No. 760,029. PATENTED MAY 17, 1904.

J. F. SKIRROW.

TELEGRAPH SOUNDER.

APPLICATION FILED JAN. 8, 1904.

NO MODEL.

Fig. 1.

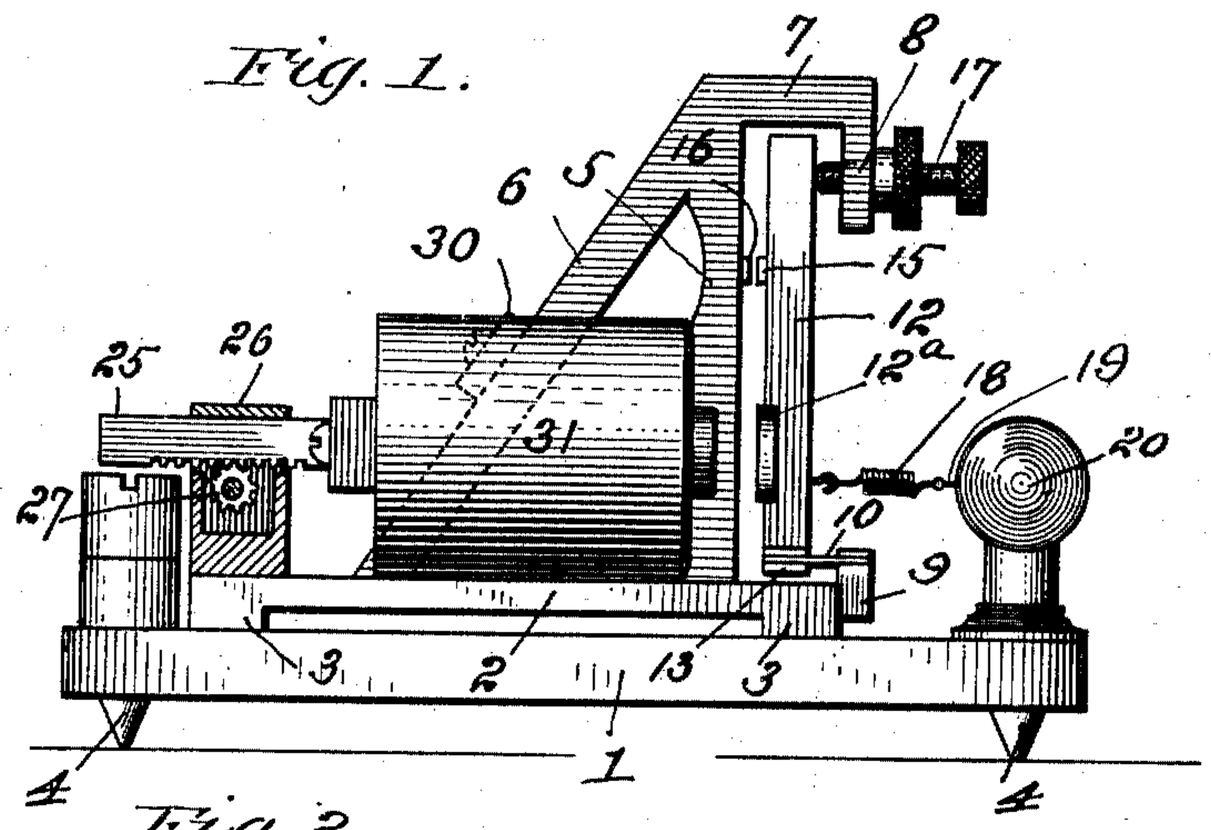


Fig. 4.

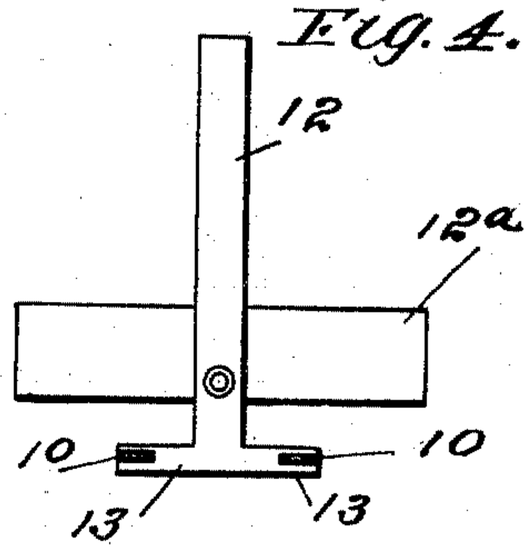


Fig. 2.

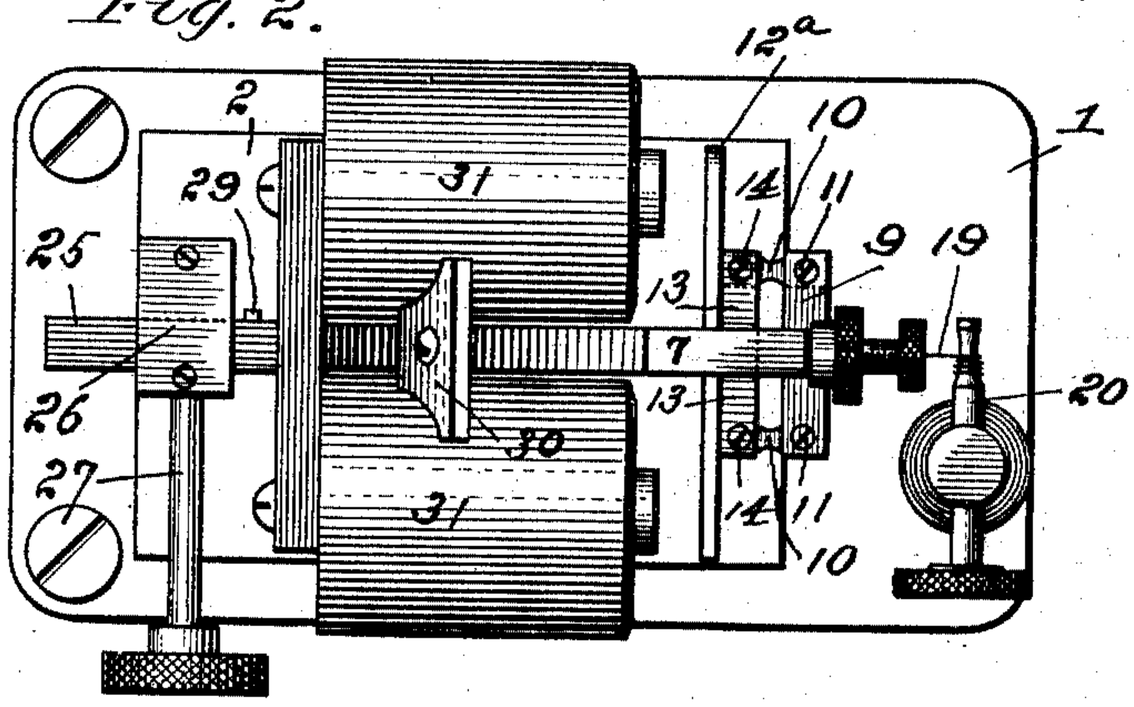


Fig. 5.

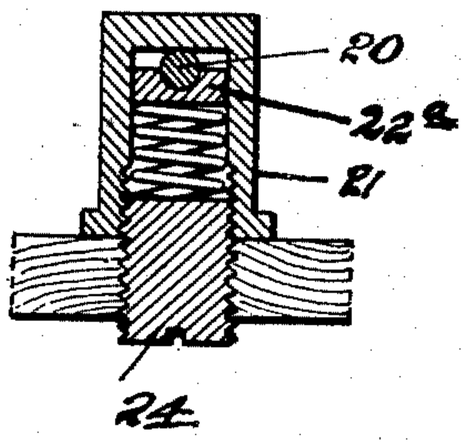


Fig. 3.

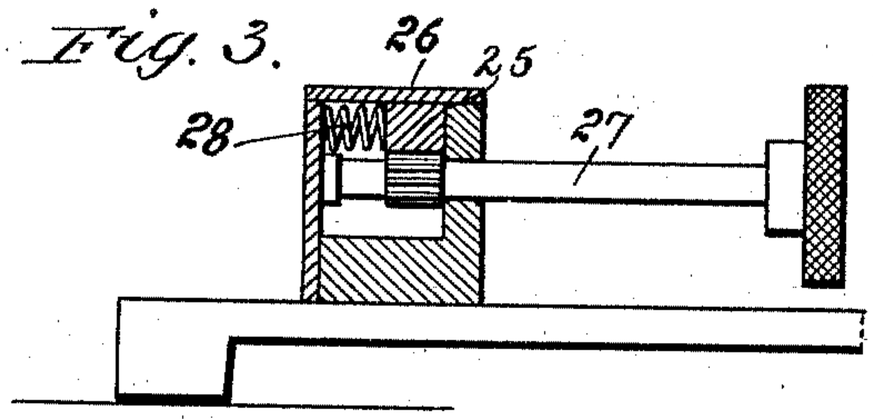
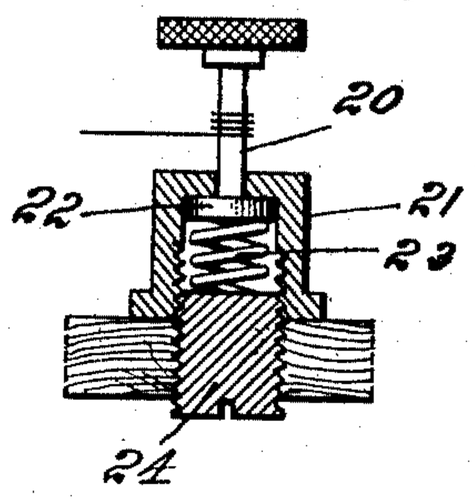


Fig. 6.



Witnesses

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No. 760,029. Patented May 17, 1904.

UNITED STATES PATENT OFFICE.

JOHN F. SKIRROW, OF EAST ORANGE, NEW JERSEY.

TELEGRAPH-SOUNDER.

SPECIFICATION forming part of Letters Patent No. 760,029, dated May 17, 1904.

Application filed January 8, 1904. Serial No. 188,238. (No model.)

To all whom it may concern:

Be it known that I, JOHN F. SKIRROW, a citizen of the United States, residing at East Orange, county of Essex, State of New Jersey, have invented certain new and useful Improvements in Telegraph-Sounders, of which the following is a specification, reference being had therein to the accompanying drawings, in which—

Figure 1 is a side elevation; Fig. 2, a plan view; Fig. 3, a vertical sectional view of the magnet-adjusting means; Fig. 4, a detail elevation of the armature; Fig. 5, a detail vertical sectional view of the means for adjusting the tension on the armature, and Fig. 6 a similar view showing a slightly different form of the armature-tension adjustment.

This invention is particularly designed for use in telegraph-sounders; but it is equally applicable to other forms of electric signaling instruments, such as relays and transmitters.

The main object of the invention is to improve the mechanical construction of telegraph instruments, and particularly to provide a sounder wherein the electromagnet may be adjusted toward and from the armature without changing the angular relation of the magnet-cores and the armature.

A further object of the invention is to provide simple and efficient means for quickly and positively adjusting the electromagnet.

Another important object of the invention is to provide a simple, efficient, and improved tension-adjusting means whereby the tension on the armature may be minutely varied.

Other important advantages and objects will appear hereinafter.

Referring to the various parts by numerals, 1 designates a wooden base for the instrument; 2, a metallic supporting-plate mounted thereon and spaced therefrom by means of lugs 3. The wooden base is provided with inverted-cone-shaped feet 4. Rising from the transverse center of the supporting-plate, near the front end thereof, is the sounding-post 5, at the upper end of which is an integral downward and rearward extending brace-bar 6, the lower end of which is secured rigidly to the supporting-plate. From the upper end of the sounding-post a horizontal arm 7 extends forward and carries at its front end the depending arm 8. Secured to the forward edge of the supporting-plate is an armature-supporting bar 9, which extends slightly above the supporting-plate, the ends of said bar being horizontally slotted near its upper edge to receive the thin flat rearwardly-extending armature-carrying spring-plates 10. The ends of these plates are rigidly secured to the armature-carrying bar by screws 11. The armature-post 12 is vertical and is formed at its lower end with the lateral-extending horizontal feet 13, whose outer ends are horizontally slotted to receive the rear ends of the armature-carrying plates 10, these spring-plates being secured to said feet by means of the screws 14. These armature-carrying springs are of sufficient strength to support the weight of the entire armature. The armature-post near its upper end is provided with a sounding-point 15, which is adapted to contact with a forward-extending anvil-point 16, carried by the sounding-post. To limit forward swing of the armature-post, the arm 8 is provided with the adjustable stop 17.

To the armature-post near its lower end is connected a forward-extending tension-spring 18, to which is connected the tension-thread 19, this thread being wound upon the rotatable tension-bar 20. This bar is shown in Figs. 1, 2, and 5 as being mounted in a horizontal position, while in Fig. 6 it is shown as being mounted in a vertical position, and of course I desire it understood that I may use it in either position. In order to retain the adjusting-bar 20 in its adjusted position and against accidental rotation to maintain the desired tension on the armature, a spring friction device is provided. As shown in Fig. 6, the lower end of the tension-bar 20^a is within a hollow post 21 and is provided therein with a disk 22. Below said disk is arranged an expansible spring 23, said spring bearing on the lower face of the disk and holding it against the under side of the top of the post 21. This post is secured to the base of the sounder by means of a clamp-nut 24, which extends through the base and up into the post, said post being internally threaded at its lower end for this purpose. It will be noted that the clamping-nut not only secures the post to the base, but also determines the amount of pres-

sure exerted by the spring on the disk 22. By screwing the nut into the post the tension will be increased, the reverse operation reducing the tension. As arranged in Fig. 5, the compression-spring exerts a pressure on the tension-bar through a follower-plate 22ª, the effect being practically the same as when the parts are arranged as shown in Fig. 6. It will thus be seen that I provide a very simple and efficient armature-tension-adjusting device by which minute variations in tension may be secured and which, while being maintained in its adjusted position, may be instantly and readily operated to increase or decrease the tension.

The electromagnet 31 is mounted to slide horizontally on the supporting-plate, its cross-bar being provided with a horizontal rearward-extending rod 25, which is provided on its under side with a rack. This bar extends through a vertical post 26, in which the inner end of a rotatable shaft 27 is mounted. This shaft within the post is provided with gear-teeth which mesh with the teeth of the rack and by which the magnet may be quickly moved toward or from its armature. To retain the magnet in its adjusted position and at the same time permit it to be quickly adjusted in either direction, a coil expansible spring 28 is mounted within the post 26 and bears against the side of the rack-bar. The pressure exerted by this spring is strong enough to prevent any accidental movement of the magnet or any movement thereof by reason of the pull exerted by the magnet on its armature-bar 12ª. To limit the rearward movement of the magnet, a stop 29 is provided on the rack-bar, which contacts with the forward face of the post 26, the forward movement of the magnet being limited by the contact of its cross-bar with the brace 6. To hold the magnet to the supporting-plate, a short cross-bar 30 is secured to the brace 6.

It will thus be seen that by providing a vertical armature-post carrying the horizontal armature-bar and mounting the magnet to move horizontally on its supporting-plate said magnet may be adjusted without varying the angular relation between the magnet-cores and the armature-bar. This is a great advantage, as the best results are obtained when the armature-cores are perpendicular to the armature-bar, and it is obvious that if this angular position is altered the efficiency of the apparatus will be decreased.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a telegraph-sounder the combination, of a base, a vertical sounding-post, a vertical armature-post, a horizontal armature-bar on said sounding-post, a horizontally-arranged electromagnet, a rearward-extending rack-bar secured to the electromagnet, a rotatable toothed device engaging said rack-bar, a spring bearing against said rack-bar and adapted to maintain the armature in its adjusted position and to permit it to be manually adjusted in either direction and an inclosing case for the spring and the toothed device, said case forming a guide for the rack-bar.

2. In a telegraph-sounder the combination, of a base, a vertical sounding-post, a vertical armature-post, a horizontal armature-bar on said sounding-post, a horizontally-arranged electromagnet, a rearward-extending rack-bar secured to the electromagnet, a rotatable toothed device engaging said rack-bar, a friction device bearing against said rack-bar and adapted to maintain the armature in its adjusted position and to permit it to be manually adjusted in either direction and an inclosing case for the spring frictional device and the toothed device, said case forming a guide for the rack-bar.

3. In a telegraph-sounder the combination, of a base, a vertical sounding-post, a vertical armature-post, a horizontally-arranged electromagnet, horizontal armature-carrying strips of thin flexible material, said strips being connected to said armature and to a suitable supporting means, a rearward-extending rack-bar carried by the electromagnet, a rotatable toothed device engaging said rack-bar, a frictional device engaging said rack-bar to maintain the magnet in its adjusted position.

4. In a telegraph-sounder the combination, of a base, a supporting-plate mounted thereon and provided with lugs to space the plate above the base, a vertical sounding-post carried by the supporting-plate, a vertical armature-post, horizontal flexible armature-carrying strips secured thereto, means for supporting said strips, a tension device connected to said armature-post, a horizontal electromagnet mounted on the supporting-plate, means for moving said magnet toward and from the armature, a frictional retaining means to hold said magnet in its adjusted position.

5. In a telegraph-sounder the combination, of a base-plate, a supporting-plate mounted thereon and provided with lugs to space the plate above the base, a vertical sounding-post carried by the supporting-plate, a vertical armature-post, a horizontal flexible armature-carrying strip secured thereto, means for supporting said strip, a tension device connected to said armature-post, a horizontal electromagnet mounted on the supporting-plate, a rearward-extending rack-bar secured to the armature, a rotatable toothed device engaging said rack-bar, a spring bearing against said rack-bar and adapted to maintain the armature in its adjusted position and to permit it to be manually adjusted in either direction.

6. In a telegraph-sounder the combination, of a supporting-plate, a vertical sounding-post secured thereto, said post being provided with a rearward and downward extending brace connected to its upper end and to the plate, a

vertical armature-post, provided at its lower end with lateral-extending horizontal feet, thin flexible horizontal carrying-strips secured to said feet, means for supporting said carrying-strips on the base-plate, a variable-tension device connected to the armature-post, a horizontal slidable electromagnet carried by the base-plate, a transverse retaining-bar secured to the brace of the sounding-post and retaining the magnet on the base-plate, means for moving the magnet toward or from the armature.

7. In a telegraph-sounder the combination, of a supporting-plate, a vertical sounding-post secured thereto, said post being provided with a rearward and downward extending brace connected to its upper end and to the plate, a vertical armature provided at its lower end with lateral-extending horizontal feet, thin flexible horizontal carrying-strips secured to said feet, means for supporting said carrying-strips on the base-plate, a variable-tension device connected to the armature, a horizontal slidable electromagnet carried by the base-plate, a transverse retaining-bar secured to the brace of the sounding-post and retaining the magnet on the base-plate, a horizontal rearward-extending rack-bar carried by the magnet, a hollow post on the base-plate to support said rack-bar, a rotatable toothed device within said post and meshing with the rack, and a spring within said post and bearing on the rack-bar to yieldingly hold the magnet in its adjusted position and permit it to be manually adjusted in either direction.

8. In a telegraph-sounder the combination, of a supporting-plate, an electromagnet, a sounding-post, an armature, thin flexible armature-carrying strips connected to said armature and arranged parallel with the armature-cores and perpendicular to the armature, means for supporting said carrying-strips, a variable-tension device connected to said armature and consisting of a tension-spring, a rotatable tension-bar, means for supporting said tension-bar, and a frictional device for holding said tension-bar against accidental rotation and permitting it to be manually rotated in either direction.

9. A variable tension for armatures comprising, an armature, means for mounting said armature, a tension-spring connected thereto, a rotatable tension-bar, a post supporting said bar, a spring confined within said post and adapted to exert a pressure on said tension-bar to hold it in its adjusted position and to permit it to be readily rotated in either direction.

10. A tension device for armatures comprising, an armature, means for mounting said armature, a tension-spring therefor, a rotatable tension-bar, a hollow post supporting said bar, a spring within said post and adapted to exert a pressure on the tension-bar, and a screw device for fastening said hollow post to a support and to retain the spring within the post.

11. A tension device for armatures comprising, an armature, means for mounting it, a tension-spring connected thereto, a rotatable tension-rod, a hollow post supporting said rod, a disk within said post and secured to said rod, a spring within said post and bearing on said disk, a screw-plug adapted to secure said post to a base and to confine the spring within the post, whereby said screw will secure the post to the base and regulate the pressure of the spring on the disk.

12. In a telegraph-sounder the combination, of a support, a vertical sounding-post carried by the support, a vertical armature-post, horizontal flexible armature-carrying strips secured to said armature-post, means for supporting said strips, a variable-tension device connected to said armature-post, a frictional device to hold the tension, an inclosing case for the frictional device, said case forming a support for the tension device, a horizontal electromagnet, means for moving said magnet from and toward the armature, a frictional retaining means to hold said magnet in its adjusted positions and an inclosing case for said frictional retaining means.

13. In a telegraph-sounder, the combination, of a support, a vertical sounding-post carried by the support, a vertical armature-post, means for supporting said armature-post, a variable-tension device connected to said armature-post, a frictional device to hold the tension, an inclosing case for the frictional device, said case forming a support for the tension device, a horizontal electromagnet, means for moving said magnet from and toward the armature, a frictional retaining means to hold said magnet in its adjusted positions, and an inclosing case for said frictional retaining means.

14. In a telegraph-sounder, the combination, of a support, a vertical sounding-post carried by the support, a vertical armature-post, means for supporting said armature-post, a rotatable tension-varying device, a post supporting said tension-varying device, a frictional device within said post and engaging the device to yieldingly hold it in its adjusted positions, means for connecting the tension device to the armature-post, a horizontal electromagnet, means for moving said magnet toward and from the armature-post, a rearward-extending bar carried by said magnet, a frictional retaining means engaging said bar to hold the said magnet in its adjusted positions, and a case inclosing said frictional means and serving as a guide for the bar.

In testimony whereof I hereunto affix my signature, in the presence of two witnesses, this 5th day of January, 1904.

JOHN F. SKIRROW.

Witnesses:

F. A. NORMAN,

T. L. CARPENTER.