

[54] **SHEATHED SOFT-FEEL HANDLE AND
METHOD OF MAKING SAME**

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[22] Filed: **Aug. 4, 1971**

[21] Appl. No.: **168,828**

[52] U.S. Cl. **16/116, 16/125, 190/57**

[51] Int. Cl. **A47b 95/02**

[58] Field of Search.....16/116, 117, 110,
16/125, 119; 190/57, 58

[56] **References Cited**

UNITED STATES PATENTS

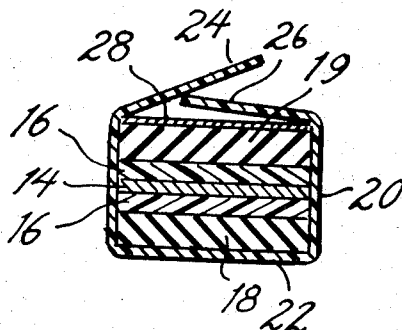
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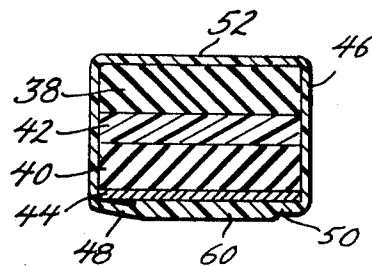
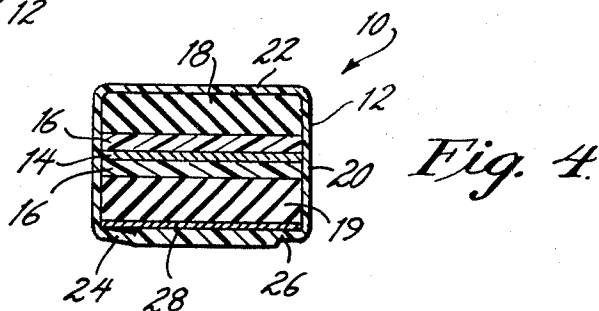
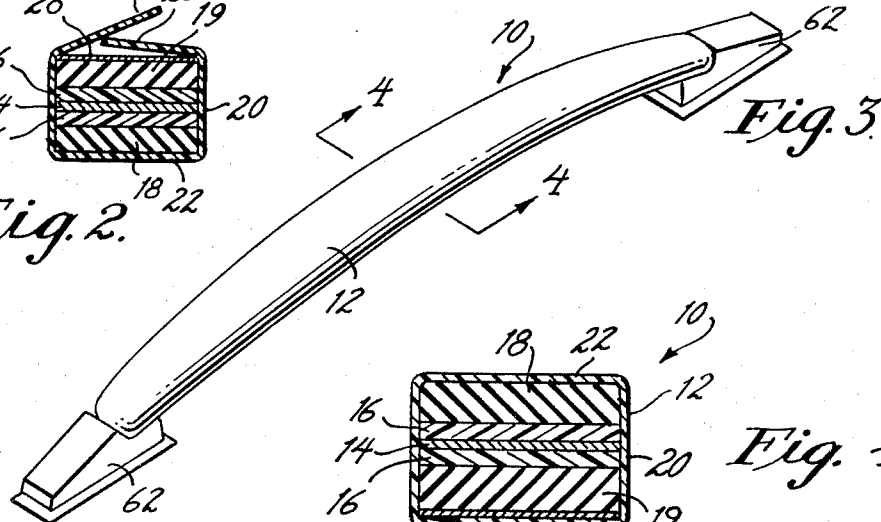
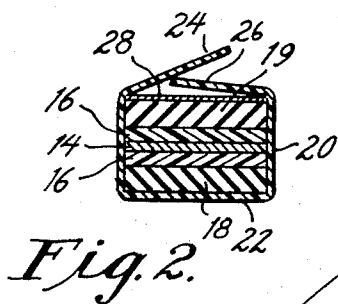
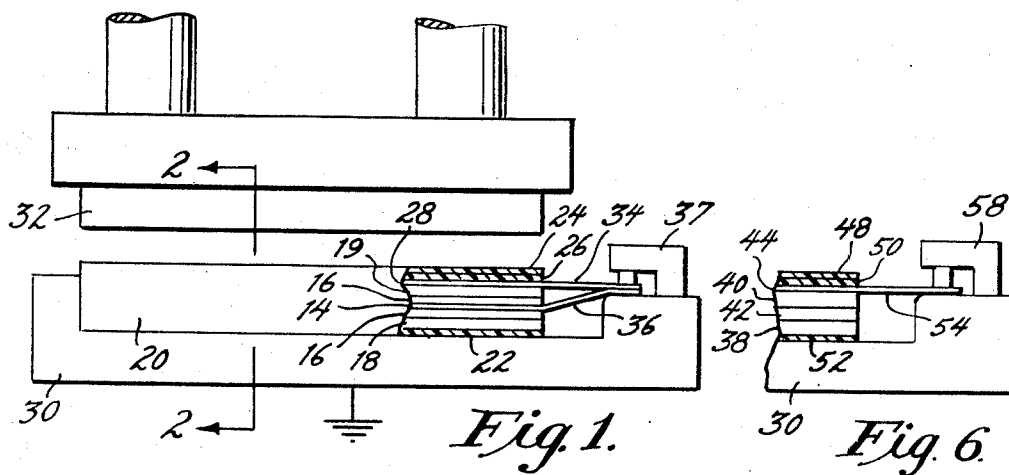
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[57] **ABSTRACT**

A soft-feel handgrip for a handle construction in which cushioning members for the top and bottom of the grip are provided with a flexible conductive member on the outer face of the bottom cushioning member and an open thermoplastic sheath wrapped around the members to provide overlapped sheath ends directly against the conductive member whereby the overlapped sheath ends can be effectively sealed dielectrically. The handgrip may include non-metallic fillers or stiffeners and/or a spring metal bar spaced from the overlapped sheath ends by the bottom cushioning member.

10 Claims, 6 Drawing Figures





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SHEATHED SOFT-FEEL HANDLE AND METHOD OF MAKING SAME

This invention relates to a handle for radios, television sets, electronic instruments, luggage, carrying cases and the like.

Soft-feel handles using rubber in the grip portion are known in the art. The handles shown in the Bush U.S. Pat. Nos. 3,500,973 and 3,531,822 employ a combination of a relatively rigid molded palm engaging plastic portion with a softer finger-engaging portion. The present invention relates more particularly to a cushioning handle employing a thermoplastic sheath and a method of sealing the sheath dielectrically.

In a sheathed handle, for purposes of esthetics, the lap seam is provided on the underside thereof. In a construction which combines a cushioning material such as rubber with a stiffer filler material and a steel spring bar encompassed by a thermoplastic sheath, the spring bar is located adjacent the overlapping portions of the sheath in order to effect sealing thereof dielectrically, i.e., by subjecting the handle to a high frequency alternating current field which causes the sheath to be heated from within for a time sufficient to effect a seal.

In practice, the handle is placed on the grounded bed of a conventional dielectric sealing machine with the ends of the spring bar conductively clamped thereto and the electrode die is lowered onto the lapped sheath. Since the spring bar is immediately beneath the lapped sheath, the only insulating separation between the die and the bed is the thickness of the sheath itself and as this is in the order of magnitude of one thirty-second inch, the current can readily pass therethrough and the field can concentrate on the lapped sheath to effectively seal the same.

However, when such a handle is mounted on a carrying case or the like, the hard steel bar is engaged by the palm and is uncomfortable. The softness is on the top but not at the bottom of the handle.

When a handle construction is made in which the spring steel bar is interposed between layers of cushioning material such as vinyl foam to yield softness both at the top and bottom thereof, it was found that in the sealing operation the vinyl foam collapsed thereby causing loss of the desired soft-feel effect.

It is the primary object of this invention to provide a sheathed handle construction which is soft both at the top and at the bottom but whose sheath is effectively sealed dielectrically.

Another object of the invention is to provide a handle having cushioning material, an internal spring steel bar and a sheath encompassing the same whose overlapped edges are dielectrically sealed along the length of the handle, the bar being spaced from the sealed overlapped edges of the sheath by the cushioning material.

Another object of the invention is to provide a cushioning handle with a dielectrically sealed sheath therearound but which contains no internal spring bar.

Another object of the invention is to provide a method of making a sheathed cushioning handle with and without a core of spring steel employing dielectric means to seal the overlapped edges of the sheath.

The objects of the invention are attained by interposing a flexible resilient metallic layer directly between the overlapped edges of the thermoplastic sheath and the insulating cushioning material whereby the alter-

nating current can pass through the sheath material and fuse the overlapped edges.

These and other objects of the invention will become more apparent as the following description proceeds in conjunction with the accompanying drawings, wherein:

FIG. 1 is a diagrammatic view of a conventional dielectric sealing machine with the handle of the instant invention in place ready for the sealing operation and partly in section;

FIG. 2 is a sectional view taken on the line 2—2 of FIG. 1;

FIG. 3 is a perspective view of one form of handle of the instant invention;

FIG. 4 is a sectional view taken on the line 4—4 thereof;

FIG. 5 is a view similar to FIG. 4 of a modified form of the invention without a spring steel core; and

FIG. 6 is a fragmentary view of the dielectric sealing machine shown mounting the handle construction of FIG. 5.

Specific reference is now made to the drawings in which similar reference characters are used for corresponding elements throughout.

Considering first the handle construction 10 shown in FIGS. 1—4, the grip portion 12 thereof comprises a core of flat spring bar 14, generally about one sixty-fourth to one thirty-second inch thick, a pair of filler strips, 16, generally about three thirty-seconds inch thick, a pair of upper and lower cushioning strips 18 and 19 generally about one-sixteenth to three-eighths inch thick and a sheath or cover 20, generally about one thirty-second inch thick.

The core 14 may be made of any suitable spring metal, preferably steel. The filler strips 16 may be made of paper impregnated with rubber, cotton duck, hardboard, leather and the like. The cushioning strips 18 and 19 may be made of any suitable flexibly resilient material such as foam polyurethane, polystyrene, polyester and rubber. The sheath or cover 20 may be made of any suitable thermoplastic resin such as polyvinyl chloride, polystyrene, polycarbonate, polyurethane, the acrylics, etc., in single ply or two ply such as vinyl bonded to a vegetable fiber.

The spring metal core, filler strips and cushioning strips are secured at their interfaces with suitable adhesive as is the upper face 22 of the upper cushioning strip 18. The opposite or lower face of the sheath, i.e., the finger-engaging portion, comprises longitudinally overlapping free edges 24 and 26.

Interposed directly between the overlapped edges 24, 26 of the sheath and the lower cushioning strip 19 is an electrically conductive member 28. The member 28 can take several forms. It can be a strip of metal foil, such as aluminum, copper and the like, from about 0.001 to 0.003 inch thick. It can be a strip of plastic, such as polyvinyl chloride, with a metal coating on one surface thereof, the other surface being secured by an adhesive such as rubber cement to the lower cushioning strip 19. It can be a plastic strip, such as cellulose acetate, having pressure sensitive adhesive on opposite faces with metallic foil secured on one face so that the other face can be adhered to the lower cushioning strip 19. It can be an electrically conductive adhesive strip. Or, it can be a metallic coating deposited on the surface of the lower cushioning strip.

Thus, the electrically conductive member 28 must not be so thin as to create too much resistance to the

flow of current therethrough, must be sufficiently resiliently flexible to follow the shape of the handgrip 10 and should be malleable so that the feel of hardness in the handgrip is minimized.

A conventional dielectric sealing apparatus having a fixed bed 30 connected to the ground, a vertically movable die or electrode 32 substantially coextensive with the handgrip 10 and a very high frequency alternating current connected therebetween is employed. See, for example, "Heat Sealing" by Robert D. Farkas, Reinhold Publishing Corporation, New York, 1964, Chapters 7 and 8, which is herein incorporated by reference. The handgrip with the spring core 14 and conductive strip 28 extending beyond the ends of the sheath or cover 20 as at 34 and 36 is laid in a well in the bed 30 with the overlapping ends 24 and 26 facing the die 32. Except for the protruding ends of the core and the conductive member, the filler and cushioning strips are coextensive with the sheath. A metal clamp 37 engages the free ends 34 and 36 of the conductive strip and core and conductively connects them to the bed. While only one such clamp is shown on the right hand side in FIG. 1, it will be understood that usually another such clamp is provided on the left hand side of the bed and engages the free ends of the core and the conductive strip in the same manner, although a single clamp is operative. Where the conductive member 28 is a coating rather than a discrete strip, the coating will be applied on the open ends of the handgrip and will conductively contact the spring metal core 36 which will then be clamped to the bed. Although preferable, it is not essential that the conductive member or coating 28 be connected to the metal core 36.

When the die is lowered into the contact with the overlapping ends 24 and 26 of the sheath or cover 20 and the current is applied, the overlapped ends become sealed as shown in FIG. 4. It has been found that with a construction such as that described hereinbefore using a dielectric sealing machine with a 2Kw output, the sheath can be effectively sealed in about 4 seconds.

Although a handgrip construction with a core of spring metal is preferred, a handgrip construction without such a spring metal core may be provided within the purview of the invention. Such a construction is shown in FIGS. 5 and 6 and comprises essentially a pair of upper and lower cushioning strips 38 and 40 separated by a filler strip 42, a conductive strip or coating 44 below the lower cushioning strip 40 and a thermoplastic sheath or cover 46 encompassing these members, the lower face of the sheath having overlapped ends 48 and 50, as in the construction shown in FIG. 2. The contacting surfaces of the members 38, 40 and 42 may be secured to each other by adhesion as may the upper face 52 of the sheath 46 to the upper cushioning strip 38. The filler strip 42 may be thicker or otherwise made more rigid than those employed with the metal core of FIGS. 1-4 to stiffen the handgrip yet permit it to be flexible.

This handgrip is placed in the well of the bed 30 in the manner previously described and the conductive member 44 is made to extend through at least one end

of the handgrip as at 54, preferably both ends. The end of the member 44 is conductively attached to the bed by the clamp 58 and the machine turned on for a time sufficient to seal the overlapped ends 48 and 50 of the sheath or cover 46 as shown at 60 in FIG. 5.

After the handgrip sheath has been dielectrically sealed suitable hardware 62 is secured to the ends of the handgrip for attachment to a carrying case and the like. While FIG. 3 illustrates one type of handle, it will be understood that many different kinds of handles can be provided with the present handgrip. Thus the hardware or adapters at the ends of the handgrip can be such as to effect pivotal, slide or similar connections to the wall of a carrying case or the like.

While preferred embodiments of the invention have here been shown and described, it will be understood that minor variations may be made without departing from the spirit of the invention and the scope of the appended claims.

What is claimed is:

1. In a soft-feel handle construction comprised of an elongated handgrip and means secured to the ends thereof for attachment to the wall of a carrying case or the like, the improvement in that the handgrip is comprised of a cushioning member, a resiliently flexible electrically conductive member against one face thereof which flexes therewith, and a thermoplastic sheath coextensive with said cushioning member encompassing said members having a face consisting of longitudinally extending ends secured to each other by fusion in overlapped relationship directly against said conductive member.

2. The handle construction of claim 1 comprising a pair of said cushioning members and a member therebetween which is stiffer than said cushioning members.

3. The handle construction of claim 2 wherein said stiffer member is a non-metallic filler which is substantially coextensive with said cushioning member and sheath.

4. The handle construction of claim 2 wherein said stiffer member is a metallic spring bar at least as long as said sheath.

5. The handle construction of claim 1 wherein said conductive member is metal foil.

6. The handle construction of claim 5 and a plastic strip secured to said metal foil which is in turn secured by adhesion to said one face of the cushioning member.

7. The handle construction of claim 1 wherein said conductive member is a conductive adhesive strip.

8. The handle construction of claim 1 wherein said conductive member is a coating of metal on said one face of said cushioning member.

9. The handle construction of claim 4 and a pair of non-metallic fillers stiffer than said cushioning members but less stiff than said spring bar on both sides of said spring bar and secured by adhesion to the corresponding faces of said cushioning members.

10. The handle construction of claim 1 wherein said cushioning member is made of a foam material.

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