March 7, 1944. M. A. NICOLAS 2,343,571

BAG CLOSURE

Filed Nov. 1, 1941

Fig. 1.

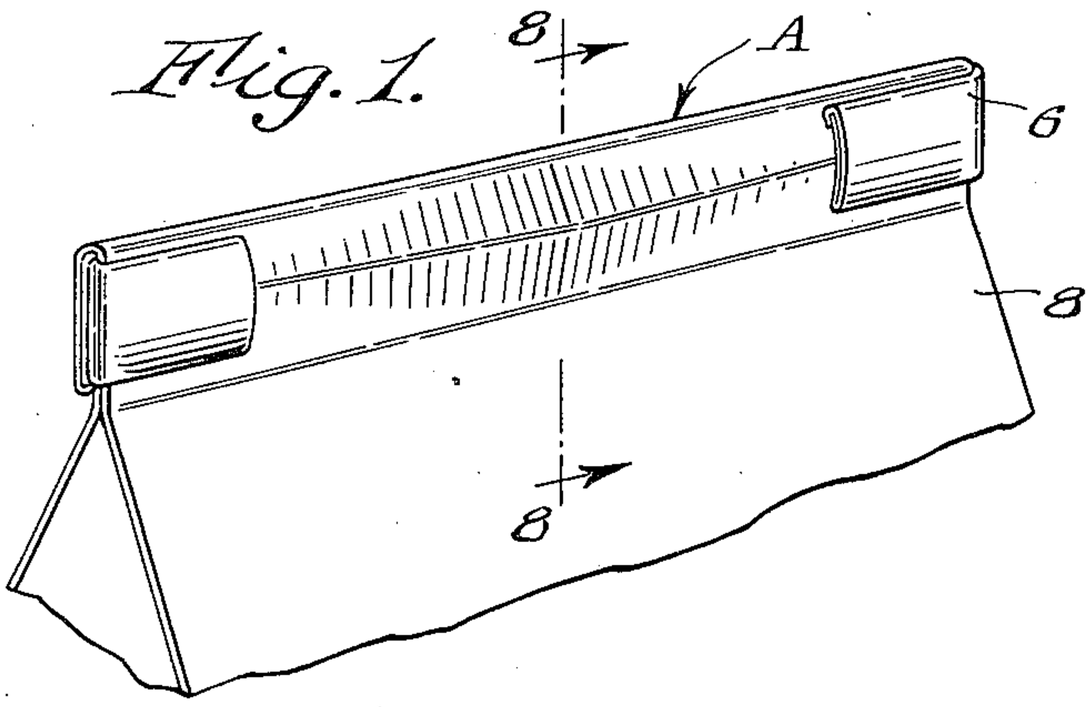


Fig. 3.

Fig. 4.

Fig. 5.

Fig. 6.

Fig. 2.

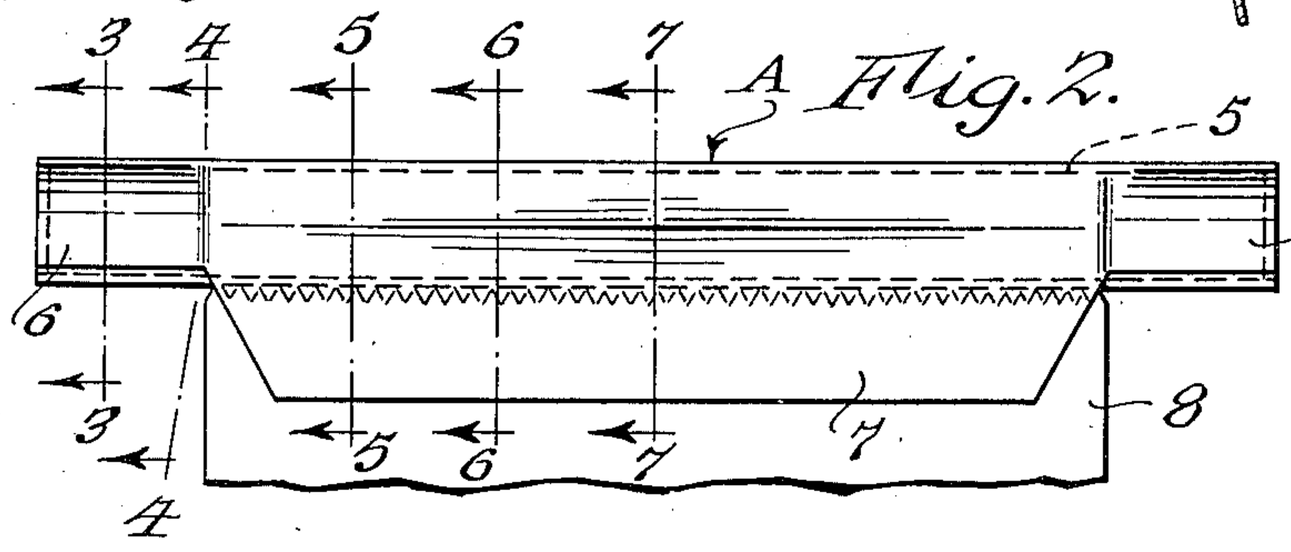


Fig. 7.

Fig. 8.

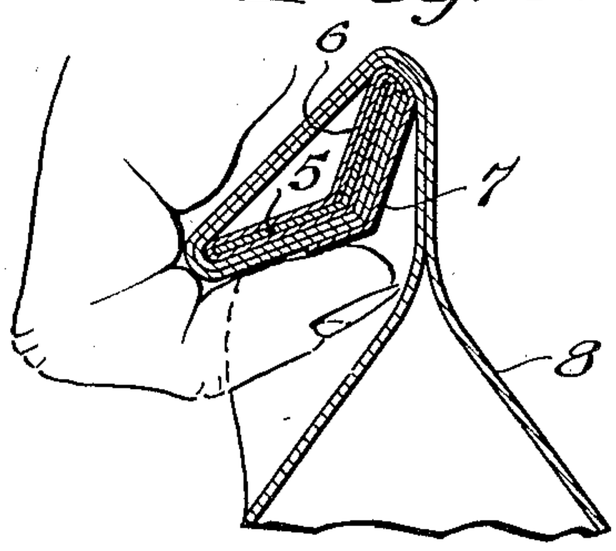


Fig. 9.

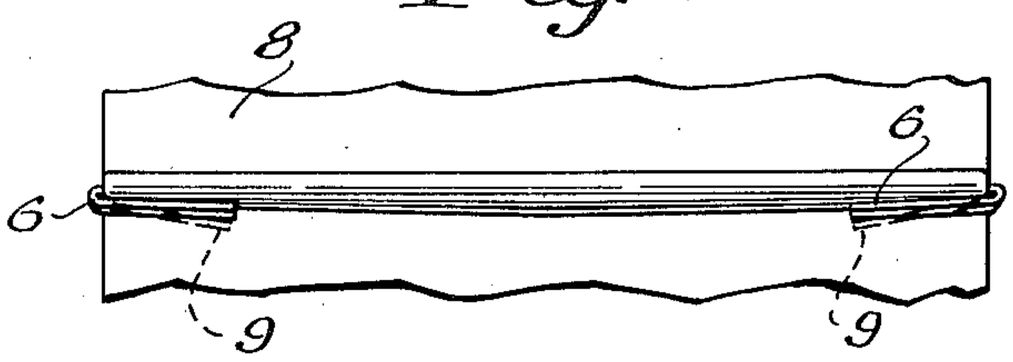
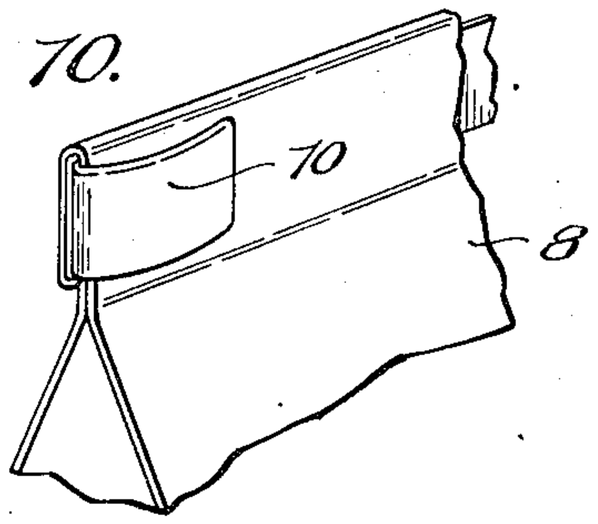


Fig. 10.



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UNITED STATES PATENT OFFICE

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BAG CLOSURE

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Application November 1, 1941, Serial No. 417,447

9 Claims. (Cl. 229—65)

This invention relates to new and useful improvements in container closures and particularly seeks to provide novel closure securing means of the paper wrapped metal tie type which is designed for use in connection with bags containing relatively large quantities of material.

The so-called metal tie closure securing devices normally comprise a strip of ductile metal completely encased by a paper wrapper adhesively secured thereto. The wrapper is in turn provided with a tab which is adhesively or otherwise secured to one wall portion of a bag adjacent the end thereof. In use, the metal tie together with the top of the bag is rolled or folded down, and the ends of the tie are then folded back to embrace the rolled down portion and the neck of the bag to secure the same in closure forming position. Heretofore, when these devices have been employed in connection with relatively large bags adapted to contain substantial quantities of material, the ductile metal strips have been made considerably larger, heavier, and stronger in order to withstand the added strains which are produced as the result of association with the large sizes of bags. These added strains are accentuated in the larger bags whenever the closures are employed as carrying handles by the purchasers. Therefore, when the metal strips in accordance with known practice are made sufficiently large for this type of use in connection with large bags and sufficiently strong to withstand the strains imposed, they reach that condition of relative inflexibility where tools must be employed to bend the tabs into closure securing position or to straighten the tabs preparatory to releasing the closure and opening the bag. Thus, one of the essential features of attractiveness of such devices, namely, the ability of a user to secure or to open the same solely through manual manipulation, is lost.

Therefore, an object of this invention is to provide a closure securing device of the metal tie type which is so constructed that normal gauges of ductile metal strips may be employed even for use in connection with the securing of large bags containing substantial quantities of material without loss of effective strength to the completed closure.

Another object of this invention is to provide a device of the character stated which is so designed that the completed closure may be employed as a carrying handle without danger of accidentally releasing or unbending the folded over tie ends.

Another object of this invention is to provide a device of the character stated which is longitudinally crimped through at least a substantial portion of its length to thereby enable the formation of a completed closure having materially increased strength.

Another object of this invention is to provide a device of the character stated which, after it has been placed into closure forming position, is longitudinally crimped to present substantially flat end portions and progressively increasing convergence of the longitudinal edges to the middle thereof to thereby provide a completed closure of materially increased strength.

Another object of this invention is to provide a device of the character stated in which the longitudinal crimping thereof is so effected that the lower edge of the rolled down portion of the secured closure projects outwardly a slight distance to facilitate use of the closure as a carrying handle.

Another object of this invention is to provide a novel method of forming and securing container closures through the use of securing devices of the metal tie type.

Another object of this invention is to provide a device of the character stated which is simple in design, rugged in construction, and economical to manufacture.

With these and other objects in view, the nature of which will become more apparent, the invention will be more fully understood by reference to the drawing, the accompanying detailed description, and the appended claims.

In the drawing:

Fig. 1 is a perspective view of the upper end of a bag provided with a closure constructed in accordance with this invention;

Fig. 2 is an elevational view of the upper end of a bag and illustrates the metal tie closure securing device in its reopened position;

Fig. 3 is a vertical transverse section through the ductile metal strip and taken along line 3—3 of Fig. 2;

Fig. 4 is a view similar to Fig. 3 but taken along line 4—4 of Fig. 2;

Fig. 5 is a view similar to Fig. 3 but taken along line 5—5 of Fig. 2;

Fig. 6 is a view similar to Fig. 3 but taken along line 6—6 of Fig. 2;

Fig. 7 is a view similar to Fig. 3 but taken along line 7—7 of Fig. 2;

Fig. 8 is a vertical transverse section taken along line 8—8 of Fig. 1 and illustrates the manner in which the closure may be employed as a carrying handle;

Fig. 9 is a plan view of the closure illustrated in Fig. 1; and

Fig. 10 is a fragmentary perspective view of one end of a bag and illustrates a modified treatment of the extreme end portions of the closure securing device.

Referring to the drawing in detail, the invention as illustrated, is embodied in a closure securing device A of the metal tie type, and includes a relatively long and narrow strip 5 formed from ductile metal, and a wrapper 6 completely encasing the same. The wrapper is provided with an integrally formed tab 7 adapted to be adhesively or otherwise secured to a bag 8 adjacent the upper or mouth end thereof.

An essential feature of this invention resides in the longitudinal crimping of the strip 5 in order that the strength of the metal tie securing device may become effectively increased. Generally, the longitudinal crimping of the metal strip is preferably carried out throughout the length thereof except for the areas in which bending occurs as an incident to the fastening or securing of a formed closure.

In one form which has been found to be commercially preferable, the metal strip 5 is crimped longitudinally to provide different cross-sectional contours throughout its length in order to form the strip into a relatively shallow but strong beam adapted to withstand the strains of usage without distortion even when relatively light gauges of metal are employed in the formation thereof. To this end, the extreme end portions of the strip, which in use form the bendable securing tabs, are pressed to form a concavo-convex cross-sectional shape as indicated in Fig. 3 of the drawing. This concavo-convex section becomes flattened out until the section indicated at Fig. 4 of the drawing is reached at which position the metal strip is in a substantially flat condition. It should be noted that the section line 4—4 also indicates substantially the line about which bending of the securing tabs takes place when the bag closure is completely formed by the rolling or folding down of the tie and the associated portions of the bag upper end. From each such line of bending, the longitudinal edges of the strip become slightly converged toward the mid-section of the length of the strip to present thereby, as indicated in Figs. 5 to 7 of the drawing, increasingly sharp V-shaped cross-sections to the midpoint. Thus, the portion of the strip which lies between the lines of bending of the tab defining end portions is contoured to provide a shallow beam of relatively great strength. It should be noticed that the contouring of the intermediate portion of the strip is reversed from the concavo-convex contouring of the end portions thereof in order that the end portions when bent back into closure securing position will be disposed in substantially nested relation with respect to the then underlying portion of the strip.

In use, the metal tie closure securing device together with the associated portion of the upper end of the bag is folded or rolled down in the well known manner and the extreme end portions of the device are then bent back upon the formed closure to secure the same. It should be noted that the contouring of the closure securing device is preferably so directed that when a bag closure is secured thereby, the lower edge portion of the secured closure will project a slight distance outwardly from the adjacent bag portion to provide space for the ready insertion of the fingers of a person who desires to employ the closure as a carrying handle as indicated in Fig. 8 of the drawing.

In certain instances, it may be found desirable to defer the longitudinal crimping of the closure securing device until after a bag closure has been completely formed and secured. In such instances the entire length of the formed closure may be subjected to crimping starting with nearly flat end portions and becoming progressively more crimped until the mid-section thereof is reached. This will provide a secured closure which is somewhat more rigid than that described above since the areas in which bending of the securing tabs occur are also given a certain amount of transverse curvature thereby increasing the beam effect of the structure as a whole.

It is of course to be understood that certain details of arrangement and proportions of parts may be variously modified without exceeding the scope of the appended claims.

I claim:

1. A metal tie closure device for bags and the like comprising an elongated deformable strip of a length greater than the width of a bag to which it is adapted to be applied to thereby provide securing tabs, and a wrapper enclosing said strip, said strip being longitudinally crimped in one direction through an area located intermediate the securing tabs, and said securing tabs being longitudinally crimped in the direction opposite that of the intermediate crimping.

2. A metal tie closure device for bags and the like comprising an elongated deformable strip of a length greater than the width of a bag to which it is adapted to be applied to thereby provide securing tabs, and a wrapper enclosing said strip, said strip being longitudinally crimped in one direction through areas extending inwardly from the ends thereof for a distance substantially equal to the length of said tab defining portions and terminating in spaced substantially flat sections, and being longitudinally crimped in the opposite direction through the area intermediate said spaced flat sections.

3. The method of closing the upper end of a filled bag having a metal tie securing device fastened thereto adjacent the upper end thereof comprising the steps of folding down the end of said bag about the metal tie as a shaper to thereby form a closure, then securing said closure by bending the ends of said metal tie thereupon, and finally longitudinally crimping said formed and secured closure into shallow, concavo-convex cross-section to increase the effective strength thereof.

4. In the method of closing a filled bag wherein the upper end is folded and secured by a device of the metal tie type having its ends bent back upon the formed closure, the step of longitudinally crimping the secured closure into shallow, concavo-convex cross-section to increase the effective strength thereof.

5. In the method of closing a filled bag wherein the upper end is folded and secured by a device of the metal tie type having its ends bent back upon the formed closure, the step of longitudinally crimping the secured closure into shallow, concavo-convex cross-section throughout its length to increase the effective strength thereof.

6. In the method of closing a filled bag wherein the upper end is folded and secured by a device of the metal tie type having its ends bent back upon the formed closure, the step of longitudinally crimping the secured closure into shallow,

concavo-convex cross-section through at least a centrally located zone to increase the effective strength thereof.

7. A package comprising a bag, a metal tie closure securing device associated with said bag, and a closure formed from the upper end of said bag and secured by said metal tie device, said securing device being longitudinally crimped from a substantially flat cross-section adjacent the ends of the formed closure to a marked concavo-convex cross-section adjacent the middle thereof whereby to increase its effective strength without decreasing its capability of being easily reopened.

8. A metal tie closure device for bags and the like comprising an elongated deformable strip of a length greater than the width of a bag to which it is adapted to be applied to thereby provide securing tabs, said strip being longitudinally crimped in one direction through an area located intermediate the securing tabs, and said securing tabs being longitudinally crimped in the direction opposite that of the intermediate crimping.

9. A metal tie closure device for bags and the like comprising an elongated deformable strip of a length greater than the width of a bag to which it is adapted to be applied to thereby provide securing tabs, said strip being longitudinally crimped in one direction through areas extending inwardly from the ends thereof for a distance substantially equal to the length of said tab defining portions and terminating in spaced substantially flat sections, and being longitudinally crimped in the opposite direction through the area intermediate said spaced flat sections.

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