Aug. 1, 1933. J. W. CLARK 1,920,841

PAPER WRAPPER FOR EXPANSIBLE MATERIALS

Filed Dec. 19, 1928

Fig. 1.

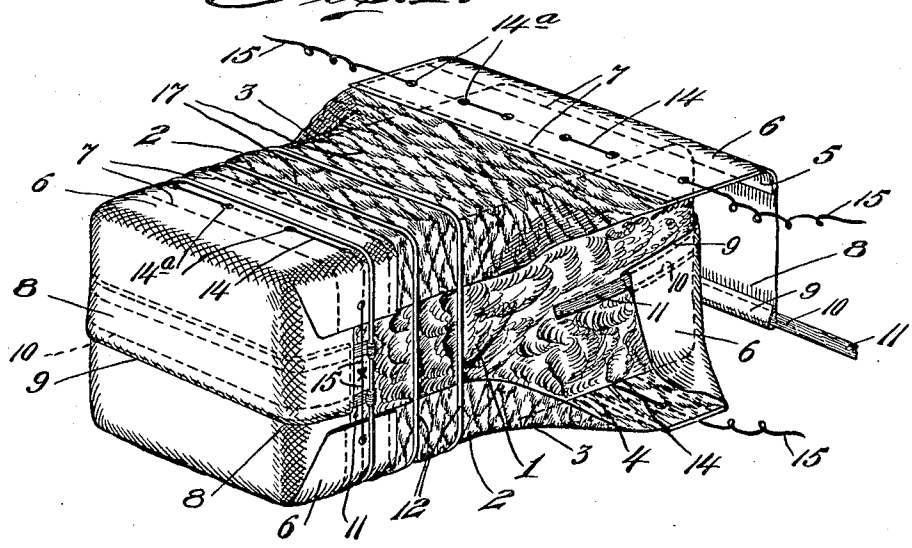


Fig. 3.

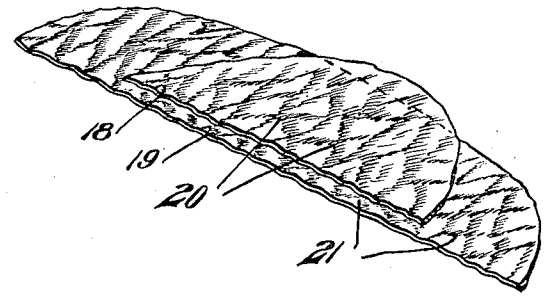


Fig. 2.

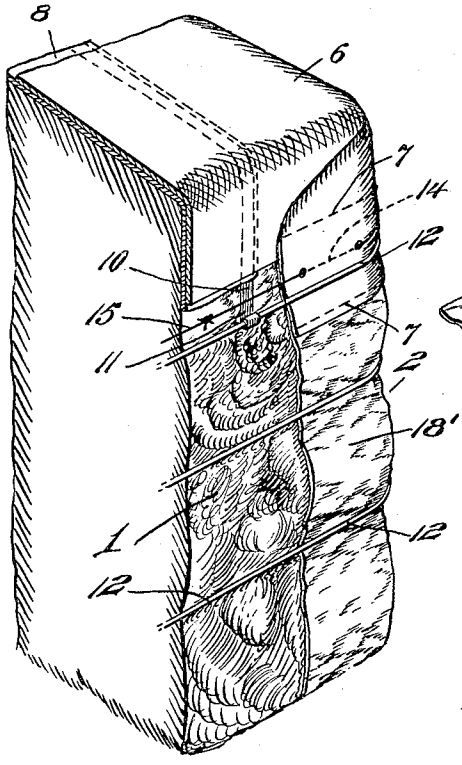
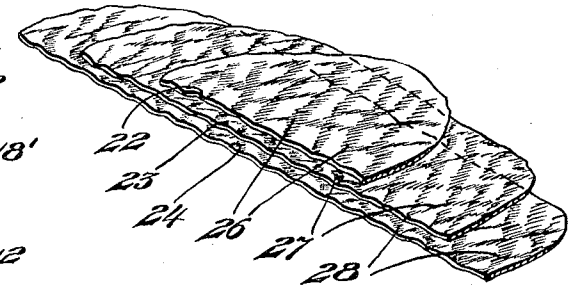


Fig. 4.



Inventor

John W. Clark

By Perley H. Plant,

Attorney

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PAPER WRAPPER FOR EXPANSIBLE MATERIALS

John W. Clark, New York, N. Y.

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6 Claims. (Cl. 100—14)

This invention relates to an improved paper wrapper for expansible materials and more particularly to a wrapper formed from one or more sheets of crepe paper or paper provided with a plurality of relatively loose gathers or folds having such a general directional trend as to be arranged substantially parallel with each other, whereby when the wrapper is applied to a bale or package of expansible material, such as cotton, wool, or the like, with the gathers or folds extending substantially parallel with the bale ties, the presence of the gathers or folds in the wrapper will permit the necessary expansion of the wrapper to accommodate itself to the expansion of the material packaged without rupture of the wrapper.

In my copending application for patent, Serial Number 260,432, filed March 9, 1928, I have described and claimed a paper wrapper for expansible material comprising one or more sheets or layers of pleated paper, each of which is provided with a plurality of closely folded pleats arranged parallel with each other, and with the bale ties which are placed over the wrapper. The pleats as shown and described in the copending application above referred to are distinguished from the folds or gathers of the present application in that they are closely folded to form three thicknesses of the paper sheet at the points where the folds occur, thus offering material resistance to the expansion of the wrapper by reason of the force required to open the pleats, while permitting such expansion upon the application of sufficient pressure thereto without rupturing the wrapper. I find, however, that by using a tough, flexible paper, such as may be made by special processes or by proper selection of materials and methods of preparation, it is possible to use one or more sheets of crepe paper or paper having relatively loose folds or gathers formed therein instead of the closely folded pleats as shown and described in said copending application.

One object of the present invention, therefore, is the provision of a wrapper of the character described, adapted for use in the baling or packaging of expansible materials, which comprises one or more sheets or layers of crepe paper or paper having a plurality of substantially loosely arranged gathers or folds formed therein and so arranged as to extend generally in a direction substantially parallel with each other and with the bale ties overlying the wrapper to permit the necessary expansion of the expansive material between the bale ties without rupturing the wrapper.

Another object of the invention is the provision of means associated with the wrappers and adapted for use in the baling of cotton and the like for temporarily holding portions of the wrapper in place and preventing undue expansion of the bale after the removal of the first bale ties in the high compression press and before recompression of the material to form a high density bale.

A further object of the invention is to provide means for temporarily securing the ends of the wrappers to the end bale ties when applying the wrappers to the bale in order to assist in drawing the end edges of the wrapper ends into close contact with the bale end when the bale ties are placed under tension by release of the force applied in compressing the baled material.

Other objects and advantages of the invention relate to various improved details of construction and novel modes of operation as will more fully appear in the detailed description to follow:—

Referring to the drawing:—

Fig. 1 is a perspective view of a bale of cotton, illustrating the position of one form of my improved wrapper as applied thereto, and showing one end of the wrapper as it appears when folded about the end of the bale, while the opposite end of the wrapper is extended to better illustrate the manner of forming the several parts,

Fig. 2 is a detail view of a portion of a completed bale with the wrapper as finally applied thereto, and illustrating the manner in which the expansible material tends to project between the bale ties and the position assumed by those portions of the wrapper extending thereover, with a portion of the loosely arranged folds or gathers expanded under the influence of the pressure exerted by the expansion of the packaged material.

Fig. 3 is a detail view of one form of wrapper made up of two sheets or layers of crepe paper having the crepes or folds arranged substantially parallel with each other, and,

Fig. 4 is a detail view, similar to Fig. 3, but illustrating a form of wrapper made up of three sheets of crepe paper.

In the embodiment of the invention illustrated herewith, 1 designates the baled expansible material, such as cotton, wool, or the like, and 2 indicates generally one of the wrapper sections as applied to one side of the bale. Each of the wrapper sections comprises a central portion 3,

which may be formed of one or more sheets of crepe paper or paper having formed therein a plurality of relatively loosely arranged folds or gathers. In the form of the invention as illustrated in Figs. 1 and 2, the wrapper sections are shown as having the central section 3 formed from a single sheet 4 of crepe paper, although two or more sheets may be employed as may be found best adapted to the material to be packaged and the size of the bale or package to be formed, but for use in the formation of standard sized bales of cotton I prefer to use two or more sheets of the paper for forming the central section of the wrapper. In the present embodiment of the invention the sheet 4 of crepe paper forming the central section of the wrapper extends to the points indicated by 5 to entirely cover the sides of the bale, and has end sections 6 of plain paper, woven fibre or fibre reinforced material, coarsely woven fabric, especially prepared paper, or other suitable material secured to each end of the central section as by lines of stitches 7 or other suitable means, whereby the end sections 6 project a sufficient distance beyond the ends of the central section so that the free end portions materially overlap each other to completely cover each bale end.

In applying the wrappers to bales of expansible material, such as cotton and the like, the lower wrapper may be placed in the press, the cotton then placed upon the wrapper and a second wrapper placed upon the cotton. The cotton is then compressed and the bale ties placed thereabout over the wrappers. In order to hold the free end portions 8 of the end sections 6 closely against the bale ends, the free end portions 8 of each end section may have the edge thereof folded over as indicated at 9, and a narrow strip 10 of paper fabric, or other suitable material inserted within the channel formed by the fold 9 so that the ends 11 of the strip project beyond the sides of the end section, whereby when the bale ties 12 are applied to the bale, and before the pressure exerted by the press is removed, the ends 11 of the strip 10 may be twisted around the end bale tie 12 to draw the folded ends, 9, of the end sections into close contact with the bale ends when the pressure upon the bale is released. In this way the folded ends are drawn into close engagement with and held firmly against the bale ends to insure that each bale end will be covered by the end sections.

Each of these wrappers may be folded before use after the manner disclosed in Figs. 9 and 10 of my copending application, Serial Number 313,447, filed October 19, 1928, in order to better adapt them for ready insertion into the press in a form capable of conforming generally to the shape of the baled material.

In the packaging of cotton the cotton is first compressed to form what are known as gin bales, which may be later recompressed to form standard or high density bales, and in recompressing the gin bales to form the standard or high density bales it is the practice to place a gin bale in a press, remove the bale ties just before placing the bale in the press, further compress the bale and then apply bale ties to the recompressed bale. After the bale ties have been removed and the gin bale has been placed in the press for recompression, it is desirable to have some means for holding the wrappers in place and prevent too great expansion of the material before recompression. As a means for performing this function a cord 14 may be inserted between the crepe paper section 3 and each end section 6, and located between the two rows of stitches 7, with the ends 15 of the cord extending from the sides of the wrapper a sufficient distance to permit the adjacent cords ends 15 to be secured together for holding the wrapper in position and preventing undue expansion of the bale before it is recompressed to form a standard or high density bale. Instead of two parallel lines of stitches being employed to hold the cords 14 in place on the wrapper, the cord may be inserted between certain of the paper sheets when more than one sheet is employed and retained in position by reason of its tendency to adhere to the sheets, or the cord may be held in position relative to the sheet or sheets by having a small amount of adhesive applied thereto for holding it upon the sheet or sheets with which it contacts, or two or more eyelets or perforations may be formed in the sheet, as indicated at 14*a* on Fig. 1, and the cord passed through certain of such openings to insure its being retained in proper position during the handling of the wrapper, or one or more narrow paper strips may be pasted to the sheet over the cord to hold the cord in place. As these cords serve their purpose when the bale is recompressed and the recompressed bale has been secured by bale ties, they may then be untied and drawn from the wrappers, or the ends cut away to prevent them from catching upon obstructions and interfering with the handling of the bales, or they may be left intact upon the bale.

The single sheet of crepe paper provided with loosely formed gathers or folds, as shown in Figs. 1 and 2, forms that portion of the wrapper extending over the sides of the bale, and the gathers or folds 17 extend generally in a direction substantially parallel with each other and with the bale ties 12. In the baling of highly expansible material, such as cotton or the like, the material expands considerably after compression to form bulges 13' between adjacent bale ties. The use of crepe paper or paper having a plurality of loose folds or gathers formed therein and arranged parallel with the bale ties permits limited expansion of the wrapper in the areas located between the bale ties to accommodate itself to the bulges of the material without placing such undue strain upon the wrapper as would cause its rupture. This is especially true when a wrapper made up of two or more sheets of paper is used, wherein each sheet is provided with folds or gathers after the manner described and the folds of the several sheets are arranged substantially parallel with each other and with the bale ties.

By using an expansible wrapper formed from one or more sheets of tough paper each of which is provided with loosely formed gathers those portions of the bale surface located between the bale ties are permitted to expand sufficiently to accommodate the material to a sufficient extent to prevent rupture of the wrapper, and at the same time the bale itself is allowed to elongate after compression without tearing the wrapper. The extension of the wrapper sheets between the bale ties is more or less limited in extent and the bale ties serve to localize the areas in which extension of the wrapper occurs.

While I have shown and described the wrappers as being formed of a central section 3 of creped paper having end sections 6 of plain paper or other material stitched thereto, the crepe paper sheet or sheets may be extended to form both the central and end sections, and the free ends of the wrapper thus formed folded over, as at 9, to form

the end folds for the reception of the strips 10 as previously described. When the crepe paper sheet or sheets are extended to form both the central and the end sections of the wrapper as above described, two lines of stitches may be formed across each wrapper adjacent to each end of the bale to serve as anchoring means for the cords 14 after the manner previously described. Staples or other suitable attaching means may be substituted for the rows of stitches after the manner previously described, if desired.

In the form of wrapper shown in Fig. 3 of the drawing, 18 and 19 designate two sheets of crepe paper arranged in superposed relation, and provided with folds or gathers 20 and 21 respectively, for forming the central portion of each wrapper section. The folds or gathers 20 and 21 are arranged substantially parallel with each other and the sheets are to be applied to the bale in such a manner that the folds 20 and 21 will lie substantially parallel with the bale ties which are placed about the bale and which overlie the wrappers.

In the form of wrapper shown in Fig. 4 of the drawing, three sheets of crepe paper are employed which are designated by the numerals 22, 23 and 24, and each of these sheets is provided with a plurality of folds or gathers 26, 27 and 28 respectively, which folds or gathers are arranged substantially parallel with each other, and the folds or gathers 26, 27 and 28 are to be arranged substantially parallel with the bale ties when the paper sheets are applied to the completed bale and the bale ties placed thereover.

The wrapper sections shown in Figs. 3 and 4 are adapted and intended to be employed either as central sections in forming wrappers having central and end sections secured together, as shown in Figs. 1 and 2, or in forming complete wrappers wherein the plain end sections are omitted and the superposed crepe sheets or sheets having formed therein a plurality of loosely arranged folds or gathers of a similar character, extend a sufficient distance to cover both the sides and the end portions of the bale. When the superposed crepe sheets are formed to extend a sufficient distance to cover both the sides and the end portions of the bale, the extreme ends of the wrapper formed of the superposed crepe sheets may be folded, as indicated at 9 in Fig. 1, to serve as an anchoring means for the strips 10, and parallel lines of stitches, such as are indicated by reference character 7 in Fig. 1, may be applied thereto to retain therebetween a cord 14, after the manner previously described.

It is to be understood that in the specification and in the claims appended hereto the terms "folds" and "gathers" are used to designate broadly any loosely arranged folds or gathers as contradistinguished from closely folded pleats wherein the paper forming the pleats is pressed closely together so that the pleats themselves offer considerable resistance to a force tending to separate the parts thereof. The term "wrapper section" as employed in the claims, refers to one of the complete wrapper sections which, as shown in Figs. 1 and 2, comprises a central section 3 and two end sections 6, but which may be formed entirely of paper provided with a plurality of loosely arranged gathers or folds if desired.

What I claim is:—

1. In a wrapper for a bale of expansible material, a pair of paper wrapper sections provided with expansible portions and positioned upon opposite sides of the bale, each of said wrapper sections having the free ends thereof folded over to form a closed channel, and an elongated strip positioned within the channel and having the ends thereof extending beyond the sides of the wrapper whereby the free ends of the strip may be secured to one of the bale ties to hold the end portion of said wrapper section in close proximity to the bale end.

2. In a wrapper for a bale of expansible material, a pair of paper wrapper sections provided with expansible portions and positioned upon opposite sides of the bale, each of said wrapper sections being provided at its free ends with holding means extending beyond the sides of the wrapper which are adapted to be secured to one of the bale ties to hold the end portion of said wrapper in close proximity to the bale end.

3. In a wrapper structure for bales, a pair of wrapper sections adapted to be positioned upon opposite sides of the bale, and means carried by each wrapper section and located adjacent to the bale end when the wrapper sections are positioned thereon for surrounding the bale transversely thereof and temporarily holding a compressed bale against expansion prior to the application of bale ties thereto.

4. In a wrapper structure for bales, a pair of wrapper sections adapted to be positioned upon opposite sides of a bale and each comprising a central section and end sections, and means carried by oppositely positioned end portions of the sections and extending beyond the side edges thereof and capable of being secured together for temporarily connecting said opposed wrapper sections transversely of the bale and holding the bale against expansion prior to the application of bale ties thereto.

5. In a wrapper structure for bales, a pair of wrapper sections adapted to be positioned upon opposite sides of a bale, means carried by each wrapper section and located adjacent to the bale ends for temporarily connecting said wrapper sections, and means carried by the ends of said wrapper sections for binding the free ends of said wrapper sections to one or more of the bale ties to hold the end portions of said wrapper sections in close proximity to the bale ends.

6. In a wrapper structure for bales, a pair of wrapper sections adapted to be positioned upon opposite sides of a bale and each provided with end portions, and means carried by said end portions and extending outwardly from the side edges thereof for attachment to a bale tie to hold the end portions of said wrapper section in close proximity to the bale ends.

JOHN W. CLARK.