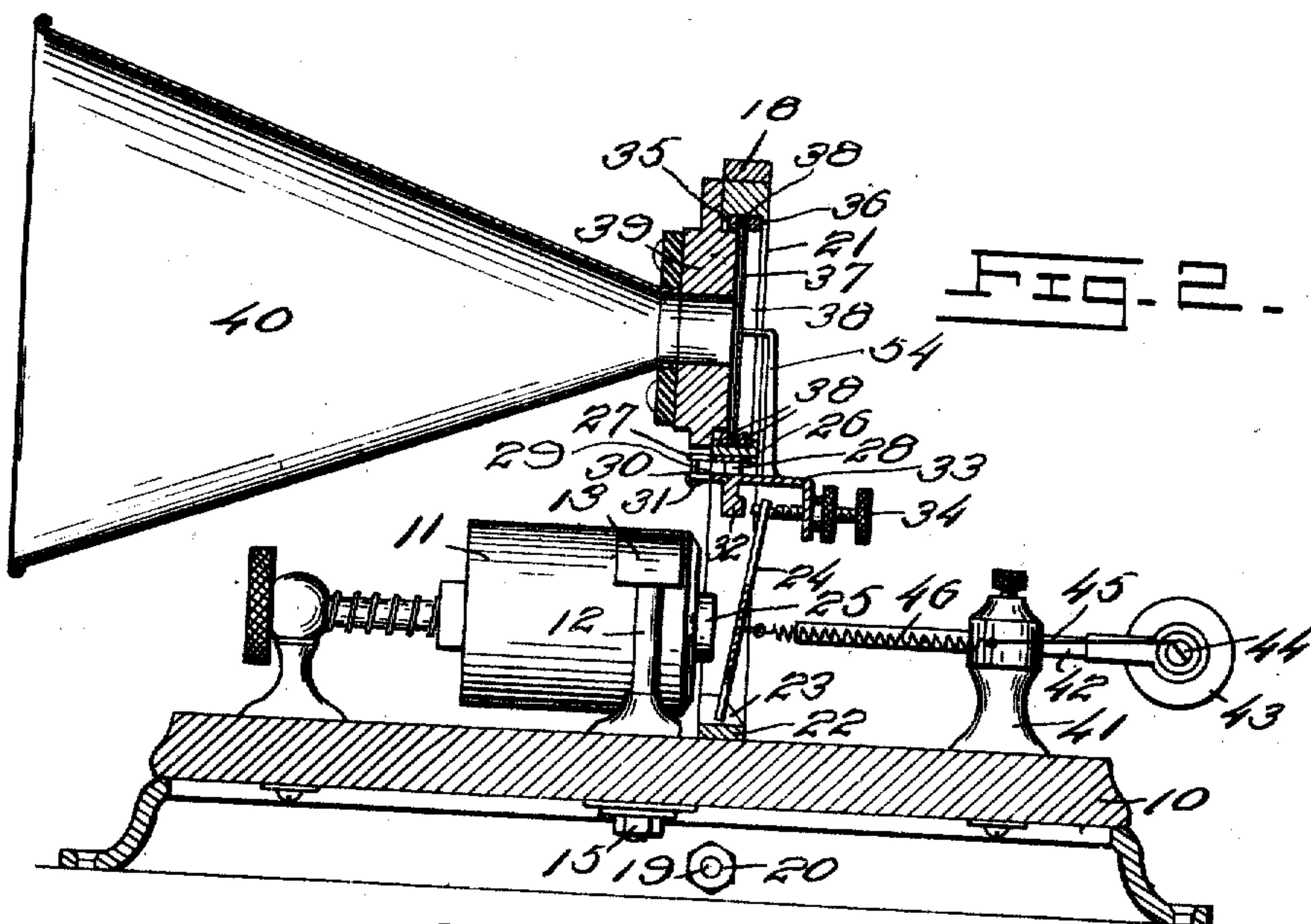
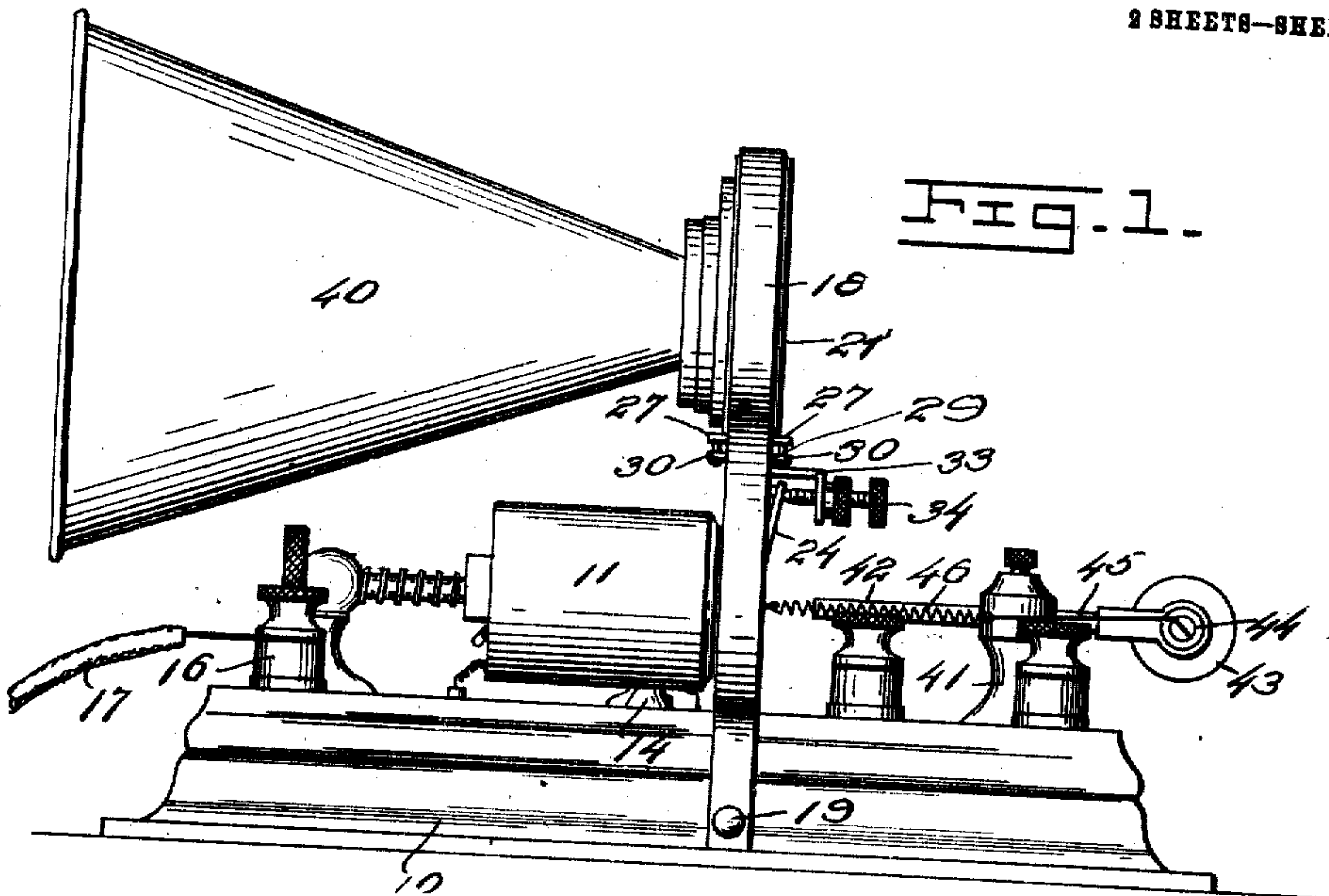


R. W. CRAWFORD, JR., R. H. BECK & L. W. DAVIES.
 INTENSIFIER FOR TELEGRAPH SOUNDERS.
 APPLICATION FILED NOV. 3, 1908.

928,589.

Patented July 20, 1909.
 2 SHEETS—SHEET 1.



R. W. Crawford Jr., R. H. Beck & L. W. Davies, Inventors

Witnesses
E. C. Chandler

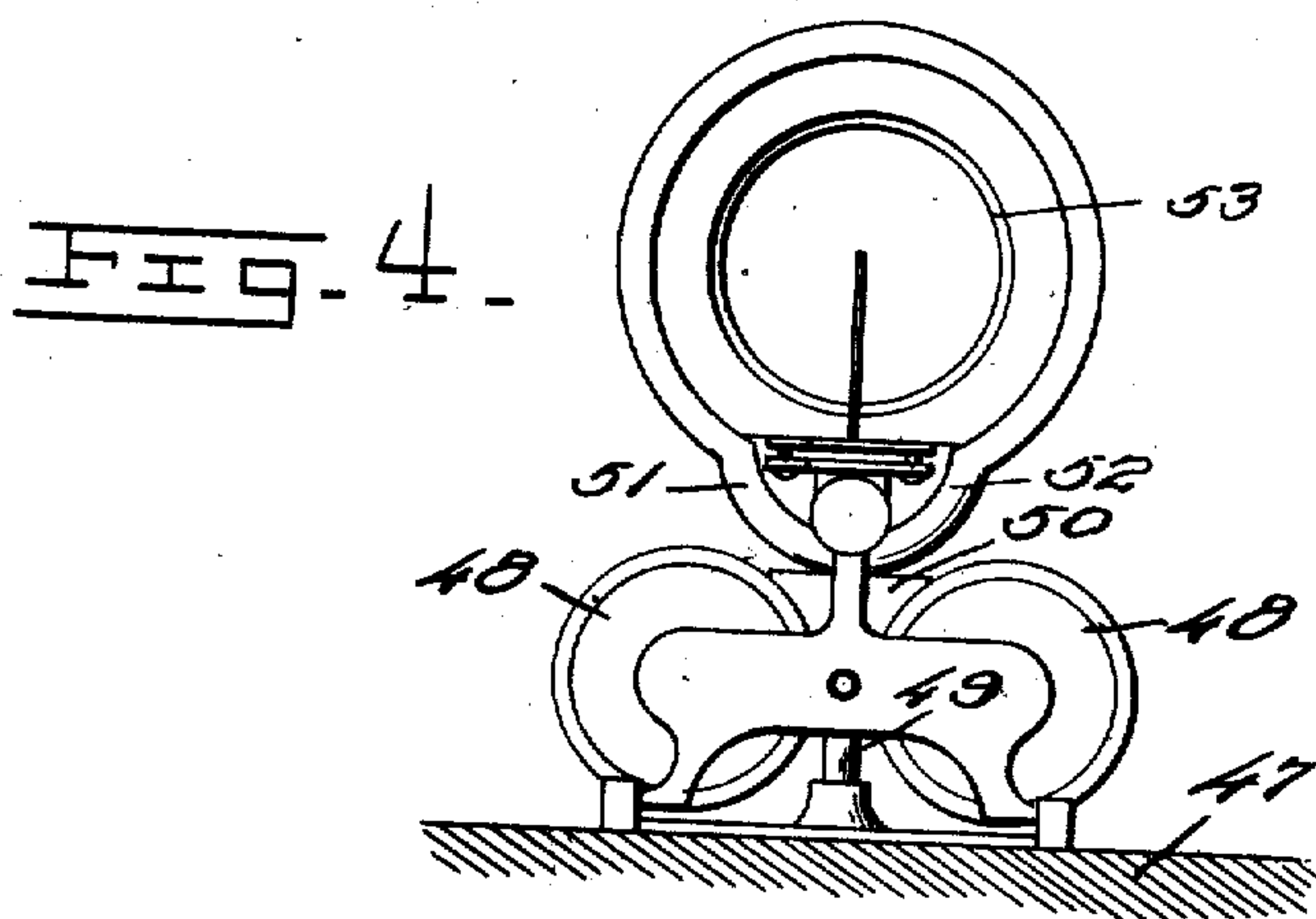
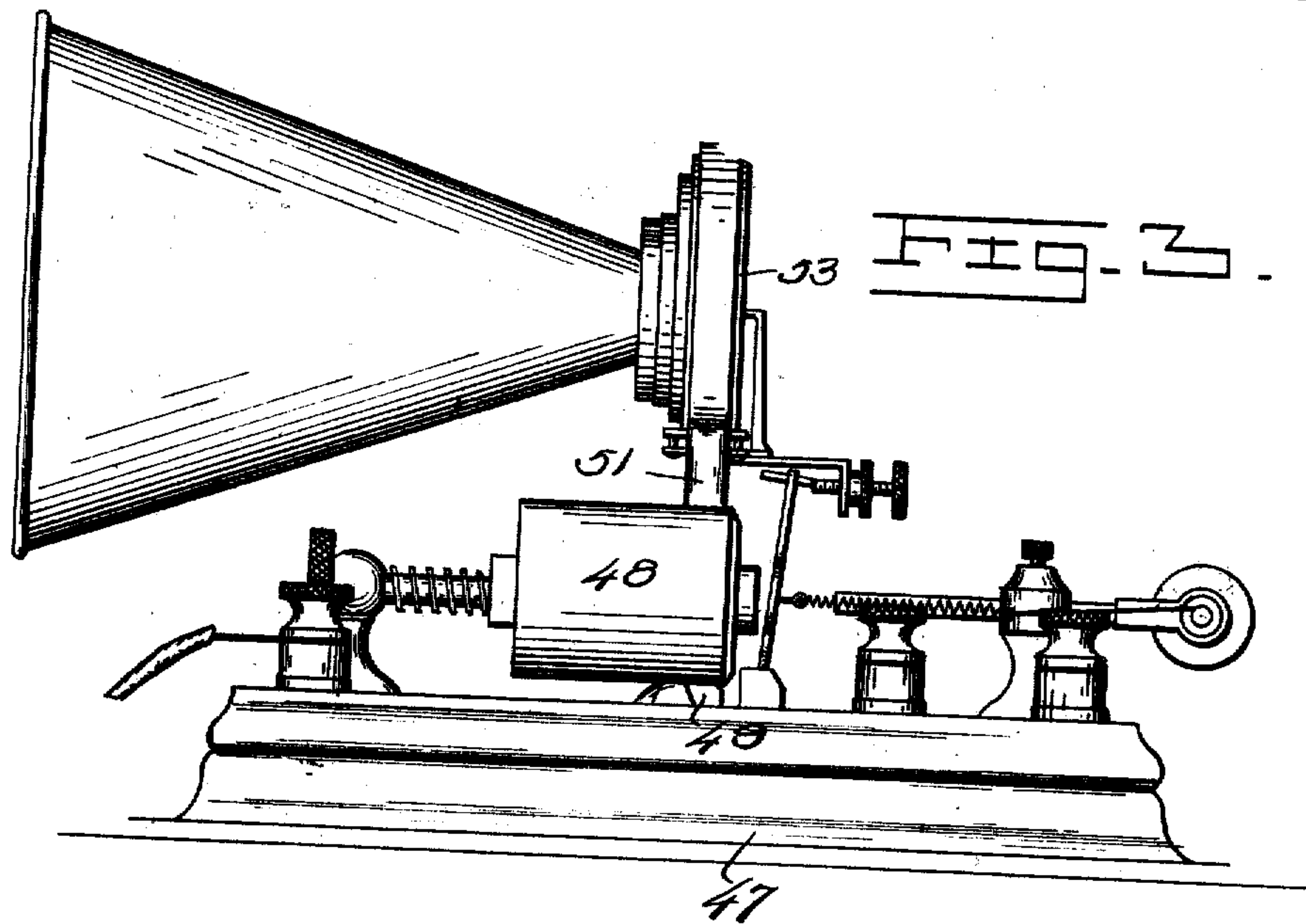
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Attorneys

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UNITED STATES PATENT OFFICE.

RALPH W. CRAWFORD, JR., RALPH H. BECK, AND LEWIS W. DAVIES, OF LAMAR, COLORADO.

INTENSIFIER FOR TELEGRAPH-SOUNDERS.

No. 928,580.

Specification of Letters Patent.

Patented July 20, 1909.

Application filed November 3, 1908. Serial No. 460,973.

To all whom it may concern:

Be it known that we, RALPH W. CRAWFORD, JR., RALPH H. BECK, and LEWIS W. DAVIES, citizens of the United States, residing at Lamar, in the county of Prowers and State of Colorado, have invented certain new and useful Improvements in Intensifiers for Telegraphic Sounders, of which the following is a specification.

This invention relates to telegraphy and has special reference to an improvement on relays.

An object of this invention is to provide a relay with means whereby the sound produced by the instrument will be intensified so that the same can be more distinctly heard.

Another object of the invention is the provision of an intensifier to a relay whereby local circuits may be dispensed with and the relay or sounder substituted in the main circuit will be sufficiently loud to be heard by the operator without the assistance of the local circuit and additional instruments.

The invention further designs a device of this character which is of simple and economical structure and one which can be applied to an instrument without materially altering the same.

Other objects and advantages will be apparent from the following description and it will be understood that changes in the specific structure shown and described may be made within the scope of the claims without departing from the spirit of the invention.

In the drawings forming a portion of this specification, and in which like numerals of reference indicate similar parts in the several views, Figure 1 is a side elevation of the complete device, Fig. 2 is a longitudinal vertical section of the same, Fig. 3 is a side elevation of a modification of the device, Fig. 4 is a front elevation of the modified form of bracket for the sounding attachment.

Referring to the drawings, 10 designates a base which supports upon its upper surface magnets 11 which are secured thereto by a bolt 12 which is provided with an enlarged beveled head 13 for engagement between the magnets 11 and clamps the magnets in rigid position upon studs 14 by means of a nut 15. The base carries the usual binding posts 16 which are connected to the magnets at their lower extremities beneath the base 10 and which are adapted to engage with the line wires 17 to energize the magnets 11. A U-

shaped frame 18 is positioned transversely of the base 10 and secured at its opposite lower extremities by bolts 19 which are passed therethrough and secured to the base 10 by clamping nuts 20. The lower end of the frame 18 is reduced and engaged upon the upper face of the base 10 and curves upwardly and outwardly to the upper portion thereof where it is circularly formed to engage a sound box 21 for a purpose hereinafter described. A metallic strip 22 is positioned across the upper face of the base 10 and is provided with flanges 23 at its opposite extremities between which is pivotally engaged an armature 24 which is mounted at the extremities of the cores 25 which energize the armature 24 upon the energization of the magnets 11.

The sound box 21 is provided across its lower side with a plate 26 which is provided with laterally extended and oppositely disposed ears 27 and which carries at its opposite extremity two depending lugs 28 which extend into apertures formed in the opposite extremities of a second plate 29 which is provided with ears 30. Set screws 31 are positioned through the ears 27 and 30 for the purpose of detachably and adjustably securing the plate 29 to the sound box 18. The plate 29 is provided with a depending abutment 32 which is engaged by the armature 24. The plate 29 is also provided with a rearwardly extending bracket 33 which is curved downwardly at its rear extremity where it supports a set screw 34 for engagement against the armature 24 to limit and regulate the reciprocation thereof. The sound box 21 is provided with flanges 35 and 36 between which is engaged a disk 37 which is centrally positioned by gaskets 38 positioned upon the opposite side of the disk 37 against the flanges 35 and 36. The sound box is also provided with a reduced portion 39 upon which is secured a horn 40 for conveying and increasing the resonance of the instrument. The base 10 carries a post 41 which adjustably carries an arm 42 which is provided at its outer extremity with a set screw 43 mounted upon a spindle 44 which carries about its inner extremity a cord 45 attached to a spring 46 carried by the armature 24. The spring 46 is used for the purpose of returning and of holding the armature 24 normally against the set screw 34.

In operation, when the magnets 11 are energized the armature 24 is drawn toward

the cores 25 and caused to strike against the abutment 32. The vibration set up in the abutment 32 is transmitted to the plate 29 and through a stylus arm 54 to the disk 37 where it is reproduced and intensified as the sound waves are transmitted through the horn 40. When the circuit in the line 17 is broken and the magnets 11 are demagnetized the cores 25 release the armature 24 and allow the spring 46 to withdraw the armature and cause the same to strike against the set screw 34 which causes vibration through the support 33 and plate 29 where the vibrations are communicated to the diaphragm 37 through the stylus arm 45 and from thence intensified as they radiate through the horn 40.

In the preferred form shown in the modification disclosed in Figs. 3 and 4 the base 47 supports the magnets 48 by a bolt 49 which is provided with an enlarged beveled head 50 for engagement between the magnets to hold the same securely in position. The beveled head 50 is provided with two arms 51 and 52 which extend upwardly and diverge to support upon their upper ends a sound box 53 of a common construction as hereinbefore described. The diverged arms 51 and 52 form a bracket for the sounding device which is simpler in construction and which produces an instrument of neat appearance.

What is claimed is:—

1. A device of the class described com-

prising a relay, a bracket disposed on said relay, a sound box carried by said bracket, a plate carried by said sound box, ears on said plate, a second plate, ears on said second plate, set screws positioned through said ears for securing said plates adjustably together, a stylus arm disposed on said first plate engaged with the diaphragm in said sound box, a bracket carried by said second plate, a set screw disposed through said bracket for engagement with the armature of said relay and an abutment depended from said second plate for engagement with said armature.

2. A device of the character described comprising a base, a relay mounted on said base, a headed bolt carried by said base extended upwardly between the magnets thereon to secure the same in position, a bracket upwardly extended from said bolt, a sound box disposed on said bracket and an abutment carried by said sound box for engagement with the armature of said relay for the purpose of regulating the motion of the same.

In testimony whereof we affix our signatures, in presence of two witnesses.

RALPH W. CRAWFORD, JR.
RALPH H. BECK.
LEWIS W. DAVIES.

Witnesses:

E. E. PIKE,
S. E. BUTLER.