

Aug. 27, 1946.

C. V. BRADY

2,406,661

BAG CLOSURE

Filed May 15, 1944

FIG. 1.

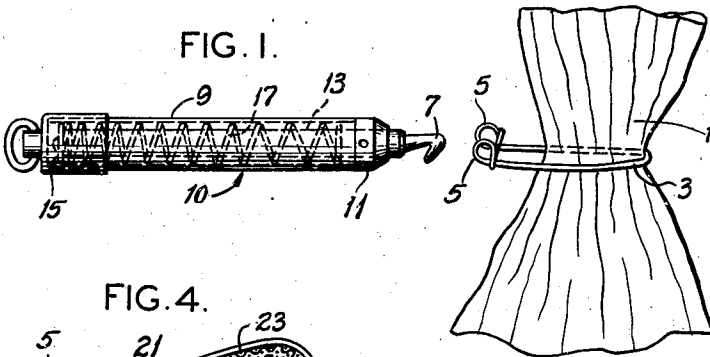


FIG. 2.

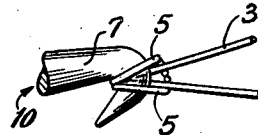


FIG. 4.

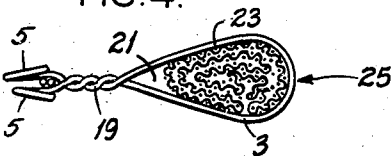


FIG. 3.

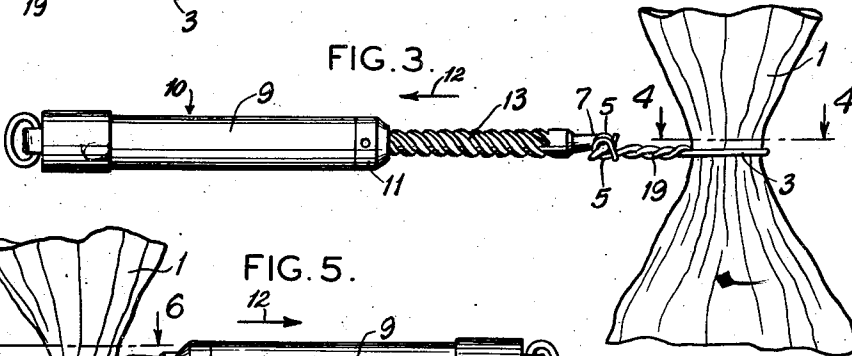


FIG. 5.

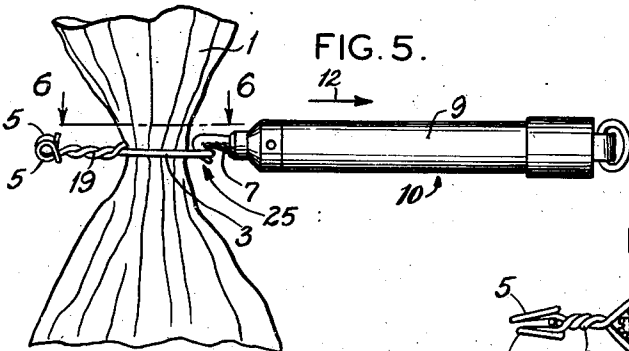


FIG. 6.

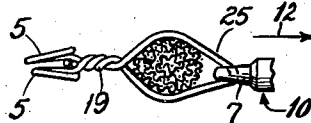


FIG. 9.

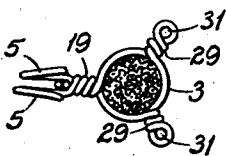


FIG. 7.

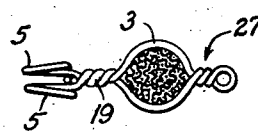
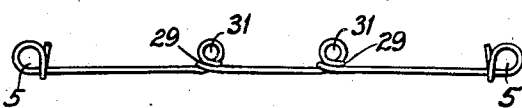


FIG. 8.



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UNITED STATES PATENT OFFICE

2,406,661

BAG CLOSURE

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Application May 15, 1944, Serial No. 535,640

2 Claims. (Cl. 24—30.5)

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This invention relates to bag closures, and with regard to certain more specific features to tie wire closures of this class.

Among the several objects of the invention may be noted the provision of means for making more effective the tie-wire closures produced by the ordinary rotary screw twisters employed for twisting the tie wires; and the provision of means of the class described which requires either very little or no additional material for carrying it out. Other objects will be in part obvious and in part pointed out hereinafter.

The invention accordingly comprises the steps and sequence of steps, elements and combinations of elements, features of construction, and arrangements of parts which will be exemplified in the structures hereinafter described, and the scope of the application of which will be indicated in the following claims.

In the accompanying drawing, in which are illustrated several of various possible embodiments of the invention,

Fig. 1 is a side elevation of a gathered bag mouth showing preliminary application of a tie wire thereto, and showing a twisting tool about to be applied;

Fig. 2 is a detailed view of subsequent procedure showing a hook of the twister applied to the tie wire;

Fig. 3 is a view similar to Fig. 1 but showing said tool being pulled and operated to twist the tie wire;

Fig. 4 is a cross section taken on line 4—4 of Fig. 3 illustrating the results attained by the action illustrated in Figs. 1—3;

Fig. 5 is a view similar to Fig. 3 but showing a subsequent step for curing certain difficulties illustrated in Fig. 4;

Fig. 6 is a section taken on line 6—6 of Fig. 5;

Fig. 7 is a view similar to Fig. 6 and showing the final result of one form of the invention;

Fig. 8 is a plan view of an alternative form of tie wire that may be used; and,

Fig. 9 is a view similar to Fig. 7 showing the tie wire of Fig. 8 in tied position.

Similar reference characters indicate corresponding parts throughout the several views of the drawing.

Heretofore it has been the practice to close a bag mouth by first gathering it and looping it with a tie wire, the ends of which are formed as eyes. The manner of doing this is illustrated in Figs. 1—4, wherein numeral 1 shows a gathered bag mouth and numeral 3 a tie wire bent into preliminary position around the gathered mouth.

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The initially straight wire is bent for the purpose. The oppositely disposed eyes 5 of the wire, through which the hook 7 of a draw screw tool 10 is applied, are illustrated in Fig. 2.

The twisting tool 10 consists of a hollow handle 9 at the end of which is a nut 11 cooperating with a screw 13. The screw may feed into and out of the space within the hollow handle 9. At its inner end the screw has a swivel head 15. Between the head 15 and the nut 11 reacts a compression spring 17.

By applying the hook 7 to the eyes 5, an operator may pull upon the handle 9 and rotate the hook. This is because the handle 9 in the operator's hands may not rotate; hence the action of the nut 11 on the screw 13 rotates the latter. The result is that the opposite sides of the tie wire 3 are twisted as illustrated in Fig. 3. A pull is applied to the handle 9 along the direction of the horizontal arrow shown at 12.

The above procedure has been satisfactory enough for ordinary closures but conditions have arisen wherein it is not entirely satisfactory. The reason is shown in an exaggerated manner in Fig. 4, wherein the twisting operation has been completed and the twisting tool removed. The twisted portion 19 of the tie wire is not brought down as well as might be desired against the constricted material of the bag mouth, a space 21 being left. The primary reason for this is that the twisting action requires an outward radial pull on the tool 9. This pull deforms the girth 23 of the tie wire into a tear shape, thus leaving a space such as shown at 21; and even when this space is visually eliminated, a looseness is left about the constricted material at this region 21.

One phase of the invention consists in the following:

After the condition of Fig. 4 is reached, or a similar one, the tool 9 is removed from the eyes 5 and hooked into the tie wire opposite the twist 19, as at 25 (Figs. 5 and 6). Then the tool is pulled as usual. The result is the insertion of a second twist at 27 as indicated in Fig. 7. This causes the space (or looseness) at 21 to be taken up, but since the gathered portions in the bag are already fairly tight at the beginning of this second operation, a similar condition does not arise under the twist 27 (Fig. 7). The result is a very tight closure all around the tie wire. The additional operation may be repeated at other peripheral points, but ordinarily this is not necessary, except on larger bag mouths.

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Also, the tie wires may be made up with pre-twisted sections as indicated in Fig. 8. In this view the straight tie wire, which has eyes 5 therein as heretofore, is provided with intermediate twisted extensions 29 forming eyes 31. This wire is bent around a bunched or gathered bag mouth and may then be twisted by the tool, as indicated at 19 in Fig. 9. Then the hook 7 may be applied to the eyes 31 and by additional pulls, further tightening twists may be inserted into the twists 29.

It will be understood that if desired a single initial twist 29 may be employed in the wire resulting in a final tied appearance such as in Fig. 7.

It will be clear from the drawing that the eye 27 of Fig. 7 or eyes 31 of Fig. 9 must be so positioned with respect to eyes 5 that the pull on eye 27 or either eye 31 has a component adapted to draw out the slack at 21 (Fig. 4); that is, they must occupy positions on the loop around the bag which are at least 90 degrees or more from the adjoined eyes 5.

It will also be understood that Fig. 9 represents the result of using the tie wire of Fig. 8, and also the result of using a wire without intermediate pre-twisted portions but in connection with which are employed two additional twisting operations such as shown in Fig. 5.

Reference is hereby made under the provisions of Patent Office Rule 43 to my application Serial Number 609,250, filed August 6, 1945, for Bag closures.

In view of the above, it will be seen that the several objects of the invention are achieved and other advantageous results attained.

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As many changes could be made in the above constructions without departing from the scope of the invention, it is intended that all matter contained in the above description or shown in the accompanying drawing shall be interpreted as illustrative and not in a limiting sense.

I claim:

1. A closure tie comprising a length of bendable wire having eyes at its ends, said eyes, upon looping the wire around an article, being adapted to be adjoined for pulling and twisting, thereby constricting the resulting loop about the article, and an additional eye formed in the wire in such a location between said eyes that it will occupy a position on the loop which is at ninety degrees or more from the position on the loop of said adjoined eyes, whereby pulling and twisting the additional eye will take up inherent slack left under the previously pulled and twisted adjoined eyes.

2. A closure tie wire comprising a length of bendable wire having eyes at its ends, said eyes upon looping the wire around an article, being adapted to be adjoined for pulling and twisting, thereby constricting the resulting loop about the article, and additional eyes formed in the wire in such locations between said end eyes that they will occupy positions on the loop which are respectively ninety degrees or greater from the position on the loop of said adjoined eyes, whereby pulling and twisting the additional eyes will take up slack left under the previously pulled and twisted adjoined eyes.

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