

- [54] **FILLED PACKAGE CONTAINING A COILED STRING OR THE LIKE**
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- [22] Filed: **May 19, 1971**
- [21] Appl. No.: **144,805**

**Related U.S. Application Data**

- [62] Division of Ser. No. 4,621, Jan. 21, 1970.
- [52] **U.S. Cl.**.....206/52 W, 206/63.3
- [51] **Int. Cl.**.....**B65d 85/04**
- [58] **Field of Search**.....206/46 Y, 63.3, 64, 206/52 W, 56 R, 42, 56 A; 229/7 R

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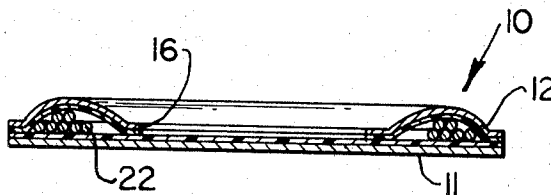
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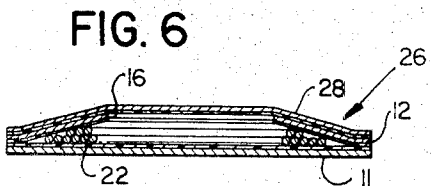
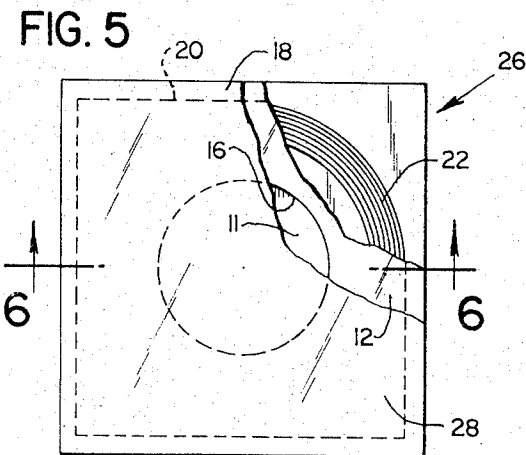
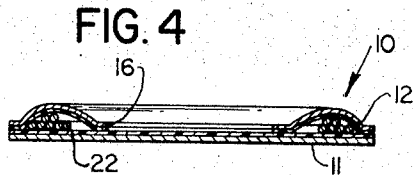
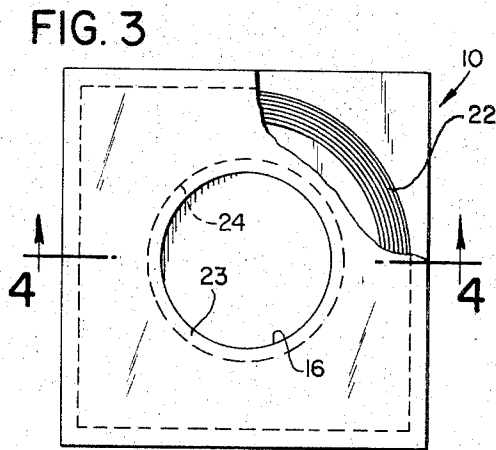
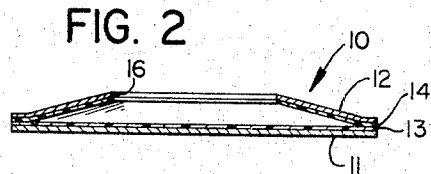
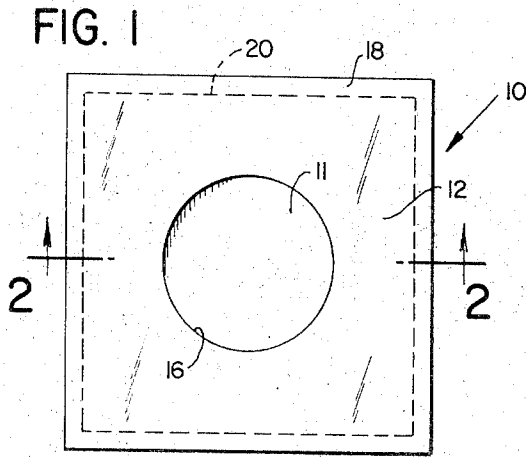
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[57] **ABSTRACT**

A package is comprised of two thin sheets, preferably rectangular and sealed to one another along their outer margins. One of the sheets has a relatively large centrally located filling opening. A strong or string like member is contained in the package between the two sheets and in surrounding relation to the central opening. The two sheets are additionally sealed to one another around the margin of the central opening, or the central opening is sealed by an overlying sheet, to totally isolate the package contents from the surrounding atmosphere.

**1 Claim, 6 Drawing Figures**





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## FILLED PACKAGE CONTAINING A COILED STRING OR THE LIKE

### CROSS-REFERENCE TO RELATED APPLICATION

This application is a division of copending application Ser. No. 4,621 filed Jan. 21, 1970, entitled "Packaging Apparatus and Method."

### BACKGROUND OF THE INVENTION

The present invention relates to a package containing a string or string like member, and more particularly to such a package which is sealed to totally isolate the string like member from the surrounding atmosphere prior to opening.

There are a number of applications which exist in a variety of different industries in which it is necessary to provide sealed packages for strings or string like members. As one prime example, in the stringed musical instrument field, resilient type music strings are typically packaged by manufacturers prior to shipment. One present method utilized in packaging is to provide a completed envelope having a sealing flap (i.e., of the letter type envelope). The musical strings are manually wound into a coiled form and wrapped in a thin tissue wrap. The coiled musical string in the tissue wrap is then manually inserted into the envelope and the flap is either manually sealed or tucked into the envelope to complete the package. This operation requires a large number of manual steps and is both tedious and costly as a result thereof. One of the factors which contributes to the tedium of the activity may be attributed to the natural resiliency of the musical string which has a characteristic of being normally urged against the coiled form to return to its normal substantially straight and uncoiled condition. This requires that some means such as, for example, the tissue wrap and/or a restraining knot be provided to retain the musical string in the coiled form at least until the musical string is inserted into the envelope.

Another disadvantage of this type of package is that the musical string, upon removal from the package, will snap into its normal substantially straight and uncoiled state unless handled and removed carefully from the envelope.

Another method of packaging musical strings which is presently employed consists of manually coiling the musical string and bending the forward and rearward ends thereof around and about the coil causing the musical string to retain itself in the coiled form. The coils are then fed between a pair of feed rollers which feed the sheets used to form the final package. The sheets are then sealed or joined to one another along their marginal peripheries with the coil being contained therein. After formation of the packages, suitable cutting means are provided to separate each package from the other before final shipment. The major disadvantage of this technique is the ever present need for a large amount of manual operations and further results in the fact that the tucked in ends of the coil may come loose, enabling the musical string to uncoil and thereby complicate the packaging operation.

Other industries dealing with strings of a similar nature (i.e., strings having a resiliency characteristic) are confronted with similar problems, the above descriptions merely being exemplary of the type of problems involved regardless of the particular end use of the strings being packaged.

The present invention involves a novel package which in the formation, filling and sealing thereof is adapted for use with the method and apparatus for packaging, described in detail in the aforesaid copending application, in which the number of manual operations required to make the completed filled and sealed package are reduced to a minimum.

The package is comprised of a pair of thin sheets which in the preferred embodiment are substantially rectangular in shape and formed of a polyethylene coated paper. However, any heat sealable plastic and a film or foil can be used instead of such paper. The sheets are joined to one another along their marginal edges as by means of a continuous heat seal. One of the sheets is provided with a central opening of substantial radius to provide means for insertion of the string.

After the package is formed to this unfilled state it is, in accordance with the method of the aforesaid copending application, placed upon a free-wheeling rotatable turntable with the central opening facing upward. A jet of air under compression is directed into the package through the opening, causing the package to become slightly inflated. Suitable feeding means pick up the forward end of a string and feed the string into the package in a linear or lengthwise fashion. The forward end of the string, after entering the package, bears against its sealed marginal edge and thereby causes the package to rotate as a result of its linear movement. The resiliency of the string, coupled with the rotation of the package, causes the string to assume a coiled form within the package. The inflation of the package by the jet of air under pressure lifts the marginal edge of the package opening sufficiently above the opposite sheet of the package to provide more than adequate clearance for entry of the forward end of the musical string. The linear feeding of the string into the package continues until the rearward end of the string lies substantially above the region of the opening so that the rearward end of the string snaps into the package as soon as it leaves the feeding means.

Since there is no need for bending either the forward or rearward ends around the coil the package insertion operation is greatly simplified. The string retains its coiled form by virtue of the fact that the natural resiliency of the string normally urges the string toward its straight uncoiled form thereby causing the string to bear against the interior portion of the marginal seal whereby the marginal seal of the package acts to retain the string in the coiled condition.

Once the string insertion operation has been completed, the package is completely sealed to protect the string against dirt, moisture or other harmful elements by closing the filling opening by either sealing the marginal edge of the opening to the opposite sheet forming the package thereby defining a substantially annular shaped hollow interior which houses the string and seals the string therein, or by applying and sealing an overlay sheet to the sheet which contains the filling opening.

Removal of the string from the novel package of this invention is simplified as compared with conventional packages in that the string may be uncoiled by tearing the package to destroy any one of the seals provided therein and pulling the string from the package. In this manner the string will not "snap" out of the package which would otherwise be the case when removing the string from conventional packages.

It is therefore the object of the present invention to provide a novel package of unique design for containing a coiled string or the like and the use of which, among other things, makes it possible to reduce or entirely eliminate the number of manual operations heretofore employed in packaging strings.

#### SUMMARY OF THE INVENTION

This invention resides in a filled and sealed package containing a string or string like member in a coiled condition and totally isolating the string from the surrounding atmosphere prior to opening. The package consists of two thin sheets of material, such as polyethylene coated paper, of generally similar size and shape which overlie one another and are connected to each other along the entire extent of their outer marginal edges as by heat sealing. One of the sheets contains a relatively large generally centrally located opening which serves as a filling opening during the placement of a string in the package, and after filling the string is so located as to be coiled around and spaced radially outwardly from the edge of such opening. Means are provided for closing the opening to prevent the entry of moisture, dirt or other foreign matter into the string containing pocket of the package through the opening. This means may be a seal joining the two sheets to one another along the edge of the opening or may be an additional sheet overlying and sealed to the sheet which contains the opening.

#### BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a plan view of a package embodying this invention prior to its being filled.

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

FIG. 3 is a plan view of the package of FIG. 1 after filling and sealing around its filling opening, part of the top sheet being shown broken away.

FIG. 4 is a sectional view taken on the line 4—4 of FIG. 3.

FIG. 5 is a plan view of a filled and sealed package comprising another embodiment of this invention.

FIG. 6 is a sectional view taken on the line 6—6 of FIG. 5.

#### DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

As mentioned above, the package of this invention is particularly well adapted for use in conjunction with the packaging method and apparatus of the aforesaid copending application. Such method and apparatus, however, are separate from this invention and therefore are not shown and described herein, reference being made to said copending application for a detailed description thereof. Also, it will be understood that the package of this invention is not necessarily limited to use with the method and apparatus of said copending application but instead may be used with other packaging methods and apparatus to which it is adapted, if desired.

Referring to the drawings, FIGS. 1 to 4 show one preferred embodiment 10 of the novel package which is comprised of a pair of rectangular sheets 11 and 12, shown best in FIGS. 2 and 4. The sheets may, for example, be paper having a polyethylene coating deposited

or otherwise formed on at least one of the surfaces of the paper sheets. For example, FIG. 2 shows the polyethylene coatings 13 and 14 as being deposited upon the engaging surfaces of the sheets 11 and 12. Sheet 12 is provided with a centrally located opening 16 of substantially large diameter. The sheets are joined to one another along their outer marginal edges by heat sealing to provide a continuous peripheral seal 18, the extent of which is bordered by the marginal edges of the sheets and by the rectangular inner border 20, shown in dotted line fashion.

The opening 16 serves as a filling opening which is sealed subsequent to the filling operation. FIGS. 1 and 2 show the package unfilled and with the opening 16 unsealed. FIGS. 3 and 4 show the package filled and with the opening 16 sealed. The string contained in the package in FIGS. 3 and 4 is indicated at 22 and is coiled around and spaced outwardly from the edge of the opening 16. In the filled package of FIGS. 3 and 4 the opening 16 is sealed by a continuous heat seal 23 of circular shape joining the sheets 11 and 12 to one another in the region defined by the edge of the opening 16 and the circular shaped broken line 24 of FIG. 3. Thus, an effective seal is formed to completely seal the string 22 within the package and keep it free from any dirt, dust, moisture or other external influences.

If desired, the finished package may be provided with an overlay sheet of substantially the identical dimensions as the sheets 11 and 12 which overlay sheet may be provided either as an alternative to the annular shaped seal 23 shown in FIG. 4 or as an additional overlay sheet. If desired, this overlay sheet may be provided with printed indicia by a separate operation performed prior to the time that the overlay sheet is joined to the package.

FIGS. 5 and 6 show a filled and sealed package 26 similar to the filled and sealed package 10 of FIGS. 3 and 4 except for including an overlay sheet as an alternative to an annular heat seal around the opening 16. In these figures, parts and features which are the same as those of FIGS. 1 to 4 have been given the same reference number as in FIGS. 1 to 4 and need not be redescribed. The additional overlay sheet is indicated at 28 and is heat sealed to the sheet 12 containing the opening 16 along the outer marginal portion thereof, thereby closing the opening 16 and completely sealing the string 22 within the package.

It should further be obvious that the package described herein may be modified in accordance with the needs of the user, and in particular that if desired the continuous heat seals provided may be replaced by seals formed through the use of a suitable adhesive or glue, or any other suitable sealing means.

I claim:

1. A filled and sealed package comprising: first and second substantially flat sheets of similar configuration, means sealing said two sheets to one another along their outer margins to form a continuous seal along the peripheries of said sheets, said first sheet having a centrally located opening and said second sheet being continuous within the bounds of its periphery, a string like member arranged in a coiled condition and located between said first and second sheets, said coiled string like member in its entirety surrounding said central opening and being spaced radially outwardly from the

edge thereof, and means closing said opening to isolate said string like member from the surrounding atmosphere, said means for closing said opening comprising means for sealing said first sheet to said second sheet along the margin of said central opening.

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