

(No Model.)

2 Sheets—Sheet 1.

H. B. COX.
HOTEL SIGNAL.

No. 375,442.

Patented Dec. 27, 1887.

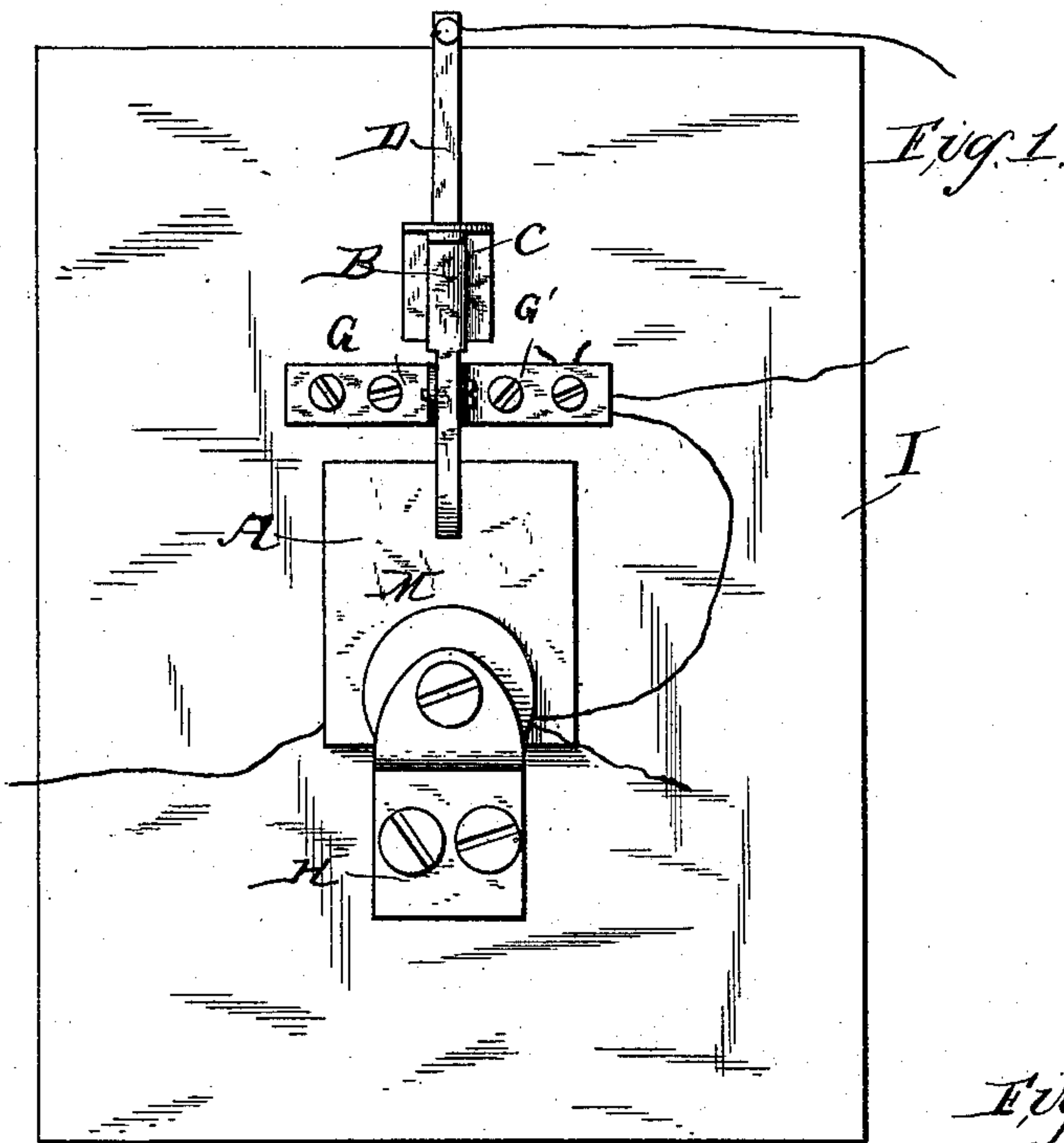
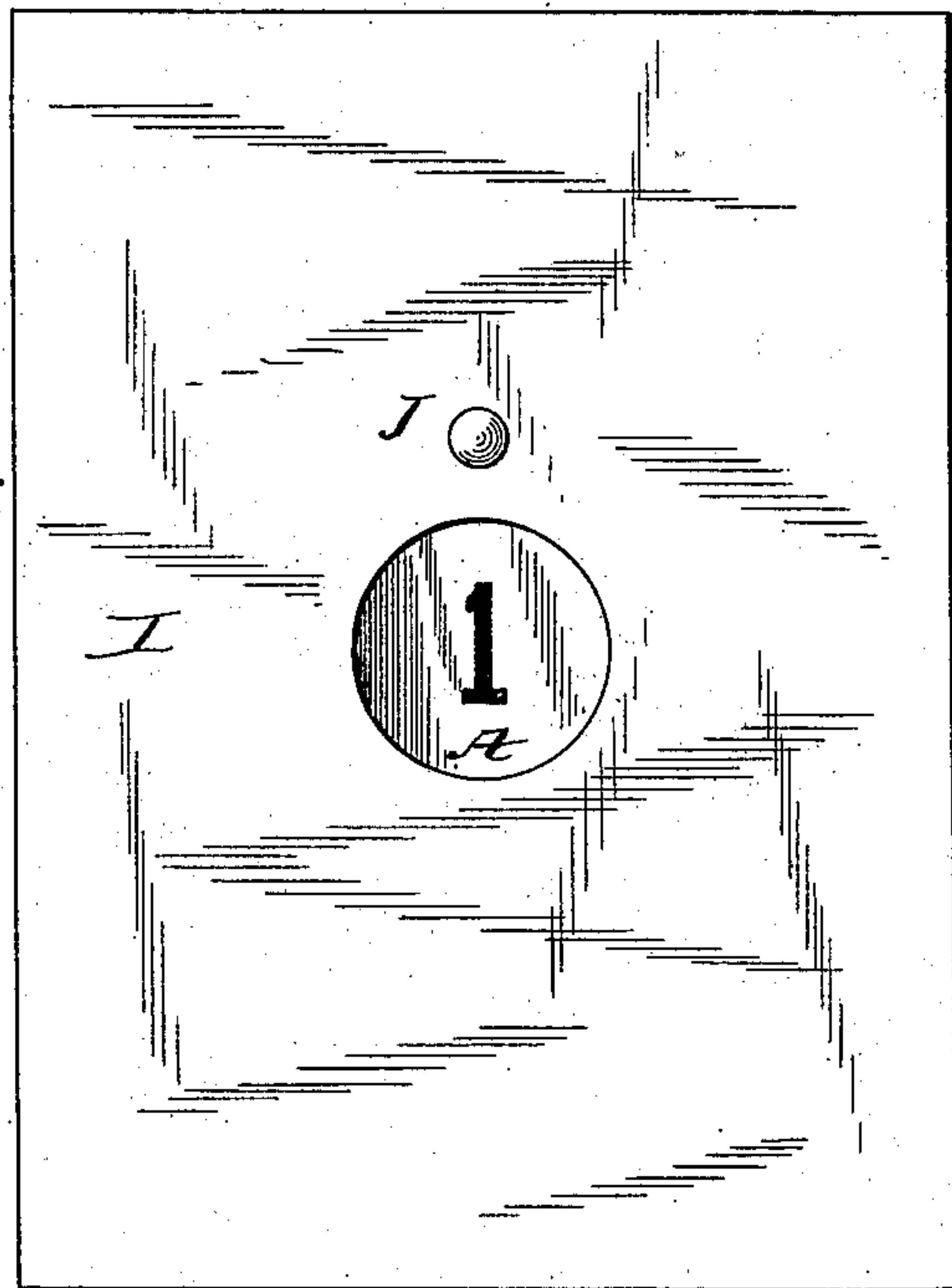
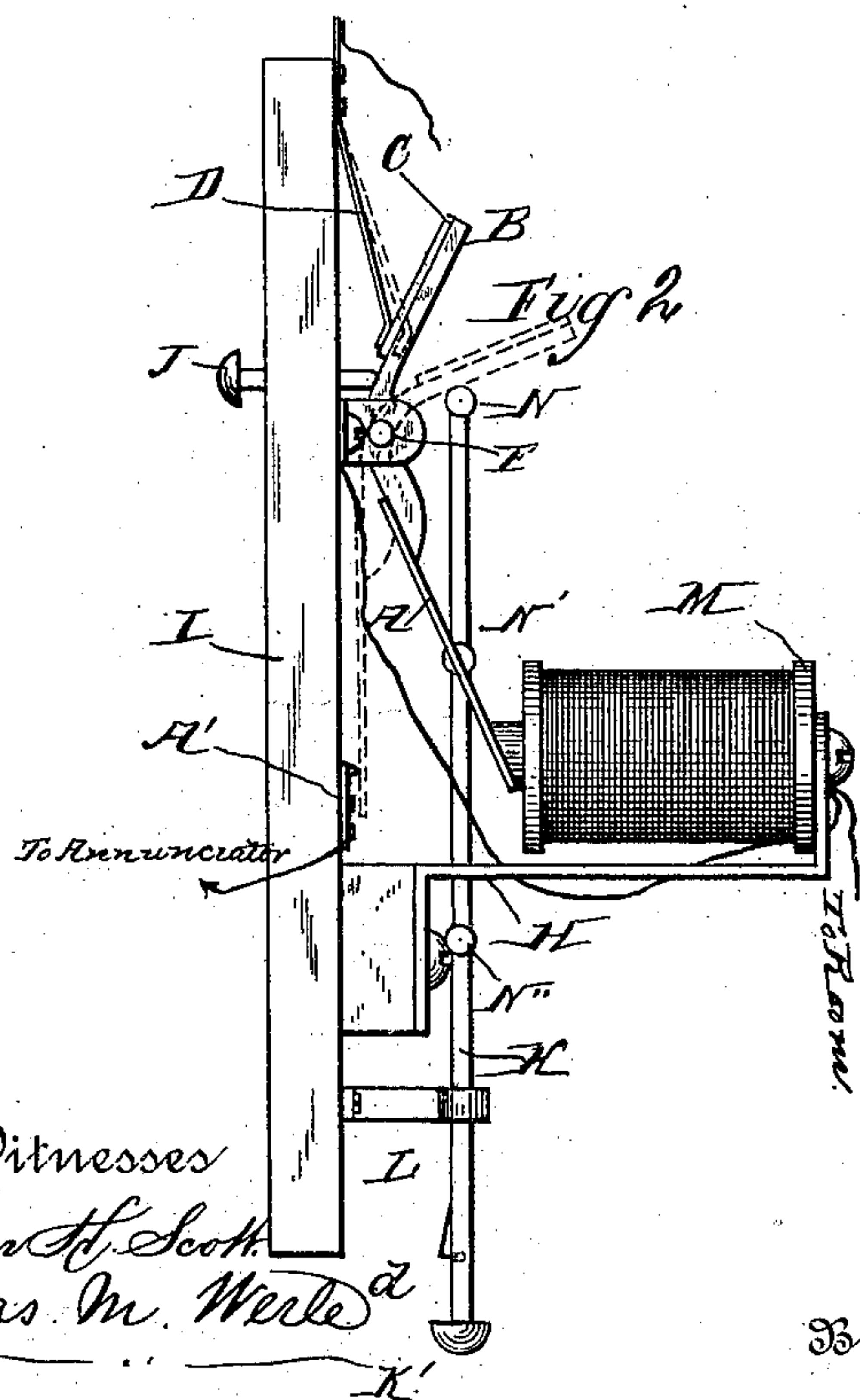


Fig. 3.



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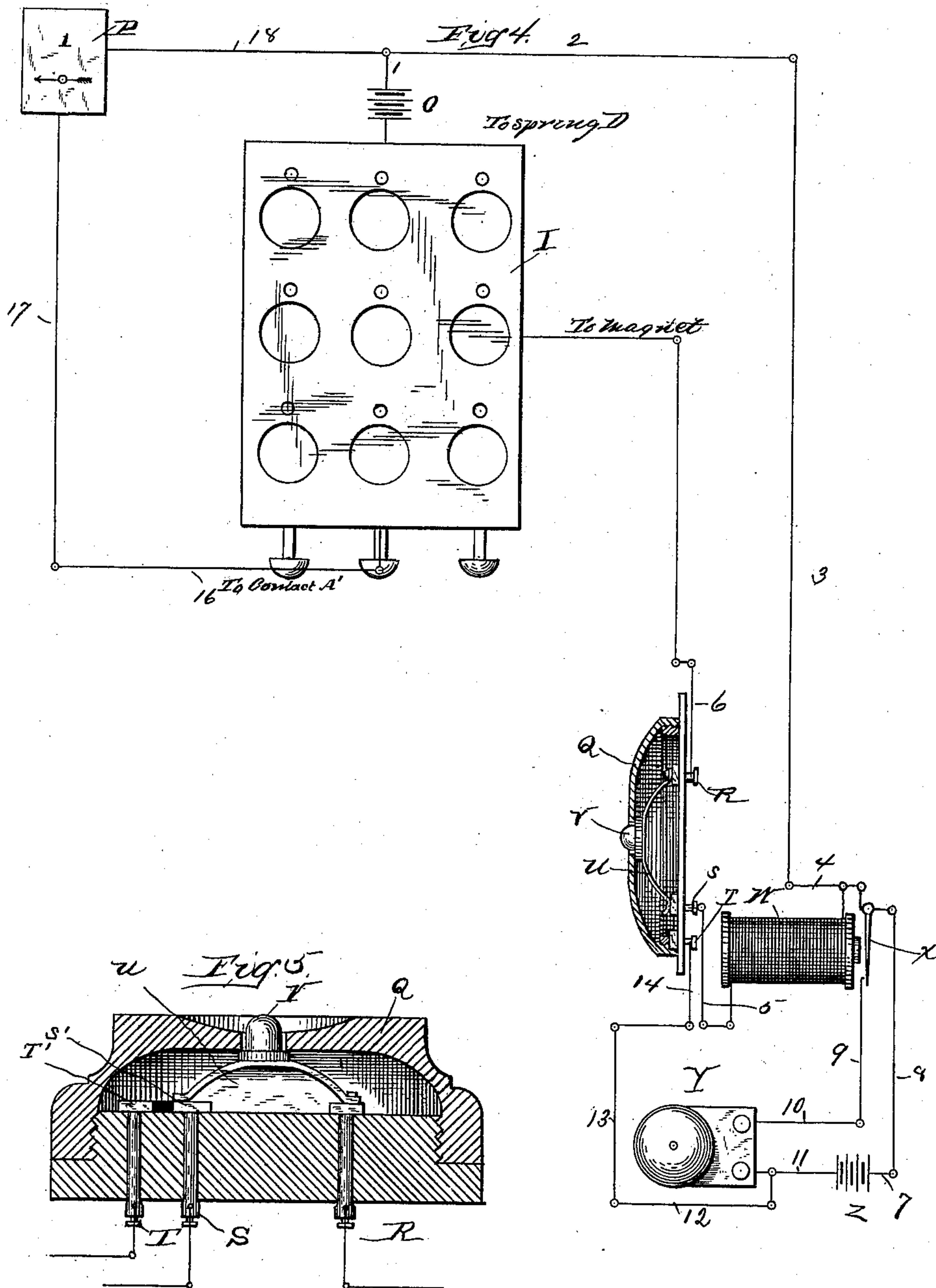
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UNITED STATES PATENT OFFICE.

HENRY B. COX, OF CINCINNATI, OHIO.

HOTEL-SIGNAL.

SPECIFICATION forming part of Letters Patent No. 375,442, dated December 27, 1887.

Application filed May 21, 1887. Serial No. 239,003. (No model.)

To all whom it may concern:

Be it known that I, HENRY B. COX, of Cincinnati, in the county of Hamilton and State of Ohio, have invented certain new and useful
5 Improvements in Hotel - Signals; 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,
10 reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form part of this specification.

My invention relates to an improved signaling system and apparatus for use where
15 there are a number of outlying stations and a central station, and where intercommunication between the two is desired. It is particularly adapted for use in hotels or large buildings where it is desirable that a guest in any room
20 may be able to make a want known in the office, or the clerk in the office may desire to give the guest signal or signals.

The object of my invention is to so organize such a system that in ordinary usage the clerk
25 can ring up any guest by a single movement and keep the bell in the guest's room ringing until he answers the call, and to enable the clerk in case of fire or general danger to ring up all of the guests and keep their bells continuously ringing in spite of any attempt on
30 the part of any guest to reply, a condition which will at once indicate that there is danger.

To this end my invention consists in providing in the clerk's office a circuit-closer which,
35 when operated, will hold the circuit closed, and controlling by this a circuit operating a bell in a guest's room.

My invention also consists in providing
40 means at the guest's room for releasing the clerk's circuit-closer, and thus silencing the guest's bell by the rupture of the controlling-circuit.

My invention also embodies special apparatus for carrying out these ends.

My invention also consists in an arrangement of circuit for accomplishing this double signaling by which only two line-wires between the office and any room are required.

50 In the accompanying drawings, which illustrate my invention, Figure 1 is a rear elevation of one of the clerk's circuit-closers and

its retaining-magnet, showing also the electric connections of the parts. Fig. 2 is a side elevation of one of the said clerk's circuit-closers
55 and its retaining-magnet, showing also how all of the circuit-closers may be operated to sound a general alarm. Fig. 3 is a front elevation of the clerk's circuit-closer board, showing one circuit-closer mounted thereon. Fig. 4 is a
60 view of the arrangement of circuits, showing the guest's circuit-closer in section. Fig. 5 is an enlarged cross-section of a guest's circuit-closer.

The circuit-closer used at the central station
65 at the clerk's office, if the system be in use in a hotel, consists of a bent arm, B, pivoted in lugs G G', secured to a suitable frame, I. The lower end of the arm carries a plate-armature, A, and the upper end a metallic contact-
70 piece, C.

When the armature A is in the position shown in Fig. 2, the contact-piece C is in engagement with a spring, D, secured to the frame. When the armature is out of control
75 of the magnet M, it hangs in the position shown in dotted lines, Fig. 2, the upper contact-piece, C, being out of engagement with spring D, and the lower end of the armature being held by gravity against contact A', secured to the
80 frame.

J is a push-pin for forcing the armature away from the magnet by hand when the clerk so desires. The magnet is secured to a support, H, fastened to the frame, as shown, and has
85 a core, preferably beveled, as shown, to take a firm hold on the armature when the latter is pushed against it. In the outer side of the frame is an aperture through which a number carried by the armature is visible, as clearly
90 shown in Fig. 3. A frame, K, held in suitable supports, has cross-bars N N' N'' attached to it at different vertical heights. The function of this will presently be explained.

An organization of the kind just described
95 is provided for each room or station, and all are mounted on a suitable frame. Only one has been shown, in order that its parts might be sufficiently enlarged for clear illustration. The cross-rods N N' N'' are capable of a vertical thrust, controlled by an arm, K', project-
100 ing out from the under part of the frame I. When thrust upwardly, the cross-arms engage the upper part, B, of each bent arm, so that a

sufficient movement on frame K will bring all of the armatures against their magnet-cores and close a circuit at each spring D. The armatures will then be held against the magnet, as will be presently shown.

In Fig. 4 the frame I is shown with a single circuit extending to an outlying station or room. It will be understood that a similar circuit extends to each room or station. The contact-spring D is connected to one pole of a battery, O, Figs. 2 and 4, and the other pole of the battery is connected with the terminal of a magnet, W, at an outlying room or station. The lugs G G' are connected with magnet M, which is connected to one contact, R, of a circuit-closer, Q, at a room or station. The contact A' is connected with one post of an annunciator, P, the other post corresponding to any room or station, being connected with said room or station by wires 18 2 3. In the annunciator I have shown only one indicator, though of course it will be understood that a similar indicator is provided for each room or station.

I will now describe the apparatus and circuit-connections at the room or station.

Q is a circuit-closer. (Shown on a large scale, Fig. 5.) It is provided with an arched metallic spring, U, secured at one side to a contact-post, R, extending through the base. Two other posts, S T, pass through this base and carry contacts insulated from each other at their inner extremities. (See S' T'.) When the button is depressed, the spring U spreads and its left extremity moves from contact S' to contact T'. Contact R connects with the magnet corresponding to the station I am describing at the central office by wire 6. Post S connects with magnet W. Post T connects with one pole of a battery, Z, at the station, the other pole being connected with the armature X of magnet W. A local circuit, 7 8 9 10 11, containing battery Z and an electric bell, Y, is controlled by the armature X, so that when the latter is drawn to its magnet the bell will be rung. The line-wire 2 3 splits near the magnet, one branch passing to the magnet and the other to the armature, as shown in Fig. 4.

The operation of the system is as follows: Suppose the clerk wishes to call a guest in room 1. He presses the armature A, which carries No. 1 on its exposed face, back against the core of the magnet. By so doing he brings contact C against spring D and closes a circuit from the positive pole of battery O through 1 2 3 4, magnet W 5, post S, spring U, post R 6, magnet M, support G, arm B, spring C to negative pole of battery. This energizes both magnets M and W. The former will hold A up, so as to maintain C in contact with spring D. Magnet W will close the local circuit at the room and ring bell Y. The bell will ring until the circuit is ruptured. The clerk can attend to other duties, the magnet M holding the circuit closed at the office. The guest can stop the ringing by pressing button V, which

ruptures the circuit as the spring passes from S' to T'. This rupture causes both magnets to be demagnetized, breaking the local circuit 7 8 9 10 11, and also allowing armature A at the office to fall; but as the spring U moves to contact T' a new circuit is closed the moment armature A strikes contact A' at the office. A current proceeds from positive pole of battery Z by 11 12 13 14, post T, contact T', spring U, post R 6, magnet M, support G, armature A, contact A' 16 17, annunciator P 18 2 3 4 8 7 to negative pole of battery Z. This rings the annunciator and operates the indicator, showing the clerk that the call has been received. The guest, after a call from the clerk, will have to hold the push-button a moment until A closes the annunciator circuit.

If at any time the guest should have a want he desires the clerk to supply, he simply depresses button V, which will operate the annunciator and secure the needed attention. In case of fire or danger, when a general alarm should be sounded in all the rooms, the clerk pushes up rod K', attached to frame K, forcing each of the contact-pieces C against its corresponding spring, D, and by means of a lug, d, the frame may be held supported in its vertical position, so that the guest's bell will continue ringing, except while said guest holds the push-button depressed, for it will be observed that the rupture of the guest's bell-circuit, which in the ordinary operation releases armature A, cannot do so now, as the armature is mechanically supported by the frame K. The guest will be notified, therefore, by the continuous ringing that there is danger.

The pin J is provided to enable the central operator to bring down the armature A in case the guest should be out of his room and should not answer the call within a reasonable time.

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

1. In a signaling system, the combination of a circuit-closer at one station, a circuit-breaker at a second station, an electric bell at the second station, circuit-connections, a battery in circuit, an electro-magnet in circuit, said magnet located behind the circuit-closer, and an armature carried by the circuit-closer engaging the magnet-core when the circuit is closed, as and for the purpose set forth.

2. In a signaling system, the combination of a circuit-closer at a central station, said circuit-closer being provided with an armature, an electro-magnet, with the core of which the said armature is adapted to engage to keep the circuit-closer closed, a circuit-breaker at a distant station, circuit-connections between the two, a battery in circuit, a relay-magnet in circuit at a distant station, and a local circuit containing an electric bell controlled by said relay-magnet, as and for the purpose set forth.

3. In a signaling system, the combination of a double-contact circuit-changer at a central

station normally completing the circuit through an annunciator at this station, the free contact completing the circuit to a relay at a distant station, a double-contact circuit-changer at the distant station normally completing the circuit through the relay at this station, the free contact leading to the annunciator at the central station, a battery in the circuit, and a local circuit controlled by the relay, said local circuit containing an electric bell and battery, as set forth.

4. In a signaling system, the combination of two stations, a double-contact circuit-changer and annunciator at one station, a double-contact circuit-changer, relay, and local circuit at a second station, contacts, as A' D, for the first circuit-changer, battery between contact D and line connecting annunciator and relay, contact A', connecting with annunciator, armature A, carried by the first circuit-changer, magnet M, behind the armature, contacts S T on second circuit-changer, the former connected with relay and line, the latter in a branch around the relay, battery Z in said branch and front stop of relay-armature, and main-line connections, as specified.

5. In a circuit-closer, a bent arm pivoted, as described, and carrying on one of its ends an armature of magnetic material, a magnet having a beveled core behind the armature, circuit-connections with a generator of electricity, whereby the circuit-closer is held closed when operated, and a push-pin to force the armature from the magnet, as specified.

6. In a double-contact circuit-closer, a bent arm pivoted, as described, and carrying at one end an armature, a contact with which said armature engages and closes one circuit when the arm is in its normal position, a magnet behind said armature, and circuit-connections with a generator of electricity, whereby the armature is held to the magnet and another circuit is closed, as specified.

7. A multiple circuit-closer comprising a series of pivoted bent arms, each arm carrying

an armature, a magnet for each armature, circuit-connections of each magnet with one contact, a frame carrying a series of cross-bars and adapted to have a vertical movement controlled by a projecting arm, whereby when the said arm is thrust upward the cross-bars will engage the upper portion of the bent arms and bring the armatures on their lower portions in contact with the cores of the magnets and close all the circuits simultaneously, and a locking device on said projecting arm for keeping the circuits closed irrespective of the magnets, as and for the purpose set forth.

8. A multiple circuit-closer for a central station, comprising a visible magnetic disk, each disk bearing a number corresponding to a distant station and secured to a circuit-closing arm, and a magnet in the circuit closed by said arm, said magnet placed behind the disk a sufficient distance to permit contact, whereby when a circuit is closed the magnet holds the disk and maintains the circuit in closed condition.

9. A circuit-changer consisting of an arched spring fixed at one end, a contact on which the other end normally rests, a second contact within reach of the spring when the latter spreads under pressure, and means of securing circuit-connections with the contacts.

10. A circuit-changer consisting of an arched spring fixed at one end, a contact on which the other end normally rests, a second contact within reach of the spring when the latter spreads under pressure, a button on the arch of the spring, a casing over the whole, the button projecting through the casing, and means of securing circuit-connections with the contact.

In testimony that I claim the foregoing as my own I affix my signature in presence of two witnesses.

HENRY B. COX.

Witnesses:

CHARLES M. WERLE,
M. M. LAMMOND.