April 9, 1963 W. G. PHILLIPS ETAL 3,084,641

METHOD OF PRODUCING CONTAINER HANDLE CONSTRUCTION

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Fig. 1.

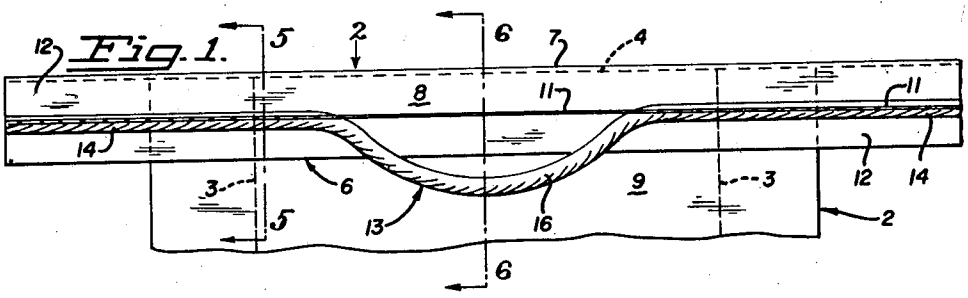


Fig. 2.

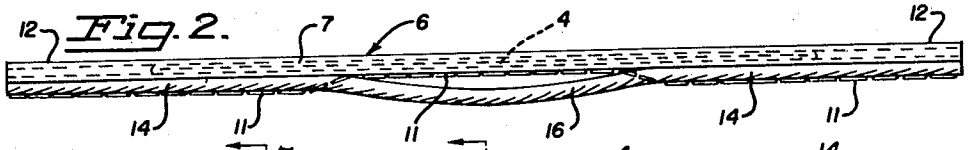
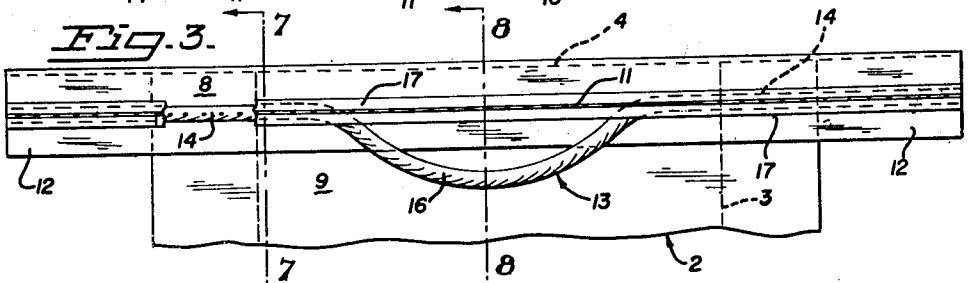


Fig. 3.



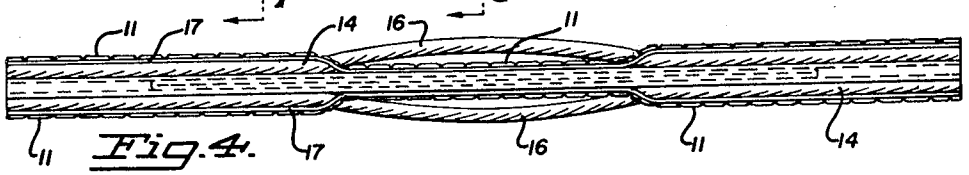


Fig. 4.

Fig. 5.

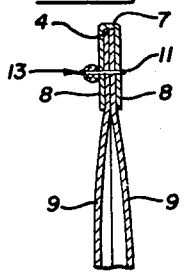


Fig. 6.

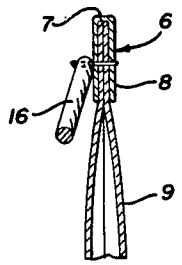


Fig. 7.

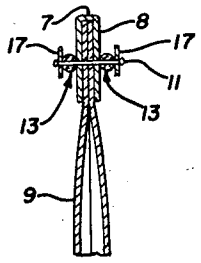
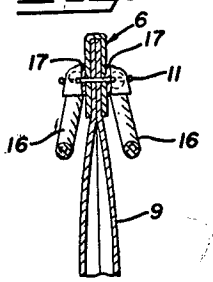


Fig. 8.



INVENTORS
Wallace G. Phillips
William O. Hall
Henry H. Overstreet

BY Stanley Bialos
Attorney

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Fig. 9.

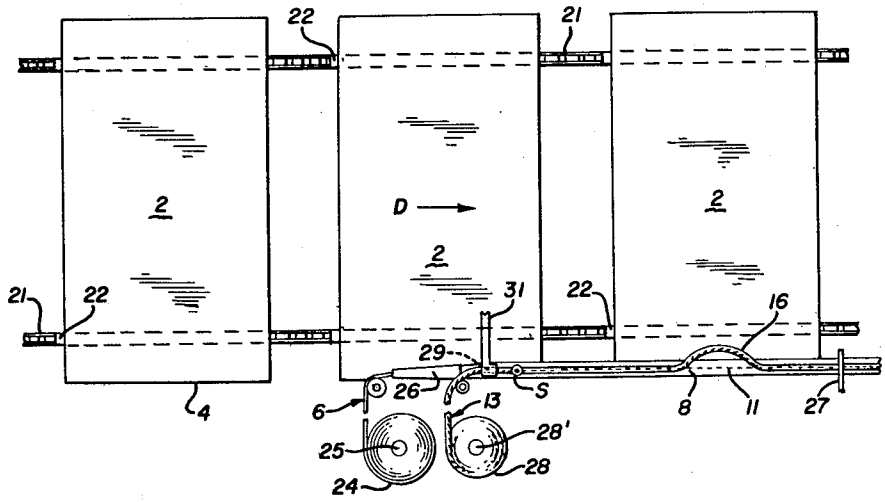


Fig. 10.

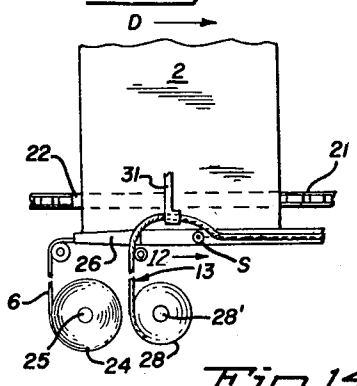


Fig. 11.

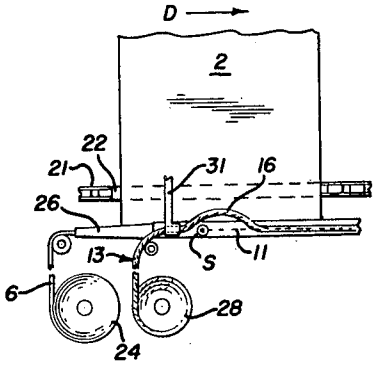


Fig. 12.

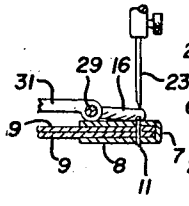


Fig. 14.

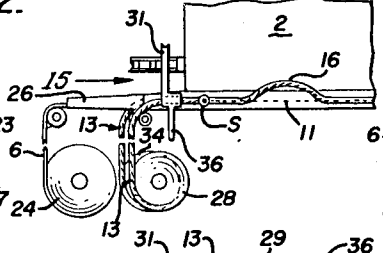


Fig. 13.

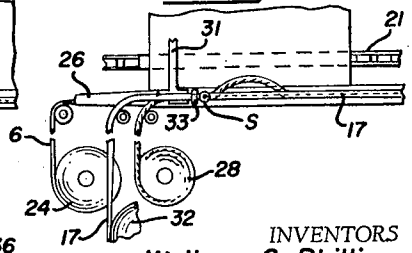
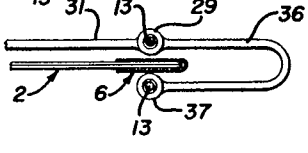


Fig. 15.



INVENTORS
Wallace G. Phillips
William O. Hall
Henry H. Overstreet
BY Stanley Bialos
Attorney

United States Patent Office 3,084,641 Patented Apr. 9, 1963

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METHOD OF PRODUCING CONTAINER HANDLE CONSTRUCTION

Wallace G. Phillips, 3698 Sueirro St., Hayward, Calif., and William O. Hall, 15075 Churchill St., and Henry H. Overstreet, 60 Via Amigos, both of San Lorenzo, Calif.

Original application Aug. 16, 1956, Ser. No. 604,474, now Patent No. 2,979,253, dated Apr. 11, 1961. Divided and this application June 3, 1960, Ser. No. 42,734

4 Claims. (Cl. 112—10)

This application is a division of Serial No. 604,474 filed August 16, 1956, now Patent No. 2,979,253, granted April 11, 1961.

This invention relates to containers, especially of the bag type, and more particularly to bag handle construction, and method of attaching handles to bags which are usually of the type provided with a closure tape or band secured completely over the bag mouth or end.

Conventional multi-wall paper bags are widely employed for the packaging of numerous products, among which are charcoal, dog biscuits, peat moss and sugar. Products of this type are frequently packaged in such bags of relatively light capacity as high as 25 lbs., compared to larger capacity bags employed for packaging of products such as cement, in capacities up to 100 lbs. or more. Such bags are generally sealed or closed with conventional paper closure bands or tapes folded over an end or mouth of the bag and stitched to the bag side walls.

It is rather cumbersome for a purchaser of such type of product usually found in a retail grocery store to grasp the body of the bag and lift the same for deposit into a shopping receptacle or other vehicle, even though the bag may not contain more than 25 lbs. of product. The present invention is designed to overcome this problem by the provision of a handle on such type of bag, which can be economically and quickly applied in the manufacturing operation of the bag when the aforementioned closure band is applied to the bag in a conventional manner, and which will facilitate handling of the bag for transportation. However, if the product which the bag is adapted to package does not require a closure tape, the handle can still be applied with stitching that secures the handle and closes the bag.

Summarizing the invention, it comprises a bag handle secured to the bag by the same means, generally stitching in the form of stitched thread but which may be stitching in the form of a series of staples, that is employed for closing a bag end, and usually for securing the aforementioned closure band or tape to the bag. Such handle is effectively applied adjacent the bag end or mouth during the time the closure band is secured to the bag by simultaneously feeding the closure band and a handle forming strip to the bag, and simultaneously stitching the handle forming strip and closure band to the bag at a fixed stitching station past which the bag, the handle forming strip end and the closure band are moved. However, during movement of the bag, the handle forming strip is moved out of line and back in line with the stitching station to thereby provide a free handle forming loop in the handle strip.

From the preceding, it is seen that the invention has as its objects, among others, the provision of an improved handle construction on a container, such as a bag, whereby the handle is secured by the same means that closes an end of the bag, and which can be effectively and economically applied during a conventional operation heretofore employed in closing the bag, thus making for economy and simplicity. Other objects of the invention will become apparent from a perusal of the following more detailed description.

Referring to the drawings which illustrate a desirable

embodiment of the invention wherein the bag is closed by a conventional closure band or tape:

FIG. 1 is a fragmentary side elevation view of a typical multi-wall paper bag having a closure band folded over an end thereof, and to which the handle of this invention is stitched by the same stitching securing the closure band;

FIG. 2 is a plan view of the construction shown in FIG. 1, looking in the direction of arrow 2 in FIG. 1;

FIG. 3 is a view similar to FIG. 1 of a modified construction wherein a handle is applied to each of the opposite sides of a bag, together with a conventional so-called filter strip; a portion of the structure being omitted from the view to illustrate the construction more clearly;

FIG. 4 is a top plan view of the bag shown in FIG. 3;

FIG. 5 is a vertical section taken in a plane indicated by line 5—5 in FIG. 1;

FIG. 6 is a similar section taken in a plane indicated by the line 6—6 in FIG. 1;

FIG. 7 is a vertical section taken in a plane indicated by the line 7—7 in FIG. 3;

FIG. 8 is a similar section taken in the plane indicated by the line 8—8 in FIG. 3;

FIG. 9 is a schematic plan view of certain parts of a conventional bag sewing machine, illustrating the method by which the bags are continuously moved, and the aforementioned handle strip and closure band applied and stitched;

FIG. 10 is a fragmentary schematic plan view illustrating how the aforementioned handle loop is initially formed with a bag in one position with reference to a fixed conventional stitching station;

FIG. 11 is a view similar to FIG. 10 with the bag moved further in its direction of travel and illustrating complete formation of the handle loop;

FIG. 12 is a fragmentary schematic end elevational view of the stitching station, looking in the direction of arrow 12 in FIG. 10;

FIG. 13 is a fragmentary schematic plan view illustrating the operation with a filter cord simultaneously stitched with the handle strip and the closure band;

FIG. 14 is a view similar to FIG. 13 but illustrating the manner in which a handle strip is applied to each of the opposite sides of the bag;

FIG. 15 is a fragmentary end elevational view looking in the direction of arrow 15 in FIG. 14.

Referring to FIGS. 1, 2, 5 and 6, the bag with which the invention has found great applicability is a conventional multi-wall paper bag 2 having the usual gussets 3 at the side ends of the bag. An end 4 of the bag (only one of which is shown in the drawings, but the other of which may be sealed with a closure band in a manner to be described), is closed by a flexible tape or band 6 usually of paper, which extends transversely across the side walls and is folded at 7 over bag end 4 to provide side flaps 8 between which the opposite side walls 9 of the bag are positioned. In the conventional manner of securing band 6 to the bag side walls, band flaps 8 are stitched to the side walls 9 by a continuous line of stitching 11. By virtue of the manner of applying closure band 6 to the bag as will subsequently be described in detail, projecting portions 12 of the band extend beyond the side ends of the bag; and stitching 11 secures together flaps 8 of each band projection.

A bag handle strip 13 is secured to the bag and to flaps 8 of closure band 6 by the same stitching 11 which secures the band to the bag. Strip 13 is laterally spaced apart leg portions 14 and an intermediate loop 16 which provides the handle. Leg portions 14 not only extend over and are secured to spaced apart portions of closure band 6 which overlie the side walls of the bag, but are also secured by stitching 11 to projecting portions 12 of the band.

It will be noted that loop 16 is unstitched to the bag, and is consequently free to be turned upwardly so it can be grasped by a hand. Also, loop 16 extends in a direction away from bag end 4, or in other words, does not project beyond such end but overlies a side wall of the bag. Such arrangement enables neat and smooth stacking of bags in a pile for packaging, transportation, or storage.

Any suitable flexible strip material may be employed to provide the handle strip such as is now commercially employed for other types of bag handle arrangements. It is only necessary that the handle strip be sufficiently strong for the load the bag is to carry. Paper strap may be utilized but it is preferred to employ round jute or cotton cord as the handle strip.

In the modification of FIGS. 1, 2, 5 and 6, a handle strip 13 is stitched to only one side wall of the bag, as this arrangement is satisfactory for the purposes intended with respect to bags of relatively light capacity. However, the bag may be provided with two handle strips, each of which is secured to a wall 9 of the bag in the manner described with respect to FIGS. 1 and 2 so as to provide two handle loops 16 both of which match each other, so that when they are turned to project above end 4 of the bag, they match and may be grasped simultaneously.

Such two handle construction is illustrated in FIGS. 3, 4, 7 and 8 to which the same reference numerals have been applied for the elements corresponding to those of the one handle embodiment. In the two handle embodiment, so-called conventional filter cords 17 are shown stitched to the bag by the same stitching 11 securing leg portions 14 of the handle strips and band 6. This filter cord which may be any suitable flexible material such as flat paper strap or round cotton or jute fiber, is sometimes employed to prevent sifting of powdery or powder forming material through the bag openings resulting from the stitch holes. If desired, filter cords 17 may be employed with bags having only one handle.

Although the described handle arrangement is disclosed in the embodiments of the invention illustrated on a multi-wall side gusseted paper bag, it can be employed on single wall or non-gusseted paper bags, or bags made of other flexible materials. Also, it may be utilized on valve bags of various types, as all of these bags are conventionally closed by closure bands of the character described; and the handle strip can be stitched onto the bag simultaneously with the stitching of the closure band, and the loop 16 formed simultaneously with the stitching operation by the following method.

The described handle arrangement is formed on the bag as an added step in the heretofore conventional method of folding band 6 over an end of the bag and stitching the same to the bag. FIG. 9 illustrates schematically the apparatus for accomplishing such method with the added step of the present invention. In such method, a continuous series or succession of bags 2, which are previously tubed in a conventional manner, is moved in one general direction indicated by direction arrow D, by means of spaced continuously moving endless conveyor chains 21 forming part of a conventional bag sewing machine. The chains have equally spaced apart lugs 22 which engage the side edges of the respective bags and move them in uniform spaced apart relationship and at a substantially constant speed.

Generally, in commercial operations, the bags are moved at a speed in the order of about 500 to 950 inches per minute; such speed of movement being coordinated with the usual speed of operation of conventional bag sewing or stitching mechanism S located at a fixed station on the machine, the stitching mechanism including a conventional needle 23 shown in FIG. 12. Closure band 6 is drawn on the form of a continuous strip from a parent supply roll 24 thereof freely journalled at 25, through a conventional band folder mechanism 26. The ends 4 of the bags pass through folder 26 which has suitable

stationary guide surfaces (not shown) that fold the band to form the side flaps 8 between which the ends of the bags become positioned; and during the movement of the bags, the band is stitched to the bag side walls 9 adjacent ends 4 by means of stitcher S which forms the aforementioned stitching 11 passing through both side walls of the respective bags and through both flaps 8 of the band.

After stitching of the band to the respective bags, the band and stitching are repeatedly severed between adjacent bags by means of a conventional cutter 27 located on the machine and operated in timed relationship with the rest of the apparatus. Such cutting between adjacent bags after they are completely stitched results in the aforementioned projecting portions 12 which extend beyond the side ends of the respective bags.

In the method of this invention, the bag handle strip 13 is also initially in the form of a continuous strip of material fed from a free parent roll 28 of the same journalled at 28'. Strip 13 is drawn through stitcher S simultaneously with the feeding of band 6 and in cooperative relationship with the band. Strip 13 is, however, guided through an eye 29 of a guide member 31 which is located at a fixed station in front of stitcher S but which is mounted for movement back and forth by suitable mechanism (not shown), in timed relationship with the movement of the bags and in a direction transverse with respect to the line of movement of the bags.

Eye 29 in guide member 31 is normally maintained directly in line with stitching needle 23, so that a leg portion 14 of a bag handle becomes stitched to the bag with band 6 at the right hand side of any given bag when it first reaches the stitching station. When such bag has been moved to a position with reference to stitcher S to the right of the center line of the bag, bag handle strip 13 is moved by guide 31 away from the bag end so as to be out of line with stitching needle 23, thus commencing formation of handle loop 16, as is indicated in FIG. 10.

After further movement of the bag, eye 29 is moved back in line with the stitching needle 23, as is indicated in FIG. 11 so that handle strip 13 becomes secured to the left portion of the bag with band 6, thus resulting in formation of the completely free loop portion 16 of the handle. This operation is repeated sequentially on all bags as they move past stitcher S. Then the successive bags are separated by the aforementioned cutter 27.

FIG. 13 illustrates the operation when a conventional filter cord 17 is applied. Another freely rotatable supply roll 32 of a continuous filter cord strip is provided, and stitched in simultaneously with handle strip 13 and the band strip 6. The usual fixed guide 33 is provided for the filter cord, ahead of stitcher S.

FIGS. 14 and 15 illustrate the operation wherein handles are formed on each of opposite sides of the bag. Such operation is the same as previously related with respect to FIGS. 9, 10 and 11 except that another handle strip 13 is fed from another freely journalled supply roll 34 from which the handle strip is supplied to the underside of the bag, as well as to the top side. For this purpose, cord guiding member 31 is provided with a looped extension 36 having another guide eye 37 located underneath the bags. Eye 37 thus guides the handle strip from supply roll 34 in and out of line with the stitching mechanism in the manner described. If desired, handle arrangements of the type described may be applied to both ends or mouths of a bag.

Although the invention is most advantageously employed with the securing of the aforementioned closure band, the closure band may be omitted with certain types of products that are relatively non-siftable, such as vegetable products, for example, beans or potatoes. When the closure band is omitted, the handle strip alone may be stitched to the bag by the above described method whereby the bag is simultaneously closed by the continuous line of stitching 11 extending transversely across the

entire width of the bag and which secures the opposite side walls of the bag together, to thus provide the improved handle and closure construction.

We claim:

1. The method of closing and simultaneously affixing a carrying handle to each bag of a series of successive bags; said method comprising moving a series of open ended bags in continuous uninterrupted fashion and in spaced relationship relative to each other past a bag closing station; at said station feeding a continuous strip of handle material into engagement with each successive bag of said series while continuing movement of each such bag past said station without interruption; as said handle strip is fed into engagement with each successive bag of said series and as such bag is moving, simultaneously applying a continuous line of stitching through said handle strip along the length thereof into and through such bag, whereby the end of such bag is stitched closed as said handle strip is simultaneously secured thereto; simultaneously with closing the end of each said successive bag of said series, forming a freely graspable readily accessible handle loop in conjunction with such bag end by periodically moving said handle strip out of and back into alignment with the path of said line of stitching in timed relationship with movement of said series of bags so that a handle loop is formed as each successive bag of said series passes said station, said handle strip being secured by said line of stitching to each successive bag on opposite sides of each said handle loop so that each said handle loop is free of stitched engagement with its associated bag; and, while continuing uninterrupted movement of said bag series, periodically severing said handle strip and said line of stitching between adjacent bags to separate successive bags of said series from each other.

2. The method of closing, sift-proofing and simultaneously affixing a carrying handle to an end of each bag of a series of successive bags; said method comprising moving a series of open ended bags in continuous uninterrupted fashion and in spaced relationship relative to each other past a bag closing station; at said station feeding a continuous sift-proofing closure band into engagement with each successive bag of said moving series; continuously folding said band over the end of each successive bag as the same moves past said station; feeding a continuous strip of handle material into engagement with the closure band folded over the end of each successive bag of said series as movement of each such bag past said station is continued without interruption; as said handle strip is fed into engagement with each successive bag of said series and as such bag is moving, simultaneously applying a continuous line of stitching through said folded band and through said handle strip along the length of said handle strip into and through each such bag, whereby the end of such bag is stitched closed as said closure band and handle strip are simultaneously secured thereto; simultaneously with closing the end of each successive bag of said series, forming a freely graspable readily accessible handle loop in conjunction with each such bag end by periodically moving said handle strip out of and back into alignment with the path of said continuous line of stitching in timed relationship with movement of said series of bags so that a handle loop is formed as each successive bag of said series passes said station, said handle strip being secured by said stitching to each successive bag on opposite sides of each said handle loop so that each said handle loop is free of stitched engagement with its associated bag and is readily graspable without interference from said folded band; and, while continuing uninterrupted movement of said bag series, periodically severing said folded band and said handle strip and said line of stitching between adjacent bags to separate successive bags of said series from each other.

3. The method of claim 2 in which said handle strip is periodically moved out of alignment with said line of stitching in a direction away from each closed bag end toward the other end of each said bag, whereby the handle loop affixed to each successive bag of said series overlies a side wall of such bag.

4. The method of claim 2 in which a pair of continuous handle strips are fed into engagement with said folded band on opposite sides of each successive bag of said series and are simultaneously secured to each such bag by said line of stitching, and in which both said handle strips are periodically moved in unison out of and back into alignment with said line of stitching whereby a freely graspable handle loop is provided on each side of each successive bag of said series.

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