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L. D. NORTON ET AL

2,180,091

SOUND RECORD TABLET

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Fig. 1.

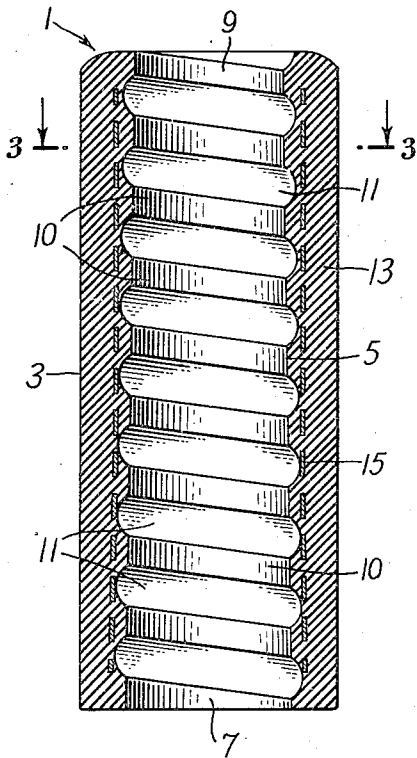


Fig. 2.

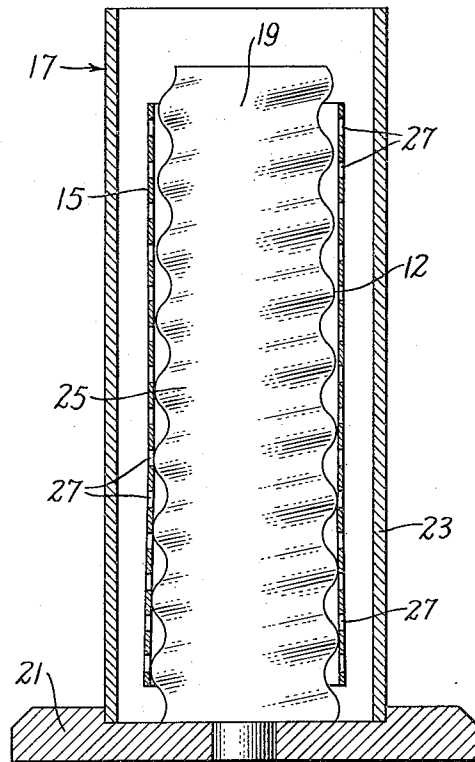


Fig. 3.

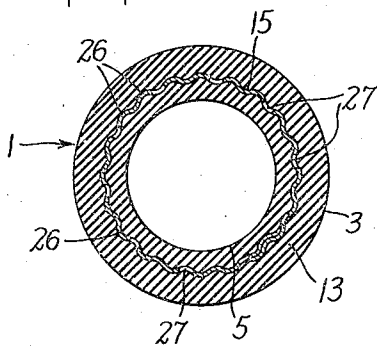
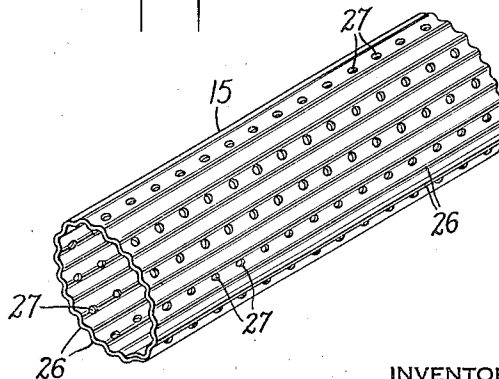


Fig. 4.



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SOUND RECORD TABLET

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1 Claim. (Cl. 274-44)

This invention relates to reinforced sound record tablets or cylinders. One object thereof has been to provide a record tablet of usual waxlike material but having a reinforcing liner included or embodied therein and of a nature and form to minimize internal stresses and strains in the cylinder which might ordinarily arise from the differences in expansion and contraction characteristics between the material of the cylinder and that of the liner.

A further object has been to provide a molded record tablet with a reinforcing liner formed from a material which bonds securely with the molded material of the tablet and which presents greater and more advantageously arranged surfaces of contact between the liner and said molded material.

Other objects will be in part obvious and in part pointed out hereinafter.

The invention accordingly consists in the features of construction, the combinations of elements and arrangements of parts exemplified in the structure hereinafter described, and the scope of the application of which will be indicated in the appended claim.

In the accompanying drawing, in which is shown one of the various possible embodiments of the invention,

Fig. 1 is a longitudinal axial section of a sound record tablet or cylinder embodying the invention;

Fig. 2 a longitudinal axial section of a mold used in making the tablet shown in Fig. 1, and shows a novel form of reinforcing member or liner operatively positioned on the core mold;

Fig. 3 a cross-section of the reinforced cylinder taken on line 3-3 of Fig. 1; and

Fig. 4 an isometric perspective view of the corrugated cylindrical liner shown in Figs. 2 and 3.

Similar reference characters refer to similar parts throughout the several views of the drawing.

Referring thereto, Fig. 1 indicates generally a cylindrical sound record tablet having a cylindrical outer surface 3 upon which a sound record may be recorded by means of a suitable recording stylus, and later reproduced by a suitable reproducing stylus. For both purposes, the cylinder is usually supported upon a tapered mandrel having devices for firmly engaging the inner surface 5 of the tablet and holding the same against rotation. Said inner surface is also tapered to conform to the taper of the mandrel.

Numerals 7 and 9 respectively indicate the

larger and smaller ends of the tapered central passageway which enables the tablet to be easily withdrawn from the mold in process of manufacture, and which facilitates its easy application to and removal from the mandrels of dictating machines as well as record reproducing machines. The inside tapered surface 5 of the tablet is fluted with a helical rib 10 and a groove 11 to aid the grip of the mandrel upon the inner surface of the tablet.

Record cylinders while in use are subject to various stresses and strains which occur with temperature changes and with applications of pressure of the friction holding devices of the mandrel. Actual breakage of the tablets occur from these stresses and strains, more particularly when the record is dropped, or strikes against a hard object, or topples over upon the surface of the desk. It has therefore been customary, in order to offset these incidents, to embody a reinforcing member or liner in the waxlike material from which the tablets are made. To be effective, such a reinforcing device should be of a nature and form to bond effectively with the body material of the tablet. Previous efforts to reinforce the tablets have not, however, been wholly satisfactory due in part to insufficient adhesion between the waxlike material and the material of the lining or reinforcing device. This is manifested when, upon receiving a shattering blow, fragments of the waxlike material break away from the liner instead of resulting merely in cracking of the record. This obviously destroys the continuity of the record surface and makes it practically impossible to reproduce any sound record carried thereby. It is therefore one of the objects of this invention to provide a reinforcing liner of such material that, when the record is shattered, the fragments will adhere tenaciously to the liner and will not readily separate therefrom.

It has also been known heretofore to make the tablet reinforcing liners slightly conical, and of a shape and size to rest upon the crest of the helical rib of the tapered core commonly employed within the tablet mold. Although liners of this shape adapt themselves conveniently to manufacturing purposes, they present other difficulties which make it desirable to employ a reinforcing liner of generally cylindrical shape, this being a further characteristic of the improved device forming the subject matter of the present invention.

Accordingly, to produce the desired improved results hereinabove suggested, and others which

will be apparent, the tablet embodying the present invention includes a liner formed from a material with which the waxlike body of the tablet will form a secure bond, which will be embedded in such relation to the waxlike material as to permit free flow of the molten mass during manufacture, and which will be of requisite stiffness to facilitate handling and placing in the mold. Such material is a relatively stiff kraft paper impregnated with a suitable substance such as latex rubber (coagulated latex), or some solution of rubber, resin or gum having adhesive and penetrative characteristics similar to latex rubber. The appearance of one form of paper suitable for this purpose is that of a paper impregnated with a waxy substance such as paraffin. This paper is perforated, as with holes 27, and is also crimped or pressed to form corrugations 26.

To form a suitable reinforcing liner from material of this character, a sheet of proper size is bent into cylindrical form and its overlapping edges are secured together with any suitable heat-resisting cement. The perforations in each reinforcing liner are sufficient in number to permit wax to flow freely from the outside to the inside of the liner as the tablet is being cast. In this respect, a corrugated liner requires fewer holes because the heated wax flows more easily along the corrugations and tends to spread more quickly and uniformly toward all parts of the mold, than is the case when a woven or knitted fabric liner is employed or where the liner is itself tapered.

To manufacture a record cylinder or tablet such as is shown in Fig. 1, a mold, as 17, may be employed, said mold being fitted with a core 19 having a helical surface rib. In operation the core is supported on base 21 which also supports an outer shell 23 coaxially with respect to core 19. A reinforcing liner, as that above described, and with its minimum internal diameter substantially equal to the mean diameter of core 19, is applied to said core substantially as shown in Fig. 2. As shown, the lower portion of the liner engages lower portions of the core, but upper portions of the liner are spaced from the upper portions of the core. Arranged in this fashion, the corrugations 26 in effect lie parallel to the axis of the liner.

After the liner 2, formed as above stated, has been properly seated on the core, heated wax material upon being poured into the mold envelops the assembled core and liner and flows through the perforations and along the corrugations thereof, thus filling the mold completely both inside and outside of the liner.

After the waxlike material has congealed to form a tablet blank, the mold shell is removed and then the core is backed out of the blank by unscrewing it therefrom, the rib 10 and groove 11 thereof acting as a thread for this purpose. The interior helical surface of the blank is then reamed to produce the tapered interior contour of the finished record cylinder shown in Fig. 1.

As appears from the foregoing description, the improved record cylinder presents material advantages both in manufacture and in the durability of the resulting product. The paper liner is easily handled in assembling with the core, and in the finished tablet is effectively embedded in the wax in such manner as to materially reinforce the tablet against disintegration as a result of commonly experienced blows and shocks in normal use. This effective reinforcement is in part due to the superior adhesion between the waxlike material of the body of the tablet and the latex covered fibers of the paper, and in part to the relatively large area of contact between the liner and the waxlike body of the tablet. Also, the corrugated form of the liner permits limited expansion of the waxlike body material due to variations in temperature, and to that extent compensates in practice for a difference in the coefficients of expansion of said waxlike material and the paper of the reinforcing liner. Furthermore, when the tablet blank is reamed to form its conical interior mandrel engaging surface, the reaming or other cutting tool does not destroy the cylinder merely by cutting into the paper liner. The paper is simply cut away with the wax. Where fabric is used for a liner, this is not the case and the whole cylinder is usually destroyed when the reaming tool encounters the fabric of the liner.

We claim:

A sound record tablet including a body of waxlike material presenting a cylindrical record-receiving outer surface and having a tapered bore and a reinforcing member embedded in said body, said member comprising a perforated and longitudinally corrugated tube of paper which has been impregnated with an adhesive substance having the bonding properties of rubber latex, said body material extending through said perforations and being effectively bonded to said paper tube, and the corrugations of said tube being disposed in said body substantially parallel with its cylindrical outer surface.

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