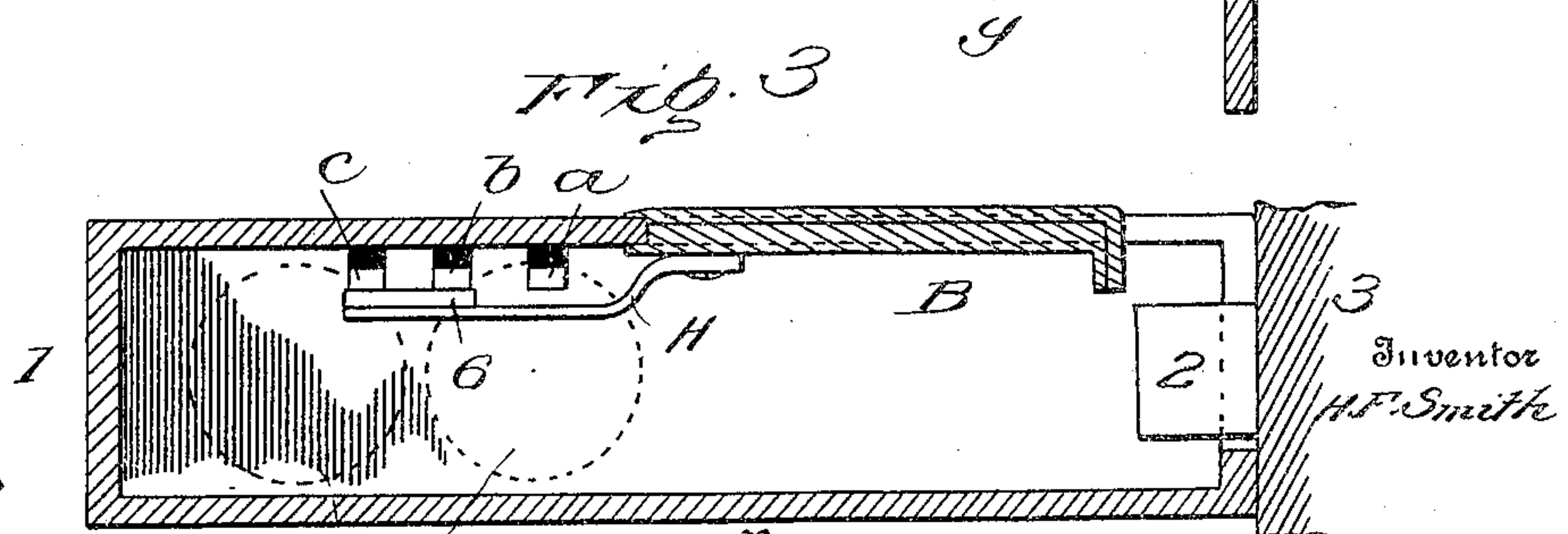
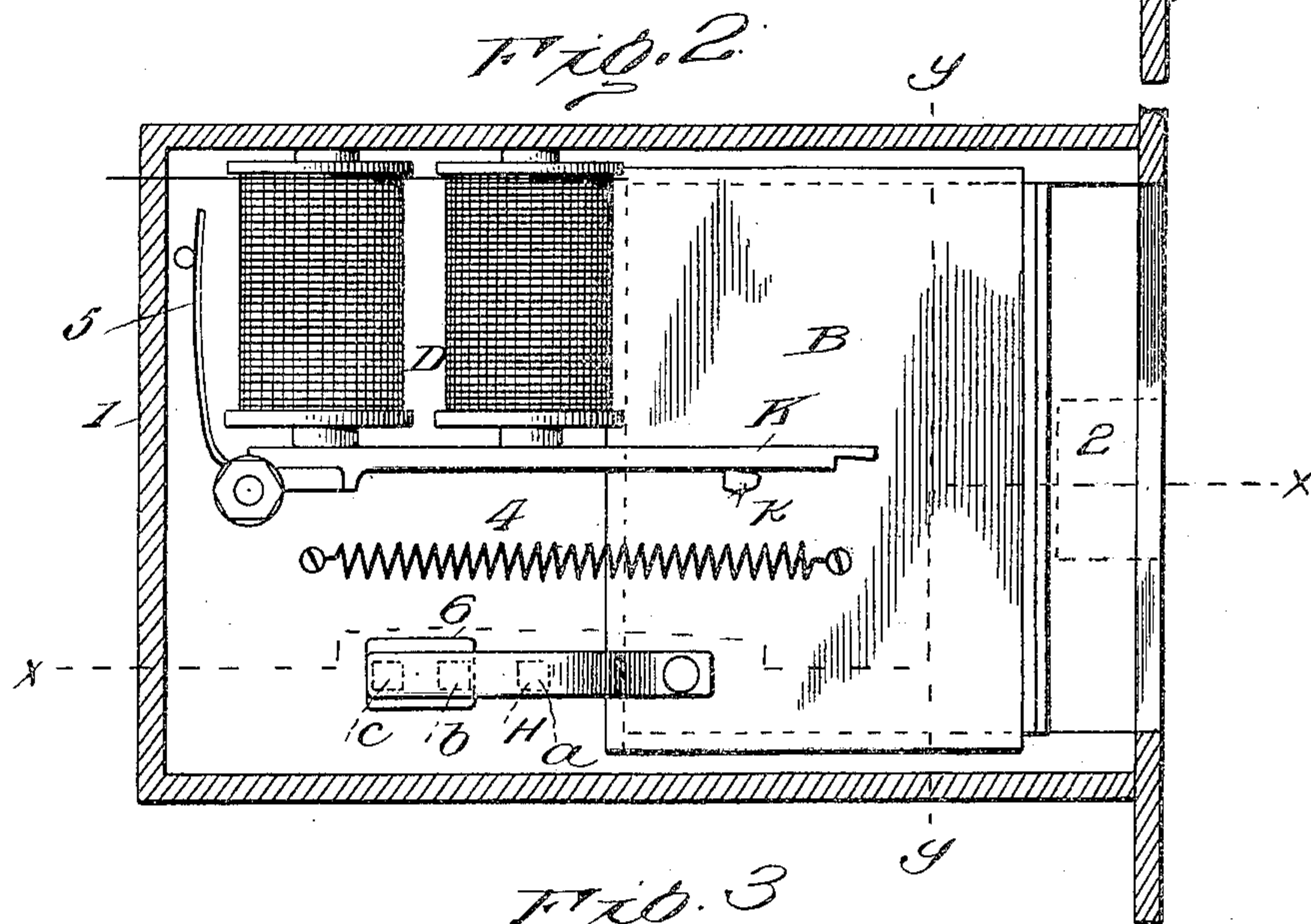
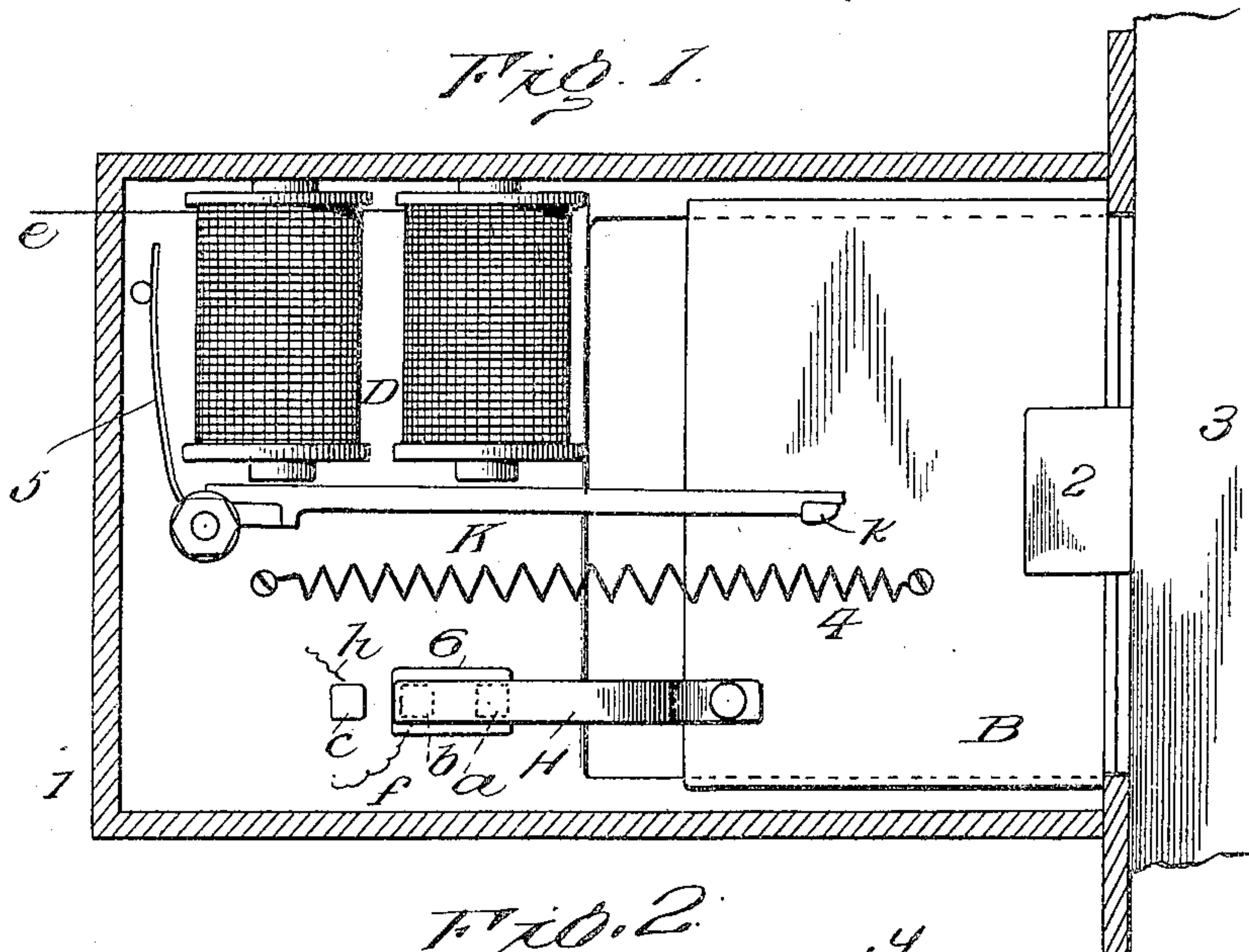


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PATENTED FEB. 20, 1906.

H. F. SMITH.
ELECTRIC LOCK STRIKE.
APPLICATION FILED JAN. 4, 1905.

2 SHEETS—SHEET 1.



Witnesses

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J. S. HOPKINS AND ONE-THIRD TO GEO. J. HOOPER, OF RICHMOND,
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ELECTRIC LOCK-STRIKE.

No. 813,119.

Specification of Letters Patent.

Patented Feb. 20, 1906.

Application filed January 4, 1905. Serial No. 239,633.

To all whom it may concern:

Be it known that I, HARRY F. SMITH, a citizen of the United States, residing at Richmond, in the county of Henrico and State of Virginia, have invented certain new and useful Improvements in Electric Lock-Strikes, of which the following is a specification.

The object of this invention is to provide means for unlocking doors of theaters, hotels, tenement-houses, &c., from any given point in case of fire or any other emergency. The controlling-points may be located at the ticket-office of a theater, the clerk's office of a hotel, the janitor's office of a tenement-house, or by a proper arrangement of the wires the controlling-points may be arranged at more than one place.

In case of hotels and tenement-houses it can be arranged to unlock the doors of each floor independent of the others or they can all be released simultaneously and ring an alarm-bell at one or more points upon each floor. It is a well-known fact that valuable time is lost and lives endangered by misplaced keys that are difficult to find during the excitement caused by a fire and in case of a theater fire by the impossibility of the ushers to get to the exit-doors to unlock them.

This invention provides simple and positive means for effecting a release of the exit-closures when required, so that a building holding a concourse of people may be quickly emptied, thereby avoiding a calamity which might otherwise occur through failure of the exits becoming unobstructed.

For a full description of the invention and the merits thereof and also to acquire a knowledge of the details of construction of the means for effecting the result reference is to be had to the following description and accompanying drawings.

While the invention may be adapted to different forms and conditions by changes in the structure and minor details without departing from the spirit or essential features thereof, still the preferred embodiment thereof is shown in the accompanying drawings, in which—

Figure 1 is a detail view of an electric lock-release embodying the invention, the casing being in section. Fig. 2 is a view similar to

Fig. 1, showing the relation of the parts after the electromagnet has been energized to effect a release of the slide and the latter is moved to clear the lock-bolt and to cut its electromagnet out of circuit and the electromagnet of the next release in series into circuit. Fig. 3 is a section on the line *xx* of Fig. 2. Fig. 4 is a section on the line *yy* of Fig. 2. Fig. 5 is a diagram of circuits.

Corresponding and like parts are referred to in the following description and indicated in all the views of the drawings by the same reference characters.

The operating parts are inclosed in a casing 1, which corresponds to the keeper of a lock, since the lock-bolt is shot therein when the door-closure or the like is secured. A portion of the casing 1 is closed by means of a slide B, which when withdrawn frees the lock-bolt 2 and admits of the door or like closure 3 opening. The releasing mechanism for the lock-bolt of the door or closure is electrically controlled and comprises an electromagnet D, cooperating armature K, and a switch H, the latter being attached to the slide B and movable therewith.

A series of electric contacts *a*, *b*, and *c* operate in conjunction with the switch H, whereby in a multiple series of lock-releasing devices they are successively cut into and out of circuit, thereby enabling the employment of a comparative low current. The slide B is normally acted upon by a retracting force represented by a contractile spring 4, secured at one end to the slide B and at its opposite end to a convenient portion of the casing 1. The armature K under normal conditions serves to hold the slide B extended across the open side of the casing 1 and engages with a lug or stop *k*, projected inward therefrom. A spring 5 exerts a force upon the armature K to hold it in engagement with the stop *k*. The switch H preferably consists of a spring secured at one end in any manner to the slide B and having its opposite end portion provided with a plate 6 to bridge and make electrical connection with any two of the contacts *a*, *b*, and *c*. When the slide B is projected so as to close the open portion of the casing 1, the switch-plate 6 closes the circuit through the con-

tacts *a* and *b*, whereby the electromagnet will be energized upon the closing of the electric circuit by means of any circuit-closing device, as the switch 7. (Illustrated in the diagram Fig. 5.)

Doors and like closures are usually hinged so as to swing outward or in one direction, and care should be exercised to arrange the lock-releasing mechanism so that the open side of the casing 1 faces in the direction of the outward swing of the door or closure to effect a release thereof in an emergency. Under normal conditions the lock-bolt 2 of the lock mechanism when projected into the keeper or casing 1 is confined by the sides thereof in the manner well understood. Should occasion require automatic release of the lock without having recourse to the key or other accustomed appliance, the electromagnet is energized by sending a current therethrough, and the armature *K* being attracted is disengaged from the stop *k*, thereby releasing the slide *B*, which under the influence of the spring 4 is withdrawn, thereby permitting the door 3 to swing outward, as the lock-bolt 2 is no longer confined by the slide or movable portion of the keeper. This is shown most clearly in Fig. 3.

Where a number of doors or closures are included in a multiple series, the circuits are substantially as shown in the diagram Fig. 5, so that upon closing the circuit through the first releasing mechanism of the series the remainder are automatically and successively cut into and out of circuit. It is preferred to include an alarm in the circuit and arrange the same so that the last releasing mechanism of the series when automatically cutting itself out of circuit will close the alarm-circuit and give warning of impending danger. Any system of wiring may be employed which will admit of the release mechanisms automatically and successively cutting themselves into and out of circuit.

Referring to the diagram Fig. 5, *E* represents the battery, and *D*, *D'*, and *D²* indicate the electromagnets of a multiple series of three release mechanisms. The slides or movable parts of the keepers or casings are represented by the reference-letters *B*, *B'*, and *B²*, and *k*, *k'*, and *k²* are the stops of the respective slides, which cooperate with the respective armatures *K*, *K'*, and *K²*. The electrical switches are indicated at *H*, *H'*, and *H²* and cooperate with the respective groups of electrical contacts *a*, *b*, and *c*, *a'*, *b'*, and *c'*, and *a²*, *b²*, and *c²*.

The wiring or circuits may be described as follows: starting at battery *E*, through wire *e*, electromagnet *D*, wire *d*, contact *a*, switch *H*, contact *b*, and wire *f*, back to battery *E*. Upon establishing this circuit the electromagnet *D* is energized and the slide *B* released and the switch moved so as to interrupt the circuit through the contacts *a* and *b* and to

complete it through the contacts *b* and *c*. This second circuit is as follows: from battery *E*, through wire *e'*, electromagnet *D'*, electrical wire *d'*, contact *a'*, switch *H'*, contact *b'*, wire *h*, contact *c*, switch *H*, contact *b*, and wire *f*, back to battery *E*. The second circuit when completed results in releasing the slide of movable part *B'* and in shifting of the switch *H'* so as to interrupt the circuit through the contacts *a'* and *b'* and establish a new circuit through the contacts *c'* and *b'*. This third circuit is as follows: from battery *E*, through wire *e²*, electromagnet *D²*, electrical wire *d²*, contact *a²*, switch *H²*, contact *b²*, wire *h'*, contact *c'*, switch *H'*, contact *b'*, wire *h*, contact *c*, switch *H*, contact *b*, and wire *f*, back to battery *E*. This third circuit is representative of the last circuit of the series of lock-releasing devices and when completed likewise results in cutting its electromagnet *D²* out of circuit and a shifting of the switch *H²*, so as to throw the alarm-circuit into action. This circuit is as follows: from battery *E*, through wire *g* and bell *G* included therein to contact *c²*, switch *H²*, contact *b²*, wire *h'*, contact *c'*, switch *H'*, contact *b'*, wire *h*, contact *c*, switch *H*, contact *b*, and wire *f*, back to battery *E*.

From the foregoing it will be understood that a low-power current may be successfully and advantageously used, thus reducing the cost of installation and renewal. This result follows from the peculiar wiring whereby the locks are successively released.

Having thus described the invention, what is claimed as new is—

1. A keeper or casing to receive the lock-bolt of a lock mechanism when projected and having a movable portion for normally confining said lock-bolt, means normally tending to throw the movable part of the keeper aside to release the lock-bolt, a stop mechanism holding the movable portion projected against the action of the retracting means, and an electromagnet included in a circuit to effect release of said stop mechanism, substantially as set forth.

2. A keeper or casing for confining the lock-bolt of a lock mechanism when projected, the same having a movable portion to effect release of said lock-bolt, an electrical circuit for effecting release of said movable part, and a switch controlled by said movable part for interrupting the aforesaid electrical circuit and closing a second electrical circuit, substantially as set forth.

3. A series of lock-releasing devices, each comprising an electromagnet, a movable part, a group of electric contacts and a switch attached to and operating with said movable part for successively throwing the circuits into action and cutting them out of action.

4. In combination, a series of electric lock-releasing devices each included in an independent circuit and comprising a movable

part, a group of electric contacts and a switch
actuated by means of the movable part to
successively throw the electric circuits into
action and cutting them out of action, and
5 an alarm-circuit thrown into action by the
last lock-release mechanism of the series, sub-
stantially as set forth.

In testimony whereof I affix my signature
in presence of two witnesses.

HARRY F. SMITH. [L. s.]

Witnesses:

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GEO. J. HOOPER.