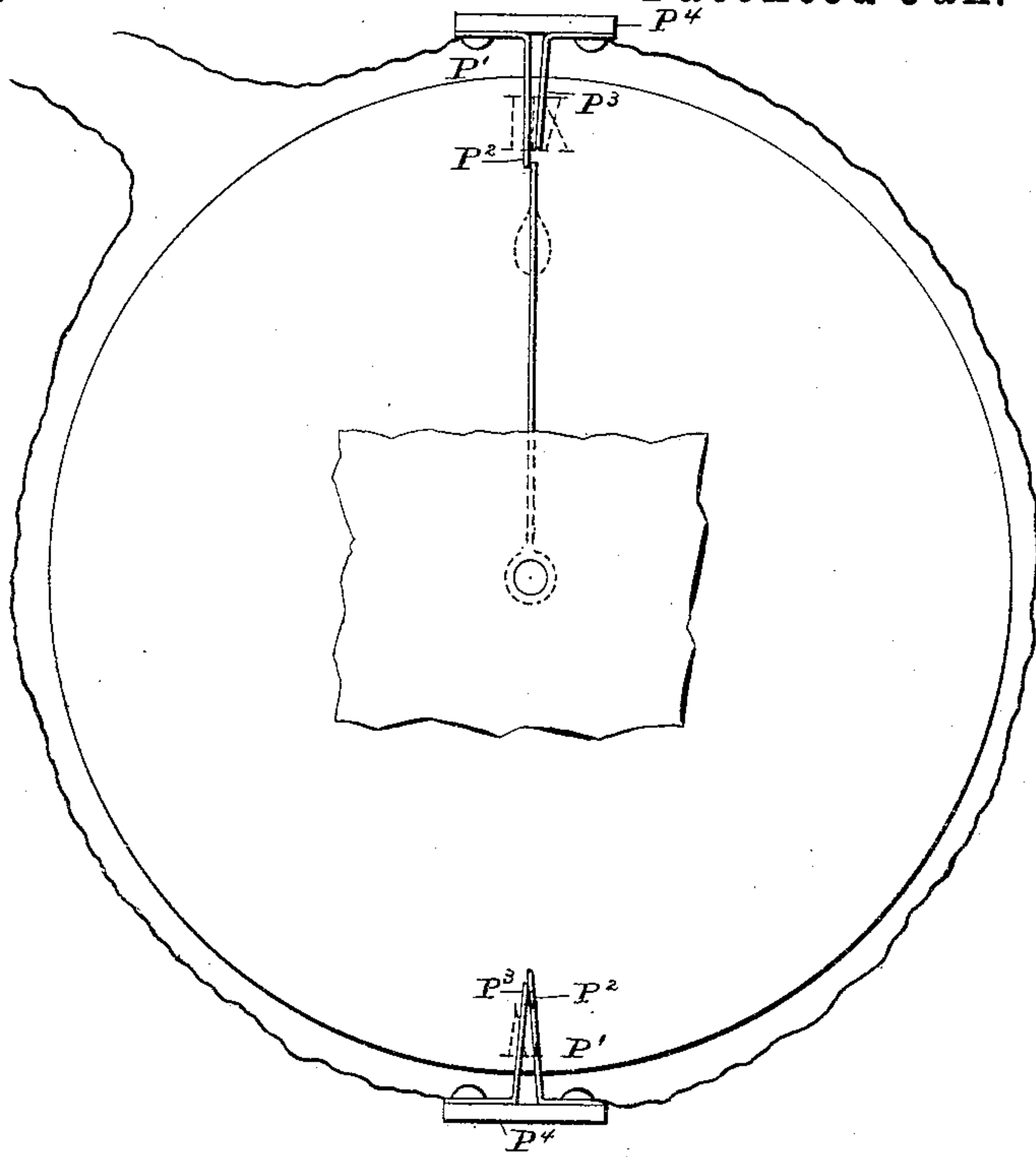
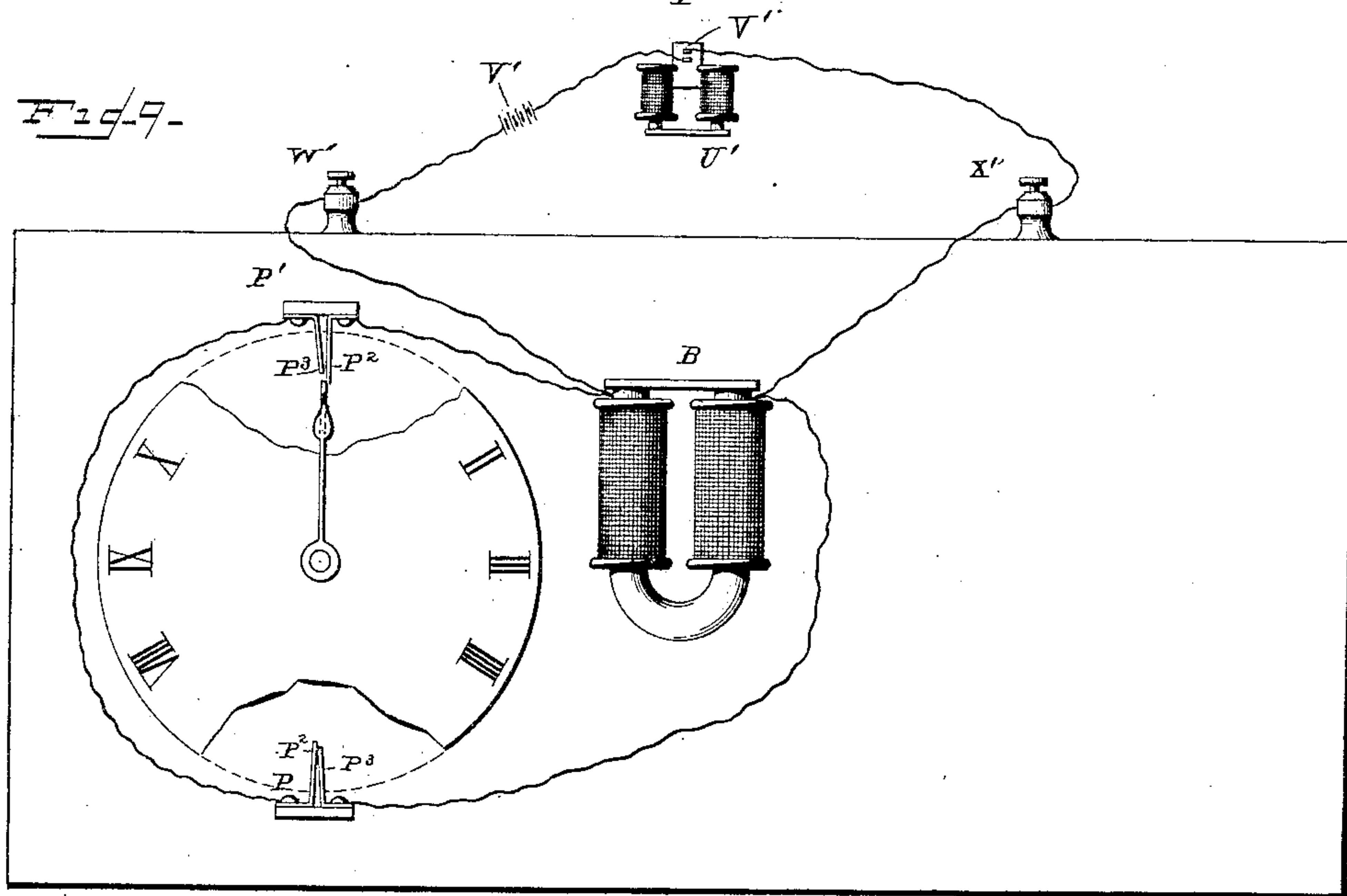


Fig. 9.



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UNITED STATES PATENT OFFICE.

WILLIE C. WALTER, OF RICHMOND, VIRGINIA, ASSIGNOR OF TWO-THIRDS
TO GEO. B. McADAMS, OF SAME PLACE.

FIRE-ALARM INDICATOR.

SPECIFICATION forming part of Letters Patent No. 334,399, dated January 12, 1886.

Application filed August 13, 1885. Serial No. 174,302. (No model.)

To all whom it may concern:

Be it known that I, WILLIE C. WALTER, a citizen of the United States, and a resident of Richmond, in the county of Henrico and State of Virginia, have invented certain new and useful Improvements in Fire-Alarm Indicators; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification.

Figure 1 is a perspective view of my improved fire-alarm indicator, parts of the same having been broken away for the purpose of showing the construction more clearly. Fig. 2 is a top view of the same with the upper portion of the casing broken away. Fig. 3 is a vertical sectional view, taken on the line x x in Fig. 2. Fig. 4 is a vertical sectional view, taken on the line y y in Fig. 2. Fig. 5 is a vertical sectional view, taken on the line z z in Fig. 2. Fig. 6 is a detail view of a part of the operating mechanism. Fig. 7 is a detail view of a portion of the interior of one of the alarm-boxes. Fig. 8 is a rear view of the clock-dial, with part of the rear casing of the same broken away, and Fig. 9 is a diagram of the entire electrical system.

The same letters refer to the same parts in all the figures.

This invention relates to fire-alarm indicators; and it has for its object to provide a device of this class which shall be operated automatically by the closing of the circuit when an alarm is given, to register the number of the "box" from which the alarm is given.

The invention further consists in the combination, with the registering mechanism, of mechanism for automatically holding the fire-alarm in check while the hour is being struck, by breaking the local circuit in which the fire-alarm is situated at the moment when the hour is to be struck, and holding the said circuit open until the striking of the hour has been completed.

The invention also consists in the combination, with this apparatus, of a dial having characters to be set by hand, for the purpose

of indicating the day, date, and hour at which the last alarm was struck.

The invention further, and finally, consists in certain improvements in the detailed construction of the recording mechanism, which will be hereinafter fully described, and particularly pointed out in the claims.

In the drawings hereto annexed, A designates a suitably-constructed casing within which my improved registering mechanism is arranged. Said mechanism comprises, first, an electro-magnet, B, secured in a vertical position to the rear side of the casing, which latter is provided with forwardly-extending brackets B' B', affording bearings for a vibrating frame, C, the rear end of which carries the armature D. The brackets B' B' also extend in a forward and upward direction, and have bearings for a guide-roller, E, the functions of which will be presently described.

F is a brace or bracket extending from the rear to the front side of the casing, and having a bearing for one end of the shaft G of a cylindrical roller, H, on which is wound a strip of paper, I, upon which the number of the box is recorded when an alarm is struck, as will be hereinafter described. One end of the shaft G extends through the bracket, as shown, and is squared to receive a key or crank, by means of which it may be revolved for the purpose of winding a fresh strip of paper thereon when the old one is exhausted. The other end of the said shaft is connected with a shaft, L, journaled in a suitable frame or bracket, M, and having a ratchet-wheel, N, connecting or meshing with a spring-pawl, O, pivoted upon the side of a spur-wheel, P, which is loose upon the shaft L, but may be caused to revolve therewith by the said pawl-and-ratchet mechanism. The spur-wheel P meshes with a pinion, Q, upon a shaft, R, which latter carries an escapement-wheel, S, engaging an escapement-lever, T, of ordinary construction.

The front end of the vibrating frame C supports a tube, U, having a wick, V, which extends into a suitably-arranged reservoir, W, containing oil or ink of any suitable composition which will rise through the wick and keep the latter constantly soaked. The upper end

of said wick should extend but slightly above the upper edge of the tube. Suitable brackets attached to the front side of the casing support a frame, X, in which is arranged a suitable pad, Y, against which the wick-carrying tube will strike when it is raised or lifted by the vibration of the frame C. The paper strip I, after passing from the roller upon which it is wound and over the guide-roller E, is carried between the wick-tube U and the pad Y, and thence through a slot, Z, in the front side of the casing, and over a roller, A', suitably journaled directly below and in front of the said slot. It is obvious that when the frame C is vibrated it will carry the wick-tube up against the paper strip, forcing the latter against the pad and making an impression or mark thereon.

Journaled to the rear side of the front part of the casing is a flanged roller, B', having a crank or handle, C', by means of which it may be readily revolved. Attached to the said roller is one end of a strap or belt, D', of textile material, leather, or any other suitable material—which, after being wound upon the said roller, is carried up through the slot Z over the guide-roller A', and underneath the paper strip I, as shown. The projecting end of the belt D' has attached thereto a plate, E', provided with a series of barbs or prongs, F', and having perforations G', to which a weight, H', may be attached detachably by means of hooks entering the said perforations. The projecting end of the paper strip I is to be connected to the plate E' of belt D' by means of the barbs F', and when thus connected it may be unwound from the roller H by the action of the weight at a speed which will be regulated by the escapement to which the said roller is geared, and which of course may be so constructed as to regulate the speed properly to cause the paper strip to receive clear and distinct impressions from the inking mechanism, without, however, causing the said marks to be placed too far apart. It is obvious that the function of the strap or band D' is simply to strengthen and re-enforce the paper strip, which, if the weight for unwinding were attached directly thereto, would be easily broken, while by the arrangement of the belt, as herein described, great strength, and also perfection of operation, are secured.

The rear side of the casing has a forwardly-extending bracket, I', to which is pivoted a lever, J', the upper end of which extends under one of the sides of the vibrating frame C, whence it is curved in an upward direction, and provided with a weight, K', which about counterbalances the lower part of the said lever. The latter or lower part is provided with a laterally-extending arm, L', extending in rear of the escapement-lever, and serving, normally, as a stop or brake to prevent the said escapement-lever from working. When the lever is in this position, its upper end or arm rests against the under side of one of the side pieces of the vibrating frame C, in

rear of the fulcrum of the latter. It follows that when the said frame is vibrated its first impulse will be to tilt the stop-lever J', thus releasing the escapement-lever and permitting the escapement to work, the latter being actuated by the unwinding from the roller H of the paper strip I by means of the weight connected to the end of the latter, as hereinbefore set forth.

The front side of the casing A is provided with hinged doors M' and N', the rear side of the former of which is provided with a suitable casing containing a clock-work, O', of ordinary construction, and the dial and hands of which are visible, as shown, through a suitable opening in the said door. Arranged upon or attached to the clock-casing at points registering with the hours, for the striking of which by electricity provision has been made at the alarm-station where my improved indicator-box is located, are commutators P', adapted for the breaking of the circuit, each of the said commutators consisting of the two spring-arms P² P³, secured at one of their ends to a suitable wooden block, P⁴, and having the wires of the local circuit connected to their secured ends, as shown, one of the arms (the arm P²) being somewhat longer than the other arm, so that its free end projects beyond the free end of the shorter arm, P³, when the free portions of the two arms are pressing against each other, which is their normal position. In the drawings hereto annexed I have shown these commutators arranged registering with the hours of six and twelve; but it will of course be understood that more of the commutators may be used, suitably arranged, when additional hours are to be struck; or, that when only the hour of twelve, for instance, is to be struck, all commutators, except the one registering with that hour, are to be dispensed with.

Q' is an arm attached to the socket of the hour-hand of the clock-works, and adapted to revolve with the same, and to engage the long springs of the commutators, disengaging them from the shorter springs or contact-points, and accordingly breaking the circuit, and causing it to remain broken for a short period at the time or times when the hour is being struck.

R' is a lever having its fulcrum at S''. One end or arm of the said lever rests upon the vibrating frame C, in front of the fulcrum of the latter, and its other arm extends over the works of the clock directly above the balance-wheel S', so that when the lever is tilted by the vibration of the frame C the opposite arm of said lever shall be thrown into contact with the rim of the balance-wheel, thereby stopping the latter and the clock from running, and indicating the exact hour at which such disturbance took place; or, in other words, the hour at which an alarm was turned in at the station.

The door N' is provided with a clock-dial, T', the hands of which are adapted to be set by hand. The said dial is provided with slots,

through which are visible the faces of a series of calendar-wheels, also adapted to be set by hand, as well as a dial-wheel bearing the inscriptions "A. M." and "P. M.," respectively, and a series of numbered disks, which may be set so as to indicate the number of a box from which an alarm has been received. In the detailed construction and arrangement of these parts no novelty is herein claimed. Their function is simply to form a convenient and easily-accessible indicator, which may be set to show the exact time at which the last alarm was received at the station:

In order to illustrate the circuit, including my improved indicator and the connection of the same with the main line, I have designated at V' the battery of the local circuit, in which my improved indicator is included, and at U' a fire-alarm box on the main line, which is of ordinary construction, the arrangement of parts whereby the armature of the electro-magnet in the fire-alarm box (which is on the main line) operates to close the local circuit of the indicator being illustrated in the detail view, Fig. 7, of the drawings.

The local circuit is as follows: From one pole of the battery V' to the binding-post W' upon the casing A; thence to the electro-magnet in the said casing; thence through the commutator or commutators P', the wire running from base to base of the fixed ends of the spring arms of the commutators, as clearly shown in Figs. 8 and 9 of the drawings; thence to the electro-magnet; thence to the binding-post X' upon the casing A; thence to one of the spring-arms of the commutator Y' in the fire-alarm box, the said commutator being precisely similar in construction to the commutators P', previously described, with the exception that the spring-arms of the commutator Y' are normally open or free from contact with each other, as shown in Fig. 7, and are preferably of the same length; thence from the other spring-arm of the said commutator to the other pole of the battery V' of the local circuit. The commutator Y' is arranged beneath the armature in the fire-alarm box in such a position, as shown in Fig. 7 of the drawings, that when the alarm-box is pulled for the purpose of sounding an alarm the armature Z', descending or swinging downward to come in contact with its electro-magnet Z², will press the ends of the spring-arms of the commutator Y' together, thereby closing or "making" the local circuit.

The operation of the invention is as follows: When the alarm-box is pulled for the purpose of sounding the alarm, the first making of the local circuit will cause the electro-magnet in the casing A to attract its armature, thus causing the frame C to rock or vibrate upon its pivots. The result of this first vibration is threefold—namely, first, the wick-tube will be carried in an upward direction by the front end of the vibrating frame, so as to cause a mark or impression to be made upon the paper strip I, which of course must have been

properly adjusted beforehand; secondly, the stop-lever J' is tilted by the descent of the rear end of the vibrating frame, so as to release the escapement-lever and instantly start the unwinding of the paper strip I from the roller H; and, thirdly, the ascent of the front end of the vibrating frame serves to tilt the lever R', thus instantly stopping the clock. After this, by each closing of the local circuit, the frame C is vibrated, the armature being attracted by the electro-magnet; but the only result of such vibration will be that an additional mark is impressed upon the record-strip I, on which, as soon as the full alarm has been given, the number of the box may be easily read by the number and location of the marks. The recording mechanism may be stopped by hand as soon as the full alarm has been given once; or it may be permitted to repeat the record as often as the alarm is repeated from the box. When the full alarm has been given, the clock is again set and started and the recording mechanism placed in position to receive a new alarm. The record-dial is also set to indicate the hour of the last alarm. While the hour is being struck electrically at the station the circuit is broken, as herein described, through the commutators P', and the alarm will thus not be heard until a short time after the striking of the hour has ceased, thereby avoiding all confusion.

It is obvious that this device may be arranged to be operated by the breaking as well as by the making of the circuit by making such necessary changes as will readily suggest themselves to those skilled in the art to which it appertains.

The advantages of this invention will be readily appreciated without requiring any extended explanation. The record-slip will indicate infallibly the number of the box from which an alarm was sounded, and it may be torn off and filed away, to be produced at future times, if necessary, as evidence in case, as sometimes will happen, any dispute should arise as to the number of the box from which an alarm was sounded, thus showing clearly if an error, when one has occurred, is chargeable to any defect in the box system, or to mistakes or neglect on part of the firemen.

It is obvious that in the practical manufacture of this invention various changes might be made in the detailed construction and arrangement of parts, many of which are of such a nature that they might be replaced by other parts of well-known construction with satisfactory results. I would therefore have it understood that I do not limit myself to the precise construction and arrangement of parts herein shown, but reserve to myself the right to all modifications which may be resorted to without departing from the spirit of my invention.

Having thus described my invention, I claim and desire to secure by Letters Patent of the United States—

1. In a fire-alarm indicator, the herein-de-

scribed recording mechanism, comprising the record-slip wound upon a suitable drum, unwinding mechanism for the said record-slip, an electro-magnet, a vibrating frame carrying
 5 at one end the armature of said electro-magnet and at the other end a marking device adapted to make marks or impressions upon the record-slip, an escapement to control the unwinding of the record-slip from its drum, a
 10 lever having a laterally-extending arm adapted to form a stop or brake for the escapement-lever, and provided with an upwardly-extending arm extending under the rear end of the vibrating frame, so as to be tilted and cause
 15 the release of the escapement-lever when the said frame is first vibrated, and a counter-balance-weight at the end of the upper curved arm of the said tilting stop-lever, substantially as and for the purpose herein set forth.

20 2. In a fire-alarm indicator, the combination of the drum carrying the record-slip, the escapement connected with and adapted to control the revolution of the said drum when the said slip is being unwound, the vibrating ar-
 25 mature-carrying frame carrying the marking device, the tilting stop-lever having an arm adapted to engage and arrest the escapement-lever, and having a curved arm extending upwardly under the rear end of the vibrating
 30 frame and provided with a weight at its outer end, the guide-rollers for the record-slip, and means for attaching a weight to the end of the latter, so as to cause it to be unwound from the drum when the armature-carrying frame
 35 is vibrated, so as to release the escapement, substantially as and for the purpose herein set forth.

3. In a fire-alarm indicator, the combination of a record-slip wound upon a suitable drum,
 40 mechanism for unwinding the said record-slip, the vibrating frame carrying at one end the armature of an electro-magnet, a receptacle containing oil or some suitable marking composition, a tube supported upon the end
 45 of the vibrating frame opposite to the armature, said tube being arranged within the said receptacle, a wick arranged within the said tube, suitably-arranged guide-rollers for the record-slip, and a pad arranged above the
 50 latter and above the marking-tube, which latter, when raised by the vibrating frame, shall bear against the said pad, substantially as and for the purpose herein set forth.

4. In a fire-alarm indicator, the combination
 55 of the record-slip wound upon a suitable drum connected with an escapement, the marking mechanism, suitably-arranged guide-rollers, a drum having attached thereto one end of a belt or strap of textile or other suitable mate-
 60 rial, the other end of said belt passing over the outermost guide-roller, underneath the record-slip, a plate attached to the free end of the said belt and having a series of barbs for the attachment of the outer or free end of the
 65 record-slip, and a weight adapted to be attached detachably to the said plate, substantially as and for the purpose herein set forth.

5. In a fire-alarm indicator, the combination, with the record-slip arranged substan-
 70 tially as herein described, of a re-enforcing belt or strap, the free end of which may be connected detachably with the outer or free end of the record-slip, for the purpose of sup-
 75 porting the weight, which is to be attached to the said record slip for the purpose of unwinding the same from its drum, substantially as hereinbefore shown and specified.

6. In a fire-alarm indicator, the combination, with mechanism, substantially as herein de-
 80 scribed, for automatically recording the number of the box from which an alarm may be sounded, said mechanism comprising a record-slip, unwinding mechanism for the same, and a vibrating frame carrying at one end a suitable
 85 marking device and at the other end the armature of an electro-magnet, of a suitably-arranged clock, and a lever, one of the arms of which normally rests upon the lower end of the vi-
 90 brating armature-carrying frame, and the other arm of which is normally at a slight distance above the balance-wheel of the clock, with which latter it will be brought in contact, so as to stop the clock at the moment when the
 95 armature-carrying frame is vibrated by the making or breaking of the circuit, as the case may be, substantially as and for the purpose herein set forth.

7. In a fire-alarm indicator, the combination of a clock, an arm mounted upon the socket of the hour-hand of the same, the herein-de-
 100 scribed commutators, consisting each of the two spring-arms, one slightly longer than the other, normally in contact at their free ends, and arranged registering with the figures of the
 105 hours at which the time is struck electrically at the station at which the apparatus is arranged, said commutators being arranged in the local circuit in such manner that the same may be broken by contact of the arm upon the
 110 hour-hand socket with the free ends of the longer spring-arms of the said commutators, and the recording mechanism arranged to be operated by the action of an electro-magnet which is in the same circuit, substantially as
 115 and for the purpose herein shown and specified.

8. As an improvement in automatic fire-
 120 alarm indicators and recorders, the combination of the recording mechanism constructed as herein described, and adapted to be operated by an electro-magnet, the armature of
 125 which is mounted upon a vibrating frame, mechanism adapted to be released by the vibration of said frame, for controlling the unwinding of the record-slip from its drum, a clock, commutators arranged to be operated
 130 by an arm mounted upon the socket of the hour-hand of said clock, for breaking the circuit at stated hours, and a lever arranged to be tilted by the vibrating frame of the record-
 ing mechanism, for the purpose of stopping the clock when the said frame is actuated or vibrated by the electro-magnet in the act of first sounding an alarm, all arranged and op-

erating substantially as and for the purpose herein shown and specified.

9. The combination, in a fire-alarm system, of the alarm-box, the battery, the recording
5 mechanism constructed and arranged substantially as herein described, the stop-clock arranged to be operated automatically when an alarm is first sounded, the arm mounted upon the socket of the hour-hand of the clock, the
10 herein-described commutators, consisting each of the spring-arms, one somewhat longer than the other, normally in contact at their free ends, and arranged registering with the figures of the hours at which the time is struck elec-
15 trically at the station at which the apparatus

is arranged, said commutators being arranged in the local circuit in such a manner that the same may be broken by contact of the arm upon the hour-hand socket with the free ends of the longer spring-arms of the said commu- 20
tators, and the local line-wire arranged as described, substantially as and for the purpose shown and set forth.

In testimony that I claim the foregoing as my own I have hereunto affixed my signature 25
in presence of two witnesses.

WILLIE C. WALTER.

Witnesses:

WM. BAGGER,
ARTHUR L. MORSELL.