No. 682,433. Patented Sept. 10, 1901.

J. F. SKIRROW.

RESONATOR.

(Application filed Feb. 15, 1901.)

(No Model.) 2 Sheets—Sheet 1.

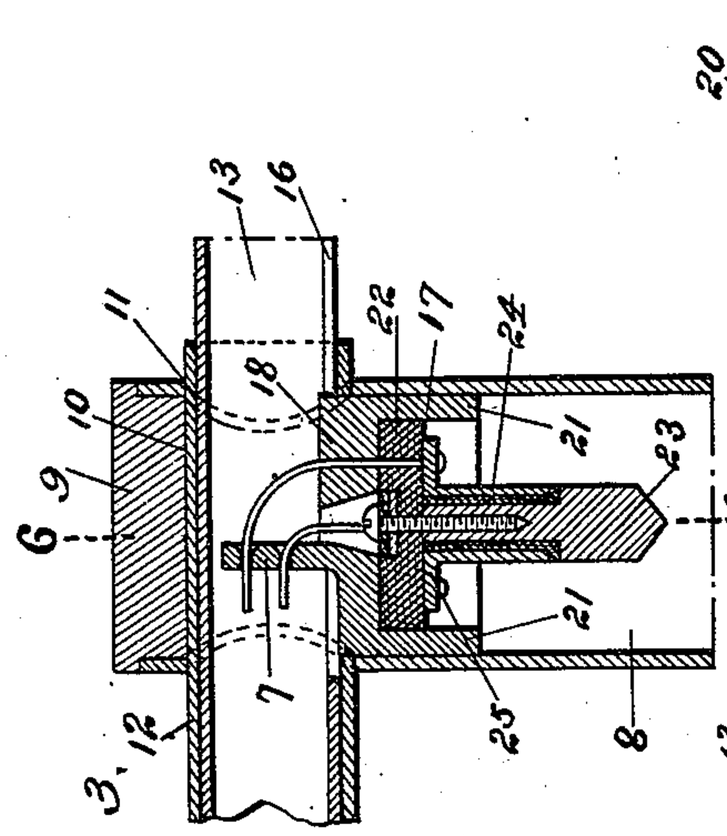

Fig. 3.

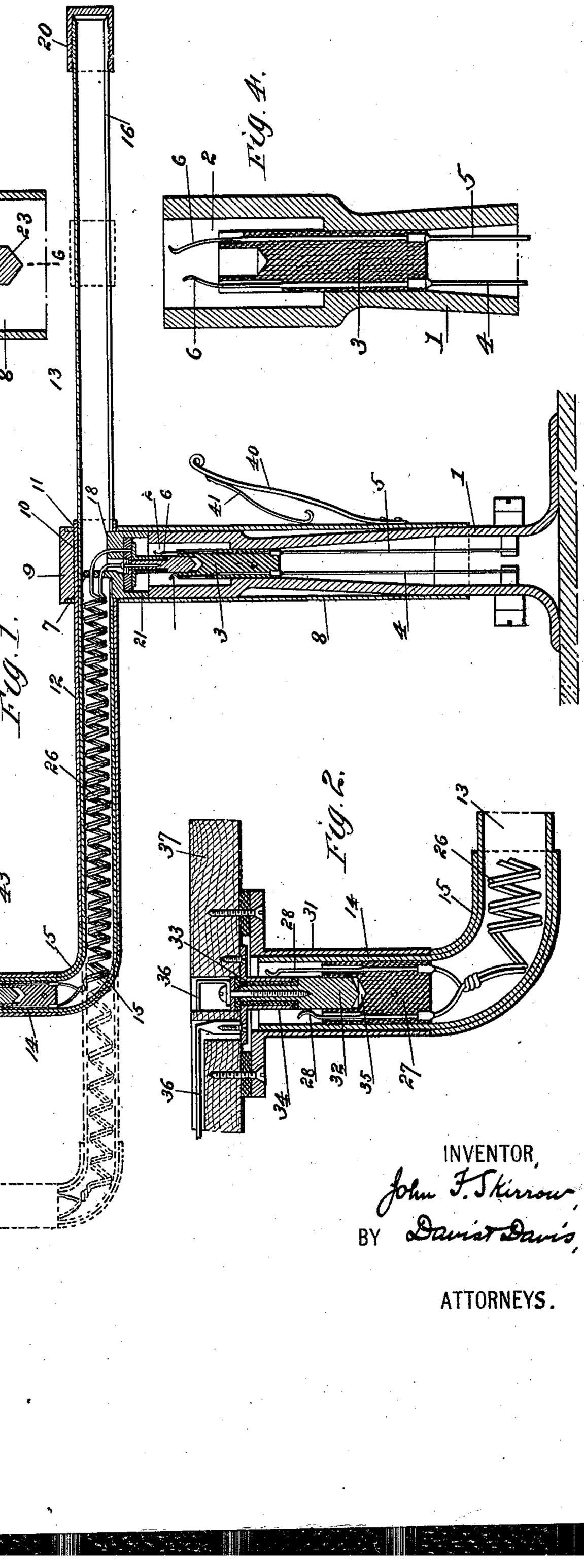

Fig. 1.

Fig. 4.

Fig. 2.

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Fig. 5.

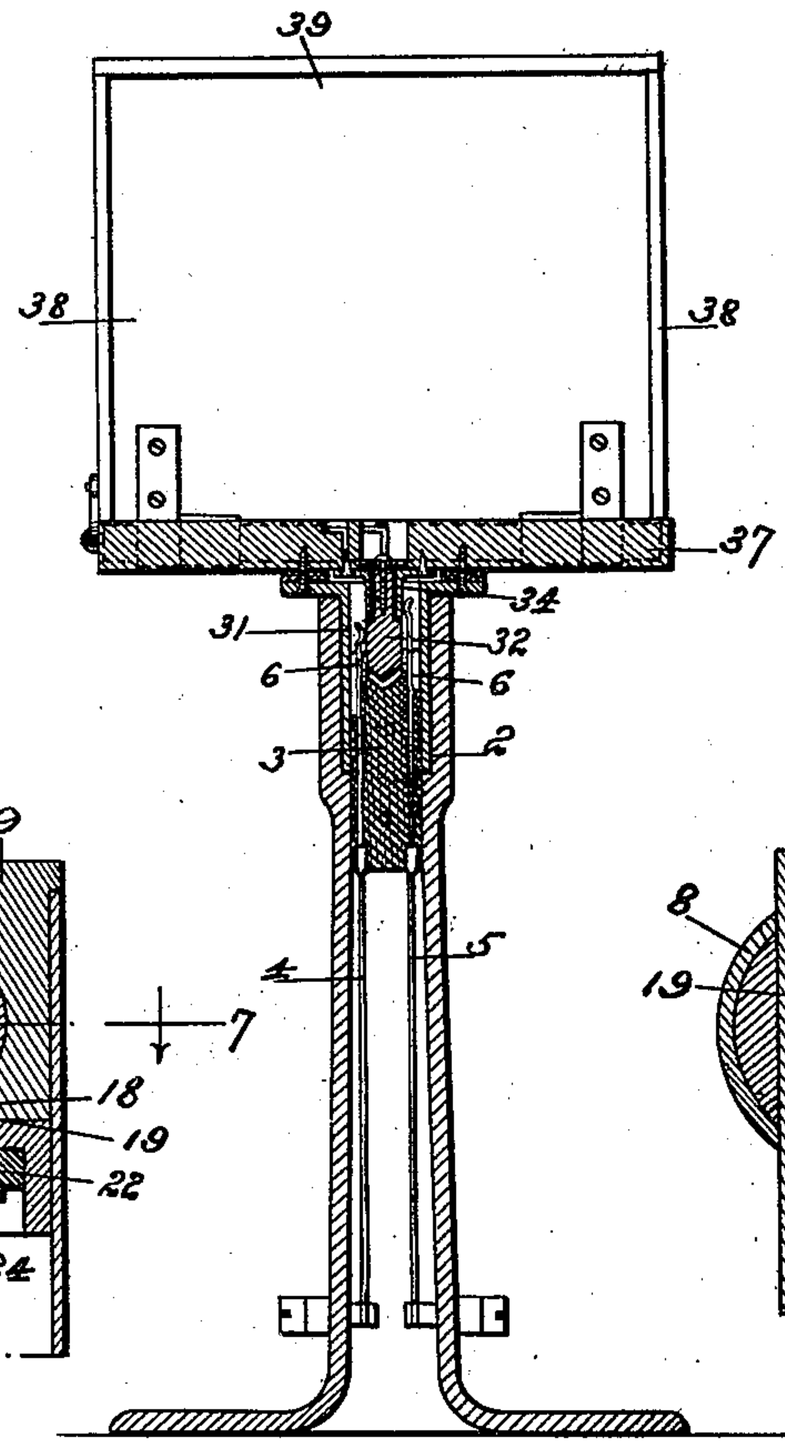


Fig. 6.

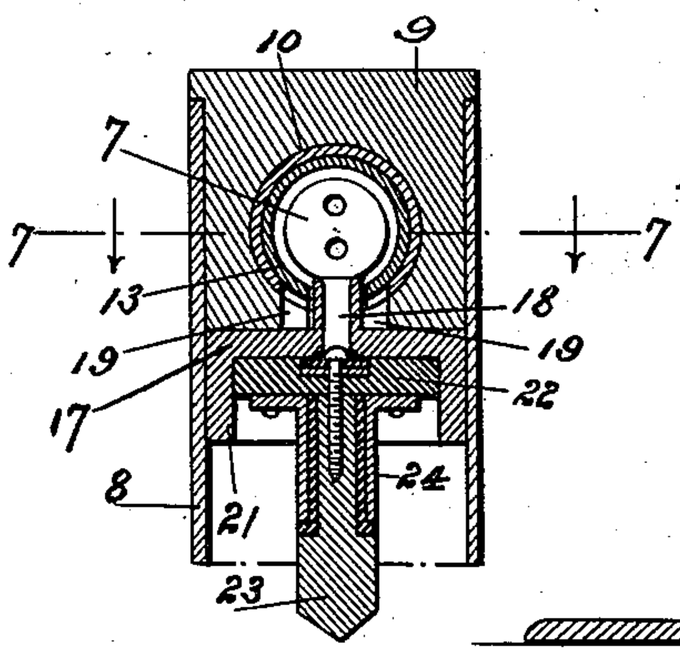


Fig. 7.

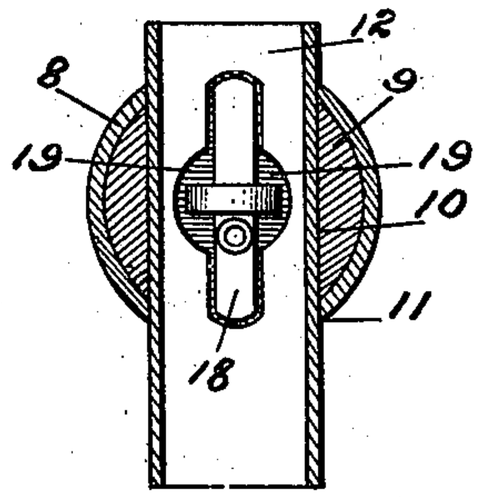


Fig. 8.

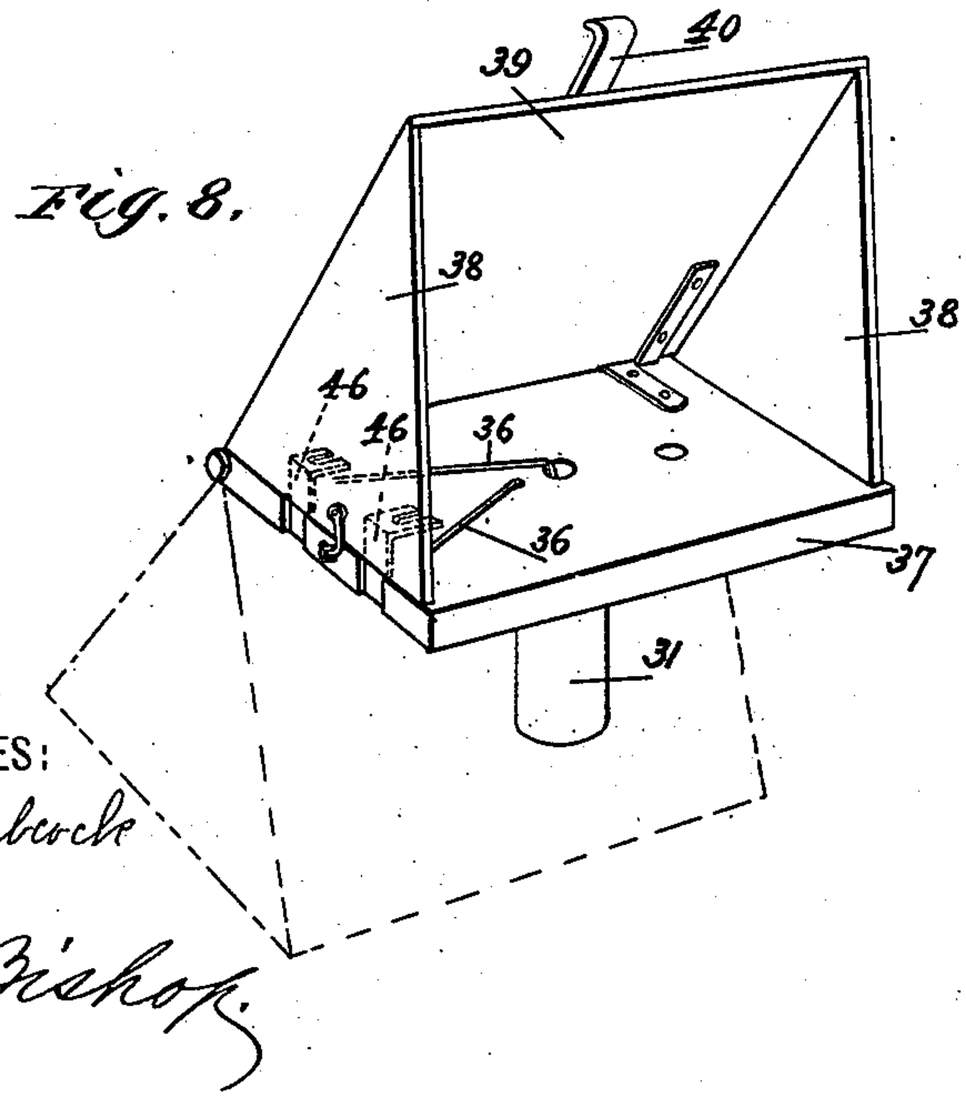
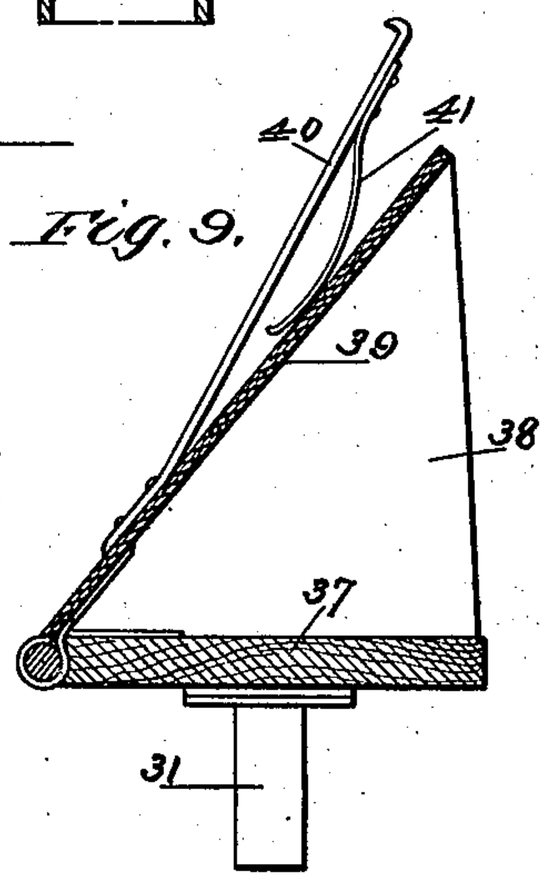


Fig. 9.



WITNESSES:
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UNITED STATES PATENT OFFICE.

JOHN F. SKIRROW, OF EAST ORANGE, NEW JERSEY.

RESONATOR.

SPECIFICATION forming part of Letters Patent No. 682,433, dated September 10, 1901.

Application filed February 15, 1901. Serial No. 47,488. (No model.)

To all whom it may concern:

Be it known that I, JOHN F. SKIRROW, a citizen of the United States, residing at East Orange, county of Essex, State of New Jersey, have invented certain new and useful Improvements in Adjustable Resonators, of which the following is a specification, reference being had therein to the accompanying drawings, in which—

Figure 1 is a vertical sectional view of the device; Fig. 2, an enlarged vertical sectional view showing the detachable connection between the sounder-box and the vertical end of the slidable bar; Fig. 3, a similar view of the top of the pillar-tube; Fig. 4, a similar view of the top of the standard; Fig. 5, a vertical sectional view showing the sounder-box mounted directly on the standard; Fig. 6, a vertical transverse sectional view of the top of the pillar-tube, taken on the line 6 6 of Fig. 3; Fig. 7, a detail horizontal sectional view on the line 7 7 of Fig. 6, the slidable bar being removed; Fig. 8, a perspective of the sounder-box, and Fig. 9 a vertical section of the sounder-box.

This invention relates to new and useful improvements in resonators; and it has for its objects to produce a resonator which may be adjusted to place the sounder-box in any desired position and to so construct the sounder-box that the sound of the signals will be reflected therefrom a short distance in one direction only.

Referring to the various parts by numerals, 1 designates a hollow standard or pillar, which is provided at its lower end with suitable supporting-feet. At its upper end this standard or support is formed with a central annular chamber 2, and extending upward into this chamber is a vertical central plug 3, of insulation, which is smaller in diameter than the chamber and through which is formed two vertical perforations to permit the wires 4 and 5 of the circuit to pass upward from inside of the standard. These wires are flattened at their upper ends above the plug 3 to form the spring-contacts 6, which are bent inward slightly, one of said contacts extending a short distance above the other. The exterior of the upper end of the standard is turned to fit the interior of the long pillar sleeve or tube 8, which extends to near the bottom of the standard, the lower end of the standard being also turned to fit the interior of the tube, and between these turned portions the standard is smaller than the tube 8, whereby the pillar-tube may be readily slid down over the standard and may be rotated thereon without undue friction. Secured in and closing the upper end of this pillar-tube is a head-block 9, which is provided with a horizontal cylindrical passage 10 coincident with the circular openings 11 in the upper end of the tube 8. Fitting in this passage is the inner end of a horizontal tubular supporting-arm 12, which projects outward therefrom a suitable distance, and within this arm is slidably mounted a tubular rod 13, one end of which is bent upward to form a vertical hollow standard or post 14. Before this tube is bent a reinforce 15 is slipped over it at the point where it is to be bent, the lower end of the reinforce being adapted to bear against the outer end of the arm 12 and limit the inward movement of the slidable rod. A long slot 16 is formed in the under side of this slidable tube, said slot extending from the unbent end of the tube inward beyond the middle thereof to form a keyway.

Secured in the pillar-tube at the base of the head-block is a key-block 17, which is formed with the vertical rib or key 18, extending across its upper face, said key extending through slots in the head-block and in the supporting-arm and fitting in the keyway 16 of the slidable rod and preventing the rotation of said rod. Formed integral with this key and extending upward therefrom transversely of the key is a circular stop-plate 7, which projects into the tubular supporting-arm 12 and into the slidable tube 13 when said tube is in position in the supporting-arm, the supporting-arm and the head-block being provided with the transverse openings 19 to permit said plate to pass into the arm 12. The keyway 16 extends to the unbent or horizontal end of the slidable arm, said end being closed by a screw-cap 20, whose inner end is adapted to contact with the inner end of the supporting-arm, and thereby limit the outward movement of the slidable arm. By removing the stop-cap 20 the slidable arm may be withdrawn entirely from the supporting-arm. The key-block is formed with a de-

pending annular flange 21, which rests on the top of the standard and supports the pillar-tube and the parts carried thereby. Secured to the bottom of the key-block within this flange is an insulation 22, and depending from this insulation is a central cylindrical contact-post 23, whose lower end is adapted to enter a central socket in the top of the plug 3, said socket forming a guide for the lower end of the contact and maintaining it in its central position. Surrounding the upper end of this post and insulated therefrom by a tube of insulation is a contact-sleeve 24, which is provided at its upper end with a flange 25, which is secured to the insulation 22. The lower end of this contact-sleeve is adapted to extend a short distance into the standard and to engage the longer of the contacts 6, while the shorter of said contacts engages the cylindrical contact-post 23.

Spirally wound within the slidable rod 13, between its upward-curved end and the stop-plate 18, is a pair of insulated wires 26, the inner ends of which pass through the stop 18, one of them being connected to the central post 23 and the other to the contact-sleeve 24. The stop-plate prevents the coil of wires being pushed over the center of the pillar-tube and becoming caught on the key or on the downward-turned ends of the wires. Secured in the vertical portion of the slidable rod 13 is a plug 27, of insulation, which is formed with two vertical perforations, through which extend the outer ends of the wires 26. The upper ends of these perforations are enlarged, and within these enlarged openings the wires are flattened, and above the plug they are bent inward and form spring-contacts 28, one of which is longer than the other and terminating below the upper end of the rod 13. Before the wires are passed upward through the perforations in the plug 27 they are twisted together to prevent the unwinding of the spiral coil. The lower ends of the perforations in the plug 27 and also in the plug 3 of the standard are enlarged slightly, and a plug of melted metal, preferably solder, is poured therein to form a shoulder on each of the wires to prevent them being drawn up through the plugs. The flattened portions of the wires will prevent their downward withdrawal.

Secured centrally to the base of the sounder-box 30 is a depending tube or sleeve 31, which is adapted to receive within it the vertical portion of the slidable rod 13, the lower end of this sleeve being adapted to rest on the upper end of the reinforce of the slidable rod 13. The exterior diameter of this sleeve is slightly smaller than the diameter of the chamber 2, formed in the standard, whereby said sleeve is adapted to be placed in said chamber and to be rotated therein.

Secured to the base 37 of the sounder-box and centrally within the sleeve is a depending cylindrical contact-post 32, which is similar to and of the same size as the contact-post carried by the key-block. Secured to the base of the sounder-box and surrounding the upper end of this contact-post and insulated therefrom by a tube 33, of insulation, is a contact-sleeve 34, which is similar to and of the same diameter as the contact-sleeve carried by the key-block. The lower end of this contact-post is adapted to fit in a socket 35, formed in the top of the plug 27, when the sleeve 31 is placed over the vertical end of the slidable rod 13, as shown in Fig. 1, and in the socket formed in the top of the plug 3 when the sleeve is placed in the chamber 2 of the standard, as shown in Fig. 5. In either of these positions the shorter contact carried by the permanent plugs engages the post, while the longer contact engages the sleeve, as clearly shown in Figs. 1 and 5. It will thus be seen that the pillar-tube and the parts carried thereby may be removed from the standard and the sounder-box placed directly thereon, its sleeve 31 fitting snugly but rotatably in the chamber 2 thereof. The post 32 and the sleeve 34 are connected to the sounder by the insulated wires 36.

The whole device is rotatable upon the standard, and the sounder-box is rotatable upon the upward-extended end of the slidable rod, said rod being slidable through the supporting-arm to enable the operator to place the sounder-box at the desired distance from him. When the sounder-box is moved away from the standard, the coil of wires 26 are drawn out, as shown in dotted lines in Fig. 1, and when the sounder-box is moved inward toward the standard this coil is condensed between the stop-plate 18 and the curved end of the slidable rod. In this way sufficient slack is obtained in the wires to permit the sounder-box to be moved away from the standard the full limit of the slidable rod, which slack when the sounder-box is in its innermost position remains nicely coiled in the slidable rod.

The sounder-box is formed of the wood base 37, the vertical sides 38, and the upward and forward inclined back piece 39. The sides and the back piece are rigidly secured together and are hinged to the base at the rear edge thereof, so that they may be swung rearward and downward, as shown in dotted lines in Fig. 8, to expose the sounder on all sides. The back piece inclines at approximately fifty degrees, as that has in practice been found the most desirable angle for reflecting the sounds from the sounder secured within the box. The sides and back piece of the sounder-box are preferably made of some non-resonant or sound-deadening material, such as hard fiber, linoleum, strawboard, or similar material.

To the exterior of the pillar-tube and to the top of the back piece are secured outward-curved rigid strips 40, and to the inner sides of these strips, near the outer ends thereof, are secured spring clamping-fingers 41, the finger which is secured to the strip carried

by the pillar-tube extending inward and bearing upon the tube and the finger secured to the strip carried by the back piece extending inward and bearing at its inner end against the back piece. These clamping-fingers are adapted to hold the message-sheets.

The sounder is removably secured in the sounder-box by means of a vertical screw 42, which extends vertically through the base of the sounder and through the base-piece of the sounder-box, its lower end being provided with a thumb-nut 43. The sounder-base is provided with the usual pins 44, which raise it above the base-piece of the sounder-box, and surrounding the screw 42 is a block 45, which is slightly narrower than the space between the base-piece of the sounding-box and the base of the sounder. This permits the screw to spring the sounder-base downward slightly until it contacts with the block 45, thereby securely clamping the sounder in place and avoiding the danger of splitting its base. Metal strips 46 are permanently secured to the base-piece 37 and are adapted to be clamped to the binding-posts of the sounder, said strips aiding in holding the sounder in place and being connected to the wires 36.

In the ordinary sounder-boxes now in use the object is to increase the strength of the signals from the sounder and to give to them a resonant quality to enable the operator to readily hear them. The result is that the sound of the signals is carried far beyond the operator who is receiving them and causes a confusion of signals where a number of sounders are in use in the same room. In the present invention the object is to deaden the sound and to concentrate it at the sounder-box to prevent it traveling beyond the ears of the operator who is receiving the signals. For this reason the back piece and the sides of the sounder-box are formed of some non-resonant material to concentrate the sound without imparting to it a resonant quality, and the sounder-box is rotatably mounted on the slidable rod, and said rod is rotatable around the standard to enable the operator to place the open front of the sounder-box close to his ear.

With a sounder-box of this construction a non-adjustable sounder and a comparatively weak current in the local circuit are employed. As the sounds do not travel beyond the operator who is receiving them, it will be readily seen that a large number of sounders may be in use at the same time and in the same room without any confusion of signals.

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

1. In a resonator, the combination of a standard, two separated contacts carried by said standard, a sounder-support removably and rotatably mounted on the standard, a pair of contacts carried by the sounder-support and adapted to engage the contacts carried by the standard, and insulated wires connected to the contacts carried by the sounder-support and adapted to be electrically connected to the sounder.

2. The combination, of a standard, two separated contacts carried thereby and insulated therefrom, a removable and rotatable part supported by the standard, a pair of depending contacts within the rotatable part and adapted to engage the contacts carried by the standard and to remain in engagement therewith during the rotation of the rotatable part, a sounder-support carried by the rotatable part, and a pair of insulated wires connected to the contacts within the rotatable part and adapted to be electrically connected to a sounder.

3. The combination, of a standard formed with a central chamber, a pair of separated contacts extending upward into said chamber one of said contacts being longer than the other, a sleeve adapted to be removably and rotatably supported by the standard, a depending contact-post supported centrally within the sleeve and adapted to engage the shorter contact carried by the standard, a contact-sleeve surrounding the contact-post and insulated therefrom and adapted to engage the longer contact carried by the standard, a sounder-support carried by the sleeve, and means for electrically connecting the contact within the sleeve to a sounder.

4. The combination, of a support, a vertical plug of insulation mounted centrally in the support and formed with a central socket in its top, a pair of separated contacts carried by said plug, one of said contacts being shorter than the other, a removable and rotatable sleeve, a depending contact-post supported centrally within the sleeve its lower end being adapted to enter the socket in the plug carried by the support and to engage the shorter contact, a contact-sleeve surrounding the contact-post and engaging the longer contact, a sounder-support carried by the sleeve, and a pair of wires connected to the contacts within the sleeve and adapted to be electrically connected to a sounder.

5. The combination, of a support, a centrally-mounted plug of insulation carried by the support, a pair of wires extending through said insulation and flattened at their upper ends to form spring-contacts and to prevent their downward removal, means to prevent said wires moving upward through the plug, a sounder-support adapted to be mounted on the support, a pair of contacts carried thereby and adapted to engage the contacts carried by the support, and a pair of wires connected to the contacts carried by the sounder-support and adapted to be electrically connected to a sounder.

6. The combination, of a standard, a pair of contacts carried thereby, a rotatable part mounted on the standard and carrying a pair of contacts adapted to engage the contacts on the standard, a rod carried by the rotata-

ble part, a sounder-box rotatably and removably mounted on said rod, a pair of wires connected to the contacts carried by the rotatable part on the standard and adapted to be electrically connected to a sounder in the sounder-box.

7. The combination, of a standard, a pair of contacts carried thereby, a rotatable part removably mounted on the standard and carrying a pair of contacts adapted to slidingly engage the contacts carried by the standard, a rod carried by the rotatable part, a sounder-box rotatably mounted on said rod, a pair of wires connected to the contacts carried by the rotatable part on the standard and adapted to be electrically connected to a sounder in the sounder-box.

8. The combination, of a standard, a pair of contacts carried thereby, a rotatable part, a pair of contacts carried thereby and adapted to engage the contacts carried by the standard, a rod carried by the rotatable part, a sounder-box rotatably mounted on one end of this bar and slidably removable therefrom, a pair of contacts carried by the bar, a pair of contacts carried by the sounder-box and adapted to slidingly engage the contacts carried by the bar, and means for electrically connecting the contacts carried by the rotatable part on the standard to the contacts carried by the end of the bar.

9. The combination, of a support, a pair of contacts carried thereby, a rotatable part removably mounted on the support and carrying a pair of contacts adapted to engage the contacts carried by the support, a slidable rod carried by the removable part, a sounder-support carried by the rod, and means adapted to electrically connect the contacts on the removable part to a sounder on the sounder-support.

10. The combination, of a support, a pair of contacts carried thereby, a rotatable part mounted on the support and carrying a pair of contacts adapted to engage the contacts carried by the support, a slidable rod carried by the rotatable part, a pair of contacts carried by said rod at one end thereof, a sounder-box rotatably and removably mounted on the end of the slidable rod and carrying a pair of contacts adapted to engage the contacts on the slidable rod, and means for electrically connecting the contact on the removable part with the contact on the end of the slidable rod.

11. The combination, of a support, a pair of contacts carried thereby, a sleeve removably and rotatably mounted on said support, a pair of contacts carried by said sleeve and adapted to engage the contacts carried by the support during the rotation of the sleeve, a horizontal rod slidably mounted in said sleeve, a sounder-box mounted on one end of the slidable rod, and means for electrically connecting the contacts carried by the sleeve to a sounder in the sounder-box.

12. The combination, of a standard, a sleeve rotatably mounted thereon, a pair of contacts carried by the standard, a pair of contacts carried by the sleeve and adapted to engage the contacts carried by the standard, a horizontal slidable rod carried by the sleeve, a rotatable sounder-box mounted on one end of said rod, and means for electrically connecting the contacts carried by the sleeve to a sounder in the sounder-box.

13. The combination, of a standard, a sleeve rotatably mounted thereon, a pair of contacts mounted on the standard, a pair of contacts supported within the sleeve and adapted to engage the contacts carried by the standard, a horizontal slidable tubular rod carried by the sleeve, a sounder-box carried by said tubular rod, and a pair of slack wires in said tubular rod, each of said wires being connected at its inner end to one of the contacts carried by the sleeve, the outer ends of said wires being adapted to be electrically connected to a sounder in the sounder-box.

14. The combination, of a standard, a rotatable sleeve mounted on said standard, a pair of contacts mounted in the standard, a pair of contacts supported within the sleeve and adapted to engage the contacts supported by the standard, a slidable tubular rod mounted in said sleeve, a sounder-box mounted on one end of said slidable rod, a pair of insulated wires coiled within the tubular rod, the inner end of each of said wires being connected to one of the contacts carried by the sleeve, the other ends of said wires being permanently secured at the outer end of the slidable rod adjacent the sounder-box, and means for electrically connecting the outer ends of said wires to a sounder in the sounder-box.

15. The combination, of a standard, a sleeve rotatably mounted on said standard, a pair of contacts within the standard, a pair of contacts carried by the sleeve and adapted to engage the contacts carried by the standard, a slidable tubular rod carried by said sleeve, a pair of wires loosely coiled within said rod, the inner end of each of said wires being connected to one of the contacts carried by the sleeve, the outer ends of said wires being secured permanently at the outer end of the tubular rod and formed into contacts, a sounder-box rotatably mounted on the end of the slidable rod, a pair of contacts carried by the sounder-box and adapted to engage the outer ends of the coiled wires, and means for electrically connecting the contacts carried by the sounder-box to a sounder within said box.

16. The combination, of a standard, a sleeve rotatably mounted on said standard, a pair of contacts carried by the standard, a pair of contacts carried by the sleeve and adapted to engage the contacts carried by the standard, a horizontal slidable tubular rod mounted in said sleeve, a pair of insulated wires loosely coiled within said tubular rod, a stop-plate carried by the rotatable sleeve and extending into the tubular rod and confining the coil between said stop-plate and one end of

the slidable rod, the inner end of each one of said wires passing through the stop-plate and being connected to one of the contacts carried by the sleeve, the outer ends of said wires being permanently secured to one end of the slidable rod, a sounder-box mounted on the slidable rod, a pair of contacts carried by said sounder-box and adapted to engage the outer ends of the coiled wires.

17. The combination, of a standard, a sleeve rotatably mounted on said standard, a pair of contacts carried by the standard, a pair of contacts within the sleeve, a slidable tubular rod carried by the rotatable sleeve, said rod being extended upward at one end and provided with a longitudinal slot in its under side, a key secured to the rotatable sleeve and extending into the slot in the slidable bar to prevent the rotation of said bar, a sounder-box mounted on the upward-extended end of the slidable bar, and means for electrically connecting the contacts carried by the sleeve to a sounder in the sounder-box.

18. The combination, of a standard, a sleeve rotatably mounted on said standard, a pair of contacts carried by the standard, a pair of contacts carried within the sleeve, a slidable tubular rod carried by the rotatable sleeve, said rod being extended upward at one end and provided with a longitudinal slot in its under side, a key secured to the rotatable sleeve and extending into the slot in the slidable bar to prevent the rotation of said bar, a sounder-box rotatably and removably mounted on the upward-extended end of the rod, a pair of contacts carried by the sounder-box and extending into the slidable rod, a pair of contacts in said rod and engaged by the contacts on the sounder-box, and means for electrically connecting the contacts in the rotatable sleeve to the contacts in the end of the slidable rod.

19. The combination, of a standard, a sleeve thereon, a pair of contacts in the standard, a pair of contacts carried by the sleeve, a horizontal tubular supporting-arm carried by the sleeve, a slidable rod in said supporting-arm and having one of its ends extended upward, a sounder-box on the upward-extended end of the slidable rod, and means for electrically connecting the contacts in the sleeve to a sounder in the sounder-box.

20. In combination, a standard formed with a central vertical chamber at its top, a pair of contacts extending into said chamber, a removable rotatable part on the standard, a pair of contacts carried by the rotatable part, a slidable rod supported by the rotatable part, one end of said rod being extended vertically, a sleeve adapted to fit over the vertical end of the slidable rod and in the chamber in the top of the standard, a pair of contacts in the vertical end of the slidable rod similar to the contacts in the standard, a pair of contacts carried within the sleeve and adapted to engage the contacts in the standard or in the slidable rod, a sounder-box carried by said sleeve, and means for electrically connecting the contacts within the sleeve to a sounder in the sounder-box.

21. The combination, of a standard formed with a central vertical chamber at its top, a pair of separated contacts extending into said chamber, a removable rotatable sleeve fitting over the standard, a depending contact-post within the sleeve, a contact-sleeve surrounding the post and insulated therefrom, a slidable bar carried by the sleeve one end of said bar being extended vertically, a pair of contacts in said vertical end of the bar, a pair of slack wires connected to the contacts in the sleeve and to the contacts in the end of the bar, a rotatable sleeve fitting the vertical end of the slidable bar and adapted to fit the chamber in the standard, a contact-post centrally mounted in this sleeve and surrounded by a contact-sleeve, said contacts being adapted to engage the contacts in the standard or those in the vertical end of the slidable bar, and a sounder-box carried by the sleeve on the end of the bar.

22. A sounder-box comprised of a base, and a sound-reflecting section hinged thereto, substantially as described.

23. In combination, a standard, a removable rotatable part fitting on top of the standard, a slidable rod supported by the rotatable part, a sounder-support adapted to slidably fit one outer end of said rod and the top of the standard when the rotatable part is removed, whereby said sounder-support may be placed on the rod or on the standard, as desired, substantially as set forth.

24. A sounder-box comprised of a base, and a sound-reflecting section hinged thereto to adapt it to be swung below the base-piece and consisting of the side pieces and the upward-inclined back piece, substantially as described.

25. In combination, a sounder-box consisting of a base and a sound-reflecting section, a sounder mounted on said base and provided with supporting-pins, a screw extending through the sounder-base and the base of the sounder-box, and a block between the base of the sounder and the base of the sounder-box, substantially as described.

In testimony whereof I hereunto affix my signature, in the presence of two witnesses, this 14th day of February, 1901.

JOHN F. SKIRROW.

Witnesses:

CHARLES SHIRLEY,

WM. R. DAVIS.