

(No Model.)

J. J. RUDDICK.
SIGNAL BOX.

No. 561,525.

Patented June 2, 1896.

Fig. 1.

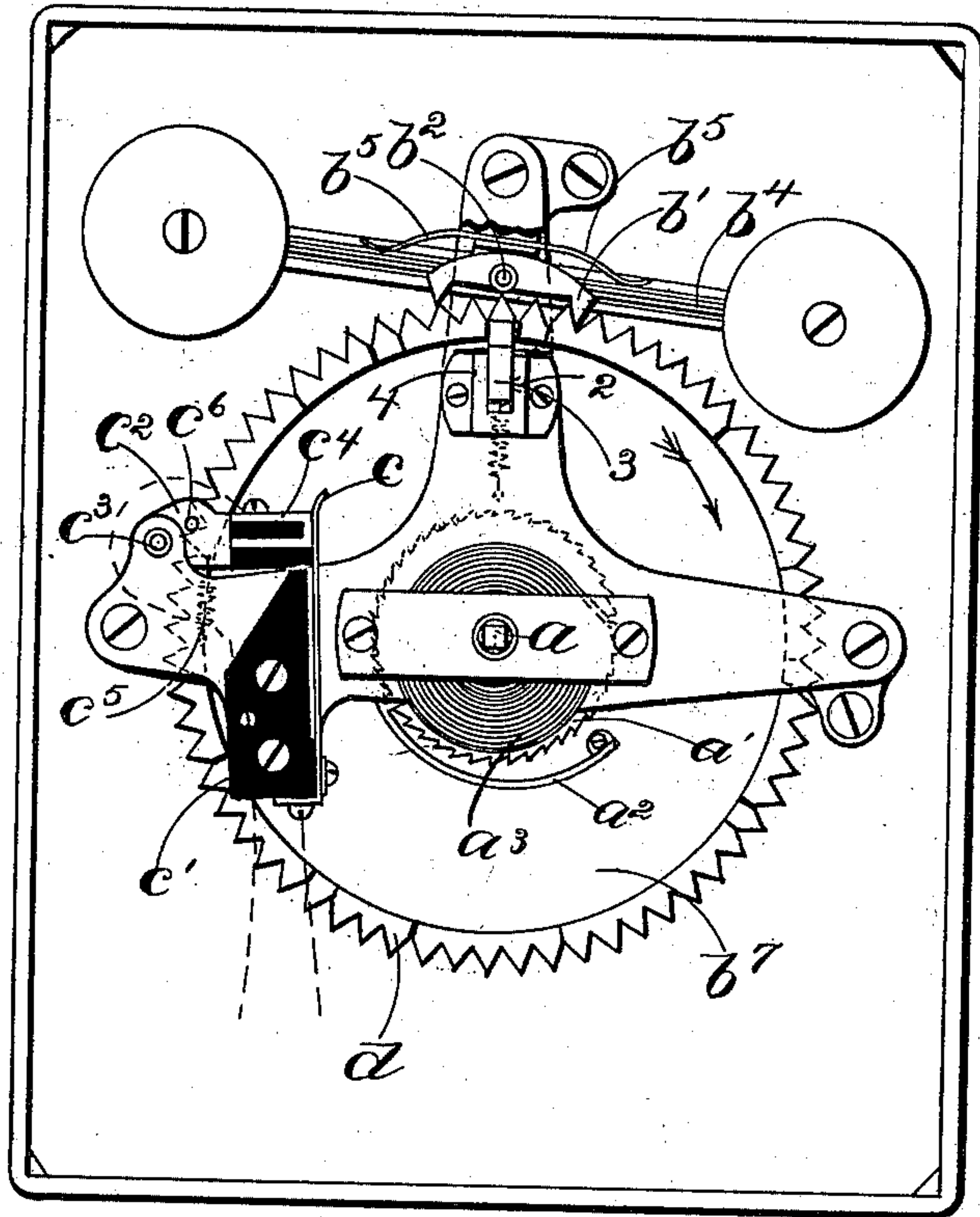


Fig. 2.

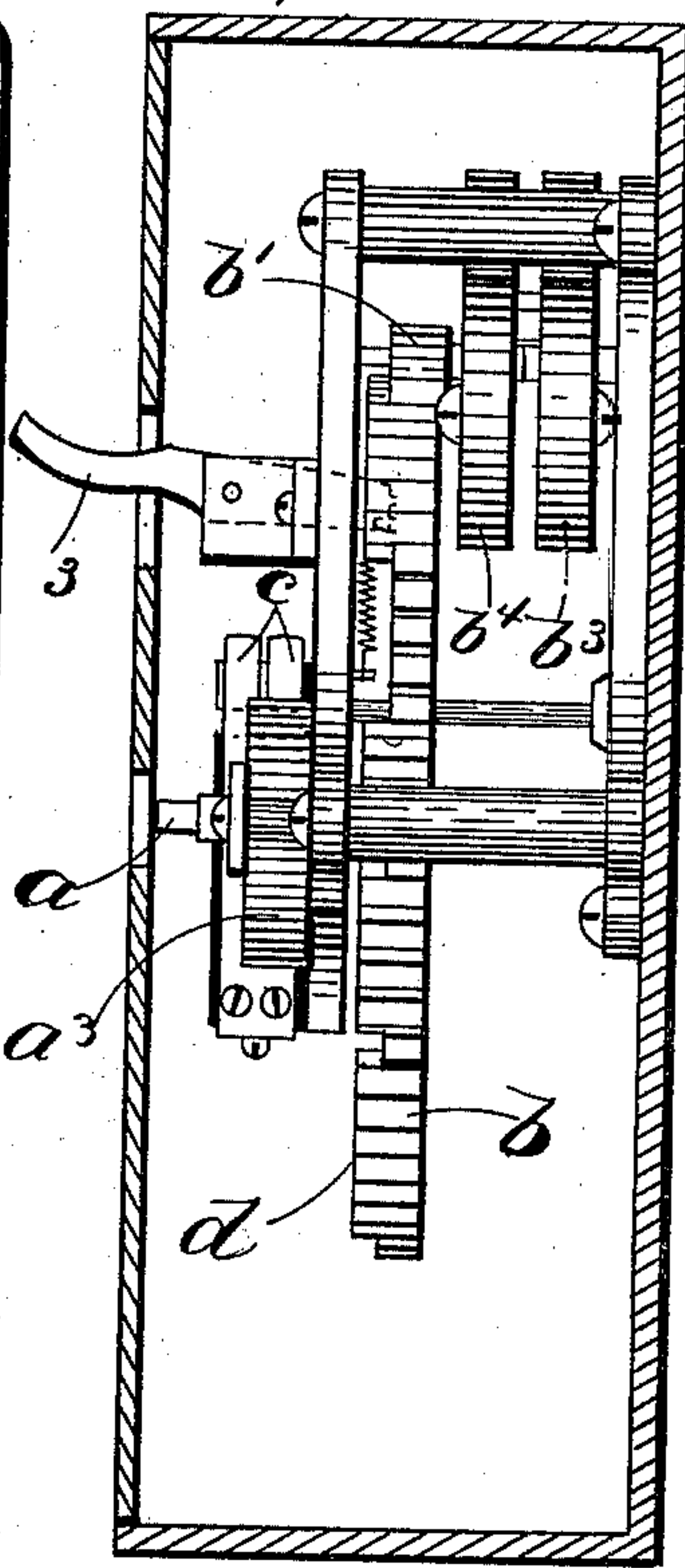
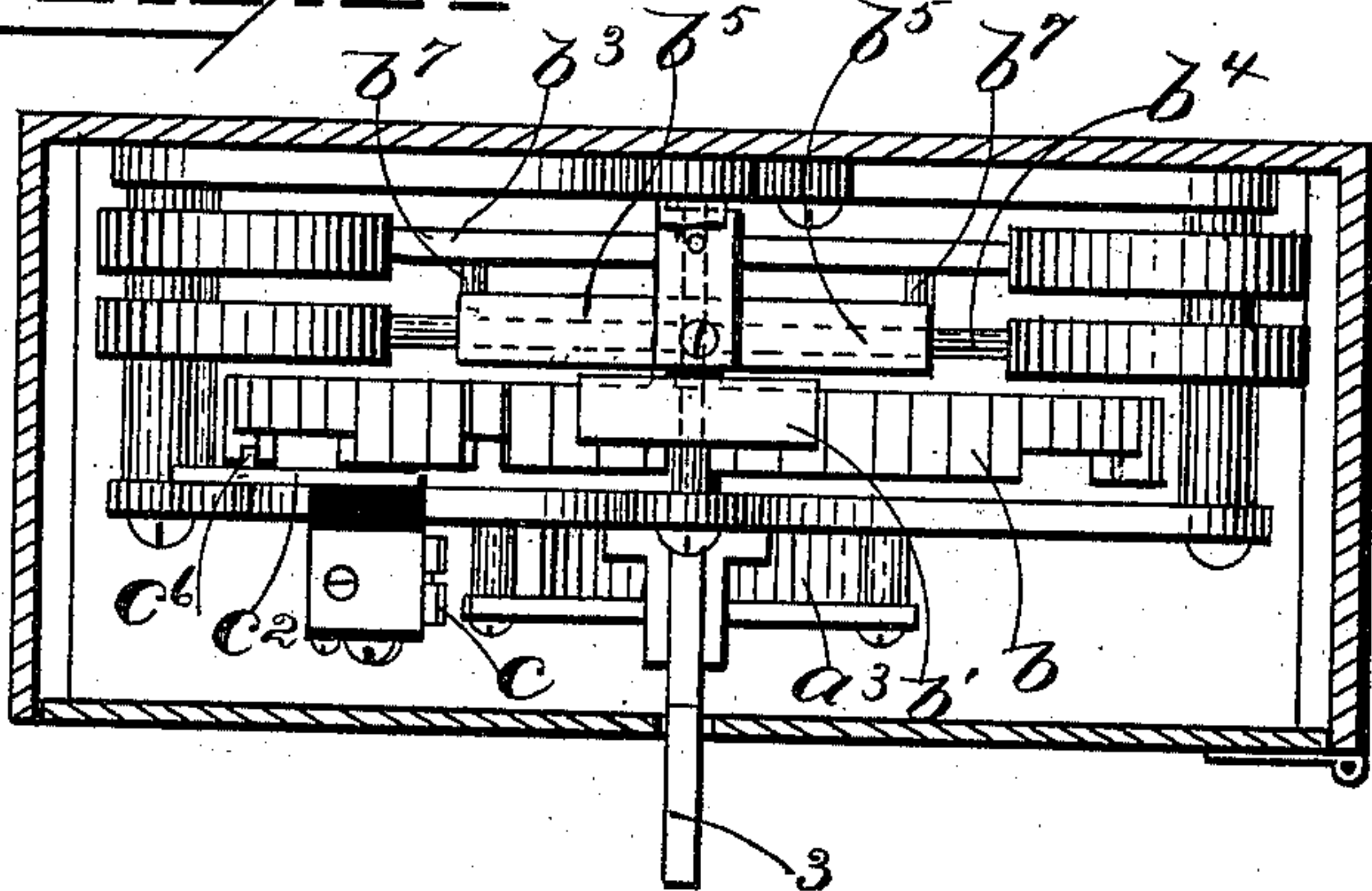


Fig. 3.



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SIGNAL-BOX.

SPECIFICATION forming part of Letters Patent No. 561,525, dated June 2, 1896.

Application filed September 20, 1895. Serial No. 563,052. (No model.)

To all whom it may concern:

Be it known that I, JOHN J. RUDDICK, of Newton, county of Middlesex, State of Massachusetts, have invented an Improvement in Signal-Boxes, of which the following description, in connection with the accompanying drawings, is a specification, like letters and figures on the drawings representing like parts.

This invention has for its object to improve and simplify the construction of signal-boxes for fire-alarms and other purposes.

In accordance with this invention the circuit-breaker consists of a stationarily-supported member and a movable member, the latter vibrating or moving back and forth to open and close the circuit and having a wide range of motion. A pallet-governed escape-wheel of large size and driven by any suitable motor is employed, and means are provided, operated by said escape-wheel, for actuating the movable member of the circuit-breaker—as, for instance, there may be signal pins or teeth arranged in groups on the side of the escape-wheel and the movable member of the circuit-breaker may lie in the path of movement of said signal-pins to be actuated by them. As the escape-wheel has an intermittent action, with more or less recoil, it is desirable to operate the circuit-breaker to open or close the circuit, as the case may be, during the successive movements of the escape-wheel, to thereby insure the circuit being held open or closed for proper and regular intervals of time, and to accomplish this result the movable member of the circuit-breaker is actuated by the escape-wheel in unison with the vibrations of its pallet, and this may be done by properly spacing the signal-pins. The signal-teeth are preferably shaped like the escape-teeth, and in such case may be made as lateral extensions of said teeth. Any usual or suitable pallet may be provided for the escape-wheel, although a pallet having governing devices of novel construction, as will be herein-after described, allows a slow intermittent movement of the escape-wheel, which is herein desired.

The means herein shown for actuating the escape-wheel consist of a mainspring, one end of which is connected with the frame and the other end with a winding-shaft, and the es-

cape-wheel is mounted upon said shaft and connected therewith by a ratchet and pawl, in order that the spring may be wound without operating the escape-wheel. A stop-pin is placed on the escape-wheel, which bears against a starting-lever, which latter, when depressed, releases said stop-pin and allows the wheel to be driven by its spring.

Figure 1 shows in front elevation a signal-box embodying this invention; Fig. 2, a side view of the signaling mechanism shown in Fig. 1, and Fig. 3 a plan view of the signaling mechanism shown in Fig. 1.

The winding-shaft *a* has secured to it a ratchet-wheel *a'*, which engages a pawl *a''*, carried by a large escape-wheel *b*, mounted upon said winding-shaft. The mainspring *a'''* is coiled about the shaft *a*, the inner end of which is connected to the shaft and the outer end of which is attached to the frame.

The winding-shaft *a* is herein shown as adapted to be turned to wind up the mainspring by means of a square-socketed key; but so far as my invention is concerned the actuating-spring may be wound in any other suitable manner, or a weight may be employed in lieu of the spring, as is common in signal-boxes.

The large escape-wheel *b* has cooperating with it a pallet *b'*, secured to a pallet-shaft *b''*, having its bearings in the frame, and to said pallet-shaft *b''* a balanced arm *b'''* is secured, which assists in governing the action of the pallet, and to retard the action of the pallet to a still greater extent as well as to equalize its motion I have provided another balanced arm *b''''*, which is constructed similar to the arm *b'''*, but is loosely mounted upon the pallet-shaft *b''* instead of fixed thereto, and two spring-arms *b''''''* *b''''''* are secured to the fixed balanced arm, projecting in opposite ways, the outer or free ends of which bear upon studs or projections *b''''''* on the fixed balanced arm and also upon the loose balanced arm. As the pallet vibrates the loose balanced arm acts by the momentum imparted to it to work independently of the fixed balanced arm by lifting the springs *b''''''* *b''''''*, and thereby retarding the vibrations of the pallet. These governing devices for the pallet materially assist in producing a slow-working box; but so far as other fea-

tures of my invention are concerned the pallet may be provided with any other kind of governing devices.

The large escape-wheel has upon its side or
5 face the signal pins or teeth d , they being disposed in groups varying according to the number of the box, and the pins of each group are herein shown as arranged the same distance apart as the teeth of the escape-wheel, and
10 for simplicity of construction they are disposed opposite the teeth of said escape-wheel. I prefer to make these pins of the same shape as the teeth of the escape-wheel, and in such event they may be formed as lateral extensions of such teeth.

The circuit-breaker herein shown comprises a contact-pen c , supported upon a block c' of insulating material, and a lever c^2 , pivoted at c^3 to the frame and having a metallic face or
20 end c^4 , which engages the contact-pen c to close the circuit. The lever c^2 is held in its lowermost position, with the circuit-contacts closed, by means of a spring c^5 , (see dotted lines, Fig. 1,) and is raised to break the circuit by means of the signal-pins d successively striking a pin c^6 on the lever which lies in the path of movement of said pins. As the signal-pins are located the same distance apart as the teeth of the escape-wheel, the
30 circuit-breaking lever will be operated in unison with the vibrations of the pallet. This result—viz., operating the circuit-breaking lever in unison with the vibrations of the pallet—may be accomplished in other ways, and hence I do not desire to limit my invention to disposing the signal-pins in precisely the way herein shown.

As herein shown, the escape-wheel has upon it three rounds of the signal No. 743; but any
40 other signal and also any other number of rounds may be arranged upon it, as desired. Furthermore, the escape-wheel, as herein shown, is adapted to make a complete revolution each time it is let off, and this is accomplished by providing a stop-pin 2 on the wheel which engages the starting-lever 3, pivoted to the frame, which may be depressed by hand to let off the wheel. A second stop-pin 4 is also provided which engages the opposite side of said starting-lever to prevent
50 backward rotation of the wheel, this latter pin moving the starting-lever, and thereby passing under it as the wheel resumes its normal position.

I claim—

1. In a signal-box, the combination of an escape-wheel, pallet therefor, and means for operating said escape-wheel, signal-pins on the side of said escape-wheel arranged in groups and shaped like unto and forming lateral extensions of the teeth of the escape-wheel, and a circuit-breaker, the movable member of which is operated by said signal-pins, substantially as described.

2. In a signal-box, an escape-wheel and pallet, and means for operating said escape-wheel, signal-pins arranged in groups on the side of said escape-wheel, the pins of each group being located opposite a corresponding number of teeth of the escape-wheel, a circuit-breaker consisting of a stationarily-supported contact-pen and a pivoted spring-pressed arm having a contact-face adapted to cooperate with said contact-pen, and also having a pin lying in the path of movement of the signal-pins, substantially as described.

3. In a signal-box, a pallet-governed escape-wheel mounted upon a winding-shaft, signal-pins arranged in groups thereon, a circuit-breaker, the movable member of which is operated by said signal-pins, a pawl on said escape-wheel, a ratchet-wheel secured to said winding-shaft which is engaged by said pawl, a mainspring one end of which is connected with said shaft, and the other end with the frame, said spring being wound by a key engaging the winding-shaft, a stop-pin on the escape-wheel, and a starting-lever, substantially as described.

4. In a signal-box, an escape-wheel having signal-pins arranged in groups thereon, means for operating it, a circuit-breaker, the movable member of which is operated by said signal-pins, and a pallet for said escapement secured to a pallet-shaft, a balanced arm also secured to said pallet-shaft, another balanced arm mounted loosely upon said pallet-shaft, and springs borne by the fixed balanced arm, extended in opposite ways and bearing upon the loose balanced arm, substantially as described.

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

JOHN J. RUDDICK.

Witnesses:

B. J. NOYES,
F. H. DAVIS.