

June 16, 1942.

T. L. MORRILL, JR., ET AL

2,286,500

PACKAGE OF LINOLEUM

Filed July 31, 1939

2 Sheets-Sheet 1

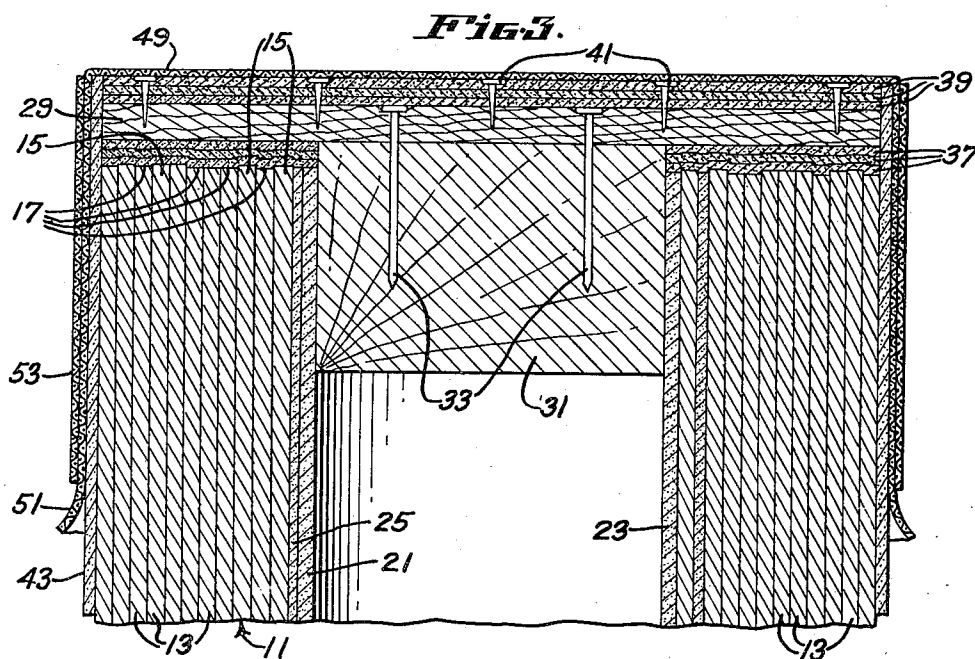


Fig. 1.

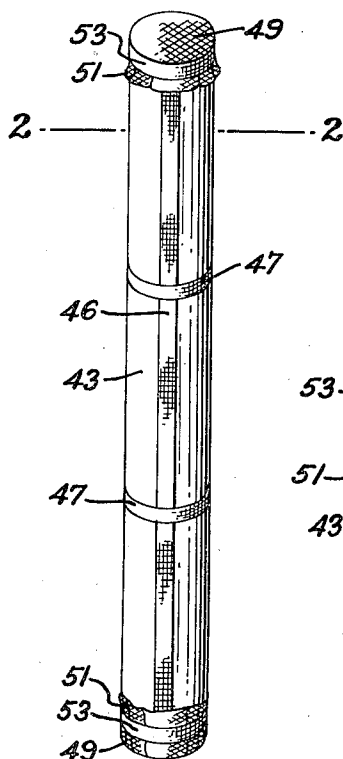
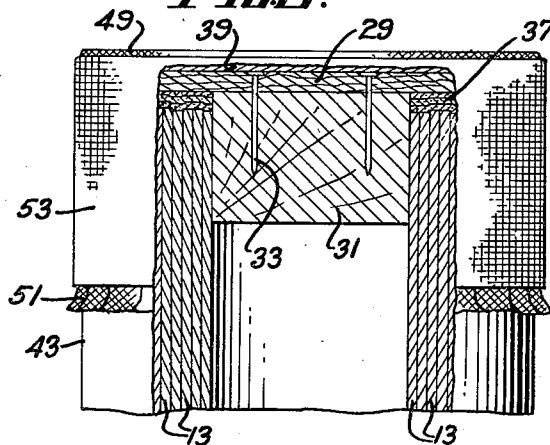


Fig. 7.



Fig. 8.



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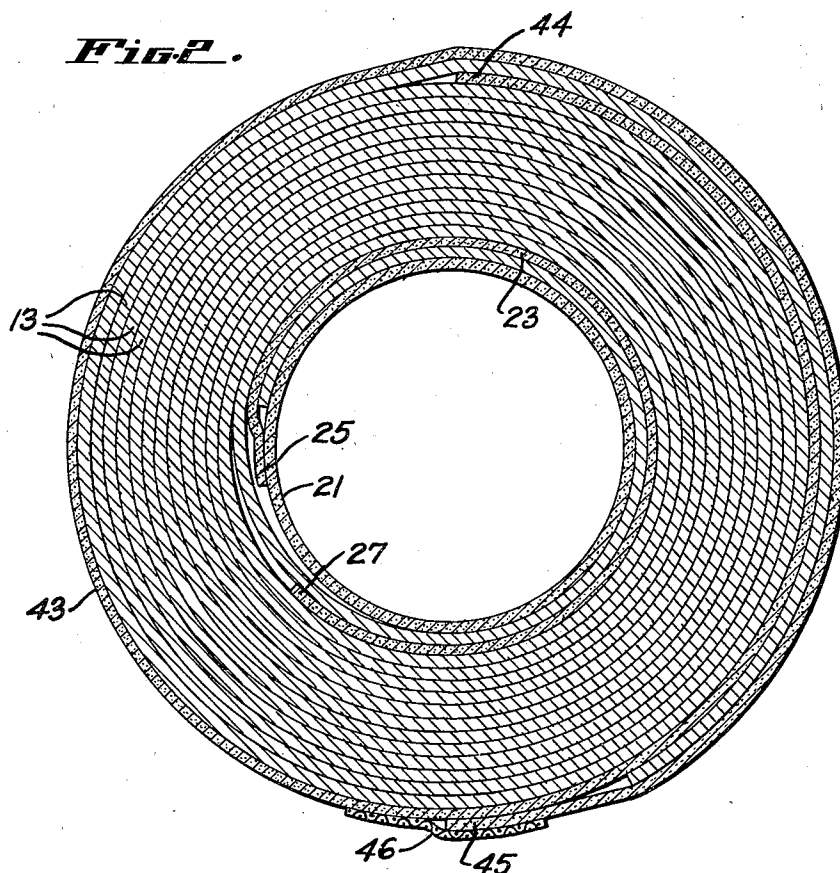
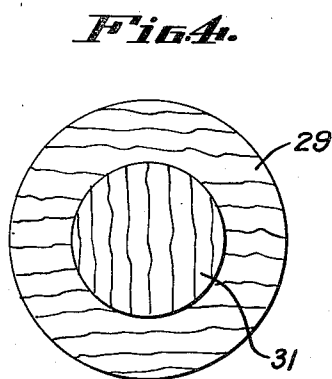
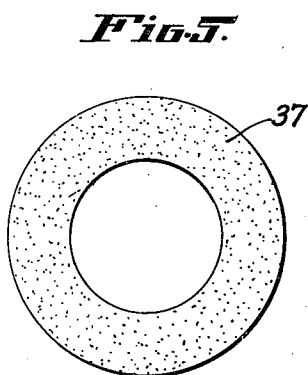
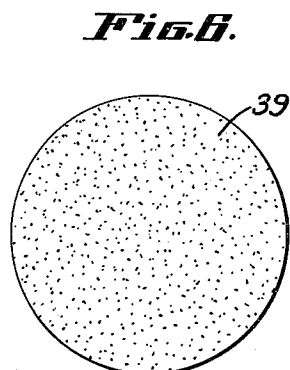
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PACKAGE OF LINOLEUM

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2 Sheets-Sheet 2



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UNITED STATES PATENT OFFICE

2,286,500

PACKAGE OF LINOLEUM

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5 Claims. (Cl. 206—59)

This invention relates to packaging linoleum with a view to protecting it during shipment and handling.

Various types of linoleum are manufactured in long strips, generally about six (6) feet wide, and when the manufacture thereof has been completed the practice has been to wind each strip, along with a sheet of tissue paper which is wider than the linoleum, into a hollow helical roll or coil with the tissue paper lying between the windings of the linoleum and projecting beyond them at both ends of the roll; and when the proper length has been wound thereon it is severed and a new roll or coil is wound in the same manner.

For the purposes of storage and shipment, the custom has been to wrap each roll in protective paper and then to tape the wrapped roll to prevent the wrapping from opening, with the projecting windings of the tissue paper packed down at each end. Due to the speed required in commercial operation, because the expense for packing in large scale production must be held to a minimum, the tissue paper does not always project properly or it is not packed down properly at the end, so that little or no protection is often afforded by it to the ends of the rolls. The length of the rolls is substantially equal to the width of the linoleum, usually about six (6) feet, and they frequently have an outside diameter of about one (1) foot. The outside diameters will of course vary with the lengths of linoleum wound in the coil; but standard lengths are generally wound, and then the rolls will have the same outside diameters. The inner diameters of the hollow rolls are generally standard, being about four and one quarter ($4\frac{1}{4}$) inches, and each roll generally weighs several hundred pounds. The rolls are difficult to handle because of their great weight, and when they are dropped obliquely or edgewise, as frequently happens through accident or carelessness, the resulting shock has often been sufficient to bend and crack the linoleum at the edges receiving it.

Attempts have been made to avoid or lessen the possibility of such damage. Crating the wrapped rolls individually has been adopted for commercial shipments, but this involves a considerable item of expense which it is desirable to avoid, but without which the risk of damage has been so great that it has been considered essential.

Objects of this invention are to avoid the use of crates and yet provide a package which is safe, economical, and easily and quickly assembled; to

distribute the shock incident to dropping the package edgewise and thus make it less effective to cause damage at the point where the shock would ordinarily be received; to distribute the shock ordinarily received by the edge of the roll when so dropped directly to many of the windings thereof; to distribute the shock to the interior of the roll; to make otherwise waste material useful in the construction of the package; and other objects will become apparent on reading this specification.

A preferred embodiment of the invention is illustrated on the accompanying drawings which form a part of this specification, and on which—

Fig. 1 is a perspective view, on a very small scale, of a completed package made according to this invention;

Fig. 2 is a cross section on the lines 2—2 of Fig. 1, but on a larger scale than Fig. 1;

Fig. 3 is a diametrical longitudinal section of an end of the package, also on a larger scale than Fig. 1;

Figs. 4, 5 and 6 are plan views on a smaller scale of different portions of the head or cap;

Fig. 7 is a broken cross section of a portion of the cap; and

Fig. 8 is an elevation, partly broken away and on a smaller scale than Fig. 3, of a modification.

The roll 11 may be of the usual type having the windings 13 of the strip of linoleum, the interposed tissue paper not being shown since it is conventional and the invention will remain the same whether or not it is used. The ends of the rolls are seldom, if ever, smooth or level, since the precautions necessary to wind the roll absolutely true are too costly for economical large scale production. The usual unevenness at the ends of the rolls is conventionally illustrated on Fig. 3 whereon the windings 15, for example, are shown as projecting beyond the windings 17 at one end of the roll. It is understood, of course, that the windings that form crests at one end of the roll form depressions or valleys at the other end thereof, since the linoleum is ordinarily of standard width throughout the length of the strip.

The rolls are preferably wound on tubular cores 21, which are preferably provided with means to prevent axial shifting of the roll and core relatively to each other. The tubular cores are preferably of paperboard, and the material thereof preferably has a thickness of about three sixteenths ($\frac{3}{16}$) of an inch, and all cores preferably have substantially the same diameters, the internal diameters thereof being about four and

one quarter ($\frac{1}{4}$) inches. A simple way to prevent the above-mentioned axial shifting is to attach a flap 23 of tough craft paper adhesively to the paperboard core at one end 25 of the flap, leaving the other end 27 thereof loose, this flap being wound between the first turns of the linoleum coil as it is wound.

Heads or caps are preferably applied to both ends of the rolls when packaging them, where they remain to protect the ends and edges of the rolls against any blows or shocks that might otherwise be applied to them. These heads or caps preferably comprise a rigid disc portion 29 and a rigid plug portion 31 rigidly attached centrally to the disc portion by nails 33. The disc portion preferably comprises a good grade of five-layer plywood board about one half ($\frac{1}{2}$) inch thick, the plies 35 of which are adhesively bound together face to face into a unitary board schematically shown on Fig. 7, generally with the grains of adjacent plies crosswise of each other. An ordinary disc of wood of the same thickness does not serve the purpose as well as the plywood since it has considerably less strength and rigidity. The plug portion 31 may be of ordinary wood.

The disc is preferred to be substantially co-extensive with the end face of the roll, and the plug is small enough to be easily inserted into the end of the tubular paperboard core 21 but yet is best large enough not to have much, if any, free play therein.

With the plug within the end of the roll and the disc at the end thereof, any shock applied to any part of the end of the roll, regardless of the direction in which it may be applied, will be distributed so that it will be made less effective at the point of application. A shock applied to the end face of the roll in a direction exactly parallel to the axis of the roll will be distributed over the end face thereof, due to the rigidity of the disc. A shock applied to the edge of the roll in a direction oblique to the axis thereof, as by the roll falling and striking the floor in an oblique position, is resolvable into a component parallel to the axis of the roll and a component perpendicular to such axis. The component which is parallel to the axis will be distributed by the disc over the end face; and the component which is perpendicular to the axis will be distributed by the plug portion 31 to the inside face of the core 21, due to the firmness or rigidity of the disc-plug assembly.

The distribution of the shock over the end face of the coil will, however, not be over the maximum possible surface if the coil ends are not all level with each other and if some project beyond others, as illustrated at 15 and 17. This is compensated by interposing between the rigid disc and the end of the coil, cushioning material which can fit itself into the depressions or valleys and which thereby distributes the shock into the valleys as well as to the crests formed by the irregular ends. Soft rubber or any other suitable cushioning material may be used. An economical material, and the one preferred, is the felt used for deadening sound and also in making roofings, floor coverings and saturated felts. It is mostly cellulose fiber and is card-board like in appearance. The thickness of such felt is usually about one sixteenth ($\frac{1}{16}$) of an inch, and while three (3) layers 37 thereof are generally effective, a different number may be used when desired. It is preferable to have cushioning material also on the outer side of the rigid disc in order to cushion

any blow or shock received by the rigid disc, and with this in view several layers 39 of the same kind of felt may be used.

Annular pieces 37 of the felt or other cushioning material may be cut so as to have substantially the same outside periphery as the outside of the roll and an inner periphery substantially co-extensive with the plug 31. Three or any desired number of the annular pieces 37 are affixed to the disc 29, surrounding the plug, preferably by adhesive paste, although they may be held by friction against the sides of the plug or in any other suitable manner. Disc pieces 39 of the same kind of cushioning material may be cut to be co-extensive with the plywood disc portion, and three or any other desired number thereof may be attached to the outer face of the plywood disc portion 29 in any suitable manner, as by means of tacks 41, or if desired the tacks may be omitted and attachment may be by means of an adhesive. The various parts of the head can be easily and quickly assembled with the substantially rigid plug and rigid disc rigidly attached to each other and with the cushioning material sufficiently firmly attached to make it easy to assemble the heads in place in making up the package. While the structure of only one end of the roll is illustrated on the drawing yet, as a general rule, it will be desired to protect both ends in the same manner. There may be special circumstances, however, when it may be desirable to protect only one end.

With the heads assembled with the plugs 31 within the hollow core 21 and the cushioning material 37 against the ends of the turns of the roll, a protective sheet 43 is wrapped around the roll and both heads (if two are used); and it is then sealed against unwrapping in any suitable manner. The protective wrapper preferred is a flexible jute fiberboard faced on both sides with smooth, hard surfaced liner paper, the whole being about sixty thousandths (0.060) of an inch thick. This is so strong that one layer affords sufficient protection. While the wrapper may be applied in any desired manner, yet it is preferred to insert the end 44 thereof into the final convolution of the coil, and then wrap it around the coil and the two heads just sufficiently to make a good overlap 45. Axial slipping of the wrapper with respect to the coil might occur before finishing the package, but winding the end of the wrapper into the end of the coil not only prevents this but permits of wrapping the protective sheet more tightly about the coil.

The overlap is preferably longitudinally of the coil, and a strip of strong adherent tape 46 is then adhesively applied along both sides of the overlap. This tape should be strong and inexpensive, and is preferably a strip of cloth about three inches wide, coated on one side with a dry composition which becomes adhesive on contact with water.

The wrapper 43 is smooth, and this makes the assembly so far described difficult for a workman to handle. Handholds may be provided in any suitable manner, as for example by providing rough areas, and this is preferably accomplished by adhesively attaching bands 47 of the above described adhesive cloth around the protective sheet, these having the additional function of aiding in binding the wrapper on the roll.

Each head is fixed against accidental removal from the assembly in any suitable manner. That preferred is to place on the end of the assembly a piece 49 of inexpensive cloth such as burlap,

which is wet with an adhesive solution, fold it down around the cylindrical surface of the assembly to form a skirt 51, and then wrap a strip 53 of adhesive tape, preferably like that described above, around the skirt to hold it in place. The strip 53 is preferably at or very close to the end of the cylindrical assembly as shown at the upper end of Fig. 1, although it may be away therefrom, as shown, for example, at the lower end thereof.

A solution of any good adhesive may be used for soaking the cloth or burlap 49, and for the necessary strength, coupled with economy, a paste of starch in water is preferred.

While the tubular core is preferred, yet it may be omitted as illustrated on Fig. 8 whereon the plug portion 31 is shown directly in contact with the inner winding 13 of the linoleum.

The elements forming the disc portion of the head will vary in size for differently sized rolls according to the amount of linoleum wound into the roll or cylinder; but with the use of cores of standard size, the plug portion of the head may have the same dimensions for differently sized rolls. The felt material, the plywood, and the wood for making the plugs may be made of waste or that rejected for other uses, so that the heads are inexpensive. The costs of the materials and labor for making the heads and for assembling the package amounts to less than the costs involved in the prior method involving crating, and at the same time the novel package affords the desired degree of safety.

The shocks caused by the novel package falling, or due to other causes, are distributed over many parts of the roll, and that part of the roll which would have ordinarily received the whole force of the shock will receive but a small part thereof and is therefore less subject to damage. This is true even if the roll fall in the manner most liable to cause serious damage, namely, by striking the floor edgewise with the roll in an oblique position.

A rigid disc at least substantially co-extensive with the surface of the end of the roll or cylinder of the packaged material, and preferably with the periphery of the disc substantially registering or flush with that of the cylinder, will afford some protection to the packaged material; additional protection will be afforded by cushioning material on either side of the rigid disc; and still greater protection will be afforded by cushioning material on both sides thereof. The plug functions as a holding means for the disc and other holding means may be substituted for it; it functions as a means to distribute exteriorly applied shocks to the interior of the roll and equivalent means may be substituted for it; and the plug need not necessarily be solid so that the interior portion thereof may be omitted, provided that the remaining portion is sufficiently strong and rigid. The edges of the heads or caps are preferably flush with the outer peripheries of the packaged material. The heads may, however, be smaller and not extend out to the edges of the rolls, but in such cases some but not all of the maximum protection will be lost. Excellent protection is afforded by having the heads extend outwardly in all directions at least as far as the edges of the rolls, regardless of whether they extend beyond such edges. It is generally preferred not to have the heads extend any substantial distance beyond the peripheries of the rolls because this may interfere with the preferred and described way of

wrapping. A part or parts of the disc-like portions of the heads may be omitted and having present a portion or portions only at the edges or at other portions of the ends of the rolls which it is desired to protect, and also having present sufficient material to connect such portion or portions present firmly to the plug.

The package is useful, not only for linoleum, but for other materials liable to similar damage. While various parts have been referred to as rigid, it is to be understood that the degree of rigidity need not be of the highest and that substantial rigidity, that is, sufficient to distribute the shocks, is all that is needed. Rigidity is referred to in the claims in this sense.

Specific structures have been referred to for an understanding of the invention, but various changes therein, and in applying the invention, may be made without departing from the spirit thereof.

We claim:

1. A package of linoleum, comprising: a sheet of said linoleum wound helically in the form of a hollow cylinder having a central longitudinal opening therethrough; protective heads at the ends of said cylinder, said heads each comprising a plug fitted into an end of said opening, a disc substantially rigidly attached to said plug, and cushioning material on both sides of said disc; the cushioning material between the ends of said cylinder and said discs being in contact with said ends; the ends of said cylinder, discs and cushioning material being substantially co-extensive; flexible, protective, tough wrapping material wrapped around the cylinder formed by said hollow cylinder and said heads to form an overlap; means to hold said overlap in place; material about each end of the resulting assembly and forming skirts on said wrapping material; and means to hold said skirts in place.

2. A package of linoleum, comprising: a tubular core; a flap member attached to said core exteriorly thereof; a sheet of said linoleum wound into a helix on said core with said flap member interwound with the beginning of said helix; protective heads at each end of said helix forming a cylinder therewith and comprising each a plug and a disc forming a substantially rigid assembly, and cushioning material; said plugs fitting into the ends of said core, said discs extending over the whole surfaces of the ends of said helix, and at least some of said cushioning material lying between the ends of said helix and said discs and lying against and covering substantially the whole surface of said ends; wrapping material interwound with the end of said helix and about said helix to form an overlap, said wrapping material having a width substantially equal to the length of said cylinder; strip material adhesively attached to both sides of said overlap to tie said overlap; means to prevent accidental removal of said heads, comprising material flexed about said heads and forming skirts on said wrapping material and adhesively attached thereto, and strip material around and adhesively attached to said skirts; and rough material adhesively attached to said wrapping material to provide rough areas as handholds.

3. A device for protecting a roll of linoleum, comprising a plug having a substantially circular periphery and an end face to which the axis thereof is substantially perpendicular, a plywood disc fastened substantially rigidly to said plug with said end face adjacent a face of said disc, the periphery of said disc extending beyond

the periphery of said plug, said plywood comprising sheets of wood adhesively bound together face to face with the grains of adjacent sheets running crosswise of each other, cushioning material fastened to the other face of said disc and extending to the edge thereof, and cushioning material about said plug at the first mentioned face of said disc.

4. A package of linoleum comprising a sheet of said linoleum wound helically in the form of a hollow cylinder having a central longitudinal opening therethrough, protective heads at the ends of said cylinder, said heads each comprising a plug fitting in said opening, a plywood disc fastened substantially rigidly to said plug with a face of said disc adjacent the end of said plug, said plywood comprising sheets of wood adhesively bound together face to face with the grains of adjacent plies running crosswise of each other, said disc extending at least to the outer edge of said linoleum cylinder, cushioning material on the other face of said disc and extending at least to the outer edge thereof, and cushioning material between said disc and the end of said cylinder and at least co-extensive with said end.

5. A package of linoleum comprising a sheet of said linoleum wound helically in the form of a

hollow cylinder having a central longitudinal opening therethrough, a tubular core fitting within said central longitudinal opening, a flap member attached to said core exteriorly thereof and extending between the inner windings of said cylinder, protective heads at the outer ends of said cylinder, the outer peripheries of said heads being substantially co-extensive with the outer peripheries of said ends, a wrapper extending between the outer windings of said cylinder and about said peripheries, and means to hold said heads in place at said ends, said heads each comprising a plug fitting within said tubular core, a plywood disc fastened substantially rigidly to said plug with a face of said disc adjacent the end of said plug, said plywood comprising sheets of wood adhesively bound together face to face with the grains of adjacent sheets running crosswise of each other, a disc of cushioning material attached to and covering the outer face of said plywood disc, and a disc of cushioning material about said plug and covering that part of the inner face of said plywood disc not covered by said plug.

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