May 15, 1923. 1,455,384

A. M. BATES

PROCESS OF FORMING AND PREPARING BAG TUBES FOR USE IN MAKING FILLED BAGS

Filed Oct. 5, 1919

Fig. 1.

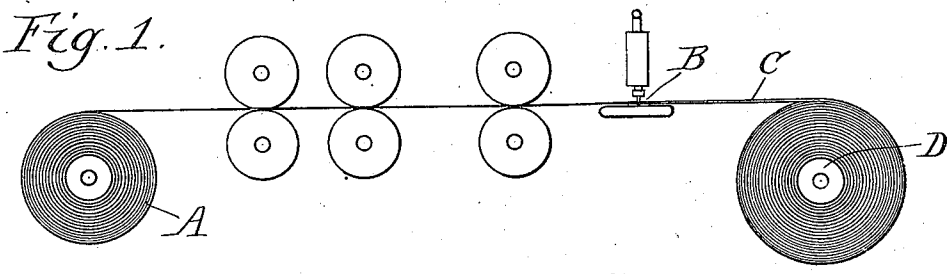


Fig. 2.

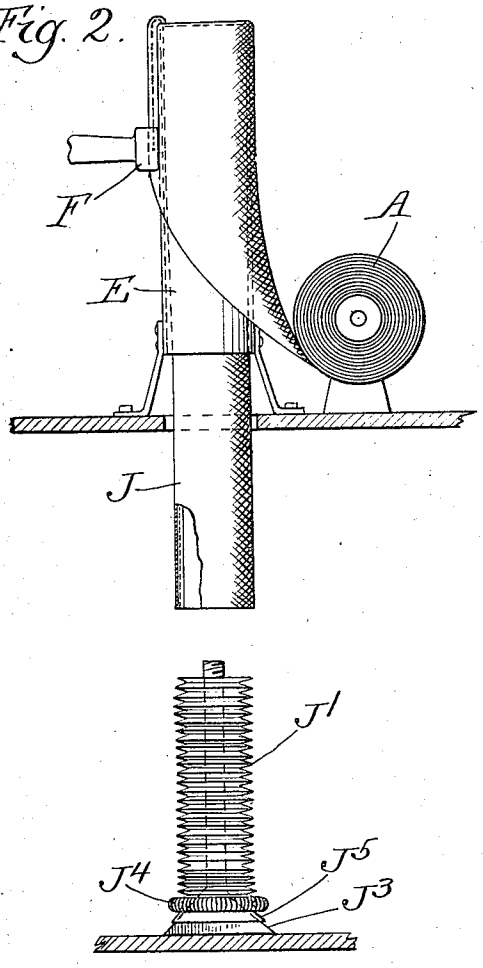


Fig. 3.

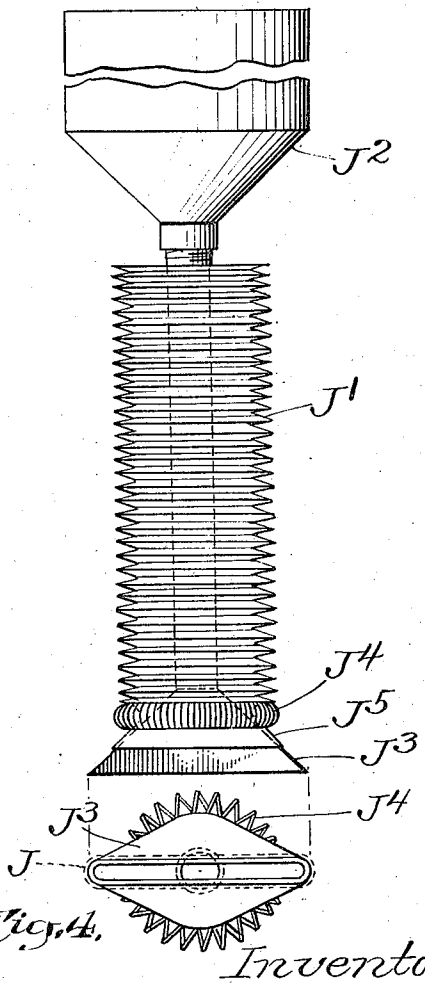


Fig. 4.

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UNITED STATES PATENT OFFICE.

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PROCESS OF FORMING AND PREPARING BAG TUBES FOR USE IN MAKING FILLED BAGS.

Application filed October 3, 1919. Serial No. 328,311.

To all whom it may concern:

Be it known that I, ADELMER M. BATES, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in Processes of Forming and Preparing Bag Tubes for Use in Making Filled Bags, of which the following is a specification.

My invention relates to a method of preparing and storing tubes of bag fabric in proper condition for use in machines which when supplied with such tube and the material to be filled into the bags produce filled finished bags. My invention is diagrammatically illustrated in the accompanying drawings wherein—

Figure 1 is a diagrammatic illustration of one process of making the tubes;

Figure 2 diagrammatically illustrates another process of making and storing the tubes in connection with a single apparatus;

Figure 3 illustrates a stored tube in proper condititon for use in the machine.

Figure 4 is a view from below, of the structure shown in Figure 3.

Like parts are indicated by like letters in all the figures.

A is a roll of bag making fabric, the two edges of which are gathered together as at B and sewed to form a tube.

The finished tube C may be run on to a reel D whence, as needed, it is gathered on a storage tube very much smaller in cross section than the diameter of the tube C and provided at its ends with holding devices whereby a great length of tube may be assembled on a short holding and filling tube.

E is a bag tube forming tube. The cloth of the roll is brought to this tube with its edges together and here they are united, as for example, by a sewing machine F. Then the tube is reversed to form the finished tube J with a longitudinal seam inside. This tube J in the process of its formation is fed down onto the short storage and filling tube which is removably attached in position, the cross-section of which is materially less than that of the distended bag tube. When a suitable length of bag tube has thus been stored, it is severed from the roll or the entire roll may be made into a continuous bag tube. The tube as it is resting on the holder is longitudinally collapsed until it takes the form J^1, and when a suitable length of tube has been put on the holder the funnel J^2 is preferably attached to one end of such filling tube, or, if preferred, any other form of enlargement may be used to prevent the bag tube from escaping from the filling tube at this end. The other end is provided with an enlargement J^3, which must be materially larger in cross-section than the body of the filling tube and of sufficient size to prevent the ready passage of the bag tube thereover. This enlargement may be of any form, as for example, oblong or flattened, so as to collapse the bag tube horizontally as it escapes over the enlargement, as shown in dotted lines in Figure 3. J^4 is a tension device about the lower end of the support and under which the end J^5 of the bag tube passes.

The result is a finished spool with an enlargement at each end and a length of finished bag making tube threaded and longitudinally collapsed on the body of the spool between the two enlargements. If, as in the preferred form, the body of the spool is a tube, then one enlargement assumes the form of a funnel preferably adapted to hold a quantity of material sufficient to fill one of the bags proposed to be formed from the tube, and the other enlargement takes the form of a spreading device which when the bag tube is fed off brings its two sides somewhat closely together so as to facilitate the sewing or closing operation.

These filled supporting sections or tubes consist therefore of two enlarged ends, over one of which the bag tube may pass with difficulty, and a long body portion which is very much smaller in cross section than the distended bag tube, so that the latter can be compressed or puckered or collapsed thereon between the two end enlargements. It would be quite possible, of course, to store the tubes on rods, or spools with rod bodies, from which the bag tubes could be subsequently transferred to the filling tubes of the filling machine.

The use and operation of my invention will be clear from the foregoing. I have

illustrated the formation of the entire tube without the same being reversed and such tube is reeled and subsequently preferably reversed and threaded upon the storing and filling tube. I prefer, however, to reverse the tube in the process of its formation and I also prefer to directly feed such reversed tube onto the storage tubes. It is evident, however, that these various steps may be greatly altered or transposed without departing from the spirit of my invention.

In the manufacture of bags from tubes of bag fabric, it is sometimes desirable to manufacture the tubes entirely apart from the bag filling and making operation. In that event the tube making apparatus can be operated at any point and at any speed. The tubes so made are preferably reversed and in any event they must be assembled on proper storage devices, which are preferably the filling tubes subsequently employed in the machine. In actual operation it would be of very little value to make a short length of tube and hence I am concerned with the case where a great length of tube is made, as for example a tube equal in length to the entire length of the roll of fabric. Such tube, since the material must be fed into it from one end to the other, must be compressed within a very short length, and this is done by collapsing the tube and threading it upon a short storage piece or tube. These tubes so stored can now be transported, stored and used as the case may require, in a machine or by hand to be converted into filled bags. The storage device is preferably the filling tube or tube through which the material is fed, for obviously the material must be fed through the entire length of the tube and therefore I prefer working my invention by including the idea of threading in a longitudinally collapsed condition, the entire length of the bag tube on a short filling tube and this must therefore be of a cross section very much smaller than that of the distended bag tube.

When the stored tubes are to be used the lower end of the tube is drawn out from under the spring and pulled down until a proper bag length is released. The lower end is closed and the material is then fed into the funnel above and down through the tube until the bag portion is filled. The tube is then seamed or closed above the bag portion and this part is severed from the rest of the tube to form the finished bag.

By storage piece, I mean to include any form of device which will serve to hold the bag tube, particularly in its collapsed condition. This storage piece might consist of a single rod or a tube or of two or more rods or any other convenient arrangement.

In the claims I have used the term "bag fabric" and I want it of course understood that this term is used in the broadest sense of any kind of bag or tube fabric no matter how or of what made. The tube or bag fabric might for instance be made of cloth or woven material, it might be of paper, rubber, or even of metal so long as it is such a flexible fabric as can be collapsed and stored in the manner shown and described.

I claim:

1. The method of forming and preparing bag fabric tubes for use in bag making and filling which consists in forming a bag fabric tube of relatively great length and progressively as it is formed folding the same in a longitudinally collapsed condition onto a storage piece of relatively short length and of a cross section much less than that of the distended tube.

2. The method of forming and preparing bag fabric tubes for use in bag making and filling which consists in forming a bag fabric tube of relatively great length and progressively as it is formed, reversing it and threading and folding it in a longitudinally collapsed condition onto a storage piece of relatively short length and of a cross section much less than that of the distended tube.

3. The process of making and storing bag fabric tube for use in a bag forming machine, which consists in forming a tube, collapsing it longitudinally, threading it upon a stem until a great length of tube has been stored upon a relatively small length of stem, and confining said collapsed threaded tube upon said stem to prevent its escape from either end thereof.

4. The process of storing bag fabric tube for use in a tube forming machine which consists in collapsing such a tube longitudinally, threading it upon a stem until a great length of tube has been stored upon a relatively small length of stem, and confining the entire length of said tube upon said stem to prevent its escape from either end thereof.

5. The method of preparing bag tubes for use in a bag filling and closing machine which consists in forming a bag tube, collapsing it longitudinally while maintaining an opening from end to end thereof, and confining the collapsed tube until it is to be used.

6. The process of preparing bag tubes for use in bag filling and closing machines which consists in compacting a relatively long flexible bag forming tube into a relatively short longitudinally collapsed mass and at the same time maintaining an unobstructed opening throughout the entire length of the collapsed tube, and confining the tube in collapsed condition until ready for use.

7. The process of preparing bag tubing for use in bag forming and filling machines which consists in compacting a relatively

long, flexible bag-forming tube in longitudinally collapsed condition in a storage zone, and maintaining along the axis of said storage zone a material feeding zone of cross-section materially less than the cross-section of the distended bag tube.

In testimony whereof, I affix my signature in the presence of two witnesses this 17th day of September, 1919.

ADELMER M. BATES.

Witnesses:
E. B. STOCK,
EDNA B. PETERSON.