May 22, 1962 A. A. MEISTER 3,035,754

BAG CONSTRUCTION

Filed Dec. 31, 1956 2 Sheets-Sheet 1

Fig. 1

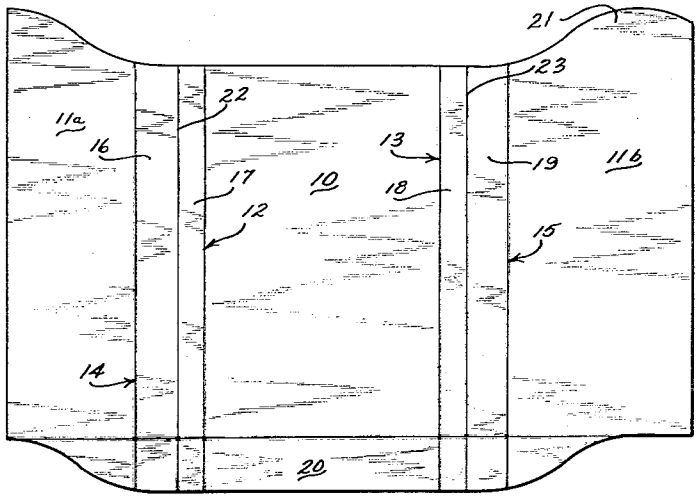


Fig. 3

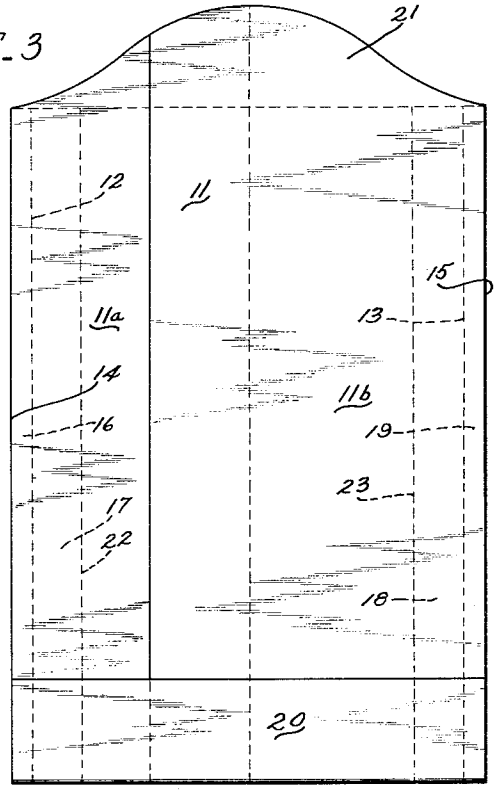
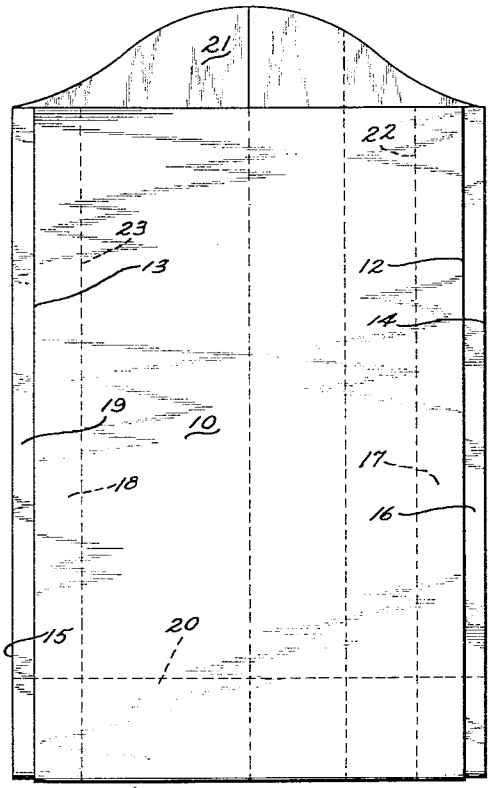


Fig. 2



Inventor
ALBERT A. MEISTER

By Lee, Sherman, Meroni, Gress & Simpson Attys

May 22, 1962 A. A. MEISTER 3,035,754

BAG CONSTRUCTION

Filed Dec. 31, 1956 2 Sheets-Sheet 2

FIG. 4

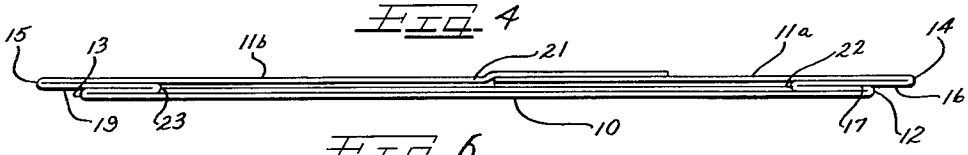


FIG. 6

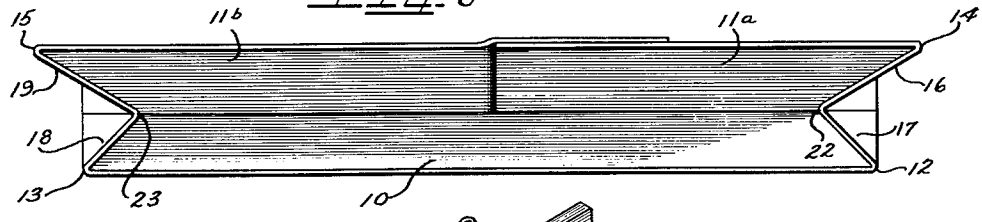
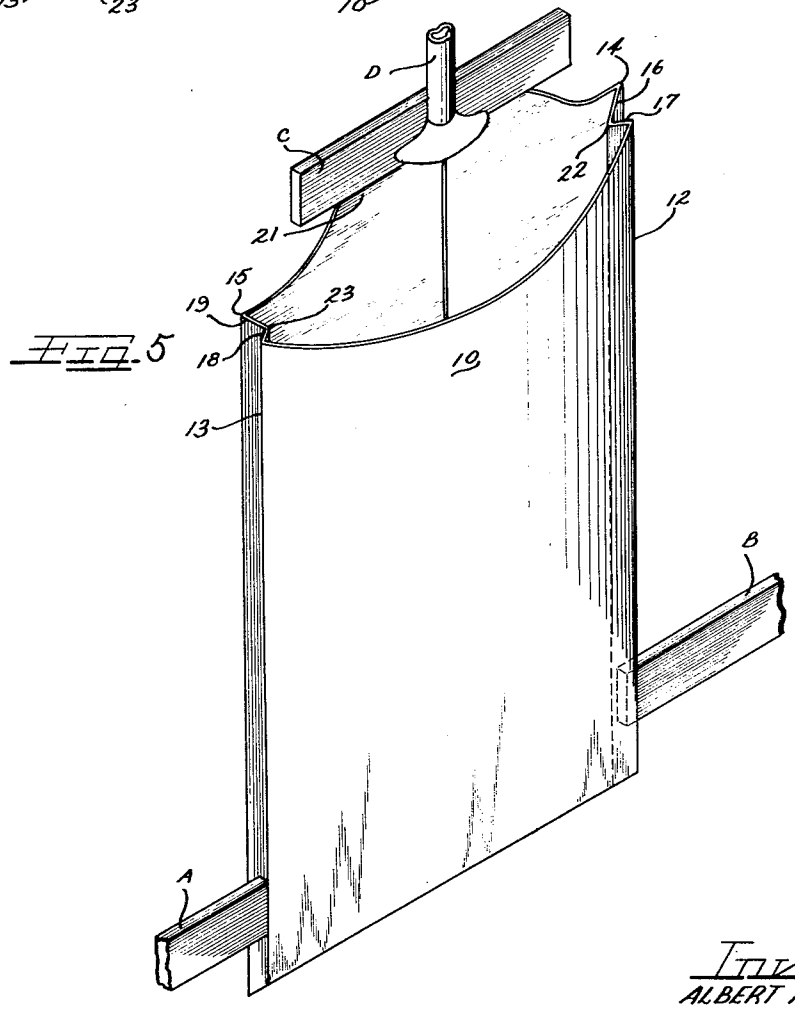


FIG. 5



Inventor
ALBERT A. MEISTER

By Kill, Sherman, Meroni, Gross & Simpson Attys

United States Patent Office 3,035,754 Patented May 22, 1962

3,035,754

BAG CONSTRUCTION

Albert A. Meister, River Forest, Ill., assignor to Bagcraft Corporation of America, Chicago, Ill., a corporation of Illinois

Filed Dec. 31, 1956, Ser. No. 631,871
1 Claim. (Cl. 229—53)

This invention relates to a bag construction, which construction is particularly useful in paper bags.

Certain types of bags are automatically filled by machine. Among these there is a type which has a front side and a back side, each having edges joined together by internally directed pleats, the bottom being folded upwardly to close that end. Bags of this type are typically used to package ice cream bars and are typically constructed of suitable paper or foil covered paper.

One way in which some of these bags are used is as follows. Several hundred bags are lined up in a chute that has a curved downward slope and there is a weight behind the bags pressing them forward. The first bag in line (see FIGURE 5) is held by a plate which is downwardly directed and which holds the upper lip of the bag. At the bottom of the chute, there are two small flanges that extend inward about ⅛ inch from either edge of the bag and about ½ inch upward from the bottom of the bag. The bag is thus held at the lip and is held lightly by the two flanges holding the bottom corners, such holding all being in cooperation with the weight of the bags in the chute. There is a constant stream of air blowing down into the bag from a nozzle which is intended to open the bag so that the bag may receive the ice cream bars or other articles which are ejected from above and which drops down a tube that is positioned just above the mouth of the bag (not shown). If the bag is blown open properly, the force of the bar dropping into the bag jars the bag out from its position, since the bag is held lightly at the three points mentioned above. The bagged bar drops onto a conveyor belt (not shown) and as soon as the bag has dropped out of position, the bag behind it moves into place and is blown open ready to receive the next bar or other contents.

The loading operation does not always proceed as smoothly as is described above. Instead, particularly in the case of bags made of certain materials such as foil, the bag, instead of being blown open, bends at a point between the upper and lower edges of the bag. This produces "dead folds," i.e. partially collapsed pleats. As a result, the horizontal bend occurs transversely to the length of the bag, that is across the bag from one edge to the other. When this happens, the air does not open the bag fully, and the contents, such as an ice cream bar, does not go all the way into the bag.

I have invented a bag construction which obviates the foregoing difficulty. Briefly, this bag construction permits the foregoing equipment to grasp the bag without contacting its front surface, whereby the front folds or pleats are not restricted so that the air may fully open every bag.

Accordingly, it is an object of this invention to provide a bag which may reliably be blown open fully by an air stream.

Another object of this invention is to provide a bag which may be used in automatic packaging machinery and in which the packaging machinery will not prevent the bag from being blown to the fully open position.

It is an object of this invention to provide a bag construction whereby foil bags may be made which may reliably be blown open every time.

Still another object of this invention is the provision

of a bag construction which may be easily manufactured by automatic machinery.

Another object of this invention is the provision of a bag construction which may be reliably used on automatic machinery.

Other objects, features and advantages of this invention will be apparent from the following detailed description of the attached sheets of drawings, which by way of a preferred embodiment illustrate the invention.

On the drawings:

FIGURE 1 is a reduced scale plan view illustrating how a blank taken from a strip of material may be folded to produce the structure of this invention;

FIGURE 2 is a front view of the bag;

FIGURE 3 is a rear view of the bag;

FIGURE 4 is an enlarged top view of the bag shown in FIGURES 2 and 3;

FIGURE 5 is a perspective view showing how the bag is being blown open while being held at three points preparatory to filling; and

FIGURE 6 is an enlarged top view of the bag similar to FIGURE 4, but with the bag blown open as shown in FIGURE 5.

As shown on the drawings:

Referring to FIGURE 1, there is shown a reduced scale view of a bag blank made from a continuous strip, the blank of FIGURE 1 having been severed from the strip at its upper and lower edges. For convenience, the view as shown in FIGURE 1 will be considered to be that portion of the material which will define the inner surface of the bag. At its center, there is a front wall **10**, and rear wall portions **11***a* and **11***b*. The front wall **10** has edges **12** and **13**. As is more clearly seen when the bag is assembled, the rear wall **11** has corresponding edges **14** and **15** which are adjacent to edges **12** and **13** respectively. Intermediate edges **14** and **12** are at least a plurality of connected panels **16** and **17** which are also connected to each other. Panel **16** is connected at edge **14** to rear side **11**, while panel **17** is connected at edge **12** to front side **10**. Similarly, panels **18** and **19** are connected to each other. Panel **18** is joined at edge **13** to front side **10** and a panel **19** is joined at edge **15** to rear side **11**.

The plurality of panels which interconnect the edges of the front and rear side may be collectively denoted as folds or as pleats, each of which plurality is asymmetrical.

In assembling the bag from the position shown in FIGURE 1, panels **17** and **18** are folded inwardly over the front side **10** as shown. Panels **16** and **19** are directed outwardly at folds **22** and **23** respectively and overlie panels **17** and **18** respectively. Rear side portion **11***a* is folded over panels **16** while rear side portion **11***b* is folded over panel **19**.

It will be noted that the rear side portion **11***b* is somewhat wider than is rear side portion **11***a* so that an area of overlap occurs which may be sealed. Of course, this sealed overlap may be placed anywhere within the bag construction so long as it does not interfere with the action of the folds or pleats. Once assembled, this overlapping seal has no special function and therefore it is apparent that this bag could be made from tubular seamless material.

At this point, the bottom portion of front side **10**, denoted at **20**, may be folded over back side **11**. Of course, all the depending portions of the various sides and panels will be folded therewith to close the bottom of the bag. The curving of the upper and lower ends of the back side portions results in less paper appearing in the bottom of the bag, and produces an upper lip portion **21** which is integral with the back side **11** at the top of the bag.

It will be noted that back side **11** is wider than front side **10**. It will also be noted that panels **16** and **19** are respectively wider than panels **17** and **18**. This difference in width of sides and panels produces a folded structure such as is most clearly shown in FIGURES 2–4. Thus, as best seen in FIGURE 2, the back side **11** extends beyond the front side **10**, the outside of the wider panels **16** and **19** being joined to the rear side **11** and being accessible from the front without contacting or otherwise touching the front side **10**, and thus also leaving the pleat or fold formed by the shorter panels **17** and **18** acting with front side **10** free without restraint if the bag be held by the upper lip **21** and at the projecting portions of the back side **11** and panels **16** and **19**.

Thus the bag is assembled and installed in the packaging machinery in flat form as shown from the front in FIGURE 2 and as shown from the rear in FIGURE 3.

A top view of FIGURE 2 appears at FIGURE 4, somewhat enlarged for clarity.

FIGURE 5 illustrates in diagrammatic form the essential feature of automatic packaging machinery which readies this bag for filling. The bag has been advanced in a chute so that it arrives at the filling station in flat form as shown in FIGURE 4.

At this point, fingers A, B and C respectively engage the projecting edges of panel **19**, panel **16** and lip **21**. The bag is held against these fingers by other bags pressing against back side **11** and serving to hold the bag in position as indicated in FIGURE 5. An air source D, coming through a nozzle located adjacent to a plate or finger C causes air to be blown into the interior of the bag, causing it to blossom or to open. It will be noted that the various fingers have no contact with the front side **10** nor with panels **18** and **17**, and have a very limited contact with panels **16** and **19**, adjacent to the closed end of the bag.

Accordingly, the respective pleats readily open up to a fully open position so that the bar or other contents may be dropped into the bag from a feeding chute adjacent to the nozzle (not shown). The weight of the goods in the bag causes the bag to slip downwardly out of position, thereby permitting positioning the next bag in place for filling.

Thus, by this invention, a structure has been provided which has a relatively narrow front face which is positioned between the two bottom flanges or fingers A and B which thereby cannot act on the front face **10** to prevent full and complete blowing open of the bag. Thus when the front side or face is blown open all the way down to the bottom of the bag, the bar or other contents can drop to the bottom of the bag.

I have also discovered in actual tests of bags having

the construction described herein, wherein only two bag thicknesses plus two fold thicknesses are pinched by the fingers A and B, there is less chance of failure of the bag to drop away from the three fingers due to the influence of the contents. Thus by having only two thicknesses along the edges **15** and **14** and four thicknesses at the fold, where the bag may be held, a more reliable release has also been obtained.

It will be understood that numerous modifications and variations may be effected without departing from the scope of the present invention, but it is understood that this application is to be limited only by the scope of the appended claim.

I claim as my invention:

A tubular bag comprising material having such flexibility as to offer no substantial resistance to billowing, said material being a longitudinal increment of an elongated web of said material, said bag including a front side, a wider rear side, each of said sides having corresponding opposite paralliel edges extending throughout the length of the bag and joined together by a pleat having a plurality of integrally connected panels of unequal width, the narrower of said panels being integrally joined to one of said edges of said front side and directed toward the opposite edge of said front side, the wider of said panels extending beyond said one edge of said front side and being integrally joined to an edge of said wider rear side, said wider rear side comprising a pair of portions overlappingly joined to one another along a region intermediate said edges, said overlapping portions jointly defining a lip portion integral with said wider rear side and extending beyond one end of said front side, and means closing the other end of said bag, said means including a closing tab integral with said sides and said pleats and defined by a fold line extending transversely to said sides and said pleats, said tab being disposed in flatwise abutting relation directly against the rear face of said wider side and secured directly thereto to expose the front face of said wider pleat panel throughout the length thereof and wherein the front face thereof is unobstructed immediately adjacent to said fold line; whereby said bag may be held at said lip and at said wider pleat panels immediately adjacent to said fold line and billowed without opposition by the structure of the bag to billowing.

References Cited in the file of this patent

UNITED STATES PATENTS

2,000,345	Miller	May 7, 1935
2,000,796	Swift et al.	May 7, 1935
2,286,465	Clement	June 16, 1942
2,735,215	Rutledge	Feb. 21, 1956