Oct. 26, 1954 SHITETSU KAMIMORI 2,692,913

ELECTRIC MEGAPHONE

Filed July 13, 1951

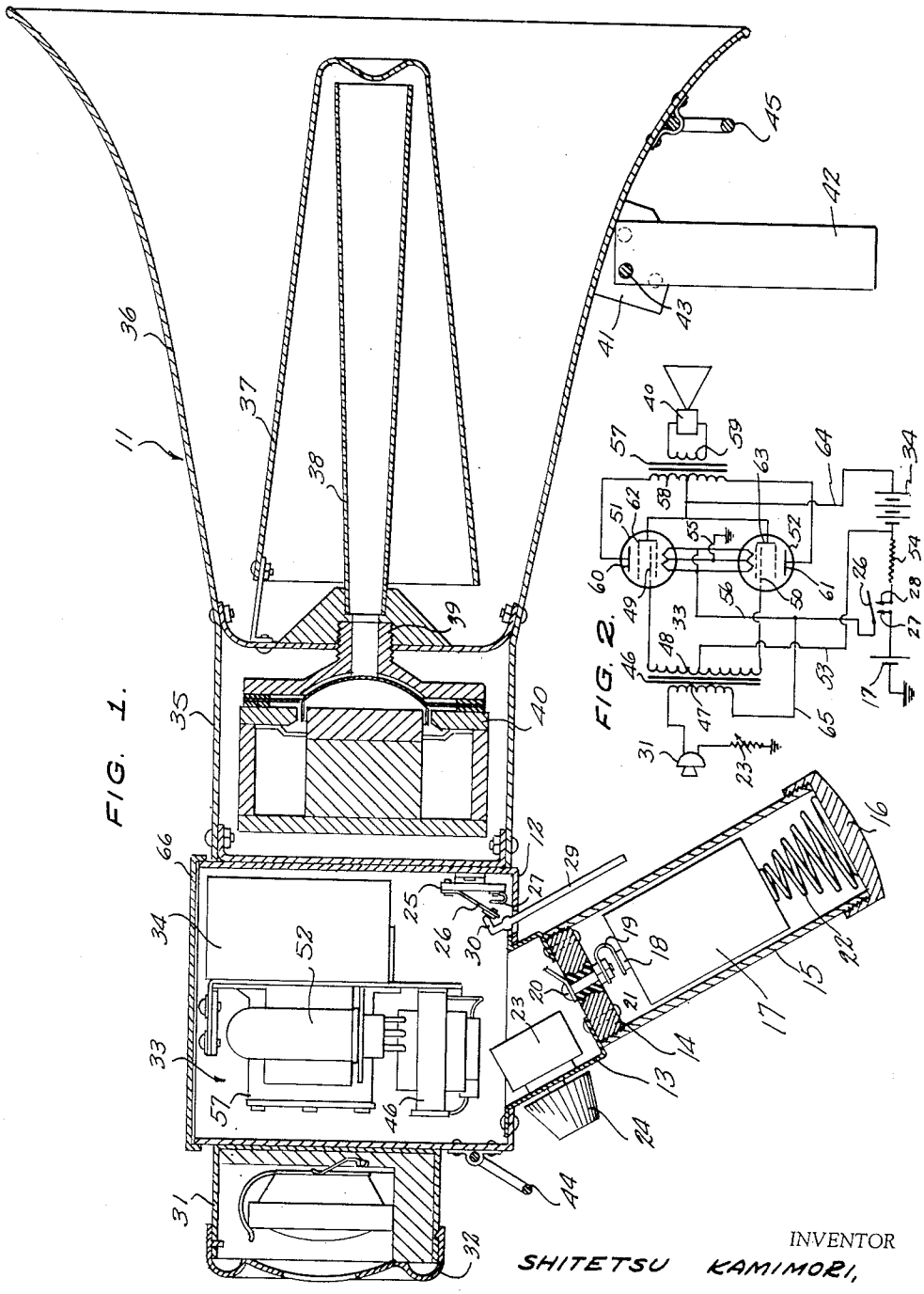


FIG. 1.

FIG. 2.

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Patented Oct. 26, 1954

2,692,913

UNITED STATES PATENT OFFICE

2,692,913

ELECTRIC MEGAPHONE

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Application July 13, 1951, Serial No. 236,498

1 Claim. (Cl. 179—1)

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This invention relates to megaphones, and more particularly to an electric megaphone.

A main object of the invention is to provide a novel and improved portable public address device similar to a megaphone, said device providing a controlled amount of amplification of the user's voice and being simple in construction, easy to handle, and light in weight.

A further object of the invention is to provide an improved electric megaphone device incorporating its own amplifier and power supply, said device involving relatively inexpensive components, being rugged in construction, being compact in size and being arranged so that the volume of sound output and the energization of the device can be controlled by one of the user's hands which at the same time supports the rear portion of the megaphone while his other hand may be employed to balance or to support the forward portion of the megaphone.

Further objects and advantages of the invention will become apparent from the following description and claim, and from the accompanying drawings, wherein:

Figure 1 is a vertical, longitudinal, cross-sectional view taken through an improved electric megaphone constructed in accordance with the present invention;

Figure 2 is a schematic wiring diagram of the electric megaphone of Figure 1.

Referring to the drawings, the improved megaphone is designated generally at 11. The megaphone 11 comprises a generally rectangular housing 12 of any suitable rigid material, such as sheet metal, said housing having secured to its lower portion the downwardly and forwardly projecting, hollow casing 13 which is provided with the threaded boss 14 on its bottom wall. Threadedly engaged with the boss 14 is the tubular, hollow handle 15, and threadedly engaged on the end of the handle is the cap 16. As shown in Figure 1, a flashlight cell 17 is contained in the handle 15, the center contact 18 of the cell engaging a contact spring 19 secured to a terminal 20 rigidly mounted in the center portion of the boss 14 and insulated from the boss by a suitable insulating bushing 21. The bottom of the flashlight cell 17 is engaged by a coil spring 22 positioned between the cell and the cap 16, as shown in Figure 1.

Designated at 23 is a rheostat which is mounted in the rear wall of the casing 13. Secured on the shaft of the rheostat externally adjacent the rear wall of said casing 13 is a control knob 24. Secured to the lower portion of the forward wall of the housing 12 is a control switch 25 comprising a movable armature 26 and a pair of stationary contacts 27 and 28. The armature 26 is normally out of contact with the elements 27 and 28. Designated at 29 is a lever

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pivoted to the casing 13 and depending from the casing, as shown in Figure 1. The lever 29 extends adjacent the forward wall surfaces of casing 13 and handle 15, the upper end of the lever 29 being formed with a projection 30 arranged to engage the armature 26 responsive to clockwise rotation of the lever, as viewed in Figure 1, and to move said armature 26 into simultaneous contact with the stationary contact elements 27 and 28. It will be apparent from Figure 1 that when the handle 17 is grasped by the user's hand, the volume control knob 24 may be manipulated by the user's thumb while the lever 29 may be rotated by one of the user's fingers while substantially maintaining grip on the handle 15.

Secured to the rear wall of the housing 12 is a conventional microphone 31 which is provided with the usual centrally apertured cover 32 through which sound input energy may be directed to the active portion of the microphone. Mounted inside the housing 12 is an amplifier 33 of conventional construction whose plate circuits are energized by a battery 34 also mounted in the housing 12 adjacent the amplifier 33. The filament circuits of the amplifier 33 are energized by the flashlight cell 17, as will be presently described.

Secured to the forward wall of the housing 12 is a sound-reproducing unit 35 which is generally conventional in construction and which comprises a flaring horn 36 in which are secured the respective concentric baffle units 37 and 38, the inner baffle unit 38 being connected to and communicating with the sound output conduit 39 of a conventional electromagnetic sound reproducer 40, preferably of the permanent magnet type. Depending from the bottom surface of the horn 36 is a lug 41 to which is pivotally secured the handle 42, the pivotal connection being shown at 43 and being located so that the handle 42 may be rotated from a position adjacent the surface of the horn to a position extending substantially at right angles to the axis of said horn, as shown in Figure 1, the forward top corner of the handle 42 abutting the horn to limit counterclockwise rotation of said handle beyond the position thereof shown in Figure 1.

Secured to the lower rear portion of the housing 12 is a first ring 44, and similarly secured to the forward portion of the horn 36 is a second ring 45, said rings being employed for connection to the ends of a suitable shoulder strap, not shown.

Referring now to Figure 2, it will be seen that the amplifier 33 may comprise an input transformer 46, the microphone 31 and the volume control 23 being connected in series with the primary winding 47 of said transformer. The opposite terminals of the secondary 48 of the

transformer are connected to respective control grids 49 and 50 of amplifier tubes 51 and 52. The center tap of the secondary 48 of the transformer is connected by a wire 53 to the negative terminal of the battery 34. Connected between the switch terminal 28 and said negative terminal is a grid resistor 54. The flashlight cell 17 is connected between the switch terminal 27 and ground, as shown. The filaments of the tubes 51 and 52 are wired in parallel, said filaments being of the center tap type, the center tap of the filaments being grounded by a wire 55. The outer terminals of the filaments are connected by a wire 56 to the switch armature 26. Designated at 57 is an output transformer having a primary 58 and a secondary 59. The respective plates 60 and 61 of tubes 51 and 52 are connected to the respective end terminals of the primary 58. The center tap of the primary 58 is connected to the respective screen elements 62 and 63 of the tubes 51 and 52, said center tap being connected by a wire 64 to the positive terminal of the battery 34, as shown. The electromagnetic sound-reproducing member 40 is connected to the terminals of the secondary of output transformer 57.

It will be readily apparent that the circuit illustrated in Figure 2 is a conventional push-pull amplifier circuit, and that the circuit is normally deenergized, inasmuch as the armature 26 is normally out of contact with the contact elements 27 and 28, as shown in Figure 2. When the armature 26 is depressed to engage the contacts 27 and 28, the filaments of the tubes 51 and 52 are energized from the battery 17 through contact 27, armature 26, wire 56, and said filaments, and at the same time the plate-cathode circuits of the tubes are completed from the negative terminal of battery 34 through resistor 54, contact 28, armature 26, wire 56 and the filaments of the tubes 51 and 52. Therefore, when sound energy impinges on the active element of the microphone 31, said sound energy will induce voltages in the primary circuit of the transformer 46, inasmuch as the primary circuit has direct current furnished thereto by the battery 17 through contact 27, armature 26, wire 56, and a wire 65 connecting wire 56 to the terminal of primary 47 opposite to that to which the microphone 31 is connected, as shown in Figure 2. The sound energy acts on the microphone to produce fluctuations of the current in the primary of the transformer 46, said fluctuations being inductively transmitted to the secondary 48 and thence to the amplifier tubes 51 and 52 by input grids 49 and 50 in the well known manner. The output signals of the amplifier tubes 51 and 52 are impressed on the primary 58 of the output transformer 57 and thence delivered by the secondary winding of said transformer to the electromagnetic sound reproducer 40. The gain of the system may be regulated by adjusting the volume control 23, namely, by regulating the amount of current in the primary circuit of the input transformer 46.

In using the device, the operator grips the handle 17 with one hand and supports the forward portion of the megaphone by holding the handle 42 with his other hand. To energize the megaphone, the operator engages the lever 29 with a finger of said hand and rotates said lever clockwise, as viewed in Figure 1. At the same time, the gain of the system may be regulated by rotating the knob 24 with the thumb of the hand which at the same time grips the handle 17. When the lever 29 is released, the armature 26 of switch 25 returns to its open position, since said armature is spring biased in a conventional manner to its open position. Therefore, upon relaxation of pressure on the lever 29, the filament and plate-cathode circuits of the amplifier tubes 51 and 52 are opened, completely deenergizing the megaphone.

The amplifier tubes 51 and 52 may be of any suitable battery-operated type, such as "3S4" tubes, the flashlight cell 17 being of the ordinary type, and the plate battery 34 being a conventional 67½-volt, small dry battery, such as is commonly employed in portable radio receivers.

The top of the housing 12 comprises a removable cover 66 which may be normally secured in overlying relationship to the housing by any suitable detachable fastening means, and which may be readily removed to provide access to the interior of the casing 12 for replacement of tubes or batteries, or for other required repairs.

While a specific embodiment of an improved electric megaphone has been disclosed in the foregoing description, it will be understood that various modifications within the spirit of the invention may occur to those skilled in the art. Therefore, it is intended that no limitations be placed on the invention except as defined by the scope of the appended claim.

What is claimed is:

In a megaphone, a housing, a flaring horn secured to one end of said housing, a microphone secured to the other end of said housing, a sound reproducer mounted in said housing and communicating with said horn, an amplifier in said housing, means connecting the output circuit of said amplifier to said sound reproducer, means connecting said microphone to the input circuit of said amplifier, a depending substantially straight hollow handle secured to the bottom of said housing between the microphone and the horn, a battery in said handle, contact means in said handle engaging the terminals of the battery, a switch in the lower forward portion of the housing, said switch including a stationary contact element and a movable contact element, an arm pivoted to the bottom portion of said housing and being engageable with said movable contact element to close said switch responsive to rotation of said arm, said arm being provided with an actuating element for rotating the arm depending from the housing and disposed forwardly adjacent the upper portion of said handle, circuit means connecting the battery to said amplifier and including said switch, a volume control mounted on the upper portion of the rear side of said handle substantially opposite said actuating element, and means controllingly connecting said volume control to said amplifier, whereby an operator may grip the handle with one hand, operate the actuating element with one finger of said hand, and simultaneously actuate the volume control with the thumb of said hand.

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