

Feb. 23, 1932.

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1,846,584

WRAPPER FOR PACKAGES, BALES, AND THE LIKE

Filed March 9, 1928

2 Sheets-Sheet 1

Fig. 1.

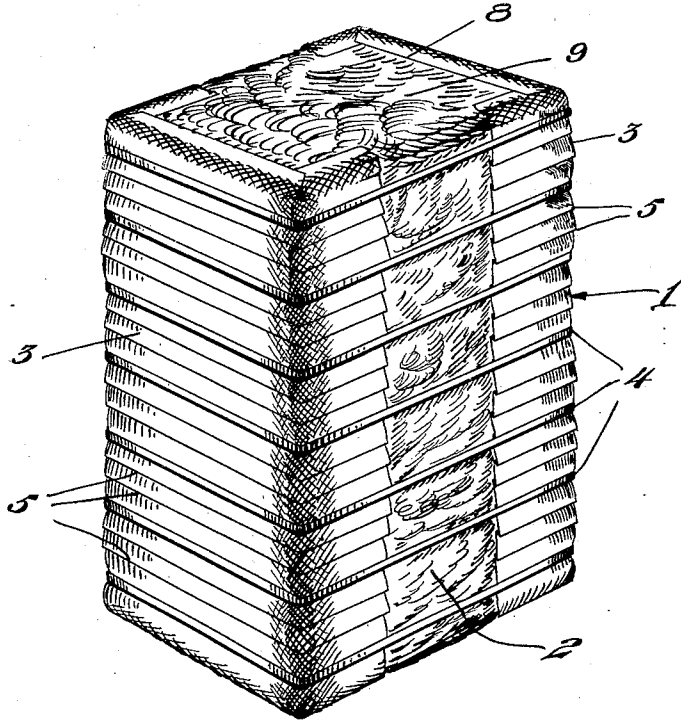


Fig. 3.

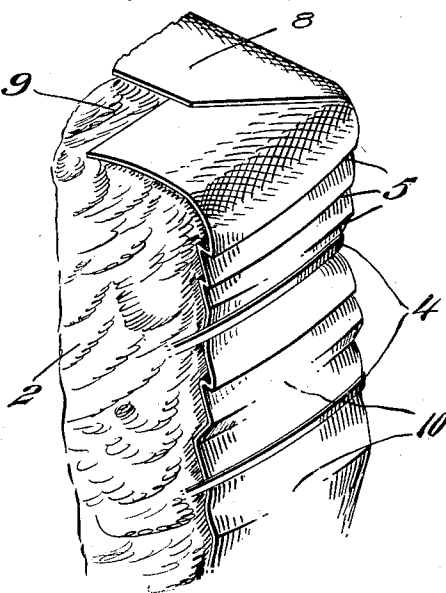
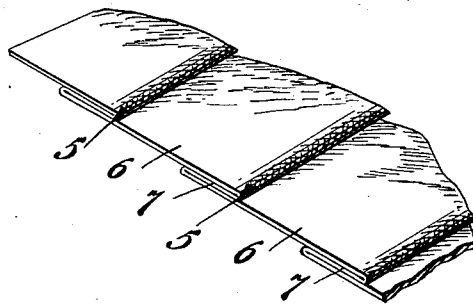


Fig. 2.



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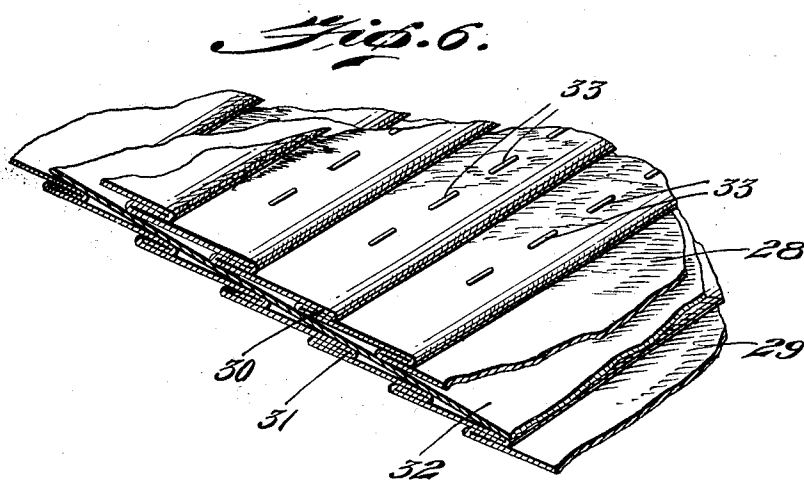
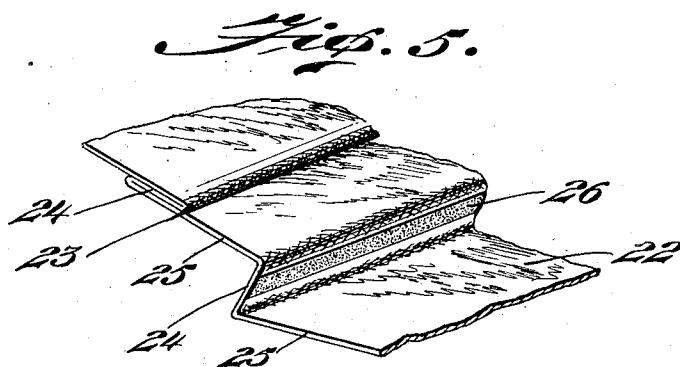
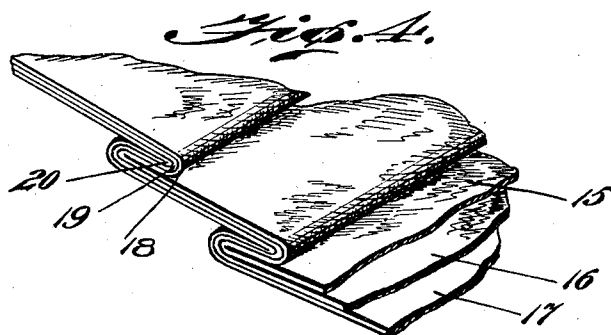
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WRAPPER FOR PACKAGES, BALES, AND THE LIKE

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2 Sheets-Sheet 2



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WRAPPER FOR PACKAGES, BALES, AND THE LIKE

Application filed March 9, 1928. Serial No. 260,432.

This invention relates to an improved wrapper for packages, bales, and the like, and more particularly to a wrapper of this character adapted for use in the baling or packaging of expansible material such as cotton, wool, and the like.

One object of the invention is the provision of a paper wrapper for bales and the like which is adapted to protect the contents from becoming soiled or otherwise damaged by contact with foreign matter, and which is capable of expanding at intervals throughout its extent without becoming ruptured.

A further object of the invention is the provision of an improved bale or package having an expansible wrapper for protecting the contents from injury and so formed as to permit limited expansion of the material without destruction of the wrapper and consequent injury to the contents.

Another object of the invention is the provision of a paper wrapper for bales or packages of cotton, wool, and the like, which is provided with pleats or gathers adapted to permit limited expansion of the wrapper throughout portions of its extent without breaking of the same.

Another object of the invention is the provision of a wrapper of the character described which is capable of being readily and easily constructed, and which, while of inexpensive material, is very efficient in use.

Referring to the drawings:

Fig. 1 is a perspective view of a bale or package of cotton or similar material, illustrating the position of my improved wrapper and its position relative to the ties employed for holding the material under compression.

Fig. 2 is a perspective view of a portion of my improved wrapper illustrating the form and arrangement of the pleats or folds therein.

Fig. 3 is an enlarged detail view of a portion of a bale, and illustrating the expansion of certain of the pleats under the influence of the pressure exerted thereon by the expansible material.

Fig. 4 is an enlarged detail perspective view of a modified form of wrapper made up

of a plurality of sheets each of which is provided with pleats, the pleats of the several sheets being arranged in interfitting relation with each other.

Fig. 5 is an enlarged detail perspective view of a further modified form of wrapper comprising a paper sheet provided with pleats, and having a line of adhesive for temporarily holding the parts of each pleat together to retard but not prevent the expansion of the pleated portion, and,

Fig. 6 is an enlarged detail perspective view of another modified form of wrapper made up of two or more pleated paper sheets with an unpleated sheet interposed therebetween.

In the baling of expansible material such as cotton, wool, and the like, it has been the practice heretofore to employ sheets or strips of burlap for partially covering the material, the burlap underlying the ties employed for holding the material under compression and protecting the material from abrasion and injury through contact with foreign matter during its transport from place to place.

In the usual method of forming such bales the raw material is placed in a press with a sheet of burlap arranged at either end thereof, and pressure is exerted upon the material to very materially reduce its bulk and so compact the same as to permit it being handled readily in transporting the same from place to place, and ties or bands are then placed about the bale upon four sides thereof to hold the material in its compacted condition.

The use of burlap for this purpose is attended by certain disadvantages, in that the cost of the burlap is such as to prohibit its being discarded after a single use and therefore require that those portions which have not been materially injured be saved and returned for reuse. Cotton, wool and like materials strongly adhere to the burlap and the fibres are forced into the interstices between the burlap strands and into any tears which may develop in the burlap wrapper, requiring the expenditure of considerable time and labor to remove all of the fibres from the burlap wrapper.

The cost of suitable paper wrappers would amount to only a fraction of that of the cor-

responding burlap wrappers, and would be sufficiently low to permit the paper wrappers to be discarded after a single use, while the tendency for fibres of cotton, wool and the like to adhere to the surface of the paper is negligible.

The use of paper in this connection, however, has heretofore been regarded as impossible by reason of the expansible character of the baled material and its tendency to expand in the spaces between the ties, such expansion being generally sufficient to completely rupture the wrapper at these points and thus leave the surface of the bale entirely unprotected.

I have found, however, that paper sheets suitable for use as a wrapper for materials of this character may be provided by forming a plurality of pleats in the paper, thus providing a paper wrapper capable of limited expansion between the bale ties whereby the wrapper is able to accommodate itself to the form of the expanded material and prevent rupture of the wrapper.

In forming the wrapper I may employ a single sheet of fairly heavy paper provided with a sufficient number of parallel pleats to compensate for such expansion as may occur between the ties, or I may form the wrapper of two or more superposed sheets which form a composite sheet and in which the pleats are formed by folding the several sheets together so that each sheet will be provided with pleats, the several pleats interlocking together to prevent separation of the several sheets in handling the same preparatory to their use as wrappers. If desired, I may prepare the wrappers by employing two or more pleated sheets either alone or in combination with one unpleated sheet, the unpleated sheet being interposed between the pleated sheets or directly underlying the expansible material with the pleated sheet or sheets located outwardly thereof upon the bale, and I may stitch or staple together the pleated sheets or the pleated and unpleated sheets along lines parallel to the pleats to prevent any separation of the sheets before their application to the bale. If desired, I may also employ one or more sheets of paper provided with pleats, and place a line of adhesive along each pleat or along certain of the pleats which will tend to retard the expansion of the pleated portions while permitting expansion of the pleats before rupture of the paper is effected.

In the embodiment of the invention illustrated in the accompanying drawings 1 designates a bale of cotton or the like 2, after the same has been compressed, showing the wrappers 3—located upon opposite sides thereof and underlying the bale ties 4, which surround the bale upon four sides thereof. Each wrapper 3 is provided with a plurality of parallel pleats 5, the direction of which,

as shown, is substantially parallel with the direction of the ties 4.

While I do not wish to limit my invention to any particular form of pleat, I prefer to form each pleat or fold with a relatively wide portion 6 and a relatively narrow portion 7, since in that way I may provide a continuous cover for the bale and permit the degree of expansion necessary for the expansion of the baled material. The ends 8 of the wrappers may overlie the ends 9 of the bale, as shown, or may be cut off substantially flush with the top of the bale as desired. In Fig. 3 of the drawings, I have shown the position assumed by the wrapper after the pressure upon the baled material is removed, when the expansible material expands somewhat into the space between adjacent ties causing the pleats or portions thereof to expand as indicated by 10 to wholly or partially remove the folds from the sheet. It is my purpose to provide a sufficient number of pleats or folds so that the expansion of the baled material will be substantially taken up by the expanding folds and thus prevent rupture of the wrapper.

In the form of wrapper shown in Fig. 2 of the drawings, a single sheet of paper is employed, provided with a plurality of pleats 5 extending in a direction substantially parallel with the direction of the bale ties.

In the form of wrapper shown in Fig. 4 of the drawings, a plurality of paper sheets are employed the several sheets being designated by the reference characters 15, 16 and 17 respectively, and each sheet is provided with a plurality of pleats or folds which are correspondingly indicated by reference characters 18, 19 and 20. As shown, the corresponding pleats 18, 19 and 20 of the several sheets are formed together so that they interengage after the formation of the pleats and thus normally hold the several sheets against separation in the handling of the sheets, while expansion of the corresponding pleats in the several sheets may take place equally under pressure exerted by the expansible material.

In the wrapper shown in Fig. 5 of the drawings, a single sheet 22 is employed which is provided with pleats 23 formed therein and comprising portions 24 and 25, a line of adhesive 26 is applied to the portion 24 for securing the portion 24 to the portion 25. The adhesive is such as to retain the portions 24 and 25 of the pleat against separation to a limited extent as tension is exerted thereon through the pressure of the expansible material. That is, the adhesive retards the separation of the portions 24 and 25 of each pleat, but permits the separation of these parts before the tension exerted upon the wrapper is sufficient to rupture the paper. In this way a certain amount of resistance is interposed to the separation of the pleats

which tends to prevent an extreme or too abrupt expansion of the packaged material. In this form of wrapper a plurality of superposed sheets may also be employed with corresponding interengaging pleats formed in the several sheets, and a line of adhesive material applied to the adjacent portions of the outer or inner sheet of the series.

Fig. 6 of the drawings discloses still another form of wrapper which comprises two or more pleated sheets and one unpleated sheet, the unpleated sheet may be placed next to the baled material or interposed between certain of the pleated sheets. As shown, the pleated sheets 28 and 29 are provided with pleats 30 and 31 respectively, and the unpleated sheet 32 is interposed between the pleated sheets 28 and 29. The pleats 30 and 31 may be arranged opposite each other or may be off-set from each other as shown to bring about more uniformity in the thickness of the composite wrapper.

The several sheets may be connected together by lines of stitches or staples 33, to hold the several parts of the composite wrapper against separation in handling.

In each of the various forms of wrapper shown herein the bale ties 4 are so arranged about the bale as to be in substantial parallelism with the pleats or gathers in the wrapper or arranged transversely of the direction of maximum expansion of the wrapper, and it has been found in practice that the bale ties operate in connection with each form of wrapper to retard initially the separation of the pleats or gathers or the expansion of the expansible portion of the wrapper while permitting a more or less gradual expansion of the expansible parts of the wrapper between the bale ties under the influence of continued pressure exerted by the expansible baled material during the handling of the bale. The separation of the pleats or gathers or the expansion of the wrapper intermediate the bale ties under the pressure exerted by the expansible baled material tends to become greatest substantially midway between the bale ties and to decrease in degree from that point towards each bale tie, since the bale ties tend to bind the pleats adjacent thereto so closely against the baled material that they are not usually entirely pressed out by the expansible material. In the use of the composite wrapper shown in Fig. 6 of the drawings the sheet of plain unpleated paper also serves in conjunction with the pressure exerted by the bale tie to retard the expansion of the wrapper or the separation of the pleats or folds therein, since it serves as an additional holding means to prevent separation of the pleats or gathers until such time as the pressure exerted by the expansible material becomes sufficient to rupture portions of the plain sheets and thus permit gradual separation of the

pleats or gathers or expansion of the expansible portions of the wrapper limited only by the restraining influence of the bale ties, the effect of which is operative to a variable degree throughout the service of the wrapper, being greatest at or closely adjacent to the bale ties and least at points substantially midway between the bale ties.

While I have shown the pleats formed in the wrappers as extending substantially parallel with the bale ties, it is to be understood that in certain embodiments of the invention and when certain kinds of paper are employed the pleats may be arranged to run in a direction somewhat at variance from exact parallelism to the extent, for example, that a single bale tie may engage two or possibly three of the pleats throughout the extent of the bale tie, but such variation is intended to be embraced within the general expression to the effect that the pleats extend substantially parallel with the bale ties as found in the specification and claims.

While the invention has been shown and described with particular reference to bales of cotton, wool and the like, the type of wrapper shown and described may be used advantageously as a covering for packages of expansible materials generally, and such wrappers may be applied to portions only of the packages, as shown, or may be modified to extend entirely around either four or six sides of the material, and may be employed in connection with substantially non-yielding ties, as shown, or with cords, ropes, or other suitable binding elements possessing a greater or less degree of extensibility.

What I claim is:—

1. As an article of manufacture, a wrapper for a package of expansible material comprising two or more layers of sheet material arranged and held in superposed relation to each other, one or more of said layers of sheet material being expansible in one direction and substantially non-expansible in a direction at substantially right angles to said first named direction, and one or more of said layers of sheet material being relatively non-expansible in all directions throughout their superficial areas, said layers of sheet material being capable of movement independently of each other throughout substantial portions of their areas.

2. As an article of manufacture, a composite paper wrapper for expansible material comprising two or more paper sheets arranged and held in superposed relation to each other, one or more of said sheets being provided with portions adapted to expand under pressure, and one or more of said sheets being incapable of material expansion without rupture, said sheets being free to move relative to each other throughout portions of said wrapper.

3. As an article of manufacture, a com-

posite wrapper for expansible material comprising a plurality of superposed paper sheets secured together at intervals throughout their extent, certain of said sheets being provided with expansible folds arranged substantially parallel with each other, the folds in said sheets being capable of limited expansion upon pressure being exerted thereagainst by said expansible material while initially resisting such expansion, and certain of said sheets being formed of plain unfolded paper.

4. As an article of manufacture, a composite wrapper comprising a plurality of paper sheets arranged and held in superposed relation to each other, certain of said sheets being provided with folds arranged substantially parallel with each other, said folds being capable of expansion under pressure, and certain of said sheets being formed of relatively non-expansile paper, certain of said non-expansile paper sheets being arranged in alternate relation with certain of the sheets containing folds.

5. As an article of manufacture, a composite wrapper comprising a plurality of paper sheets arranged and held in superposed relation, one or more of said paper sheets being provided with folds arranged substantially parallel with each other and capable of separation to permit limited expansion of a portion of the sheet, and one or more of said sheets being formed of non-folded paper, each of the sheets which is provided with folds being capable of movement relative to the sheets next adjacent thereto throughout a substantial portion of its extent to permit opening of the folds therein independently of the sheets adjacent thereto.

6. As an article of manufacture, a wrapper for expansible material which comprises two or more paper sheets arranged and held in superposed relation to each other, certain of which sheets are relatively non-expansile throughout their extent, and certain of which sheets are provided with portions that normally tend to resist expansion when positioned relative to the expansible material but which are capable of expansion under the pressure exerted by the expansible material, the expansible portions of said last named sheets being capable of movement independently of said relatively non-expansile sheets.

7. As an article of manufacture, a wrapper for expansible material comprising two or more paper sheets arranged and held in superposed relation to each other, one or more of said sheets being capable of expansion under pressure exerted by the expansible material, and one or more of said sheets being relatively non-expansile, each of said sheets being movable independently of the others throughout portions of its extent.

8. A wrapping means for a package of expansible material, comprising a layer of sheet

material which is expansible in one direction under the influence of pressure exerted thereon by the expansible material and relatively non-expansile in a direction at substantially right angles to said first named direction, and means substantially co-extensive with said first named layer for initially restraining the expansion of said sheet material but yielding to permit limited expansion of said sheet material when the tension thereon exceeds a critical value.

9. A wrapping means for a package of expansible material comprising one or more paper sheets having substantial areas capable of expansion in one direction, and means for conserving the expansible character of said sheets throughout substantially the entire extent of their expansible areas.

10. A wrapper for a package of expansible material comprising one or more paper sheets capable of expansion in one direction, and means for initially retarding the expansion of said paper sheets substantially uniformly throughout the expansible areas thereof while permitting expansion of the expansible portions of said sheets upon increase of pressure being exerted thereon by the expansible material prior to the rupture of the wrapper.

11. A wrapper for a bale of expansible material comprising two or more paper sheets, one or more of said sheets having substantial areas capable of expansion in one direction, and means for conserving the expansibility of each expansible sheet, said means including one or more additional relatively non-expansible sheets co-extensive with the expansible areas of the expansible sheet or sheets.

12. A wrapping means for a package of expansible material comprising two or more pleated paper sheets and one or more unpleated paper sheets interposed between certain of said pleated paper sheets the several sheets being arranged and held in superposed position relative to each other, the pleats formed in each of said pleated paper sheets being arranged substantially parallel with each other and with the pleats in the remaining pleated sheets and the pleats in each pleated sheet being offset transversely from the pleats in one or more of the remaining pleated sheets.

13. A wrapper for a package of expansible material comprising two or more paper sheets each provided with parallel pleats capable of opening under pressure exerted by the expansible material the several sheets being arranged and held in superposed position relative to each other, certain of the pleats contained in the separate sheets interlocking with each other to hold the interlocked sheets against substantial movement relative to each other and insure a substantially uniform separation of the pleats contained in the individual sheets.

14. A wrapper for a package of expansible material comprising one or more paper sheets

provided with expansible portions formed of parallel pleats extending across the entire transverse extent of the sheet, the several pleats being of substantially uniform width to provide a substantially uniform degree of expansibility throughout the transverse extent of the wrapper, and means for initially retarding the expansibility of the expansible portions of said sheet or sheets whereby a relatively gradual opening of the pleats is insured upon increase in pressure of the expansible material and the rupture of the wrapper prevented.

In testimony whereof I have affixed my signature.

JOHN W. CLARK.