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METHOD AND APPARATUS FOR MAKING A BAG WITH SELF-HOLDING FOLDS
Original Filed May 3, 1940

Serial No.
396,114
2 Sheets-Sheet 1

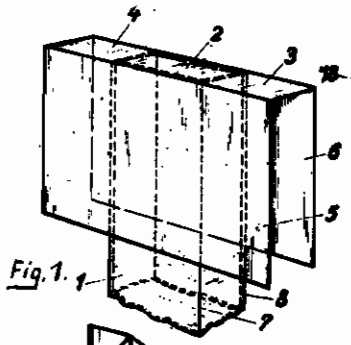

Fig. 1.

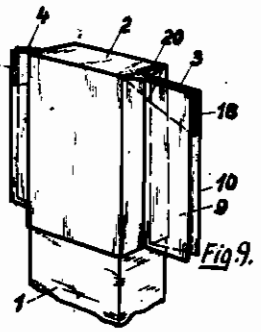

Fig. 9.

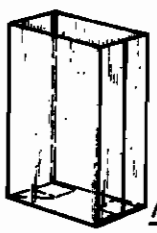
Fig. 7.

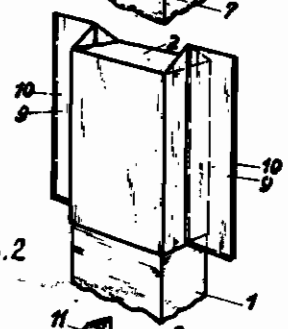

Fig. 2

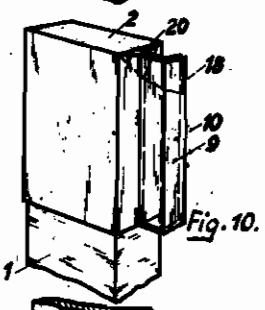

Fig. 10.

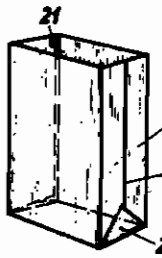

Fig. 13.

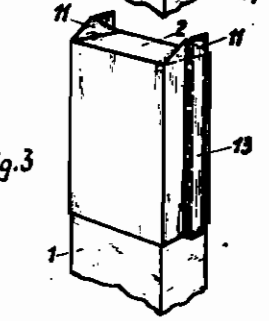

Fig. 3

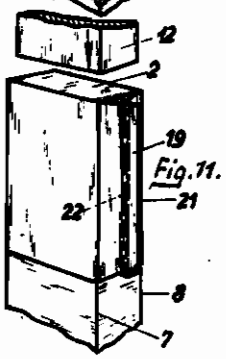

Fig. 11.

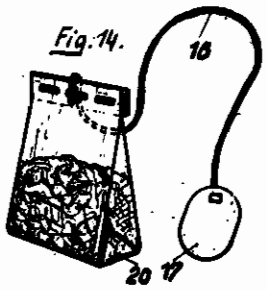

Fig. 14.

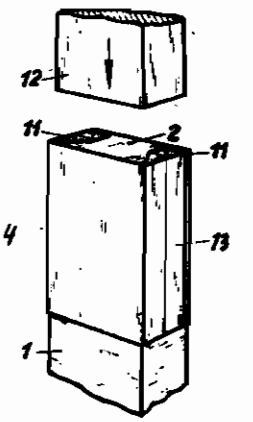

Fig. 4

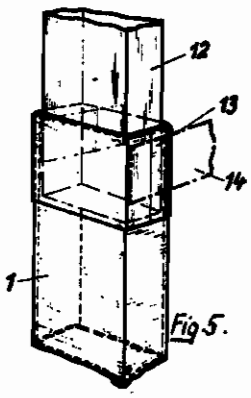

Fig. 5.

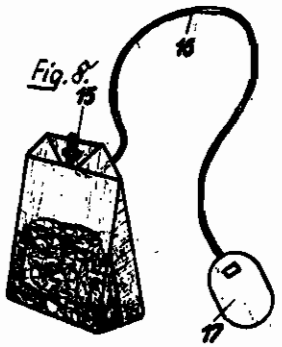

Fig. 8.

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Fig. 12.

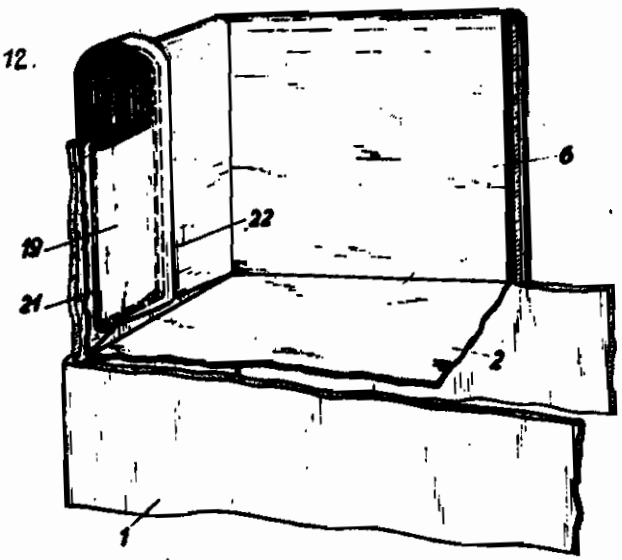
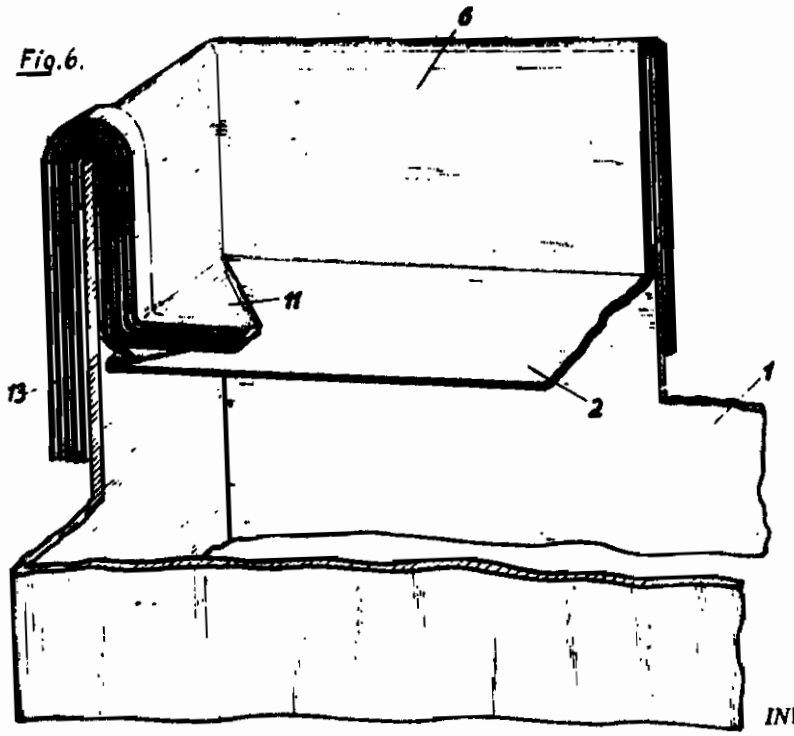


Fig. 6.



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ALIEN PROPERTY CUSTODIAN

METHOD AND APPARATUS FOR MAKING A BAG WITH SELF-HOLDING FOLDS

Adolf Rambold, Dresden, Germany; vested in the Alien Property Custodian

Application filed May 31, 1941

The present invention relates to the manufacture of folded bags of all types made by folding a blank of material of rectangular design over a core, preferably in such a manner that the bags comprise a smooth continuous bottom, several smooth continuous sides and two opposite continuous sides, which are closed and formed by folding adjacent edges of the blank of material, whereby said edges of the blank of material are folded together several times over and over in known manner. Triangular portions projecting beyond the bottom are formed thereby, or, in order to avoid said triangular portions, it is necessary to locate the bottom edge portions which project beyond the base area proper between the side edges in such a manner that the edges of the projecting bottom edge portions are retained near the longitudinal side edges of the blank of material and are folded therewith. Bags formed in this way, the folded seams of which are produced in the manner described, are completely tight. However, it is necessary to positively secure these folded seams in position, either by means of stapling with metal staples or by means of sealing the material, as for example, the sealing of waxed paper through the application of heat, or by means of glue. The object of the present invention is to eliminate the necessity of all such methods of sealing.

Heretofore it has been known that a sewn bag of cloth may be turned inside out after sewing in order to improve its appearance. My invention provides for improved appearance in a bag which is held together as a result of folding and without any additional aids.

My invention substantially simplifies methods heretofore known. The invention comprises turning the folded bag with the side closing folds, which is formed over a core, inside out after folding. A hollow core is preferably utilized which makes it possible to form the bag in a single operation by folding the blank of material on the outside around the hollow core, and after folding, to pull the bottom of the bag through the hollow core by means of a plunger which is applied to the bottom and to turn the bag thereby. The projecting triangular portions formed in the first mentioned folding of the side folds, which must be turned down on the bottom of the bag before it is turned inside out, are brought into the inside of the bag by means of turning the bag inside out with the result that the bag remains completely closed in itself without any additional aids merely through the folding of its side folded seams. When the projecting bottom portions are located between the continuous sides and folded therewith, the turning inside out causes the triangular portion connecting the folded bottom portion with the bottom to be turned on the outside by means of turning the bag inside out and secures the longitudinal side folded seam in position at the lower end of the bag.

The bag is particularly intended for use preferably as in infusion bag for tea, coffee and so forth but other uses will readily suggest themselves. Such bags can be used as sales packages as well as infusion bags. For the latter purpose the bags may be made for example of a suitable material, such as filter paper or perforated cellophane or cloth. The top closing of said bags can be effected in known manner by means of folding and clamping with staples or by means of sealing the material. In the case of infusion bags, a string holder with a tag is applied simultaneously with the stapling.

The position of the folded seams bears no relation to the invention and may be arranged as desired.

Two examples are shown in their individual steps of development in the accompanying drawings.

Figures 1, 2, 3 and 4 are perspective illustrations showing the progressive steps in the manufacture of the bag out of a rectangular blank sheet of material over a core of rectangular cross section, on the narrow sides of which side closing folds of the bag being produced are formed, whereby triangular portions result; Fig. 5 shows how the bag formed over the core is drawn through the hollow core by means of a plunger and thereby turned; Fig. 6 illustrates on an enlarged scale the operation step according to Fig. 5, whereby the core and the piece of work are illustrated opened up; Fig. 7 shows the bag formed according to Figs. 1–6, completed and turned inside out; Fig. 8 shows the bag according to Fig. 7, filled and provided with a top closing; Figs. 1, 9, 10 and 11 illustrate the progressive steps in the forming of a bag with a differently formed side edge folding; Fig. 12 shows a further method of forming the top closure for a bag; Fig. 13 shows the finished bag turned inside out, made according to Figs. 1, 9, 10, 11, 5 and 12; and Fig. 14 illustrates the bag of Fig. 13 filled and provided with a top closing.

The bags according to Figs. 8 and 14 are illustrated, for example, as infusion bags, but they may also be used as sales packages as well. The ratio of their dimensions may be as desired and the drawings are not intended to limit my invention either as to proportions or sizes. In

manufacturing the bag, as illustrated by Fig. 1, a rectangular blank sheet of material is utilized which is folded in U-fashion in any suitable manner over a core of rectangular cross section. A hollow core is preferably used for making the bags. The core is indicated by reference character 1. Its inner edges are preferably rounded off, as shown for example in Fig. 6 at 100 and 101, in order to facilitate the drawing through of the bag formed over it as hereinafter described. The bottom of the bag is indicated by reference numeral 2. Additional portions of the bag extending from and projecting beyond the narrow sides of the core 1 are indicated by reference numerals 5 and 4, whereas the portions of the blank of material turned downward are indicated by 5 and 6. The edges of the U-shaped folded blank of material (Fig. 1) are pressed together on both opposite sides and in such a manner that the lateral portions 9 and 10, extending from the center plane of the core, project from the edges 7 and 8 of said core 1 and extend parallel to the sides 5 and 6 (Fig. 2). Said lateral portions 9 and 10 are folded together several times over and over, in the present example twice (Fig. 3), and are folded over into the narrow side plane of the core 1. As Fig. 3 also shows, the portions 11 projecting beyond the bottom 2 are formed thereby, which are folded over on the bottom as shown in Fig. 4. The plunger 12 then begins to function and is moved in the direction of the arrow toward the bottom 2, and is applied to the bottom and is thrust through the hollow core 1. The finished side folds designated by reference numeral 13 are thereby prevented, for example, by means of indicated springs 14 from opening during the process of drawing through. As Fig. 6 shows, the portions 11, i. e. the projecting triangular portions are brought into the inside of the bag with the result that the bag remains closed without any additional aids simply by means of its side folds.

Fig. 7 shows the finished bag. Fig. 8 shows said bag after being filled and after its top has been closed in any suitable manner. A staple 15 secures the top closing and serves at the same time to fasten a holder string 16 with tag 17.

Beginning with Fig. 1, the forming of the side folds according to Fig. 9 comprises thrusting the portions 3 and 4, projecting beyond the bottom 2, between the lateral portions 9 and 10 in such a manner that the edge 18 is retained near the longitudinal edges of said lateral portions so that when said lateral portions 9 and 10 are folded several times, said portions 3 and 4 are folded therewith, as shown in Fig. 1. In the present example the fold is effected twice. The finished folded bag thus formed is shown in Fig. 11. The folds are indicated herein by reference numeral 18. If the projecting bottom portions 3 and 4 are thrust between the lateral portions 9 and 10 and folded therewith, the turning inside out illustrated in Fig. 5 results in the triangular portion 20, connecting said folded bottom portion with the bottom, being turned on the outside on both sides by means of turning the bag, as shown clearly in Fig. 13. This secures the longitudinal side folded seam 19 in position at the lower end of the bag. It is also important that the edge 21 of the fold 19, which, as is shown in Fig. 11, is on the outer edge, be brought to the inside, whereas the inner folded edge 22 located in the middle is turned on the outside and is retained in the middle of the finished bag for locating in respect to the edges 7 and 8 of the core 1 and in closing the bag, as Fig. 14 shows, is brought outwardly further toward the inside.

The top closing—usually a fold closing—can be sealed or stapled in known manner. The top closing also serves to increase the securing of the side folds for which gluing or stapling have heretofore been required.

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