

No. 672,168.

Patented Apr. 16, 1901.

W. A. HUDSON.  
TELEGRAPH SOUNDER.

(Application filed Dec. 29, 1900.)

(No Model.)

Fig. 1.

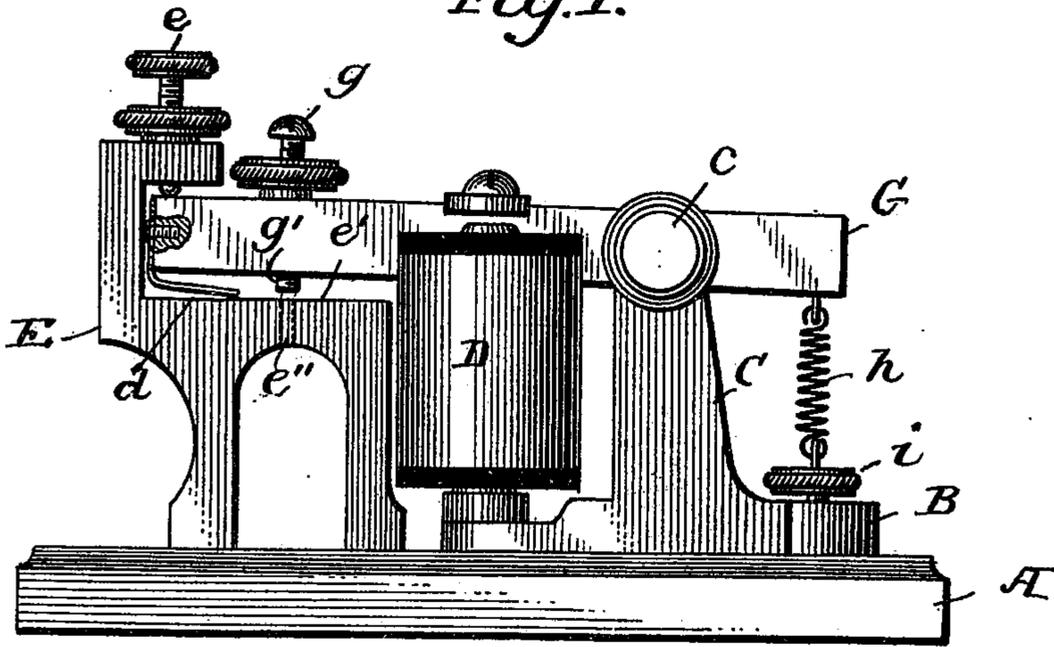


Fig. 2.

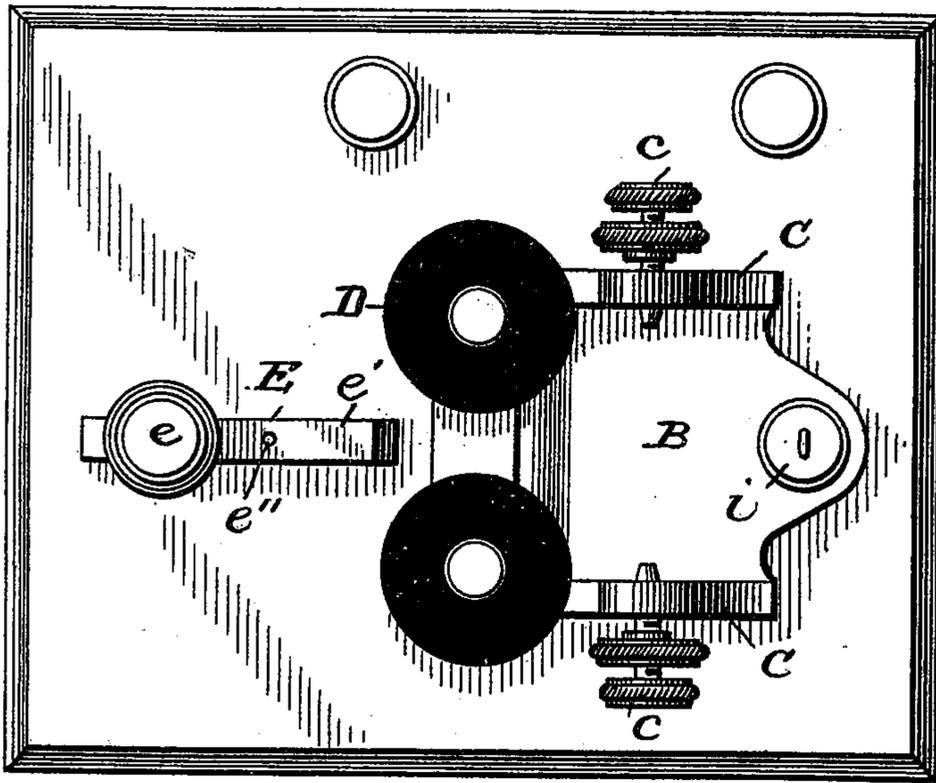
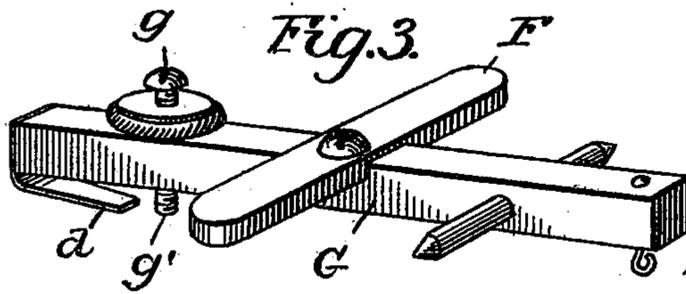


Fig. 3.



Witnesses

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# UNITED STATES PATENT OFFICE.

WILLIAM A. HUDSON, OF WASHINGTON, DISTRICT OF COLUMBIA, ASSIGNOR  
TO JAMES EDGAR SMITH, OF SAME PLACE.

## TELEGRAPH-SOUNDER.

SPECIFICATION forming part of Letters Patent No. 672,168, dated April 16, 1901.

Application filed December 29, 1900. Serial No. 41,504. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM A. HUDSON, a citizen of the United States, residing at Washington, in the District of Columbia, have invented certain new and useful Improvements in Telegraph-Sounders, of which the following is a specification.

My invention relates to improvements in telegraphic instruments, but more particularly to improvements in that class of instruments known as "sounders;" and one object of my invention is to increase the sharpness of the sound produced by the moving parts, so that a loud clear "click" is the result.

A further object of my invention is to increase the sensitiveness of the magnetic armature in such manner that upon the electromagnets being deenergized the moving parts of the sounder will be actuated more quickly than has heretofore been the case and without lag due to residual magnetism in the magnet-cores, my improvement necessitating the use of a retractile spring of no greater strength than is customary. This quickness of motion of the moving parts further contributes to the sharpness of the sound produced.

In the accompanying drawings, Figure 1 is a side elevation of a telegraphic sounder embodying my improvements. Fig. 2 is a plan view with the armature-lever removed, while Fig. 3 is a perspective view of the armature-lever and attachments.

Referring to the drawings, A represents a wooden base, which may support a telegraphic sounder of any suitable description; but for the purposes of illustrating my improvements I have shown attached to the base a sounder including a plate B, having uprights C and electromagnets D, with a separate sounding-post E, carrying a back-stop, as a screw e.

F represents a soft-iron armature, to which is attached an armature-lever G, pivoted on the fulcrum-points of screws c, which pass through the uprights C. This armature-lever carries an adjustable contact-piece, as a screw g, and has attached to its shorter arm a retractile spring h of any usual form, which spring may be connected to an adjustable thumb-screw i in the plate B.

In the ordinary form of sounder of the type

shown the downward stroke of the armature-lever G causes the flat contact-tip g' of contact piece or screw g to impinge upon the top e' of the arch or bridge of sounding-post E; but the sound thus emitted is somewhat deadened by the cushioning effect of the strata of air contained between the contact-tip g' and the top of the arch. This cushioning effect will always be present when impact is caused between plane surfaces. To obviate this sound-deadening effect by forming an aperture or hole e'' in the arch of sounding-post E, directly beneath contact-tip g' and of slightly smaller diameter than the contact-piece, so that the strata of air on impact between the contact-tip and arch finds a way of escape through the aperture, and a loud click is the result, caused by impact of the flat contact-tip over the aperture and on a narrow strip of the metal of the arch around the periphery of the aperture.

In a telegraphic sounder the pull of the retractile spring must be so regulated that it does not exceed in strength the attractive force of the electromagnets when energized, and this pull should be so further regulated that it gives the armature prompt action. This question of a nice adjustment is often a troublesome one, especially when the energizing-current for the electromagnets is varying, while a further difficulty is met with in the tendency of the armature to "stick," caused by residual magnetism in the cores, a lag in the action of the armature being thereby produced. In my apparatus I fasten a small auxiliary spring d, which is preferably in the form of a leaf-spring, to the end of the longer arm of the armature-lever G and bend this spring d beneath the lever in such manner that the tip of the spring impinges upon and slides along the arch-top e' upon the downward stroke of the armature-lever, thus compressing the spring and causing it to exert an upward pressure on the lever. The spring d is so adjusted that no pressure is exerted by it when the armature-lever is in its retracted position against back-stop e, and being on the longer arm of the lever it may be a spring of such small strength that it in no way interferes with the prompt action of the lever when the electromagnets are energized;

but upon the magnets being deenergized the spring *d* imparts an initial impulsion to the armature-lever of sufficient strength, when combined with the action of the retractile spring *h*, to promptly start the lever on its return stroke without lags for the effect of residual magnetism in the cores is thus completely overcome. This auxiliary spring, while shown fastened to the extreme end of the armature-lever and bent under it, may be fastened to the bottom of the lever, or it may be arranged in any suitable manner at the end of the lever which will enable it to fulfil the functions hereinbefore set forth.

15 The pressure of the auxiliary spring is adjusted to bending it to a proper angle with the lever and by adjusting the contact-tip *g'* with which it coöperates.

Without limiting myself to the precise details of construction shown and described, what I claim, and desire to secure by Letters Patent, is—

1. In a telegraphic sounder, the combination of the armature-lever and sounding-post, one of which is provided with a contact-tip and the other with an aperture over which the contact-tip is adapted to impinge, and means for causing impact between the contact-tip and the periphery of the aperture, substantially as described.

2. In a telegraphic sounder, the combina-

tion with the amature-lever provided with a contact-tip, of a sounding-post having an aperture, and means for causing the contact-tip to impinge upon the sounding-post over the aperture, substantially as described. 35

3. In a telegraphic sounder, the combination with the actuating electromagnets, sounding-post, and pivoted armature-lever provided with a retractile spring attached to its shorter arm, of an auxiliary spring attached to the longer arm of the amature-lever for imparting an initial impulsion to said lever when the electromagnets are deenergized, substantially as described. 45

4. In a telegraph-sounder, the combination with the actuating electromagnets, sounding-post having an aperture, and armature-lever carrying a contact-tip and provided with a retractile spring, of an auxiliary spring for imparting an initial impulsion to the armature-lever when the electromagnets are deenergized, and means for causing the contact-tip to impinge upon the sounding-post over the aperture, substantially as described. 55

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

WILLIAM A. HUDSON.

Witnesses:

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W. C. DUVALL.