June 19, 1923.

1,459,425

C. H. WHEELER

ARMATURE BACKSTOP

Filed Jan. 4, 1921

Fig. 1.

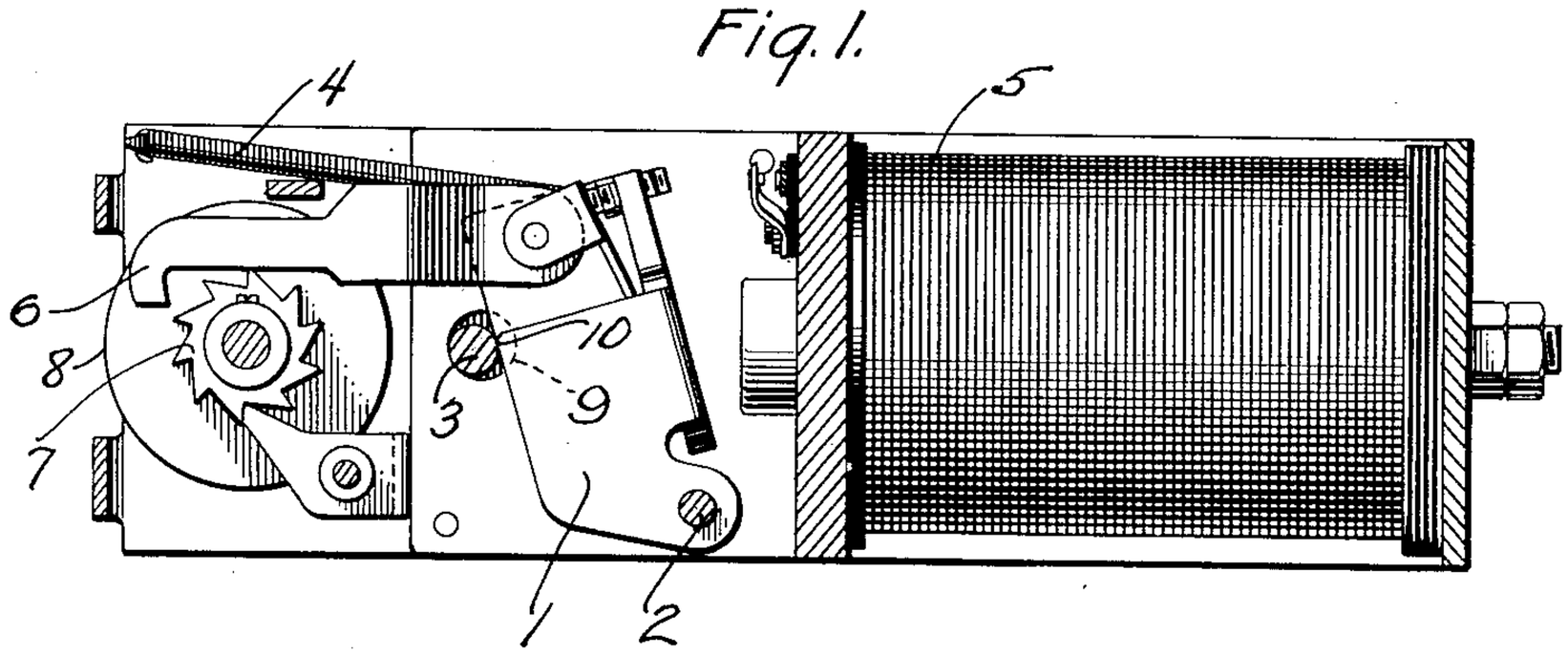


Fig. 2.

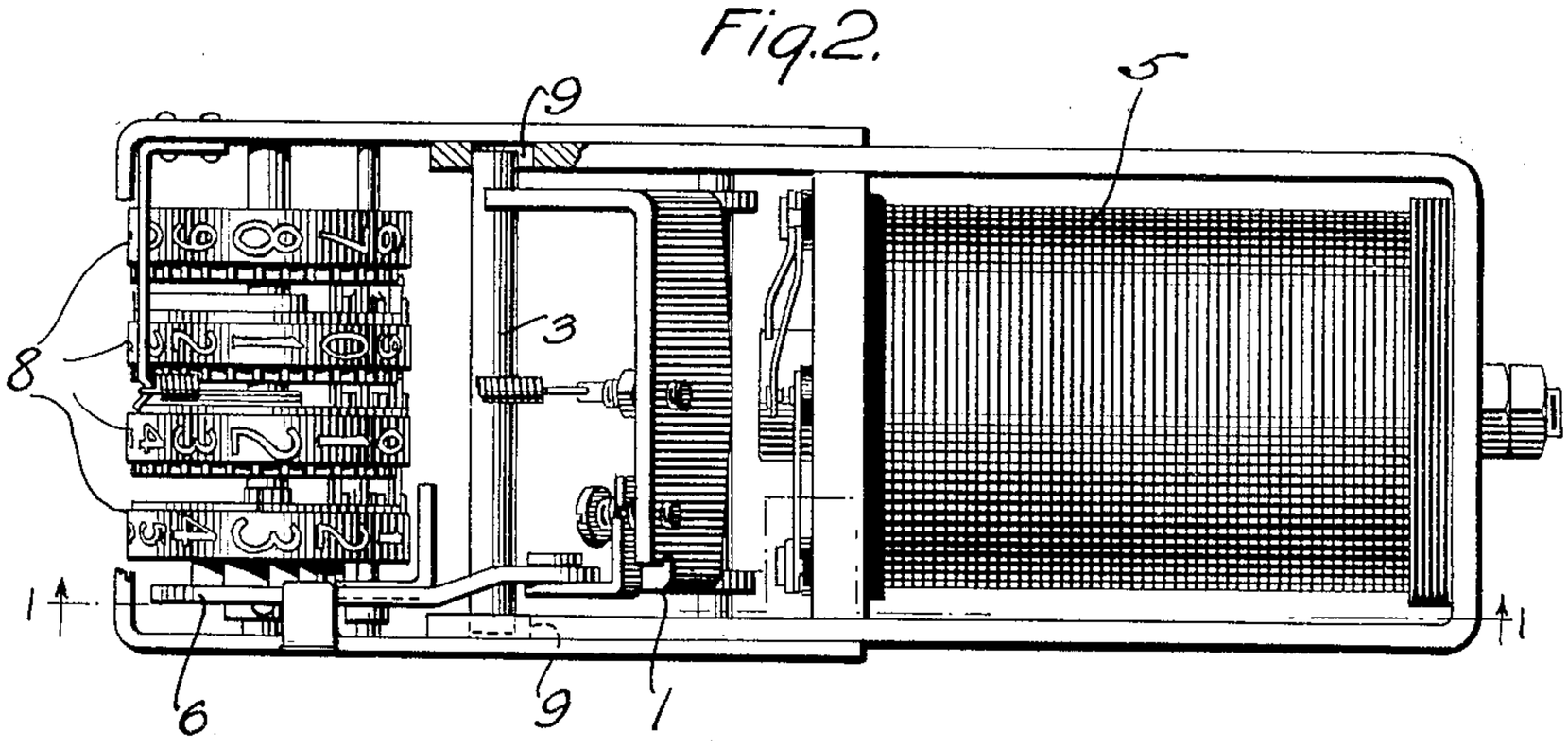
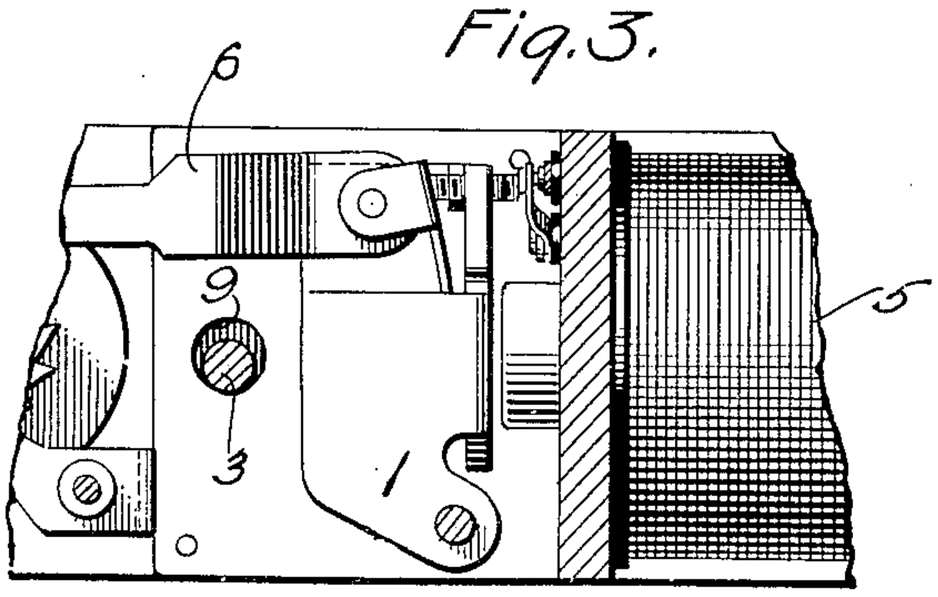


Fig. 3.



Inventor
Clyde H. Wheeler,
by Joel C. Palmer,
Att'y.

Patented June 19, 1923. 1,459,425

UNITED STATES PATENT OFFICE.

CLYDE H. WHEELER, OF MIDLAND PARK BOROUGH, NEW JERSEY, ASSIGNOR TO WESTERN ELECTRIC COMPANY, INCORPORATED, OF NEW YORK, N. Y., A CORPORATION OF NEW YORK.

ARMATURE BACKSTOP.

Application filed January 4, 1921. Serial No. 434,874.

To all whom it may concern:

Be it known that I, CLYDE H. WHEELER, a citizen of the United States, residing at borough of Midland Park, in the county of Bergen, State of New Jersey, have invented certain new and useful Improvements in Armature Backstops, of which the following is a full, clear, concise, and exact description.

This invention relates to electromagnetic devices, and more particularly, to an improved back stop for the armatures of relays and similar apparatus.

It has been found that the armatures of message counting registers, such as are used in telephone exchanges for recording calls, sometimes fail to operate due to a gummy deposit which forms at the point of contact between the armature and its back stop. The gummy deposit, consisting presumably of oil and dust, forms after the registers have been in service a considerable time, in spite of the fact that the registers are covered and reasonably dust-proof.

The invention consists in providing a loosely mounted back stop, which, if it is stuck thereto will follow the armature a short distance on its forward stroke, whereupon the back stop will be suddenly restrained and torn away from the armature.

The pull of an electromagnet on its armature is smallest at the beginning of the forward stroke due to the larger air gap, and grows stronger as the armature moves forward. It will be apparent, then, that if the armature is stuck to a rigidly mounted back stop, it is likely to entirely fail to move, especially if only enough current is supplied to the electromagnet to normally operate the armature, that is, when it is not stuck.

The invention, while described in connection with a message register, is equally applicable to other electromagnetic apparatus, such as relays and step by step devices, and is not limited to the specific arrangement described, but only by the appended claims.

The accompanying drawing illustrates the invention in connection with a well-known type of message register similar to that described in U. S. Patent No. 765,255 to C. E. Scribner and F. R. McBerty.

Fig. 1 is a longitudinal section of the message register along line 1—1 of Fig. 2; Fig. 2 is a plan view of the same; and Fig. 3 a partial sectional view illustrating the armature in its actuated position.

Armature 1 is pivotally mounted on the pin 2 and is normally held against the back stop 3 by the coil spring 4. The armature is shown in its normal position in Figs. 1 and 2, and in its actuated position in Fig. 3. The electromagnet 5 is adapted, upon energization, to actuate armature 1. Stepping pawl 6 is carried by armature 1 and arranged to actuate ratchet wheel 7 upon each forward movement of the armature.

It is thought unnecessary to describe the operation of the counting discs 8, as their operation is well-known to those skilled in the art and not pertinent to the present invention.

The back stop 3, comprising preferably a cylindrical rod, is loosely mounted in apertures 9, which are considerably larger in diameter than the back stop.

The gummy deposit accumulates at the point of contact 10, either on the armature or the back stop, or both. Upon the armature moving forward in the position shown in Fig. 1, the back stop 3, if stuck to the armature, is carried along with the latter until the back stop strikes the opposite side of the apertures 9. The armature, having gathered momentum, and the magnetic pull having increased due to the shortening of the magnetic gap, will continue to move forward, breaking the adhesion between itself and the back stop.

Sticking of message register armatures due to the gummy deposit has been a serious problem involving considerable loss to telephone companies, both on account of failure to register calls and the cost of frequently cleaning large numbers of registers. This problem has been satisfactorily solved by the present invention.

What is claimed is:

1. In an electromagnetic device, an armature, an electromagnet for actuating said armature and a loosely mounted back-stop for said armature which is adapted to rotate through a small angle when engaged by said armature.

2. An electromagnetic device comprising

an electromagnet, an armature and a cylindrical back-stop for said armature, said back-stop being mounted in bearings having a larger diameter than said back-stop.

3. In an electromagnetic device, an armature, an electromagnet for actuating said armature, and a cylindrical back-stop for said armature, said back-stop being mounted in apertures of a diameter appreciably larger than said back-stop.

In witness whereof, I hereunto subscribe my name this 31st day of December, A. D., 1920.

CLYDE H. WHEELER.