Dec. 15, 1953 W. GILL ET AL 2,662,649

SHIPPING PACKAGE

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Fig. 2

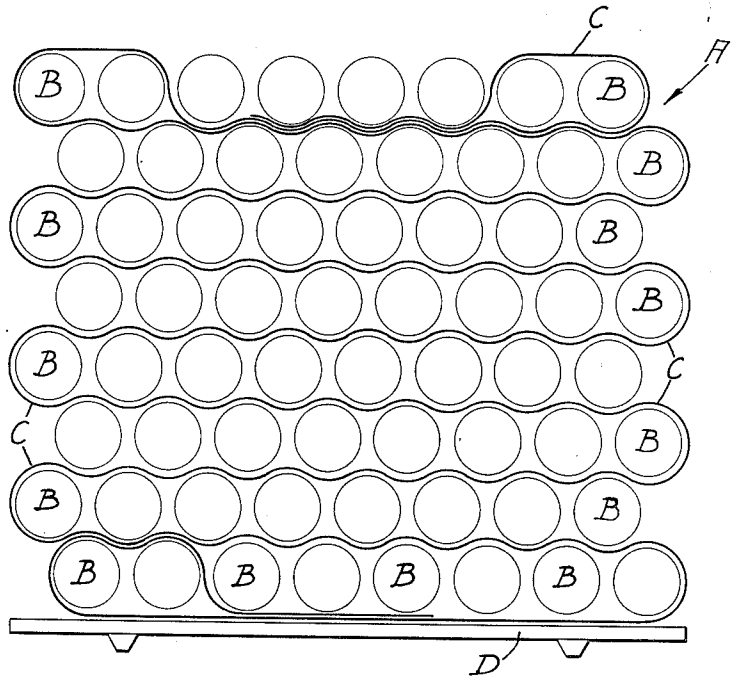


Fig. 3

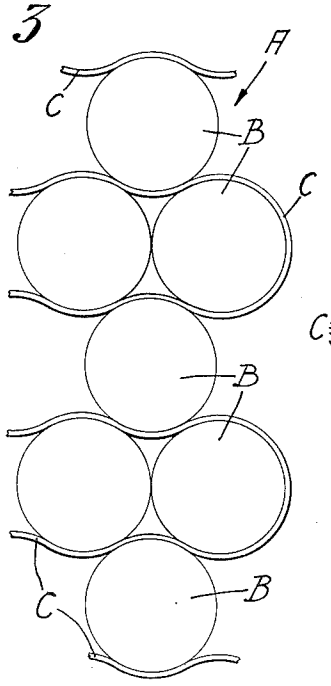
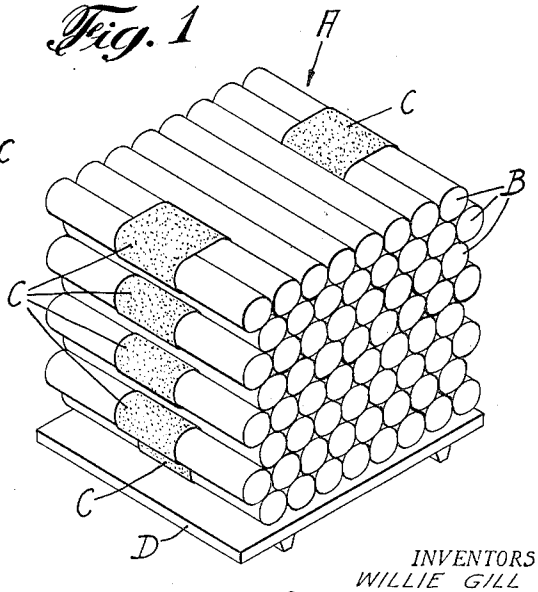


Fig. 1



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Fig. 4

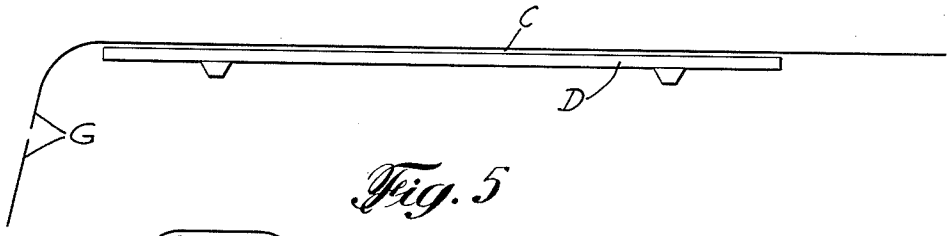


Fig. 5

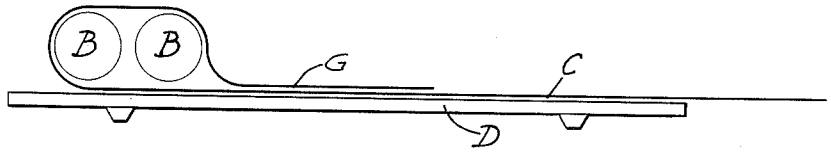


Fig. 6

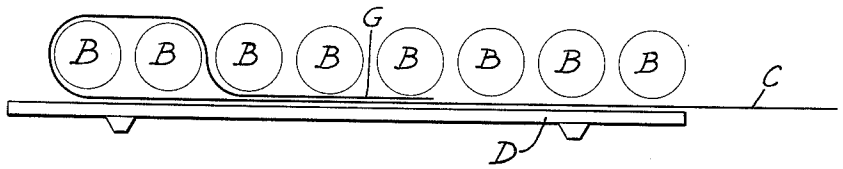


Fig. 7

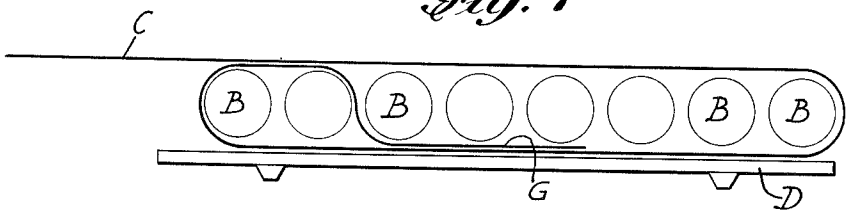
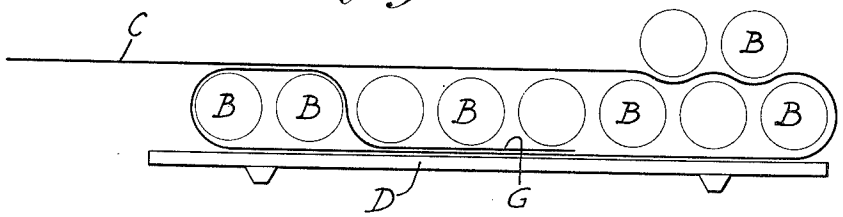


Fig. 8



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Fig. 9.

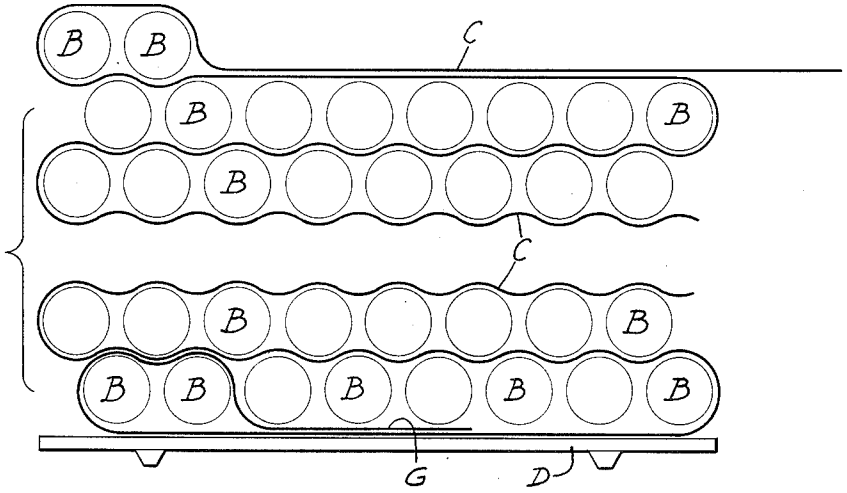
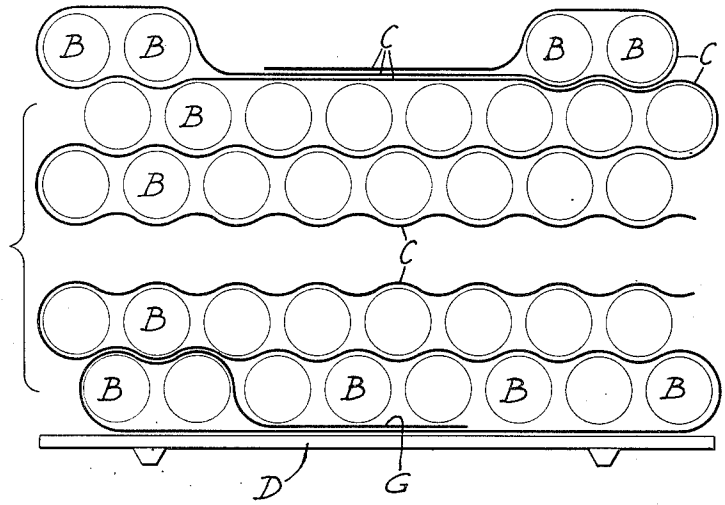


Fig. 10.



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2,662,649

SHIPPING PACKAGE

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Application July 27, 1951, Serial No. 238,908

7 Claims. (Cl. 214—10.5)

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The present invention relates to a shipping package and the method of building up the same and has particular reference to a relatively large and heavy shipping unit built up from a plurality of stacked smaller articles or packages arranged in layers or tiers and tied together by a single or substantially continuous binding element interwoven between the layers of the articles and the articles themselves.

An object of the invention is the provision of a package and method of producing the same wherein a large number of smaller articles may be built up in stacked relation to produce a strong and stable unitary package which may be readily handled for unit loading into trucks or railroad cars or for efficient and compact storage.

Another object is the provision of such a shipping package and method of producing the same wherein the built up shipping packages are stable enough to stack one on top of the other to a considerable height and volume, even though the articles in themselves are of considerable weight.

Another object is the provision of such a package and method of producing the same wherein the various articles in the package are held in place vertically stacked and preferably in staggered relation by a relatively inexpensive, substantially continuous binding element which is interwoven between the articles in such a manner as to lock the ends of the binding element in place as well as to tie the articles together in a unitary structure.

Another object is the provision of such a package and method of producing the same wherein the package may be assembled in a rapid and economical manner with a comparatively inexpensive binder element which may be discarded after use, with the result that great savings in material and time are obtained.

Numerous other objects and advantages of the invention will be apparent as it is better understood from the following description, which, taken in connection with the accompanying drawings, discloses a preferred embodiment thereof.

Referring to the drawings:

Figure 1 is a perspective view of a package produced by the steps of the instant method invention;

Fig. 2 is an enlarged schematic side elevation of the package shown in Fig. 1, the view showing how the binder element is interwoven between the articles in the package;

Fig. 3 is an enlarged view of a fragmental portion of the package shown in Fig. 1, the view showing how the binder element holds the outer

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overhanging or projecting articles in place in the package; and

Figs. 4 to 10 inclusive are schematic side elevations showing the preferred method steps of producing the package shown in Fig. 1.

As a preferred or exemplary embodiment of the invention, Figs. 1, 2 and 3 of the drawings illustrate a unitary package A built up of a plurality of smaller packages or articles B held together in a predetermined arrangement preferably by a single binder or tie element C which is interwoven or snaked between the articles. In the instant case, the articles B are cylindrical in shape and comprise fibre tubes containing metal can ends packaged for shipment to customers' plants or for storage until required, although the invention is equally well adapted to other articles which may be readily stacked one upon another in rows or layers or tiers. The package A preferably is built up on a pallet, skid or other support D for easy handling.

The binder element C preferably is a single continuous flexible element which preferably is a relatively wide strip of strong paper or other tough fibrous material, although the invention is equally well adapted to the use of narrow webs, or wire-form binder elements made from other materials such as non-fibrous substances, metals, plastics, etc.

In such a package the binder element C may form the foundation or part of the foundation of the package and may extend under the first or lowermost row of articles B as best shown in Fig. 2, the leading end of the binder or tie element being looped over one or more of the articles at one end of the row (at the left as viewed in Fig. 2) and tucked under one or more of the adjacent intermediate articles in the row to lock or securely hold this end of the binder element in place. At the opposite end (the right as viewed in Fig. 2) of the first row of articles, the binder element extends up around the end article and back toward the left between the first and second rows, thence up around the end article at the left in the second row and extending toward the right between the second and third rows and so on along a rising sinuous path of travel extending between each two adjacent staggered rows of articles until it reaches the top row of the stack. At this top row the binder element extends over the top of one or more of the articles at the left end of the stack as viewed in Fig. 2, then along toward the right opposite end of the stack, back over one or more of the articles at this opposite end (at the right in Fig. 2) of the stack, and ter-

minating under a plurality of the intermediate articles in this top row between the surrounded articles at the ends of the stack, as best shown in Fig. 2. This tucking of the terminal end of the binder element C under several of the intermediate articles in the top row, anchors this end of the binder element and thus holds the element in place.

The binder element C thus interwoven between adjacent rows of the articles B in the stack compactly holds the articles together in a stable, rigid, unitary package or structure, which it has been found, can withstand severe shock and rough handling without damage. The entire package may be readily moved and transported on its pallet or skid D and several such packages may be piled one on top of the other to economize in space during transportation or storage.

The method of producing such a package is schematically illustrated in Figs. 4 to 10 inclusive. In forming such a package, the leading end of the binder or tie element C is laid across the skid D as shown in Fig. 4, with a short length marginal free end portion G of the element overhanging one edge of the skid. One or more of the articles B, depending upon the number of articles to be assembled in a row or layer, are placed on the skid side-by-side or in contiguous relation across the binder element adjacent its free end portion G as best shown in Fig. 5. The free end portion G of the binder element is then folded back over these initially placed articles and pressed down against the remainder of the binder element on the skid as in Fig. 5. The length of this free end G of the element should be long enough to overlap the skid so that two or three articles B can be placed on top of it. With the leading end of the binder element in place, the remainder of the articles to complete the first row or layer are laid side-by-side in engagement with each other on the skid across the binder element, including the free end of the short length G, as shown in Fig. 6. This locks or anchors the leading end of the binder element in place.

As the next step in building up the unitary package, the binder element C is folded back over the top of the first row or layer of articles B as shown in Fig. 7. A second row of articles B is then laid in place over the binder element on top of the first layer of articles as shown in Fig. 8. Where the articles are cylindrical in shape as shown in the drawings, the articles in this second row are preferably in staggered relation to the articles in the first row. Hence the articles in the second row depress the binder element into the spaces between the articles in the first row, thus drawing the binder element taut. In this manner the package is built up, by folding the binder element back over the top of each row of articles as it is laid in place on a preceding row and hence the binder element is woven back and forth between each row of articles and is drawn tight by the articles as they are laid in place on the element. The end articles at opposite ends of alternate rows or layers of the package are partially surrounded by the binder element C and project beyond or overlying the end articles in adjacent rows as best shown in Fig. 3 and thus these end articles firmly are locked in place against displacement from the package.

In placing the top row or layer of articles B in the package, one or more articles are placed in position on top of the binder element as best shown in Fig. 9, these articles being at the left

end of the package as viewed in Fig. 9. The binder element C is then folded over the tops of these placed articles and beyond the articles the binder element is laid down against the exposed portion of the binder element extending across the articles in the next to the top row thereby providing a double thickness of the binder element as shown in Fig. 9. With the binder element in this position, one or more articles are placed in position across the double thickness binder element at the right end of the package as shown in Fig. 10. Following this, the terminal end of the binder element is folded up over these newly placed articles at the right of Fig. 10 and laid down in the space intermediate the articles at both ends of the package, thereby providing between these articles a triple thickness of the binder element as shown in Fig. 10. If the binder element is taken from a roll of such material, it is cut off at this point to provide the terminal end of the element. If the binder element is precut to the required length, the terminal end will automatically fall in the correct place.

As the concluding step, the intermediate space between the end articles in the top row is filled with sufficient articles to complete the row, these articles being placed on top of the triple thickness of the binder element, as best shown in Fig. 2. These lastly placed articles lock the terminal end of the binder element C in place and thus complete the binding together of all the articles in the package. Thereafter the package as a unit may be moved on its skid or pallet for transportation or storage, as desired.

It is thought that the invention and many of its attendant advantages will be understood from the foregoing description, and it will be apparent that various changes may be made in the form, construction and arrangement of the parts and that changes may be made in the steps of the method described and their order of accomplishment without departing from the spirit and scope of the invention or sacrificing all of its material advantages, the form hereinbefore described being merely a preferred embodiment thereof.

We claim:

1. A unitary package for shipping and storing articles, comprising a plurality of articles arranged in rows, in close relation and with a plurality of rows stacked on top of each other, and a substantially continuous flexible binder element extending under the bottom row of articles and interwoven between the succeeding rows of the entire package to bind the articles together in a stable unitary package, the ends of the binder element being interwoven between articles in the bottom and in the top rows of the package and held by the weight of articles above them to anchor the ends of the binder element against displacement.

2. A unitary package for shipping and storing articles, comprising a support, a plurality of articles arranged on said support in rows, in close relation and with a plurality of rows stacked on top of each other, and a substantially continuous flexible binder element extending across said support under the bottom row of articles and interwoven between the succeeding rows of the entire package to bind the articles together in a stable unitary package, the free ends of the binder element being interwoven between articles in the bottom and in the top rows of the package and held by the weight of articles above them to anchor the ends of the binder element against displacement.

3. A unitary package for shipping and storing articles, comprising a support, a plurality of articles arranged on said support in rows, in close relation and with a plurality of rows superimposed upon each other, and a substantially continuous flexible binder element extending across said support under the bottom row of articles and around the end articles in said bottom row and further extending between each succeeding and adjacent pair of rows and around the end articles at oppositely disposed ends of alternate rows and around both end articles of the top row to bind the articles together in a stable unitary package, one free end of said binder element terminating in and being anchored in said bottom row by articles above and resting upon it and the opposite free end of said binder element terminating in and being anchored in said top row by articles in said row resting upon it to lock said element in place.

4. A unitary package for shipping and storing articles, comprising a movable support, a plurality of articles arranged on said support in rows, in close relation and with a plurality of rows superimposed upon each other, and a substantially continuous flexible binder element extending across said support under the bottom row of articles and substantially horizontally interwoven between the rows of the entire package to bind the articles together in a stable unitary package the free ends of the binder element being interwoven between articles in the bottom and in the top rows of the package to secure the ends of the binder element against displacement, the leading free end of said binder element extending under and being held in place by one or more articles in the bottom row of said package and the terminal free end of said binder element extending under and being held in place by one or more articles in the top row of said package.

5. A unitary package for shipping and storing articles, comprising a movable support, a plurality of cylindrical articles arranged on said support in rows, in close engaging relation and with a plurality of rows superimposed upon each other in staggered relation, and a substantially continuous flexible binder element extending under the bottom row of articles and interwoven sinuously between the rows of the entire package and partially surrounding the overhanging end article in each row to support all overhanging end articles, to bind adjacent rows together and to bind all of the rows together in a stable unitary package, the lower and upper free ends of the binder element being interwoven between articles in the bottom and in the top rows of the package, respectively, to secure the ends of the binder element against displacement.

6. A unitary package for shipping and storing articles of substantial weight, comprising a movable support, a plurality of articles arranged in contiguous relation on said support in uniformly staggered rows superposed upon each other with an end article of a superposed row overhanging a contiguous end article of a subjacent row and at least one substantially continuous flexible binder element snaked through a series of superposed rows and wound at least partially around each of said overhanging articles, the ends of said binder element being separated from each other, the lead end of said binder element being anchored by at least one article in a lower row of said package and the terminal end of said binder element being anchored by at least one article in a row higher than said lower rows of articles, thereby providing a unitary package of articles tightly bound together for shipment and storage.

7. A unitary package for shipping and storing articles of substantial weight, comprising a plurality of articles arranged in contiguous relation in uniformly staggered rows superposed upon each other with an end article of a superposed row overhanging a contiguous end article of a subjacent row and at least one substantially continuous flexible binder element snaked through a series of superposed rows and wound at least partially around each of said overhanging articles, the ends of said binder element being separated from each other, the lead end of said binder element being anchored by at least one article in a lower row of said package and the terminal end of said binder element being anchored by at least one article in a row higher than said lower rows of articles, thereby providing a unitary package of articles tightly bound together for shipment and storage.

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