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F. O. HANSON.

SOUND MAGNIFIER FOR TELEGRAPH INSTRUMENTS.

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Fig. 1.

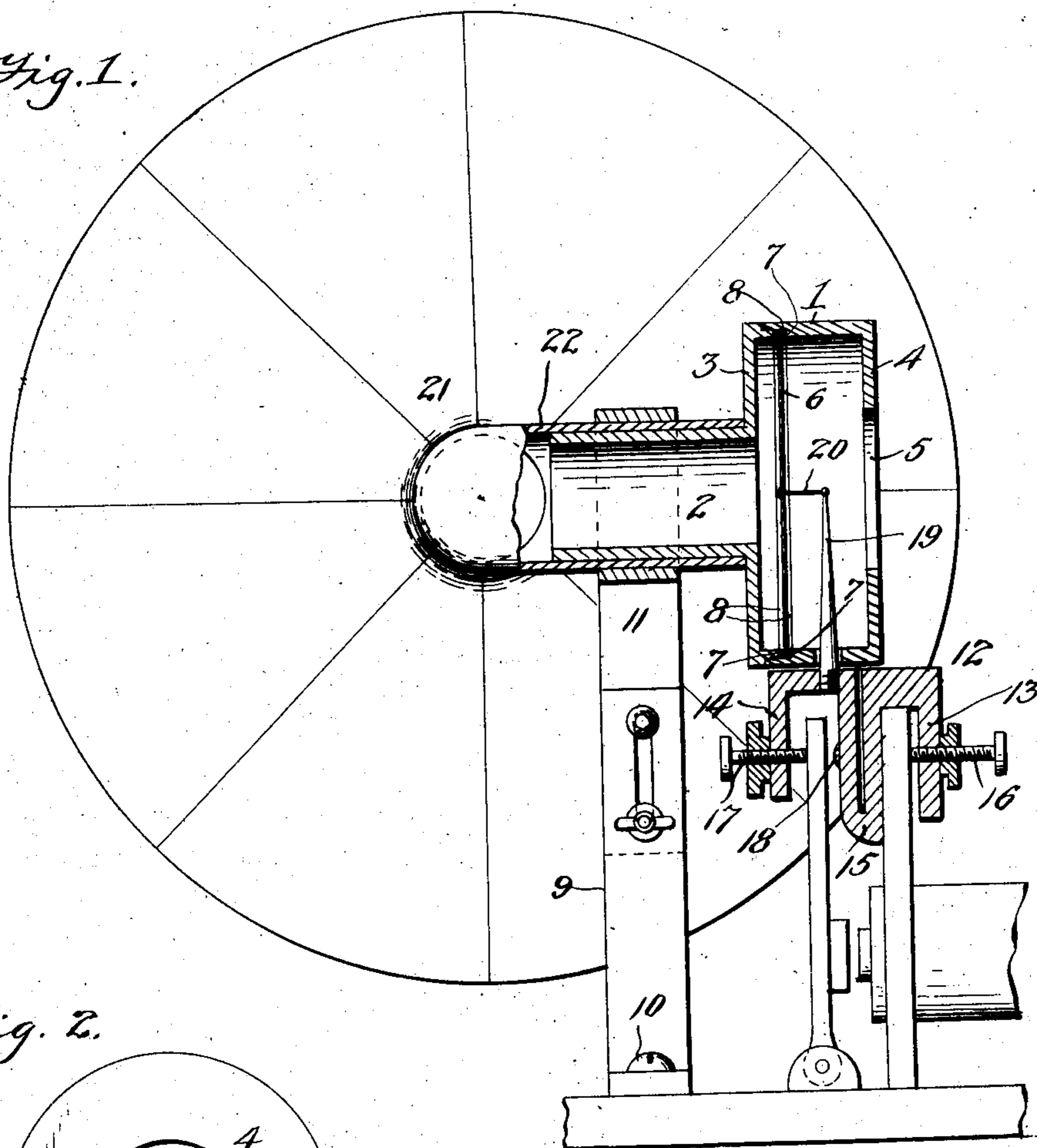
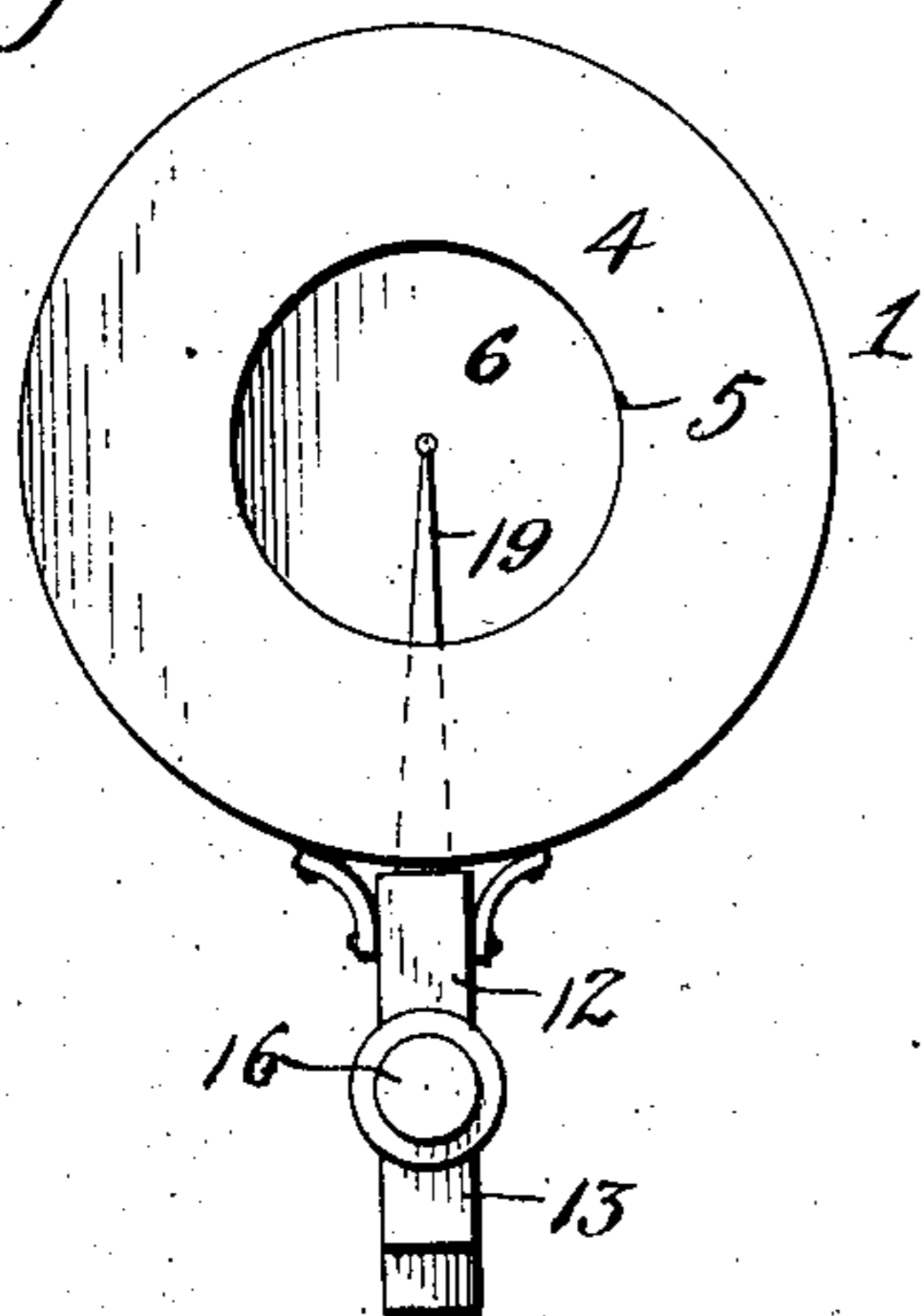


Fig. 2.



Witnesses

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# UNITED STATES PATENT OFFICE.

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## SOUND-MAGNIFIER FOR TELEGRAPH INSTRUMENTS.

No. 834,520.

Specification of Letters Patent.

Patented Oct. 30, 1906.

Application filed February 26, 1906. Serial No. 303,089.

*To all whom it may concern:*

Be it known that I, FREDERICK O. HANSON, a citizen of the United States, residing at Victoria, in the county of Ellis and State of Kansas, have invented certain new and useful Improvements in Sound-Magnifiers for Telegraphic Instruments; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention is a sound-magnifier for telegraphic instruments by means of which I am enabled to dispense with the use of sounders and local batteries ordinarily employed on telegraph-lines and to amplify the sounds of the relay as operated directly by the relatively weak electrical currents on the line, and hence utilize the relay as the sounder.

My invention consists in the construction, combination, and arrangement of devices hereinafter described and claimed.

In the accompanying drawings, Figure 1 is a vertical sectional view of a sound-magnifier embodying my invention. Fig. 2 is an elevation of the same.

The sound-box 1 is cylindrical in form and at one side 3 has a tubular cylindrical extension 2 of reduced diameter, which communicates therewith. The opposite side 4 of the sound-box has an opening 5. A diaphragm 6, of mica or other suitable material, is held in the sound-box by annular shoulders 7, packings 8, of rubber or other suitable material, being interposed between said shoulders and said diaphragm. The sound-box is supported by a standard 9, which is secured to the base of the relay instrument by a screw 10 or other suitable device. Said standard is shown as provided with a vertically-adjustable member 11.

In connection with the sound-box I provide a frame 12. The same comprises a pair of inverted-U-shaped members 13 14, the inner arms of which are connected together at their lower ends, as at 15, said members being otherwise unconnected. The outer arm of the member 13 has a clamping-screw 16 to clamp said member on the standard of the relay instrument, and the outer arm of the member 14 has an adjusting-screw 17. The armature-lever of the relay instrument operates between the point of said screw and a

boss 18 on the inner arm of said member 14. Said member has on its upper side an upwardly-extending and upwardly-tapering point 19, which enters the sound-box through an opening in the lower side thereof and terminates at a point opposite the center of the diaphragm. A wire 20, of silver or other suitable material, connects the center of the diaphragm and the inner end of the point.

An amplifying-horn 21 has its inner end provided with a sleeve 22 to slip over and fit on the tubular extension 2 of the sound-box to pivotally attach the horn thereto, so that the horn may be turned in any desired direction.

When the armature instrument is in operation, the strokes of its armature-lever delivered upon the boss 18 and the point of the adjusting-screw 17 set up vibrations in the frame 12 and in the point 19, which are communicated by the action of the wire 20 to the diaphragm, causing the same to vibrate and in connection with the casing of the sound-box and the horn to reproduce and greatly amplify the sounds produced by the relay instrument, with the result that the relay instrument may be used as a sounder and enable the ordinary sounder and the local battery to be entirely dispensed with.

From the foregoing description, taken in connection with the accompanying drawings, the construction and operation of the invention will be readily understood without requiring a more extended explanation.

Various changes in the form, proportion, and the minor details of construction may be resorted to without departing from the principle or sacrificing any of the advantages of the invention as defined in the appended claims.

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

1. A sound-magnifier for telegraphic relay instruments having an armature-lever, a fixed frame to receive the blows of the armature-lever, a point extending from said fixed frame, a sound-box, a diaphragm in the sound-box, and a connection between the diaphragm and the point.

2. A sound-magnifier for relay instruments, having an armature-lever, a frame to receive the blows of the relay armature-lever,

a point projecting from said frame, a sound-box having an opening in one side, through which the point extends, and a diaphragm in the sound-box, to which the vibrations of the point are communicated, substantially as described.

3. A sound-magnifier for relay instruments, having a frame to receive the blows of the instrument armature-lever and provided with a point, fixed thereto and extending therefrom, a sound-box having an opening in one side through which the point extends, said sound-box being further provided with a

tubular extension, a diaphragm in the sound-box and to which vibrations are communicated from the point, and a horn having a sleeve fitted on the tubular extension of the sound-box, substantially as described.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

FREDERICK O. HANSON.

Witnesses:

F. G. BRUNEY,  
W. HUBBS.