

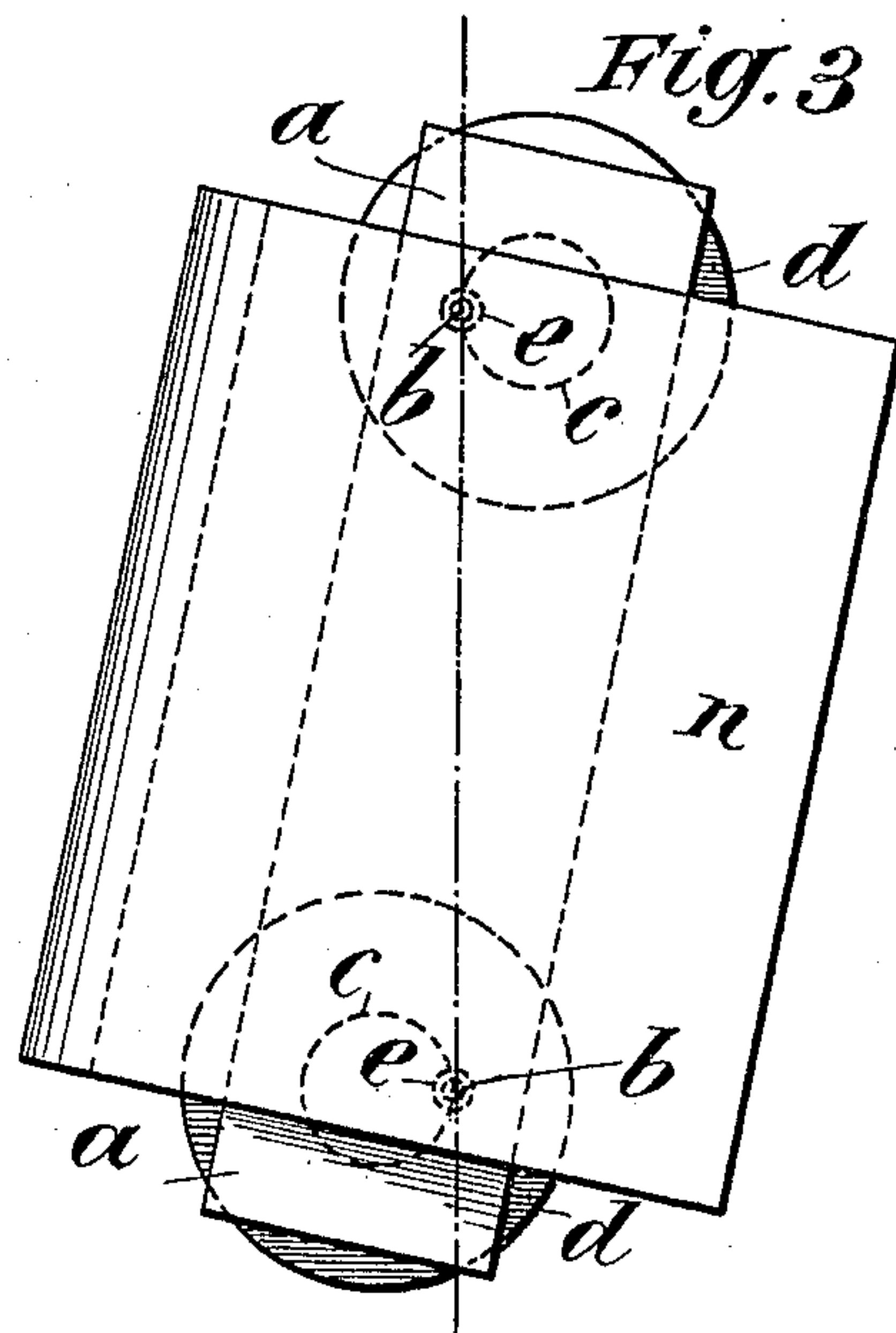
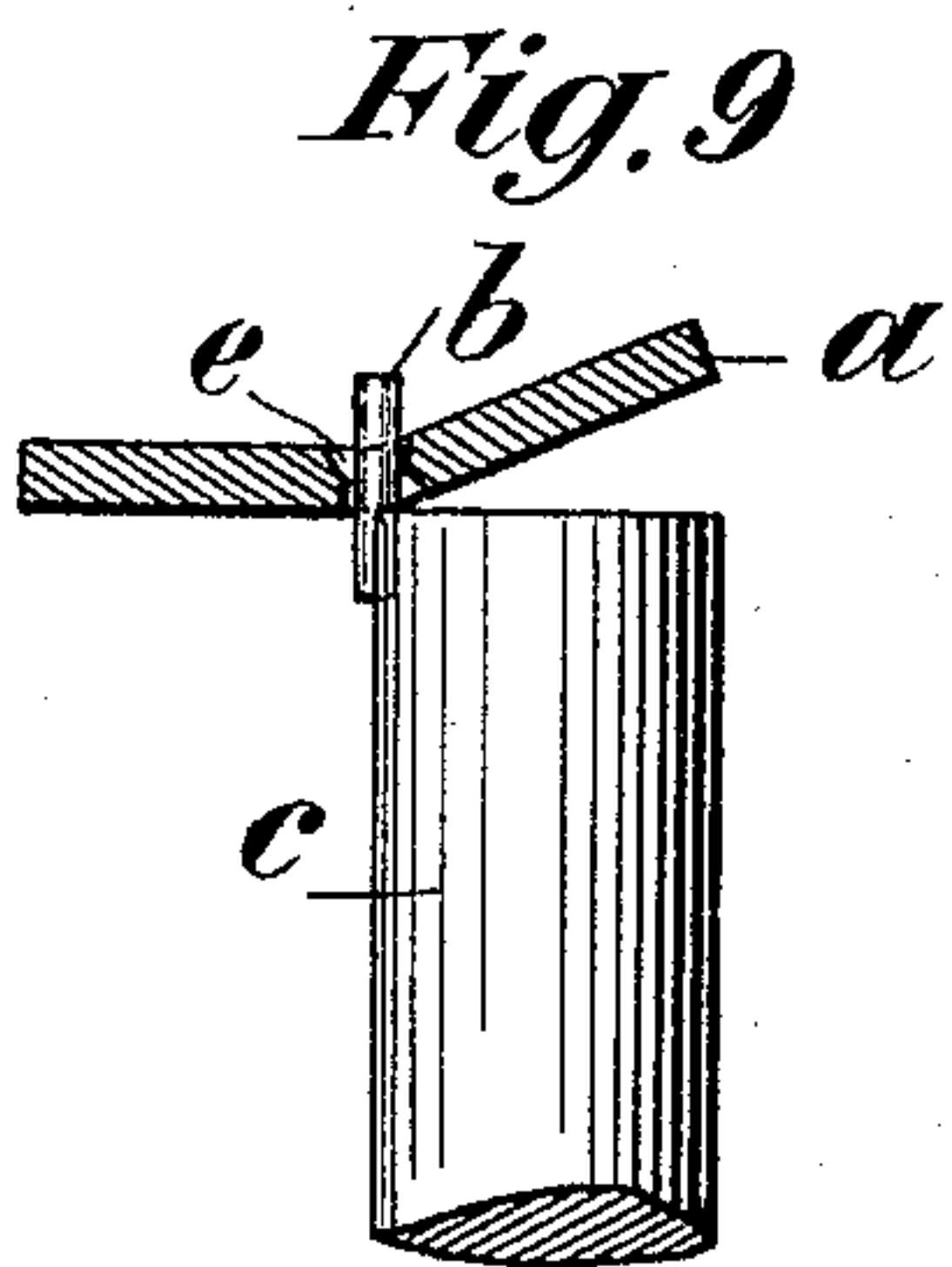
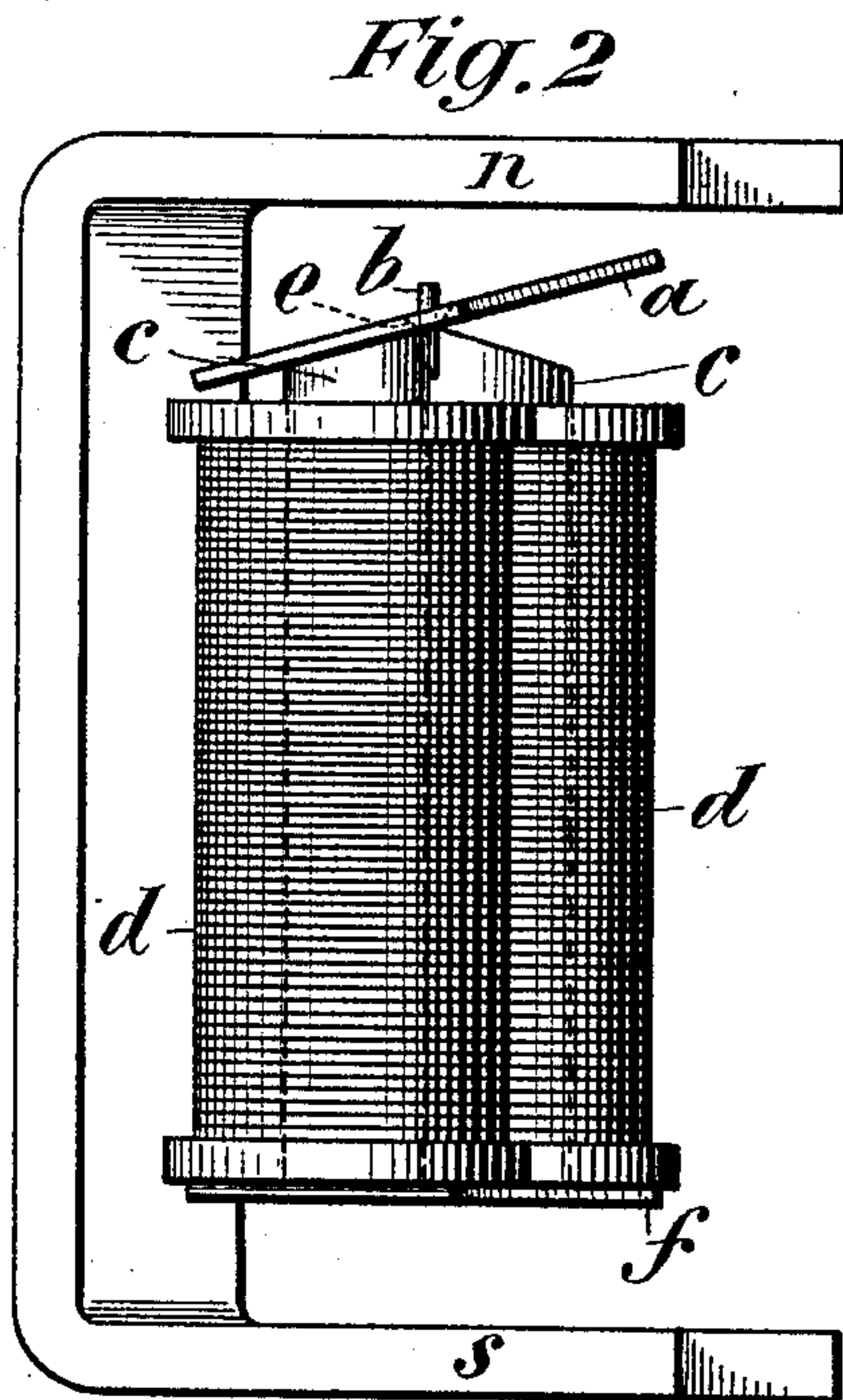
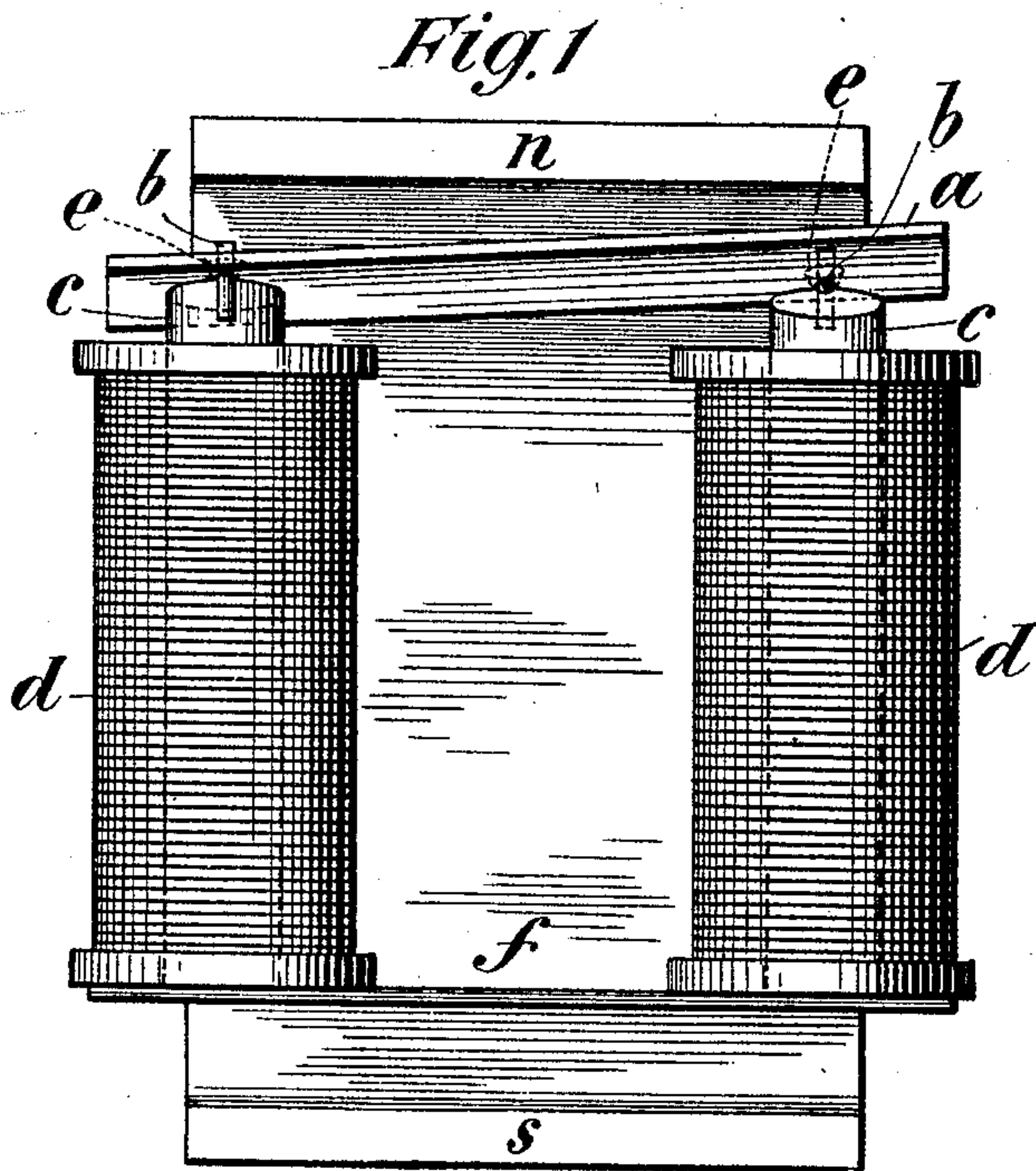
No. 795,432.

PATENTED JULY 25, 1905.

M. FISCHER.
POLARIZED ARMATURE APPARATUS.

APPLICATION FILED SEPT. 1, 1904.

2 SHEETS—SHEET 1.



Witnesses:

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2 SHEETS—SHEET 2.

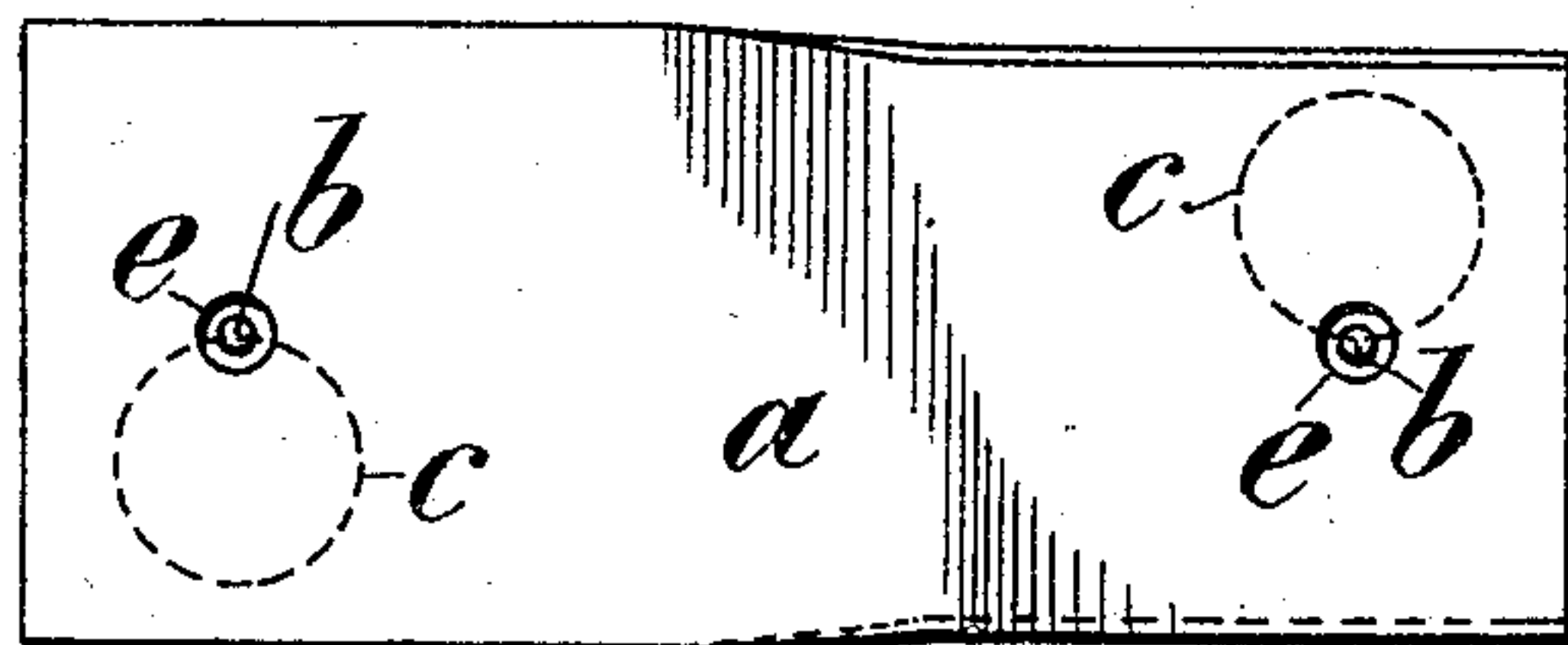
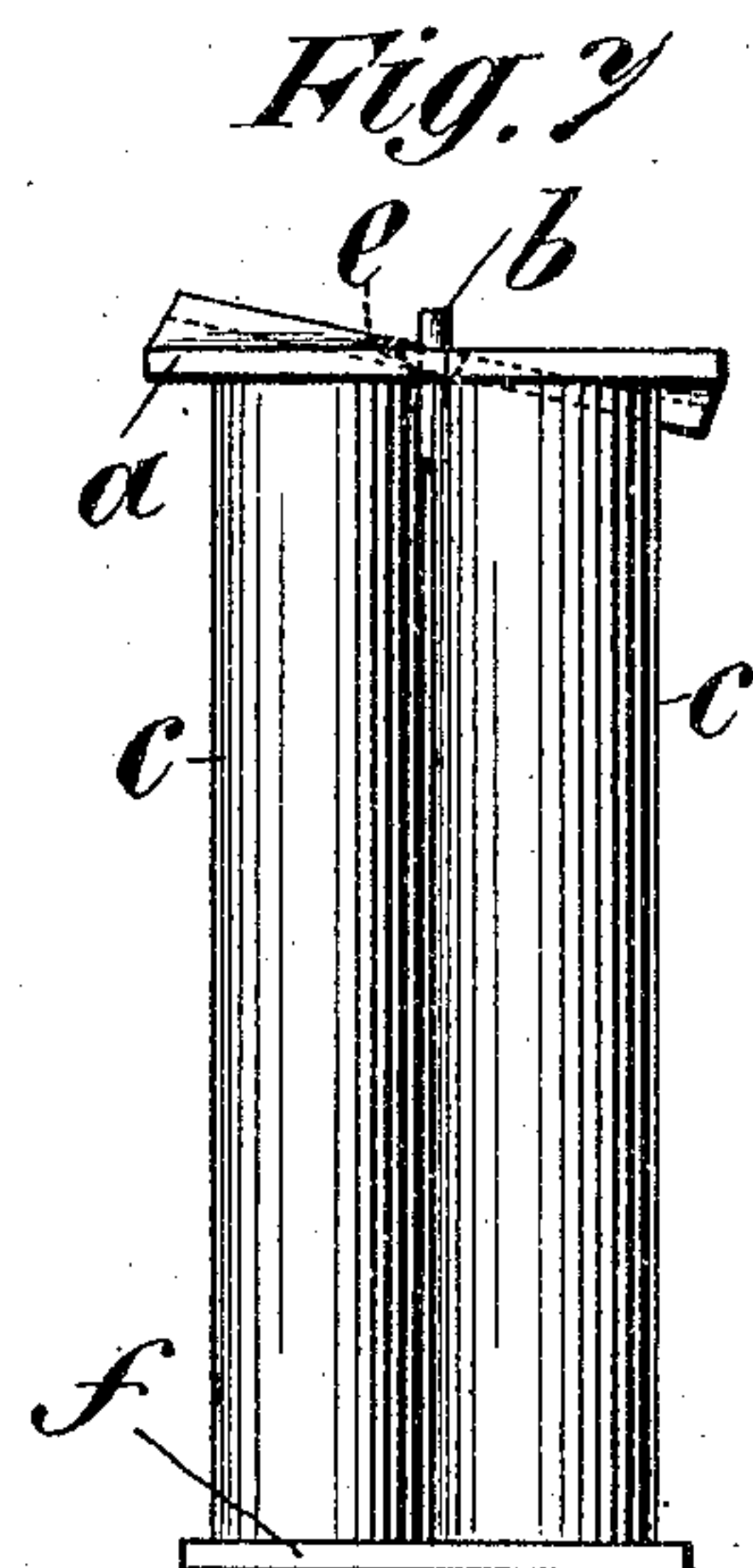
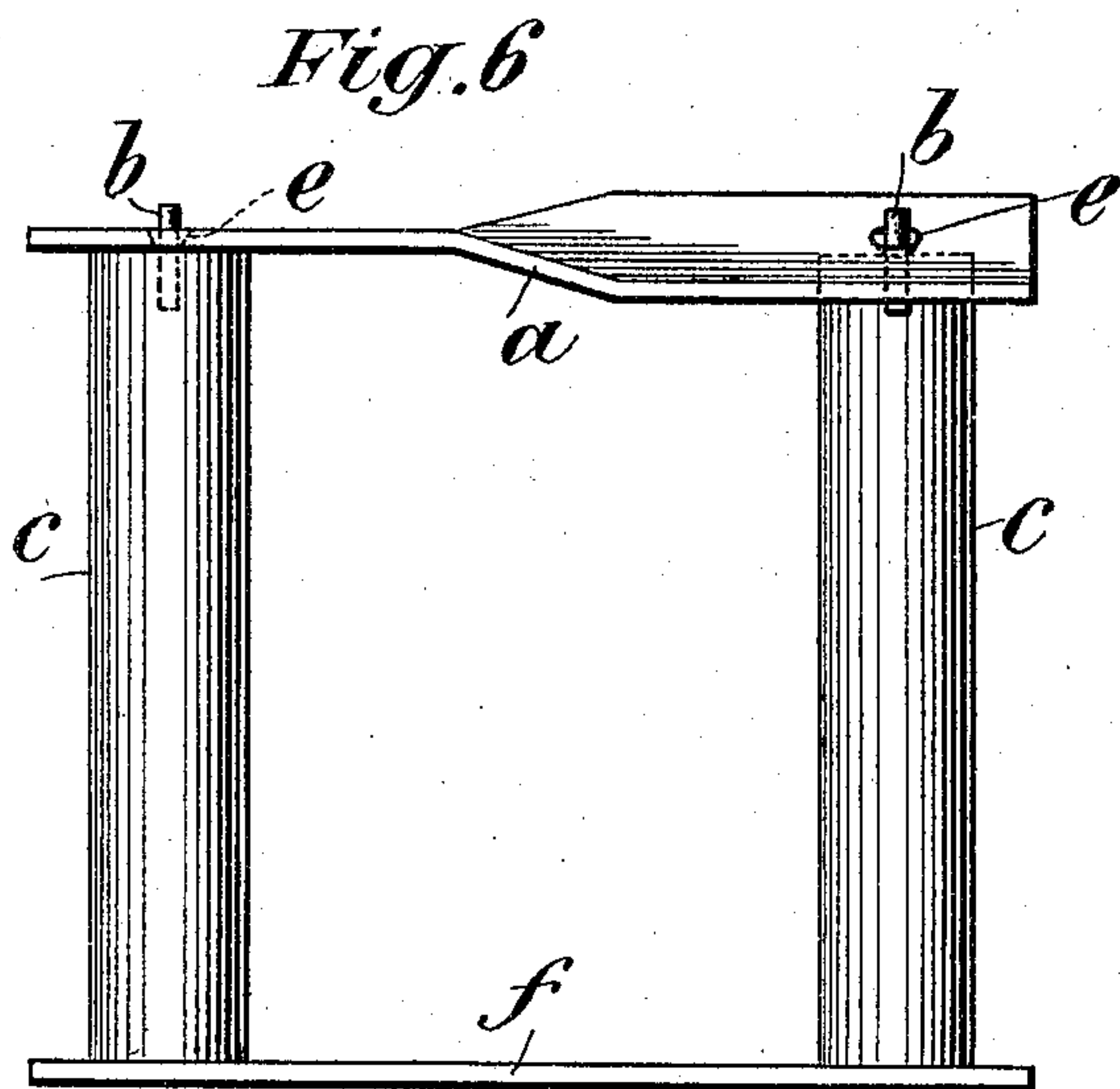
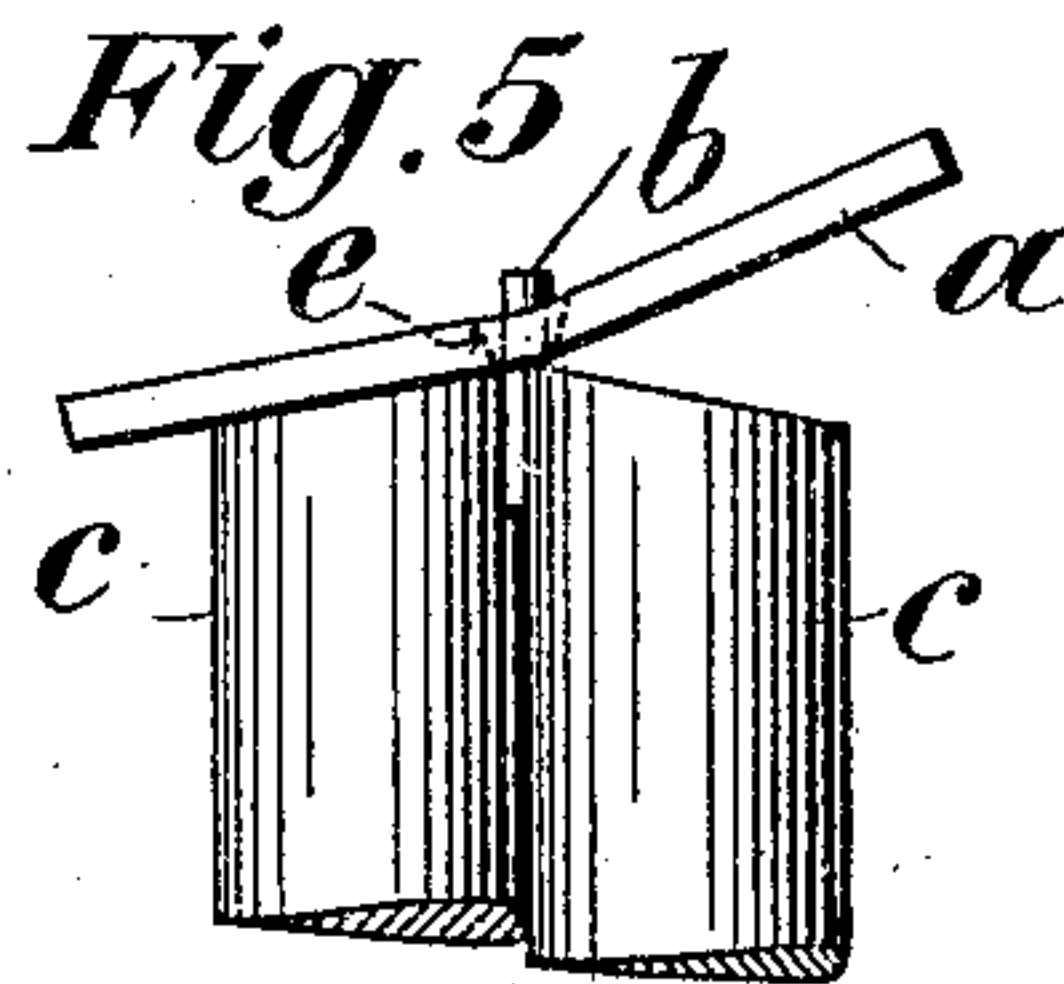
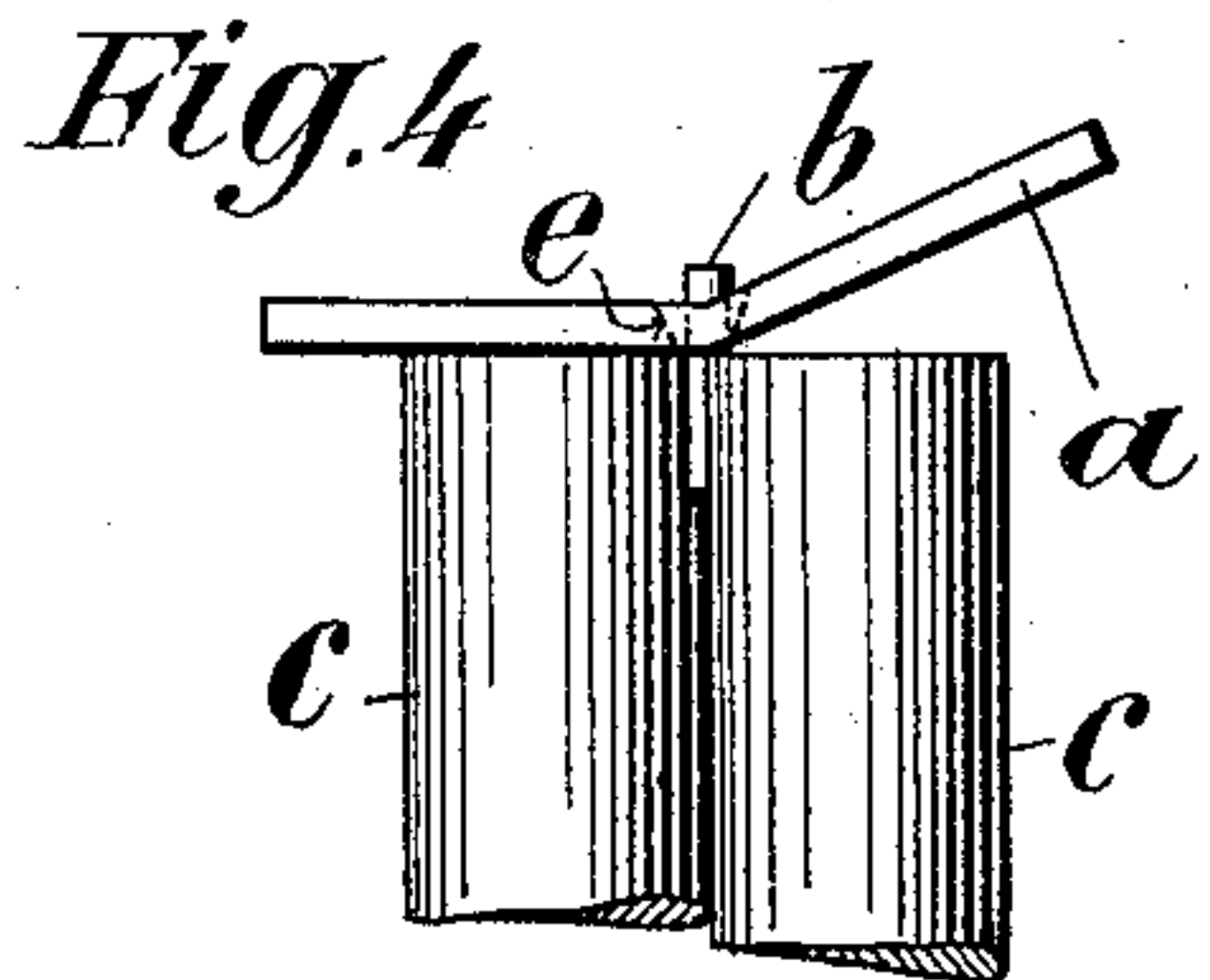


Fig. 8

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UNITED STATES PATENT OFFICE.

MARTIN FISCHER, OF ZURICH, SWITZERLAND.

POLARIZED-ARMATURE APPARATUS.

No. 795,432.

Specification of Letters Patent.

Patented July 25, 1905.

Application filed September 1, 1904. Serial No. 223,048.

To all whom it may concern:

Be it known that I, MARTIN FISCHER, a citizen of the Republic of Switzerland, residing at Zurich, Switzerland, have invented new and useful Improvements in Polarized-Armature Apparatus Operated by Reversals of Electric Current, of which the following is a specification.

This invention relates to an improved construction of polarized-armature apparatus operated by reversals of electric current, according to which the polarized armature is mounted, so as to be capable of tilting on the front edge of one core of the electromagnet and upon the rear edge of the other core of the electromagnet, the arrangement being such that the armature when at rest in a position of attraction will bear with one end or face fully upon the end of the attracting-core, while the other end or face of the armature will be at an inclination to the end of the other core, and vice versa, according to the direction of the electric current passing through the coils of the electromagnet.

Some constructions of apparatus according to this invention are illustrated by way of example in a diagrammatic manner in the accompanying drawings, in which—

Figures 1, 2, and 3 are respectively a front elevation, a side elevation, and a plan, of apparatus constructed in accordance with this invention. Figs. 4 and 5 are respectively a side elevation and a front elevation of a modified construction of the cores of the electromagnets and of the appurtenant armature. Figs. 6 and 7 are similar views of a further modified construction of the same parts. Fig. 8 is a plan of Fig. 6, and Fig. 9 is a view, on a larger scale, of a detail.

In the improved apparatus, *ns* indicate a permanent steel magnet; *a*, a polarized armature; *c*, two cores of an electromagnet, and *d* the coils which are slipped over the latter.

On the edge of each of the upper end faces of the cores of the electromagnets there is arranged a guide-pin *b* in such a manner that both pins *b*, Fig. 3, are situated at right angles to the longitudinal axis of the base-plate *f* of the electromagnet and on opposite sides thereof. These guide-pins engage in holes *e*, Fig. 9, of the armature *a*, which are formed as socket-bearings.

In the construction shown in Figs. 1 and 2 the end faces of the cores *c* of the electromagnet are arranged opposite to each other and are beveled off transversely to the longitudi-

nal axis of the base-plate *f*. The armature *a* thus rests upon the front edge of one end face of the cores of the electromagnet and on the rear edge of the other end face of the cores of the electromagnet, the guide-pins *b* preventing the armature *a* from moving sidewise.

In the construction shown in Fig. 4 the end faces of the cores of the electromagnets are arranged at right angles to the axes of the cores, and the armature *a* is bent up in such a manner that it will always bear wholly upon the end face of one core only of the electromagnet and only upon the edge of the other end face of the core.

In the construction shown in Fig. 5 the end faces of the cores of the electromagnets are beveled, as shown in Figs. 1 and 2, and the armature *a* is further bent up, as shown in Fig. 4.

In the construction shown in Figs. 6 and 7 the end faces of the electromagnet-cores are, like those shown in Fig. 4, not beveled, and the armature is formed in two parts, which are twisted or out of winding relatively to each other.

The operation of the herein-described constructions is as follows: By the action of the permanent steel magnet *ns* the end faces of the cores of the electromagnet—that is to say, the poles of the electromagnet and the poles of the armature that come in contact therewith—are polarized constantly and oppositely. Consequently the armature *a* will constantly be attracted by the two poles of the electromagnet. If now a current of determined direction be passed through the coils *d* of the electromagnet, the armature will be attracted by the pole whose polarity has become strengthened by the current with such force that the armature will tip over toward and be held fast by the face of the said pole until a reverse current is sent through the coils of the electromagnet, which will strengthen the polarity of the other pole of the electromagnet, whereupon the armature will tip over to the opposite pole. This play of the armature may continue indefinitely.

In the heretofore usual constructions of polarized-armature apparatus the armature has been mounted to work between centers, knife edges, or other bearings in such a manner that the armature quits one core of the electromagnet entirely when it is attracted by the other pole of the electromagnet. Now in my improved apparatus the armature does not quit either of the two electromagnet-

cores entirely, but rests also on the edge of the pole of weaker polarity, being also attracted by it. By means of this resting of the armature on the edge of one core of the electromagnet the attraction of the armature by the other core at the next change of current is prepared and facilitated and, vice versa, the separation of the armature from the poles of the magnet is facilitated, because the separation takes place gradually from the edge. These two factors increase the efficiency of the improved apparatus, which is, moreover, very simple, because the hitherto unavoidable layers of non-magnetic material (inserted pins, sheet metal, or the like) inserted between the core and the armature, which necessarily had the effect of preventing the adhesion between these parts and also of diminishing the efficiency of the apparatus, are hereby dispensed with.

Having now particularly described and ascertained the nature of the said invention and in what manner the same is to be performed, I declare that what I claim is—

1. The combination with the pole-pieces of an electromagnet; of an armature rocking on axes, a line through which intersects a line passing through the centers of the pole-pieces.

2. The combination with the pole-pieces of an electromagnet; of an armature rocking on

said pole-pieces, a line passing through the rocking points intersecting a line passing through the centers of the pole-pieces.

3. The combination with the pole-pieces of an electromagnet having pins projecting from one edge of the poles on a line intersecting a line passing through the centers of said pole-pieces; of an armature mounted to rock on said pins.

4. The combination with the pole-pieces of an electromagnet having their pole-faces inclined in opposite directions; of an armature rocking on centers on said pole-pieces a line through which centers intersects a line passing through the centers of the pole-pieces.

5. The combination with the pole-pieces of an electromagnet having their pole-faces beveled in opposite directions; of a polarized armature having flat contact-faces bent to contact with the pole-faces of the pole-pieces, said armature rocking on centers on said pole-pieces a line through which intersects a line passing through the centers of the pole-pieces.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

MARTIN FISCHER.

Witnesses:

PAUL RUEF,

WILLIAM STREHLER.