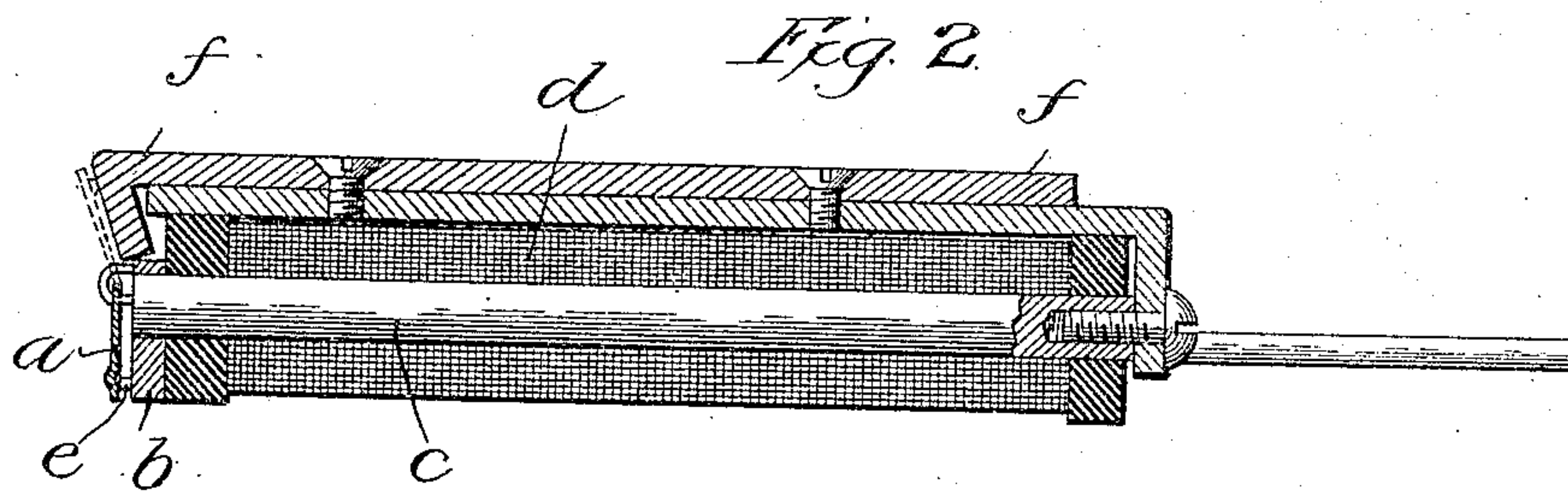
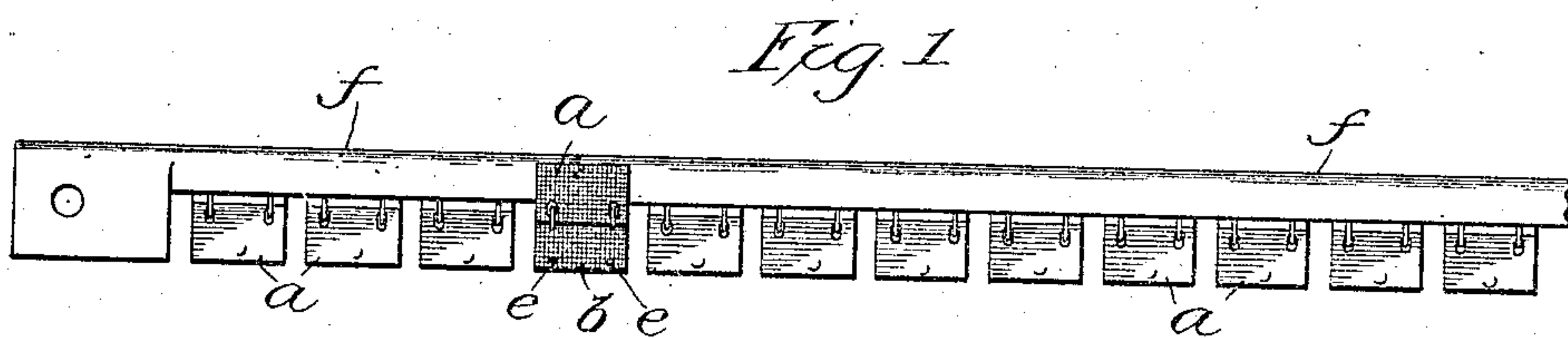


A. F. DIXON.
ELECTRIC SIGNAL.
APPLICATION FILED MAR. 6, 1907.

944,545.

Patented Dec. 28, 1909.



Witnesses:
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UNITED STATES PATENT OFFICE.

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ELECTRIC SIGNAL.

944,545.

Specification of Letters Patent.

Patented Dec. 28, 1909.

Application filed March 6, 1907. Serial No. 360,947.

To all whom it may concern:

Be it known that I, AMOS F. DIXON, citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in Electric Signals, of which the following is a full, clear, concise, and exact description.

My invention relates to electric signals, such as are used in telephone exchange systems, as for "toll trunks," and for annunciators, and its object is to provide an improved device of this character which will be extremely simple, cheap to manufacture and efficient in operation.

The invention also contemplates a signal device which may be made very small, but will display a large target surface in proportion to the space which it occupies in the face of the switchboard.

I will describe one form of my invention by reference to the accompanying drawings, in which—

Figure 1 is a front view of a strip of several signals, as they would be mounted in a switchboard, the target of one of the signals being shown in a position of display; and Fig. 2 is a detail sectional view of one of the signals, on an enlarged scale.

The light sheet-iron shutter *a* is hinged at its upper edge to the face of an iron block *b* mounted at the end of the core *c* of the electromagnet *d*. The block *b* virtually forms an enlargement of the end of the core, and the shutter normally hangs over and conceals the face of said block. The magnet is provided with a return pole piece which runs back above the magnet coil, the free end of said pole piece being located just above the block *b* at the end of the core, and at a little distance from said block. Stop-pins *e e* are preferably provided upon the face of the block to prevent the face of the iron shutter from directly contacting therewith; and a stop is also preferably provided to prevent said shutter from directly contacting with the return pole piece. In the form shown, a part of the brass mounting plate *f* projects over the end of the return pole piece to serve this purpose; and the shutter is also preferably provided with a raised nipple to prevent it from sticking against the flat surface of said plate *f*.

When the magnet is energized, the free

end of the shutter *a* partaking of the same polarity as the face of the block *b* at the end of the core, is first repelled from said face, and swings outwardly and upwardly into a position where it is finally attracted and held by the return pole piece, as shown in dotted lines in Fig. 2. The target shutter is thus given an extended arc of movement, by means of an exceedingly simple structure. The target is thus in two parts, one part being the face of the block *b* and the other the inner face of the shutter *a* which normally faces said block, so that the total target surface is approximately twice the area of either part alone. The area of the target when displayed is approximately the entire area occupied by the signal device in the face of the switchboard.

I claim:

1. An electric signal having a target composed of two parts hinged together at their upper edges, one of said parts being movable and the other fixed, and electromagnetic means constructed and arranged to swing said movable part upwardly and outwardly upon its hinge, to display the inner faces of both parts.

2. An electric signal having a target composed of two iron parts hinged together and normally lying one over the other, in combination with means for magnetizing said parts to cause the same to repel each other and display the surfaces thereof which normally face each other.

3. In an electric signal, the combination with an electromagnet, of a light iron shutter hinged at the end of the magnet core, and normally lying over said core, the free end of said shutter being adapted to be repelled from the face of the core when the magnet is excited, and a return pole piece for the magnet in position to attract said shutter and continue its movement beyond the point to which it was carried by repulsion from said core, whereby an extended arc of movement is secured.

4. In an electric signal device, the combination with an electromagnet, of a light shutter of magnetic material hinged at the end of the magnet core and normally hanging over the face of said core, and a stop to prevent the inner face of said shutter from directly contacting with the face of said core, the magnet being adapted when excited to

move the free end of the shutter outwardly from the core.

5 5. In an electric signal device, the combination with an electromagnet, of a light, iron shutter hinged from its upper edge at the end of the magnet core and normally hanging down over the face of said core, and a return pole piece for the magnet having its free end above the end of the core, in
10 position to attract said shutter and swing it outwardly and upwardly to disclose its inner face and the face of said core in juxtaposition, when the magnet is excited.

15 6. In an electric signal, the combination with an electromagnet of horse-shoe type, having on one pole a projection extending away from the other pole, of a shutter of magnetic material pivotally mounted adjacent said projection and normally lying approximately parallel thereto the shutter be-

ing adapted to be swung toward said other pole when the magnet is excited.

7. In an electric signal device, the combination with a horizontally-disposed electromagnet having a downwardly extending
25 projection at the end of the magnet core and a return pole piece above the electromagnet, of a light shutter of magnetic material hinged at the end of the core and normally hanging over the depending projection of
30 the core, the free end of the shutter being adapted to be first repelled and then attracted toward the return pole piece when the magnet is excited.

In witness whereof, I hereunto subscribe
my name this 4th day of March A. D., 1907.

AMOS F. DIXON.

Witnesses:

RALPH G. JOHANSEN,
ROY T. ALLOWAY.