A. M. BATES.

BAGGING MACHINE.

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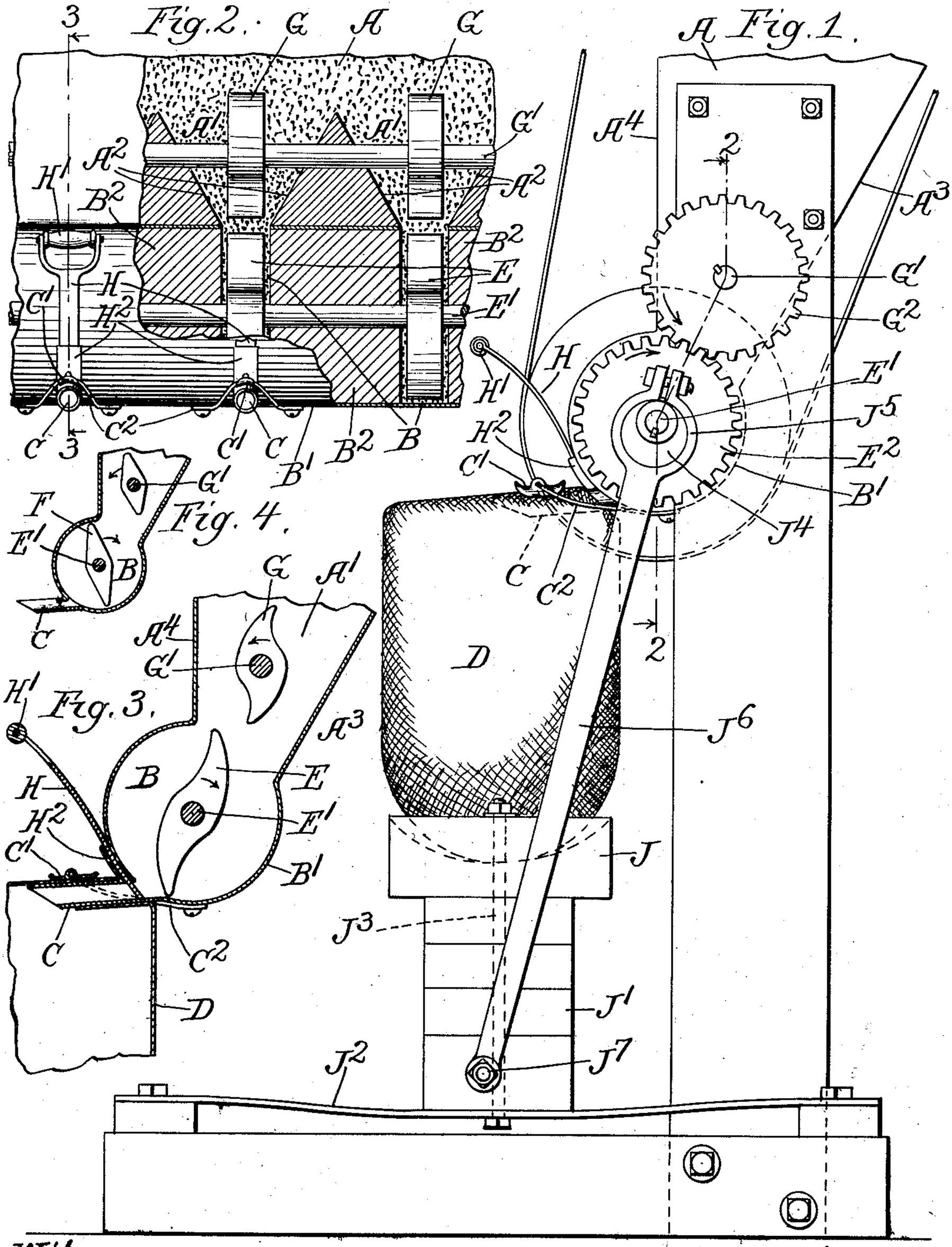
959,447. **Patented May 31, 1910.**



UNITED STATES PATENT OFFICE.

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BAGGING-MACHINE.

959,447. Specification of Letters Patent. Patented May 31, 1910.

Application filed March 3, 1906. Serial No. 304,021.

To all whom it may concern:

Be it known that I, ADELMER M. BATES, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented a certain new and useful Improvement in Bagging-Machines, of which the following is a specification.

My invention relates to bagging machines and has for its object to provide new and improved devices and apparatus in machines for filling bags and the like.

The invention is illustrated in the accompanying drawings, wherein—

Figure 1 is an end elevation of a machine showing certain of the devices of this application; Fig. 2, a partial front elevation with parts shown in section indicated by lines 2—2 of Fig. 1; Fig. 3, a section on line 3—3 of Fig. 2, and Fig. 4, a like view showing a modification.

Like letters of reference indicate like parts in all the drawings.

My invention relates to certain new and improved constructions and features in bag filling machines, particularly in that class of machines which is designed to fill valve bags or bags having a relatively small filling opening.

I have not thought it necessary to show all of the details of a complete machine, but only such parts as are necessary for a thorough understanding of the particular features desired to be claimed herein. The operation of the machine will be apparent from these drawings to one familiar with the art. The machine, as I have illustrated it, contemplates the filling of a number of bags at the same time.

A represents a bin designed to contain a considerable amount of the material to be bagged.

B B are filling chambers which communicate with the bin in any desired manner, for example, I have shown the bin as provided at the bottom with a number of throats or hoppers A^1 A^1. These hoppers or throats may have the sloping sides A^2 A^2 and an inclined back wall A^3. Preferably the front wall A^4 is vertical. The filling chambers may be formed in a cylindrical device B^1 by means of blocks B^2 B^2 properly spaced or in any other desired manner.

With each feeding chamber B is associated a filling element which may also, though not necessarily, serve as a means for supporting the bag. These filling elements are here shown as tubes C C which open from the bottom of the filling chambers. The tubes are preferably slanted downward a trifle. The bag D will ordinarily be supported on the filling tubes which extend through the valve or filling aperture. In order to prevent displacement of the bag, I prefer to associate with each filling tube a clip C^1 which is clamped on the bag by the spring C^2.

The material preferably feeds into the filling chambers B B by gravity and from there is forced through the several filling tubes C into the bags by means of centrifugal feeding devices. These feeding devices I have shown as curved propeller blades E E, the curvature of the blades being such as to drive the material from the bottom of the chamber straight into the filling tubes. These tubes, it will be seen, are positioned substantially tangential to the filling chambers.

In Fig. 4 I have shown a modified form of propeller blade. In this case the blade F is substantially straight. I prefer, however, to use a curved blade such as is shown in Fig. 3, as this obviously serves to maintain the pressure upon the material in line with the axis of the filling tube. When a machine is organized to fill several bags, the several propeller blades may be mounted on a single shaft and propelled in unison. I have shown such a shaft at E^1.

A difficulty which has frequently to be met in machines designed to feed material, is found in the tendency of the material to pack above the feeding device. This is particularly likely to occur when the material is fed through a relatively contracted space. To obviate this difficulty I have provided in each throat or hopper A^1 an agitator or auxiliary feeding device which is also rotary in its action. These agitators may be blades G G similar to the propeller blades of the feeder, and they may be all mounted on a single shaft G^1. Preferably these blades are curved in the same way as the feeder blades. The hopper leading to each feeding chamber is preferably constructed, as has been said,

with a straight front wall A^4. The agitator is located so as to come more or less close to this wall, and, therefore, drives the material downward into the feeding chamber where it is acted upon by the feeder E. This effectually prevents the arching of the material over the mouth of the feeding chamber.

The machine, as has been said, is designed to fill several bags at one time. The separate feeding elements while operated from a common source of power, should be capable of separate control so far as the different bags are concerned. To this end I have provided a cut-off which is associated with each feeding chamber. This consists preferably of a metallic blade H provided with a hand grip H^1, the blade extending through a guide H^2 so that it may be forced across the mouth of the filling tube C. I prefer to make this cut-off blade of thin elastic material such as steel, so that it may be easily forced through the stream of material going through the tube. When the bag has been filled it will only be necessary for the operator to push down the handle H^1 thus cutting off the feed of material. The propeller blade will continue to revolve, the material being carried around and around in the chamber. It will be observed that the use of a rotary feeding device of this character insures a constant and regulable pressure. Even without the cut-off there would be little danger under ordinary circumstances, of bursting the bag if it were allowed to stay on the tube after being filled. When the resistance to the passage of the material through the tube C equals the tangential pressure exerted on the material by the propeller blade, the material will cease to pass through the tube and instead be carried around through the feeding chamber.

The machine may be operated from any desired source of power which may be applied to either of the shafts E^1 or G^1. The shaft E^1 I have shown as provided with a gear wheel E^2 which meshes with a gear wheel G^2 on the shaft G^1.

It will ordinarily be advisable to provide a machine of this character with some means for agitating the bags while they are being filled in order to insure complete filling. I have shown such apparatus in the form of a jig board J having a support J^1 mounted on a spring J^2. The parts may be held together in any suitable manner, as for example, by the bolt J^3. The shaft E^1 may be provided with an eccentric J^4 around which extends the strap J^5 of a pitman J^6 which is connected at J^7 with the support J^1.

The use and operation of my invention are as follows: The bag to be filled will be slipped over one of the filling tubes C by the operator in charge, the clip C^1 sufficing to hold the same in position. The operator will then remove the cut-off blade from the mouth of the tube. The machine, it will be understood, has already been started up. The material will now feed down from the bin A into the hopper A^1 where it will receive the positive impulse from the agitator G. The propeller blade E will force the material through the tube until the bag is filled. The bags may be thus put on the machine in succession and separately removed when filled. The structure broadly considered embraces, therefore, a bin or supply chamber, a series of throats or supply passages, a series of filling chambers into which through the supply passages the material is supplied from the chamber. From each of these filling chambers project a filling tube, while in each of these filling chambers rotates the feeding element. In each of the throats, or if the throat be dispensed with, in the bottom of the hopper, is the rotating agitator. The filling aperture is the passage through the filling tube. The bag is supported on the filling tube and held there by a bag holder. The remaining element is the cut-off. The supply of material is carried in the bin or filling chamber and it passes thence into the filling chamber or through the supply passage and thence into the filling chamber. The agitator in the supply passage prevents the arching or packing of the material. It is placed at the bottom of the vertical column of material so as to break away the material at that point and permit the material above to flow down toward the filling chamber. The feeding element forces this material forward if the filling tube aperture is open or carries it beyond if such aperture be closed. The feeding process continues during the agitation of jigging of the bag until the bag is full when it may be removed.

I claim:

1. In a machine for filling valve bags, the combination of a supply chamber and bag filling tube with forcing feeding means to receive the material from the supply chamber and feed the same into the bags, and a rotary agitator consisting of a curved propeller blade at the place where the material passes from the supply chamber into the feeding means.

2. In a machine for filling valve bags, the combination of a supply chamber with a bag filling tube, and means for forcibly agitating and feeding the material through the tube, comprising two propeller devices arranged one above the other.

3. In a machine for filling valve bags, the combination of a material supply chamber with a bag filling tube, and means for forcibly agitating and feeding the material from the supply passage through the tube comprising two curved propeller devices arranged one above the other, said bag filling tube arranged substantially at a tangent to

the arc described by the lower of the two propellers.

4. In a machine for filling valve bags, the combination of a filling chamber, a supply chamber, arranged so that the material flows from one to the other by gravity, of a bag filling tube and a forcing agitator near the base of the vertical column of material and a forcing feeding device in the filling chamber.

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Witnesses:
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