

[72] Inventor **Raymond M. Hoey**
Barrington, Ill.
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 [73] Assignee **The Kendall Company**
Boston, Mass.

[56]

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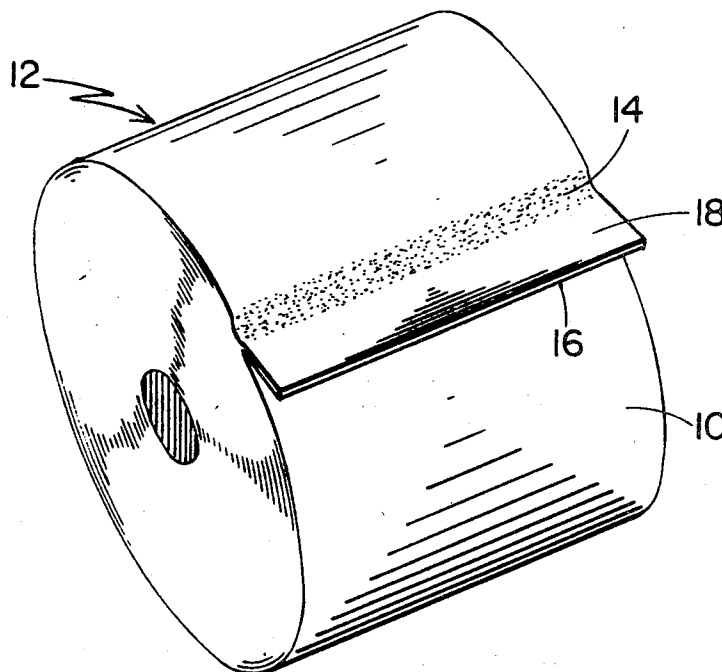
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Primary Examiner—William T. Dixon, Jr.
Attorney—Rowland V. Patrick

[54] **ROLL OF THERMOPLASTIC MATERIAL**
6 Claims, 2 Drawing Figs.

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156/220, 206/53
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58.53.59 F; 229/48 T; 156/220

ABSTRACT: An elongated strip of thermoplastic material wound into a roll having a portion of the roll's ultimate convolution fused solely by strip material to only the penultimate convolution to provide a breakable connection therebetween which will break, to release the strip for unwinding, before the strip material tears.



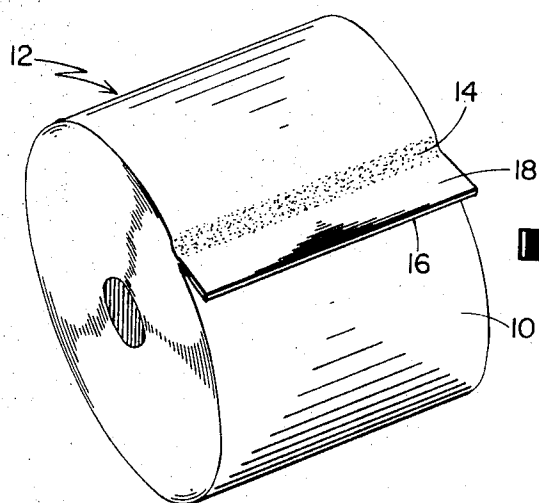


FIG. 1

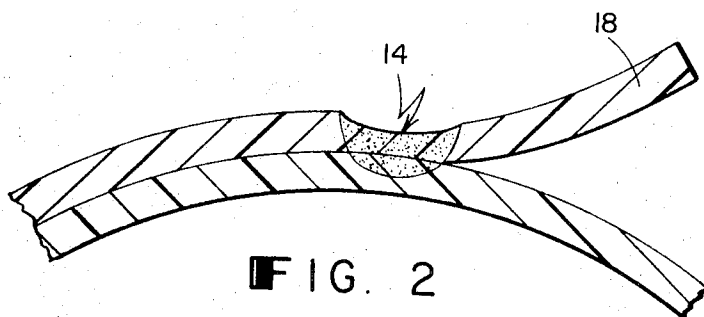


FIG. 2

ROLL OF THERMOPLASTIC MATERIAL

This invention relates to thermoplastic strip materials wound into a roll, and more particularly to means for the prevention of the premature unwinding of such rolls.

Rolls of strip materials which are not self-adhesive tend to unwind during shipment and handling prior to the time that unwinding is desired for the employment of the material comprising the roll. Various efforts to deal with this problem have proven to be a nuisance both at the manufacturing and at the consumer levels. At the manufacturing level the use of tape or other such material to secure the free end of the final convolution of the roll adds to the total cost both in the cost of such material and in the relatively large amount of labor time required for application. At the consumer level such ways of sealing the end of the roll are difficult to unfasten and can cause tearing or other deformation of material of the roll (depending of course upon the composition of such material) thus resulting in wastage. In view of the foregoing, it is an object of the invention to provide a roll of nonself-adhesive material which will not unwind during handling prior to use and yet one which is easily unwound when desired.

The invention features an article of manufacture comprising a roll of an elongated strip of material having thermoplastic surfaces wound in a multiplicity of convolutions, wherein a portion of the ultimate convolution is fused solely by strip thermoplastic substance to the penultimate convolution and to no other convolution to provide a breakable connection between those two convolutions, the maximum strength of the breakable connection being substantially less than the ultimate tensile strength of the strip at the breakable connection. The portion of the ultimate convolution which is so fused is spaced from the free end of the strip of material so as to provide a finger tab which may be grasped when it is desired to break the breakable connection, such having a minimum strength capable of supporting the roll when supported by the tab.

Other objects, features, and advantages will appear from the following description of a preferred embodiment, taken together with the attached drawings thereof, in which:

FIG. 1 is a perspective view of a roll of strip material according to the invention; and

FIG. 2 is a section taken at 2-2 of FIG. 1.

In FIG. 1 shown a strip of thermoplastic material 10 wound into a roll 12 which comprises a multiplicity of convolutions. In the preferred form strip 12 is composed entirely of thermoplastic material. It will become apparent, however, that the invention extends to a laminated strip having surfaces of thermoplastic material. In accordance with the present invention, the ultimate convolution of roll 12 is fused, solely by the thermoplastic substance of the strip, as more fully described below, to the penultimate convolution in a line 14 which preferably extends across the entire width of the roll 12, providing a novel breakable connection only between those two convolutions. Such line of fusion 14 is spaced from the end 16 of the strip of thermoplastic material 12, thus providing a finger tab 18. This tab may be grasped by the user when it is desired to break the connection formed by fusion line 14. A more detailed view of the fusion line 14 may be seen in FIG. 2.

It is essential to the invention that the breakable connection provided at the fusion line 14 break selectively when the tab

18 is pulled without damage to the strip of thermoplastic material itself beside the connection. Such damage would most likely take the form of a tearing of the strip in the region of the breakable connection between the ultimate and the penultimate convolutions. Too, it is desirable that the minimum strength of the breakable connection be such as to permit convenient handling of the roll, as by picking it up and so freely suspending it by finger tab 18.

To obtain a breakable connection of the foregoing characteristics, a heat source is applied to the region of the ultimate convolution where the fusion is desired. The strength of the breakable connection will depend upon various factors. Among these are the specific thermoplastic material, the temperature of the sealing device, the dwell time of the sealing device upon the thermoplastic material, and the pressure with which the device is used. Rolls of high-density polyethylene and urethane foam very advantageously employ such a breakable connection to prevent unraveling. It has been found essential, however, to employ a heat source which has a very accurate temperature control so that the operator can employ a single convenient dwell time and pressure, for any given thermoplastic material, which will provide a breakable connection of the type described above. A Teflon coated heat sealing wheel sold by the U.S. Plastics Corporation of Lima, Ohio under the trade name "Sealine Hand Sealer" has been found to be adequate for this purpose. It is evident, however, that a bar sealer, the hot tip of a soldering iron, or any heating device with adequate temperature control would serve as well. For a urethane foam sheet material of about one-sixtyfourth to about one-eighth of an inch thickness a sealing wheel temperature of 575° F. will produce a suitable breakable connection with a single transit of the wheel across the foam roll at a relatively light pressure.

Other embodiments will occur to those skilled in the art and are within the following claims.

What I claim is:

1. An article of manufacture comprising a roll of an elongated strip at least the surfaces of which are thermoplastic material wound in a multiplicity of convolutions and having a portion of the ultimate convolution fused solely by said thermoplastic material to the penultimate convolution and to no other convolution, providing a breakable connection between said two convolutions spaced from the free end of said strip providing a finger tab, said breakable connection having a maximum strength substantially less than the ultimate tensile strength of said strip at said breakable connection for the destruction of said connection without tearing said strip for unwinding said multiplicity of convolutions.

2. The article of manufacture as claimed in claim 1 wherein said elongated strip is substantially entirely composed of said thermoplastic material.

3. The article of manufacture as claimed in claim 2 wherein said breakable connection has a minimum strength capable of supporting said article when freely suspended from said finger tab.

4. The article of manufacture as claimed in claim 3 wherein said breakable connection comprises a narrow band extending across substantially the entire width of said strip.

5. The article of manufacture as claimed in claim 4 wherein said thermoplastic material is urethane foam.

6. The article of manufacture as claimed in claim 5 wherein said thermoplastic material is high-density polyethylene.