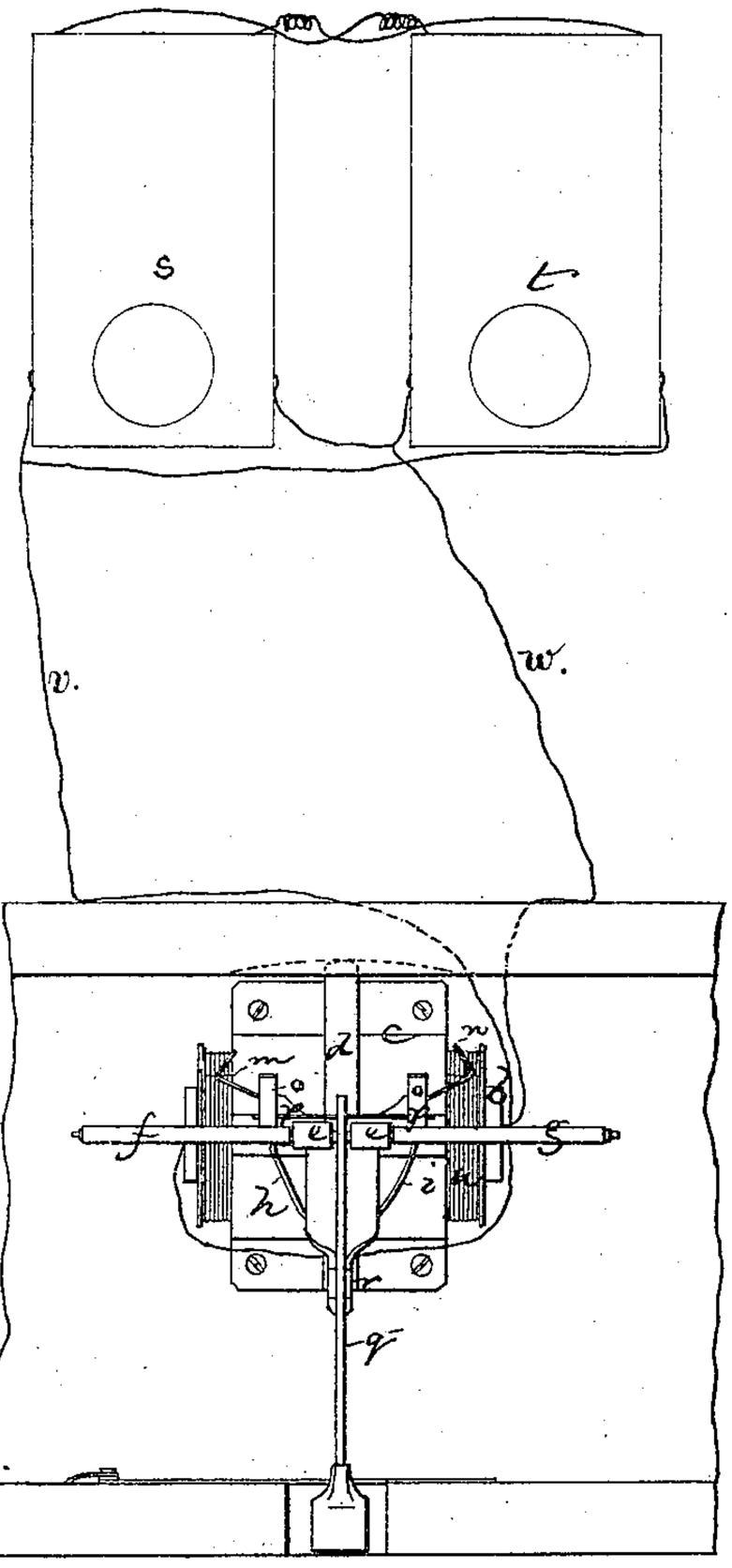
# W. HUMANS.

## Electro-Magnetic Annunciators.

No. 136,518. Patented March 4, 1873.

A

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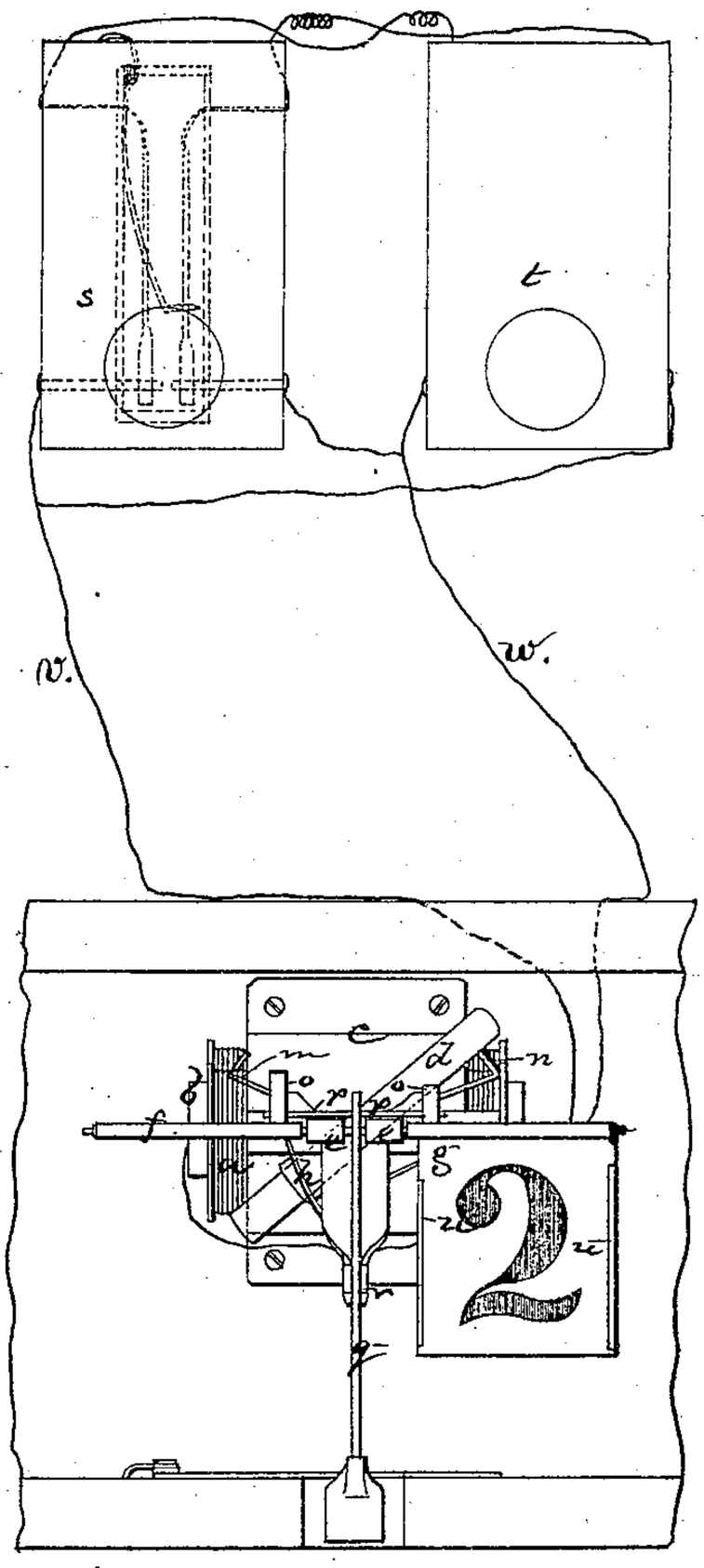


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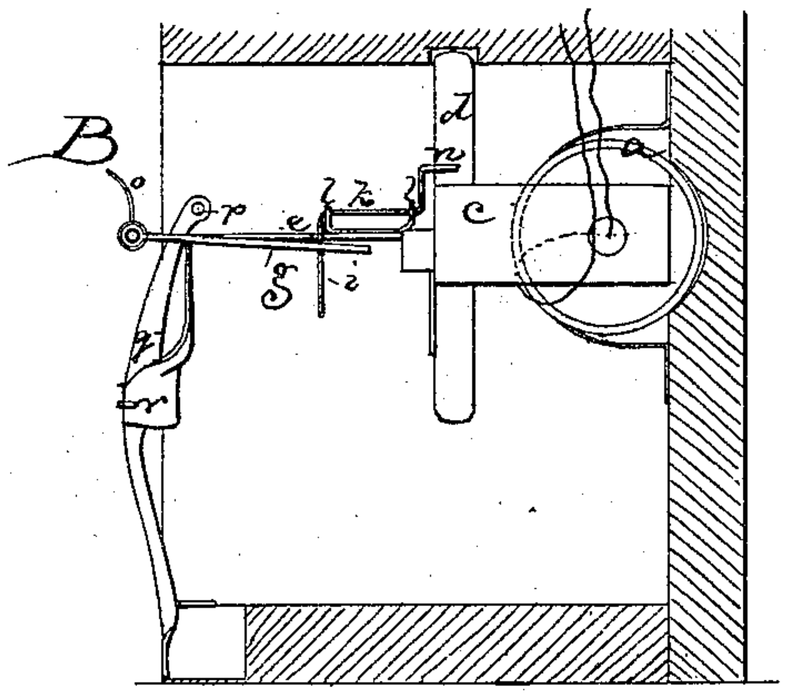


Witnesses.
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L. A. Latimer.

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Wm. Humans
by his Attys.
Crosby & Gould

# UNITED STATES PATENT OFFICE.

WILLIAM HUMANS, OF CAMBRIDGE, MASSACHUSETTS.

## IMPROVEMENT IN ELECTRO-MAGNETIC ANNUNCIATORS.

Specification forming part of Letters Patent No. **136,518**, dated March 4, 1873.

*To all whom it may concern:*

Be it known that I, WILLIAM HUMANS, of Cambridge, in the county of Middlesex and State of Massachusetts, have invented an Improved Electric Annunciator; and I do hereby declare that the following, taken in connection with the drawing which accompanies and forms part of this specification, is a description of my invention sufficient to enable those skilled in the art to practice it.

My invention relates to the construction or arrangement of the mechanism of that class of hotel annunciators in which the drops or room-indicators are connected with an electric line, the circuit in which is normally broken, and by the connection of the drops therewith holds them all normally away from the openings at which they are displayed, while by operating a knob or switch-key at any one room the circuit is closed, and by closing releases the particular drop that indicates the room where the switch is operated.

In my invention I use a vertical balanced magnetic armature, so pivoted as to swing very readily in either direction, and a single spool or coil having extending through it a soft, straight iron core, toward either end or pole of which the armature may swing, and in line with or in front of each end or pole of the core I place one of the indicating-drops, each pole having the drop for a single room, making for each single armature and its single coil and core the drops for two rooms.

Heretofore, when such pivoted magnetic armatures have been employed, a single armature and a single coil and core have been required for every room or drop; but with my invention I make each armature serve for two rooms or drops, with one straight coil and core; and my invention consists, primarily, in the combination of a single magnetic armature, attracted toward either pole of a straight core, extending through a single coil, and connected with the two drops or indicators for two rooms.

The drops or indicators may be arranged to swing in various directions; but I prefer to use a flap-drop, pivoted at top, and standing normally in a horizontal plane, the number or letter being concealed by this normal position of the drop, and being displayed when the drop is released and falls forward by gravity, such an arrangement of the drops constituting one feature of my invention.

The drawing represents two drops of an annunciator mechanism, mounted and operated in accordance with my invention, the two drops and the mechanism connected therewith serving to illustrate the system, as all the others are duplicates of these, except as to their indicating-faces.

A shows the mechanism in front elevation. B is an end view of the drops, armature, and coil. C shows one of the drops as released and thrown down by its weight.

*a* denotes a straight spool or coil, having extending axially through it a core, *b*, of soft iron, the ends or opposite poles of which may be bent or extended at right angles to the coil. In front of this coil is a frame, *c*, insulated from the coil, and having bearings for supporting the pivots or gudgeons of a magnetized armature, *d*, which armature is pivoted above its center of gravity, so that it hangs normally in vertical position, balanced, and free to swing readily in either direction. At the front of the frame *a* is an arm, *e*, at the end of which are two oppositely-extending horizontal wires that support two swinging drops, *f g*, each drop swinging vertically upon its pin, being raised to horizontal position and held there by a latch or catch, *h* or *i*, and dropping into vertical position by gravity whenever released from said catch. Each catch *h* or *i* may be simply a bent wire having a horizontal part, *k*, supported and turning in two ears or bearings, *l;* and an arm, *m* or *n*, extends up from the rear end of the pivot part *k*, the lower end of the catch, below the shoulder *h* or *i*, being so bent that by gravity the catch stands in position to hold the drop, slight inward movement of the catch releasing the drop and letting it fall, while upward movement of the drop presses in the catch until the edge of the drop passes the shoulder, when the weight of the catch will throw the shoulder under the drop and lock it in horizontal position.

The respective arms *m n* are in the plane of opposite movements of the upper end of the swinging armature, and when the armature swings in one direction it strikes the arm *m* and throws the catch *h* in, permitting the drop *f* to fall, while, when it swings in the opposite

direction, it strikes the arm *n* and operates the catch *i*, releasing the drop *g*, which will then fall, either drop being actuated, accordingly as the armature swings in one or the opposite direction.

Each drop has a finger, *o*, and back of the two fingers *o* are two oppositely-extending arms, *p*, of a lever, *q*, pivoted at *r*, and when either drop is down it is restored to horizontal position by moving in the lower arm of the lever, one of the arms at the top of the lever then striking the finger *o* of the released drop and pressing it forward, by which action the drop is raised until the shoulder of the catch slips under it. The lever is returned to normal position by a suitable spring.

All the levers for all the drops of the annunciator system are connected, so that by operating one rod the clerk at the central office throws any fallen drop of the system back to its normal position, only such drop or drops as are down being affected, as, although all the levers are operated, no lever meets a finger, *o*, except at such drops as are down. With the restoration of the drops to position, therefore, the electric current has nothing to do, as the clerk or attendant always sees when a drop is down, and immediately and mechanically restores it to position; but each drop is released so that it may fall (to announce a call from the room with which said drop is connected) by an electric circuit and suitable switch mechanism, and with the main circuit each coil, helix, or spool is so connected that the circuit may be closed in two directions or for two rooms, the armature swinging in one direction toward one pole of the coil when the switch of one room is operated, and in the opposite direction toward the opposite pole when the switch for an adjacent room is operated, thus making the one coil and armature answer for two rooms.

By operating the switch at *s* (by pressing in the knob or key) the circuit is closed and the armature is attracted toward one pole of the coil, and by its movement releases the drop, indicating the room where the switch is located; and by operating the switch *t* at the next room (by pushing in the knob or key) the circuit is closed through the opposite pole of the coil, drawing the magnet in the opposite direction, and releasing the drop connected with the room where the switch *t* is located.

By this arrangement an annunciator mechanism may be brought into a very much smaller space than by the common arrangement of electric annunciators, or a space for the drop-case occupying not more than half of the space now used for such a case for the same number of rooms.

I not only hang or pivot each drop, as shown or described, but I make the drop of metal, or with a metal back, and form the opposite side edges of the drop-plate with lips or flanges *u*, which are turned over so that they confine the card to it, the opposite edges of the card being simply slipped under the lips of the plate and being retained by the lips.

It will be observed that the circuits for both rooms (or for two rooms) are embraced by the same wires, one wire, *v*, from one switch connecting with one pole of the coil, and the other wire, *w*, from the other switch connecting with the other pole of the coil, the switches acting alternately by simply reversing the current through the same local current.

I claim—

1. An electric annunciator in which, with a single armature and a single straight coil or spool, drops for two adjacent rooms of the building are operated, thus making for any number of rooms but half the number of straight coils and armatures, substantially as shown and described.

2. The combination of each swinging armature with two drops by means of the pair of catches, either of which is operated to release a drop by the swinging of the armature against the arm *e* of the catch.

3. In an electric annunciator for hotels and other buildings, the combination of two switches, *s t*, with the single spool and armature mechanism, substantially as shown, and for the purpose described.

4. In an electric annunciator for hotels and other buildings, the combination of the switches for two rooms with a single armature and the same main circuit, the switch for each room acting to send a current in a direction opposite that sent by the other, substantially as shown and described.

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