July 1, 1958 J. O. HUGHES ET AL 2,841,500

METHOD OF PACKAGING AND PRESERVING HOPS

Filed April 10, 1953

FIG. 1.

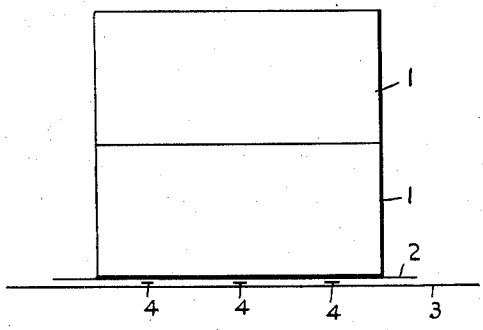


FIG. 2.

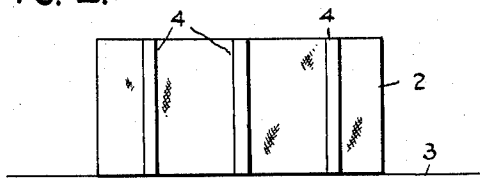


FIG. 3.

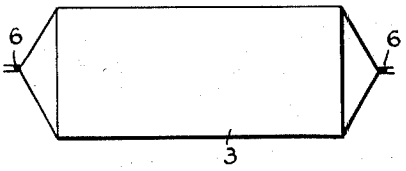


FIG. 4.

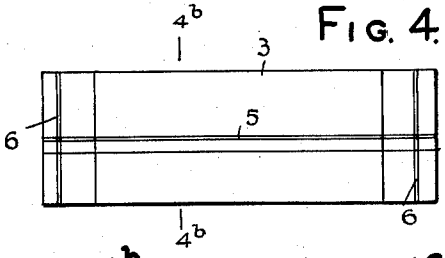


FIG. 4b.

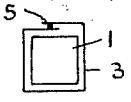


FIG. 4a.

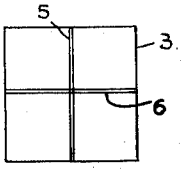


FIG. 5.

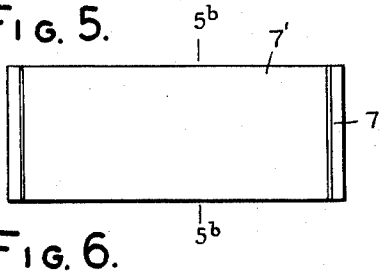
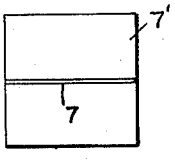


FIG. 5a.



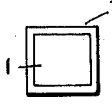


FIG. 5b.

FIG. 6.

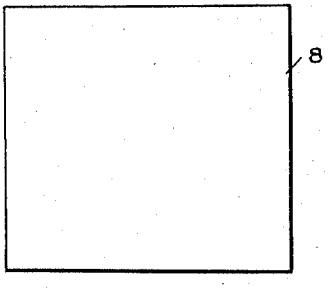


FIG. 8.

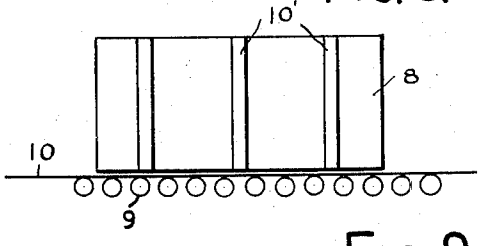


FIG. 7.

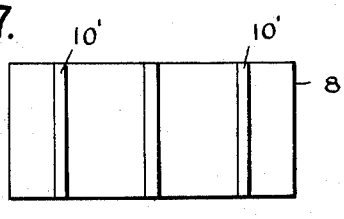
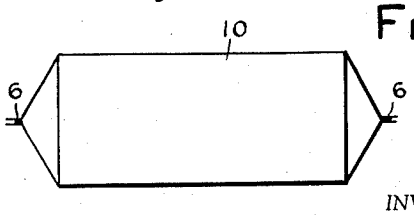


FIG. 9.



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METHOD OF PACKAGING AND PRESERVING HOPS

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Application April 10, 1953, Serial No. 348,039

1 Claim. (Cl. 99—189)

Our invention relates to a method of packaging hops.

An important object of the invention is to provide a simple and inexpensive method of storing hops which have been compressed in bales, for providing an air-tight package.

A further object of the invention is to provide an air-tight casing or container for the hops, which will retain the hops within their original state, without the loss of aroma or color.

Other objects and advantages of the invention will be apparent during the course of the following description:

In the accompanying diagrammatic drawings forming a part of this application, and in which like numerals are employed to designate like parts throughout the same,

Figure 1 is a side elevation of the bales of hops and associated elements, showing the first step in the method,

Figure 2 is a similar view, showing the next step in the method,

Figure 3 is a similar view of the completed product,

Figure 4 is a plan view of the same,

Figure 4-*a* is an end elevation of the same.

Figure 4–*b* is a transverse section taken on line 4*b*—4*b* of Figure 4,

Figure 5 is a plan view of the bale enclosed within a tubular casing or container,

Figure 5–*a* is an end elevation of the same,

Figure 5–*b* is a vertical section taken on line 5*b*—5*b* of Figure 5,

Figure 6 is a side elevation of a bale of hops which has been compressed,

Figure 7 is a similar view of the same bale which has been compressed to half its size,

Figure 8 is a similar view of the compressed bale shifted to a position over the plastic sheet,

Figure 9 is a side elevation of the bale showing the plastic sheet enclosing the same and formed into the air-tight casing or container.

As is well known, hops are compressed into bales for shipment or storage. When shipped by water, the bales are usually further compressed to save space.

As shown in Figure 1 of the drawings, we have shown two bales **1** which were previously compressed and which have been arranged in super-posed relation. Where burlap and bands have been previously used, they are removed from the individual bales, and a section of burlap **2** and a sheet of plastic material **3** are arranged beneath the bales. We may also use bands **4**. The burlap **2** and the bands **4** are disposed above the plastic sheet **3**. The assembled bales **1**, burlap **2**, plastic sheet **3** and bands **4** are arranged in a press in the usual manner and pressure applied to the bales so that they are compressed to half their original size, Figure 2. After compression, the burlap **2** and bands **4** are arranged about the sides of the bale, to retain the same in the reduced compressed size. While within the compressor, and after the compression action, the plastic sheet **3** is

folded over the compressed bale to completely enclose the same. The plastic sheet is flexible and may be opaque or translucent. It is preferred to use an apaque plastic sheet. The plastic sheet is formed of a heat-seaming plastic. The plastic sheet is preferably a polyethylene plastic although we could use a polyvinylchloride.

The folded over longitudinal edges of the plastic sheet **3** are heat-seamed providing a longitudinal seam **5**, Figures 4, 4–*a* and 4–*b* and the ends of the folded over sheet are secured together by heat-seams **6**.

The invention is not restricted to any particular manner of folding the plastic sheet as this may be varied. However, all folded over portions of the sheet are heat-seamed so that the plastic sheet provides a casing or container which is air-tight and will prevent gasses or odors passing from the hops to the exterior of the casing, and prevent the air entering the casing.

We also contemplate arranging the compressed bale in the air-tight casing after the bale has been moved from the compressor.

The casing **7'**, Figure 5, which is formed of the plastic material may be tubular, and if a tubular casing is used, the bale of hops would preferably be first compressed in the compressor and removed therefrom and introduced into the tubular casing, although it could be introduced into the tubular casing first, and the compression followed through. The ends of the tubular casing are then heat-seamed, as shown at **7**, Figure 5. This provides a casing which is air-tight. The tubular plastic casing is, of course, flexible, and may be opaque.

In Figure 6, a previously compressed bale of hops **8** is shown which is then introduced into a compressor, and compressed to one-half of its former size, Figure 7, and the burlap and the bands **10'** may be applied thereto. This compressed bale is now placed upon a plastic sheet **10**, identical with the sheet **3** and the bale **8** and sheet **10** are moved upon rollers **9**. The sheet **10** is now folded about the bale **8** and the overlapped portions of the sheet are heat-seamed, in the same manner as described in connection with Figures 3 and 4. This provides an air-tight casing for the bale. Instead of using the sheet **10**, which is folded over the bale, the bale may be introduced into the tubular casing **7'**, Figure 5. When the tubular casing is used, such casing is heat-seamed at its ends. The plastic casing enclosing the bale is air-tight.

In accordance with the method, a compressed bale may be divided, such as cut in half and enclosed within the air-tight plastic casing.

We have found that when the hops are compressed in a bale and enclosed within the air-tight plastic casing, that such hops will not lose its natural aroma. The original color of the hops is also retained, since the plastic casing may be opaque and will exclude the light from the hops.

The presence of mice and rodent pests is known as a considerable problem in hop warehouses. Since our plastic casing is air-tight, the aroma from the hops cannot pass to the exterior of the casing, and the mice and rodents will therefore not be attracted by the hops. This will eliminate a considerable problem. The air-tight casing also prevents the air exteriorly of the casing from contacting with the hops, preventing deterioration of the hops.

It is to be understood that the various changes in the order of the steps of the method may be resorted to without departing from the spirit of our invention or the scope of the sub-joined claim.

Having thus described our method, we claim:

A method of packaging hops for shipment and preserving the same in the original condition during such shipment, comprising taking a compressed bale of hops and removing the original covering sheet and bands

therefrom, subjecting the original compressed bale of hops to a higher degree of pressure to highly compress the bale and reduce the size of the bale to approximately one-half of the original size, retaining the highly compressed bale in substantially the same reduced size by enclosing the same in a sheet and bands and thereby resisting the expansion of the bale, then enclosing the highly compressed bale which is reduced in size within a casing formed from a plastic sheet, then heat sealing overlapping parts of the casing to completely close the same and provide an air tight casing, and retaining the highly compressed bale which is reduced in size in substantially the same size for preventing expansion of such bale when said bale is in the air tight casing.

References Cited in the file of this patent

UNITED STATES PATENTS

443,619	Orr	Dec. 30, 1890
1,780,142	Becker	Oct. 28, 1930
2,054,112	Abrams	Sept. 15, 1936
2,102,716	Berch	Dec. 21, 1937
2,225,810	Waters	Dec. 24, 1940
2,239,375	Sergeant	Apr. 22, 1941
2,328,766	Yates	Sept. 7, 1943
2,590,128	Sandberg	Mar. 25, 1952
2,638,724	Harvey	May 19, 1953
2,674,535	Meisler	Apr. 6, 1954
2,700,459	Anspacher	Jan. 25, 1955