

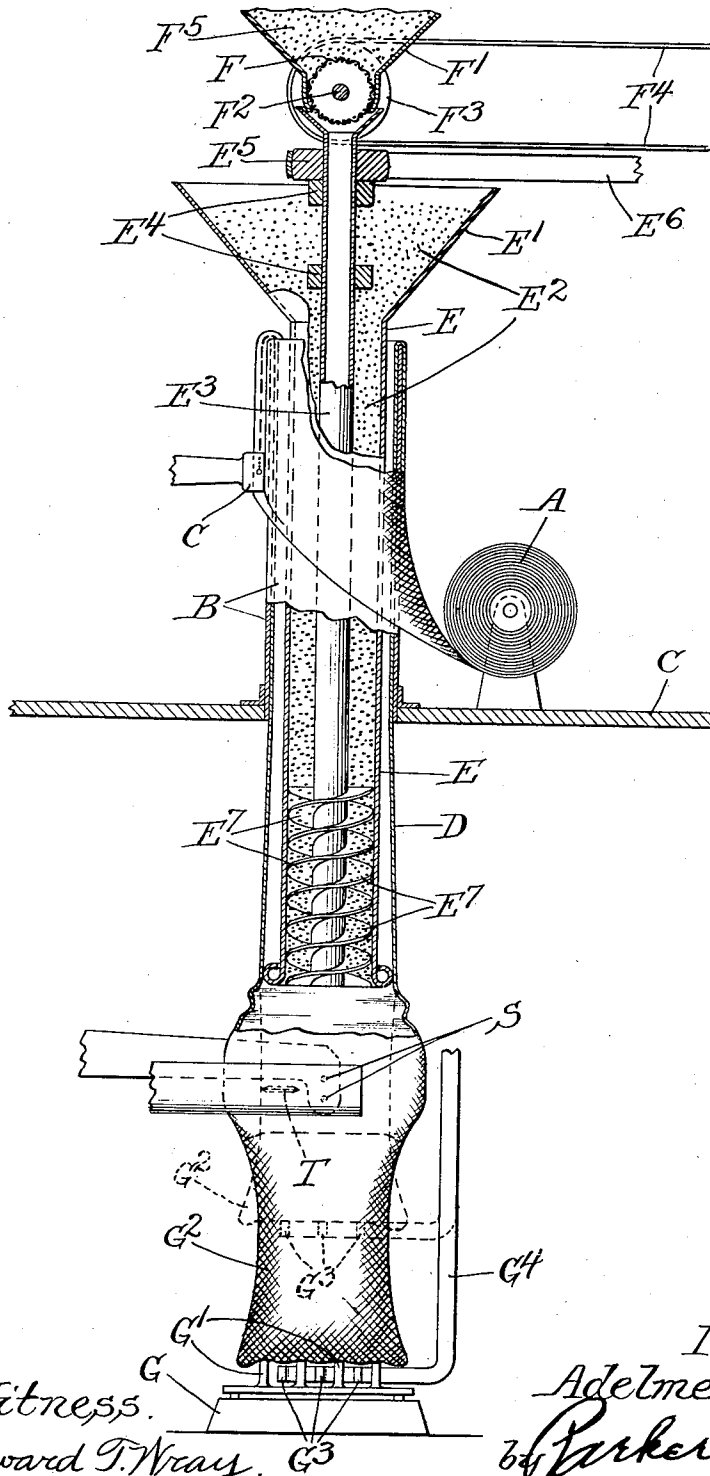
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A. M. BATES

PROCESS OF PRODUCING FILLED BAGS

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UNITED STATES PATENT OFFICE.

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PROCESS OF PRODUCING FILLED BAGS.

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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 Producing Filled Bags, of which the following is a specification.

My invention relates to a process of making and filling bags and particularly to a process wherein the material to be filled into the bag is to be weighed and particularly where the weighing consists in first supplying the bulk of material necessary to fill the bag and then in supplying a small flow or supply to accurately complete the necessary filling. The process is illustrated in the accompanying drawing in connection with a diagrammatic showing of an apparatus sufficient to carry out the process.

A is a roll of bagging material which is preferably formed into a tube by being folded around a former B, its two edges being sewed together by the sewing machine C, to form the tube. The tube, so formed on the outside of such cylinder B, is then carried up over the edge of the cylinder and down until it emerges as the tube D. Inside of the bag tube is another guard or supply or primary tube E which may form the lower projection on the funnel E¹. This funnel and tube E are normally filled with the material to be fed into the bag, as indicated at E². Preferably disposed within the tube E is the rotary secondary filling tube or shaft E³ properly mounted and supported, as, for example, in bearings E⁴, and adapted to be rotated by means of the pulley E⁵ and the belt E⁶ thereon. On the lower end of this feed tube E³ are the propeller flights E⁷ whereby, when this feed tube is rotated, the material is forced downwardly, and, when the tube is stopped, the material is supported against further descent. F is a feed device which may take the form of a rotary screen in the bottom of the funnel F¹. On its shaft F² is a pulley F³ adapted to be driven by the belt F⁴. This screen or feed device is interposed between the funnel F¹ which is supplied with the material F⁵ and the open top of the tube E³. G is a scale with the upwardly projecting slats G¹ on which the bag end G² of the bag tube ultimately rests. G³ is a support comprising a series of fingers which

are mounted on and carried by the supporting frame G⁴. These fingers are normally in the elevated position shown in dotted lines, and they are adapted, when they descend, to pass between the slats G¹ of the scale.

I have not shown the details of the mechanism or of the connections of the several parts, as the mechanism forms no part of this invention and is only here illustrated for the purpose of enabling me to explain the process, which process, however, can be carried out in part by hand or by a variety of apparatuses very different from those illustrated.

S indicates the two needles and T the severing device, the needles and the severing device being properly associated and supported so that they move laterally across the bag tube to form the closure for the top of the bag and the bottom of the tube and to sever the filled portion from the tube.

The use and operation of my process as it may be illustrated in connection with the parts of the apparatus here shown is as follows:

Assuming that the fabric, mounted on a suitable roll, has been brought into proper relation with the apparatus, it will be printed or marked as may be desired, and then formed into a bag tube by means of the sewing machine which unites its edges. The printed matter will be so placed that it will be on the inside of the tube when first formed outside the forming tube, and the seam, of course, will be on the outside of the tube. As the process proceeds and the tube is reversed, the longitudinal seam is brought inside and the printed matter outside. The operation continues until a short section of the bag tube extends below the forming tube, whereupon the lower end of the tube is closed in any desired manner. The packing flights are now rotated, preferably together with the secondary filling tube, whereupon they feed the material downwardly into the closed end, of the tube and pack it against such closed end forcing the material and the bag tube downwardly until approximately the entire amount of material desired in the bag has thus been fed and packed into the lower end of the tube. If the bag is to receive 100 pounds, we may assume that, at this point, 98 pounds of material have been fed and packed into the lower end of the tube. This, however, will

have forced the lower end of the tube downwardly to a distance about equal to the length of the bag to be formed, and here the lower end of the bag comes in contact with the fingers of the support or trip. It might come in contact with these fingers at any earlier moment. In any event, the time arrives when contact of the bag with this support or tripping mechanism causes such mechanism to descend and throw the flights out of action thus stopping the flow of material to the bag. The bag descends upon the scale and, by the hand of the operator or otherwise, an additional section of the bag tube is drawn downwardly so as to leave a loose or puckered portion of the bag tube at a point between the top of the bag to be formed and the end of the forming tube. The bag is now resting on the scale which shows, for example, that 98 pounds have been inserted. At this point by automatic machinery or the action of the operator the feed screen or sieve F is set in operation so that a small feed of material takes place from the funnel F¹ down through the feeding tube into the top of the bag, and, when the scale indicates that the 100 pounds or the total desired amount has been received, the supply mechanism is stopped either by hand or automatically. The portion of the tube above the filled bag portion is now brought into proper relation to a preferably laterally traveling sewing machine and two seams are run across it, followed by a severing device, so that the filled bag is closed and severed from the tube and the lower end of the bag tube, is closed to form the bottom of the next bag, and the operation then proceeds as before until the roll of fabric or the entire tube is used up. I prefer to make the tube from the fabric as the process of filling the bags is carried on, but it is quite within my process to manufacture the bag tube in great length and to thread it up on the supply tube and then to fill as above stated.

As will be seen from the above, by this process I am enabled to fill the bulk of the material into the bag under pressure and to pack it against the bag walls while they are under tension. This produces a well filled compact package. At the same time, by relieving the tension on the tube walls during the secondary operation, I am enabled to weigh the bag accurately, and the secondary feed, by which the necessary additional material is slowly sifted into the bag, does not materially affect the weighing, so that packages of uniform weight can be obtained. Where the term "sifting" is employed in the claims, it relates to dropping the material in such a manner as not to disturb the weighing operation.

In the claims I have used the term bag portion. I have used this term to indicate

that part of the tube, which after it has been cut, forms the bag. It is, of course, not a separate bag until it has been cut away from the tube, and, until it has been cut, away it is merely a bag portion of the tube.

It is obvious that various changes within the scope of the appended claims may be made in the process while retaining some of the advantages.

I claim:

1. The method of producing filled bags which comprises suspending a bag from above, filling the bulk of a charge of material into the bag while it is so suspended, then discontinuing the suspension and supporting the bag from beneath, and, while the bag is supported from beneath, weighing it and sifting into it the necessary additional amount to complete the charge.

2. The method of producing filled bags which comprises forcing the material into a bag and packing it against the closed end of the bag, while resisting motion of the closed end by tension of the bag walls, discontinuing the force feed and tension when the greater part of a charge has been packed into the bag, and then weighing the bag and contents and loosely filling into the bag the necessary additional amount to complete the charge.

3. The method of producing filled bags which comprises forcing material in an annular stream against the closed end of a bag while resisting movement of said closed end by tension of the bag walls, discontinuing the annular stream and the tension on the walls when the greater part of a charge has been packed into the bag, then weighing the bag and contents and completing the charge by feeding material loosely into the center of the open end of the bag.

4. The method of producing packages from filling material and a bag tube long enough to produce a plurality of bags, which comprises closing an end of the tube, suspending the closed end by yielding tension applied to the adjacent walls of the tube, forcing an annular stream of material through the tube against the closed end and thus forcing the end downward against the tension of the adjacent walls, discontinuing the annular stream and the tension when the greater part of a charge has been packed into the tube against its closed end and the adjacent taut walls, then weighing the filled portion and sifting into it centrally the additional material necessary to complete a charge, and then closing and severing the tube to form a separate package.

5. The method of filling and closing bags which comprises forcing material, in an annular stream only, into the bag in a direction axial of the bag until the greater part of a charge is inserted, and then weighing the bag while adding, centrally of the bag

only, additional material necessary to complete the charge, and then closing the bag.

5 6. The method of producing filled bags which comprises progressively packing material into a bag, pressing each successive increment against material previously in the bag, furnishing resistance to the movement of the material in the bag, in response to the pressure of the added increments, by tension 10 of the walls of the bag, until the bulk of a desired charge is inserted in the bag, then relieving the tension on the bag walls, resting the partially filled bag on a weighing device, and completing the filling of the bag 15 by dropping material into it while it is resting on the weighing device.

7. The method of producing filled bags which comprises progressively packing

material into a bag, pressing each successive increment against material previously in the bag, furnishing resistance to the movement of the material in the bag, in response to the pressure of the added increments, until the bulk of a desired charge is inserted in the bag, then discontinuing said resistance and resting the partially filled bag on a weighing device, and completing the filling of the bag by dropping material into it while it is resting on the weighing device.

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

ADELMER M. BATES.

Witnesses:

MILDRED H. MACKIE,
EDITH L. PORTER.