

No. 840,201.

PATENTED JAN. 1, 1907.

H. M. CRANE.
ELECTROMAGNETIC SIGNAL.
APPLICATION FILED JUNE 8, 1904.

2 SHEETS—SHEET 1.

Fig. 1.

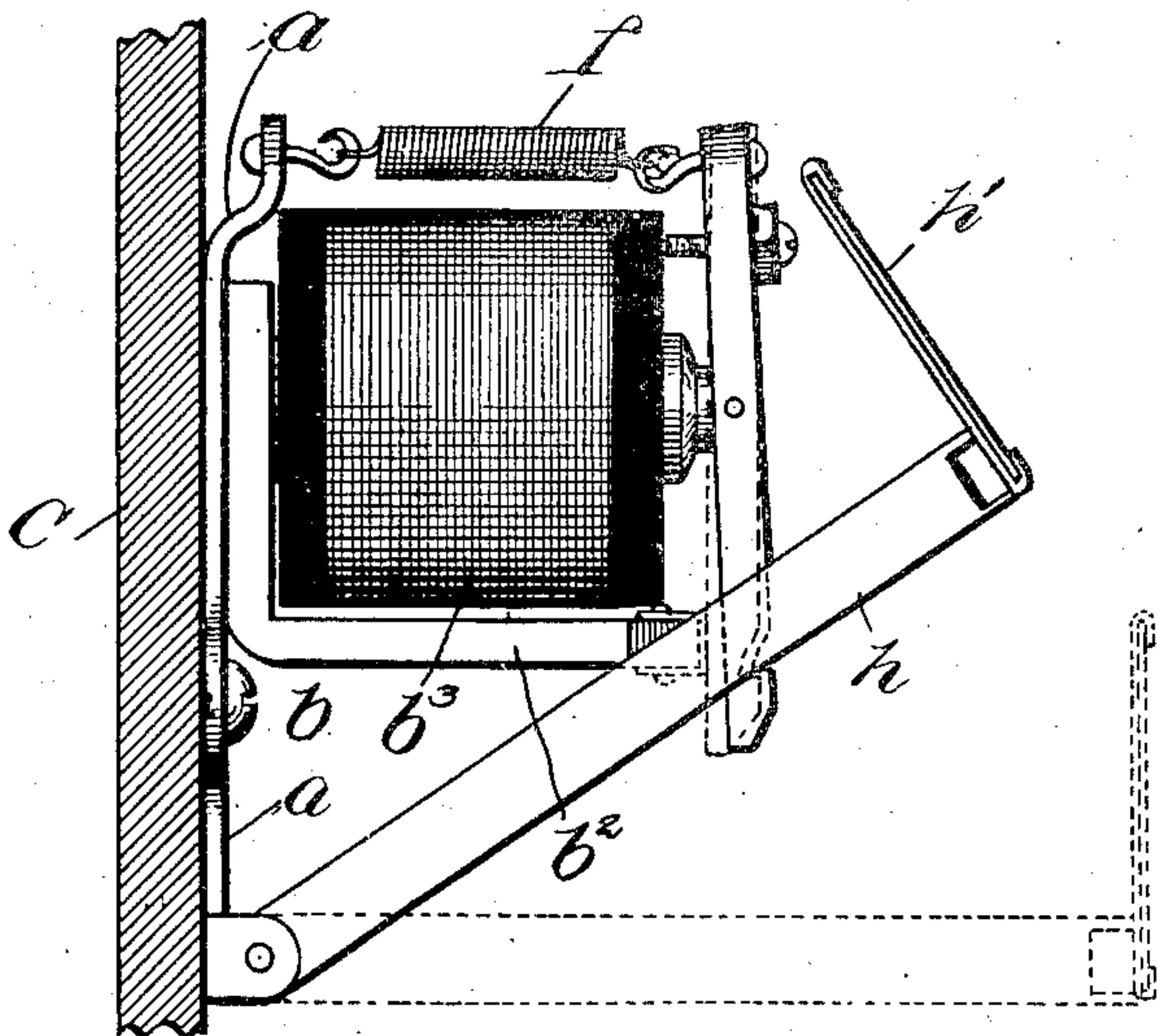


Fig. 2.

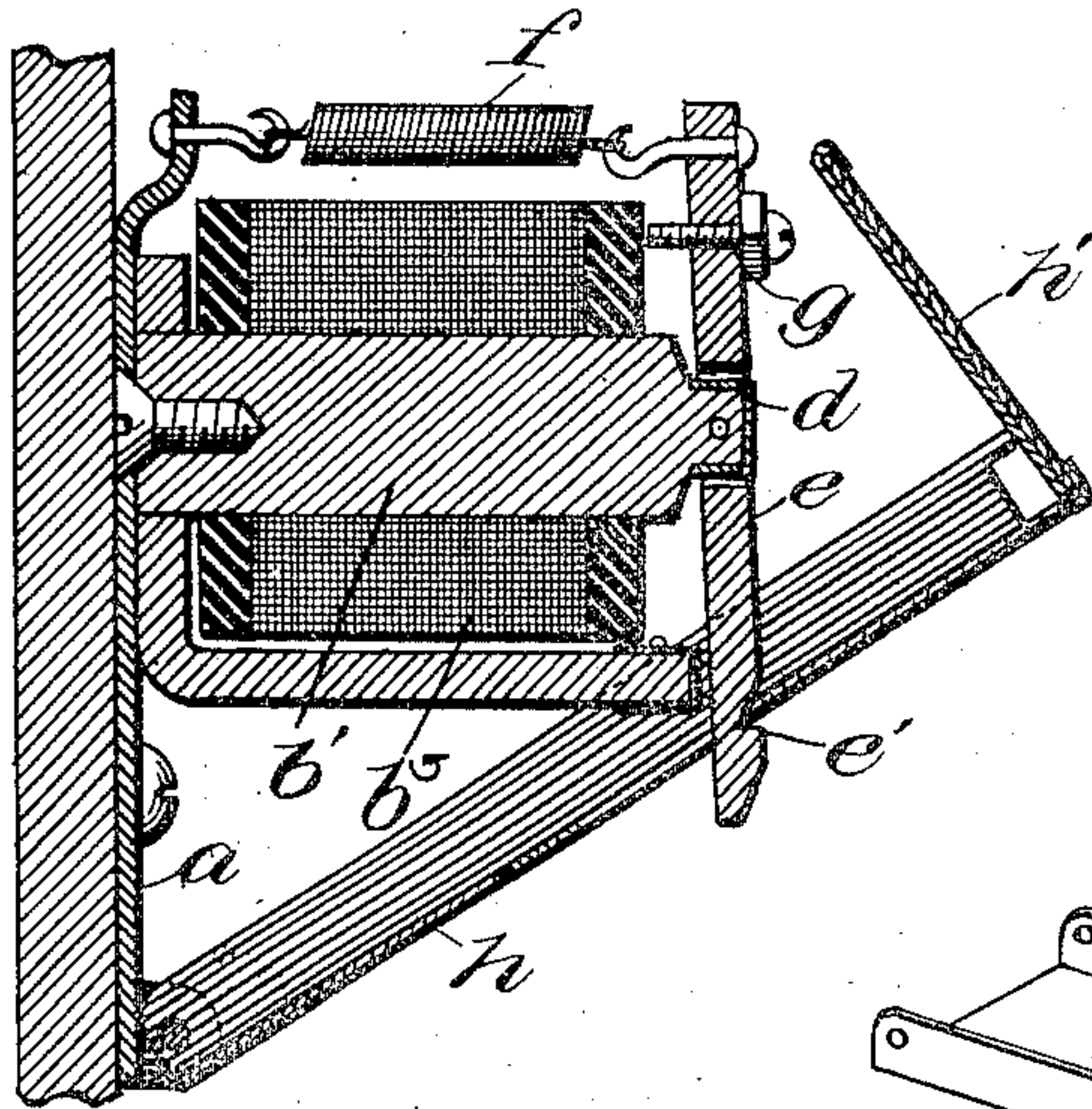


Fig. 3.

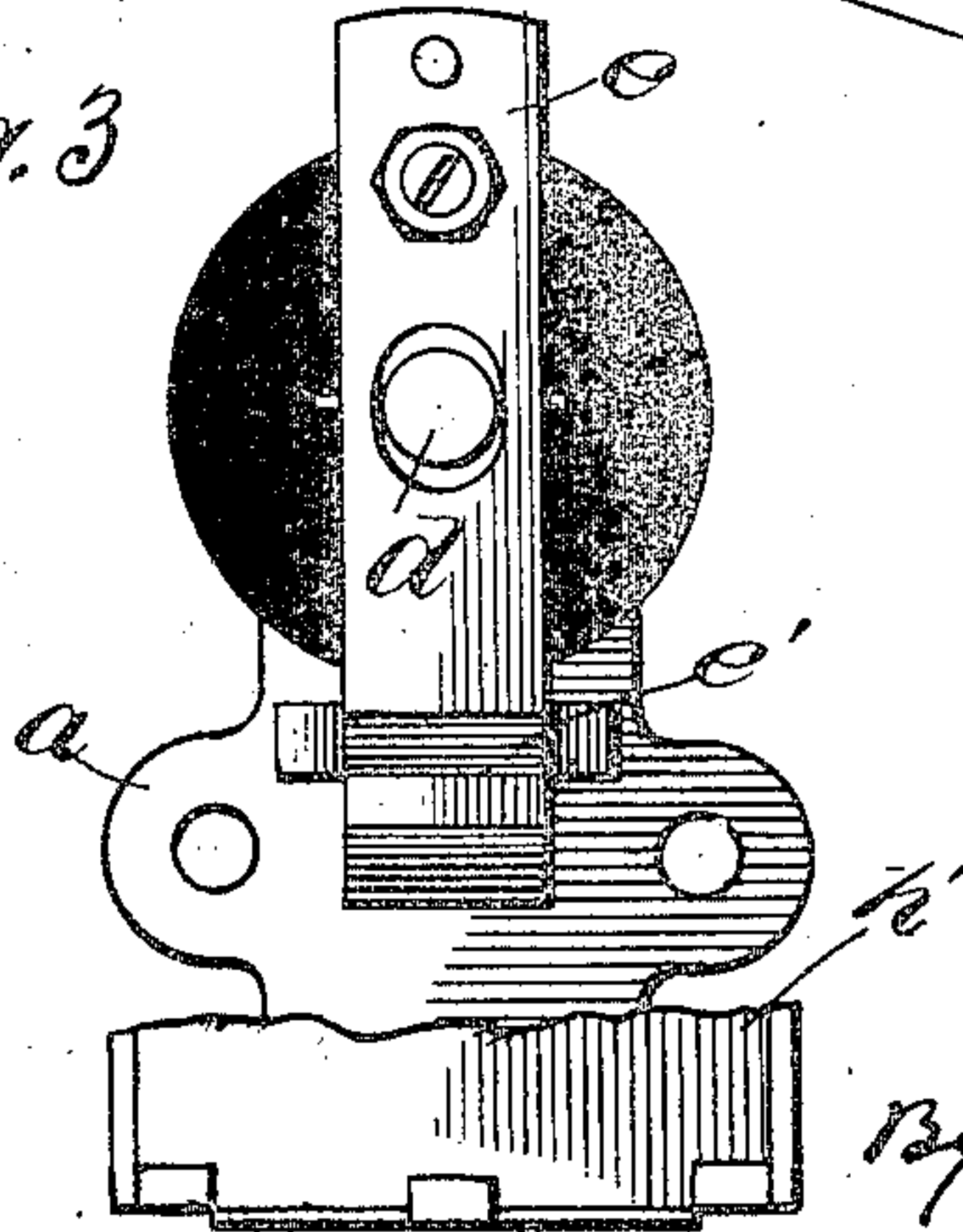
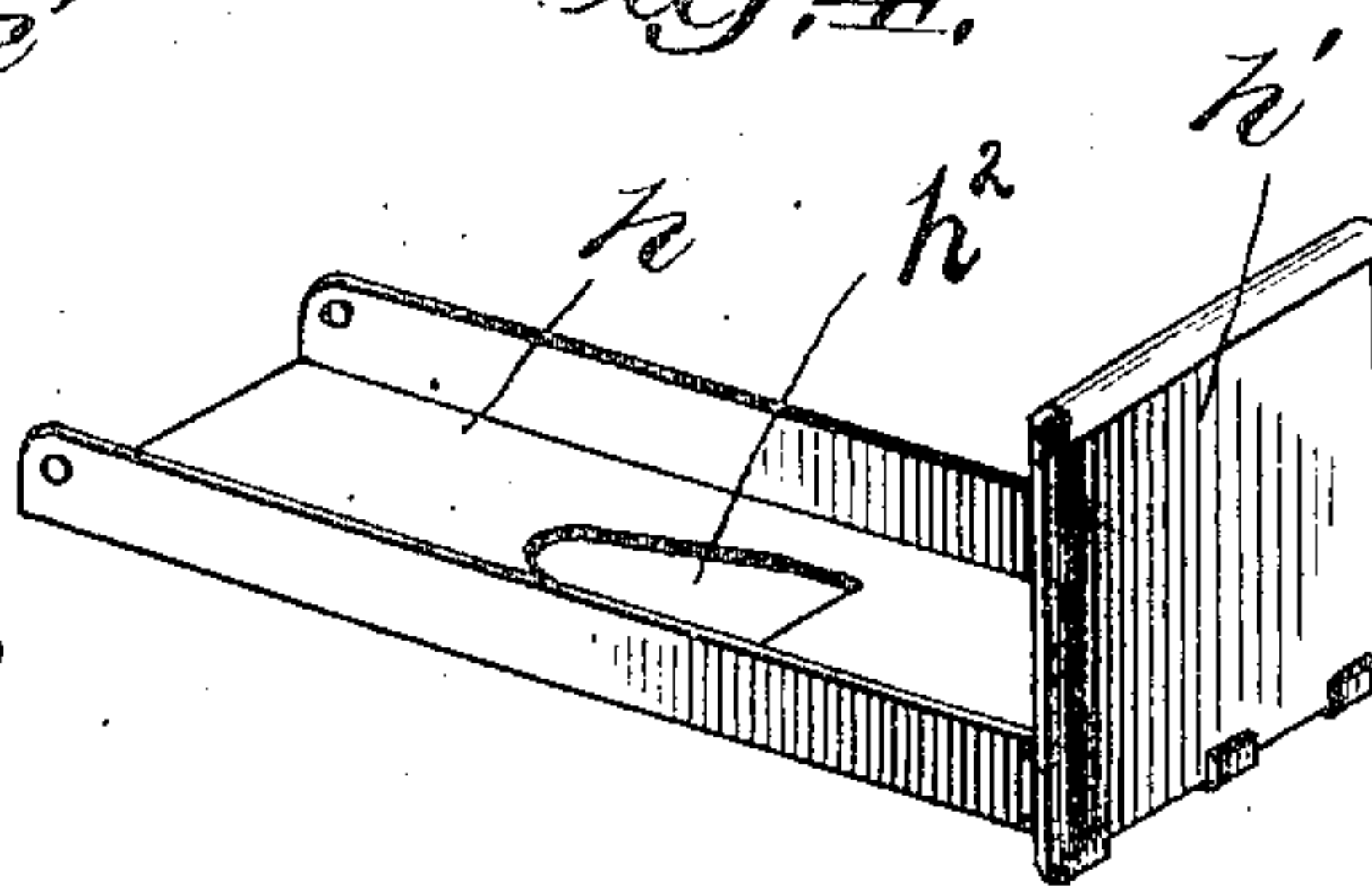


Fig. 4.



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2 SHEETS—SHEET 2.

Fig. 5.

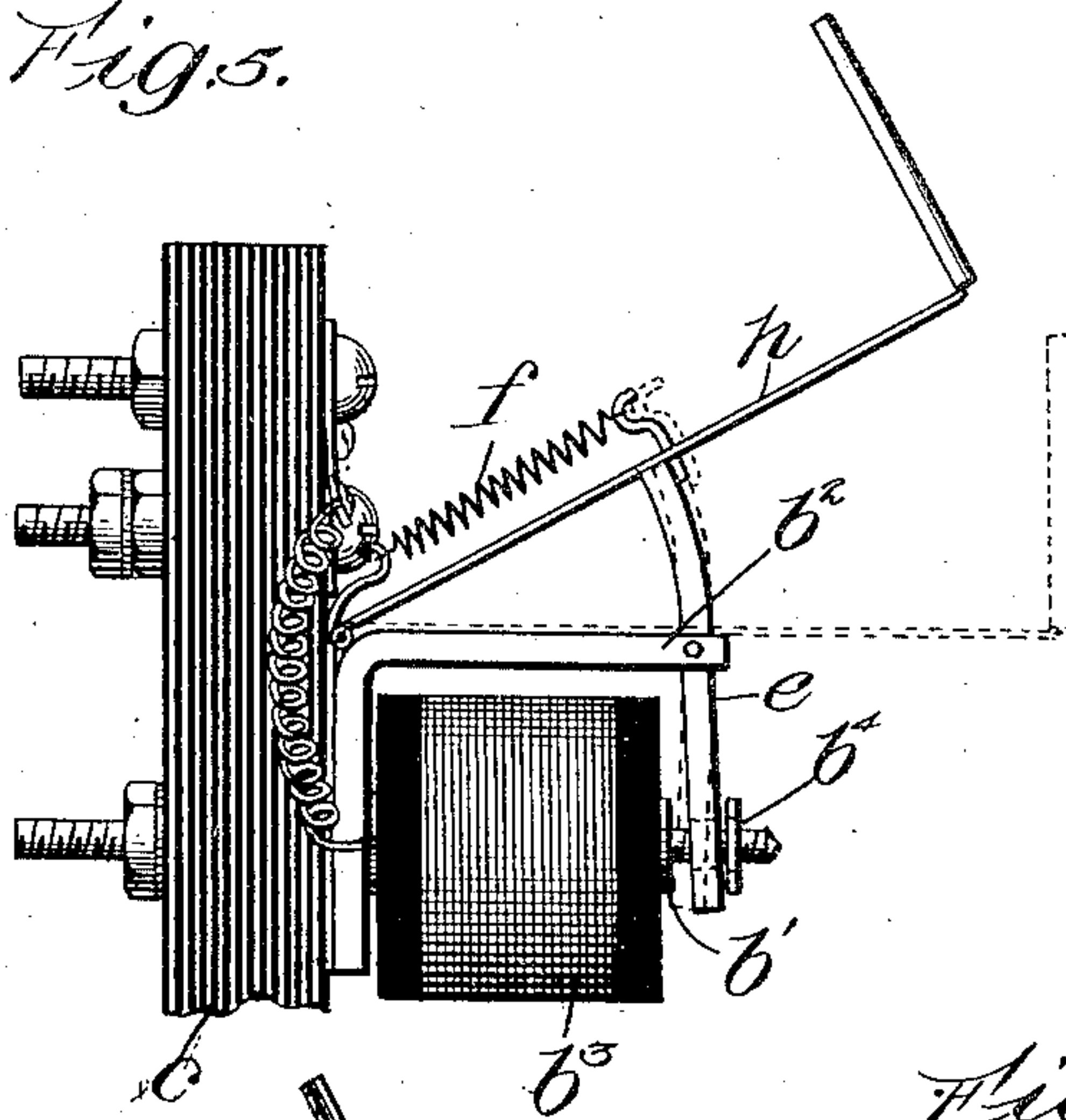


Fig. 6.

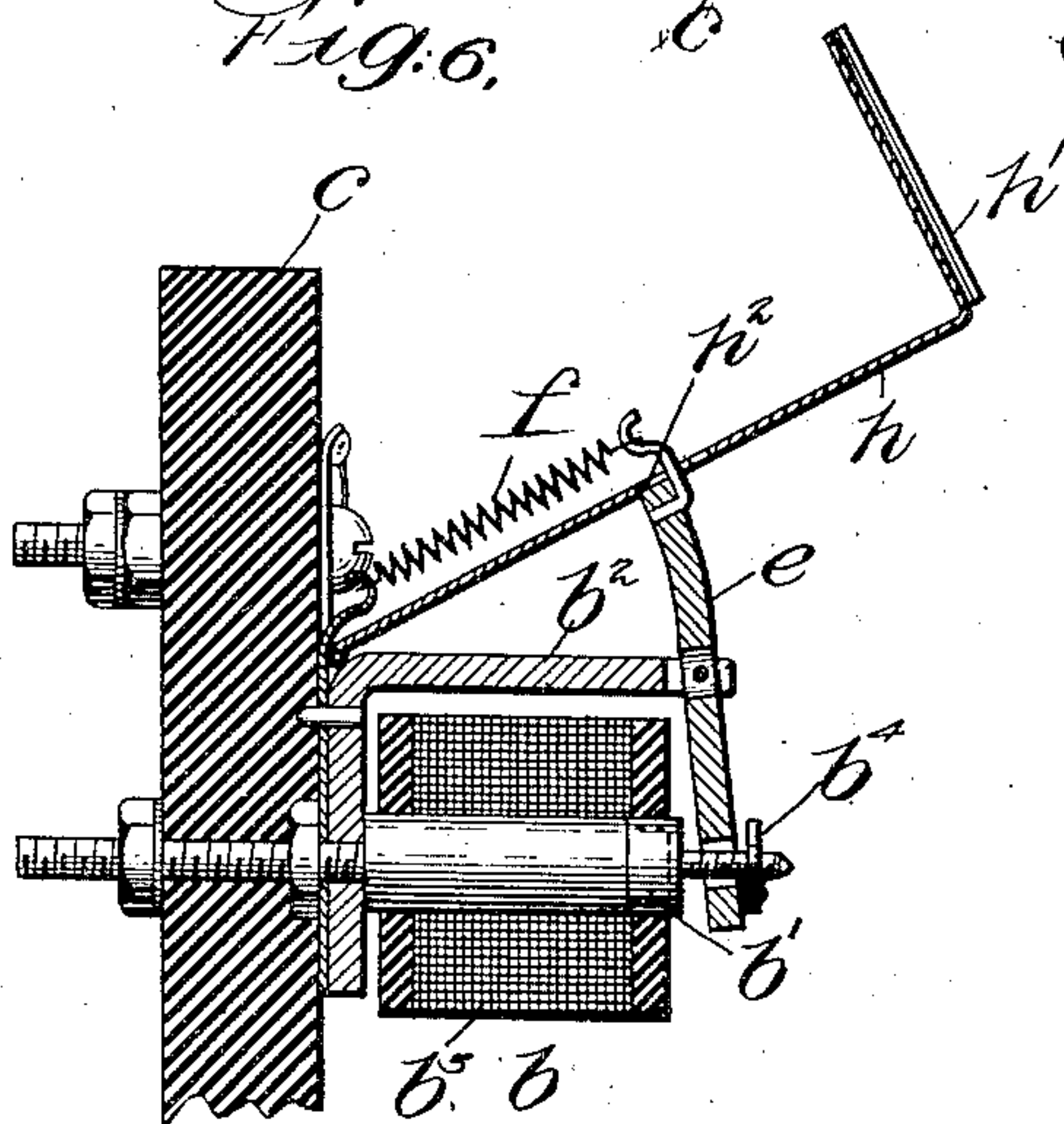
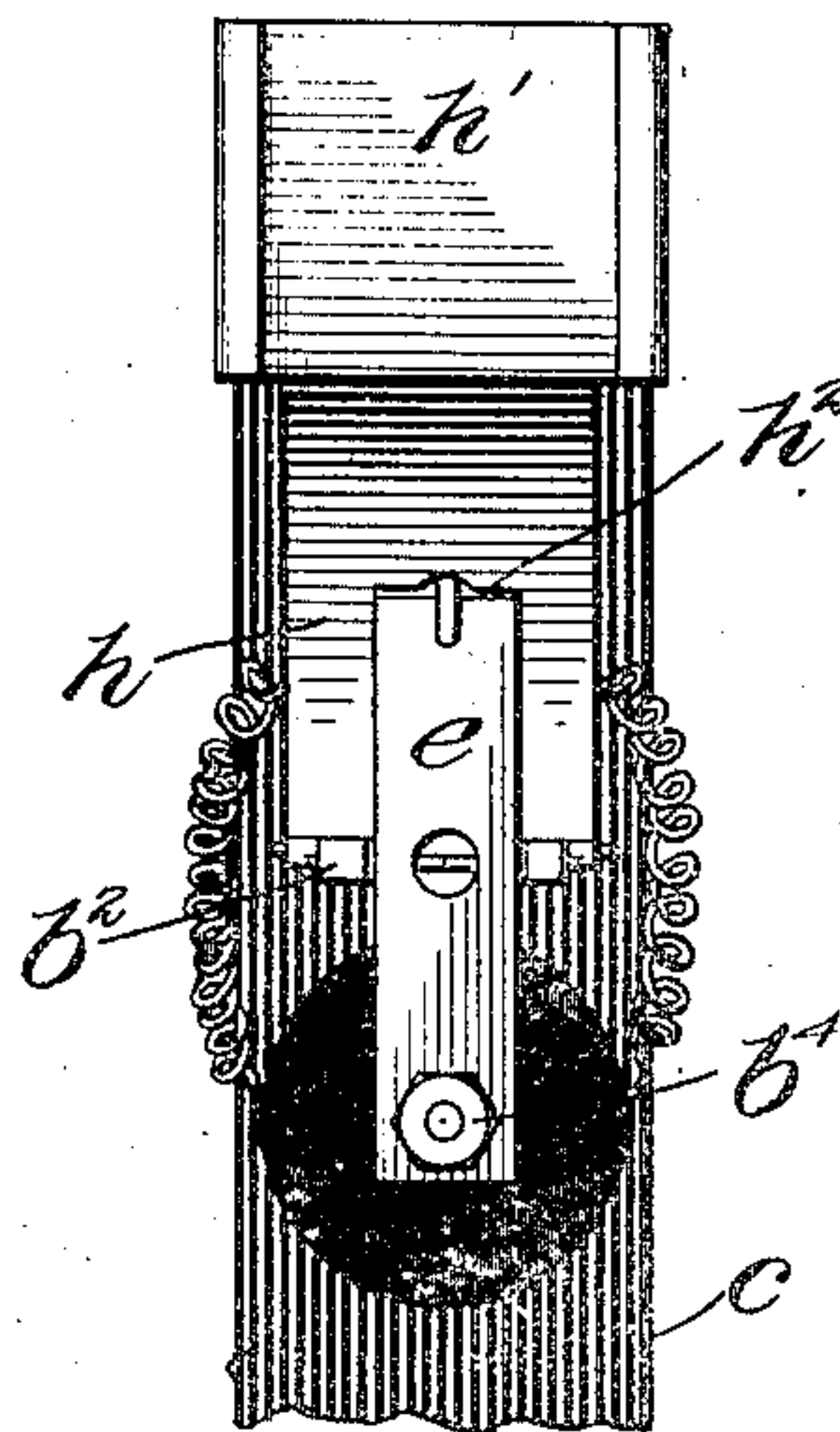


Fig. 7.



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UNITED STATES PATENT OFFICE.

HENRY M. CRANE, OF NEW YORK, N. Y., ASSIGNOR TO WESTERN ELECTRIC COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

ELECTROMAGNETIC SIGNAL.

No. 840,201.

Specification of Letters Patent.

Patented Jan. 1, 1907.

Application filed June 8, 1904. Serial No. 211,611.

To all whom it may concern:

Be it known that I, HENRY M. CRANE, a citizen of the United States, residing at New York, in the county of New York and State of New York, have invented a certain new and useful Improvement in Electromagnetic Signals, (Case No. 12,) of which the following is a full, clear, concise, and exact description.

My invention relates to an electromagnetic annunciator-drop, and has for its object to provide an improved device which will be compact and so constructed that the signal may not be operated if the annunciator is accidentally jarred or shaken.

I will describe my invention by reference to the accompanying drawings.

Figure 1 is a view in elevation of my annunciator-drop. Fig. 2 is a vertical sectional view thereof. Fig. 3 is an end view. Fig. 4 is a detail view of the target and its supporting-arm. Fig. 5 is a view in elevation of a modified form of my invention. Fig. 6 is a vertical sectional view thereof, and Fig. 7 is an end view.

The same letters of reference are used to designate the same parts wherever shown.

Referring first to Figs. 1 to 4, inclusive, the electromagnet *b*, comprising a core *b'*, pole-piece *b²*, and helix *b³*, is mounted upon a plate *a*, adapted to be secured to a suitable support *c*. The core is provided with a projecting end or extension upon which is centrally pivoted an armature *e*. Said extension is of reduced cross-section and adapted to enter a hole in the armature *e*, a pin passing through said armature and extension to form a pivot for said armature. A sleeve *d*, of non-magnetic metal, is preferably provided for the projecting end of said core in order to prevent "sticking" or freezing of the armature to said core, due to magnetic friction between the armature and the core upon which it is pivoted. The upper end of the armature *e* is connected by a retractile spring *f* with the plate *a*, a stop *g* preferably passing through the upper end of the armature to engage the insulating-head of the magnet-spool and limit the movement of the armature. The lower end of the armature is presented before the end of the L-shaped pole-piece, secured to the rear of the magnet-core, which may be provided with a non-magnetic shield, as shown, to prevent stick-

ing of the armature. The electromagnet *b* may be considered as a U-shaped magnet, the core *b'* and pole-piece *b²* forming the arms thereof. A lever-arm *h* is pivoted to the plate *a* and carries a target *h'*, an opening *h²* being provided in said arm, through which the lower end of the armature may pass, the edge of the opening riding up over the end of said armature (which is preferably beveled) and into a transverse groove *e'* in the face of the armature, which groove serves at a latch to hold the arm in the position indicated.

Referring to Figs. 5 to 7, inclusive, which illustrate a modified form of my invention, the armature *e* is centrally pivoted upon the pole piece or arm *b²* of the magnet, with its lower end presented before the end of the core *b'*, which may be provided with a non-magnetic shield to prevent sticking of the armature. The lower end of the armature normally rests against a stop *b⁴*, which limits its outward movement, said stop being carried by a pin secured to the core *b'* and passing through a hole in the armature. The upper end of the armature *e* when the same is unattracted is adapted to engage the lever-arm *h* to maintain the same in the position indicated, said armature being moved and held in such position by the retractile spring *f*; but when the armature is moved by the energization of magnet *b* the upper end of the armature registers with the opening *h²* in said arm, allowing the arm to fall into its alternative position, as shown in dotted lines in Fig. 5. It will thus be seen that when the lever-arm is in its upper position and held by the armature the retractile spring acts upon the armature in such a way as to tend to hold the same in firm engagement with the lever-arm, so that a positive attraction of the armature is required to release the lever-arm. The armature being pivoted at or approximately at its center of gravity, the force of any jar or blow is exerted equally upon both sides of the pivotal joint and causes no movement of the armature to release the target.

I claim—

In an annunciator-drop, the combination with an electromagnet having a projecting core, of a return pole-piece for said magnet, a supporting-plate for said magnet, an armature pivoted at its center of gravity upon said core, a retractile spring connecting the upper

end of said armature with said plate, a stop carried by the upper end of said armature adapted to abut against said magnet to limit the retractive movement of said armature, and a target-arm pivoted to said plate and normally held by the other end of said armature.

In witness whereof I hereunto subscribe my name this 11th day of April, A. D. 1904.

HENRY M. CRANE.

Witnesses:

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