No. 668,257.

Patented Feb. 19, 1901.

G. L. FOOTE.

ELECTROMAGNET.

(Application filed Oct. 19, 1900.)

(No Model.)

Fig. 1.

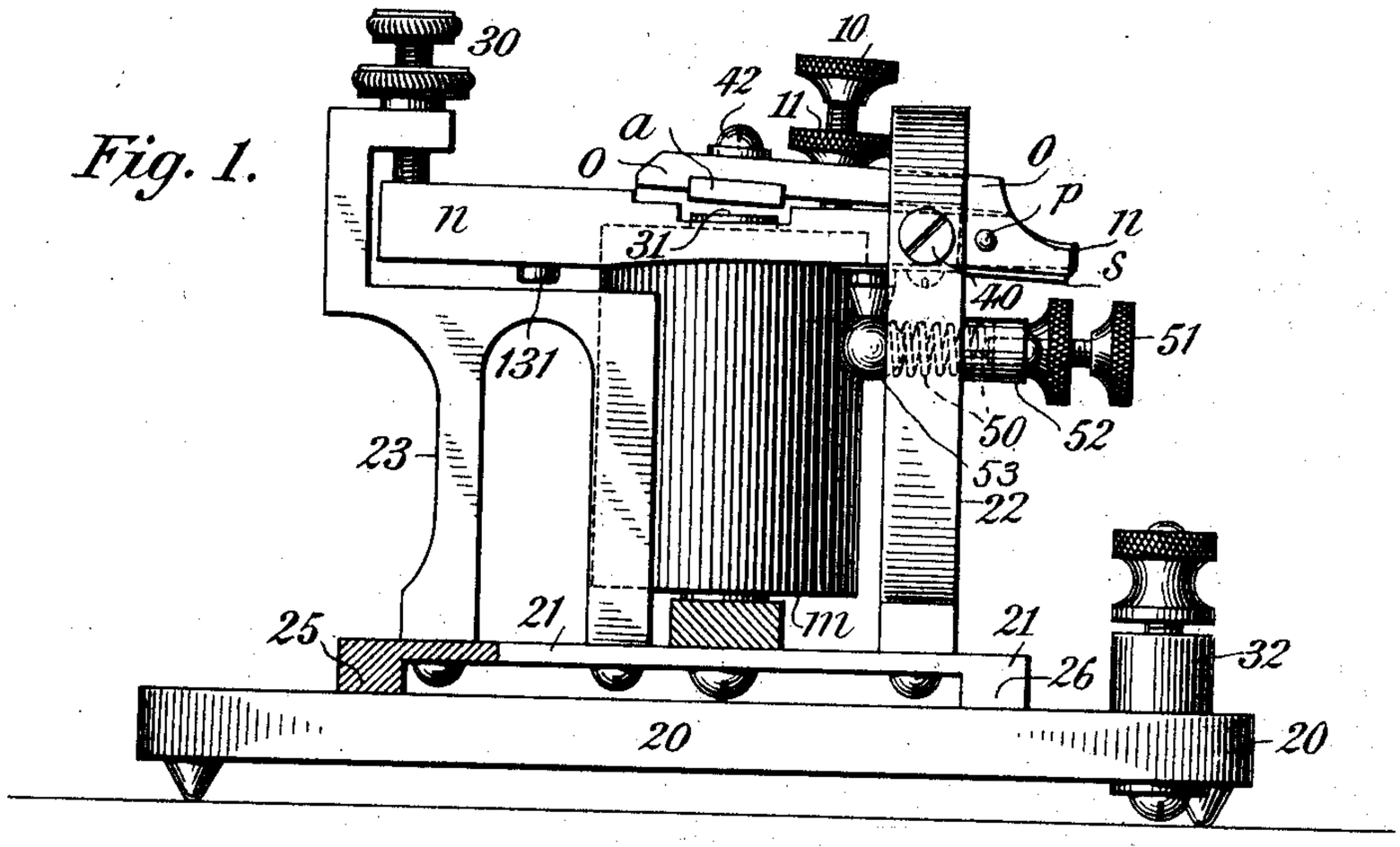


Fig. 2.

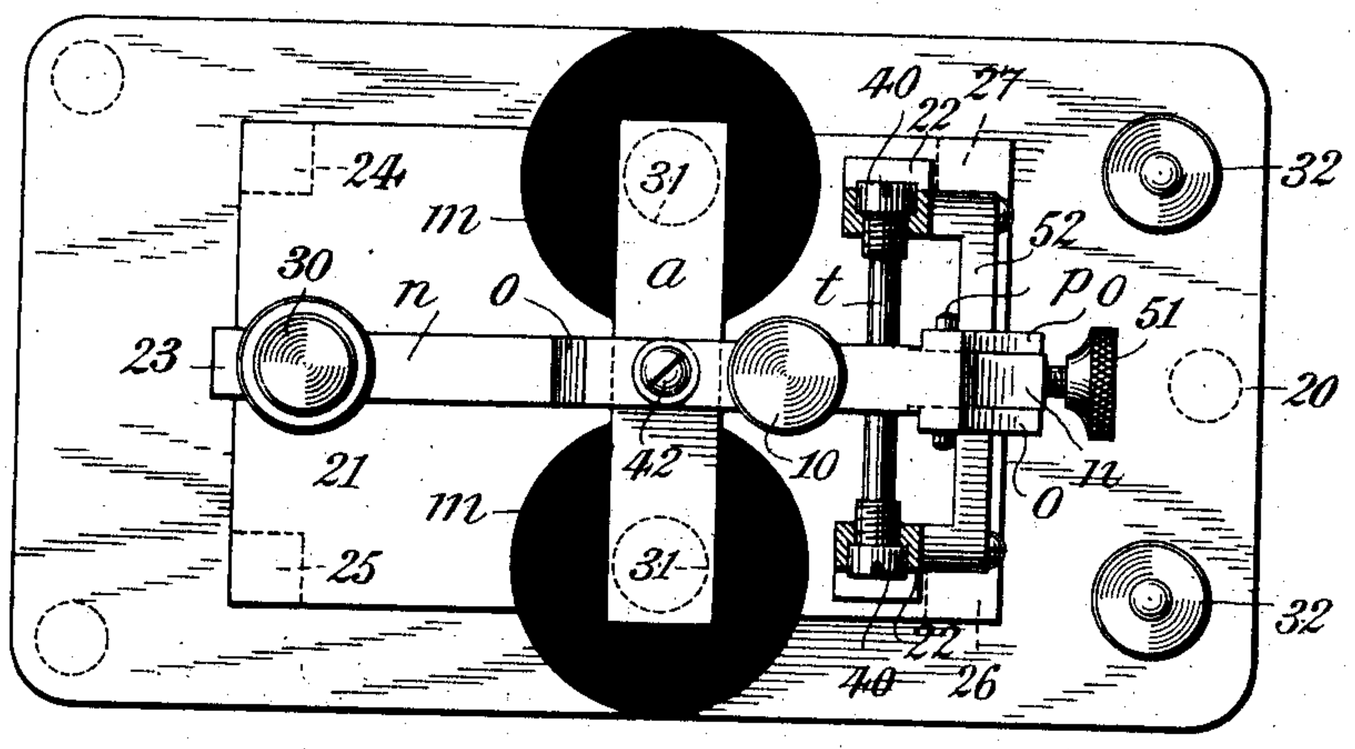


Fig. 3

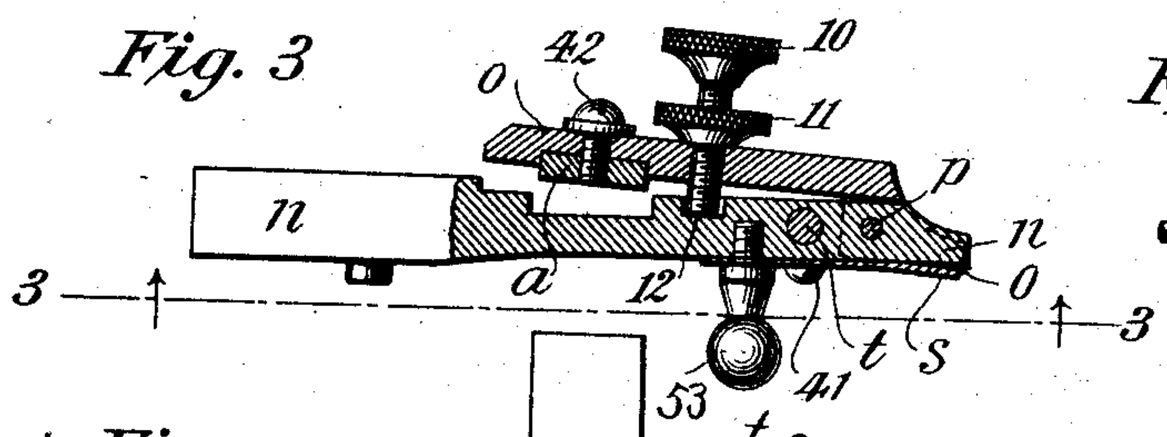


Fig. 5.

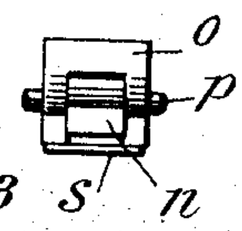
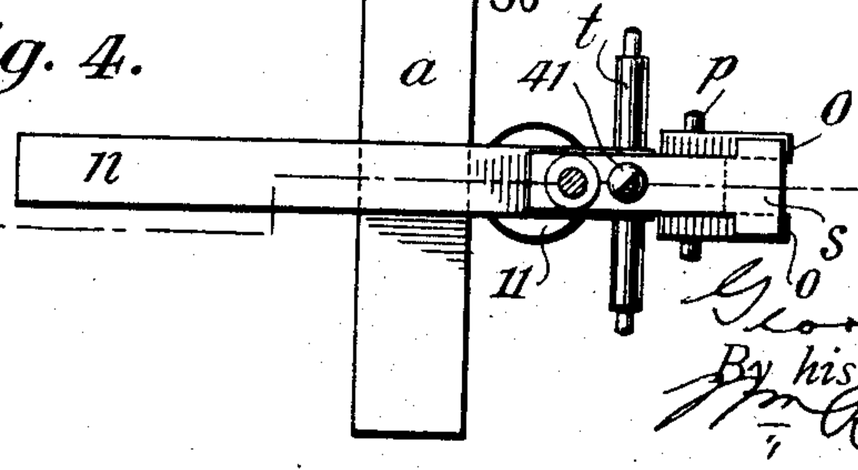


Fig. 4.



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ELECTROMAGNET.

SPECIFICATION forming part of Letters Patent No. 668,257, dated February 19, 1901.

Application filed October 19, 1900. Serial No. 33,561. (No model.)

To all whom it may concern:

Be it known that I, GEORGE L. FOOTE, a citizen of the United States, and a resident of Brooklyn, in the county of Kings and State of New York, have made certain new and useful Improvements in Electromagnets, of which the following is a specification.

My invention is an improvement in electromagnets, such as the sounders and relays employed in the telegraph service.

My improvement consists in a means for adjusting the position of the armature without changing the position or stroke of the vibratory bar employed.

I employ the usual arrangement of electromagnetic coils, limit-stops, and retracting-spring, but attach the armature on the said bar adjustably. I prefer to pivot or hinge the armature and bar together. A spring is employed having a tendency to press the two parts or pieces in a fixed direction, as toward each other, and an adjusting-screw is employed to separate the armature from the bar to which it is hinged, pivoted, or attached, the screw acting against the spring-pressure.

The accompanying drawings illustrate my invention.

Figure 1 is an elevation of a main-line sounder containing my improvement. Fig. 2 is a plan view of the same. Fig. 3 is a sectional view of the vibrating bar with the armature adjustably attached to it. The section is taken on the line 4 4, Fig. 4. Fig. 4 shows the under side of the same bar on the line 3 3, Fig. 3. Fig. 5 is a rear end view of the bar, showing the hinge connecting the armature and vibratory bar together.

I employ the usual arrangement of magnet-coils *m*, with suitable cores having poles like 31. The coils are fixed to a metallic base 21, having four points of support, 24 25 26 27, integral therewith, constituting a sounding-board. The sounding-board 21 is fixed upon the base-board 20, and there are suitable screw-cups 32, connected, respectively, with the coil-terminals. On the sounding-board 21 are located the yoke 22 and the anvil 23. *n* is a vibratory lever having a trunnion *t*, working in the adjustable screw-bearings 40 in the yoke 22. There is a limit-stop 131 on the lower side of the bar *n* and an adjustable upper limit-stop 30 in the anvil-piece 23. The means preferred by me for adjustably supporting the armature *a* consists of a supplemental piece *o*, having a transverse pivot *p* connecting it with bar *n*. There is a flat steel spring *s* fixed to the bar *n* by means of a screw 41. The spring engages the extremity of the piece *o* beyond its point of support and exerts a constant tendency to force the opposite end of *o*, to which the armature *a* is fixed by means of a screw 42, toward the bar *n*. There is a set-screw 10, with a check-nut 11, passing through a screw-threaded aperture in the piece *o*. The screw 10 engages a socket 12 in the bar *n*. It will thus be seen that while the spring *s* has a constant tendency to force the armature *a* toward the bar *n* the screw 10 may be changed in position to vary the extent of the separation between *o* and *n*, so that while the extent of the movement of bar *n*—that is, its length of stroke—may be maintained uniform and unchanged the distance of the armature *a* from the poles 31 of the magnet *m* may be changed at pleasure by adjusting the screw 10. The retracting-spring 50 is shown as a compression-spring located between the adjusting-screw 51 on a cross-bar 52, fixed to yoke 22, and a projecting point 53, fixed to the bar *n*.

What I claim, and desire to secure by Letters Patent, is—

1. In an electromagnet the combination of suitable electromagnetic coils, a vibrating bar, a retracting-spring and limiting-stops for said bar, a supplementary bar pivotally supported upon said vibrating bar, an armature fixed thereto and means for varying the position of said armature with respect to said vibratory bar and the magnet-poles.

2. In an electromagnet the combination of suitable coils, a vibratory bar, a retracting-spring and limit-stops therefor, a bar pivoted to said vibratory bar, a spring acting to press said bars together, an armature fixed upon the second-named bar and an adjusting device carried by one bar to limit the extent of separation of said bars.

3. In an electromagnetic sounder the combination of the coils, a vibratory bar having limiting-stops and a retracting-spring; an armature movably supported upon said bar, a spring pressing said armature in one fixed direction and an adjustable contact carried by one of said bars to limit the extent of separation of said armature and bar.

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