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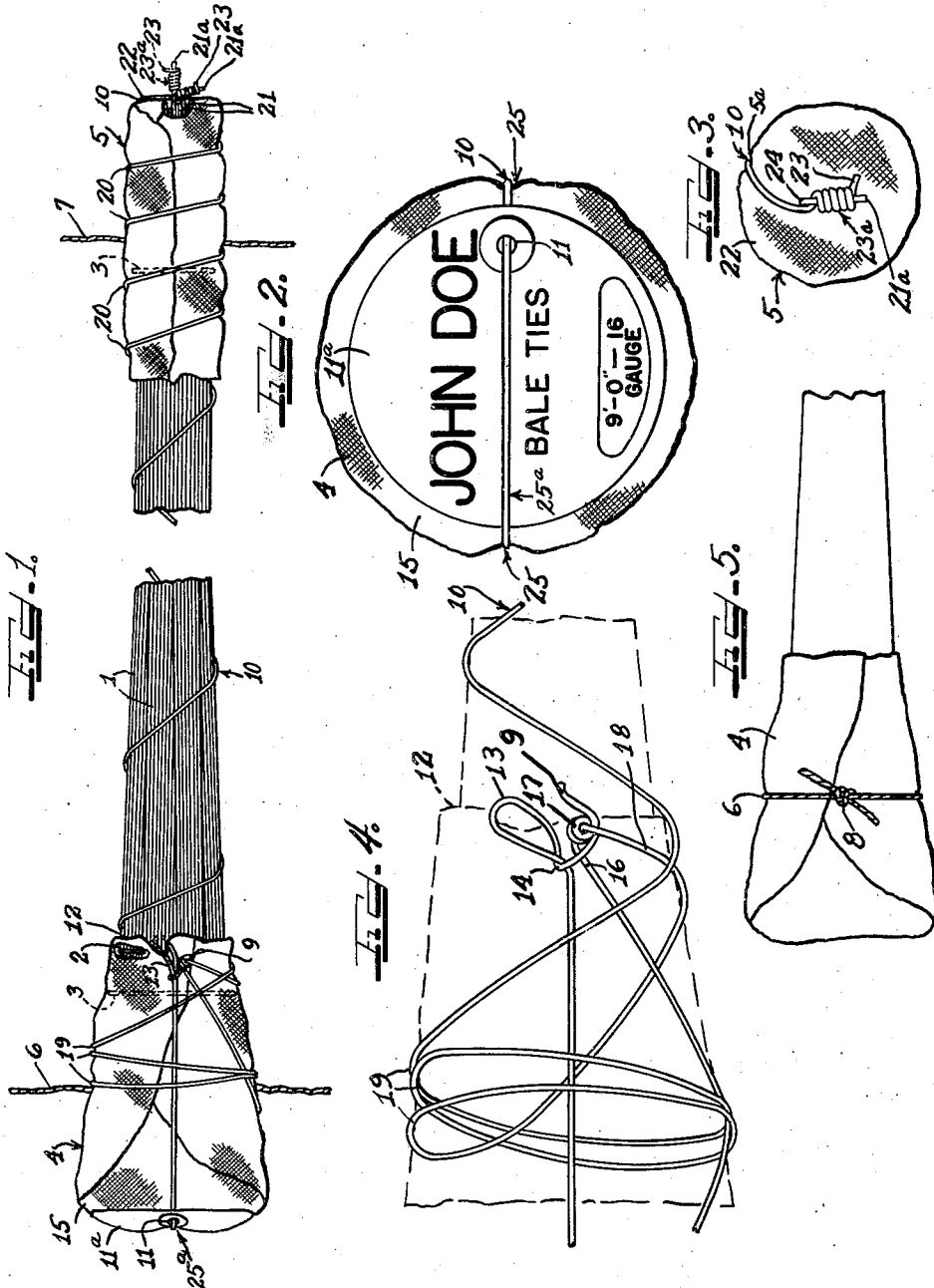
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2,124,503

BALE TIE PACKAGE

Filed Sept. 6, 1935

2 Sheets-Sheet 1



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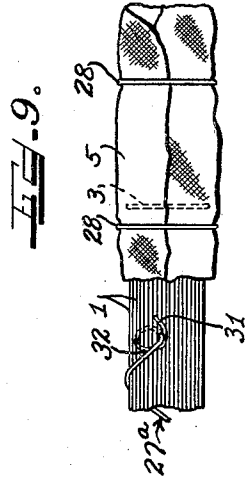
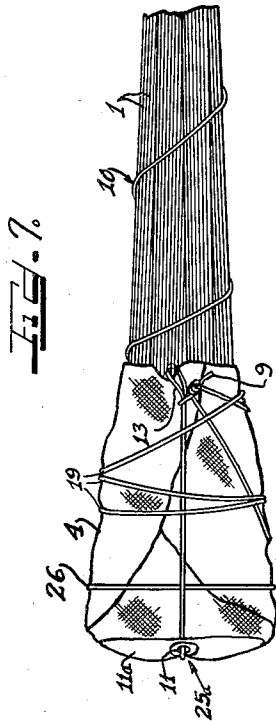
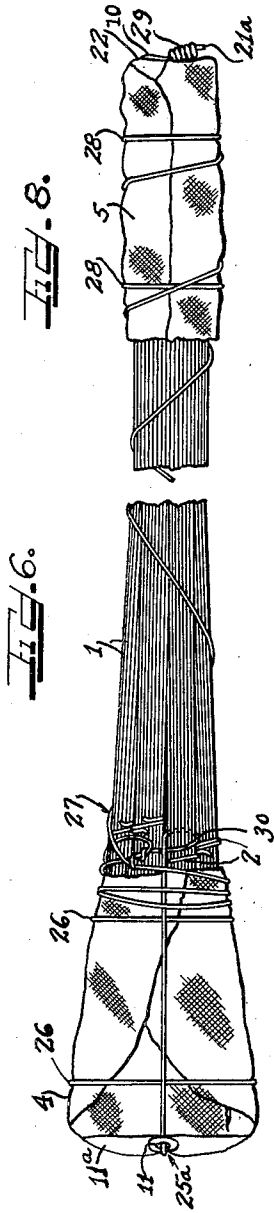
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2 Sheets-Sheet 2



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# UNITED STATES PATENT OFFICE

2,124,503

## BALE TIE PACKAGE

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Application September 6, 1935, Serial No. 39,390

6 Claims. (Cl. 206—46)

This invention has to do with the packaging of elongated bundles of lengths of material such as wire, bale ties and the like. It has been the practice in the past to wrap bundles of this character by means of a number of individual wire rings placed about the assembled ties or the like at intervals which may vary with the size of the bundles and have been usually six to eight inches, more or less. This means of wrapping the bundles has been found unsatisfactory, among other reasons because of the accidental mingling of at least some of the rings with the material to be baled, when the rings are severed as the bundle is being unwrapped. Another reason for the dissatisfaction is that these springs would slip along the bundle, due among other things to engagement with other bundles, both before and during shipment, thus requiring redressing.

To remedy this situation at least in part, there has been a recent tendency to replace a majority of such rings by a single strand wrapped spirally lengthwise of the bundle. However, reliance in such improved constructions has been placed upon wire rings employed to secure burlap coverings at the ends of the bundle in place.

It is one of the principal objects of the present invention to provide an improved package of this character but in which the burlap anchoring rings are eliminated.

Also in the past the spiral wrapping strand has been fastened in place with one or both ends secured under the burlap cover or covers. This has slowed up the removal of the wrapping means since it has been necessary to remove one or more rings outside of the covers, then to remove the covers and thereafter to cut away or otherwise unfasten the end or ends of the spiral strand.

It is accordingly another object of the invention to provide a package of the character referred to wherein the spiral strand is disposed substantially in its entirety exteriorly of the covers.

It is a further object of the invention to provide a package of the class referred to wherein a single wrapping element is employed for holding the bundle in shape and securing the end covers alone or with an identification tag in place.

It is a further object of the invention to provide a package of the character referred to wherein the ties or the like are held in assembly by wrapping means including a spiral wrapping strand having an end wrapped about an end covering of the bundle and anchored to a protruding end of a tie outside of the cover.

It is another object of the invention to provide an improved method of making a spiral wrapped package of the class referred to.

In accordance with the general features of the invention, applied to bale ties by way of example, only, a sufficient number of ties are placed together to form an elongated body of generally cylindrical shape, the ends of the body being secured together by wire or other suitable rings to hold the ties in assembly. A burlap or other suitable covering is placed over and about the end portions of the assembly and folded neatly in place. These covers are ultimately to be secured in place by the same spiral wrapped strand. Accordingly, the covers should be held in place until they are wrapped by the strand.

One end of the strand to be spiral wrapped about the assembly is passed through a hole near the periphery of an identification tag and is looped about one or more of the assembled ties in a manner to tightly anchor the end of the strand. A portion of the strand at the extremity of the end is left free, and while the covering is held temporarily, the strand is looped longitudinally about the cover in a manner to position the major part of the tag between the strand and the outer end of the cover. The strand is then returned and fastened to said extremity of the strand, and then is coiled about the cover, after which it is spiraled along and about the assembly toward the other end of the bundle and coiled securely about the cover at said other end. In the placing of the cover at said other end, at least one adjacent end of a tie is permitted to project through the end of the cover. When the spiraling of the strand is completed, the strand is fastened at its second end to the protruding end of the tie, and then severed. The two fastened ends are then bent flat against the end of the second cover. Thereupon, in the event the covers have been temporarily held in place by means other than by hand, said means is readily removed, and then the package is complete.

In accordance with another form of the invention, the means for fastening the covers in place may be retained even after the spiral wrapping strand is secured.

In accordance with another form of the invention, one end of the spiral strand may stop short of the second cover and be secured to one or more ties adjacent the second cover.

Further objects and advantages of the invention will appear as the description proceeds.

This invention (in preferred forms) is illus-

trated in the drawings and hereinafter more fully described.

Figure 1 is a view in elevation, partly broken away, showing a principal form of the invention.

5 Figure 2 is an enlarged head end view of the package appearing in Figure 1.

Figure 3 is a view in elevation, somewhat enlarged, of the other end of the package.

10 Figure 4 is a phantom isometric view showing the arrangement of the wrapping strand at the head end of the package.

Figure 5 is a diagrammatic view showing how a cover may be temporarily held in place pending the application of the wrapping strand shown in 15 Figures 1 and 4.

Figures 6 and 7 are views similar to the left of Figure 1 but of modified forms of the invention.

Figure 8 and 9 are views similar to the right end of Figure 1 but of modified constructions.

20 Referring now more particularly to the drawings, the assembly of elongated elements chosen for illustrative purposes is made up of a plurality of elongated elements such as wire bale ties 1 whose looped or otherwise formed head 25 ends are arranged at one end to constitute the head or large end of the bundle. The ties 1 are initially arranged in small bundles of about twenty-five each and are bound by rings 2, after which they are placed together to form bundle 30 assemblies to be wrapped in accordance with the present invention. When the ties are thus assembled, a larger ring 3 is wrapped about the assembly at each end, thereby holding the ties together preparatory to the wrapping of the 35 bundle in accordance with the invention.

A preferably flexible cover such as one made of burlap as shown at 4 for the head end of the bundle and 5 for the small end of the bundle is placed over the respective end of the bundle and, 40 if necessary, folded in such a manner as to adequately cover the end portions as shown in Figure 1 and other figures. The covers may be temporarily held in folded arrangement by hand, one or more wires, string or the like. In the 45 form of the invention appearing in Figure 1, string is employed. This string may comprise a piece as shown at 6 for the head end and 7 for the tail end, each of which may be tied by a slip knot for ready release or by any other 50 type of knot, as shown at 8 in Figure 5.

In the event wire rings are employed for temporarily holding the covers in place, such rings, as in the case of the rings 3, are formed by placing them in encircling relation to the covers 55 and twisting the ends of each wire together.

One end 9 of a wrapping strand 10 is passed through an opening 11 in an identification tag 11a of pasteboard, sheet metal or the like, bearing any desired identification such as the name 60 of the manufacturer and description of the material wrapped. Said end 9 of the wrapping strand is preferably passed from the front to the back of the tag and is slipped under and looped about one or more ties 1 adjacent the free edge 65 12 of the head cover 4, as shown at 13. The loop 13 may be closed in any suitable manner as by a half hitch as shown at 14, leaving a short portion of the strand adjacent the end 9 free. From the loop 13, and while the cover 4 70 of the head end of the bundle is held in proper arrangement temporarily as explained heretofore, the strand 10 is passed longitudinally outward, that is, toward the front end 15 of the cover 4 and then is passed substantially diametrically across said front end so as to position

the major part of the tag 11a between the strand and said front end 15 as shown in Figure 2. The strand 10 is then returned in a half spiral turn so as to be brought to a point 15 adjacent the loop 13, at which point the free end 9 is 5 coiled one or more times about the strand as shown at 17. In this manner the strand at the point 16 is firmly anchored. The strand from the coils 17 is then returned in the direction of the front end 15 of the cover, as shown at 10 18 and is coiled preferably a plurality of times transversely about the cover as shown at 19, with sufficient tightness to firmly secure the cover 4 in position so that the temporary holding means such as the string 6, wire or the like may be 15 discarded. Such temporary holding means need not be discarded as soon as the coiling of the strand about the cover 4 is completed, but may if desired be removed at any time thereafter, as when the wrapping of the bundle by the strand 20 10 is completed throughout. From the portion coiled at 19 to hold the cover 4 in place, the strand 10 is spiraled toward the small end of the bundle, passing about the uncovered part of the assembly and preferably a plurality of 25 times about the tail or small end cover 5 as shown at 20, the cover 5 being held temporarily in place prior to formation of the coils 20 thereabout by hand, string or wire as explained hereinabove. 30

In assembling the ties 1, no effort is made to have their free ends 21 terminate flush, inasmuch as slight irregularity at such ends will be concealed by the face 22 of the tail end cover 5. For the purposes of the present invention, 35 it is desirable that at least one such tie end project through such face 22 as shown at 21a. In the process of spiraling the strand 10 about the bundle, relative rotary movement is effected between the spool or other source of strand and 40 the bundle, so that the strand at the tail end of the bundle is coiled one or more times about the protruding tie end 21a as shown in dotted lines in Figure 1. The strand 10 is severed at 45 23 after such coil or coils have been formed, and thereupon the end portion 21a and the coils 23a thereabout are bent as a unit substantially flat against the face 22 of the tail cover 5, as shown in full lines in Figures 1 and 3, terminating substantially within the peripheral envelope of the 50 package. The temporary holding string 7 or other temporary holding means may be severed or otherwise opened and pulled off free of the cover 5, and the temporary holding means at the head end of the bundle similarly treated, 55 leaving the assembled ties 1 packaged solely by the covers 4 and 5, the strand 10 and the identification tag 11a. By severing the protruding tie end 21a just outside of the face 22 as at 24, before commencement of the coiling thereabout, 60 and by also severing the loop 13, the entire wrapping material comprising the covers 4 and 5, the strand 10 and the tag 11 may be removed substantially as a unit, much more expeditiously than has heretofore been the case. In such 65 removal, the head cover 4 and associated portions of the strand and the tag 11 may be first released and then slipped along the assembled ties toward the tail end, slipping the tail end cover 5 therewith off the assembly. Thus upon the 70 two severing operations above referred to, the entire wrapping structure may be removed by substantially a single short operation.

With this structure, there are no parts such as wire burlap-securing rings or the like to be 75

come entangled with the material to be baled, when the package is unwrapped for use by the ultimate consumer.

It will be observed that the portion of the wrapping strand looped longitudinally about the covers 4 and 5 and the tag 11a is preferably tightly held so as to be pressed into interlocking relation with the cover 4 as shown at 25 and with the tag 11a as shown at 25a and similarly with the cover 5 as shown at 5a. Thus the strand will not become accidentally displaced from its illustrated relation to the covers 4 and 5 and tag 11a.

In addition to affording means for identification of the character of material wrapped as well as the identity of the manufacturer, or any other insignia, the tag 11a serves as a reinforcing or protective means for the front end 15 of the cover 4 and the adjacent ends of the ties 1. The bent over portions 21a and 23a at the face 22 of the tail cover 5, in addition to serving as a means for anchoring the tail end of the strand, serves as a protective means for the adjacent ends of the ties 1 and the face 22 of the cover 5.

With this construction no parts protrude to any appreciable extent beyond the outer lateral confines or envelope of the package, so that there is no likelihood of interlocking of adjacent bundles wrapped as explained.

In the form illustrated in Figure 6, wire or like rings 26 may form permanent parts of the package, serving to hold the cover 4 properly wrapped. The wrapping strand 27 in such event need not be coiled about the body of the cover 4, but may be coiled merely at the inner end of the cover preparatory to its being spiraled longitudinally along the assembly of ties 1.

In Figure 7 is shown a somewhat modified wrapping for the head end of the bundle. This arrangement is substantially identical with that described in connection with Figure 1, with the addition of a cover holding ring 26 which may be made of wire or other suitable material. If desired in such construction, the number of coils of the strand 10 about the cover 4 may be reduced in view of the presence of the ring 26.

In the modified tail end construction shown in Figure 8, rings 28 may be employed as a permanent part of the package to firmly hold the tail end cover 5 in place. In such event, the wrapping strand may be spiraled about the cover 5 substantially only to the extent necessary to complete the wrapping and then coiled at 29 about the tie end 21a and bent down against the face 22 of the cover 5 as shown in Figure 3. With this construction used in conjunction with the head end packaging of any of Figures 1, 6 and 7, for example, no part of the wrapping strand is interiorly disposed relative to the covers 4 and 5. Upon severing the ring or rings 26, if present, the loop 13 or 30, as the case may be, and the tie 21a just before commencement of the coils 23a or 29, removal of the entire wrapping material as a unit substantially in the manner previously described may be effected.

The tail end of the wrapping strand may terminate short of the cover 5 as shown in Figure 3. In this form, the tail end of the strand 21a may be cut short and the end 31 passed under and looped about one or more ties 1 and bent against the ties as shown at 32. The loop is preferably drawn tight so as to be frictionally bound to the looped ties and thereby resists slipping relative thereto. The cover 5 in this form of the invention is held by metallic or other suitable rings 28 which, with the tie assembling ring 3 inside of

the cover 5, frictionally hold the cover wrapped about the tail end of the tie assembly.

It will be seen from the foregoing that the present invention provides a method of packaging an elongated bundle expeditiously so as to provide a neat structure having no protuberances likely to entangle with adjacent packages and which is capable of ready dis-assembly from the assembled ties or other elongated packaged material.

Bale tie bundles and other wire or like elongated bundles may be of different sizes and weights. In a bundle of approximately eight feet in length and weighing approximately forty pounds, a pitch of approximately three inches has been found satisfactory, although it is to be understood that other suitable pitches for the wrapping strand helix or spiral, for bundles of the same and different sizes may be readily arrived at.

The wrapping of the strand may be accomplished in any desired way. One manner of so doing involves the rotation of the bundle after the extremity of the strand adjacent the head cover has been coiled about the body of the cover as explained above. This rotation may be effected preferably by mechanical means such as a rotary chuck holding the front part of the head cover and associated end of the bundle, while a source of strand material such as a spool is moved longitudinally of the bundle. Under such circumstances, the remainder of the bundle is preferably supported in such a manner as not to interfere with the spiraling of the strand thereabout. Or, if desired, the bundle may be moved longitudinally while the spool or other source of strand is rotated about the bundle. Instead of employing strand material on a spool, such material may be previously cut to the desired length.

The package embodying the present invention will retain its form so as not to require redressing or adjustment at any time, and is also compact so as to require a minimum of shipping space.

For the purpose of enhancing the appearance of the bundle, the strand may be provided with a copper plating or other finish, if made of metal, the strand being preferably made of steel wire for the purpose of strength.

The term "bundle" herein is to be understood as including in its scope any assembly of elongated pieces and also a length of elongated material.

As heretofore pointed out, any suitable temporary tying means may be employed for temporarily holding the covers in place. For example, one or more rubber bands may be employed for this purpose in connection with each cover, such band or bands being allowed to remain on or being removed from the completed package, as desired.

The rings 2 are revealed in the form shown in Figure 6 but are preferably concealed as in Figures 1 and 9. The cover 4 is cut out in Figure 1 to show one of the rings 2.

I am aware that many changes may be made and numerous details of construction may be varied through a wide range without departing from the principles of this invention, and I, therefore, do not purpose limiting the patent granted hereon otherwise than necessitated by the prior art.

I claim as my invention:

1. A package comprising an elongated bundle, a cover about one end of the bundle, a part of the bundle protruding through said cover, and

a wrapping strand for holding the cover in place, said strand being secured about the bundle and passing about the cover and having an end fastened to said protruding part.

5 2. A package comprising an assembly of elongated elements, a cover over one end of the assembly, at least one of the elements protruding through and beyond the cover, and a wrapping strand secured about the assembly and passing  
10 along said cover and fastened to the protruding part.

3. A package comprising an assembly of elongated elements, a cover over one end of the assembly, at least one of the elements protruding through and being bent beyond the cover,  
15 and a wrapping strand secured about the assembly and passing along said cover and fastened to the bent part; said part terminating substantially within the peripheral envelope of the package.  
20

4. A package comprising an assembly of elongated elements, a cover upon one end of said assembly, one of said elements projecting longitudinally beyond one end of said assembly, a  
25 wrapping strand having one end anchored to said elements and wound around said cover and said assembly with the free end anchored to said projecting element.

5. A package comprising a bundle of elongated elements, a cover over each end of said bundle, a single strand of wire anchored to said elements adjacent the inner end of one cover, said strand then extending across the adjacent end of said  
5 bundle and returning upon the opposite side of the same and being secured to the anchored end of said strand, said strand then being spiralled around the adjacent cover; the intermediate portion of the bundle and the cover at the opposite  
10 end, such opposite end having one of said elongated elements projecting longitudinally beyond the bundle, and said strand being anchored to said projecting element.

6. A package comprising a bundle of elongated  
15 elements, a cover upon each end of the bundle, said bundle and covers being held in assembled relation by a single strand of wire wrapped around the covers and spiralled around the intermediate portion of said bundle, one end of  
20 said strand of wire being anchored to an intermediate portion of said bundle, one of said elongated elements projecting longitudinally beyond said bundle at one end thereof, and the other end of said strand of wire being secured to said  
25 projecting element.

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