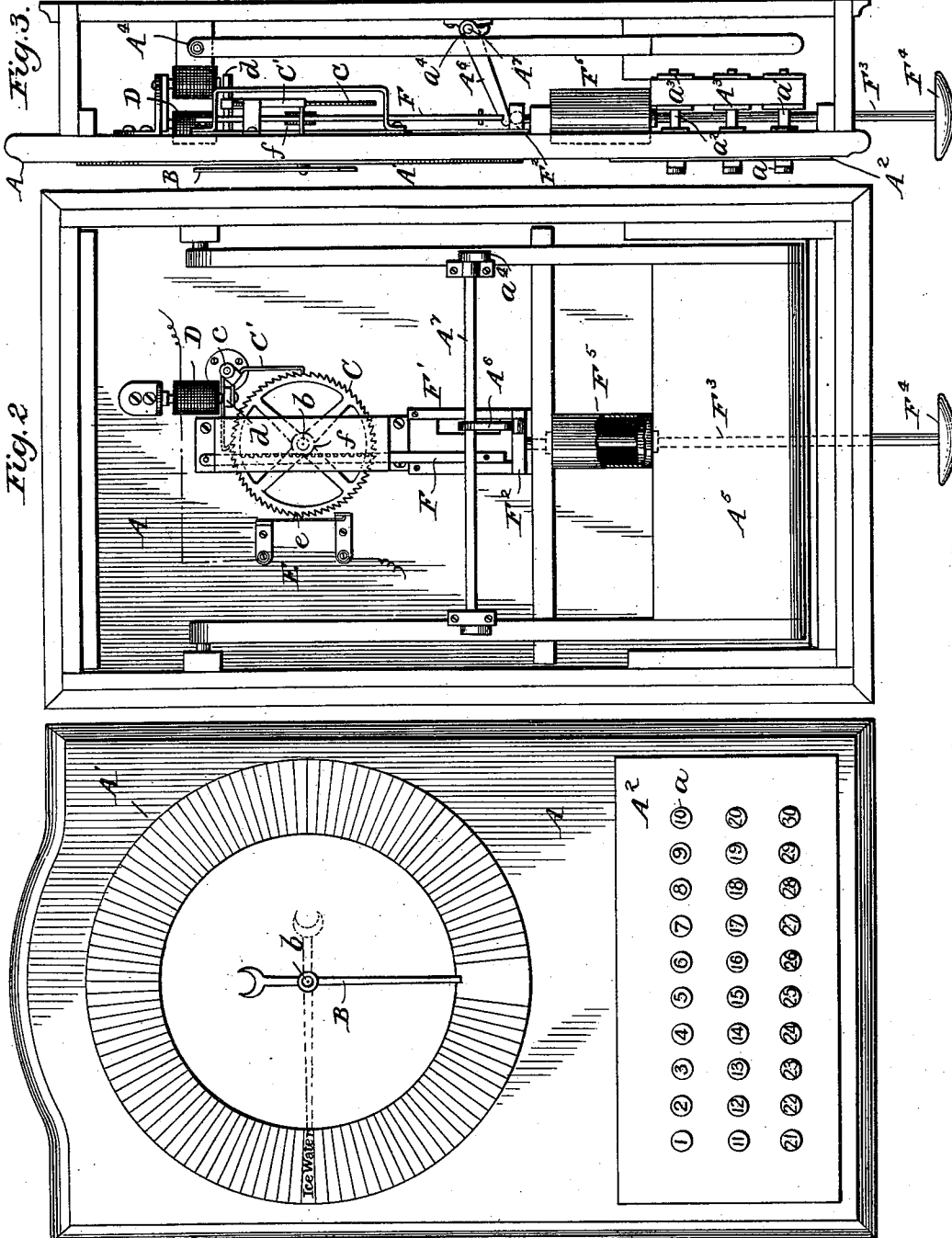


J. B. ROGERS.
ANNUNCIATOR.

No. 564,314.

Patented July 21, 1896.



Witnesses
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J. A. Fairbank

Fig. 1.

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(No Model.)

3 Sheets—Sheet 2.

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Fig. 4.

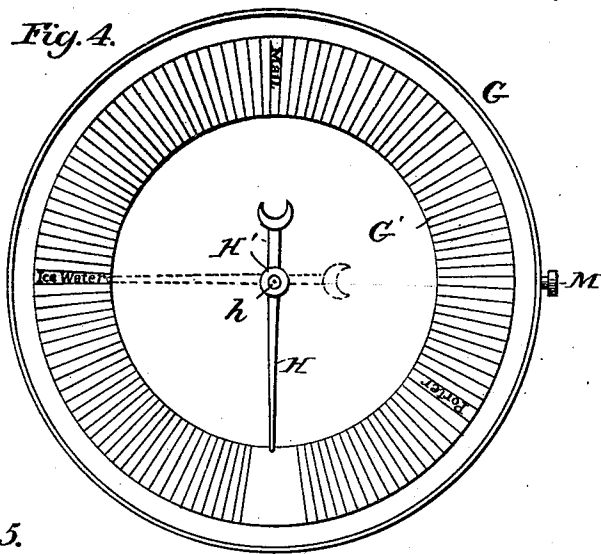


Fig. 5.

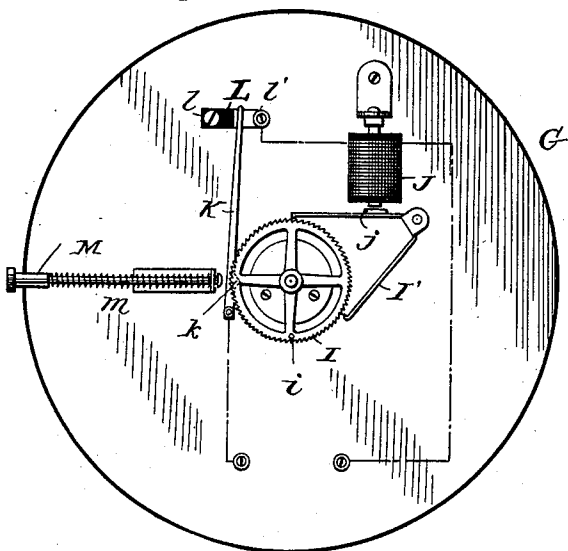
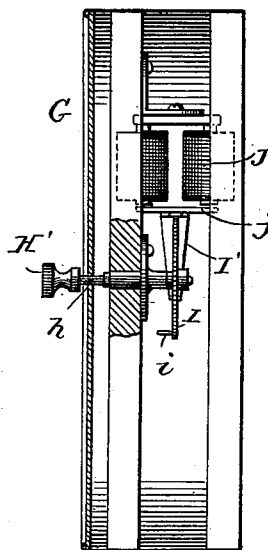


Fig. 6.



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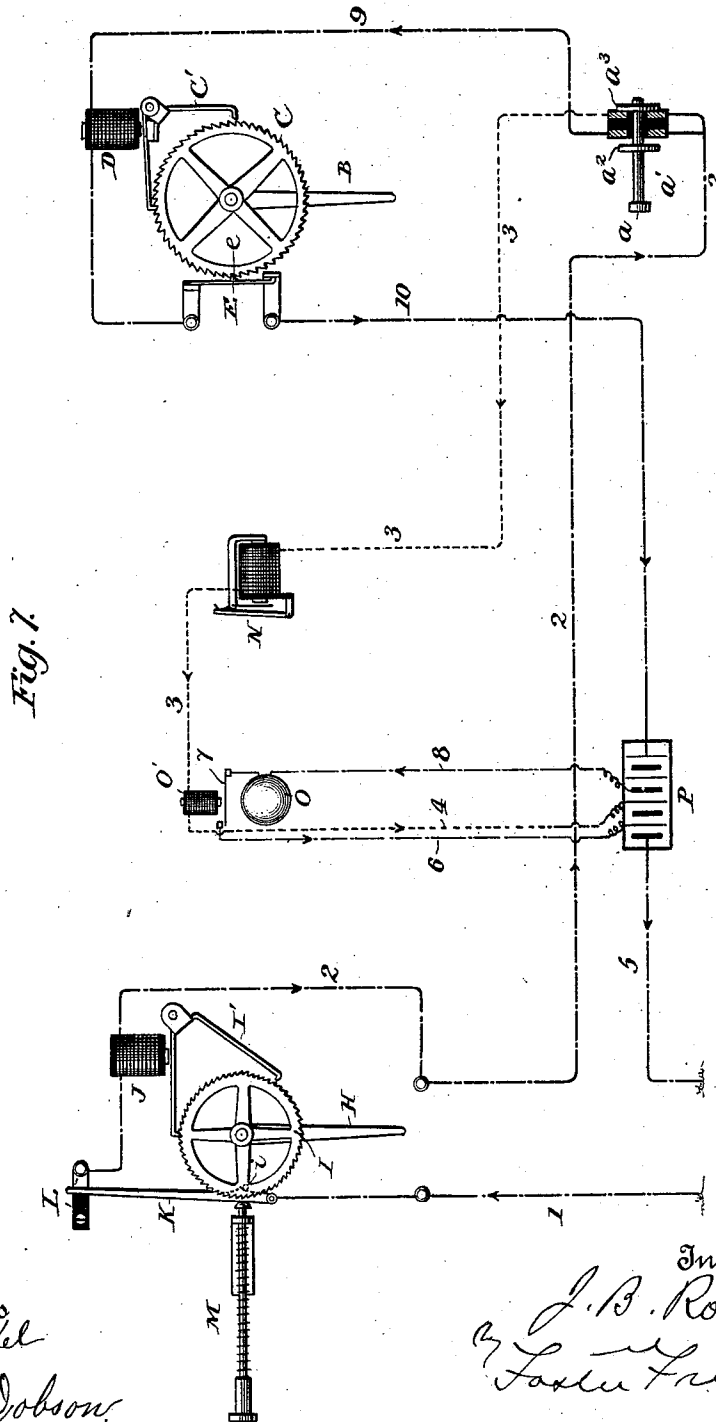
(No Model.)

3 Sheets—Sheet 3.

J. B. ROGERS.
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UNITED STATES PATENT OFFICE.

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ANNUNCIATOR.

SPECIFICATION forming part of Letters Patent No. 564,314, dated July 21, 1896.

Application filed October 31, 1894. Serial No. 527,557. (No model.)

To all whom it may concern:

Be it known that I, JOHN B. ROGERS, a citizen of the United States, residing at Zillah, in the county of Yakima and State of Washington, have invented certain new and useful Improvements in Annunciators, of which the following is a specification.

My invention relates to electric annunciators, and has for its object to provide a simple, cheap, and effective annunciator; and my invention consists in an annunciator having the features of construction, arrangement, and mode of operation substantially as hereinafter set forth.

Referring to the accompanying drawings, Figure 1 is a front view of the recording device. Fig. 2 is a rear view of the same. Fig. 3 is a side view, one of the side pieces being removed. Fig. 4 is a front view of the transmitter. Fig. 5 is a rear view thereof. Fig. 6 is a vertical section, and Fig. 7 is a diagram indicating the arrangement of the circuits.

As above indicated, my present invention relates to annunciators adapted for many and various purposes, but it is designed more particularly for hotel or similar uses, wherein there is a single recording instrument, and there are a number of transmitting instruments located in different parts of the building, all connected electrically with the central recording apparatus, and all arranged so that not only can the number of the room or other place from which the call is sent be designated, but the particular one of a large number of calls can also be designated, and this by a construction and arrangement of mechanism which is exceedingly simple, not liable to get out of order, as well as cheap and practicable.

Without reciting the numerous attempts heretofore made to produce such a device, I will now proceed to describe the embodiment of my present invention as illustrated in the accompanying drawings, it being understood that while I have shown the preferred construction and arrangement the details may be varied somewhat by those skilled in the art without departing from the principles thereof.

The recording apparatus, which is shown more particularly in Figs. 1, 2, and 3, com-

prises a case A, which may be of any suitable material or shape, and which has arranged on it in a convenient position, shown as in the upper portion of the front, a dial A', divided into a number of sections, in which are marked the various wants or calls most likely to be useful in any particular case. Operating in connection with this dial is a pointer B, which may be of any desired shape or size, being shown as a simple pointer mounted on the end of an axle *b*, and arranged to be rotated in the manner hereinafter described in connection with the dial or index. Also mounted on the face of the recorder is a plate A², containing a number of switches or push-buttons *a*, having numbers or other designating-marks corresponding with the rooms or other places with which the recorder is connected. The operating mechanism for the pointer and the circuit connections controlled by the push-buttons or switches are preferably arranged in the case of the recorder, where they will be protected from the elements and from tampering by unauthorized persons, and I will now proceed to describe the same.

One of the main objects of my present invention is to provide an exceedingly simple mechanism, both in the recorder and the transmitter, in order to avoid expense as well as to avoid liability of derangement of the parts, and it will be seen hereinafter how well these objects have been attained. Connected to the shaft *b* of the pointer is a ratchet-wheel C, and this ratchet-wheel is controlled by a ratchet or escapement C', shown as pivotally mounted as at *c*, with its free ends engaging the ratchet-wheel in the well-known way. This ratchet or escapement is controlled by an electromagnet D, the armature *d* of which is formed on or connected with one arm of the escapement. Connected with the circuit of this electromagnet is a circuit-breaker E, shown in the form of a spring connecting two contacts, the spring provided with an offset or projection *e*, against which the ratchet-wheel impinges, and the circuit-breaker is arranged so that as the ratchet-wheel rotates the circuit will be alternately made and broken in the manner hereinafter more particularly set forth.

Some means are provided for operating the

ratchet-wheel under the control of the escapement, and while a spring may be used, or any other well-known mechanism, I preferably make use of a vertically-sliding rack-bar F , engaging a pinion f on the shaft b of the ratchet-wheel. This rack slides in a frame F' , mounted over the ratchet-wheel, and by its own weight causes the ratchet-wheel to rotate to operate the circuit-breaker, and as its weight is uniform at all times the ratchet-wheel will be impelled to rotate at a uniform rate of speed, controlled only by the escapement.

Some sort of means are provided for elevating the rack-bar, and I have shown a bar F^2 , mounted on a rod F^3 , having a knob F^4 extending below the case, by means of which the bar may be raised to raise the rack-bar as desired, and I preferably provide a retarding device, as a dash-pot F^5 , which will prevent the too sudden movement of the rod, which would derange the working of the apparatus.

The push-buttons or switches controlling the circuits may be of any desired construction, but are shown in the present instance as comprising the buttons a , which are mounted on stems a' , passing through the front face of the case, and which are arranged to make and break the circuit in accordance with their position, whether in or out. Thus they carry two circuit-closers $a^2 a^3$, which are mounted on the stems and control circuits, the terminals of which are supported in a bracket or plate A^3 . Some means should be provided to press the push-buttons out when desired, and I have shown hangers A^4 mounted in the case and connected to a cross-piece or plate A^5 opposite the rear portions of all the push-buttons, and this is arranged to be operated as by the lever-arm A^6 , mounted on a shaft A^7 , and having cams a^4 at its ends for forcing the plate A^5 forward when desired. This lever A^6 is arranged in the present instance to be operated by the bar F^2 simultaneously with the raising of the rack-bar, so that by one movement all the parts of the recorder are restored to their normal conditions when desired, the pointer, of course, being moved to its normal position, the push-buttons being restored to their normal positions, that is, out, and the rack-bar being elevated or set up so as to be ready to operate the pointer whenever the magnet is operated to control the escapement and permit the recorder hand or pointer to be rotated.

The transmitter to be used in the different rooms or localities and to be connected with the recording device at the main or central office is likewise exceedingly simple in construction and is very similar in the arrangement of its parts to the recorder, and it consists in the present instance of a case G , which is shown as cylindrical and made of metal or otherwise, having on its face a dial G' , divided into spaces corresponding to the spaces on the dial of the recorder and correspondingly marked with the wants or calls. There is also

a hand or pointer H , mounted on a shaft h , projecting through the face of the case, and which is in this instance provided with a milled nut or head H' , by means of which the hand or pointer H may be rotated by the operator until it corresponds with the desired call on the dial.

Mounted on the shaft h is a ratchet-wheel I , which preferably has a series of ratchets corresponding in number with the ratchets of the ratchet-wheel C of the recorder, and this ratchet-wheel is likewise controlled by an escapement I' , which in turn is controlled by an electromagnet J , the armature j of which is connected to or forms part of the escapement I' . Arranged in the circuit of the electromagnet is a circuit-breaker K , shown in the form of a pivoted arm having a projection k , extending into the path of the projection or pin i on the ratchet-wheel, and the free end of the circuit-breaker normally rests on the insulated portion l of the contact-piece L , and the circuit is therefore normally broken. Means are provided for closing the circuit by causing the circuit-breaker to rest upon the portion l' of the contact L , and while these means may vary I have shown a push-button M extending to the side of the case and normally under the pressure of a spring m and so arranged that when it is pressed inward the circuit-breaker will be moved to close the circuit; but as soon as the pressure of the operator is released the spring will restore it to its normal position, so as not to interfere with the operation of the circuit-breaker when it is moved to break the circuit by the pin or projection i on the ratchet-wheel impinging upon the projection k on the circuit-breaker.

It will be understood that there will be a number of transmitters, in accordance with the rooms or localities connected with the recorder, and all of these will be constructed alike and will be connected with the recorder by suitable circuits, and it is desirable that there should be an annunciator of some construction to indicate the particular room from which the call is received, and I find the ordinary hotel annunciator N , as usually employed, is convenient for this purpose, the details of construction of which will vary, of course, and which construction and mode of operation are well understood by those skilled in the art, there being the ordinary drops or indicator devices, which, on calling, close the circuit to the recorder and indicate the particular circuit closed. A bell O may also be arranged, as is common, which will be operated by a magnet O' , which controls the local circuit of the bell, and which magnet is in one branch of the circuit of the annunciator-drops, so that when any call is made the bell at the central office will ring until the call is attended to by the proper party. There is no necessity of having a bell in connection with the transmitter, as the restoration of the pointer of the transmitter to its normal position will indicate to the person using the

transmitter that the call has been received and will have attention.

In Fig. 7 I have indicated the preferred arrangement of circuits, wherein I have used a single battery P or battery-cells for all the circuits, although, of course, it will be understood that independent batteries or groups of cells may be used, and without detailing these circuits I will now describe the mode of operation of the device, so that it will be apparent to those skilled in the art.

Assuming the hand or pointer H to be in the normal position, as indicated, and the operator desires to call for any particular article, say, for instance, ice-water, he will turn the pointer to the right, by the aid of the thumb-nut, until the pointer indicates the article desired on the dial of the transmitter. This being done, he will press the push-button M, which will close the electric circuit at the contact L, and it may be traced as follows, as indicated in Fig. 7: starting from the ground, through the conductor 1, leading to the circuit-breaker K, thence to the contact 25 L, through the magnet J, by the conductor 2, to the push-button a, having a number corresponding with the number of the room, assumed in this case to be "1", thence, by the conductor 3, to the magnet of the particular drop of the annunciator N, corresponding to the room, through the magnet of the drop, and, if the bell is used, through the magnet O', by the conductor 4, to the battery, and, by the conductor 5, to ground again, thus completing the circuit. This, as is well understood, will cause the annunciator-drop or indicator to be operated to designate the particular room from which the call has been made, and the magnet O' will close the local circuit 6, 7, and 8 through the bell O, and the bell will continue to ring as long as this circuit remains closed. The operator at the central office, hearing the bell and noticing the number on the annunciator, will press the push-button a, corresponding to the number on the indicator, breaking this circuit, thereby, of course, causing the local circuit of the bell to be broken and the bell to stop ringing. In breaking this circuit by pushing in the push-button he also closes another circuit, which, as a matter of fact, may include the same conductors 1 and 2 of the former circuit; but instead of connecting with the conductor 3 it is connected with the conductor 9, including the coils of the magnet D, the circuit-breaker E, and thence, by the conductor 10, to the battery P, and to ground by the conductor 5. This will energize both the magnets of the recorder and the transmitter in unison, and the weighted rack-bar F or equivalent, acting on the ratchet-wheel C, which is released by the escapement C', causes the ratchet-wheel to turn one step, when the circuit-breaker E is opened by one of the teeth of the ratchet-wheel breaking this circuit and deenergizing the magnets, and the escapement C' falling releases the ratchet-wheel another

portion of a tooth, so that the projection e on the circuit-breaker E will come opposite another tooth on the ratchet-wheel and allow the circuit-breaker E to close, which will immediately energize the magnet again, and the operations will be repeated.

It will thus be seen that both the magnets D and J, at the recorder and transmitter, are energized in unison and their circuits are broken in unison, so that the escapements operated by the respective magnets are operated in unison, and the indicator-hand at the recorder will be moved in unison with the indicator-hand at the transmitter, step by step, and this will continue until the ratchet-wheel I at the transmitter has rotated to bring its pin i in contact with the projection k and move the circuit-breaker arm K from the contact l' to the contact l, breaking the circuit permanently. This is accomplished only when the indicator-hand H is at its normal position, it being restored by the operation of the escapement on the ratchet-wheel. It will be understood that the indicator-hand at the recorder has moved as many spaces to the right as the indicator-hand at the transmitter retreated or moved backward to its normal position, and the indicator at the recorder will therefore show a call corresponding to that of the indicator at the transmitter when it was set by the operator. Thus the central office will have a true indication of the particular call of the operator at the transmitter, and this operator will know that his call has been correctly received. When this is completed, the operator at the central office raises the knob F⁴, which raises the rack-bar F, restoring the indicator-hand to its normal position, and the push-button is forced outward to its normal position by the lever A⁶ and its cams moving the plate A⁵, and the parts are restored to their normal condition. The annunciator-drop is also restored by the usual mechanism common to hotel-annunciators, and this may be connected to be operated by the knob F⁴, so that at one operation all the parts are restored to their normal condition, ready to receive another call.

It will thus be seen that by an exceedingly simple construction, both of the transmitter and the recorder, a large number of signals from the transmitter, as well as a large number of transmitters, may be used in connection with a single recorder and that the transmitter and recorder will operate in unison and will quickly designate the particular call of any particular transmitter and notify the operator of the transmitter that his call has been received. Of course it will be understood that the annunciator may be combined with the recorder, but I have chosen to show them separate, as nearly all hotels are provided with annunciators connected with the various rooms, and it will be seen that my recording device and transmitting device can be readily connected with the circuits of the

ordinary annunciator in buildings where they have already been established without serious inconvenience or expense.

It will further be seen that by constructing the transmitter and the recorder substantially as indicated, so that each has a ratchet-wheel, an escapement and a magnet controlling the escapement, the magnets of the transmitter and recorder being in the same line, the two devices will operate in unison, and any movement of the ratchet-wheel of the transmitter will be accompanied by a similar movement of the ratchet-wheel of the recorder, and neither will move beyond the distance required to indicate the call desired. This is an important advantage over transmitters wherein the ratchet-wheel moves a certain definite distance for each call, although it may indicate the various calls on the recorder. In my device if the indicator of the transmitter moves only three spaces to indicate the desired call, the ratchet-wheel moves only the same distance, and a corresponding number of variations or interruptions of the electric circuit takes place, and the ratchet-wheel of the recorder moves likewise only the same number of steps. Furthermore, it will be observed that the makes and breaks or variations of the circuit controlling both the transmitter and recorder are operated at the recorder end of the line, and in the arrangement shown the circuit is broken at each step of the hand of the recording device, and this make and break of the circuit at the recording device operates the indicators at the transmitter and recorder in unison through the magnets included in the same line. It will further be seen that with this arrangement the transmitter need have but one point for breaking the circuit, and that is when the indicator is at its normal position. With this arrangement I am enabled to make a most simple device, comprising very few parts, which are easily constructed, not liable to get out of order, and still certain and definite in their operation, and this is a very important feature of my invention.

What I claim is—

1. The combination in an annunciator, of a recording device comprising a dial, a pointer, and a ratchet-wheel connected with the pointer, an escapement controlling the ratchet-wheel, a magnet operating the escapement, a circuit-breaker controlling the magnet, push-buttons controlling the circuit of the magnet, a rack-bar for operating the ratchet-wheel, and means for raising the rack-bar, and means for restoring the push-buttons to position, substantially as described.
2. The combination in an annunciator, of the dial, a ratchet-wheel and pointer being in

connection with each other, an escapement controlling the ratchet-wheel, a magnet operating the escapement, a circuit-breaker controlling the magnet, push-buttons controlling the circuit of the magnet, a rack-bar operating the ratchet-wheel, and means whereby the rack-bar is set and the push-buttons restored to position simultaneously, substantially as described.

3. The combination in an annunciator of a recording device having an indicator, a single ratchet-wheel connected with said indicator, a circuit-breaker arranged to be operated at each complete step of the ratchet-wheel, a transmitter having an indicator, and a circuit-breaker arranged to be operated when the indicator is in its normal position, a circuit connecting the recorder and indicator, magnets controlling the indicators of the recorder and transmitter and causing them to operate in unison, push-buttons controlling the magnet of the recording device, a rack-bar, a knob for raising the rack-bar, and a lever having cams controlling a plate for restoring the push-buttons to position, substantially as described.

4. In an annunciator the combination of a recording device comprising a single ratchet-wheel and a pointer connected therewith and moving over a dial, an escapement controlling the movements of said wheel, a magnet controlling the escapement, and a circuit-breaker controlled by said wheel, and a transmitting device comprising also a single ratchet-wheel and pointer connected therewith and moving over a dial, an escapement for said wheel, and a circuit-breaker therefor controlled by a spring-actuated push-rod, a magnet controlling said escapement, and an electric circuit controlling both of the escapements and wheels, whereby the pointers at the transmitting and recording devices are operated in unison, substantially as described.

5. In an annunciator, the combination with the dial, of the pointer, a ratchet-wheel connected to the pointer, an escapement controlling the ratchet-wheel, a magnet operating the escapement, a circuit-breaker controlling the magnet, push-buttons controlling the circuit of the magnet, a knob for raising the rack-bar, and a lever having cams controlling a plate for restoring the push-buttons to position, substantially as described.

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

JOHN B. ROGERS.

Witnesses:

ROBT. STERLING,
C. C. WARD.