June 2, 1959 I. CASTER ET AL 2,889,104

CARTON HANDLE CONSTRUCTION ARRANGED FOR AUTOMATIC MANUFACTURE

Filed Sept. 20, 1957 2 Sheets-Sheet 1

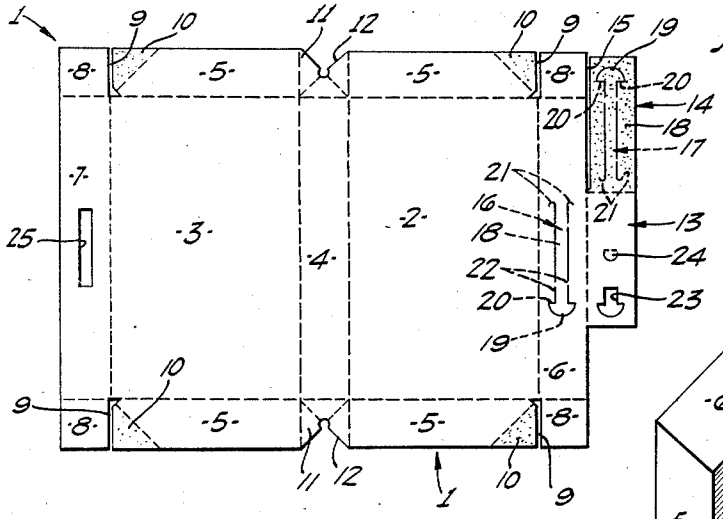


FIG. 1.

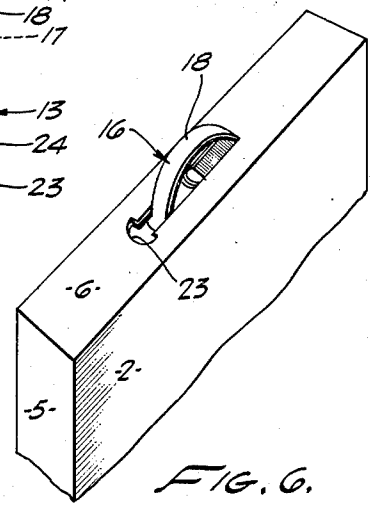


FIG. 6.

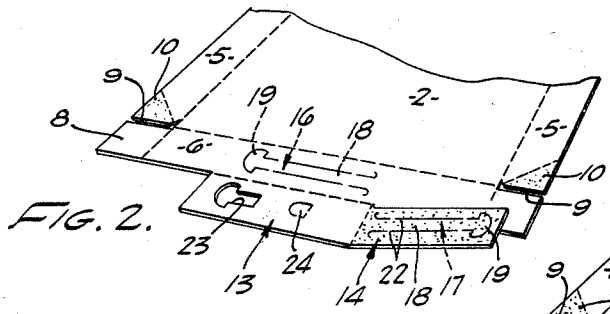


FIG. 2.

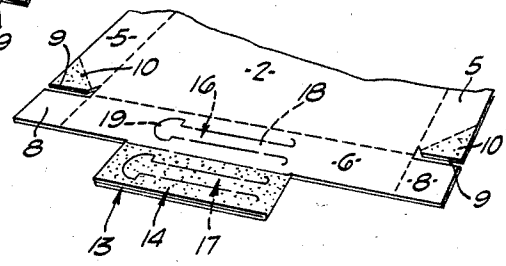


FIG. 3.

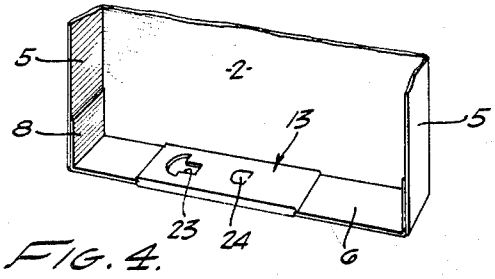


FIG. 4.

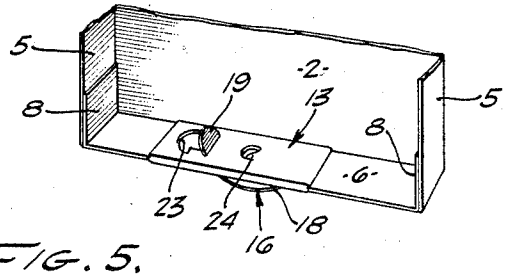


FIG. 5.

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CARTON HANDLE CONSTRUCTION ARRANGED FOR AUTOMATIC MANUFACTURE

Filed Sept. 20, 1957 2 Sheets-Sheet 2

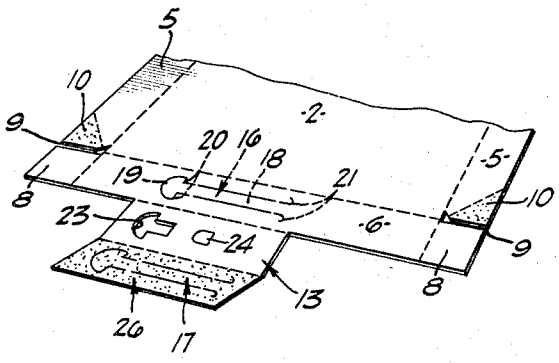


FIG. 7.

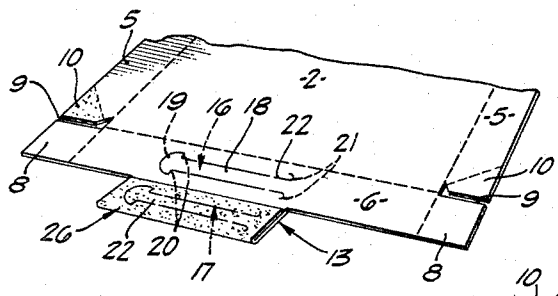


FIG. 8.

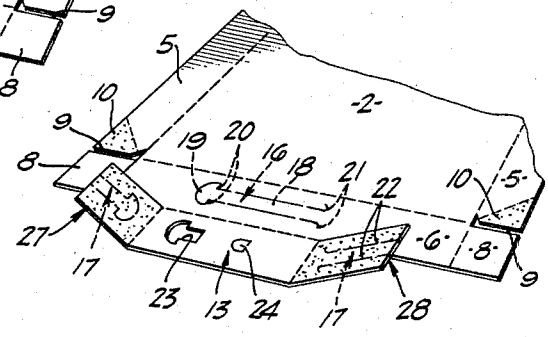


FIG. 9.

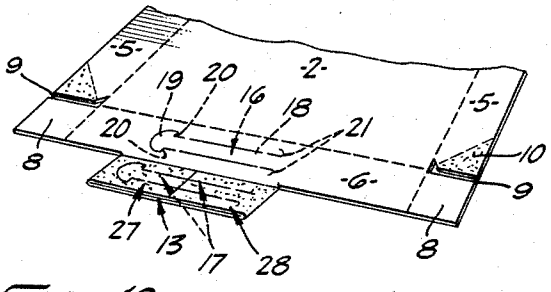


FIG. 10.

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United States Patent Office 2,889,104 Patented June 2, 1959

2,889,104

CARTON HANDLE CONSTRUCTION ARRANGED FOR AUTOMATIC MANUFACTURE

Irving Caster and Irving Feldman, San Mateo, Calif.

Application September 20, 1957, Serial No. 685,318

9 Claims. (Cl. 229—52)

This invention relates to carton handle construction arranged for automatic manufacture, and included in the objects of this invention are:

First, to provide a carton handle construction which retains the advantages of the "Carton With Carrying Handle," Patent No. 2,802,616, issue date August 13, 1957, yet facilitates automatic manufacture in conventional carton manufacturing machines.

Second, to provide a carton handle construction which does not appreciably increase the cost of manufacture as compared to cartons of similar dimension without carrying handles.

With the above and other objects in view, as may appear hereinafter, reference is directed to the accompanying drawings in which:

Figure 1 is a developed view of the carton blank incorporating the invention;

Fig. 2 is a fragmentary perspective view showing the carton blank in the initial process of manufacture into a carton;

Fig. 3 is a similar perspective view showing the second step of manufacture;

Fig. 4 is a similar view showing the third or final stage of manufacture;

Fig. 5 is a similar fragmentary perspective view showing the completed carton as viewed from inside, showing the handle in its operating position;

Fig. 6 is a fragmentary external perspective view of the completed carton with the handle in position for use;

Figs. 7 and 8 illustrate a modified construction of which Fig. 7 is a fragmentary perspective view similar to Fig. 2, showing the initial stage of manufacture, and Fig. 8 is a perspective view similar to Fig. 3, showing the succeeding stage of manufacture;

Figs. 9 and 10 illustrate a further modified construction of which Fig. 9 is a fragmentary perspective view similar to Fig. 2, showing the initial stage of manufacture, and Fig. 10 is a fragmentary perspective view similar to Fig. 3, showing the succeeding stage of manufacture.

The carton is formed from a single-piece carton blank 1. The blank includes a front panel 2, a back panel 3, a bottom panel 4, end panels 5, and top panels 6 and 7. These panels are foldably connected in the usual manner by score lines, indicated in the drawings by broken lines, to form a pair of attached box members, one of which telescopes over the other.

The top panels 6 and 7 are provided at their extremities with end tabs 8, separated from the adjacent end panels 5 by slits 9. The adjacent extremities of the end panels 5 are provided with foldable triangular sections 10 coated with adhesive for attachment to the end tabs 8. At the ends of the bottom panel 4, between corresponding end panels 5, are cross folded sections 11 having V-notches 12 so that the sections thus formed will fold together as the two parts of the carton are brought into position.

The carton so far described may, for the purposes of the present invention, be considered conventional.

Reference is now directed to Figures 1 through 6. In the construction here illustrated a retainer flap 13 is foldably attached to the top panel 6 near, but slightly offset from, the central portion thereof. The retainer flap is slightly longer than the handle to be formed and may be substantially the width of the top panel 6.

Foldably attached to either end of the retainer flap 13 is a reinforcing flap 14 which is likewise slightly longer than the handle to be formed. The reinforcing flap 14 initially lies contiguous to but is separated from the top panel 6 by a slit 15.

It should be observed that in Figures 1, 2, and 3 the side of the carton blank 1 destined to become the inside of the finished carton faces upward. Normally, this is the unglazed or unfinished side of the cardboard comprising the carton. The opposite side destined to become the outside of the carton is calendered or the surface otherwise provided with an attractive finish. In the course of manufacture both sides of the reinforcing flap 14 are coated with adhesive.

The reinforcing flap 14 is first folded from the position show in Figures 1 and 2 to the position shown in Figure 3 so that the unfinished side of the reinforcing flap is adhered to the unfinished side of the retainer flap 13. The retainer flap 13 and reinforcing flap 14 are then folded over the top panel 6, as shown in Figure 4, so that the adhesive on the reinforcing flap 14 bonds the reinforcing flap 14 to the top panels 6, as shown in Figure 4.

The top panel 6 and reinforcing flap 14 are provided with handle cutouts 16 and 17 which register with each other when the reinforcing flap 14 is folded over the top panel 6. Each handle cutout includes a strap portion 18 and a head portion 19. The head portion may be semicircular and slightly wider than the strap portion 18 so as to form lateral shoulders 20. The extremities of the slits which form the strap portions 18 turn outwardly to form stress-relieving terminal slits 21. Initially, the handle cutouts are retained in the planes of the top panel 6 and reinforcing flap 14 by conventional nicks 22 or interruptions in the slits which define the cutouts.

The retainer flap 13 is provided with a T-slot 23 corresponding in dimension to the head 19 and adjacent portion of the stem of the handle cutouts 16 or 17. The material within the T-slot is punched out in the course of manufacture prior to folding the reinforcing flap 14 over the retainer flap 13. Also formed in the retainer flap 13 is a push tab 24 disposed in registry with the central portion of the handle cutouts 16 and 17 when the reinforcing flap 14 and retainer flap 13 are folded, as shown in Fig. 4.

By reason of the fact that the reinforcing flap 14 is attached to the retainer flap 13, so that the reinforcing flap 14 may be first folded over the retainer flap 13 and then these two flaps folded over the top panel 6, the carton blank 1 may be processed through a conventional carton manufacturing machine. For example, the International Right Angle F.Z. Swiftly and the International Right Angle Frank Hall Universal Box Manufacturing Machines.

In the course of manufacture, the carton blank 1 is cut out and scored as indicated in Figure 1. This operation includes the forming of a handle slot 25 in the top panel 7. This operation also includes the cutting, but not separating, of the handle cutouts 16 and 17 in the top panel 6 and reinforcing flap 14, the forming of the push tab 24, and the punching out of the T-slot 23.

In passing the carton blank 1 through the box-forming machine, the unfinished side of the reinforcing flap 14

is first coated with adhesive, the reinforcing flap **14** is then folded over the retainer flap **13**, as indicated in Figures 2 and 3, the finished side of the reinforcing flap **14** or the corresponding area of the top panel **6** is coated with adhesive, and thereupon both the retainer flap **13** and reinforcing flap **14** are folded over the unfinished side of the top panel **6** so as to form three plies of material.

In order to position the carrying handle for use, the push tab **24** is depressed to force the strap portions of the handle cutouts outwardly into arch form, and the head portions **19** of the handle cutouts are pushed in the opposite direction through the T-slot **23** so that the shoulders **20** ride on the margins of the leg of the T-slot **23**, as shown in Figure 5. When this is accomplished, the carrying handle appears as shown in Fig. 6.

In the construction of Figures 1 through 6, the reinforcing flap **14** has been shown as attached to an end of the retainer flap **13**. The reinforcing flap may also be foldably connected to the extended longer side of the retainer flap **13**. Thus as shown in Figures 7 and 8, a reinforcing flap **26** is shown attached to the extended longer side of the retainer flap **13**.

The reinforcing flap **26** is otherwise identical in construction to the reinforcing flap **14**; that is, it is provided with a handle cutout **17** which eventually registers with the handle cutout **16** in the top panel **6**. In this construction the unfinished side of the reinforcing flap **26** is coated with adhesive, then folded over the retainer flap **13**; the finished side of the reinforcing flap **26** is then coated with adhesive, and then the two flaps are folded over the top panel **6**.

In place of coating the reinforcing flap **26** with adhesive, the retainer flap **13** and the appropriate area of the top panel **6** may be adhesive coated so that in any case the top panel **6**, reinforcing flap **26**, and retainer flap **13** are adhesively attached by their confronting surfaces. After the retainer flap **13** and reinforcing flap **26** have been folded over the top panel **6**, the construction appears essentially as shown in Figures 4, 5, and 6.

Reference is now directed to Figures 9 and 10. Complementary portions which divide the reinforcing flap are attached to both ends of the retainer flap **13**; that is, the reinforcing flap comprises reinforcing flap sections **27** and **28**. In this case a portion of the handle cutout **17** is formed in one reinforcing flap section and the complementary portion of the handle cutout is formed in the other reinforcing flap section, as indicated in Figures 9 and 10. If this construction is used, the nicks **22** must be sufficiently strong as to ensure that the sections of the handle cutout **17** are not lost in the box making process but remain in the reinforcing flap sections.

With this construction the unfinished sides of the reinforcing flap sections **27** and **28** are adhesively coated and then folded over the retainer flap **13**, as shown in Figure 10, and then the reinforcing flap sections are again coated with adhesive on their finished sides, whereupon the retainer flap with the reinforcing flap sections thereon are folded over the top panel **6** so that the completed structure appears essentially as shown in Figures 4, 5, and 6.

Insofar as the operation of the conventional box-making machine is concerned, any of the three constructions shown may be used.

While particular embodiments of this invention have been shown and described, it is not intended to limit the same to the exact details of the constructions set forth, and it embraces such changes, modifications, and equivalents of the parts and their formation and arrangement as come within the purview of the appended claims.

What is claimed is:

1. A carton comprising: a side panel; a retainer flap foldably attached directly to said side panel; a reinforcing flap foldably attached directly to said retainer flap and indirectly through said retainer flap to said side panel; said reinforcing flap being folded over and adhered to said retainer flap and both said retainer and reinforcing flaps being folded over said panel with said reinforcing flap interposed between said panel and said retainer flap and adhered to said panel; a two-ply handle cutout formed in said panel and reinforcing flap, said handle cutout including a stem integrally attached at one end to said panel and said reinforcing flap and a laterally enlarged head at its other end; said retainer flap having an aperture adapted to register with said head and adjacent portion of said stem and terminating in a margin traversing said stem, the stem of said handle being adapted to arch from said panel and reinforcing flap away from said reinforcing flap and said head adapted to be thrust through said aperture and moved therein until restrained by said margin.

2. A carton as set forth in claim 1, wherein: said retainer panel is provided with means spaced from said aperture for manual access to said handle stem to initiate arching of said handle stem.

3. A carton as set forth in claim 1, wherein: said reinforcing flap is foldably attached at an end of said retainer flap and is initially disposed with a margin contiguous to said panel.

4. A carton as set forth in claim 1, wherein: said retainer flap is rectangular with one of its longer sides foldably attached to said panel; and said reinforcing flap is foldably attached to the extended longitudinal side of said retainer flap.

5. A carton as set forth in claim 1, wherein: said reinforcing flap comprises a pair of complementary flap sections foldably attached to opposite ends of said retainer flap.

6. A carton blank, comprising: a panel destined to become a side of a carton; a rectangular retainer flap foldably attached directly to a margin of said panel; a rectangular reinforcing flap substantially coextensive with said retainer flap foldably attached directly thereto and indirectly to said panel through said retainer flap; handle cutouts in said panel and said reinforcing flap adapted to register when said reinforcing flap is folded over said retainer flap and both said flaps are folded over said panel with said reinforcing flap interposed between said panel and retainer flap; said retainer flap having an aperture adapted, when said retainer flap is folded over said reinforcing flap and panel, to register with a portion of said handle cutouts; said flaps and panel destined to be adhesively secured together.

7. A carton blank as set forth in claim 6, wherein: said reinforcing flap is foldably attached in end-to-end relation with said retainer flap.

8. A carton blank as set forth in claim 6, wherein: said reinforcing flap is foldably attached in side-by-side relation with said retainer flap.

9. A carton blank as set forth in claim 6, wherein: said reinforcing flap comprises a pair of complementary sections foldably attached to opposite ends of said retainer flap.

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