

Elisha Gray's
Electro Magnetic Annunciator.

118231

PATENTED AUG 22 1871

Fig 1.

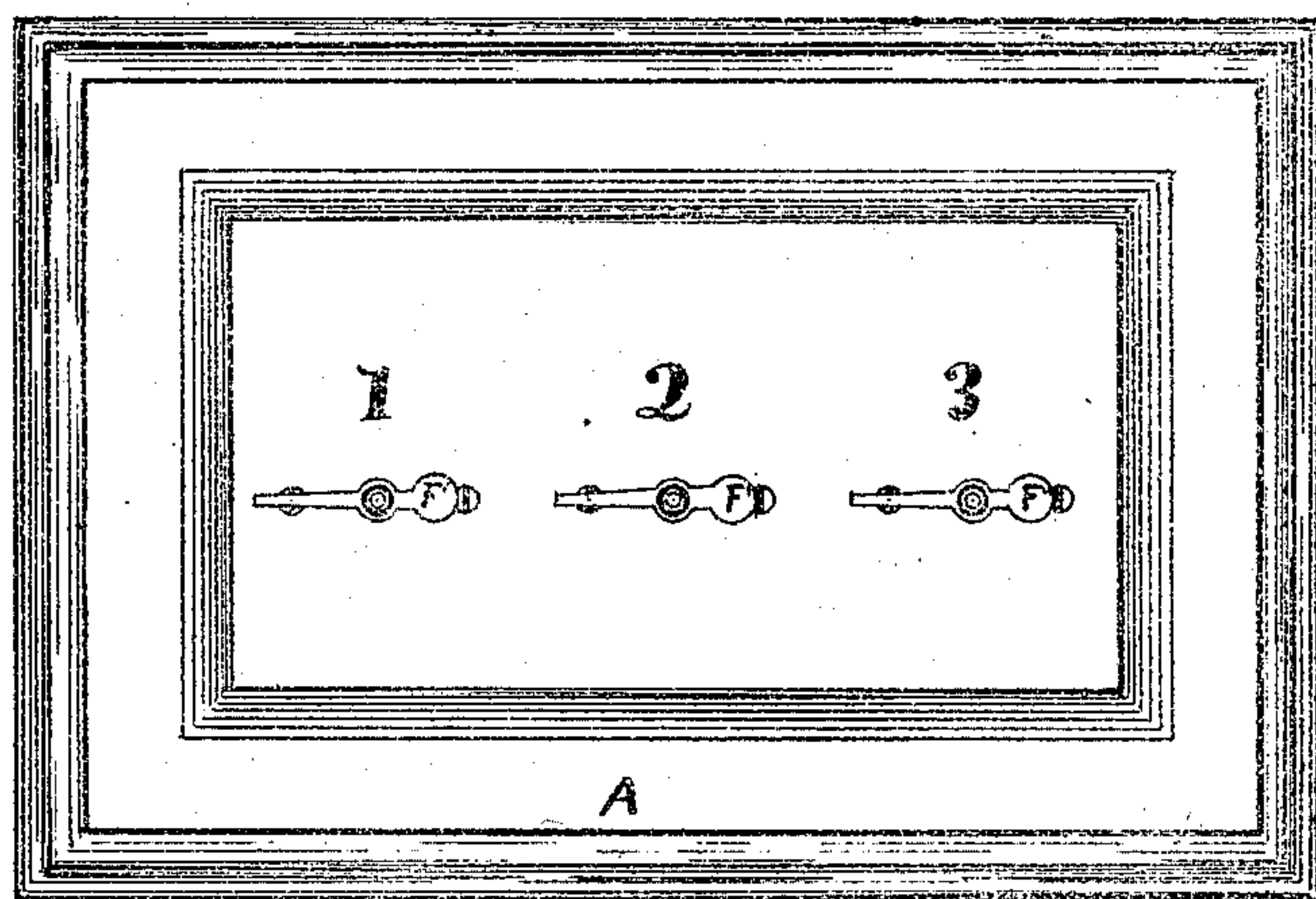


Fig 5.

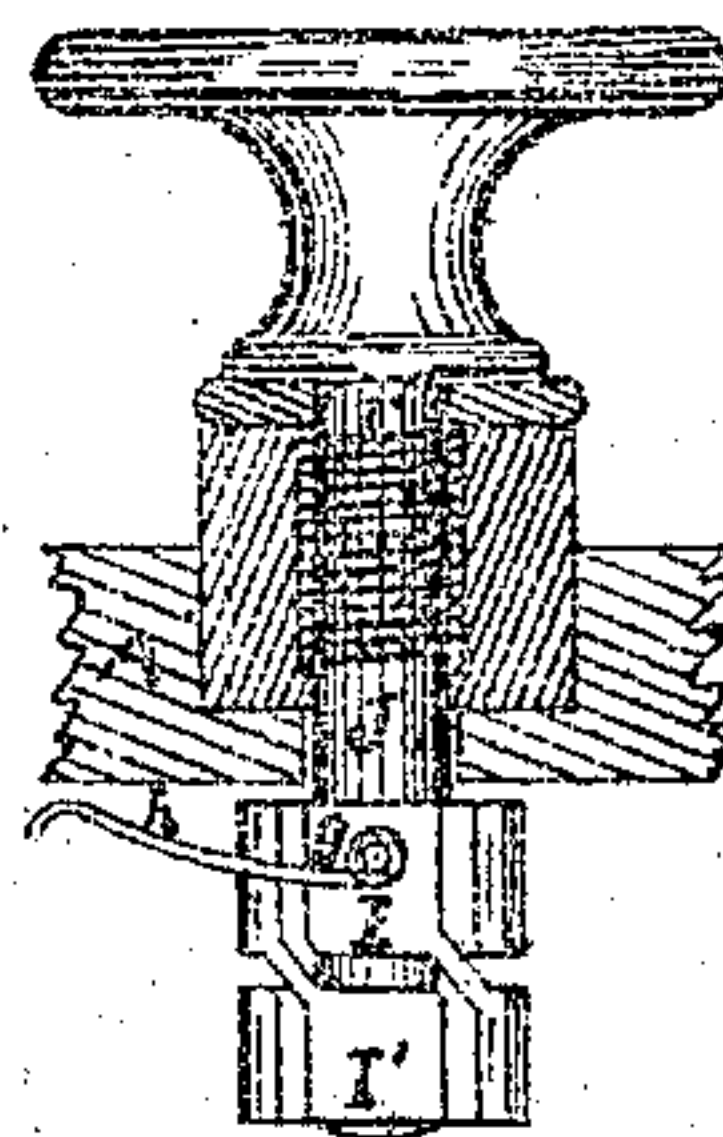


Fig 2.

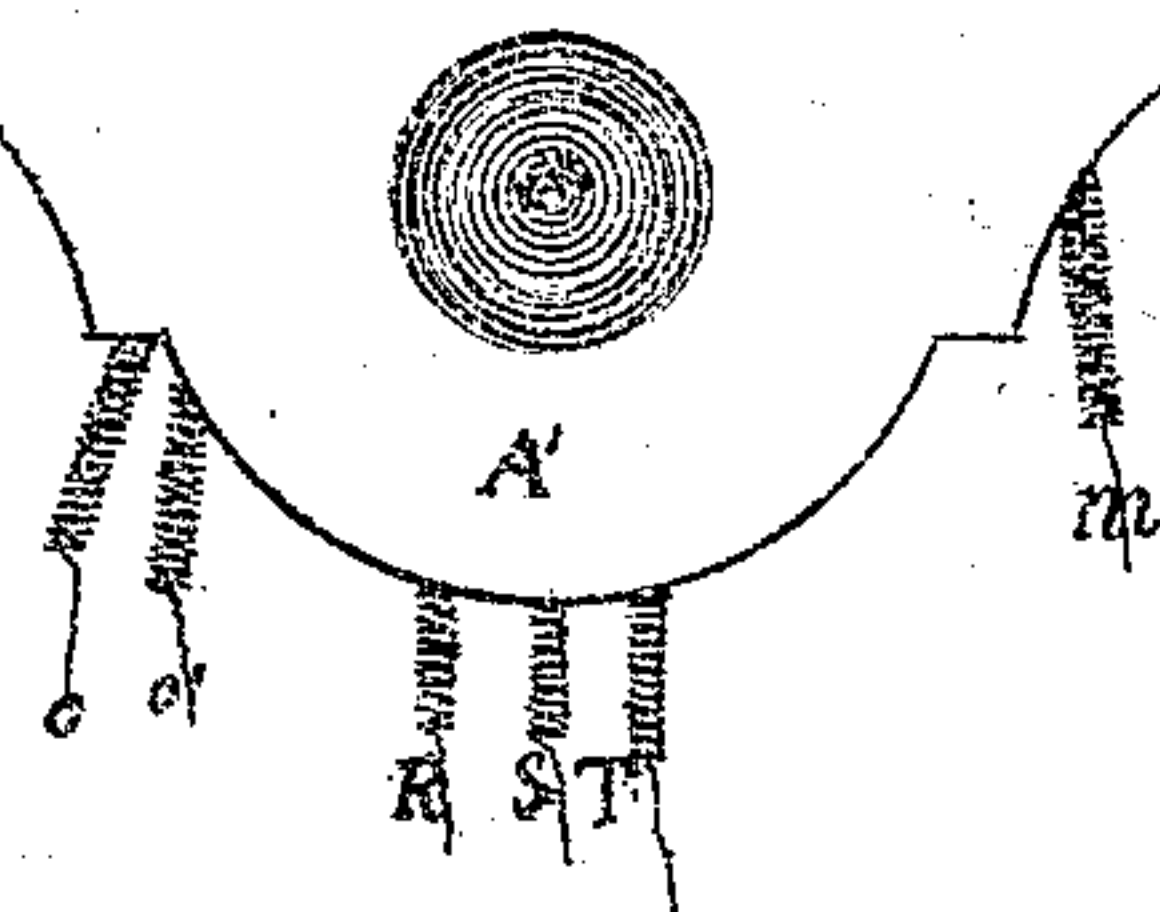


Fig 3.

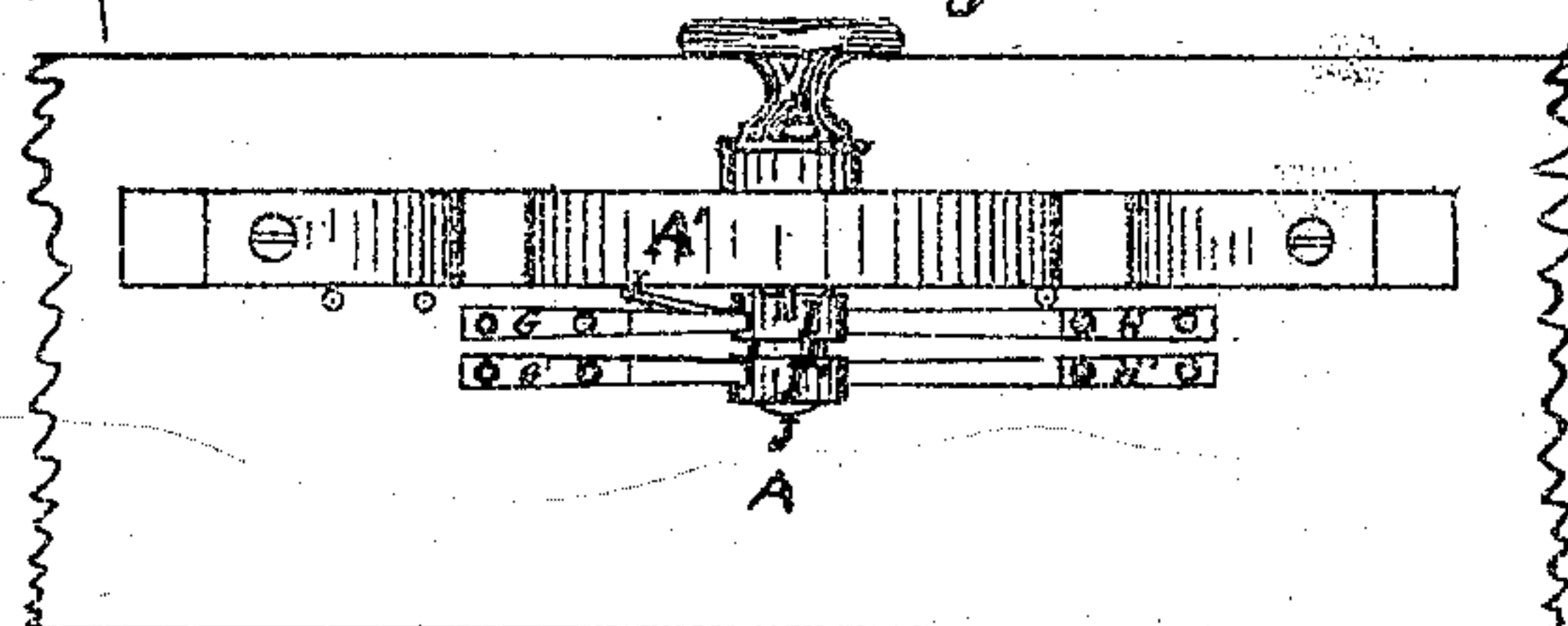
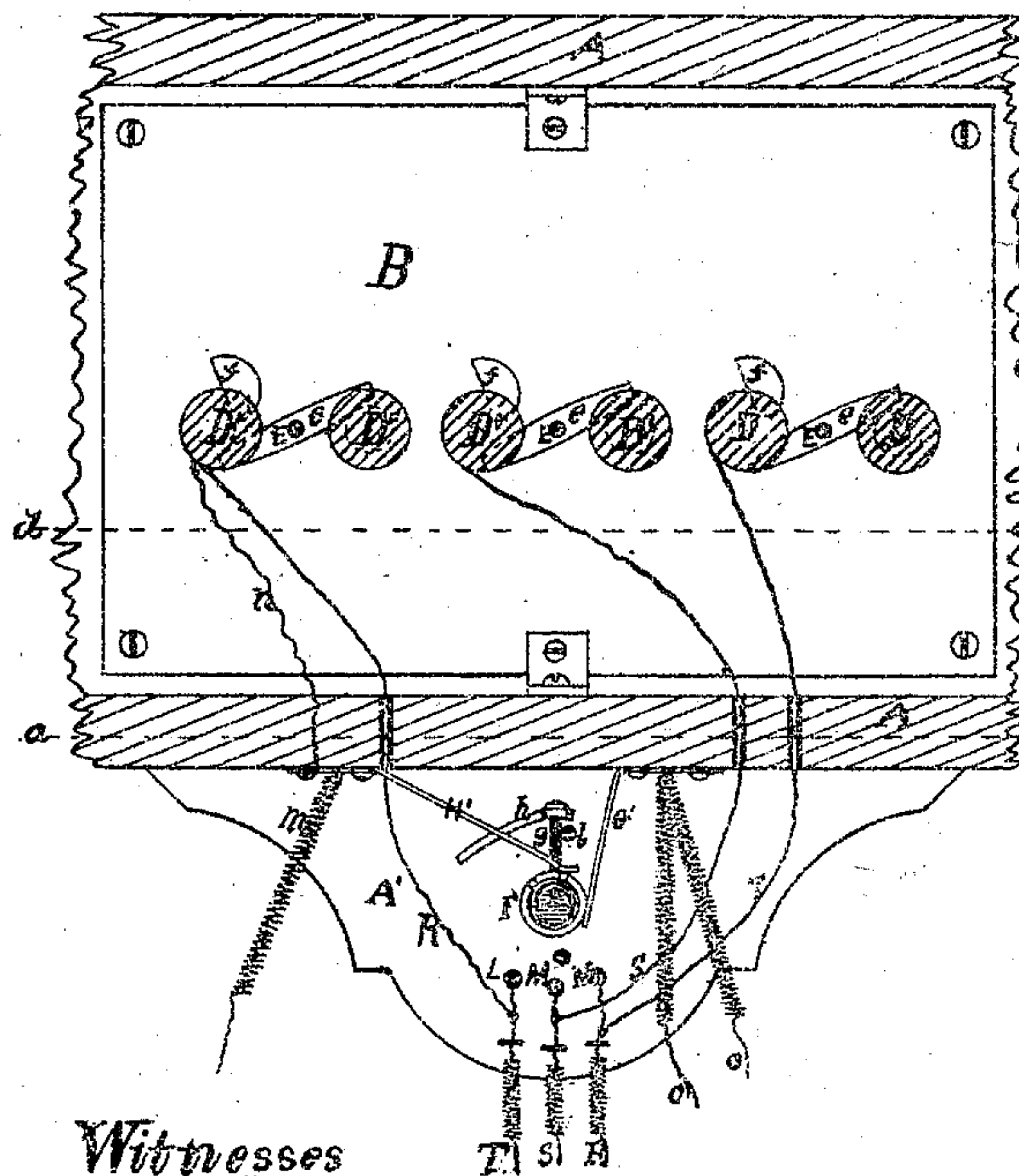
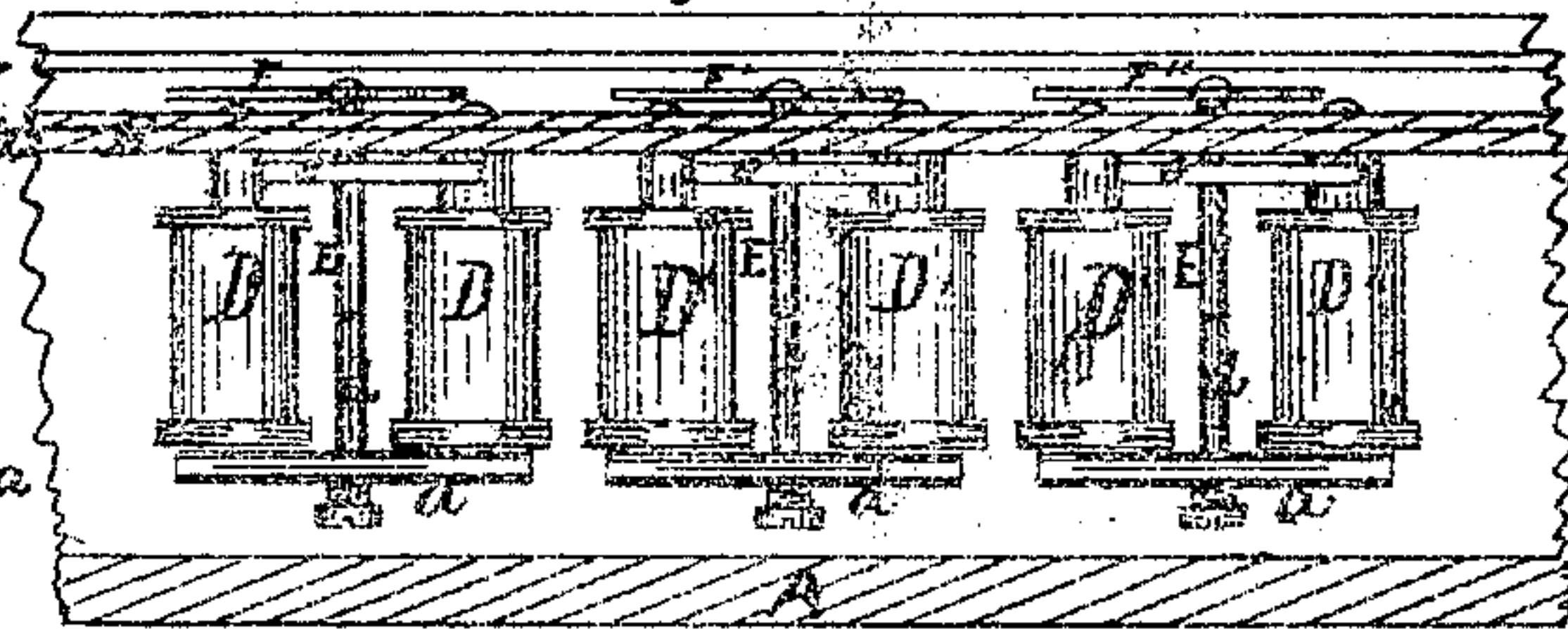


Fig 4.



Inventor

Elisha Gray

Witnesses

C. H. Sherburne

C. H. Frost

UNITED STATES PATENT OFFICE.

ELISHA GRAY, OF CHICAGO, ILLINOIS.

IMPROVEMENT IN ELECTRO-MAGNETIC ANNUNCIATORS.

Specification forming part of Letters Patent No. 118,231, dated August 22, 1871.

To all whom it may concern:

Be it known that I, ELISHA GRAY, of Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Electro-Magnetic Annunciators; and I do hereby declare the following to be a full, clear, and exact description thereof, which will enable others skilled in the art to which my invention appertains to make and use the same, reference being had to the accompanying drawing forming part of this specification, in which—

Figure 1 is a top view of my invention. Fig. 2 is an inverted transverse longitudinal section of the same. Fig. 3 is a side elevation taken on line *a a*. Fig. 4 is vertical longitudinal section on line *d d*, and Fig. 5 is an enlarged detached section of the knob employed in reversing the electric current.

Similar letters of reference indicate corresponding parts in the several figures of the drawing.

The object of my invention is to provide an annunciator for the use of hotels and other similar public buildings, by which the number of the room or rooms from which the call is made may be indicated upon the dial; and the improvement consists in an electro-magnetic arrangement communicating from the apartment with the dial, a description of which in detail will be hereinafter fully given.

In the accompanying drawing, A represents the case, which may be as shown or of any known form, which will receive the operating parts of the instrument. B is a metal plate, which is firmly affixed to the inner side of said case, and upon which is mounted the electro-magnets D D' D''. Each limb of said magnets is connected at its opposite ends from the plate by metal heel-pieces *a a a* firmly affixed to the arbor or bearing of the same. E E' E'' are shafts, one end of which have a bearing within plate B, and are pivoted at the opposite end to or upon set-screws *d d d*, which are secured within straps *a*, by which the same are held in proper adjustment. Affixed upon said shafts, between plate B and the end of the magnets, are steel needles or armatures *e e e*, which are properly hardened and magnetized. Said needles or armatures are so arranged as to have an automatic tilting movement, by the reciprocal rocking movement of the shafts, imparted thereto by the electrical current from the magnets. Attached to plate B are lugs *f f f*,

which are so arranged as to prevent the said armatures from coming in contact with and against the poles of the electro-magnets as the same are tilted by the electrical current. Said lugs are usually made of cork, but they may be made of any suitable material. F F' F'' are light metal indicating-pointers, which are firmly affixed to the outer ends of said arbors in front of plate B immediately under the figures marked upon the dial. Attached to the outer side of the case are metal springs G G' and H H', which are bent in proper shape to bring their outer ends in contact with and against metallic rings I and I' affixed upon the knob-spindle J, which is secured to the projecting portion A' of the case. Said rings are insulated one from the other, and their periphery cut into two separate parts, forming in each a long and short section. The short section of ring I is connected to the long section of ring I', and the short section of ring I' is connected to the long section of ring I, by which the electrical current is conveyed from one to the other. Affixed to the short section of ring I is a pin or pivot, *g*, to which is attached a curved spring, *h*, so arranged as to come in contact with and pass over points L, M, and N, which are permanently attached to projection A' of the case, as said knob or commutator is revolved, the same being so arranged as to admit of a reciprocal semi-annular rotary movement. Attached to and upon the knob-spindle J of the commutator is a coiled spring, *i*, which is so arranged as to force the said knob back to its proper position as the same is rotated partially around, and firmly holding the same against a stop-pin, *l*, secured in the said projection. Affixed to the said points L, M, and N are wires R, S, and T, which are each attached at one end to the magnets D D' D'', the opposite ends of each leading to different rooms having numbers corresponding with the numbers indicated upon the dial. Within each separate room is secured a circuit-closer, the manipulation of which causes a contact between the wire communicating with the room and the common return-wire *m*. One end of each wire R, S, and T is soldered to the core of the magnets D D' D'', which are in direct contact with the plate B. Affixed to the core of the magnet D is a wire, *n*, which communicates with spring H. Firmly affixed to springs G G' are wires O O', which are connected with the poles of a galvanic battery.

The operation of my invention is as follows: As the occupant of room No. 1, for instance, manipulates the circuit-closer the electrical current will pass from wire O' through spring G', long section of ring I', short section of ring I, spring H to the common return-wire *m*; thence through the room to wire R; thence through magnet D, plate B, spring G, long section of ring I, short section of ring I', spring H', and wire O to the pole of the battery. The electrical current having passed through magnet D in such a direction as to develop a polarity similar to that already in the approximate poles of the needle-armature *e*, hence a mutual repulsion takes place between the approximate poles of the magnets and a mutual attraction between the more distant ones, the object of which is to tilt needle *e* to a reversed position, which carries pointer F upon Fig. 1 of the dial, the same current ringing a bell secured upon the return-wire. The call having been made and the number of the room noted, it now remains to restore the pointer to its former position, which is done by turning the knob of the commutator until spring *h* makes a contact with point N, thus changing springs H H' from the short sections of rings I and I', which brings spring H' in direct contact with spring G', and spring H with spring G, by which means the electrical current passes from wire O to and through spring G', through the long section of ring I', short section of ring I, spring H, metal point N, wire R, magnet D, plate B, spring H,

long section of ring I, spring G, and wire O' to the pole of the battery; thus the electrical current will pass through magnet D in a reverse direction from that which was produced by the manipulation of the room circuit-closer, by which a reverse effect is produced upon needle *e*, which restores pointer F to its original position.

The same operation may be repeated in a like manner with any other number which will produce a corresponding result.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The arrangement of circuits for operating the needle or armature *e* either forward or backward by the electrical current, substantially as and for the purpose set forth.

2. The commutator J of an electro-magnetic annunciator, constructed and arranged to operate substantially as and for the purpose specified.

3. The springs G G' H H' and wires R S T, in combination with rings I and I' of the commutator J, the whole arranged substantially as and for the purpose described.

4. The spring *h*, in combination with points L, M, and N, arranged as described, whereby the electrical current is reversed, substantially as and for the purpose specified.

ELISHA GRAY.

Witnesses:

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N. H. SHERBURNE.