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[54] **BODY-ATTACHED SWITCH MEANS AND HOLDER FOR A MICROPHONE**
3 Claims, 5 Drawing Figs.

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[56]

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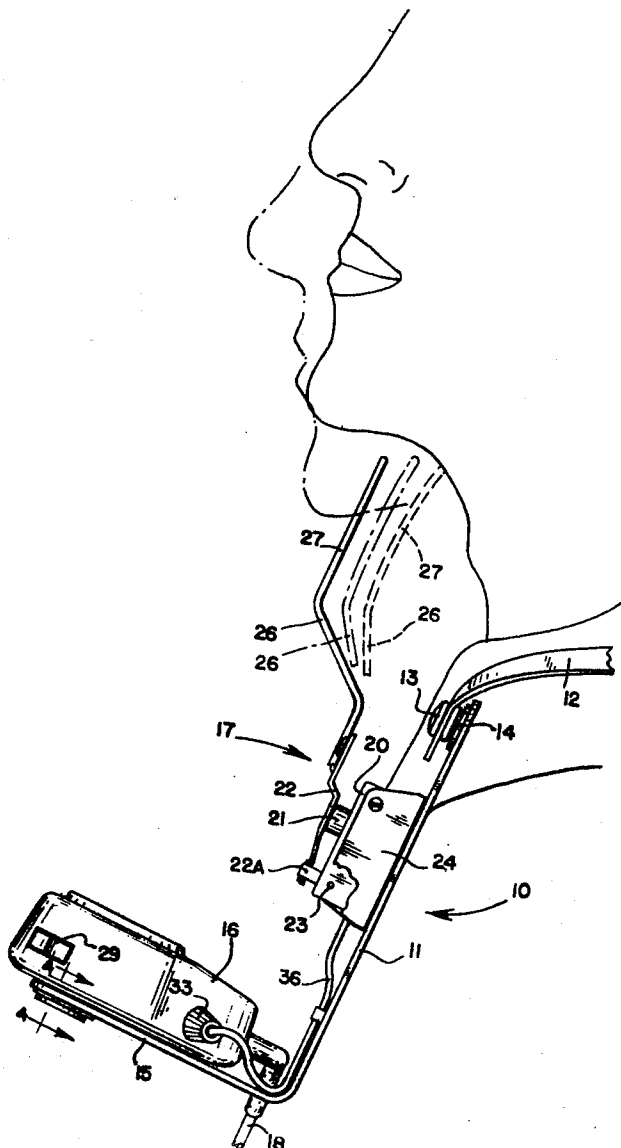
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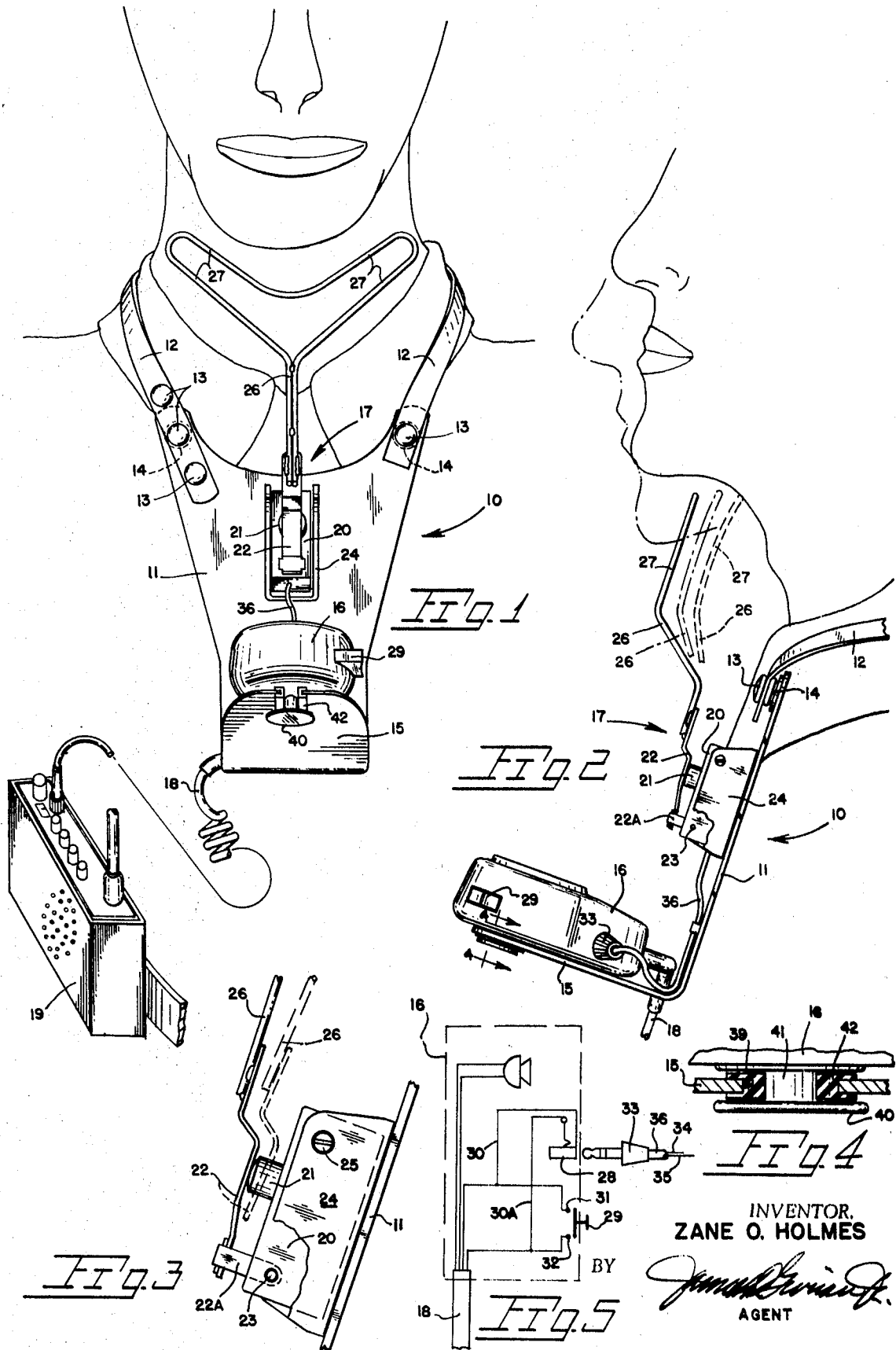
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ABSTRACT: Presently disclosed is a microphone mounted on a support which is suspended from the user's neck. An on-off switch for the microphone carries a switch actuating member terminating in proximity of the user's head to permit head movement to close the microphone control switch.





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AGENT

BODY-ATTACHED SWITCH MEANS AND HOLDER FOR A MICROPHONE

BACKGROUND OF THE INVENTION

The present invention relates generally to communication systems and more particularly to portable radio equipment carried on the person.

The use of portable two-way radio equipment has become common place. Miniaturization of radio components along with increased durability now make practical the portable use of two-way (transmit and receive) radios, in many occupations. Such radios are commonly referred to as walkie talkies. Such occupations include for example police work, construction and logging industries, production line supervisors and others too numerous to mention.

Recently it has been found highly practical to provide personal two-way radios to train crew members particularly brakemen who must visually check and report on the status of railroad cars while under way this requiring the hazardous task of moving from car to car.

An objectionable feature to radio use in the past by brakemen has been the fact that the crew member, while checking the cars under way, in order to transmit must use one hand for operation of the radio's microphone, the radio unit itself being strapped to the person's body. These microphones are commonly of the push-to-talk type and are known as remote microphones (not integral part of radio unit) being in circuit with the transmitting circuit of the radio via a length of coiled cord. Obviously the use of one hand for the microphone-switching operation jeopardizes the crewman's safety.

The present switch means avoids this objectionable feature by permitting a slight tilting of the user's head to close the microphone control switch. The slight tilting of the head to close the switch and subsequent jaw movement during speech does not distort nor hamper the user's diction or voice qualities. Thus satisfactory transmissions may be easily made by the crewman at any time while retaining full use of both arms and hands. This is particularly important when both visual and radio signals are being used.

While the above advantages of the present invention are exemplary related in connection with a particular occupation it will be apparent that many other occupations involving physical agility and unrestricted arm use will similarly benefit from the instant invention.

A further object of the invention resides in the removable mounting arrangement for the microphone to permit return of the entire radio unit to its original configuration. Further such mounting is preferably of a releasable type to avoid personal injury should the cord become fouled on other equipment.

The prior art of which I am aware disclosed various throat microphones for translating physical throat vibrations into variable electrical currents for subsequent amplification and transmission. The present invention is believed to be far removed both structurally and functionally from this art.

SUMMARY

A microphone switch control includes an arm located in the proximity of the user's head for switch-actuating movement thereby by head movement. This control is in circuit with a microphone control switch of a portable two-way radio carried upon a support depending from the person's neck. The control switch is actuated upon head movement of the user leaving both hands and arms of the user unencumbered.

A summary of the invention's objects are above stated.

DESCRIPTION OF THE DRAWINGS

In the accompanying drawings:

FIG. 1 is a front elevational view of the microphone switch means and holder in place on the upper torso of a user,

FIG. 2 is a side elevational view of FIG. 1 with the switch control shown operably disposed in broken and dashed lines,

FIG. 3 is an enlarged side elevational view of the switch and a fragment of its control,

FIG. 4 is a sectional, detail view of means removable mounting the microphone and taken along line 4-4 of FIG. 2, and

FIG. 5 is a wiring schematic.

DESCRIPTION OF PREFERRED EMBODIMENT

With continuing reference to the drawings wherein reference numerals indicate parts similarly identified in the following specification, the reference numeral 10 indicates generally the present invention in place on the person.

The invention comprises a base at 11 having an upright plate portion adapted to rest against the user's outer apparel on the upper torso of the body. The base is conveniently suspended by a neck strap 12 having snap fastener components 13 for engagement with cooperating snap components as at 14 mounted on the base 11. The multiple snap components adjacent one strap end permits vertical positioning of the base 11 relative to the jaw of the wearer for purposes more fully explained later.

With continuing regard to base 11 an outwardly directed support 15 is formed integral therewith to mount a remote microphone component generally at 16 of a personal two-way radio. Remote microphone 16 is connected in the usual manner by cord 18 to the two-way radio 19 shown with a fragment of a belt attaching the latter to the wearer's body.

Disposed upon base 11 is a microphone control switch indicated generally at 17. This switch includes a switch body 20 which is disclosed as being of the microswitch type characteristically including pressure-sensitive contacts. The switch body 20 may be of conventional switch construction having a normally open set of contacts one of which being on a flexible element for biased closing against a stationary contact. The closable or movable contact of the present switch body 20 is closed upon inward travel of a pushbutton 21, the button having a normally extended off position as shown in FIG. 2. Overlying the button is a plate 22 with a U-shape mounting bracket 22A hingedly mounted at 23 by a pin to the switch body 20, as been seen in FIG. 3. Further detailed description of the switch body 20 is believed unnecessary as such switch body structure is well known in the switch art.

Attaching switch body 20 to base 11 is a clevis 24 of shaped metal, conveniently spot welded to the base and apertured to receive mounting screws 25 for the switch body.

Indicated at 26 is a switch control arm of novel configuration and function. The lower extremity of the arm is supported by plate 22 for limited swinging movement such movement being caused in an inward direction by head and jaw movement of the user. While the switch control arm 26 and its supporting plate 22 are shown as being in soldered securement it may, for convenience of manufacture, be desired to form them from one piece of material.

Control arm 26 is disclosed as being formed from wire stock and being of Y-shape as viewed in the front elevation of FIG. 1. The branches of the Y at 27 extend upwardly terminating alongside the upper throat and below the jaw for control of the latter in a convenient manner. The adjustable strap fasteners 13 earlier described allow vertical positioning of the plate 11 and hence branches 27 to be contacted by the jaw upon forward inclining of the user's head. Such spacing of the branches from the jaw is such as to allow normal unrestricted head movement with an intentional lowering of the head being necessary to bring the jaw into branch contact.

As viewed in FIG. 2 the switch control arm 26 is shown in broken lines moved to a position whereat the button 21 has been depressed to close the contacts in switch body 20 energizing the microphone 16. Also in broken lines is the inclined head position causing such closure. Further control arm movement resulting from jaw movement during speaking is shown in dashed lines. Such further movement by control arm 26 is permitted by the resilient nature of the control arm material and the hinged mounting thereof at 23.

As aforementioned, a microphone 16 for a portable two-way radio is supported on the base 11. In the remote microphone shown a conventional microphone push to talk control is indicated at 29 it being necessary to depress and hold the control 29 thus closing a circuit to energize the microphone all in a standard manner.

To adapt a conventional portable radio microphone of the remote type to use in the present invention it is merely necessary to incorporate a two-conductor plug 28 (FIG. 5) in the microphone housing the plug being wired in parallel via leads 30-30A with the standard contacts 31-32 closable by the microphone control 29. A two-conductor jack 33 insertable into the plug is provided with conductors 34-35 in a wire 36 to put the contacts of switch 20 in parallel circuit with those operated by control 29. Accordingly, energization of the microphone is now attainable through switch 20. The microphone may also be energized by depressing control 29 if desired. This dual feature allows a radio unit with its remote microphone to be returned to normal configuration simply upon removal of the jack 33 from the microphone installed plug 28 and disengagement of the microphone 16 from its support 15 as later described. Conversely plugging in of jack 33 permits contacts within the switch body 20 upon closing to complete a circuit through conductors 34-35 and 30-30A back to the radio unit to energize or key the microphone.

In microphones for specific use in combination with the present invention the microphone control 29 is dispensed with and all microphone switching is accomplished by the microphone control switch 17. The present invention further comprehends the use of a combined remote speaker-microphone unit on support 15 such being found particularly useful in high noise level environments where a speaker mounted within the radio unit 19 strapped about the body is unsuitable.

The plate 11 with its outwardly extending support portion 15 may within the scope of the present invention be utilized as a radio unit holder for use in those occupations where a light weight radio suspended from the user's neck would not be objectionable. In such instances the microphone and speaker would both be contained within radio unit in distinction to the two-way personal radio earlier described having a remote microphone or remote microphone-speaker unit.

In FIG. 4 a sectional view is provided disclosing a microphone mounting arrangement to permit the microphone 16 to be easily detached from its support 15. With additional reference to FIG. 1 the support 15 is slotted at 39 to provide an inset area for the sliding reception of a button 40 projecting from the underside of housing 16. A grommet 42 of soft rubber is mounted in place along the bifurcated support 15 and which is compressible to receive the reduced central area

41 of the button. The grommet grips said central area 41 and permits removal of the microphone from the support 15 only upon intentional withdrawal or upon the coiled microphone cord becoming fouled or hung up.

The present invention during use remains in place with its suspended weight assuring the central positioning shown. The invention leaves, as aforesaid, the user's hands and arms unencumbered to permit various occupational tasks. While in no way limiting the application or uses of the invention it has been found highly useful by railroad personnel whose duties include the arduous tasks of coupling of air hoses and applying hand brakes.

Having thus described the invention, what I claim as new and desire to be secured by Letters Patent is:

1. Microphone switch means actuated by the jaw of the user with the switch means and microphone carried upon a base suspended from the neck of the user, said switch means and holder comprising in combination,

a base adapted to be adjustably suspended from the neck of the user and including an outwardly extending support for the microphone, and

a microphone control switch carried by said base and having normally open contacts, said control switch further including a switch control arm of elongate flexible material for biasing the contacts of said switch control into a closed position closing an electrical circuit to the microphone, said control arm including upwardly diverging branches each extending in an inclined manner sub-jacently along opposite sides of the user's jaw whereby forward tilting of the user's head will cause closure of the switch contacts with subsequent additional jaw movement occurring during speech being permitted by the flexing of the resilient control arm.

2. The invention as claimed in claim 1 wherein said base is bifurcated to receive a rubber grommet with the latter adapted for compressed engagement with a portion of the microphone for microphone retention on the base and further permitting convenient detachment of the microphone from the base.

3. The invention as claimed in claim 2 wherein said microphone includes internal switch contacts within the microphone housing closable by a manual control also within the microphone housing, the contacts of said microphone control switch being in parallel circuit with said internal switch contacts in the microphone, a two-conductor jack insertable within a two-conductor plug disposed in said microphone housing whereby the contacts are detachably connected in parallel circuit permitting keying of the microphone by either head and jaw movement or manually by the manual microphone control.

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