

[54] **PLASTIC BAG HAVING ARCUATE CLOSED END AND ARCUATE LIPPED OPEN END**

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[58] Field of Search **229/57, 53; 206/57 A**

[56] **References Cited**

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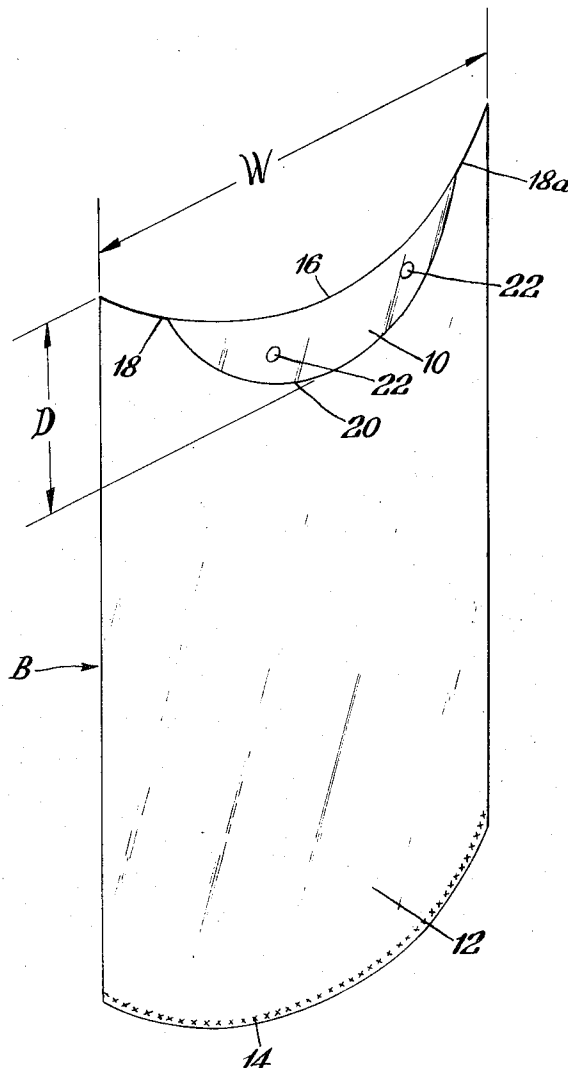
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[57] **ABSTRACT**

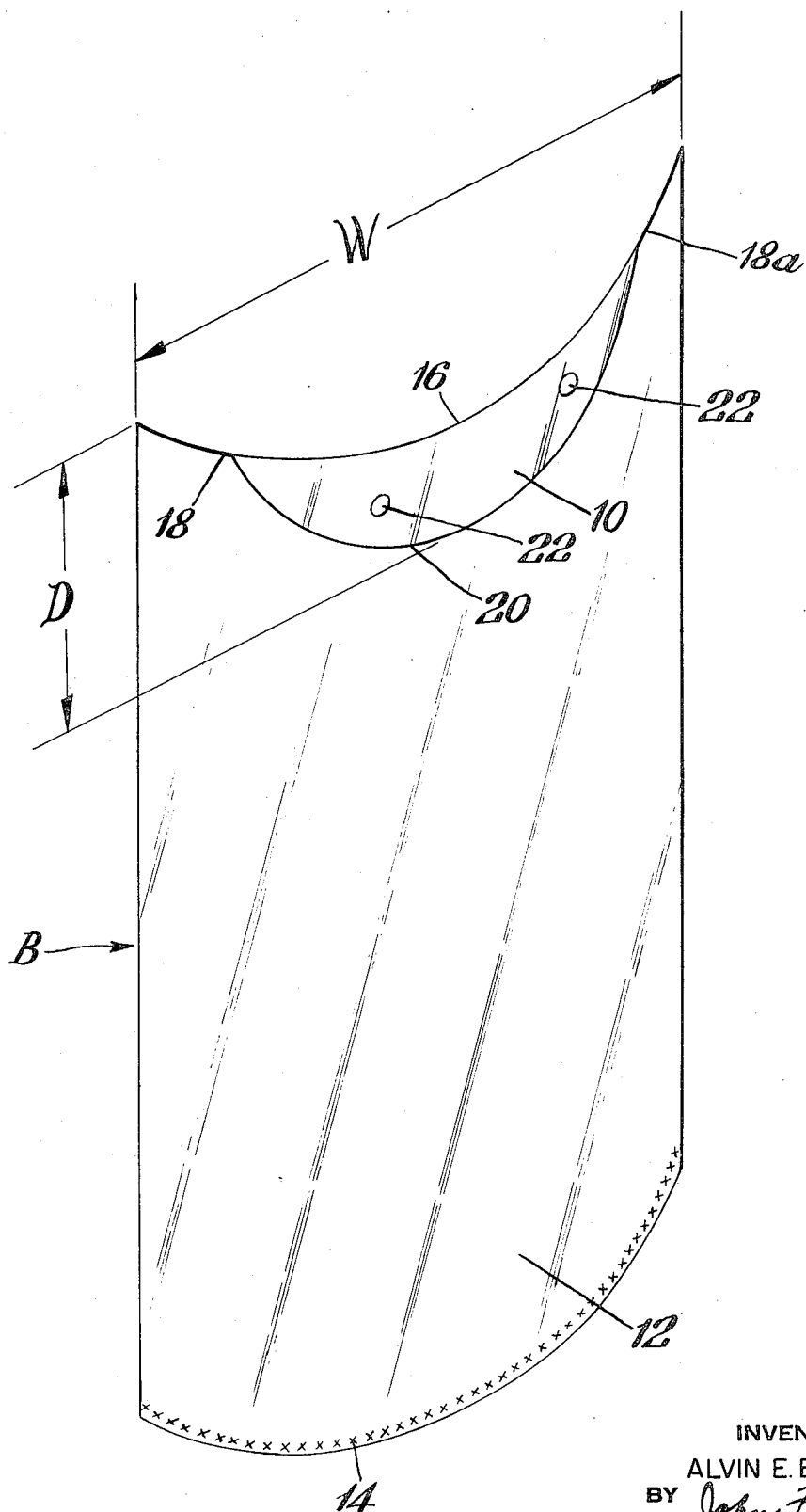
A bag for packaging food, particularly meat, is composed of tubular, flexible, plastic film sealed at one end to provide an arcuate closed end, the rear wall of the tubular bag remote from the closed end being arcuate and generally parallel to the closed end, the end of the front wall of the tubular bag remote from the closed end also being arcuate and having a cut-out portion generally central of its width of a different radius from the radii of the closed end and the end of the rear wall, the rear wall having at least one aperture in the area underlying the cut-out portion of the front wall.

2 Claims, 1 Drawing Figure



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PLASTIC BAG HAVING ARCUATE CLOSED END AND ARCUATE LIPPED OPEN END

The invention relates to a flexible plastic bag for packaging food, particularly processed or uncooked meat, and refers more particularly to a bag having an arcuate closed end and a lipped arcuate open end.

The food packaging industry is moving rapidly to more use of bags for perishable food items and particularly so in the area of meat products. Processed meats, such as bolognas, meat rolls, smoked hams and other familiar items and fresh meats, including poultry and fish are appearing more and more frequently as pre-packaged items. Although many such prepackaged food items are prepared by wrapping the food product, sometimes on a more or less rigid support, in plastic film, the use of bags to contain the product offers many potential advantages and is growing.

While it is of course very simple to place an object in a bag, it is far more difficult to produce efficiently, economically and with full regard to sanitation and health principles packaged food items on a rapid, repetitive, commercial scale. Materials suitable for use in contact with food are relatively expensive. Meat items (except of course in the case of processed items such as bolognas) are far from uniform in shape. Despite mechanization of many of the operations in producing large numbers of food packages, manual handling is necessary.

In attacking such problems, the art has devised ingenious machines for handling bags in repetitive cycles, machines for loading the bags, devices for arraying the bags in good order for handling, and an impressive assortment of support apparatus such as conveyors, bag closing and tying machines.

The heart of the bagging system, however, is the bag itself. A number of bag structures have been shown in the patent literature. Specific reference is made to U.S. Pat. Nos. 3,441,198; 3,317,037; 3,352,411; 3,508,379; 3,156,273; and to Canadian Pat. No. 851,553. Bags have been produced from tubular film by sealing the tube at one end and from folded film by sealing at the sides, and others have been made by sealing two superimposed films at perimetral edges. In some bags, the front and rear walls are the same length. These are called "flush cut" bags. In others, the front wall is shorter than the rear wall. These are called "lipped" bags. In some tubular bags, the ends are arcuate, and in some the front wall has a cut-out portion less than the flat width of the bag. Despite these efforts, however, there is still demand for a bag which is economical of material, convenient to handle, and adapted to use with rapid, repetitive loading equipment.

The principal object of the invention is to satisfy such demand. More specifically, an object of the invention is the provision of a flexible, plastic bag adapted to use in the bagging of food products on rapid, repetitive apparatus.

The sole FIGURE of the drawing is an isometric view of a bag embodying the invention by means of which these objects are attained.

The bag of the invention is tubular and has an arcuate seal at one end uniting the front and rear walls of the tube at that end. At the end remote from the sealed end, the rear wall is also arcuately cut and is generally parallel to the sealed end. The front wall of the bag at its open end is also arcuately cut, the extremities of the flat width being generally parallel to the corresponding

extremities of the sealed end, and an arcuate cut-out portion of different radius from the radii of the sealed end and the rear wall is located generally centrally of the front wall at the open end of the tube.

Referring to the drawing a tubular bag B is shown having a rear wall 10 and a front wall 12 joined at one end by a seal to form an arcuate closed end 14. The end 16 of the rear wall 10 remote from the closed end 14 is arcuate and generally parallel to the closed end 14. The extremities 18, 18a of the flat width of the front wall 12 are also arcuate and generally parallel to corresponding portions of the closed end 14. Generally centrally of the flat width of the front wall 12, an arcuate portion 20 is cut out. The radius of the arcuate portion 20 is shorter than the radius of the arcuate end 14, the end 16 of the rear wall 10 and the extremities 18, 18a of the front wall 12, a generally crescent-shaped piece of the end of the front wall 12 having been removed. In the portion of the rear wall 10 exposed by the cut-out portion of the front wall 12 one or more apertures 22 are provided for positioning the bag B on a post or wicket not shown. The aperture 22 may be circular, as shown or of other configuration including those shown in U.S. Pat. application Ser. No. 042,043; filed June 1, 1970 and assigned to the assignee of this invention.

The bag of the invention is made of any flexible plastic material. Of course for food use it must be approved. The sealed end may be sealed in any way, heat sealing being convenient, economical, and preferred. For packaging meats a preferred material is polyvinylidene chloride. Other suitable materials are: polyolefins, e.g. polyethylene, or polypropylene; nylon; polyethylene terephthalate; polystyrene; and copolymers of those listed. The bag may also be made of a laminate of the type used for food packaging.

The bag of the invention offers many advantages. It is preferably stacked with others on a post or wicket. Since it is a lipped bag, only the rear wall is retained by the post or wicket legs, making for easy removal by hand or by machine. The arcuate closed end adapts the bag to use for items of irregular shape and makes possible close conformity between the item and the bag.

In the case of many meat products, after the product is placed in a bag, the bag must be evacuated. In most cases this is accomplished by inserting a nozzle of an evacuating device into the neck of the bag which is then manually gathered around the nozzle. In the bag of the invention ears formed at the outside extremities of the bag defined by the portions 18, 18a assist in substantially uniform gathering about the nozzle and thereby aid in efficient evacuation of the bag. In practice, the ears 18, 18a should extend about 1 to 1.5 inches beyond the operator's hand when the bag is gathered about the nozzle to prevent leakage of air through the cut-out portion 20 of the front wall 12 of the bag during evacuation.

The cut-out portion 20 of the front wall of the bag also assists in the operation just described. It should not extend too far into the front wall 10 because of waste of material. Expressing the flat width of the bag as W, the depth D measured from the tips of the ears 18, 18a to the extremity of the cut out 20 should be about 0.25 to 0.35 W to minimize waste of material and to provide optimum protection against leakage during evacuation. Specific useful dimensions are tabulated for illustration.

Bag Width "W" inches	Depth of Cut Out "D" inches
4	1.375
7	2.125
10	3.25
10	2.5
12	3.0
14	4.5
14	3.5
20	6.0
24	8.5

Bags made in accordance with the invention have been extensively tested on bagging machines in which they have been mounted on wickets and opened by an air stream. Such tests have indicated that the bags met the objectives of the invention.

What is claimed is:

1. A bag formed of a flattened tube of flexible thermoplastic film openable across its entire width and having
- an imperforate front wall;
 - a rear wall; and
 - an arcuate closed end formed by a seal between said front wall and said rear wall at one end of said flattened tube,
- the end of said rear wall remote from said closed end being arcuate and parallel to said arcuate closed

end,
the end of said front wall remote from said closed end also being arcuate,
portions of said end of said front wall at and adjacent the extremities of the width of said flattened tube being parallel to said arcuate closed end,
said front wall also having an arcuate cut-out portion generally central of the width of said flattened tube,
the radius of said arcuate cut-out portion being shorter than the radii of said arcuate closed end and said arcuate end of said rear wall; and
said rear wall being imperforate except for having at least one aperture therein adapted to receive a leg of a wicket at said end remote from said closed end in an area underlying said cut-out portion of said front wall, the configuration of said ends of said front and rear walls thus providing ears for said bag extending well beyond the central portions of the width of said flattened tube and adapting the open end of said bag to be gathered substantially uniformly about a tubular member when such member is inserted in the open end of said bag formed by the ends of said front and rear walls remote from said closed end.

2. A bag as defined by claim 1 in which the radius of said arcuate cut-out portion is such that the distance "D" from the extremities of said ears to the extremity of said cut-out portion is about 0.25 to 0.35 times the flat width "W" of said bag.

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