

May 2, 1939.

W. A. EVANS ET AL

2,156,754

TELEPHONE HANDSET

Filed July 11, 1935

2 Sheets-Sheet 1

FIG. 1

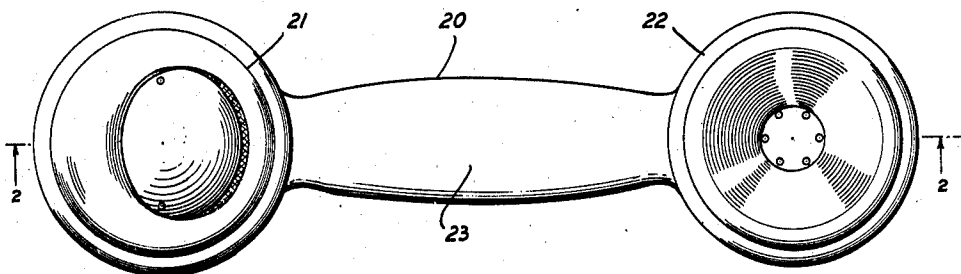


FIG. 2

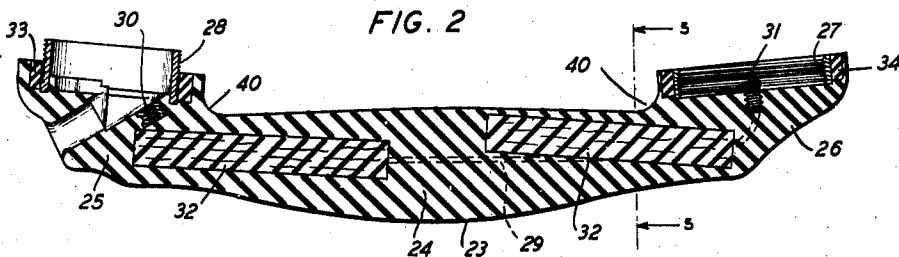


FIG. 3

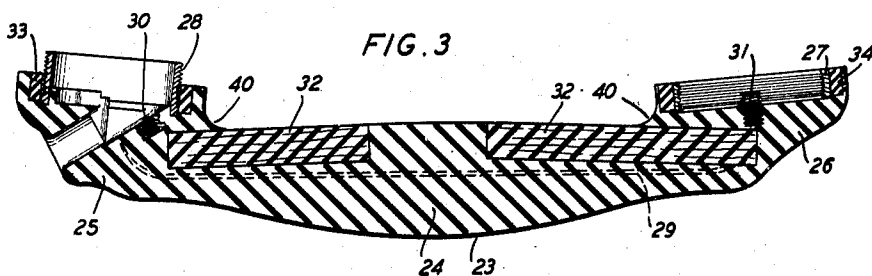


FIG. 4

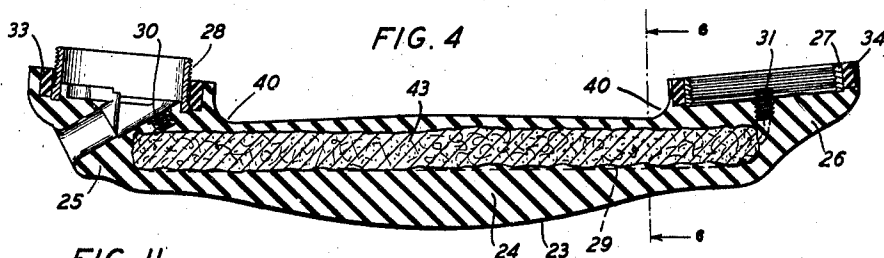


FIG. II

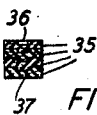
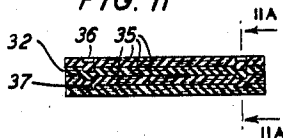


FIG. IIA

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FIG. 5

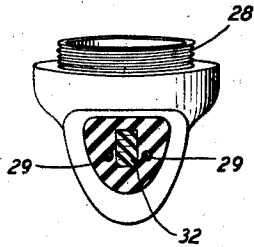


FIG. 6

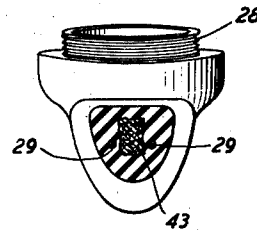


FIG. 7

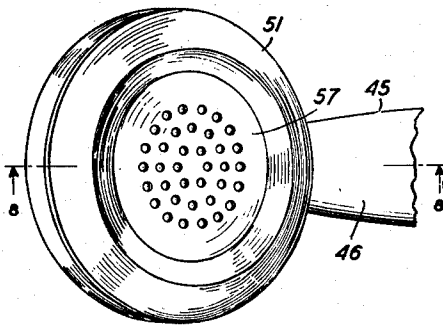


FIG. 8

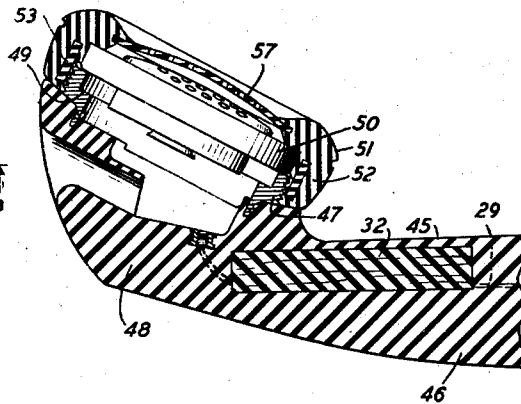


FIG. 9

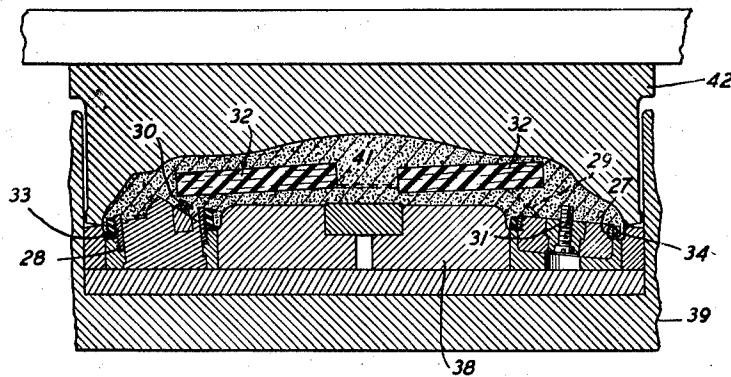
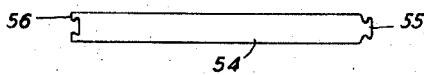


FIG. 10



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2,156,754

TELEPHONE HAND-SET

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Application July 11, 1935, Serial No. 30,834

12 Claims. (Cl. 179—103)

This invention relates to a telephone device and, more particularly, to the reenforcement of molded portions of a hand telephone or telephone handset, and a method of making the molded portions.

An object of this invention is to improve and to strengthen the molded portions of the hand telephone.

A feature of this invention comprises reenforcing a hand telephone handle and a receiver or transmitter cap of insulating material with an insert of insulating material.

Another feature comprises reenforcing a hand telephone handle and a receiver or transmitter cap of a phenol condensation product with an insert of a phenol condensation product.

A further feature comprises using as a reenforcing insert a fabric filled molding compound preform, a partially or completely cured laminated or other varnish impregnated fabric, or a resin impregnated fibre molding board made by the pre-mixed process.

Still another feature comprises the method of making the reenforced handle of this invention.

A more complete understanding of this invention will be obtained from the detailed description which follows read with reference to the appended drawings, wherein:

Fig. 1 is a plan view of hand telephone or handset, including a transmitting casing, a receiver casing and a handle, embodying this invention;

Fig. 2 is a cross-sectional view of the handle or common support portion of the hand telephone of Fig. 1 taken along the line 2—2 thereof, and showing reenforcing inserts in accordance with the invention;

Fig. 3 is a cross-sectional view of the same with the reenforcing inserts partially coplanar with one surface of the handle;

Fig. 4 is a cross-sectional view of the same but with a single reenforcing insert extending substantially the entire length of the handle;

Fig. 5 is a sectional view of the handle of Fig. 2 taken along the line 5—5 thereof;

Fig. 6 is a sectional view of the handle of Fig. 4 taken along the line 6—6 thereof;

Fig. 7 is a plan view of the transmitter end of a hand telephone or handset;

Fig. 8 is a cross-sectional view of the handset fragment of Fig. 7 along the line 8—8 thereof;

Fig. 9 is a cross-sectional view of a mold in which a handset handle may be made in accordance with the invention, showing the metal and insulating material inserts and the molding powder;

Fig. 10 is an elevational view of a strip of insulating material from which the transmitter cap insert of Fig. 8 may be formed; and

Fig. 11 and Fig. 11A are cross-sectional views of a reenforcing insert showing its laminated struc-

ture and the manner in which the laminations are united.

Referring now to Figs. 1 and 2, there is shown a hand telephone set or handset 20, comprising a transmitter 21, a receiver 22, and a handle, hand grip portion or common support 23. The handle 23 is preferably molded of an insulating material, such as a wood flour filled phenol condensation product, and comprises a bar portion 24, a transmitter-supporting end portion 25 and a receiver-supporting end portion 26. An internally threaded metal ring 27 is embedded in the receiver end and an externally threaded metal ring 28 is embedded in the transmitter end of the handle for threaded engagement by suitably threaded portions of the transmitter and receiver casings. Conductors 29 are molded in the handle to reenforce it and to provide electrical connections between the inserts 30, 31, the rings 27, 28, the transmitter, the receiver, and a cord (not shown) for connecting the handset in a communications circuit. It has been found that a handle consisting of the elements recited above may under certain conditions break at the junctions 40 of the bar portion and the transmitter and receiver end portions, and that radial cracking may occur in the end portions around the embedded rings. The handle could be made, of course, of an insulating material having greater strength, but the increased expense of using such material renders that procedure practically objectionable. A metal tube could be embedded in and extend substantially the entire length of the handle, but metal and molded insulating material are not the most compatible materials, and there is the ever present possibility that the two will separate after the molding operation.

In accordance with this invention, there is embedded in the bar portion of the handle, one or more reenforcing inserts 32 that extend along the handle bar and end portions and across the junctions thereof; and in the transmitter and receiver end portions ring-shaped reenforcing inserts 33, 34 that fit snugly around the rings 27, 28. The inserts 32 are preformed and may be of a fabric filled molding compound, a partially or a completely cured laminated or other varnish impregnated fabric, or a resin impregnated fiber molding board made by the pre-mix process. It is preferred to have the inserts of the last-named material, which is made by beating the paper pulp with the thermo-setting resin and water. The paper made from the pulp is usually about .001 inch in thickness and is rolled off with a varying number of layers, as desired. Each insert 32 may be in a single piece or may be a laminated structure; in various handles constructed in accordance with this invention, the insert has been approximately $\frac{1}{4}$ inch or $\frac{3}{8}$ inch square, and approximately 2 inches in length,

and when the insert was of pre-mix process molding board, it consisted of four laminae 35, as shown in Figs. 11 and 11A, each lamination or layer having a recess 36 and a projection 37 to maintain the laminae in alignment during the molding operation and to hold the laminae together for convenience in placing in the mold. The inserts 33, 34 are formed preferably of pre-mix process molding board.

10 The procedure followed in making the handle will be understood by reference to Fig. 9. The lower and stationary portion 38 of the mold 39 provides a support for the rings 21, 28 and the inserts 30, 31. The insulating material 41 from which the handle is formed, is placed in powdered form on the portion 38, the reinforcing rings 33, 34 placed around the rings 21, 28, the reinforcing inserts 32 placed upon the powder, additional molding powder added to completely surround the inserts and sufficient to form the handle of predetermined size, and the upper and movable portion 42 of the mold placed in position and heat and pressure applied to form the handle, to shape and cure the powdered material and to complete or advance the cure of the reinforcing inserts. The amount of powder deposited in the mold prior to the positioning of the inserts need only be sufficient to form a thin coating on the mold. When pre-mix process molding board is used, this thin coating may be dispensed with, it having been found that in the finished product the outer surfaces of the inserts and the rest of the handle present a substantially homogeneous appearance. Fig. 3 shows such a handle in cross-section.

The handle of Fig. 4 is similar to those of Figs. 1 to 3 except that a single reinforcing insert 43 of rag-filled phenol condensation product extending substantially the entire length of the handle is employed.

In Figs. 7 and 8 there is shown the transmitter end of a handset 45, the handle portion 46 of insulating material being reinforced by an insert 32. An externally threaded metallic insert or ring 47 in the transmitter end portion 48 of the handle has a shoulder portion 49 providing a support for a transmitter unit 50, which may be of the type disclosed in A. F. Bennett et al. Patent No. 2,042,822, issued June 2, 1936. The unit is held in position by a cap 51 of molded insulating material provided with an internally threaded flange portion 52 for engagement with the ring 47. The cap is reinforced by an annular insert 53, preferably of resin impregnated fiber molding board. The insert 53 may be formed from an elongated strip 54 (Fig. 10) of the molding board that is provided with shaped, interlocking end portions 55, 56 so that the strip may be bent into an annulus and the end portions locked together. A protector grid 57 of the molding board is molded integrally with the cap, and constitutes a reinforcement for the cap as well as a protector of the transmitter unit. A molded receiver cap of insulating material could be reinforced, it is apparent, in the same manner.

While this invention has been disclosed with reference to various specific embodiments, it is to be understood that it is not limited thereto but by the scope of the appended claims only.

70 What is claimed is:

1. A telephone handset comprising a handle portion of a body of insulating material having a reinforcing insert of insulating material.

2. A telephone handset comprising a handle

portion formed of a phenol condensation product having therein a reinforcing insert of a phenol condensation product.

3. A telephone handset comprising a handle portion formed of a phenol condensation product having a phenol fabric insert therein.

4. A telephone handset handle molded of a wood flour filled phenol condensation product and having a preformed insert of phenol condensation product embedded therein to strengthen it.

5. A telephone handset handle molded of a wood flour filled phenol condensation product and having a pre-formed insert of resin impregnated fiber molding board embedded therein to strengthen it.

6. A handle of molded insulating material for a hand telephone comprising a transmitter-supporting end portion, a receiver-supporting end portion and a bar portion joining said end portions, a metallic annular member embedded in one of said end portions, and an annular member of insulating material embedded in said one end portion and surrounding said metallic member to strengthen said one end portion.

7. A handle of molded insulating material for a hand telephone comprising a transmitter-supporting end portion, a receiver-supporting end portion and a bar portion joining said end portions, a reinforcing insert of insulating material embedded in said handle and extending across the junction of said bar and an end portion, a metallic annular member embedded in one of said end portions, and an annular member of insulating material embedded in said one end portion and surrounding said metallic member to strengthen said one end portion.

8. A handle of molded insulating material for a hand telephone comprising a transmitter-supporting end portion, a receiver-supporting end portion and a bar portion joining said end portions, and a reinforcing insert of insulating material embedded in said handle and extending across the junction of said bar and an end portion.

9. A telephone handset comprising a handle portion formed of insulating material having a resin impregnated fiber molding board insert therein.

10. A closure member of insulating material for a casing for a telephone instrument, said member having a central sound wave passage and a peripheral flange portion for engagement with the casing, and an annular reinforcing insert of insulating material embedded in and forming a part of said flange portion.

11. In a telephone handset, a member of molded insulating material having a cavity therein for supporting an acoustic unit, a connecting means comprising a metallic ring molded in said cavity, and a preformed insert of insulating material surrounding said ring and within said member to strengthen it.

12. In a telephone handset of molded insulating material, a portion for housing an acoustic unit comprising a cup-like member and a cover member having upstanding peripheral flanges, and means for reinforcing the flanges against radial stresses comprising a preformed annular insert of insulating material embedded in and forming part of each flange.

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