

F. R. McBERTY.

RELAY.

APPLICATION FILED SEPT. 5, 1908.

929,319.

Patented July 27, 1909.

Fig. 1

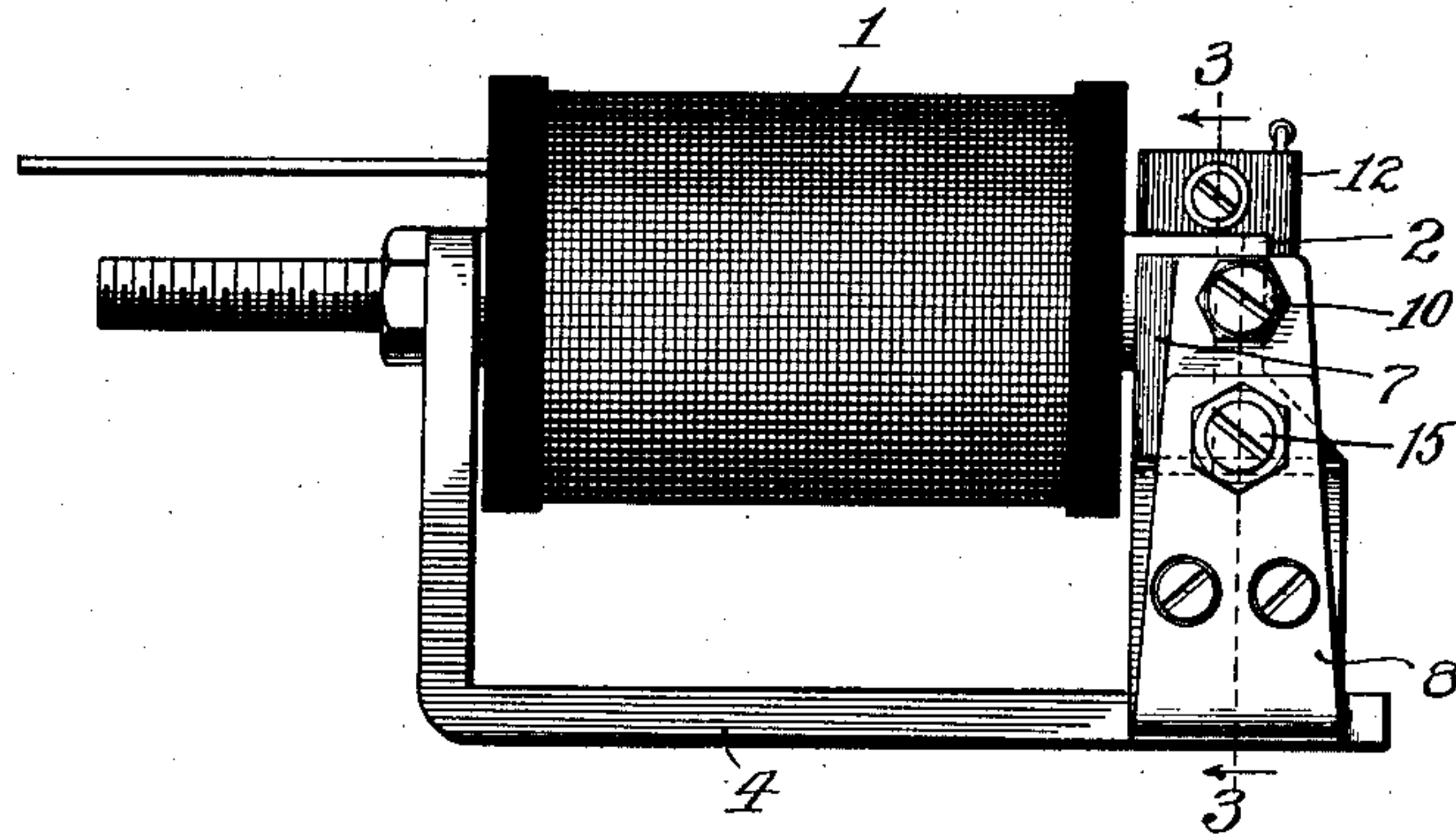


Fig. 2

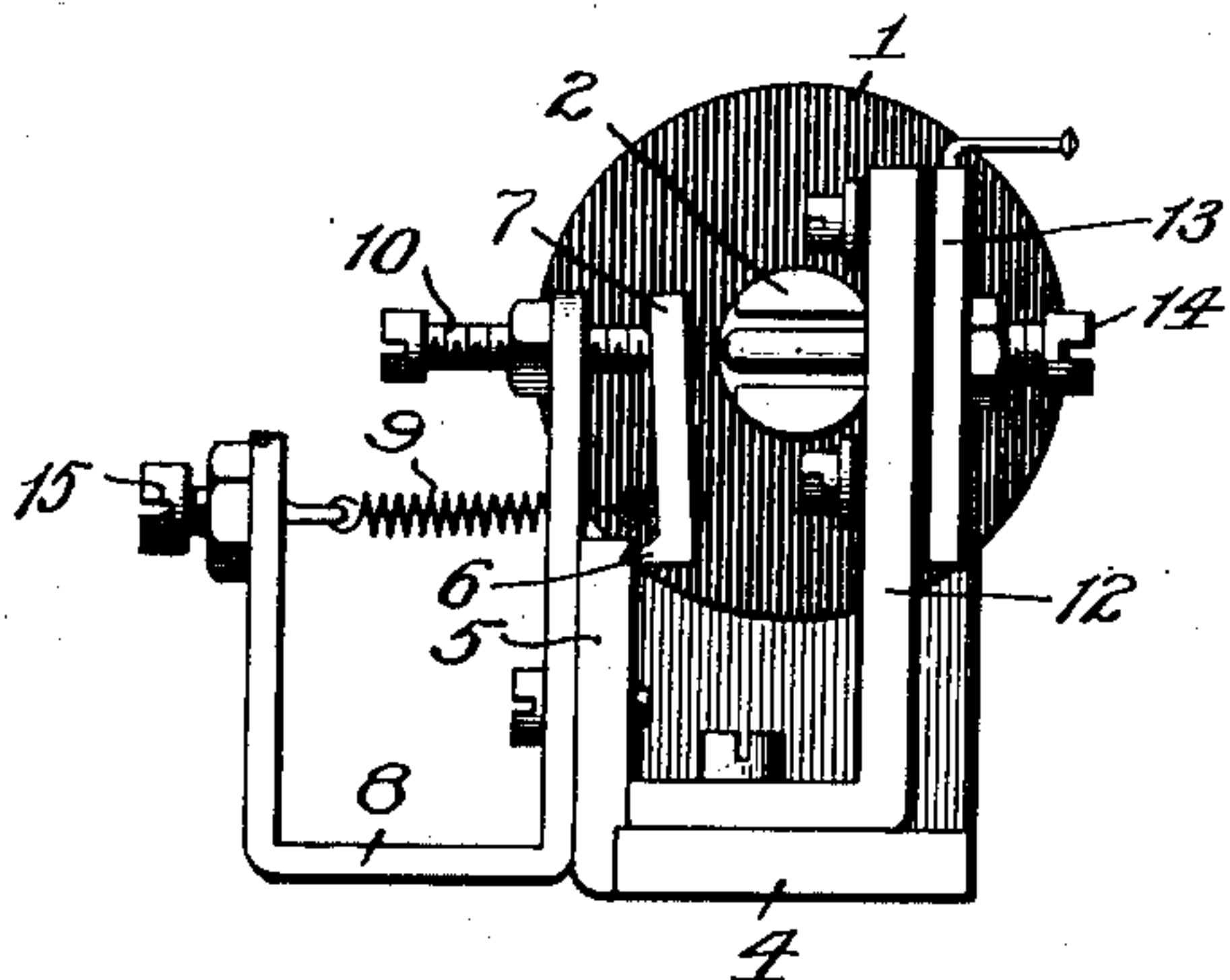


Fig. 3

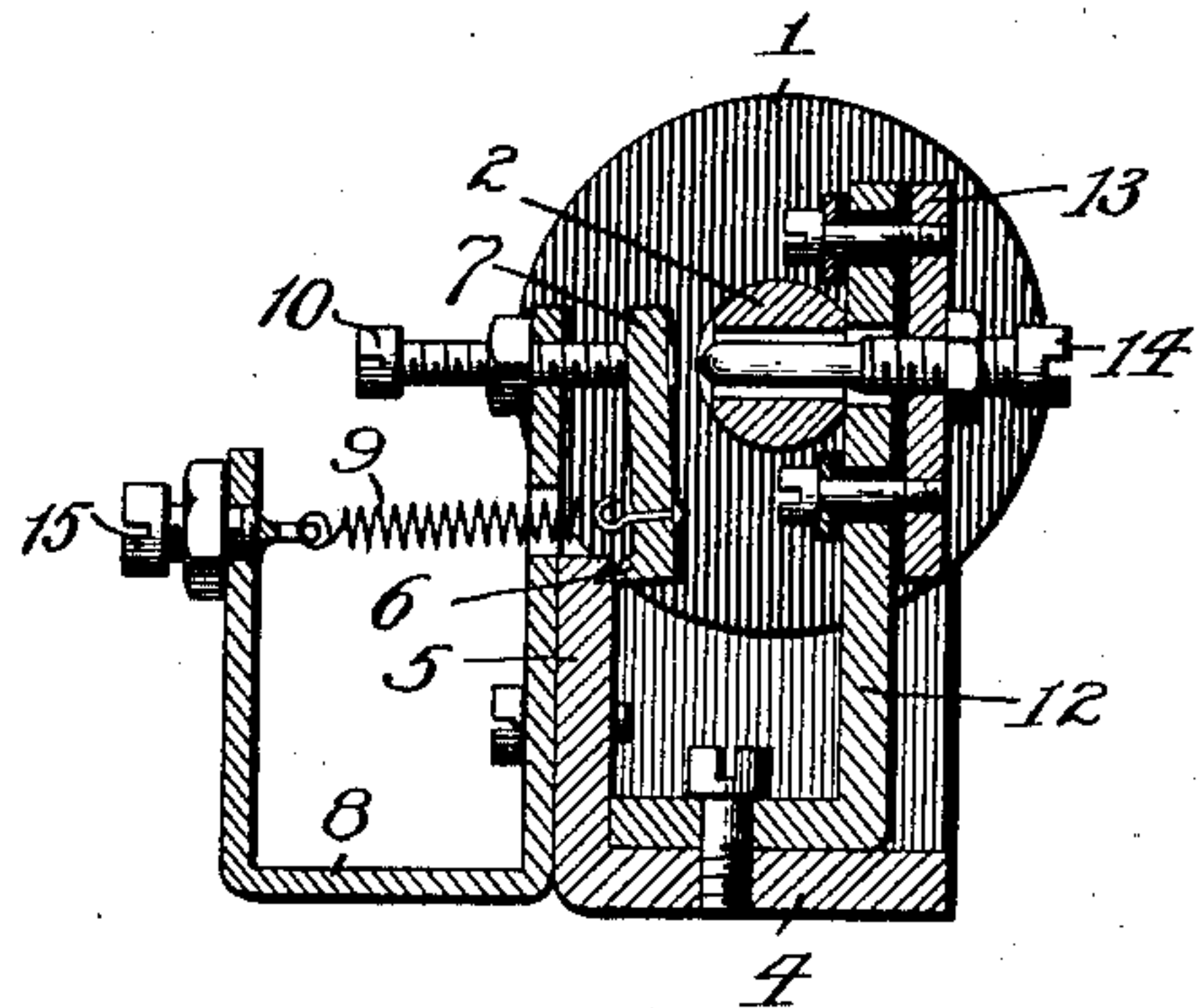
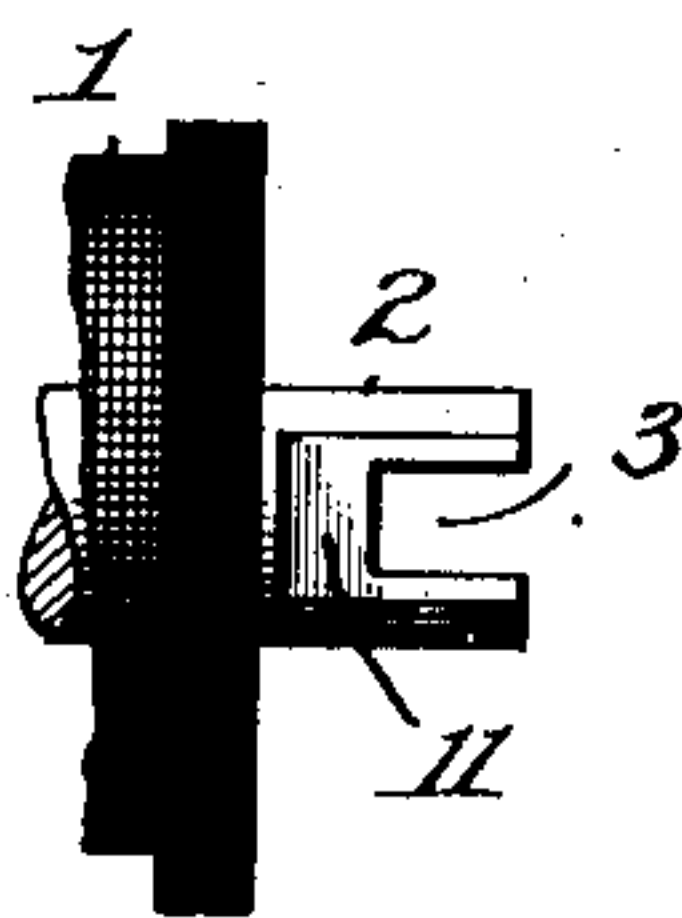


Fig. 4



Witnesses:
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UNITED STATES PATENT OFFICE.

FRANK R. McBERTY, OF NEW ROCHELLE, NEW YORK, ASSIGNOR TO WESTERN ELECTRIC COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

RELAY.

No. 929,319.

Specification of Letters Patent.

Patented July 27, 1909.

Application filed September 5, 1908. Serial No. 451,869.

To all whom it may concern:

Be it known that I, FRANK R. McBERTY, citizen of the United States, residing at New Rochelle, in the county of Westchester and State of New York, have invented a certain new and useful Improvement in Relays, of which the following is a full, clear, concise, and exact description.

My invention relates to relays, and its object is to provide in a compact form a relay which is extremely sensitive to electrical impulses, and which in its mounted position is readily accessible for adjustment.

One feature of the relay of my invention consists in the mounting of the armature at one side of the projecting end of the core.

A further feature of my invention consists in a contact terminal which projects through the core in position to have its closure controlled by the position assumed by the armature.

My invention consists of certain other details of construction which may be readily understood by reference to the accompanying drawings, in which—

Figure 1 is a side elevation of the relay; Fig. 2 is a front end elevation; Fig. 3 is a vertical section on the line 3—3 of Fig. 1; and Fig. 4 is a fragmentary detail showing the projecting core in side elevation.

Similar reference characters are used to designate similar parts wherever shown.

The energizing spool 1 is provided with a core having a projection 2 at the forward end of the spool. Said core may have a slotted end, as shown at 3. The yoke 4 is in the form of an angle plate constituting a magnetic circuit from the rear end of the core to the forward end thereof. At its forward end said yoke is provided with a lateral extension 5 bent at right angles toward one side of the core extension. The inner face of the extension 5, near the upper end thereof is provided with a transverse notch forming a seat for the knife edge 6 of the armature 7.

The outer face of the extension 5 has mounted thereon a U-shaped bracket 8. A retractile spring 9 has its ends connected to the armature 7 and the outer limb of said U-shaped bracket, respectively. The adjusting screw 10 is mounted in the inner limb of the U-shaped bracket 8, and serves to adjust the retracted position of the armature 7. The knife edge 6 of the armature 7 differs

from the usual construction in that it extends laterally from the lower end of the armature. Said armature lies at one side of the core extension 2, the opposite sides of said core extension being provided with flat faces 11.

A mounting strip 12 of non-magnetic material is secured to the yoke 4 and extends upwardly in contact with the core extension 2, on the side thereof opposite the armature. A terminal plate 13 is mounted on said strip 12, but is insulated therefrom. An adjustable contact terminal 14, in the form of a pin threaded in said plate 13, has its free end projecting through the slot 3 in position to close a circuit through the armature 7 when said armature is in its attracted position. The yoke 4 preferably extends, as shown, beneath the spool 1, in a direction parallel to that of the core of the spool, said extension 5 thereof and the mounting strip 12 lying in planes perpendicular to the yoke 4 and extending from the opposite edges thereof.

By this construction I have provided a relay having a magnetic circuit and an armature mounting adapted to render the armature extremely susceptible to electric impulses passing through the spool of the relay. A relay of this type is particularly adapted for use in connection with automatic telephone apparatus in which compactness of structure, extreme accuracy of action and quick response to intermittent stepping pulsations are absolutely essential. As is apparent, the several adjusting screws are readily accessible from the front of the relay. The screw 14 for adjusting the contact terminal, the screw 10 for limiting the amount of retraction of the armature, and the screw 15 for adjusting the tension of the retractile spring 9 lie at the sides of the forward end of the spool in positions readily accessible in the usual mounted position of the relay.

What I claim is:

1. In a relay, the combination with an energizing spool provided with a core projecting from the end thereof, of an armature mounted at the side of the core and lying in a plane parallel with the axis of the core, and a contact terminal extending toward the face of the armature and arranged to have its closure controlled by the actuation of said armature.

2. In a relay, the combination with an en-

ergizing spool provided with a core projecting from the end thereof, an armature mounted at one side of the core projection, and a contact terminal extending through the end of said core projection and having its closure controlled by the actuation of said armature.

3. In a relay, the combination with an energizing spool provided with a core having a slotted projection, an armature mounted at the side of said projection, and a contact terminal extending through the slot in said projection in position to be closed by the actuation of said armature.

4. In a relay, the combination with an energizing spool provided with a core projecting from the forward end of the spool, of a yoke of magnetic material extending from the opposite end of the core and provided at its forward end with an angular lateral extension terminating in proximity to the side of the core projection, an armature having a bearing in said angular extension of the yoke, and a contact terminal extending transverse the axis of the core in position to have its closure controlled by the actuation of said armature.

5. In a relay, the combination with an energizing spool provided with a core projecting from the forward end of the spool, of a yoke forming a magnetic circuit from the rear end of the core to the forward end thereof, said yoke at its forward end being provided with a lateral extension at one side of the core, a spring-retracted armature having a lateral knife-edge bearing in the lateral extension of the yoke, and a contact terminal having its closure controlled by the position assumed by said armature.

6. In a relay, the combination with an energizing spool provided with a slotted core projecting from the forward end of the

spool, of a yoke forming a magnetic circuit from the rear end of the core to the forward end thereof, said yoke at its forward end being provided with a lateral extension at one side of the core, a spring-retracted armature having a lateral knife-edge bearing in the lateral extension of the yoke, and a contact terminal projecting through the slot in the yoke extension in position to have its closure controlled by the position assumed by said armature.

7. In a relay, the combination with an energizing spool provided with a core having a slotted extension projecting from the forward end of the spool, of a yoke forming a magnetic circuit from the rear end of the core to the forward end thereof, said yoke being provided at its forward end with an upward lateral extension lying in a plane parallel with the axis of the core, a spring-retracted armature having a laterally-extending knife-edge seated in the inner face of said lateral extension of the core, an adjusting screw for the armature having a mounting on the lateral extension of the yoke, a mounting strip secured upon said yoke and extending upwardly on the side of the core opposite to that which the armature faces, a terminal plate insulatedly mounted on said strip, and an adjustable contact terminal carried by said terminal plate, said contact terminal projecting through the slot in said core in position to be closed when the armature is in its attracted position.

In witness whereof, I, hereunto subscribe my name this first day of September A. D., 1908.

FRANK R. McBERTY.

Witnesses:

D. C. TANNER,
A. H. MOORE.