J. W. JONES.

COMBINATION HORN.

APPLICATION FILED NOV. 18, 1909.

1,121,104. Patented Dec. 15, 1914.

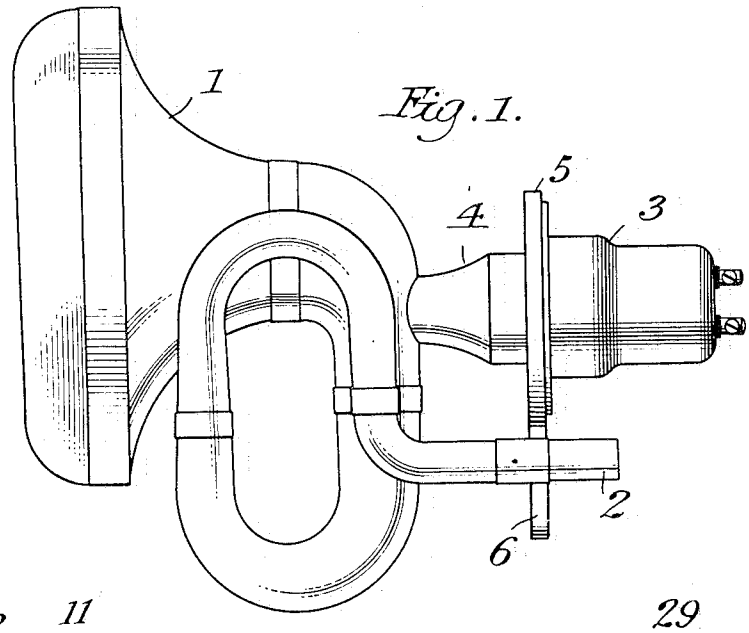

Fig. 1.

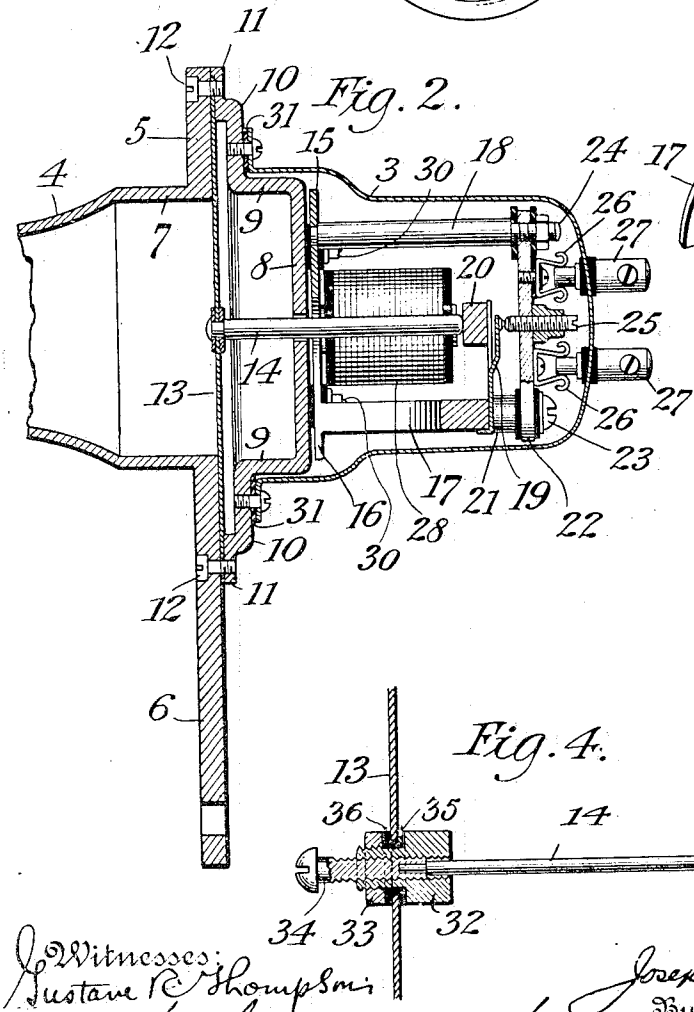

Fig. 2.

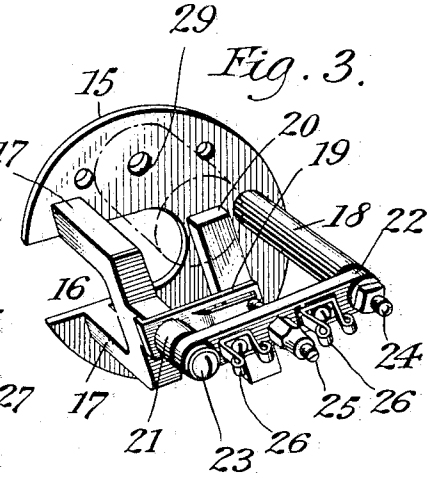

Fig. 3.

Fig. 4.

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UNITED STATES PATENT OFFICE.

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COMBINATION-HORN.

1,121,104. Specification of Letters Patent. Patented Dec. 15, 1914.

Application filed November 18, 1909. Serial No. 528,711.

To all whom it may concern:

Be it known that I, JOSEPH WILLIAM JONES, a citizen of the United States of America, and a resident of New York city, New York, have invented a new and useful Improvement in Combination-Horns, which improvement is fully set forth in the following specification.

This invention is a combination horn for automobiles or the like.

The invention comprises combining into a single unit of an electromagnetically-actuated diaphragm (operated by a push button or other switch) and a reed (actuated as by a bulb or the like), by means of which can be given either of two signals or tones besides a third signal or tone due to the simultaneous operation of the two devices.

The invention consists further in certain details of construction and arrangement to be hereinafter set forth and claimed.

My invention will be best understood by reference to the annexed drawings in which—

Figure 1 is a side view of the combination horn; Fig. 2 is a sectional view of the electromagnetically-operated portion thereof: and Figs. 3 and 4 are details.

Referring to Fig. 1, the horn proper or trumpet 1 is of any desired (flaring) shape, and at the rear extends in one or more coils to the tube 2, which is connected with the bulb or other device (not shown) for sounding the reed (not shown). 3 indicates the casing of the electromagnetically-operated diaphragm, which is connected to the trumpet 1 by the neck 4. 5 is a ring which forms part of the diaphragm-support, and extends as a plate 6, where it is provided with holes for securing the device to an automobile or the like.

Fig. 2 shows the construction of the interior of the casing 3. The ring 5 carries the forwardly-extending wall 7 which is reduced at 4 or uniting with the rear trumpet 1. 8 is a disk having a central aperture and carrying a cylindrical wall 9, with an outwardly-extending flange 10, and the offset flange 11. The offset flange 11 is located adjacent to the rear face of plate 5, to which it is secured by screws 12. Between flange 11 and plate 5 is clamped the metal diaphragm 13, there being preferably a countersink in the face of flange 11 in which the diaphragm fits. Secured to the center of the diaphragm as shown, by a rigid union is the rearwardly extending rod 14, that protrudes through the central aperture of disk 8, into a position to be hammered upon by the armature of the electro-magnet. The electro-magnet is mounted at the rear of disk 8, and is inclosed by casing 3. Preferably I employ for the electro-magnet a unitary bracket 15, which is best seen in Fig. 3. This bracket consists of the base-plate or disk cut away at one side, at 16, to a point past its center, and having integral therewith the yoked posts 17—17 that straddle space 16, and opposite thereto the single post 18. From the top of the yoke extends transversely across the bracket a spring 19 that carries the armature-bar or hammer element 20; on top of the spring and above the yoke is the sleeve 21, and resting upon top of this sleeve and of post 18 is the bridge-piece 22, which is insulated from its supports but secured thereto by the screws 23—24, screw 23 securing sleeve 21 and spring 19. Instead of screws 23—24 taking into posts 17—18, the tops of these posts may be screw-threaded and nuts turned down on them. The tip of screw 25, in the bridge, coacts with spring 19 to make and break the circuit. 26—26 are spring-clips secured at the rear of bridge 22, one of the clips being insulated therefrom, and the two arranged to engage the two terminals 27—27 of casing 3. The spools 28 (only one of them being shown) are secured in the usual manner to the face of the bracket 15, (as at the point 29 Fig. 3). When the spools have been secured and all parts properly assembled upon the bracket, the base thereof is secured to the plate 8 by screws 30, the parts being so arranged that the vibrations of the armature 20 will hammer properly upon the rear end of rod 14 to vibrate diaphragm 13. The casing 3 is dome-shaped as shown, with an offset about midway and a flange at its forward end, to engage over the electro-magnet and over the central portion of bracket 8, so as to rest upon the outward flange 10, to which it is secured by screws, a rubber gasket 31 being interposed. The terminals 27 are carried by, but insulated from, the rear of the casing, and are so located that they will engage the spring-clips 26.

The parts are hermetically sealed not only against dust but against moisture and the tendency to rust. There are no working parts to wear against each other or to require lubrication. There is no necessity for leading any circuit-wires through the casing, the inner ends of the insulated terminals 27 engaging with the clip-terminals 26. The parts are readily assembled; and if, for any reason, it be desired to get at the interior, they are as readily taken apart and put together again. The wires (not shown) leading from the terminals 27 will be in circuit with a battery or other source of power, and the circuit will be controlled by a push button or other convenient form of switch.

The rod 14 will preferably be adjustable with respect to the armature 19: one way of accomplishing this is shown in Fig. 4. The block 32 has a reduced screw-threaded portion fitting a central aperture in diaphragm 13; a nut 33 is screwed down upon this reduced portion to clamp the whole upon the diaphragm; a screw 34 is longitudinally adjustable through the block 32; and the rod 14 extends rearwardly from this screw 34. By turning screw 34 in or out the rear end of rod 14 is brought into proper relation with armature-bar 20. Preferably the rod 14 and its parts are insulated from the diaphragm 13. For this purpose, 35 is a sleeve, of fiber or the like, encircling the reduced portion of block 32, and having a flange interposed between the shoulder of the block and the adjacent face of the diaphragm; and 36 is a ring of fiber on the opposite side of the diaphragm. These insulating parts 35—36 prevent any passage of current to the diaphragm and thence to the plate 6 and the automobile.

The device as a whole occupies but little space and is located at any convenient place upon the vehicle. The bulb for the reed will be located as usual, and the push button may be located upon the stem of the bulb or at any convenient point. The operator can sound the reed for certain purposes and the diaphragm for others; and, when desired, he can sound them both simultaneously and produce the blended effect. The reed feature, when used alone, operates in the well-known manner which needs no further explanation. The actuation of the diaphragm is positive and within direct control of the operator. The blows or impacts upon the diaphragm are at a right angle thereto, and there is no tendency to strain or dislodge any of the parts.

Although I have given a detailed description of my invention, it will be understood that this is for the sake of clearness, and that my invention is not limited to the precise details set forth; also parts of my invention may be used to the exclusion of other parts, and modifications, transpositions, and reversals may be resorted to, without in any case departing from the spirit of the invention.

Having thus described my invention, I claim:

1. The combination with the diaphragm of an electromagnetically-actuated horn, of a bracket in the form of a disk cut-away from its center, three standards and a bridge-piece forming a yoke and carried thereby, an armature supported by said yoke, magnet-spools secured to said bracket on either side of said cut-away portion, terminals secured to said bridge-piece, and a rod located within said cut-away portion and extending operatively between said armature and said diaphragm.

2. In an electromagnetically-actuated horn for automobiles or the like, a bracket for the electromagnet comprising a disk having a portion cut-away from its center to its periphery, a yoke carried by said disk and straddling said cut-away portion, a post also carried by said disk opposite said yoke, an insulated bridge-piece uniting the top of said yoke and said post, a spring carried upon said yoke, an armature carried by said spring, clip-terminals upon said bridge-piece, magnet-spools and means for securing the spools to the disk.

3. A horn for automobiles or the like comprising a mouth-piece extending rearwardly into an annular flange, a centrally-apertured cup having an annular flange secured behind the first-named flange, a diaphragm secured between said flanges, a rod secured to said diaphragm and protruding rearwardly through said central aperture, a bracket secured at the rear of said cup and carrying terminals, an electromagnet mounted upon said bracket and having an armature positioned to hammer longitudinally upon the end of said rod, a hermetically-sealed casing completely inclosing said electromagnet and secured at the rear of the second-named flange, and insulated binding-posts carried by said casing and adapted to engage said terminals.

4. A diaphragm horn, having a diaphragm, a pair of opposed diaphragm clamping members, an electro-magnet mounted on one of said members, circuit closing members for said electro-magnet, terminals for said electro-magnet and said circuit closing members, and a casing inclosing said magnet, circuit closing members and terminals, and detachably secured to one of said diaphragm clamping members independently of the connection between said last-mentioned members, and having terminals for engagement with the first-mentioned terminals upon the securing of the casing in position.

5. A diaphragm horn, including a diaphragm, detachably-connected oppositely-

disposed diaphragm-clamping members, an electrically-actuated diaphragm-vibrating means, supported by one of said members, electric terminals mounted on said diaphragm-vibrating means, and a casing inclosing said diaphragm vibrating means and terminals, and detachably secured directly to one of said last-mentioned members independently of the connection between said members, and having terminals presented within said casing for engagement with said first-mentioned terminals upon securing the casing in position, and said casing terminals also extending outside of the casing so as to be adapted for connection with an external source of power.

6. A diaphragm horn, including a diaphragm, electrically-actuated diaphragm-vibrating means, a supporting member for said means and also serving for supporting the peripheral portion of said diaphragm, spring clip terminals for said diaphragm-vibrating means, and a casing detachably secured to said member independently of the connection between the latter and said diaphragm, and inclosing said means and said terminals, and having terminals for entry into engagement with said spring clips upon the securing of the casing in position.

7. A combination horn, including a trumpet mouth, a coiled tube having one end attached to the rear thereof for transmitting reed-produced sound waves to said trumpet mouth, and a second tube connected intermediate of said trumpet mouth and said coil and arranged substantially in alinement with said trumpet mouth, and containing a diaphragm and electrically operated diaphragm actuating means.

8. A signaling device, comprising a diaphragm, a diaphragm supporting member, a skeleton frame including a disk detachably secured directly to said member and having spaced members extending outwardly therefrom away from said diaphragm, a bridge piece carried by said members and insulated therefrom, magnet coils secured to said disk, a spring supported armature carried by one of said members, and terminals for said magnet coils mounted on said bridge.

9. A signaling device including a diaphragm, a pair of opposed diaphragm clamping members, one of said members having an aperture therethrough, and a trumpet connected with said aperture and the other of said members comprising a dished disk having its peripheral portion constituting its diaphragm clamping portion and having the central portion thereof spaced from and substantially parallel to said diaphragm, and having an aperture therethrough, a diaphragm actuating member projecting through said aperture and engaging with said diaphragm to actuate the latter, electrically operated power means carried by said disk and projecting from the surface thereof opposite to said diaphragm and serving to operate said diaphragm actuating means, and a casing inclosing said electrically operated power means and secured to said disk intermediate of the central and peripheral portions of the latter.

10. A diaphragm horn including a diaphragm, electrically actuated diaphragm vibrating means, a supporting member for said means and also serving to support the peripheral portion of said diaphragm, a spring clip terminal for said diaphragm vibrating means, a casing detachably secured to said member independently of the connection between the latter and said diaphragm and inclosing said means and said terminal, and a member projecting through said casing and carried by the latter and adapted to engage with said spring clip upon the securing of the casing in position and having its outer end adapted for the attachment of electric wire.

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

JOSEPH WILLIAM JONES.

Witnesses:
C. A. L. MASSIE,
RALPH L. SCOTT.