D. E. SWEET.

TELEGRAPH-SOUNDERS.

No. 195,417. Patented Sept. 18, 1877.

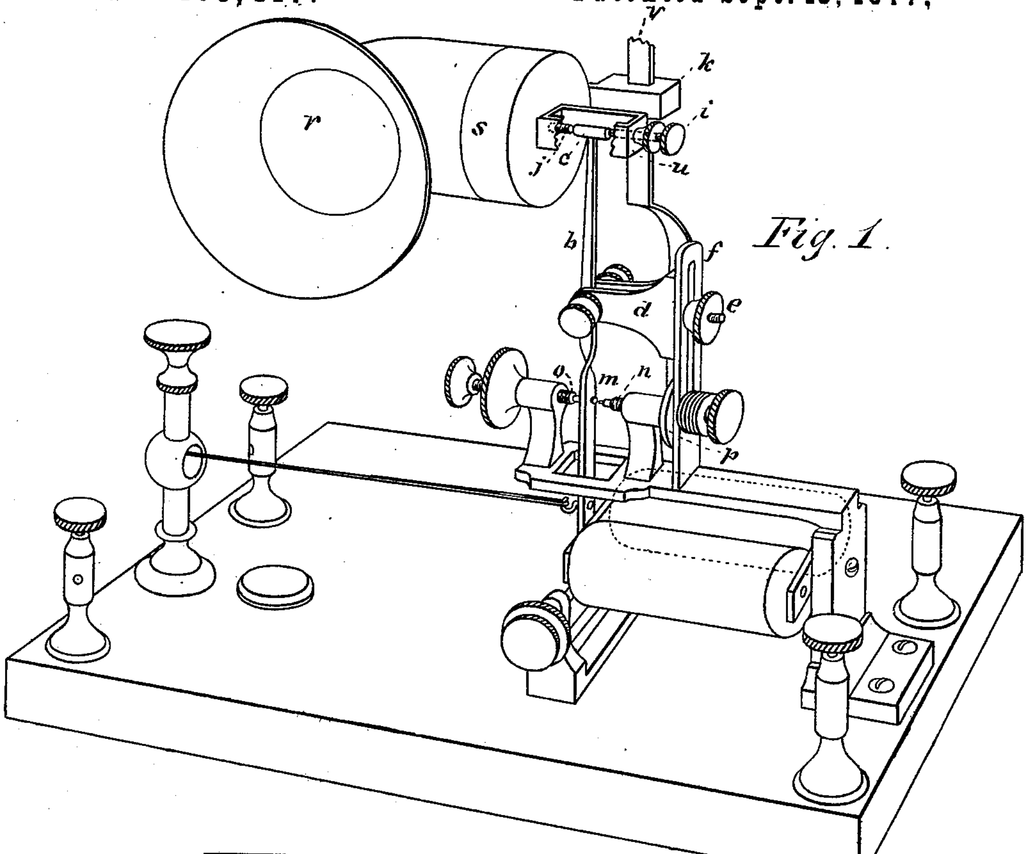

Fig. 1.

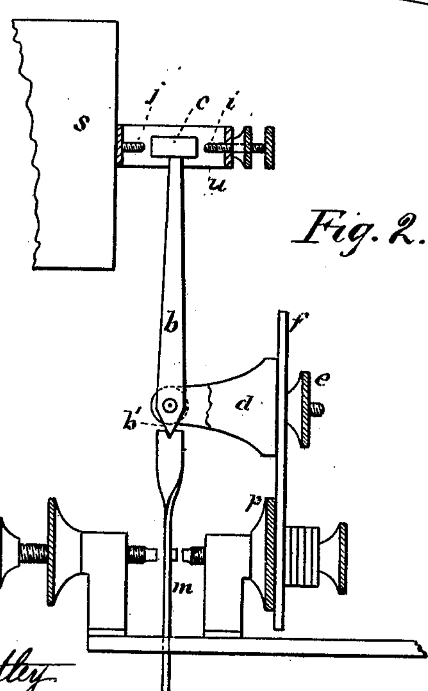

Fig. 2.

WITNESSES

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DANIEL E. SWEET, OF CHICAGO, ILLINOIS.

IMPROVEMENT IN TELEGRAPH-SOUNDERS.

Specification forming part of Letters Patent No. **195,417**, dated September 18, 1877; application filed February 1, 1877.

To all whom it may concern:

Be it known that I, DANIEL EDWARD SWEET, of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Telegraph-Sounders; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

The object of my invention is to furnish a device by which the faint click of the armature of the Morse relay will be increased and re-enforced, so as to give a clear, distinct sound, which can be easily heard, even if the relay is attached to a long circuit with a feeble current, thus making it unnecessary to use a local battery.

My invention is intended to be attached to the common Morse relay, or to any receiving or sending instrument that is ordinarily read by the sound.

It consists of a device which greatly magnifies the short movement of the armature, and of an improved sounder, for augmenting the click of the instrument.

Figure 1 is a perspective view of a Morse relay-instrument with my attachment. Fig. 2 is a side view of part of the armature and hammer, showing the details of their construction.

In the drawings, *m* is the ordinary lever, which carries the armature, and plays between the screw-pins *n* and *o*. A lever, *b*, which I will call the "hammer," is placed vertically above *m*, and in line with it when in its normal position. This hammer is pivoted to the sliding support *d*, and *d* is fastened by the binding-screw *e* to the slotted support *f*. This allows a vertical adjustment to the fulcrum of the hammer.

The screw-pin *n* passes through a hole in the slotted plate *f* below the slot, and the binding-screw *p* clamps and holds the slotted plate. These parts *f*, *d*, and *b* may be attached in like manner to the screw-pin *o*. It is immaterial which support is used. The short arm *b'* of the hammer *b* (shown in detail by Fig. 2) is made with a wedged-shaped end, which sets in a V-shaped notch in the end of the armature *m*. This makes a simple connection with very little friction; but any other device may be used for the same purpose. The upper end of *b* carries a small hammer-head, *c*, and the ratio between the length of the arms *b* and *b'* is such that the head *c* has from four to six times the amount of play that the armature *m* has between the points *n* and *o*. I find this gives the best result, though the ratio may be varied as desired. The hammer-head *c* is not, however, an essential feature.

The hammer-head *c* is placed between two screw-pins, *i* and *j*, similar in construction to *n* and *o*, which limit the motion of the lever or armature *m* in the common instrument.

With this attachment the pins *n* and *o* are set so that the hammer-head *c* will play in contact with the points *i* and *j*, and not be stopped before it strikes them, by the armature *m* striking the points *n* and *o*. The pins *i* and *j* are adjustable, and screwed through the hoop *u*, which is fastened to the head of the sounder *r s*. The sounder is made in two parts—the head *s*, which is called the gong-section, made with a projecting rim which slides over the funnel portion *r* of the sounder, and the funnel *r*, a short tube, so curved as to make the planes of the cross-sections at its two extremities at right angles to each other, and made with a broad flaring opening, so as throw the sound out into the room.

The bend in the tube is not essential, but as the instrument is generally placed it brings the opening into the most convenient position for the operator.

To adjust the pin *j* the funnel portion *r* of the sounder can be removed, and then the heads of the screw *j*, which come inside of the gong-section *s*, can be reached. The gong-section *s* has a slide, *k*, with clamp-screw, which slides on the standard *v*. The standard *v* is screwed to the bed-piece of the instrument, and supports the sounder *r s*, as described. The sounder *r s* can be made to fasten to the relay by screw-pin *n* or *o*.

The sounder is made of any sonorous material which will transmit and augment the sounds produced by the hammer *c* on the

points *i* and *j*. For this purpose thin wood or porcelain for the head of the gong-section, and metal, glass, porcelain, or hard rubber for the rest of the sounder, will possibly give the clearest and loudest sounds. The hammer-head *c* will strike at both ends of its stroke when the pins *i j* and *n o* are set as described. If it is desired, the pin *o* may be set clear of armature *m* and allow the back stroke to strike against screw-pin *i* of the sounder, or screw-pins *n* and *o* can both be set clear of armature *m*, and allow both the forward and back stroke to strike points *i* and *j* of the sounder. This cannot be done at all times, depending upon the length of the wire, the amount of play that can be allowed between points *n* and *o*, or the amount of attraction in the magnet.

I am aware that sounders in which the blows are struck upon the head of a barrel-shaped chamber have been used before, but those only reflect the vibrations of the head of the sounder to a focus, while in my device the click, augmented by the sounder, is thrown out through the flaring mouth as the sound issues from a trumpet.

Futhermore, the armature in all other instruments acts directly upon the sounder. The movement of the armature is small and the blow light, while with my extension or compound leverage the hammer has a much larger and stronger movement, and makes a clear, distinct click, which, acting through the sounder, is perfectly audible withbut the aid of a local battery.

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

1. The hammer *b*, constructed and supported substantially as described, in combination with the armature *m* and pins *i* and *j*, the whole constructed for the purpose of enlarging the movement of the striking parts of a telegraphic instrument, substantially as described.

2. The sounder constructed with the tube *r*, made with the flaring opening, the gong-section *s*, and the screws *i* and *j*, all constructed and combined substantially in the manner and for the purpose herein set forth.

3. The combination of the hammer *b*, sliding block *d*, with binding-screw *e*, slotted plate *f*, standard *q*, with screw *n*, binding-screw *p*, and armature *m*, constructed substantially as described, and for the purpose set forth.

4. The combination of the sounder *r s*, standard *v*, hammer *b*, and armature *m*, substantially as described, and for the purpose herein set forth.

In testimony that I claim the foregoing as my own I affix my signature in presence of two witnesses.

DANIEL EDWARD SWEET.

Witnesses:
REUBEN THOMAS SWEET,
CHARLES SINGLETON SWEET.