

F. B. COREY.

RELAY.

APPLICATION FILED MAR. 20, 1909.

Patented July 27, 1909.

929,393.

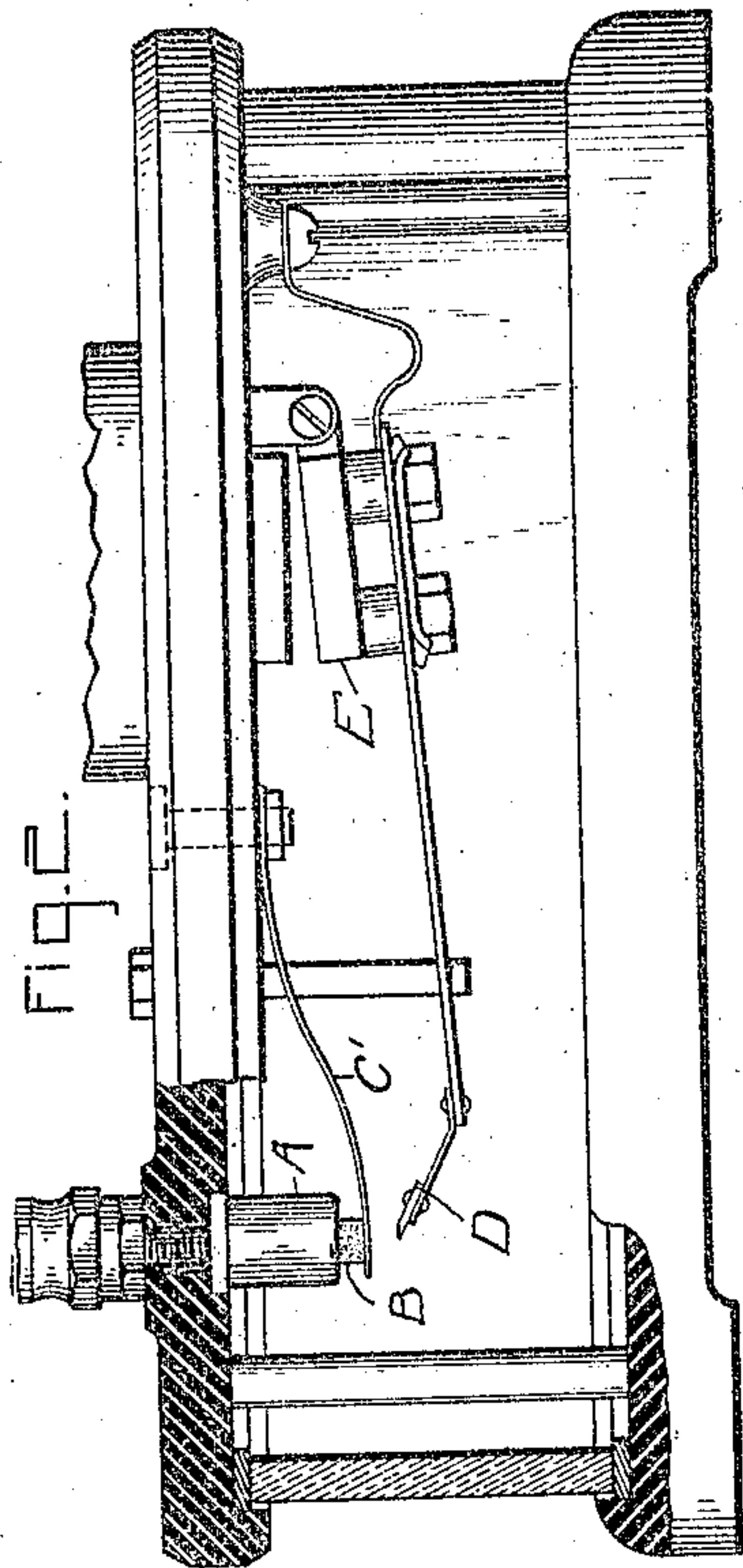


FIG. 2.

FIG. 3.

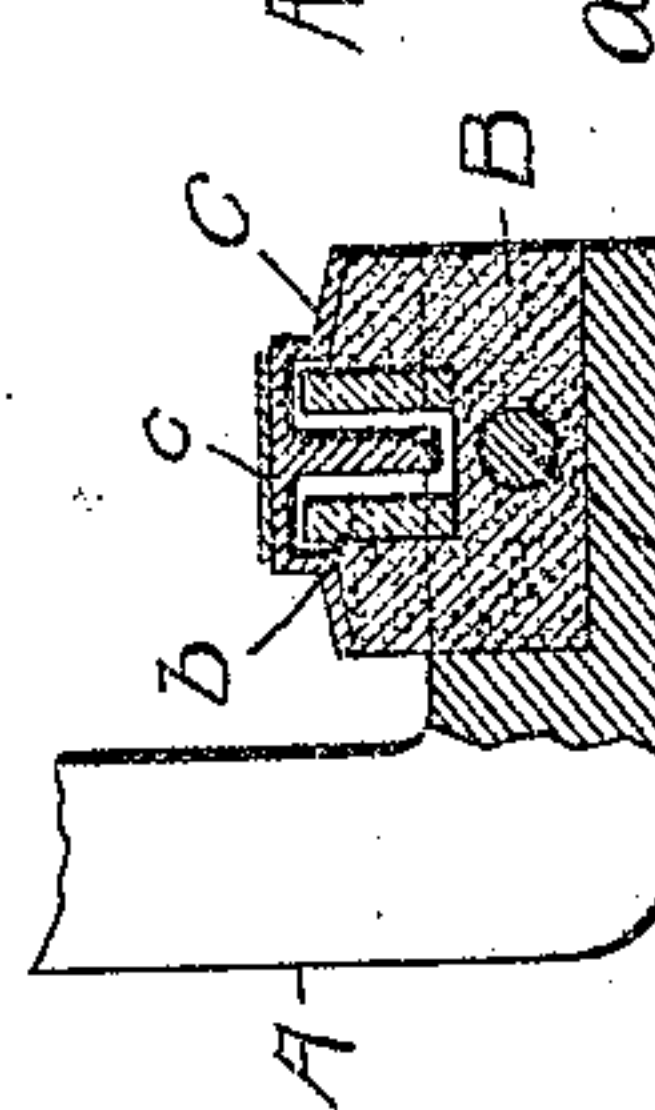
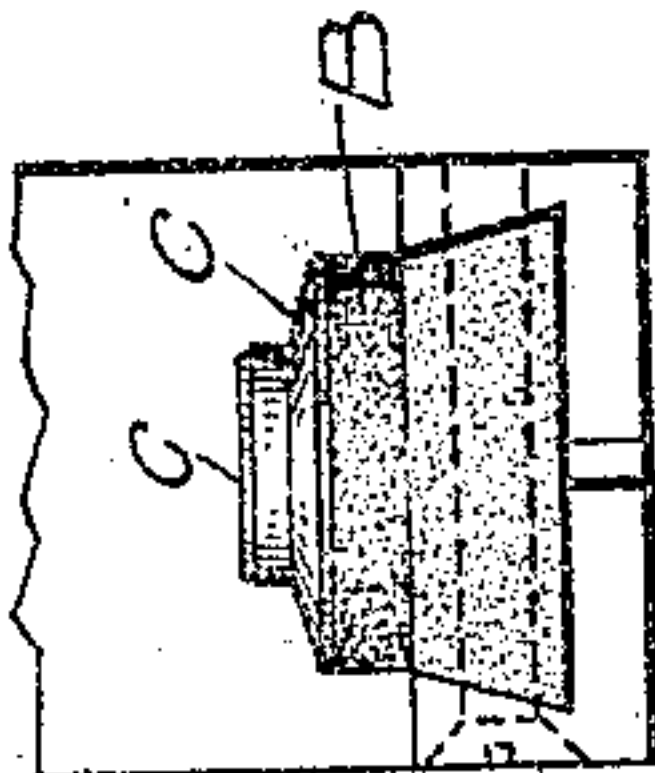


FIG. 4.

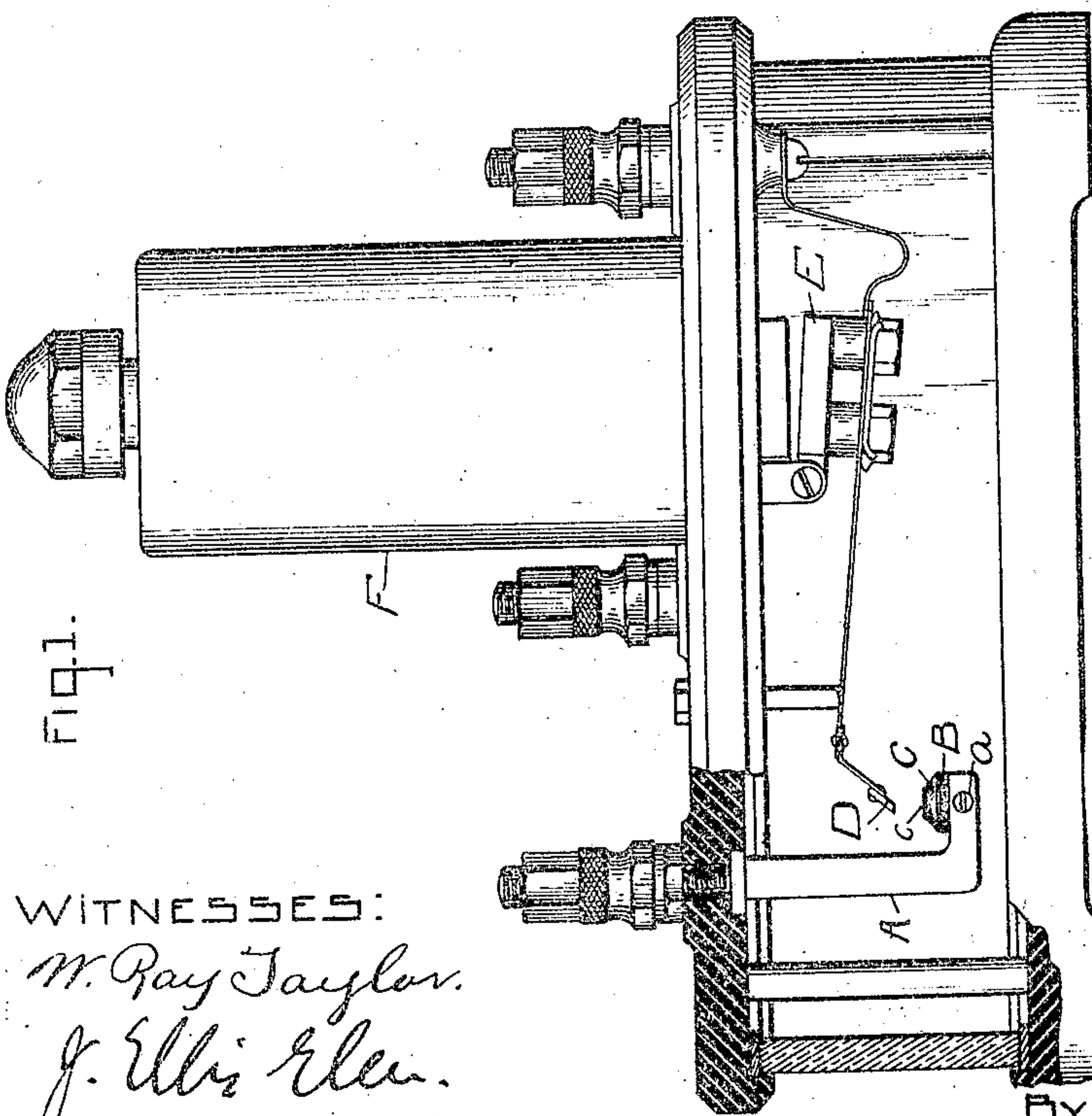
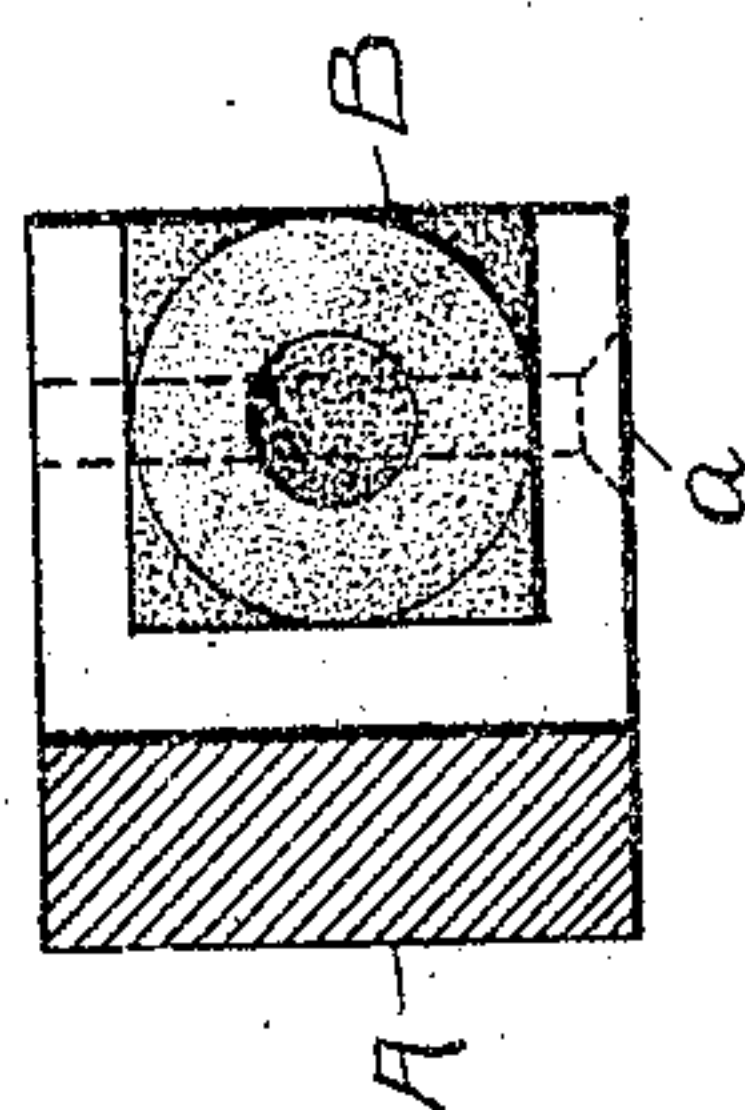


FIG. 1.

WITNESSES:

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ATTY.



# UNITED STATES PATENT OFFICE.

FRED B. COREY, OF SCHENECTADY, NEW YORK, ASSIGNOR TO GENERAL ELECTRIC COMPANY,  
A CORPORATION OF NEW YORK.

## RELAY.

No. 929,393.

Specification of Letters Patent.

Patented July 27, 1909.

Application filed March 20, 1909. Serial No. 484,663.

*To all whom it may concern:*

Be it known that I, FRED B. COREY, a citizen of the United States, residing at Schenectady, county of Schenectady, State of New York, have invented certain new and useful Improvements in Relays, of which the following is a specification.

My invention relates to relays, and particularly to relays for use in railway signaling.

Because of danger from lightning, which, if metallic contacts were employed, might fuse the contacts together so as to give false clear indications, it has been customary in relays for railway signaling to employ non-fusible material in the form of carbon blocks for the contacts. A carbon contact has the disadvantage of increasing its resistance with use, apparently because of the wearing away of the softer portions of the carbon.

The object of my invention is to provide a novel contact construction for a relay, whereby the usual carbon blocks, forming a non-fusible contact, may be employed without producing the usual increased resistance with use.

My invention consists in providing a non-fusible contact in the form of a carbon block, a metallic contact piece normally resting against the surface of the block, and a metallic contact relatively movable into and out of engagement with the contact piece, the contact piece being adapted, if it becomes fused to the metallic contact, to be moved away from the non-fusible block. With this construction the circuit is normally closed and opened between the metallic contact piece and the metallic contact. There is, thus, little wear to increase the resistance between the contact piece and the non-fusible contact with which it normally remains in engagement. Should the contact piece, however, become fused to the metallic contact, it would be lifted away from the non-fusible contact, so as to open the circuit and to prevent a false clear indication.

My invention will best be understood by reference to the accompanying drawing, in which—

Figure 1 shows a relay with its contacts arranged in accordance with my invention; Fig. 2 shows a modified contact arrangement, and Figs. 3 to 5 show enlarged detail views of the contact of Fig. 1.

In Fig. 1, A represents a terminal stud or

binding post which carries at its lower end a carbon block B, which forms a non-fusible contact. The end of the stud A may be split and the carbon block B clamped between the split portions by a screw *a*, as is best shown in Figs. 4 and 5. C represents a metallic contact piece which normally rests freely on the carbon block B. This contact piece is shaped like a tack with a central shaft extending into a recess in the carbon block B. Suitable insulation, such as a glass tube *b* is placed in the recess to insulate the shank from the walls of the recess. The piece C is preferably of silver, since this metal makes a low resistance contact with carbon. A thin platinum disk *c* may be soldered to the top of this piece to receive the movable contact, since platinum oxidizes less freely than silver, and is, consequently, less affected by the arc caused by opening the circuit. D represents the movable contact which is preferably of platinum, and is carried by the pivoted armature E of the electromagnet F.

During the normal operation of the relay the piece C remains in engagement with the carbon block B, the shape of the piece C and of the block preventing lateral displacement of the contact piece. The circuit is normally closed and opened by contact D moving into and out of engagement with the disk *c*. Since there is under ordinary operation no relative movement and, therefore, no wear between the piece C and block B, the usual increase in resistance between a metal and carbon contact is not produced. If, however, the contact D should become fused to the contact piece C, the contact piece would be lifted out of engagement with the carbon block so as to open the circuit upon the de-energization of the relay.

Fig. 2 shows a modified arrangement of the contacts. In Fig. 2 the movable contact D is moved upward to engage the stationary contact and in place of a contact piece resting by its own weight on the carbon block, a contact piece in the shape of a light spring C<sup>1</sup> rests against the lower surface of the carbon block B, being normally held in engagement with the contact plug by its own spring pressure. Upon fusion between the spring C<sup>1</sup> and the movable contact D, the spring would be drawn away from the carbon block, so as to open the circuit upon the deenergization of the relay.



I do not desire to limit myself to the particular construction and arrangement of parts here shown, but aim in the appended claims to cover all modifications which are within the scope of my invention.

What I claim as new and desire to secure by Letters Patent of the United States, is,—

1. In a relay, a non-fusible contact block, a metallic contact piece normally resting against the surface of the block in electric contact therewith, and a metallic contact relatively movable into and out of engagement with said contact piece, said contact piece being adapted to be moved by said metallic contact, upon fusion therewith, away from the non-fusible contact block.

2. In a relay, a non-fusible contact block, a metallic contact piece normally resting freely against the surface of the block in electric contact therewith, said contact block and contact piece being shaped to prevent lateral displacement of the contact piece, and a metallic contact relatively movable

into and out of engagement with said contact piece.

3. In a relay, a non-fusible contact block, a metallic contact piece normally resting freely on the surface of said block in electric contact therewith, and a metallic contact relatively movable into and out of engagement with said contact piece.

4. In a relay, a non-fusible contact block, a metallic contact piece normally resting freely on the surface of said block in electric contact therewith and having a shank extending into a recess in said block, said shank being insulated from the walls of said recess, and a metallic contact relatively movable into and out of engagement with said contact piece.

In witness whereof, I have hereunto set my hand this 18th day of March, 1909.

FRED B. COREY.

Witnesses:

MARGARET E. WOOLLEY,  
HELEN ORFORD.