P. WAGNER.

Armature for Electro-Magnets.

No. 227,863. Patented May 18, 1880.

Fig. 1.

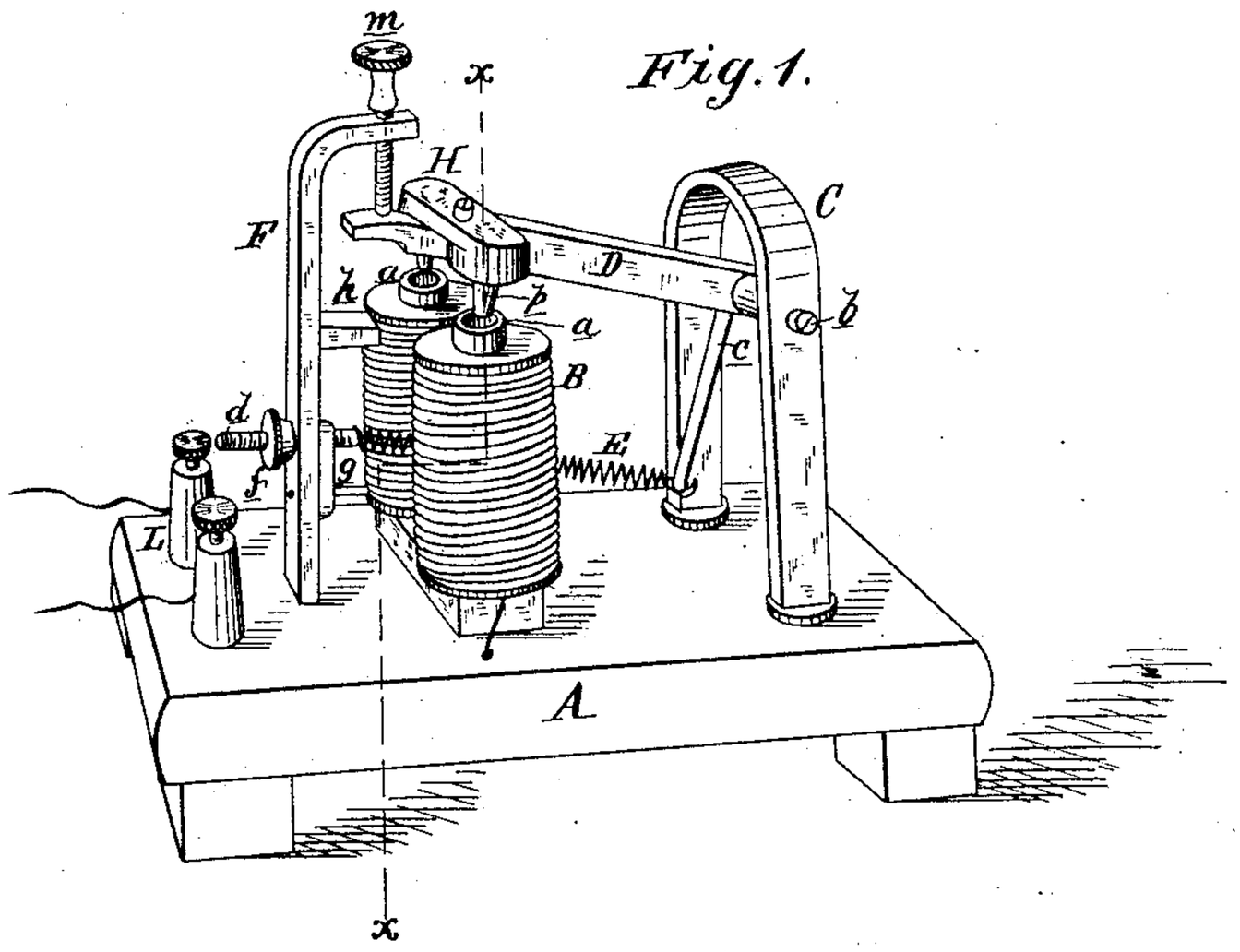
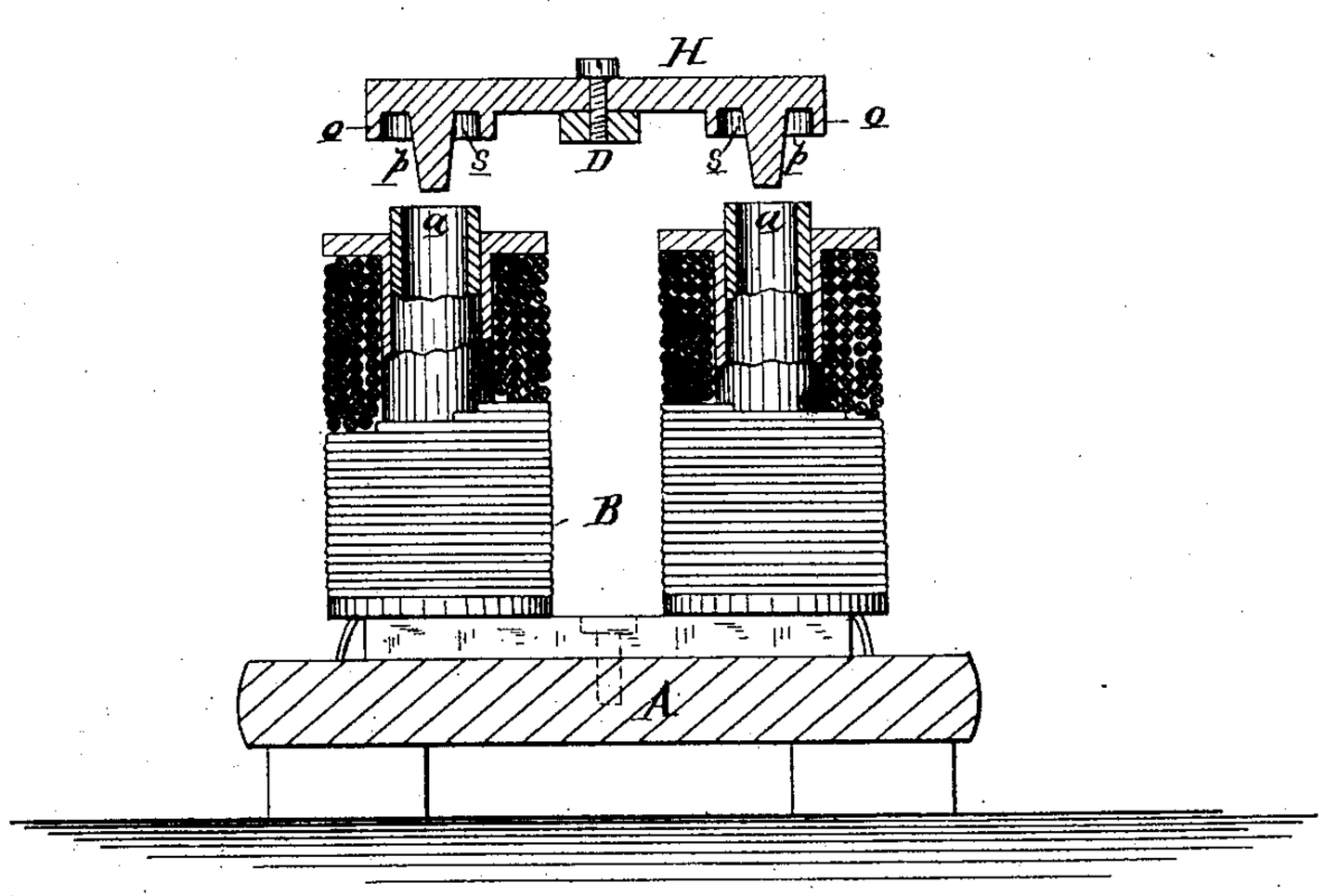


Fig. 2.



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UNITED STATES PATENT OFFICE.

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ARMATURE FOR ELECTRO-MAGNETS.

SPECIFICATION forming part of Letters Patent No. 227,863, dated May 18, 1880.

Application filed January 12, 1880.

To all whom it may concern:

Be it known that I, PETER WAGNER, of the city, county, and State of New York, have invented a new and Improved Armature for Electro-Magnets, of which the following is a specification.

Figure 1 is a perspective view, showing the application of my invention in connection with the ordinary electro-magnetic telegraph-sounder. Fig. 2 is a vertical sectional elevation of the armature and magnets on line *x x*, Fig. 1.

Similar letters of reference indicate corresponding parts.

The object of this invention is to increase the surface of attraction between the armature and the poles of the magnet, and thus augment the power of the electro-magnet and increase the length of the swing of the armature.

The invention consists of an armature having fixed on its lower face, at its opposite ends, two circular collars that form sockets, from the centers of which sockets conical iron points or nipples project downward, so that when said armature is arranged over an electro-magnet having hollow poles the armature will be attracted from a greater distance when the electric current passes through the wires, and the armature will have a greater swing, closing with its conical points or nipples within the hollow poles of the magnet and the collars of the armature encircling the poles of the magnet.

In the drawings, A represents the base of the apparatus. B is the electro-magnet, made similar to other electro-magnets, excepting that its poles are made hollow, as shown at *a*. C is an arched standard, in which the armature-lever D is pivoted on the pivots *b b*. *c* is the spring-arm of the armature-lever, connected by the helical regulating-spring E to the movable adjusting-screw *d*, that is held by a thumb-nut, *f*, in a hole in the upright standard F, said spring E being restricted in vertical motion by the stop and pin *g*.

On the inner face of the standard F is a projecting stop, *h*, that serves to prevent the armature-lever D from descending too far; and *m* is an adjustable thumb-screw that passes vertically downward through the bent top of the standard F and serves to limit the upward swing of the said armature-lever D, and consequently, also, of the armature H, which is attached to the said lever D near its free end. On the lower face of this armature H, near its ends, are the collars *o o*, forming sockets *s s*, from the center of which the nipples or cones or conical points *p p* extend downward. L are the usual binding-posts.

In ordinary armatures the surface of attraction is limited by the superficial areas of the faces of the magnetic poles, and hence the swing of the armature is comparatively restricted, for the reason that the armature must be arranged close to the poles of the magnet; but in the improved armature herein shown and described the entire cone-surface *p*, the socket-surface *s*, and the inner surface of the collars *o* are operative, thereby giving the armature a comparatively much larger surface of attraction and increased power and swing, and greatly increasing the distance or range of attraction.

With its conical points or cones entering the hollow poles of the magnet the armature herein shown operates more quickly than a flat armature, and requires less electric power to perform an equal amount of work, and the force exerted is more uniform; hence this device, arranged substantially as shown, may, with great advantage, be applied as a motive power for mechanisms of various kinds.

I do not confine myself to telegraph-sounders in the application of this improved device, for it is obvious that it may be applied to other electro instruments or motors; nor do I broadly claim a hollow magnet; but,

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

1. An armature for electro-magnets, constructed, substantially as herein shown and described, with collars *o o*, sockets *s s*, and cones *p p*, as set forth.

2. The combination, with the armature H, provided with collars, sockets, and cones *o s p*, respectively, of the electro-magnet B, provided with hollow poles, substantially as and for the purpose described.

3. In an electro-magnetic apparatus, the magnet B, provided with hollow poles, armature H, provided with collars, sockets, and cones, pivoted lever D, spring E, standard F, stops

g h, and thumb-screw *m*, combined and arranged substantially as and for the purpose described.

4. In an electro-magnetic apparatus, an armature provided with a conical point or nipple and a collar so arranged above an electro-magnet having a hollow pole that as the armature approaches the magnet the nipple will enter and the collar surround the hollow pole of the said magnet, substantially as and for the purpose set forth.

5. An electro-magnetic instrument made substantially as herein shown and described, the poles of the magnet being hollow, and the armature being provided with cones or nipples that enter the poles of the magnet and with collars that surround the heads of the poles of the magnet when the armature approaches the magnet, as set forth.

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Witnesses:
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