

Mar. 6, 1923.

E. H. ANGIER ET AL

1,447,331

PACKAGE

Filed May 10, 1918.

2 sheets-sheet 1

Fig. 1.

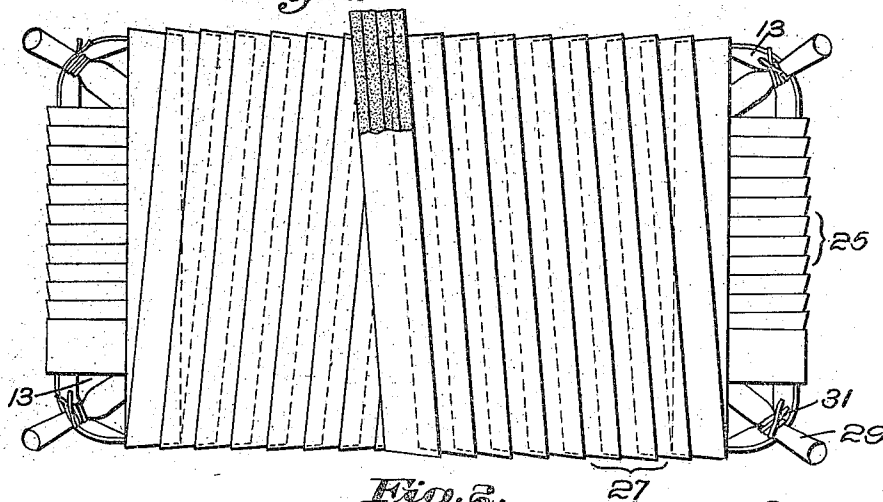


Fig. 2.

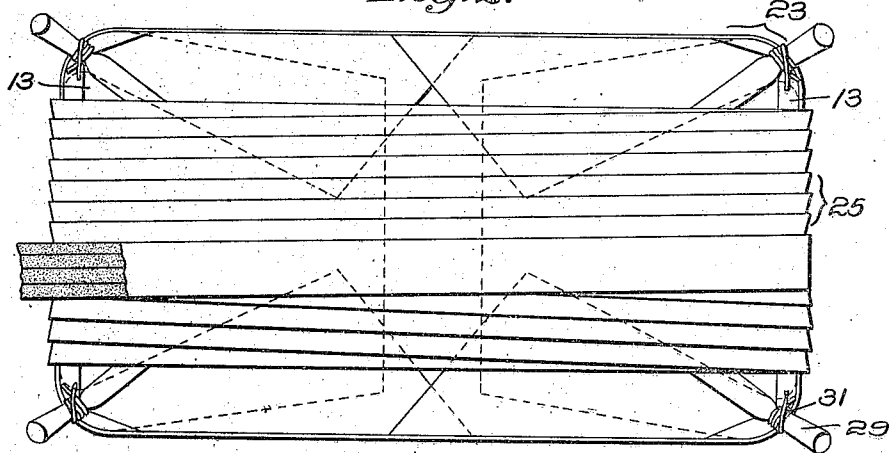
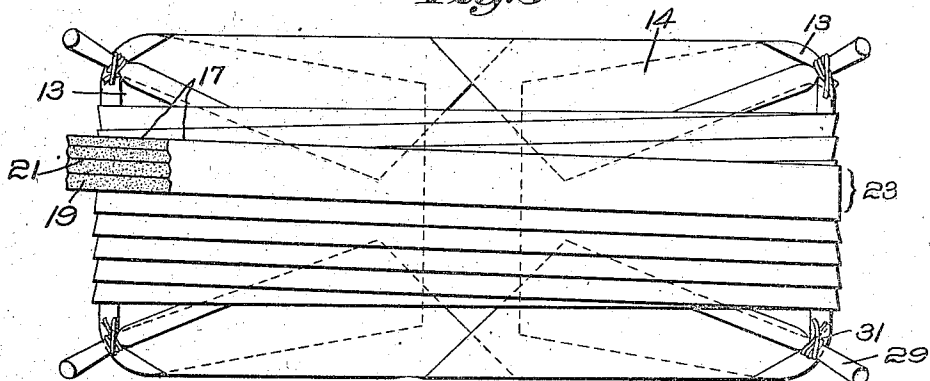


Fig. 3.



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2 sheets-sheet 2

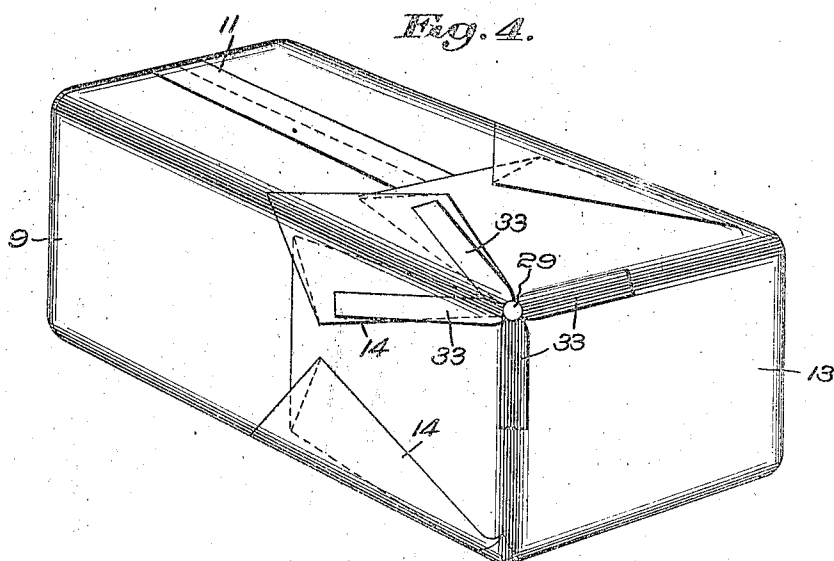
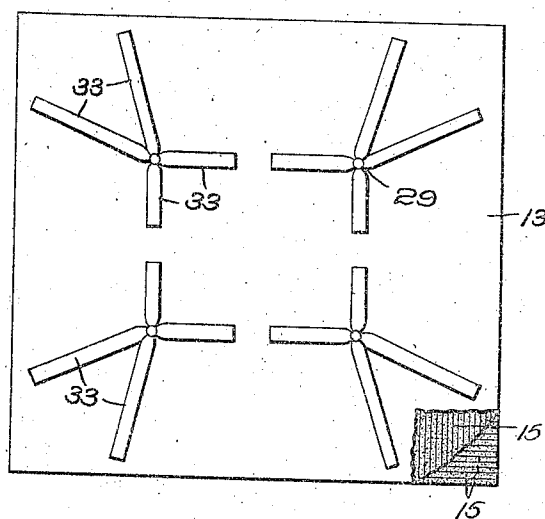


Fig. 5.



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PACKAGE.

Application filed May 10, 1918. Serial No. 233,804.

To all whom it may concern:

Be it known that we, EDWARD H. ANGIER and WILLIAM M. WHEILDON, citizens of the United States, and residents, respectively, of Framingham and Ashland, in the county of Middlesex and Commonwealth of Massachusetts, have invented an Improvement in Packages, of which the following description, in connection with the accompanying drawings, is a specification, like characters on the drawings representing like parts.

This invention relates to packages and is designed to provide as a unit for storage or shipment a commodity or commodities in a resistant enclosing covering. The particular package shown in the drawing as an example of our invention is of such form that it might aptly be called a bale and for convenience we shall in the following description use the word "bale" referring both to the enclosed commodities and to the covering or wrapping. The word bale, however, is commonly understood as implying a mass of more or less agglomerated material. While we anticipate a marked field of usefulness for our invention in connection with baled material, for example packages of clothing, we wish to emphasize the fact that our use of the word here is for convenience and by way of example and that single articles or numbers of articles each of which would have a permanent form of its own might be enclosed by the wrapping.

Our invention will best be understood by reference to the following description taken in connection with the accompanying drawings wherein:—

Figure 1 is a side elevation of the bale with the outermost covering partially removed and partially broken away;

Fig. 2 is a similar view with the outermost covering entirely removed and the next inner covering partially removed and partially broken away;

Fig. 3 is an elevation viewing the bale as if seen from the bottom of Fig. 1 and shows another covering removed;

Fig. 4 is a perspective view of the bale with only some of the preliminary coverings in place; and

Fig. 5 is a development in plan of one of the end coverings, partly broken away.

Referring to the drawing, we have there illustrated as an example of our invention a bale such as might be formed of a quantity

of clothing and having a more or less parallelepipedal form. The construction of the package here shown will best be understood by a description of the method of making the same. In this description we shall refer successively to Figures 1 to 4 in reverse order.

The bale proper or material which is to be enclosed in the covering may conveniently be enclosed in a wrapping sheet or sheets which may be sealed about the same by means of an adhesive strip 11. This sheet 9 may serve as a bale tie and may be joined about the material while the latter is under compression temporarily to hold the same in position. This sheet, furthermore, will serve to protect the material from the adhesive used in forming the outer layers of the package.

The ends of the package may next be covered by means of caps or end papers 13 here shown as formed of sheets folded in over the ends of the same by means of box pleats 14 at the corners of the bale. Conveniently these sheets are of a reinforced and waterproof paper such, for example, as indicated in Fig. 5, wherein I have shown a laminated sheet comprising three thicknesses secured together by layers of suitable waterproof adhesive in which are embedded reinforcing strands 15, the strands of one layer extending at right angles to the strands of the other layer. Outer covering layers are then applied to the bale, which as shown in Figs. 1, 2 and 3 are made up of narrow strip applied in helical turns. Conveniently this material takes the form of two strips of paper 17 secured together by a water-repellent adhesive such as bitumen, shown at 19, in which are embedded reinforcing strands 21 extending longitudinally of the strip.

In Fig. 3 we have shown at 23 the innermost of the layers formed by this strip as encircling the two ends covered by the end papers 13 and two of the sides of the bale. The strip is applied in overlapping helical turns tightly stretched about the bale, which turns are preferably bound together by means of adhesive which may be applied to the inner side of the strip as it is wound in place. The layer 23 may be built up of any suitable number of layers two of which are here illustrated, alternate layers being of opposite pitch. The use of a narrow wrap-

ping band as described permits the covering to be applied firmly with adequate tension and permits it to conform to any slight irregularities of the material packaged. At the same time, when the adhesive which has been applied dries, the whole becomes a practically unitary thickness of material without undue fullness and, as it were, molded in place about the bale.

After the layer 23 has been completed, another wrapping layer 25 may be applied as shown in Fig. 2, this layer encircling the two ends of the bale and the two sides not covered by the layer 23. In other words, the axis of the helix formed by the turns of wrapping strip in the layer 25 is substantially perpendicular to the axis of the helix formed by the turns of layer 23. The layer 25 may be formed of any suitable number of thicknesses, the turns of adjacent thicknesses preferably being of opposite pitch, as shown, and the turns of this layer are bound together and also secured to the subjacent wrappings by suitable adhesive.

Herein the package is completed, as shown in Fig. 1, by a third layer of wrapping strip 27 which encircles the four sides of the bale as distinguished from the two ends, the axis of the helix formed by the turns of this layer 27 being perpendicular to both axes of the layers 25 and 23. As before, this layer is built up by taut, overlapping, helical turns of strip secured together by adhesive. As shown in Fig. 1, the three wrappings of strip material 23, 25 and 27, each of which encircles a pair of the three dimensions of the package, cooperatively substantially enclose the same except for slight interstices at the corners which are closed by the sheet material which was first applied before the layers of strip and which is bound down and secured in place by such layers. Herein the multiple thicknesses of material formed by the box pleats 14 of the end sheets 13 cover the corners of the bale. Obviously, however, the corners can be first covered by other means.

In packaging large bundles and particularly bundles of agglomerated material such as are ordinarily formed in bales in the more restricted sense of that word, it has been found impracticable to utilize sheets of paper since they cannot be applied smoothly without warping or bellying or be drawn tightly into position. It has further been found that these large sheets under the shocks of transit break and split even although formed of materials of high quality and great cost, this splitting permitting moisture to reach the contents of the package. Furthermore, if it were attempted to apply waterproofing adhesive to a large sheet of material in order to form a waterproof layer around the bale, the sheet could not readily be handled and the warping

thereof would be exaggerated. In the present invention the use of sheet material as a part of the outer covering is substantially eliminated, it appearing only at the corners of the bale over a small area where it is firmly held in position by the crossing layers of wrapping strip. There is no large surface where the covering can lie with an undesirable fullness or be subject to considerable breaking strain. The package as a whole is covered with compound layers which are built up of narrow strip which may be drawn smoothly into position with adequate tension and made to follow closely the contours of the material wrapped. When constructed as described, moreover, the various layers will be merged together or conglutinated by the solidified or set adhesive in such a way as to form a substantially unitary thickness which, according to the particular adhesive used, may have a leathery or rubbery consistency which, because of the manner in which it has been built up into position in exact conformity to the form of the bale, will be almost like a natural hide or husk about the same.

Preferably, in packaging a three-dimensional commodity, as herein shown, I apply a layer of wound wrapping strip about each pair of dimensions. Not only does this provide for a more complete covering of the commodity and for resistant side walls formed of crossed elements, but the entire package is more stable and resistant to shocks. In handling large packages in shipment they are frequently thrown or dropped on one of their corners. However the bale shown in the drawing may strike, the distorting strains in each direction are resisted by encircling bands formed of layers of strip. Movement and distortion of the material is minimized and there is less possibility of the sheet material which may be used as a preliminary covering or to cover over the corners cracking or breaking. Moreover, as pointed out, the corner coverings are of a very small extent and are firmly held by the adjacent wrappings so that tearing or twisting strains on the same are minimized.

In a bale of this character it is desirable to provide means for handling the same corresponding to the ears of a bag, in order to prevent possible puncturing of the covering by the use of hooks. Conveniently we utilize the end papers 13 as carriers for handles 29 which are adapted to project at the corners of the bale in the interstices of the layers of strip. One of these handles is shown in Fig. 4 but it will be understood that two or more, herein four, are preferably used at each end of the bale (see Fig. 5). While these handles may take any desired form, they are conveniently formed of two sections of strip similar to that used

in forming the layers 23, 25 and 27, which sections are crossed and pressed together for a sufficient distance from the point of crossing to form a suitable length of ear.

At the base of this ear the strips may be bound together with string or cord 31 (Figs. 1, 2 and 3). The projecting ends of the strips (designated by the numerals 33 in Figs. 4 and 5) are secured by adhesive to the end paper 13 in such manner that when this paper is folded they will extend over the sides of the bale in proper directions to resist strain. Herein they are extended along the two edges of the end of the bale and diagonally along the two side faces adjacent that end. The strain resisting filaments or strands, as 21, carried by the strips provide proper strength therefor, the strain being longitudinally on such strands. Otherwise described, the strips might be said to be attached to the end papers and have fullness which is presented at the corner of the bale and provides a handle 29. The ends 33 of the strips extend beneath the wrapping layers 23, 25 and 27 and are firmly bound down and held by the same as well as adhesively secured as a part of the unitary covering formed by the coherent layers of the complete wrapping.

Having thus described the particular form of our invention shown in the accompanying drawings, the principles exemplified thereby which we claim as new and desire to secure by Letters Patent we shall express in the following claims:—

1. A sealed package having two crossing wrapping layers each comprising overlapping helical turns of wrapping strip wound about the package and conglutinated by adhesive and substantially waterproof sheets fitted to the thing enclosed and covering the same at the interstices of the wrappings, said wrappings binding down said sheets and adhesively secured thereto to provide sealed joints.

2. A three-dimensional sealed package

having a wrapping layer encircling each pair of dimensions formed by overlapping helical turns of wrapping strip wound about the package and conglutinated by adhesive and substantially waterproof covers over the corners of the package bound down by said wrappings, which are adhesively secured thereto to provide sealed joints.

3. A bale or like package comprising a commodity and a combined protective covering and unifying binding therefor comprising coverings for the ends of the bale, a wrapping tensioned around the ends and binding down the coverings and a wrapping encircling the sides of the bale and which overlaps and binds down said end coverings, said wrappings being formed of helically applied strip.

4. A package having two crossing wrapping layers formed of helically applied strip and bands held by said layers and projecting to provide handles for the package.

5. A package having end coverings, bands secured to said coverings, an encircling wrapping over the ends and a wrapping between the ends overlapping said end coverings, said bands having full portions projecting between the wrappings to provide handles.

6. A bale having a handle or ear comprising crossing bands which have a fullness at the corner of the bale and having a wrapping by which the ends of said bands are secured.

7. A bale having a handle or ear comprising crossing bands with longitudinal strain-resisting filaments, which bands have a fullness at the corner of the bale, and having a wrapping by which the ends of said bands are secured.

In testimony whereof, we have signed our names to this specification.

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WILLIAM M. WHEILDON.