

L. C. COULTER & F. POWELL.

BAG TURNING MACHINE.

APPLICATION FILED MAY 4, 1911.

1,046,561.

Patented Dec. 10, 1912.

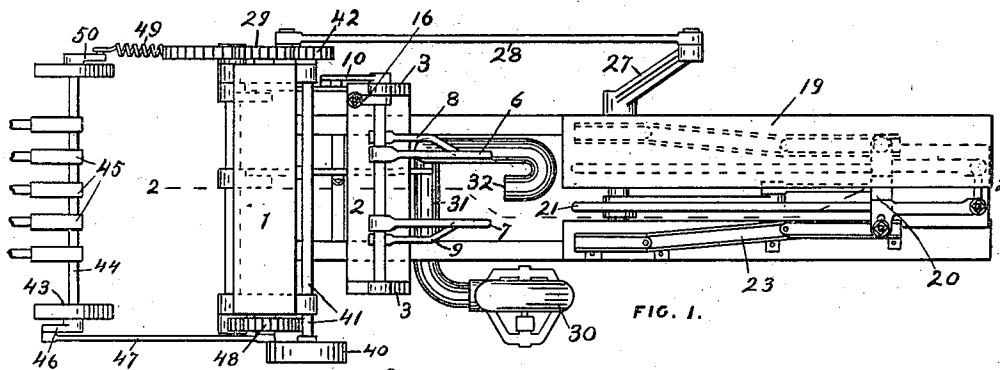


FIG. 1.

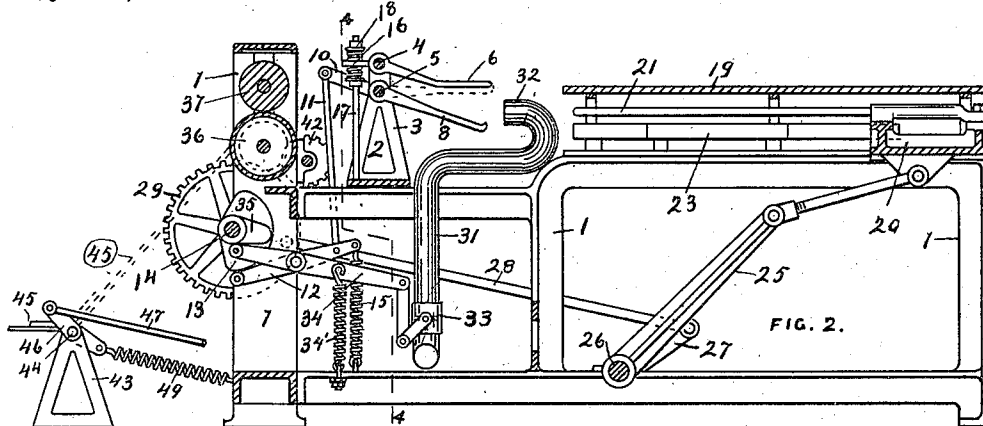


FIG. 2.

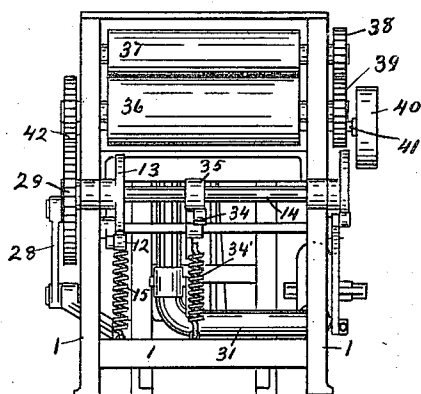


FIG. 3.

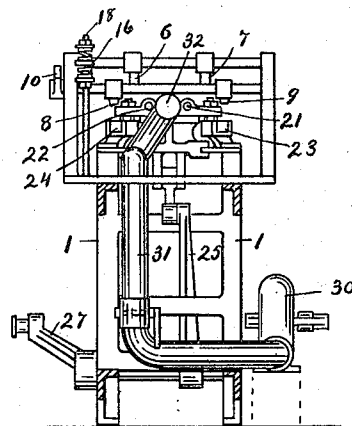


FIG. 4.

WITNESSES

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# UNITED STATES PATENT OFFICE.

LOUIS C. COULTER AND FREDERICK POWELL, OF PORTLAND, OREGON.

## BAG-TURNING MACHINE.

1,046,561.

Specification of Letters Patent.

Patented Dec. 10, 1912.

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*To all whom it may concern:*

Be it known that we, LOUIS C. COULTER and FREDERICK POWELL, citizens of the United States, residing in the city of Portland, Multnomah county, Oregon, have invented certain new and useful Improvements in Bag-Turning Machines, of which the following is a specification.

Our invention relates to bag-turning machines, and more particularly to a new and additional element for machines of this character, and by means of which bags of delicate or starched material can be safely and rapidly turned.

We are aware that there are a number of machines for turning bags, but these machines all have their objections. So far as we know, no machine has yet been designed which is wholly successful in turning bags made of delicate or starched materials, such as bleached and starched fabrics, or other similar material without injury thereto. We have discovered a new element, which, when applied in combination with the pusher-arms of bag-turning machines, makes it possible to more quickly and safely turn bags of the character referred to without mutilating or injuring them.

Our invention contemplates the combination with means for distending and holding the mouth of a bag and pusher-arms of an air blast directed against the bag and cooperating with the pusher-arms to force the body of the bag through its mouth. We also provide improved pusher-arms for spreading the bag as it is turned, and improved means for picking up and pressing the bag and delivering it from the machine in its turned condition.

We are aware that many different ways can be devised for using a blast of air as one of the principal elements in a machine for turning bags, and we do not intend that our invention, which consists in the combination of a blast of air under pressure against a bag, held by mechanical means, with pusher-arms or their equivalent, shall be limited to the particular machine shown and herein-after described.

In order that others may understand our invention, we have shown in the accompanying drawings, one practical embodiment of the invention, which we will now describe.

In the drawings,—Figure 1 is a top plan view of one embodiment of the invention;

Fig. 2 is a longitudinal sectional view, taken on the line 2—2 of Fig. 1; Fig. 3 is a left end view of the machine; and Fig. 4 is a cross sectional view taken on line 4—4 of Fig. 2, with parts being broken away and omitted for the purpose of clearness.

Referring to the drawings, the machine comprises a rectangular frame 1 having mounted thereupon a bag distending frame 2, with the side pieces 3—3, and having mounted therein upper and lower cross bars or shafts 4 and 5. Mounted upon the upper bar or shaft 4, and spaced apart, are two receiving and distending arms or fingers 6 and 7. Mounted upon the lower cross bar or shaft 5 are two lower receiving and distending arms or fingers 8 and 9. Arms 8 and 9, it will be seen, converge at their ends so as to register with the ends of the arms 6 and 7, and preferably have their ends made hook-like so as to fit around the ends of the arms 6 and 7, in the manner indicated in the dotted line position, Fig. 2. Shaft 5 is provided with a rearwardly extended arm 10, connected by means of a rod 11 to a rocker arm 12, one end of which is adapted to be operated by means of a cam 13, upon a shaft 14 mounted upon the frame 1, and the other end of which arm 12 is attached to a tension spring 15. The shaft 4 is also provided with a short rearwardly extending arm 16, working upon a rod 17, with tension springs above and below it, and with a nut 18 for adjusting the tension of said springs.

19 designates a receiving table upon which the bags to be turned are stacked, one-half thereof having been omitted from Fig. 1. Mounted to reciprocate underneath the table 19 is a cross head 20 carrying two pusher-arms 21 and 22, the arm 22 being shown in dotted lines underneath the table 19, Fig. 1, and the ends of both arms being shown in Fig. 4.

23 and 24 designate two adjustable guide-ways in which two movable parts of the cross head 20, carrying the arms 21 and 22, travel; said guide-ways being arranged so that as the cross head is moved forwardly, the pusher-arms 21 and 22 are moved apart, and as said cross head moves rearwardly, said pusher-arms are drawn toward each other.

25 designates a crank arm mounted upon a shaft 26 and connected at its upper end with the cross head 20. Said shaft 26 is provided at one end with a crank arm 27

connected by means of a rod 28 to a gear wheel 29, mounted upon the shaft 14.

30 designates a blower with a blast or blow pipe 31 extended so that its end 32 stands mid-way between the vertical and horizontal positions, and so as to discharge between the fingers 6 and 7 and 8 and 9. Mounted in the pipe 31, at 33 is a shut-off valve, controlled from a rocker arm 34 mounted upon the frame 1, with one end thereof adapted to engage, and be operated by a cam 35, mounted upon the shaft 14. A tension spring 34' is connected with the rocker arm 34 so as to hold the same steady. Mounted in an upright portion of the frame 1, at the left hand end thereof are two pressing rolls 36 and 37. Roll 36 is preferably made of metal, and roll 37 of some suitable composition, such, for example, as the material of which printers' rolls are made. These rolls are operated through gears 38 and 39, Fig. 3, in mesh with each other, and are driven from a power pulley 40, mounted upon a shaft 41, carrying at its opposite end a gear 42, in mesh with gear 29.

43 designates a receiving and discharging or stacking mechanism, comprising a shaft 44, mounted in a suitable supporting frame, as shown, and carrying a number of receiving forks or prongs 45, which are adapted to be rocked back and forth, into the positions indicated in Fig. 2, the receiving position of said prongs being indicated in dotted lines, and the stacking or depositing position being indicated in full lines at 45. Shaft 44 is operated by means of a short crank arm 46 and a rod 47, connected with a crank or gear 48. A tension spring 49 connects with a short crank arm 50, upon the opposite end of said shaft 44, for the purpose of holding the receiving and discharging mechanism steady.

The operation of the device may be briefly described as follows: The bags to be turned are stacked upon the receiving table 19. The operator takes the bags, one at a time, and slips the open end or mouth thereof over the arms or fingers 6 and 7 and 8 and 9 which are closed together in the manner indicated in the dotted line position Fig. 2. As soon as the mouth of the bag is placed over the ends of these arms or fingers, the lower arms or fingers 8 and 9 are moved downwardly away from the upper arms or fingers 6 and 7 through the operation of the cam 13, the arm 12 and the rod 11. This distends the mouth of the bag and simultaneously therewith, the valve 33 in the blast pipe 31 is opened by means of the rocker arm 34 and the cam 35, directing a blast of air, under pressure against the side of the bag and forcing the body thereof inwardly through its mouth and between the arms or fingers 6, 7, 8 and 9. At the same time the cross head 20 is moved forwardly by means of the crank arm 25, the connecting rod 28

and the gear 29. As this cross head 20 moves forwardly the pusher-arms 21 and 22 follow the body of the bag through the mouth thereof, at the same time spreading apart through the operation of the guideways 23, and operating to stretch the bag open themselves as their ends pass between the bent portions of the arms or fingers 8 and 9, and into engagement with the rollers 36 and 37. These rollers receive the sewed end of the bag from the ends of the pusher-arms 21 and 22 and draw it therefrom, at the same time pressing the bag and discharging it upon the prongs 45 of the receiving and discharging mechanism, by means of which the bags are stacked at the end of the machine.

The machine here shown and described, illustrates clearly how a blast of air under pressure, can be used in combination with the spreading arms or fingers thereof, for turning bags. This can be done in many different ways, and the purpose of the drawings and description herein is only to illustrate one practical way of applying the invention to a bag turning machine.

We have found that the use of an air blast against the bag, without the use of pusher-arms, is not successful. We have also found that the use of pusher-arms by themselves, is not successful, for the reason that the bag clings to the ends of the arms with resulting injury to the bag. This is particularly true of the more delicate and starched material, it being almost impossible to turn bags made of this kind of material without injury thereto, when only the pusher-arms are used. By a combination however, of the pusher-arms with an air blast, we have found that most any kind of bag can be quickly and successfully turned without injury thereto. The air under pressure moving against the bag simultaneously with the advance of the pusher-arms, causes the fabric to turn upon itself very readily and prevents its clinging to the ends of the pusher-arms. The pusher-arms, moving into the bag as it is thus being turned, cooperate with the blast to spread and stretch the bag open themselves, and to deliver it to the pressing rolls. By making one of the rolls of a composition material, the bag is more readily picked from the ends of the pusher-arms than would be possible if both rollers were of hard material.

We claim:

1. In a bag turning machine, in combination, holding members for holding a bag mouth distended, pusher arms for pushing the body of a bag through its mouth, operating mechanism therefor, an air blast device, and means for putting said air blast into operation against said bag simultaneously with the operation of said pusher arms.
2. In a bag turning machine, the combina-

tion with members for holding a bag mouth distended, pusher arms and operating mechanism therefor, of an air blast mechanism adapted to intermittently discharge a blast of air against the bag, and connections between said operating mechanism and said air blast mechanism, timed to direct the air blast against the bag during the operation of said pusher arms.

3. A bag turning machine comprising in combination holding members for the mouth of a bag, means for automatically spreading the same, pusher arms and means for operating the same, an air blast mechanism with means for controlling the same, and operating connections between said pusher arms and said air blast mechanism timed and adapted to operate both against the bag together.

4. In a bag turning machine, the combination with holding members for the mouth of a bag, pusher arm and air blast mechanisms arranged to be directed against said bag, operating mechanism therefor, operating connections between said pusher arms and said air blast mechanism, timed and adapted to operate both together against said bag, and rollers arranged to receive and discharge said bags, with means for operating the same.

Signed at Portland, Oregon, this 26th day of April, 1911.

LOUIS C. COULTER.  
FREDERICK POWELL.

In the presence of—  
FLORENCE JENNINGS,  
W. A. BURKE.