May 26, 1942. L. J. STERN 2,284,177

SIGNAL

Filed Sept. 14, 1939 2 Sheets-Sheet 1

Fig. 1

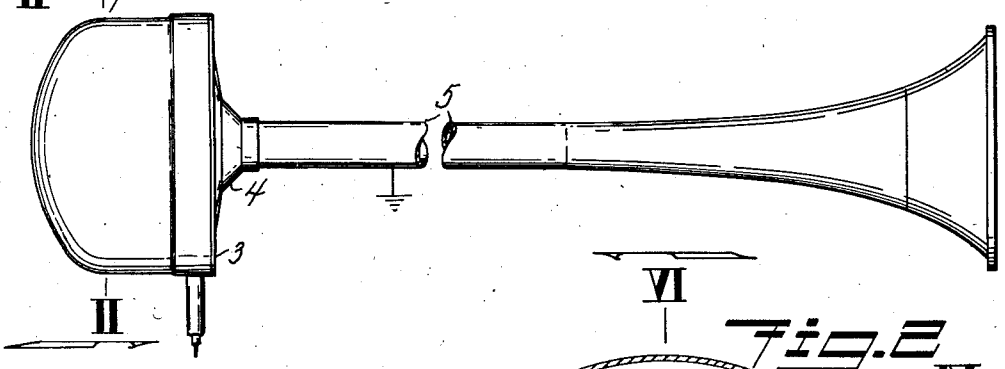
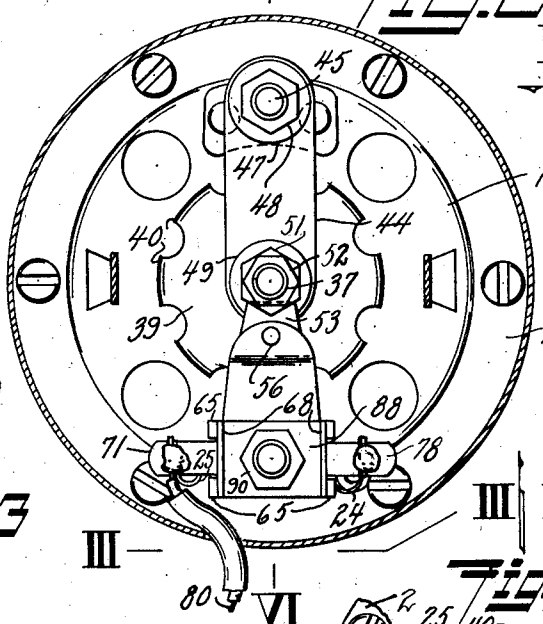


Fig. 2



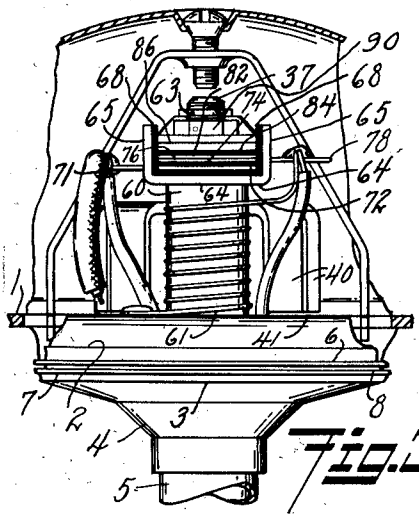
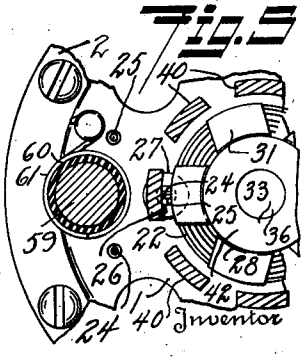


Fig. 3

III

III IV

Fig. 5



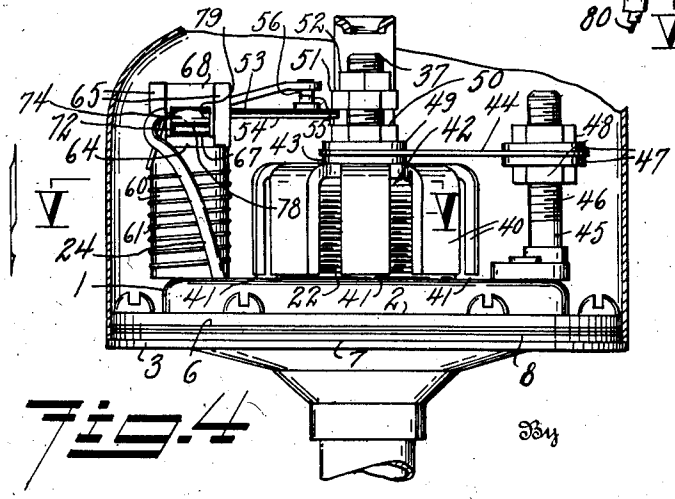


Fig. 4

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May 26, 1942. L. J. STERN 2,284,177

SIGNAL

Filed Sept. 14, 1939 2 Sheets-Sheet 2

Fig. 6

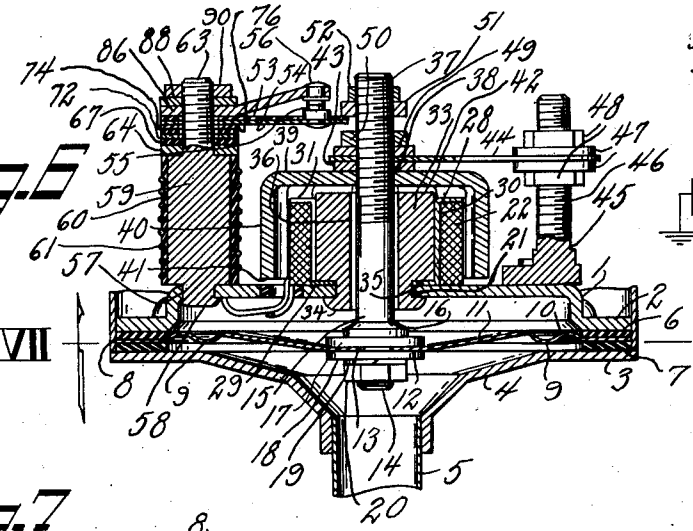


Fig. 11

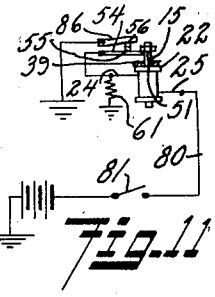


Fig. 7

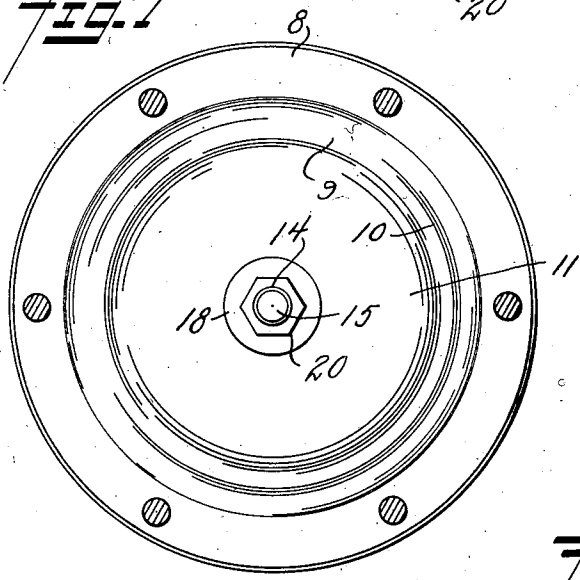


Fig. 8

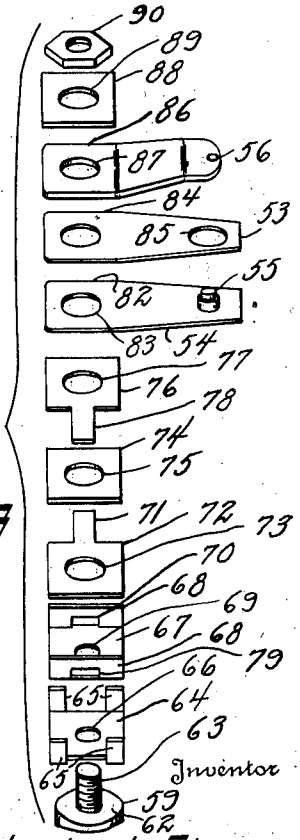


Fig. 10

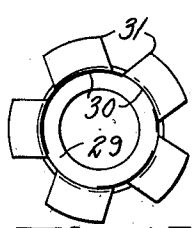
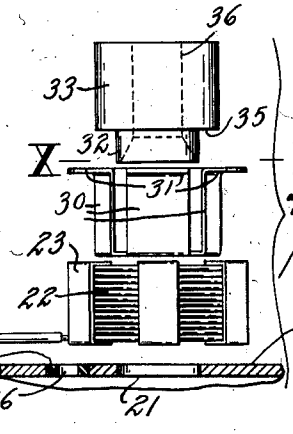


Fig. 9



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UNITED STATES PATENT OFFICE

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SIGNAL

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Application September 14, 1939, Serial No. 294,917

2 Claims. (Cl. 177—7)

This invention relates to structural advantages and manufacturing economies relative to features in audible devices.

This invention has utility when incorporated in a diaphragm type of electromagnetic horn, more particularly as adapted for motor vehicle use.

Referring to the drawings:

Fig. 1 is a side elevation, with parts broken away, of an embodiment of the invention in a diaphragm type of electric horn;

Fig. 2 is a section on the line II—II, Fig. 1, showing the actuator assembly under the hood or shell of a horn;

Fig. 3 is a view on the line III—III, Fig. 2, parts being broken away, showing the post carrying the arc quenching resistance and breaker terminals;

Fig. 4 is a view on the line IV—IV, Fig. 2, showing the breaker and electromagnet actuator in side elevation;

Fig. 5 is a section on the line V—V, Fig. 4, showing the breaker mounting stem and the coil;

Fig. 6 is a section on the line VI—VI, Fig. 2, showing the post and coil in medial section;

Fig. 7 is a section on the line VII—VII, Fig. 6, showing the plan of the diaphragm;

Fig. 8 is a distributed view of the elements providing the breaker mounting and terminals on the horn post therefor;

Fig. 9 is a distributed view of the electromagnet core and coil assembly;

Fig. 10 is a view on the line X—X, Fig. 9, showing the holder for the coil; and

Fig. 11 is a wiring diagram of the control circuit for the installation.

The structure herein embodies main frame member 1 (Fig. 6) having circular offset flange 2 forming the seat. Opposing this flange 2 is minor frame member seat 3 having inward extension 4 to projector 5. Between the seats 2, 3, packing as of non-conductor or fiber disks 6, 7, peripherally engages rim 8 inwardly from which is a compound curve or complete sine forming groove 9 and rim 10 as a hinge directly adjacent this rim. Inwardly from this hinge 9, 10, taper portion 11 extends to flat central portion 12 having centrally thereof opening 13, through which protrudes threaded portion 14 of non-magnetic stem 15 having integral shoulder 16. This integral shoulder 16 abuts washer 17 on one side of the flat portion 12, while washer 18 on the opposite side is anchored thereagainst through spring washer 19 and nut 20 on the threaded portion 14. This nut 20 thus clamps the non-magnetic stem 15 as an actuator element or connection with the diaphragm of the sound producer.

The main frame 1 centrally thereof has opening 21 (Fig. 9). In the assembly herein, coil 22 with insulation wrapping 23 may have its leads 24, 25, through opening 26 of insulation ring 27 to one side of the central opening 21. The coil 22 has central opening 28 (Fig. 6) into which may be inserted a holder having ring portion 29 (Fig. 10) with fingers 30 rising therefrom along the inside of this opening 28. These several fingers 30 have outwardly offset termini 31 engaging the outer side of the coil 22 in this assembly. The ring portion 29 is against the frame member 1 and surrounds the opening 21. Into this opening 21 may be thrust extension 32 (Fig. 9) of core 33 as a sleeve about the stem 15 (Fig. 6). As thus brought into position, anchorage is completed by riveting or upsetting the portion 32 to form overhang 34 (Fig. 6) against the member 1, thereby opposing shoulder 35 in clamping this ring 29 and thereby the coil 22 into assembly with the frame as well as simultaneously completing the magnetic circuit from this core 33 with the frame 1.

This sleeve 33 has central opening 36 with clearance as to the non-magnetic stem 15. This non-magnetic stem 15, say of brass, may have remote from its threaded portion 14 threaded portion 37 with which may engage a cup-shaped armature having central threaded opening 38 in its disk portion 39 with rim portion 40 therefrom as a series of fingers having termini 41. In the deenergized condition of coil 22, these termini 41 provide air gap clearance between the armature and the member 1. Similarly in this condition of the coil, there is air gap clearance between the inner side of armature disk 39 and terminus 42 of the core. There is thus provided an armature serving as a protective shield for the winding, the fingers of the shield permitting heat dissipation or ventilation about or from such winding. Additionally, this threaded portion 37 carries washer 43 against the outer side of the cup of the armature as a spacer for spring strap 44 about this portion 37 and extending to post 45 anchored with the frame 1 having threaded portion 46 with washers 47 and nuts 48 for adjustably locating and clamping this spring 44 in position for locating the armature cup at the desired main position or air gap as to the electromagnet circuit. This position for the spring 44 is adjusted at the post 45 and has supplemental adjustment at the threaded portion

37 through the washer 49 as locked by nut 50 into clamping position for this spring 44 as to the armature disk portion 39. Additionally on this threaded portion 37 is ledge-providing nut 51 with lock nut 52 therefor. As the coil 22 is energized to attract the armature the stem 15 may flex the diaphragm 11 as to its hinge 9, 10, and thus cause the ledge 51 to act on insulation 53 held by spring conductor arm 54 and thereby space terminal 55 from terminal 56 in this breaker or switch.

Remote from the anchorage post 45, this member 1 has opening 57 to which may be upset riveted portion 58 of post 59. This post 59 is wrapped by insulation, say asbestos cylinder 60 to carry resistance 61 as a by-pass for arc quenching in the operation of the breaker 55, 56. This post 59 at the terminus of this resistance has shoulder 62 from which extends stem 63. Mounted against this shoulder 62 on this stem 63 is plate 64 (Fig. 8) having upstanding fingers 65 in forming a rectangular channel with opening 66 anchoring such channel with the post as the threaded portion 63 extends therethrough. Into this channel of metal as a rigid shell, there may be inserted fiber plate 67 having arms 68 to be inside the fingers 65 and thus provide an insulation channel with opening 69 as a way for the threaded portion 63. One arm 68 has opening 70 adjacent the portion 67 through which tongue 71 of conductor rectangle 72 may project with its opening 73 clear of the stem 63. Insulation rectangle or plate 74 with opening 75 spaces from this conductor plate 72 conductor plate 76 having opening 77 clear of the stem 63 and with its tongue 78 projecting through opening 79 in the insulation channel 67, 68.

Conductor finger 71 as thus protruding provides connection or terminal for line 80 (Fig. 11) from horn control switch 81, say adjacent the steering wheel of the vehicle. From this terminal 71 as connected to this line 80 there is connection to line 25 for the coil 22. Opposite conductor line 24 of the coil 22 extends to terminal 78. Mounted on this conductor plate 76 for electrical conductivity therefrom is the spring switch arm 54 to the breaker 55, 56. There is not conductivity from this arm 54 to the ledge 51 for the reason that this ledge 51 strikes the insulation strip 53 mounted on this arm 54. This spring plate 54 has rectangular portion 82 holding its opening 83 clear of the threaded portions 63. Rectangular portion 84 of the insulation plate 53 positions such effectively, and opening 85 therethrough provides clearance for the terminal 55. The terminal 56 has rectangular portion 86 registering between the arms 68 of the insulation plate 67 with these several terminal elements as assembled therein for the stem 63 to pass through opening 87 therein. This set-up has its anchorage completed by plate 88 within the fingers 65 of the channel 64, 65, and opening 89 about the stem 63. In completing this assembly, nut 90 on the stem 63 is effective for clamping this assembly in set-up position.

The parts herein are in a simplified series in the various elements of assembly and as such series is grouped there is a rigid substantial set-up. This is one functioning effectively for continued operation in the hinging of the diaphragm and its assembly with its actuator stem, in this simplified and rigid mounting of the core for assembling the coil in a magnetic circuit therefor, in the protective armature for the coil, in the arc quenching resistance across the line for the breaker, and the assembly for the series of elements in the breaker terminal set-up.

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

1. An article of manufacture embodying a post adapted to be mounted in the frame member of a signal device, said post having a shoulder with a less diameter threaded stem therefrom, a series of parts assembled on said threaded stem from said shoulder including a holding channel, a pair of terminals, a pair of breaker elements, a nut on the stem to maintain the assembly, and insulation spacing the channel from the adjacent terminal, insulation between the terminals, insulation between the breaker elements, and insulation between the nut and the adjacent breaker element.

2. An article of manufacture embodying a post adapted to be mounted in the frame member of a signal device, said post having a shoulder with a less diameter threaded stem therefrom, a series of parts assembled on said threaded stem from said shoulder including a holding channel, a pair of terminals, a pair of breaker elements, a nut on the stem to maintain the assembly, and insulation spacing the channel from the adjacent terminal, insulation between the terminals, insulation between the breaker elements, and insulation between the nut and the adjacent breaker element; and about the post on the side of the shoulder away from the threaded stem a winding connected between said pair of terminals.

LEWIS J. STERN.