Aug. 20, 1935. L. L. VASOLD 2,011,957

AUDIBLE SIGNAL

Filed April 5, 1929

FIG. 1

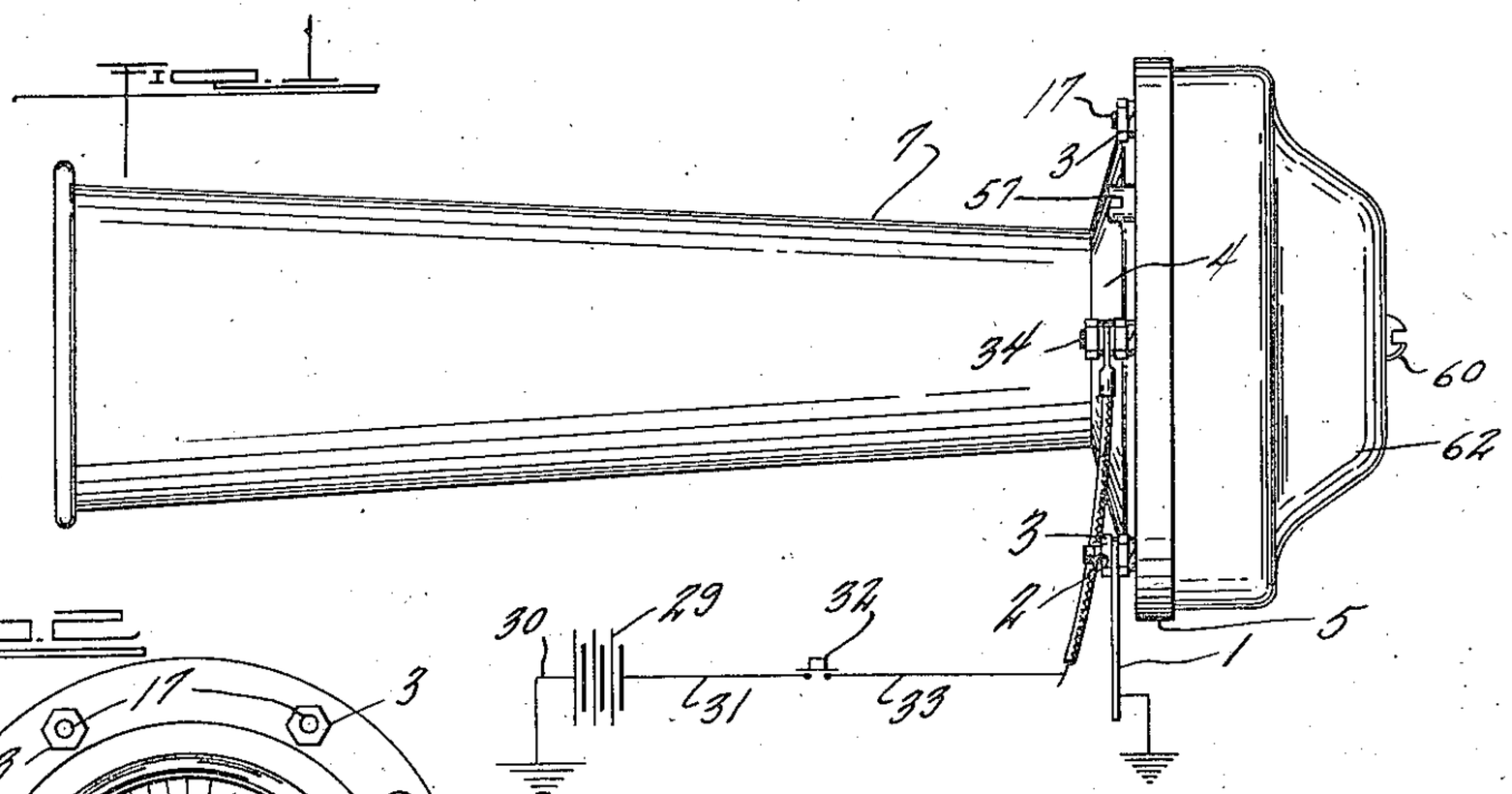



FIG. 2

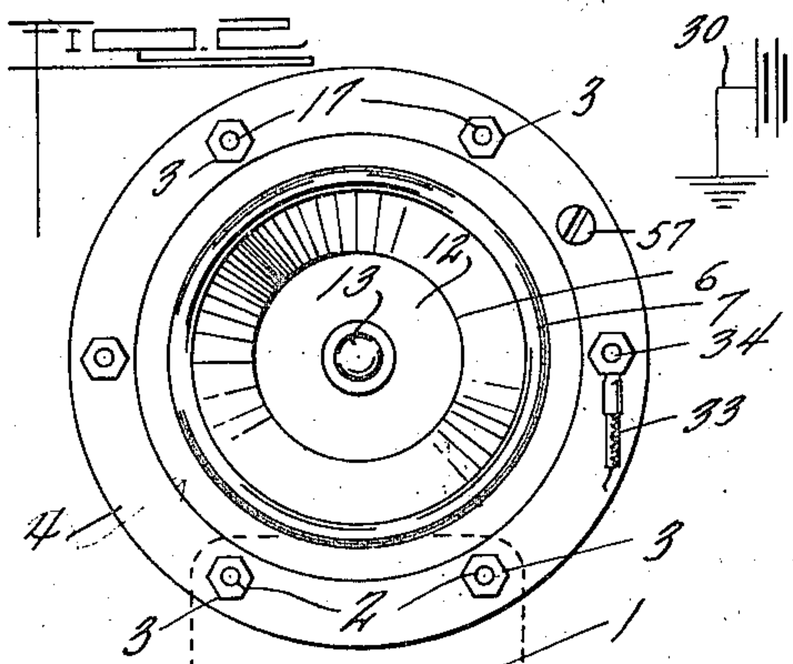



FIG. 3

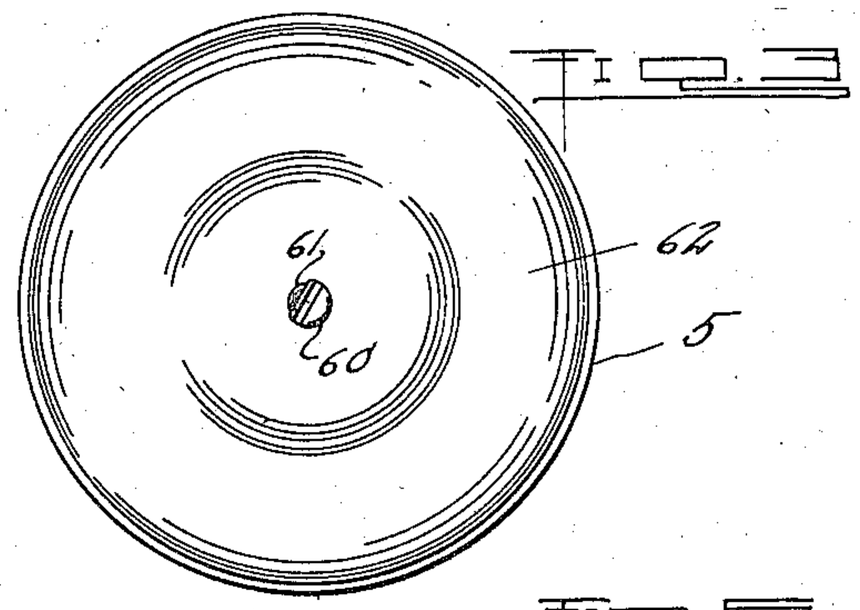



FIG. 4

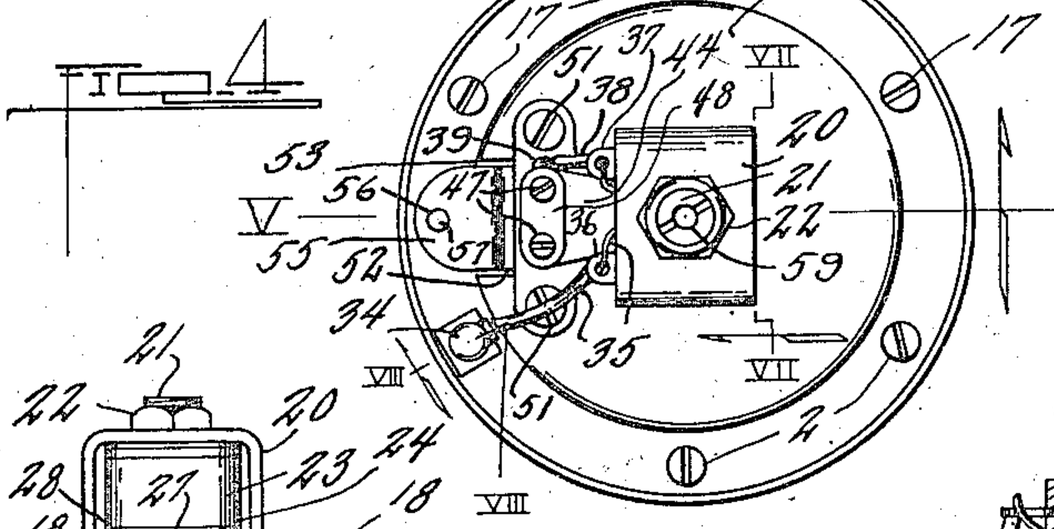



FIG. 5

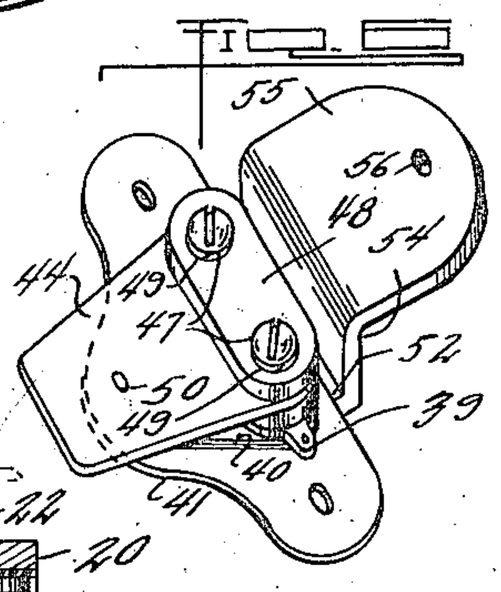



FIG. 7

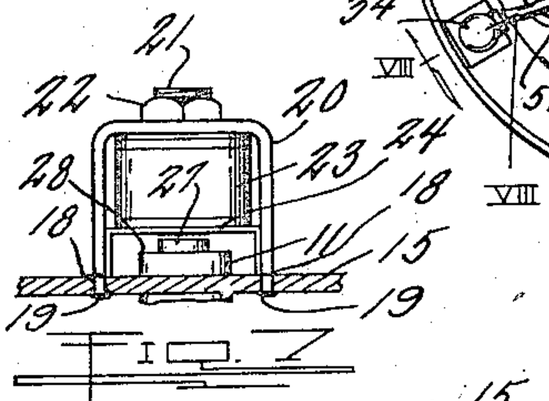



FIG. 6

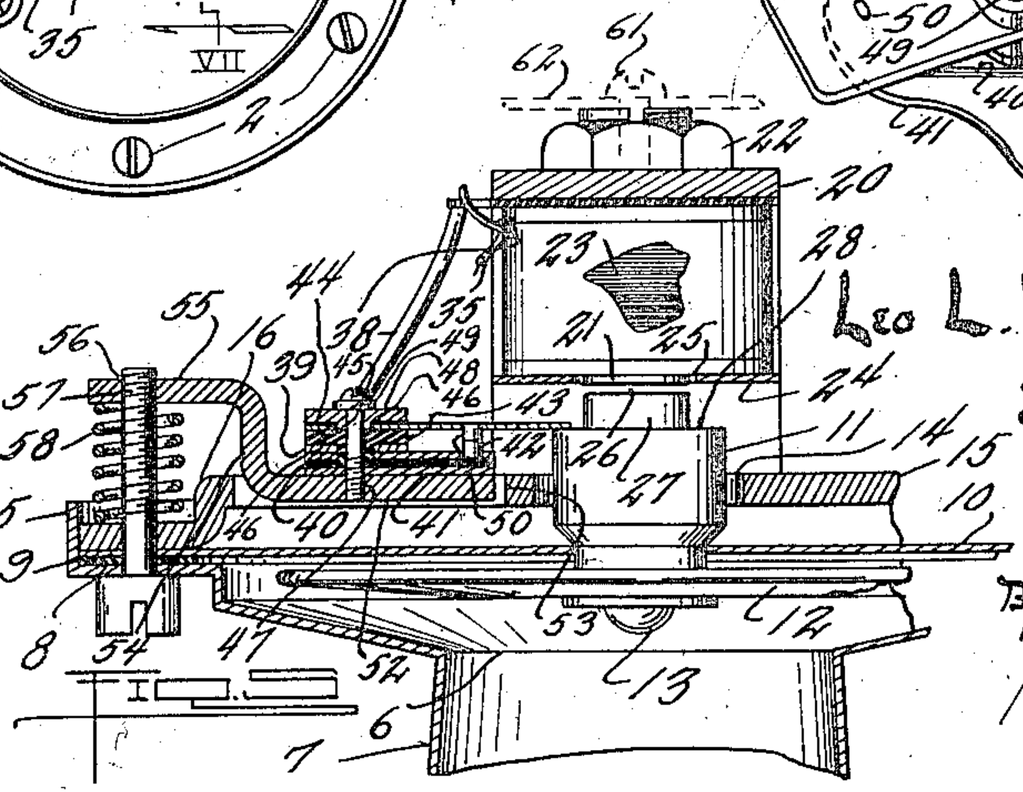
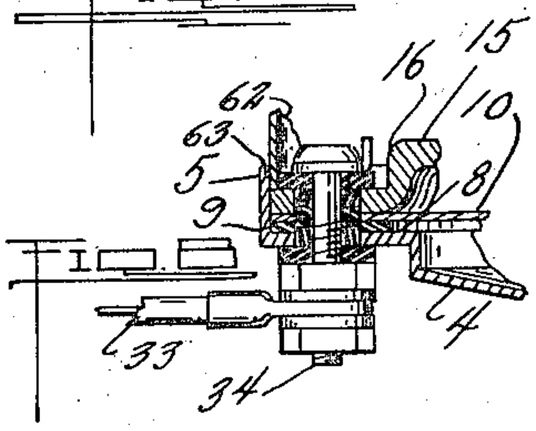



FIG. 8

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Patented Aug. 20, 1935 2,011,957

# UNITED STATES PATENT OFFICE

2,011,957

## AUDIBLE SIGNAL

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Application April 5, 1929, Serial No. 352,678

4 Claims. (Cl. 177—7)

This invention relates to audible signals.

This invention has utility when incorporated in electric horns, more especially of the magnetic type as involving features of construction and adjustment therefor.

Referring to the drawing:

Fig. 1 is a side elevation of an electric horn type of signal, embodying features of the invention;

Fig. 2 is a view of the horn of Fig. 1, looking into the amplifier portion thereof;

Fig. 3 is a view of the horn of Fig. 1, looking in the rear or shell portion thereof;

Fig. 4 is a view looking into the right of Fig. 1, with the shell removed;

Fig. 5 is a partial section on the line V—V, Fig. 4;

Fig. 6 is a detail view of the control or automatic switch adjustable unit, in perspective;

Fig. 7 is a section on the line VII—VII, Fig. 4; and

Fig. 8 is a section on the line VIII—VIII, Fig. 4.

Bracket 1, from a fixed structure when the device is used in a building such as traffic signal or when used in motor vehicles for the fixed support, is engaged by bolts 2 having nuts 3 thereon, thereby effecting assembly of this device, comprising a minor housing portion 4, marginally terminating in flange 5. This minor housing portion 4 has central opening 6 from which extends the megaphone or amplifier 7. Resting on seat 8 adjacent the frame 5 is ring packing or gasket 9 upon which rests diaphragm 10 fast with stem 11 carrying resonator 12 fast therewith by rivet 13. This rivet 13 is toward the amplifier 7, while the stem 11 extends oppositely therefrom through opening 14 in plate 15 having marginal offset portion 16 within the flange 5. In addition to the bolts 2, additional bolts 17 having nuts 3 thereon assemble the plate 15, disk or diaphragm 10 and the housing 4 into a substantial structure.

Openings 18 on opposite sides of the central opening 14 in the plate 15 have tongues 19 riveted therein for arch member 20 bridging the opening 14. Core piece 21 through this opening is adjusted by nut 22. This core piece 21 extends toward the opening 10 through coil 23, between the cross-over portion of this arch member 20 and the arch portion of minor member 24. The member 24 has opening 25 through which the core 21 extends for slight clearance 26 as to the reduced end 27 of the stem 11 as an armature, thereby providing shoulder 28.

Electric energy source battery 29 having one side to ground 30 has conductor 31 therefrom to manually controllable horn switch 32 thence by line 33 to terminal 34 insulated from the housing 4 and plate 15, as well as the disk 10 through which it extends. From this terminal 34 extends lead 35 through guide 36 to the coil 23. This coil 23 has its circuit therefrom completed by extending through guide 37 of lead 38 therefrom to terminal 39 as a plate insulated by lamina 40 from spring mounting plate 41. This plate 39 extends to have rising therefrom contact point 42. Mounted on this plate 39 is insulation plate 43 over which is metal plate 44 having embossed portion 45 from plate 48 extending to insulation 43 through opening 46 in spacing the terminal 39 from mounting bolts 47. These mounting bolts 47 above the metal plate 44 carry metal plate member 48 and top locking washer 49. This plate 44 extends to have contact point 50 opposing the contact point 42 in this automatic switch device. The plate member 44 extends therebeyond to rest upon the shoulder 28 of the armature 27, 11.

As the manual switch 32 is closed, electric circuit is completed from the battery 29 to this switch 32, thence by line 33, terminal 34, conductor 35, terminal 36, into the coil 23 and thence by terminal 37, conductor 38, plate 39, automatic switch contacts 42, 50, to the plate 48 grounding to the screws 47 and mounting plate 41 anchored with the plate 15 by bolts 51. This ground connection instead of being from the mounting plate 41 may be from this plate 44 through the armature 11, 27, in the disk 41 to the housing 4, the bolts 2, and the mounting bracket 1, as completing the ground from the ground 30 to the battery 29.

The screws or bolts 47 extending through the flexible spring or yieldable mounting plate 41 have thread assembly with bracket 52 in recess 53 of the plate 15. This bracket protruding from this recess 53 has riser portion 54 and outwardly projecting overhang 55 having threaded opening 56 therein engaged by bolt 57, about which is, between this overhang 55 and the offset portion 16 of the plate 15, a compression helical spring 58. This bolt 57 protrudes through the plate 15, the disk 10, gasket 9 and housing 4 to be exteriorly accessible. Accordingly, placing a screw driver in the head of this bolt 57 and rotating such either clockwise or counter-clockwise direction varies the compression of the spring 58 and rocks this bracket as permitted by the spring steel mounting plate 41. There is accordingly a definite control effected for the position of the overhang 44 resting on the shoulder 28. This means that in the energizing of the coil 23 by closing the switch 32, the clearance between the elements 20, 44, may be varied, controlling the breaking

of the circuit at the automatic switch 42, 50. At once this circuit is broken, the coil 23 is de-energized to allow the spring plate 43, as bearing against the shoulder 28, to determine the clearance 26, and as the switch 42, 50, is again closed, the circuit is completed and there is the resulting vibratory action from the coil 23, as a solenoid, transmitted to the disk 10 to be amplified by the megaphone 7. The vibratory action thus produces the audible signal and this external adjustment is one which may be varied to respond to the battery or energy source conditions for desired operation and there may be slight control for tone effect as well.

It is to be seen in this connection that the electric actuator and its assembly bolts are all mounted on the plate 15 and at no time require any disturbance relatively to the actuated member for the stem 11. The core 21 is herein shown as having central threaded recess 59 for bolt 60 as through opening 61 in concave shell 62 anchored by this single holding bolt 60 in this assembly in completing the housing of this device.

This shell 62 has marginal flange 63 seating within the flange 5 of the minor housing 4. It is accordingly seen that the mounting structure, not only as to the fixed or flexible assembly of the bracket 1 but as to the mechanism, is at all times a complete assembly, with access to the parts by the removal of the single bolt 60. Furthermore, it is not necessary in the normal upkeeping operation of this structure that there be any removal of the housing or dis-assembly of the housing structure for the reason that usual control adjustments can all be accurately determined by operating the bolt 57.

What is claimed and it is desired to secure by United States Letters Patent:

1. A horn embodying a diaphragm, a housing therefor, and an interrupter in the housing comprising a flexible plate member, anchoring means mounting the plate member and fixing an axis of flexure therefor parallel to the diaphragm and spaced outward from the axis of the diaphragm, a pair of contact carriers mounted on the plate member and extending therefrom different distances toward the axis of the diaphragm actuating means for the interrupter fixed with the diaphragm and engaging the carrier of greater extent toward the axis of the diaphragm from the axis of flexure to effect disturbance of cooperation between the contacts of said carriers, and plate adjusting means for the interrupter away from the axis of the diaphragm more remote than the axis of flexure, including a screw having threaded engagement with the plate, said screw having an exposed operating portion, and a compression helical spring about the screw between the housing and said plate.

2. A horn embodying a diaphragm, a housing therefor, and an interrupter in the housing comprising a flexible plate member, anchoring means mounting the plate member and fixing an axis of flexure therefor parallel to the diaphragm and spaced outward from the axis of the diaphragm, a pair of contact carriers mounted on the plate member and extending therefrom different distances toward the axis of the diaphragm, actuating means for the interrupter fixed with the diaphragm and engaging the carrier of greater extent toward the axis of the diaphragm from the axis of flexure to effect disturbance of cooperation between the contacts of said carriers, and plate adjusting means for the interrupter away from the axis of the diaphragm more remote than the axis of flexure.

3. In an audible signal device the combination of a frame, a diaphragm on one side thereof, a shell providing a housing for the diaphragm, means securing the diaphragm and shell to the frame, an actuator having actuating means for shifting the diaphragm, a control member, a flexible mounting, means for securing the mounting to the frame in providing an axis of flexure therefor parallel to the diaphragm and spaced outward from the axis of the diaphragm, means assembling the control member with said flexible mounting and providing an extension toward the actuator from the flexible mounting, an interrupter carried by said extension and operable by the actuator, said member having oppositely from the actuator an arm from the mounting, a spring normally flexing said member for shifting said arm away from the frame, a bolt through the plate and to the arm having means coacting with the spring for limiting the action of said spring, said coacting means being adjustable for varying the operation of the interrupter by the actuator, and a circuit for the actuator and interrupter.

4. A horn embodying a diaphragm, a housing therefor, and an interrupter in the housing comprising a flexible plate member, a mounting therefor determining an axis of the flexure for said plate member parallel to the diaphragm and outward from the axis of the diaphragm, a first contact carrier on the plate member and extending toward the axis of the diaphragm, a second contact carrier on the plate member and extending beyond the contact of the first contact carrier on the plate member toward the axis of the diaphragm, the contacts of said carriers being normally in engagement, an armature for operating the diaphragm, reciprocation effecting means for the armature, said armature in its reciprocation being effective to shift the second contact carrier in disturbing the relation between the contacts, and plate member adjusting means for the interrupter away from the axis of the diaphragm more remote than the axis of flexure of said plate member.

LEO L. VASOLD.