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2,575,142

MICROPHONE ATTACHMENT FOR ACCORDIONS

Filed Aug. 19, 1949

2 SHEETS—SHEET 1

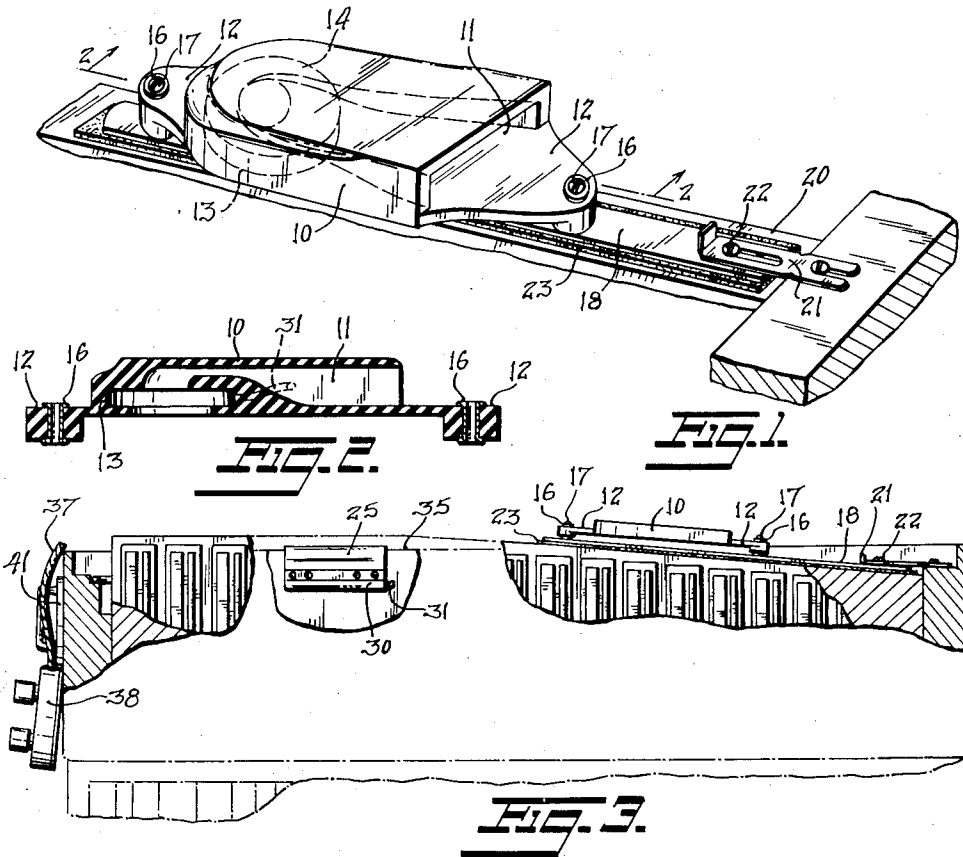
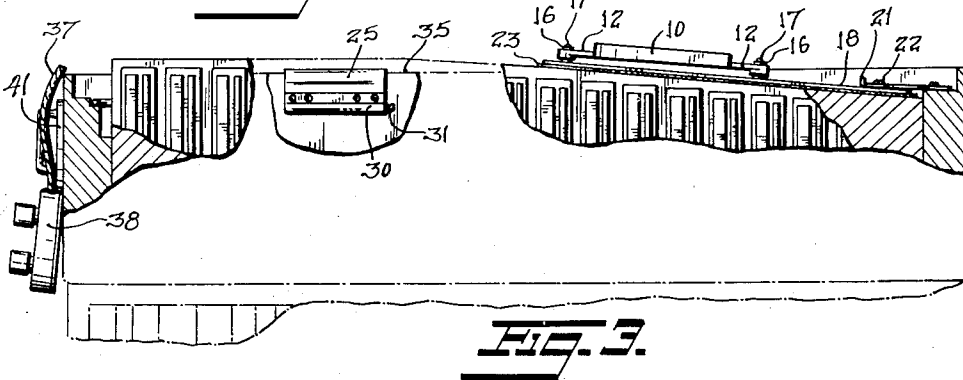
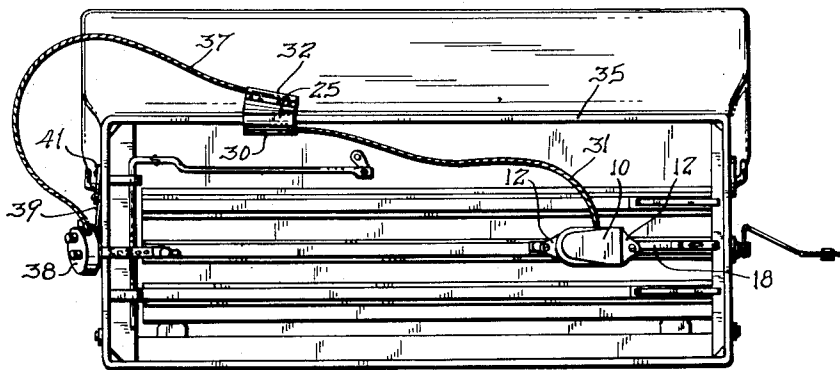


FIG. 4.

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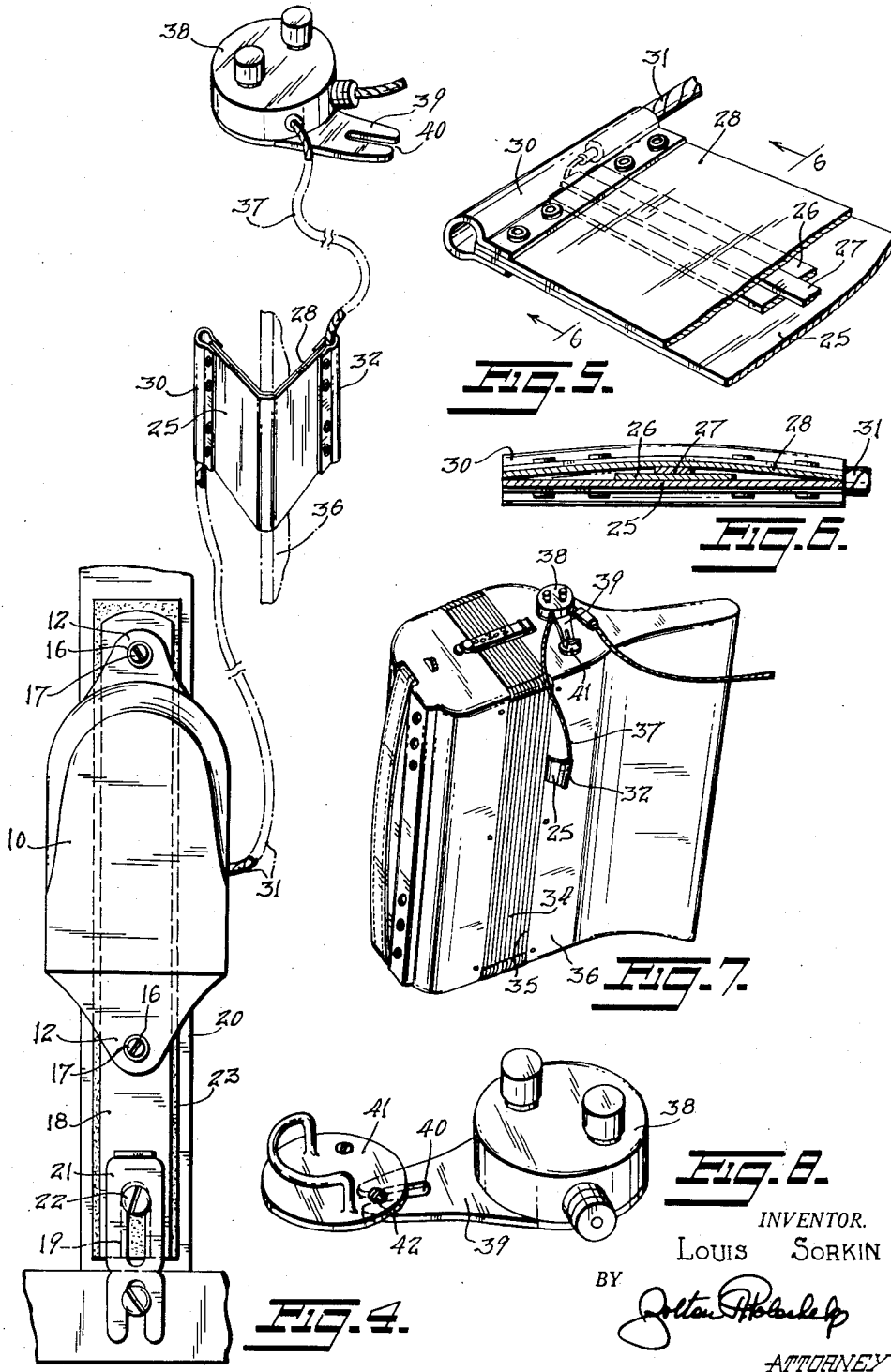
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2 SHEETS—SHEET 2



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MICROPHONE ATTACHMENT FOR
ACCORDIONS

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6 Claims. (Cl. 84—1.04)

1

This invention relates to sound amplifying systems and more particularly to an internally mounted accordion transducing arrangement.

The primary object is to provide a sound transducing device which can be securely mounted inside an accordion without drilling any holes, adding any screws, or in any way damaging or affecting the interior mechanism, case work, or finish thereof.

Another object of the present invention is to provide a sound transducing device which will, even under the peculiar acoustical conditions existing within an accordion, translate the musical sounds of an accordion into their electrical equivalents with maximum uniformity over the entire musical range of the instrument.

Another object of the present invention is to provide a sound transducing device in an accordion which has an increased sensitivity to the high register tones created by the accordion and does not disturb the balance of uniformity between the high and low register tones, thereof.

Another object of the present invention is to provide in a sound transducing device adapted to be mounted in an accordion means whereby the pick-up of stray noises, such as key clicks, vibrations, or any other disagreeable sounds which the player does not wish to be amplified, may be held at a minimum.

Another object of the present invention is to provide controlling means for a sound transducing device in an accordion which may be securely attached to the outside of the accordion within easy reach of a player without the drilling of any holes in the case work of the instrument, adding screws or damaging clamps to the instrument, or in any way marring or affecting the surface or finish thereof.

Another object of the present invention is to provide means whereby a sound transducing device mounted inside an accordion may be connected electrically with an externally mounted controlling means without in any way injuring, marring, or making any holes in the casework or any other parts of the accordion or interfering with the secure attachment of the device in the most desirable position inside the instrument or the secure attachment of the controlling means in the most desirable position on the outside of the instrument.

Another object of the present invention is to provide in an electrical connection between the inside and the outside of an accordion electrical shielding means to protect the circuit thereof from the effects of vehicle ignition systems,

2

fluorescent fixtures, etc., to thereby result in the practical complete elimination of hum and other undesirable noises when said electrical connection is included in an amplifying system circuit.

Still another object of the present invention is to provide a sound transducing device mounted in an accordion and adapted to minimize the feed-back result between said device and the loud speaker utilized therewith.

For further comprehension of the invention, and of the objects and advantages thereof, reference will be had to the following description and accompanying drawings, and to the appended claims in which the various novel features of the invention are more particularly set forth.

In the accompanying drawings forming a material part of this disclosure:

Fig. 1 is an isometric view illustrating the transducer.

Fig. 2 is a sectional view taken along the lines 2—2 of Fig. 1.

Fig. 3 is a side elevation of the transducer.

Fig. 4 is a partially plan and partially isometric view illustrating the various components of the present invention.

Fig. 5 is a fragmentary isometric view of the flexible connector.

Fig. 6 is a sectional view taken along the lines 6—6 of Fig. 5.

Fig. 7 is an isometric view illustrating an accordion with the present invention applied thereto.

Fig. 8 is a perspective view showing the control box attached to strap bracket.

Fig. 9 is an elevational view of the accordion with the bellows removed to show the mounting of the transducer therein.

As particularly well seen in Figs. 1, 2 and 3 a transducer 10 is provided and is preferably moulded of hard rubber to comprise an acoustic horn 11 formed internally therein, hold-down bosses 12, and a microphone recess 13. A microphone 14, which is of the crystal type and requires no further description herein, is fitted in said recess 13 and may be fastened to the transducer by any suitable means. The said hold-down bosses 12 are drilled for receiving screws and the holes thus formed are provided with rubber grommets 16. This assembly is secured by screws 17 to a plate 18 which may be of any metal but is preferably of brass, in view of its corrosion resistance. Said plate 18 is formed at its end adjacent the mouth of the horn 11 with an open-end slot 19.

Now in all accordions there is provided a treble

reed block 20 having a sliding clamp 21, as seen in Figs. 4 and 9, also, for maintaining said reed block in position therein. Said clamp 21 may be loosened with respect to the said reed block 20 by the loosening of a block screw 22 which also exists in all accordions. When the screw 22 is so loosened, the end of the plate 18 having the slot 19, may be pushed under the clamp 21 far enough so that when the screw 22 is re-tightened the plate 18 is held securely in position on the reed block 20.

The aforesaid rubber grommets 16 support the transducer 10 suspendedly in order that there be no direct contact between same and the brass plate 18. Also, the surface of the plate 18 that rests on the reed block 20 is insulated therefrom by a layer of sound deadening soft felt 23. This arrangement provides a means of mechanical isolation from vibrations that are transmitted to the reed block 20, and this isolation in turn minimizes the transmission of any mechanical noises, key clicks, etc., that are produced in the accordion itself, to the rubber transducer 10 and also, therefore, to the crystal microphone 14.

When the transducer 10 is mounted in the accordion in the manner just described and particularly well shown in Fig. 9, the mouth of the horn 11, which is designed to provide a maximum uniformity of pick-up over the entire range of the instrument, faces in the direction of the higher register reeds. This facing of the device tends to greatly increase the sensitivity thereof to the high register tones created by the accordion, thereby achieving a maximum uniformity over the entire musical range of the instrument. Without the inclusion of the horn 11 in the present arrangement, the microphone 14, disposed as herein shown or in any other position in the accordion, would effect a decidedly unbalanced result, with the low register tones far over-balancing the high register tones.

As seen in Figs. 4 and 9, also, a flexible connector is provided whereby an electrical connection is made between the transducer 10 inside the accordion and the exterior thereof. Said connector is seen also in Figs. 5 and 6, and comprises a flexible conductive sheet 25, an insulative tape 26, a conductive strip 27, and an insulative sheet 28, with the said conductive sheet 25 serving as ground and the said conductive strip 27 serving as a live connection. At one end of the just described arrangement and secured thereto as by riveting is an inside bracket 30, which bracket is adapted to receive and hold fast therein a shielded cable 31 in order that the live wire therein might make contact with the conductive strip 27 and the metallic shielding thereof might make contact with the conductive sheet 25. At the other end of the arrangement an outside bracket 32 which is identical to said inside bracket 30 is held secure thereto in like manner and receives therein a second cable 37 in like manner.

Now as best seen in Figs. 7 and 9, the just described assembly obviates the necessity for drilling holes in the casework or puncturing the bellows 34 of the instrument. This is so inasmuch as the flexible section of the connector, when, assembled, assumes a thickness of approximately ten to fifteen thousandths of an inch and it is this section of the connector that is passed through an open seam 35 which exists in all accordions between the bellows 34 and the keyboard sections 36 thereof. It is to be noted that the just described arrangement in no way interferes with the desirable disposition of the transducer 10 on the inside of the accordion nor with the desir-

able placement of a hereinafter described control box on the outside of the instrument.

Leading from the outside bracket 32 wherein connection is made with the conductive strip 27, the above mentioned second shielded cable 37 makes connection with a control box 38, the internal workings of which need not be and are not herein described. Secured to the underside of said control box 38, as by welding or similar means, is an extension plate 39 having a slotted end 40. Now, provided on the key board section of every accordion is a shoulder strap bracket 41, which bracket 41 is secured thereto by bracket screws 42. In order to mount the said control box 38, the said strap bracket 41 is raised slightly by loosening one of the screws 42 and the said extension plate 39 is pushed thereunder so that the slotted end 40 slides about the said screw 42. Upon the re-tightening of said screw 42 the control box 38 is held rigidly in place.

It will be noted in regard to the electrical shielding of the present device that the said outside bracket 32 is made of metal and that portion of the flexible connector that remains outside of the accordion is also metal. This affords a complete circuit between the inside shielded cable 31 and the outside shielded cable 37 and results in a thorough electrical shielding of the whole device, thereby preventing hum and other noises effected by ignition systems, fluorescent fixtures, etc. in the amplifying system used therewith.

And it will be noted in regard to the provision of the acoustic horn 11 in the moulded transducer 10 that said horn 11 imparts directive effects to the higher register tones produced by the accordion and, since crystal microphones have sensitive peaks in the higher register, this directional effect noticeably lessens the degree of undesirable acoustic feed-back.

While I have illustrated and described the preferred embodiment of my invention, it is to be understood that I do not limit myself to the precise construction herein disclosed and the right is reserved to all changes and modifications coming within the scope of the invention as defined in the appended claims.

Having thus described my invention, what I claim as new, and desire to secure by United States Letters Patent is:

1. In a flexible connector adapted to connect electrically two shielded cables, the combination of a conductive sheet, a conductive strip, an insulative tape separating said conductive sheet and strip, an insulative sheet protecting said conductive strip, said sheets, strip, and tape being secured together by conductive brackets at both ends thereof, each of said brackets holding fast therein one of said shielded cables, a ground contact being made between said conductive sheet, said brackets, and the shielding on said cables, and a live contact being made between said conductive strip and the wires in said cables.

2. The combination with an accordion including a reed block and a clamp for securing said reed block in said accordion; of a sound transducer comprising an internal acoustic horn, a recess, a microphone secured in said recess, and associated with said horn, suspension means for the mounting of said transducer, a metal plate upon which said transducer is mounted by said suspension means and whereby the assembly is mounted to the said reed block by the insertion thereof under the said reed block clamp.

5

3. The combination with an accordion including a reed block, a sliding clamp for holding said reed block in said accordion and being fastenable by the tightening of a block screw in said reed block; of a sound transducer comprising, an internal acoustic horn, a recess, a microphone securely fitted in said recess and associated with said horn, rubber grommets for the suspended mounting of said transducer, a metal plate upon which said transducer is suspendedly mounted, an open slot in the end of said plate adjacent the opening of the said horn, said metal plate being secured to the said reed block by the sliding clamp and the block screw.

4. The combination with an accordion including a keyboard section, a bellows, and an open seam between said keyboard section and bellows; of a flexible connector adapted to connect electrically internal and external shielded cables comprising, a flexible conductive sheet, a flexible conductive strip, a flexible insulative tape separating said conductive sheet and strip, an insulative sheet protecting said conductive strip, said sheets, strip, and tape being secured together by conductive brackets at both ends thereof, each of said brackets holding fast therein one of said shielded cables, a ground contact being made between said conductive sheet, said brackets, and the shielding on said cables, a live contact being made between said conductive strip and the wires in said cables, and said flexible sheets, strip, and tape being disposed in the seam between the said bellows and keyboard section.

5. The combination with an accordion including a reed block having low and high register reeds and a sliding clamp adjacent the higher register reeds and adapted to hold said reed block in the accordion; of a sound transducer comprising an acoustic horn, a crystal microphone associated with said horn, suspension means for the mounting of said transducer, a metal plate for the suspended mounting thereto of said trans-

6

ducer, said plate being secured to said reed block by said sliding clamp, a sound insulating material interposed between said metal plate and said reed block, and said horn facing said higher register reeds.

6. The combination with an accordion including a keyboard section, bellows, an open seam between said keyboard section and bellows, a reed block having low and progressively higher register reeds and a sliding clamp adjacent the higher register reeds and holding said reed block in said keyboard section, and a shoulder strap bracket screwed externally to said keyboard section; of a sound transducer comprising an acoustic horn, a crystal microphone associated with said horn, means whereby said transducer is suspendedly secured to the reed block by the said sliding clamp and facing toward the higher register reeds, a flexible electrical connector disposed in the seam between said bellows and said keyboard section, a control box having an extension thereon inserted under the said shoulder strap bracket and thereby secured to the said keyboard section, and shielded electric cables connecting said transducer to one side of said flexible connector and the said control box to the other side of said flexible connector.

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REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
1,587,696	Carter	June 8, 1926
2,102,668	Ballantine	Dec. 21, 1937
2,399,513	Shapiro	Apr. 30, 1946
2,439,551	Teikowski	Apr. 13, 1948
2,460,408	Babicky	Feb. 1, 1949
2,486,264	De Armond	Oct. 25, 1949