

No. 686,007.

Patented Nov. 5, 1901.

H. SHOEMAKER.  
RELAY.

(Application filed May 13, 1901.)

(No Model.)

Fig. 1.

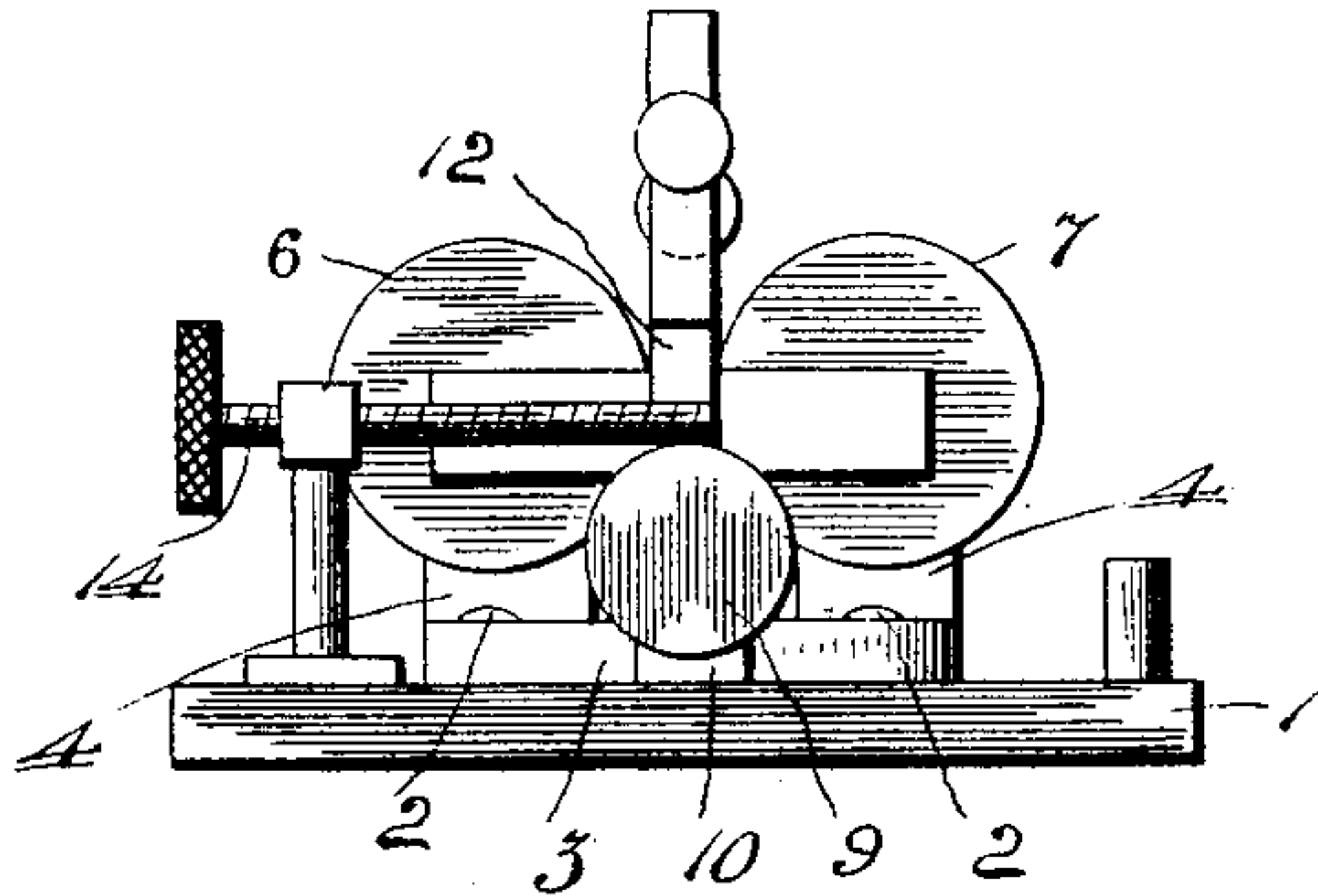


Fig. 2.

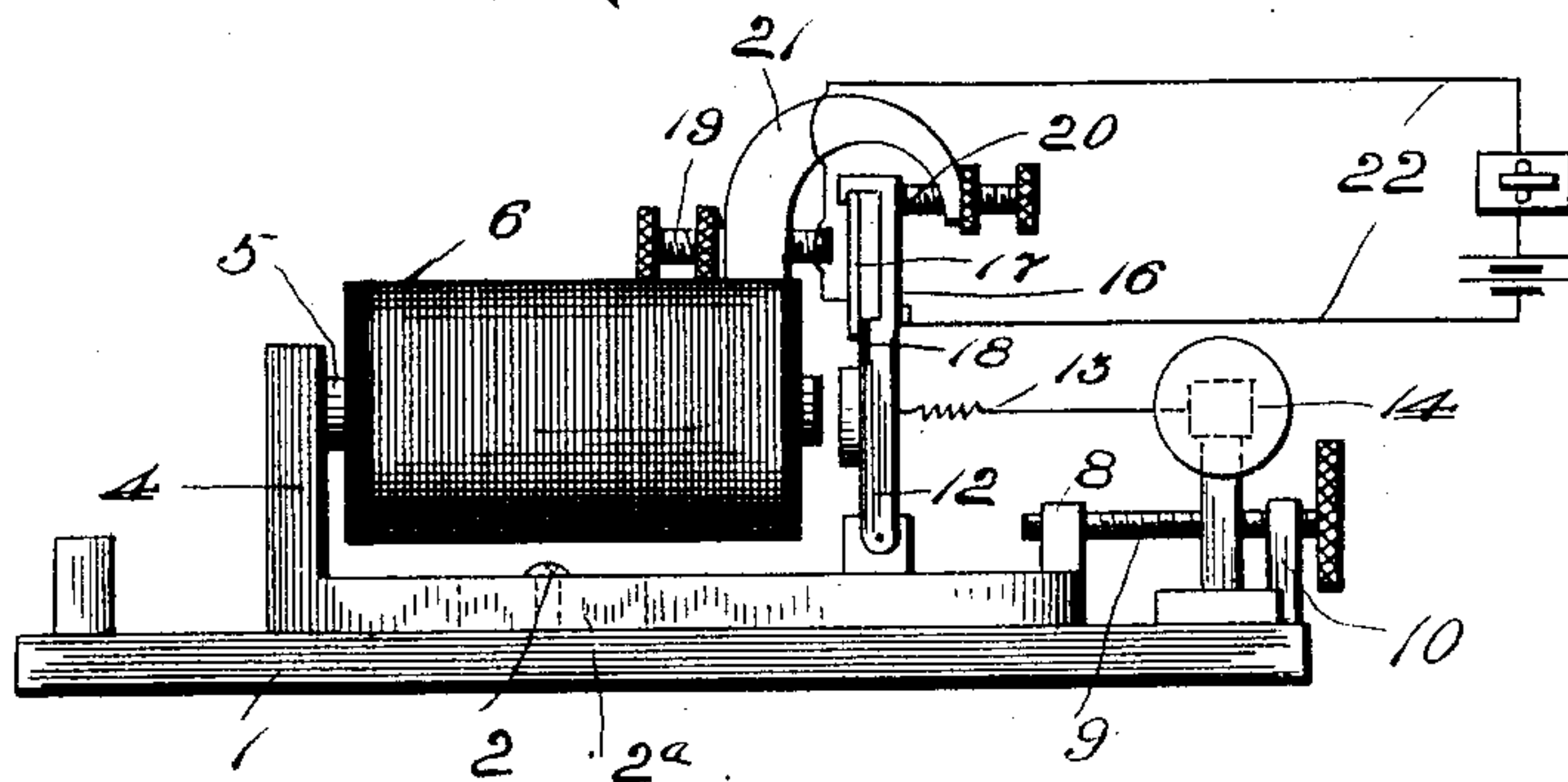
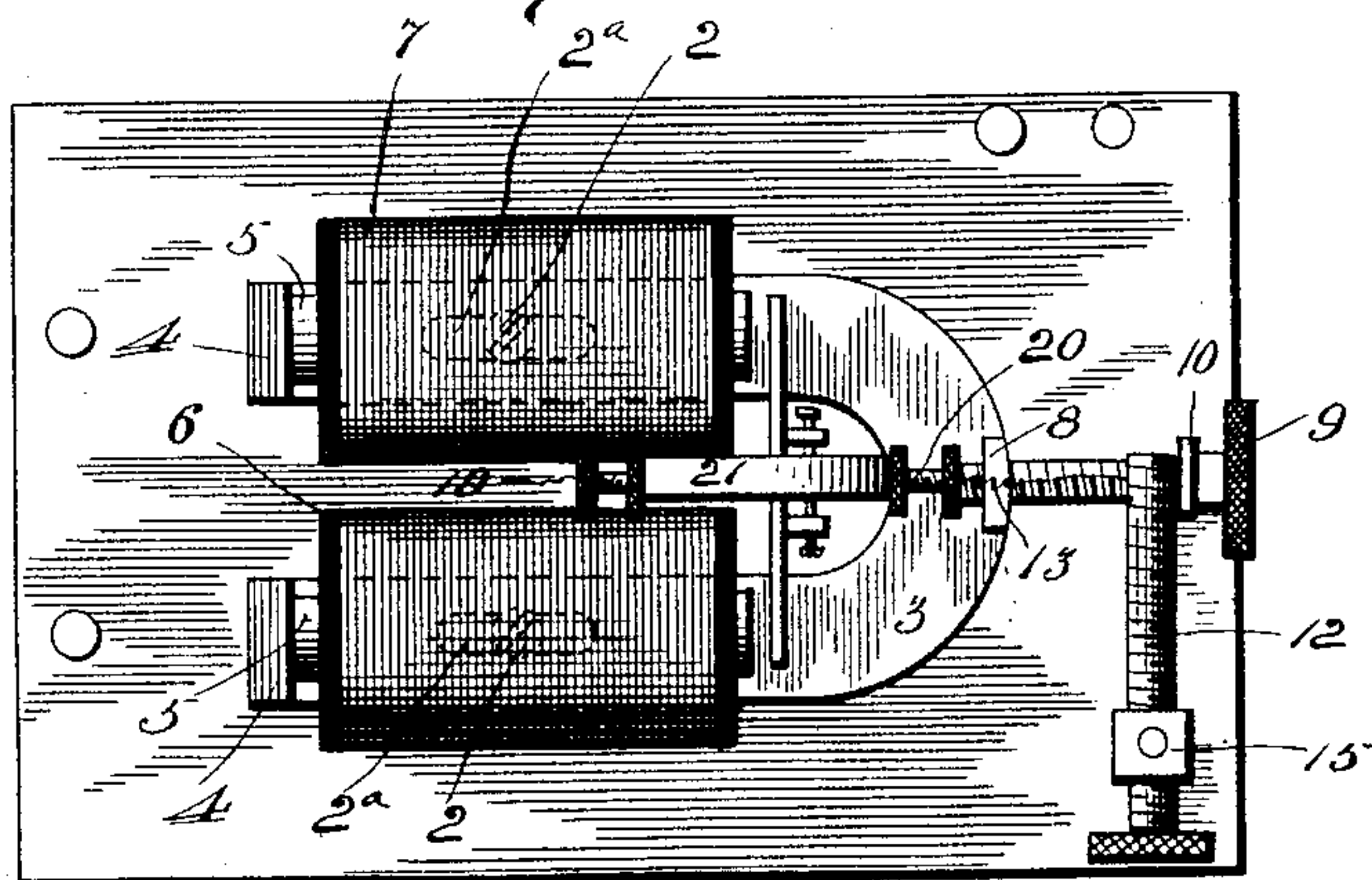


Fig. 3.



WITNESSES:

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## RELAY.

SPECIFICATION forming part of Letters Patent No. 686,007, dated November 5, 1901.

Application filed May 13, 1901. Serial No. 60,094. (No model.)

*To all whom it may concern:*

Be it known that I, HARRY SHOEMAKER, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Relays, of which the following is a specification.

This invention relates to improvements in relays, and has special reference to a relay which is provided with a permanent magnet to form a hold-over current in the instrument.

To attain the desired objects, the invention consists of a relay embodying novel features of construction and combination of parts, substantially as disclosed herein.

In the drawings, Figure 1 is an end view of the relay. Fig. 2 is a side elevation thereof, with a sounder-circuit in diagram connected in operative position therewith; and Fig. 3 is a top plan view thereof.

Referring to the drawings, the numeral 1 designates a base, upon which is slidably mounted by means of screws 2 and elliptical openings 2<sup>a</sup> (shown in dotted lines in Figs. 2 and 3) the permanent magnet 3, whose right-angled arms 4 are connected with the cores 5 of the windings 6 and 7. Formed upon the upper forward part of this magnet is the threaded lug 8, which is adapted to be engaged by an adjusting-screw 9, journaled in the bearings 10 on the base. Pivoted in the bearings 11 is the arm or lever 12, which is adapted to be returned, when released by the permanent magnet, by the coil-spring 13, whose tension is adjusted by means of the spindle or screw 14, mounted in the standard or post 15. This lever consists of the hooked end 16 and has connected to it the spring-plate 17, which is insulated therefrom by the insulation 18 and whose tension is outward and normally held by the end of the lever, the contact-screw 20 and back-stop 19 limiting the movement of the lever and allowing a circuit to be made through the lever and plate 17 when so desired. The screw 20 and stop 19 may be stationary or may be set in an anvil 21, when they are adjustable to limit the movement of the lever back and forth.

To the lever 12 is connected one wire of the sounder-circuit 22, whose other wire is connected to the plate 17, so that when the lever is normally held by the permanently-magnetized cores the plate 17 has its upper end disengaged from the hook, thus causing the sounder-circuit to be held open.

From this description, taken in connection with the drawings, the operation of my improved relay is readily understood; but, briefly stated, it is as follows:

In repose the permanently-magnetized cores attract the lever and cause the circuit to be held open, the circuit being closed when the windings receive an impulse, which overpowers the permanent magnet and allows the coil-spring to move the lever and allow a circuit through the lever and plate 17, and thus close the sounder-circuit, a dot or dash being transmitted, according to the length of time the coils are magnetized, for as soon as the same are demagnetized the permanent magnet causes the cores to attract the lever, and thus open the sounder-circuit.

It is evident that I provide a very durable, inexpensive, and cheap relay which is very useful and practical.

I claim—

The herein-described relay consisting of a base, a permanent magnet provided with upturned ends, slidably mounted upon said base, cores connected to the upturned ends of said magnet, windings surrounding the cores, an anvil connected to said base, stops carried by said anvil, a lever pivoted on said base, and having its upper end contacted by said screws, said upper end being hooked, an insulated spring-plate carried by the lever and having its free end adapted to engage the hooked end of the lever, a spring connected to said lever, and means to adjust the tension of said spring.

In testimony whereof I affix my signature in presence of two witnesses.

HARRY SHOEMAKER.

Witnesses:

M. WIEGAND,  
I. SCHWAB.