

June 30, 1936.

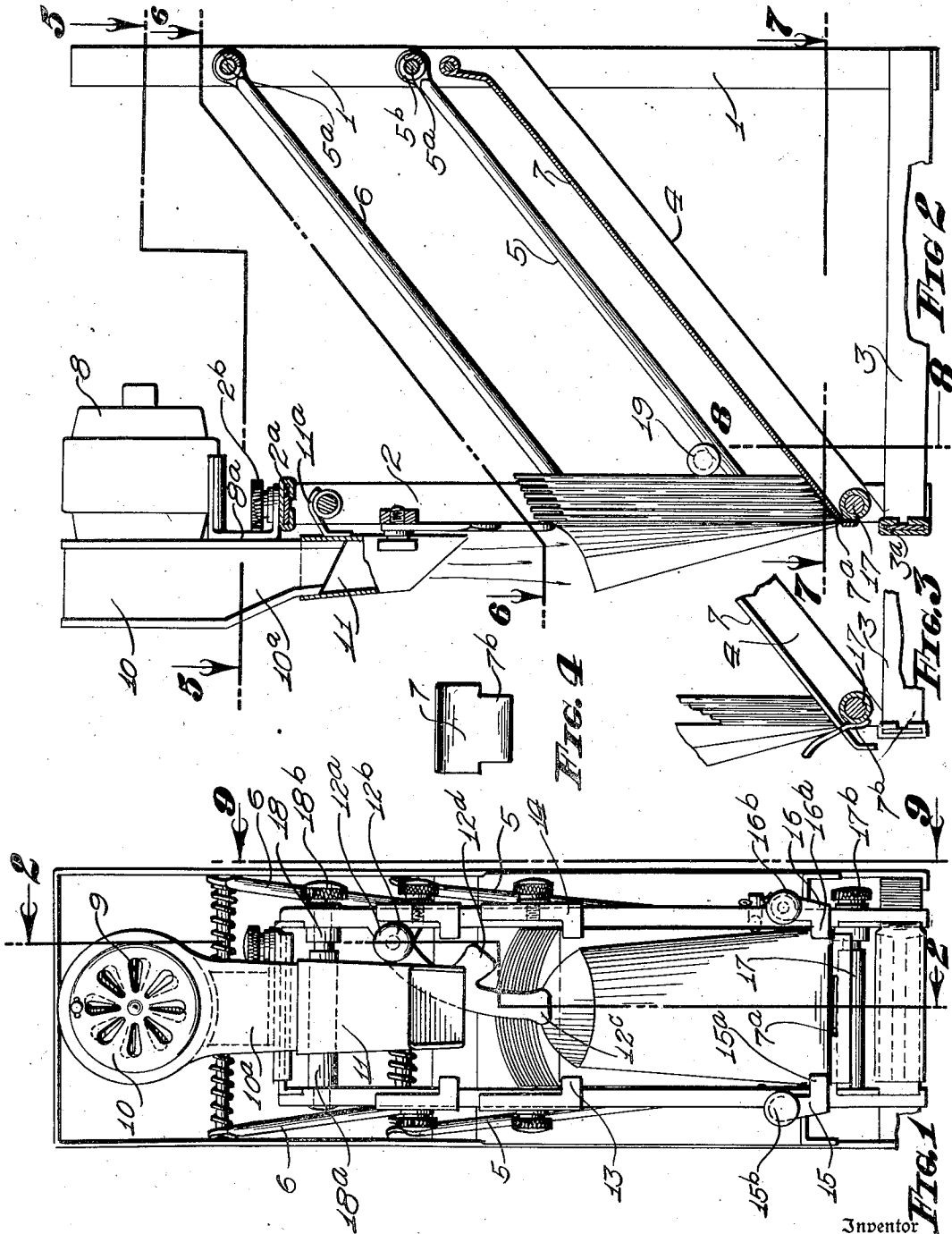
I. SHAFER

2,045,678

BAG OPENING MACHINE

Filed Oct. 14, 1932

2 Sheets-Sheet 1



Inventor
IRA SHAFER
A. B. Bowman
Attorney

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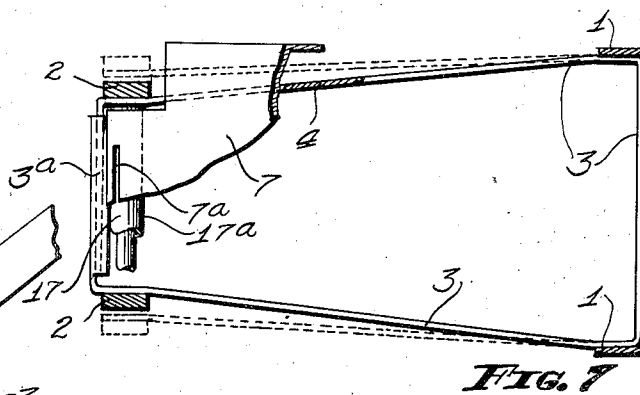
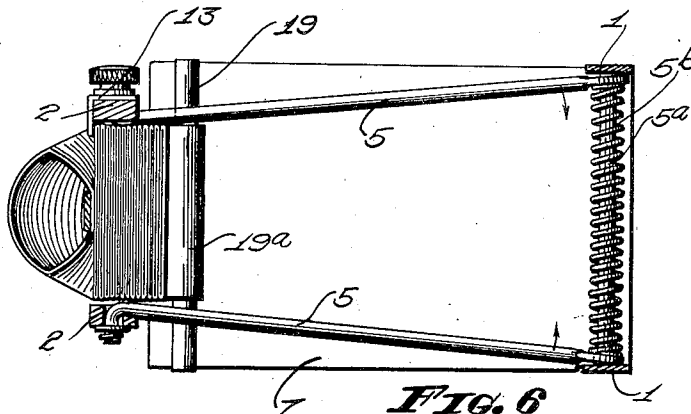
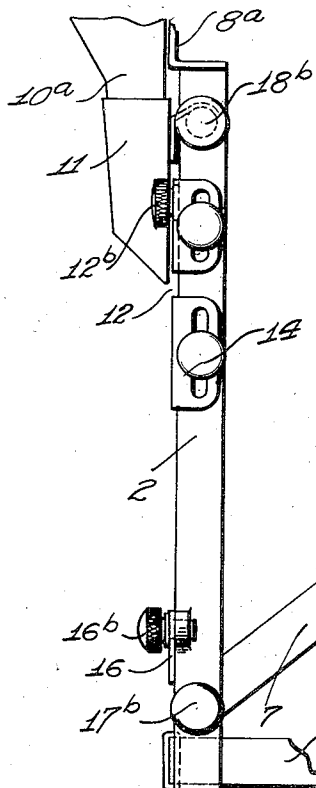
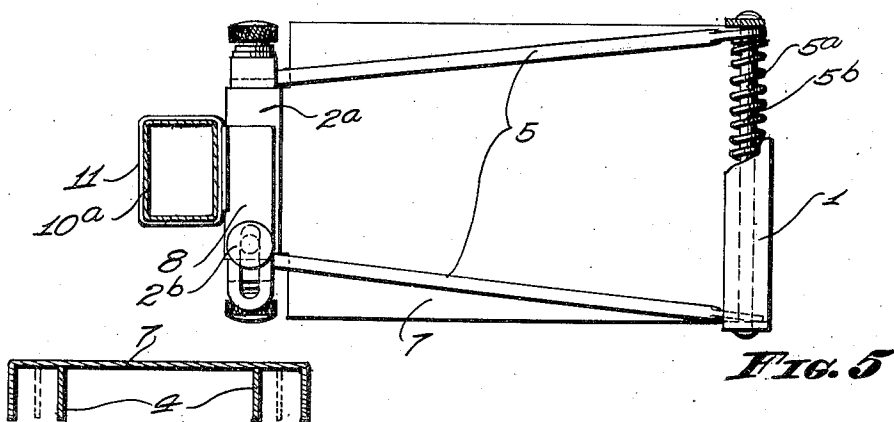
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2 Sheets-Sheet 2



Inventor

IRA SHAFER

By

A. B. Bowman

Attorney

UNITED STATES PATENT OFFICE

2,045,678

BAG OPENING MACHINE

Ira Shafer, San Diego, Calif.

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5 Claims. (Cl. 226—49)

My invention relates to a machine for opening flat bags ready for placing articles in the bag, and the objects of my invention are:

First, to provide a machine for automatically feeding flat bags in position to receive air for opening the same;

Second, to provide a machine of this class which is readily adjustable to varying sized, widths and lengths of bags;

Third, to provide a machine of this class in which the bags may be taken out directly in front of the machine or transversely to the side and filled at the same time;

Fourth, to provide a machine of this class in which the bag is opened by air pressure;

Fifth, to provide a machine of this class in which the bag is held at one side while the air is admitted between the two sides of the flat bag and separate from the top downwardly and held at the bottom until released by the operator;

Sixth, to provide a machine of this class which is automatic in its operation of opening the bag ready for receiving the contents; and

Seventh, to provide a machine of this class which is very simple and economical of construction, easy to operate, efficient in its action, adjustable throughout, and which will not readily deteriorate or get out of order.

With these and other objects in view as will appear hereinafter, my invention consists of certain novel features of construction, combination and arrangement of parts and portions as will be hereinafter described in detail and particularly set forth in the appended claims, reference being had to the accompanying drawings and to the characters of reference thereon which form a part of this application, in which:

Figure 1 is a front elevational view of the machine showing a bag in its opened position therein; Fig. 2 is a sectional view along the line 2—2 of Fig. 1; Fig. 3 is a fragmentary sectional view showing a slightly modified form of the lower front portion of the machine from that shown in Fig. 2; Fig. 4 is a front elevational view of the bag supporting plate in certain modified structure; Fig. 5 is a sectional view along the line 5—5 of Fig. 2 showing portions in elevation to facilitate the illustration; Fig. 6 is a sectional view along the line 6—6 of Fig. 2; Fig. 7 is another sectional view along the line 7—7 of Fig. 2; Fig. 8 is a sectional view along the line 8—8 of Fig. 2, and Fig. 9 is a fragmentary side elevational view from the line 9—9 of Fig. 1.

Similar characters of reference refer to similar

parts and portions throughout the several views of the drawings.

The frame members 1, 2, 3 and 4, bag guide members 5 and 6, inclined feed plate 7, motor 8, fan 9, fan cage 10, air directing member 11, bag flap holder 12, bag edge holders 13, 14, 15 and 16, adjusting rods 17 and 18, and bag supporting roller 19, constitute the principal parts and portions of my bag opening machine.

The frame member 1 is an inverted U-shaped member preferably made from flat bar material and of a width between the members of the larger width bags. The member 2 is a similar inverted U-shaped member considerably shorter. The upper cross bar however is cut crosswise and is provided with a clip 2a extending around the same for supporting the ends thereof in spaced relation to provide for adjustment of the relation of the two members 2 one from the other. This member 2a is provided with a hole near one end through which extends a screw threaded lug upon which is screwably mounted the nut 2b. This clip 2a therefore provides means for adjusting the relative spacing of the two frame members 2.

The lower ends of the members 1 and 2 are rigidly secured to the respective corners of the frame member 3 which is a rectangularly shaped member preferably made of flat bar material. The cross bar at the front however is cut and it is supported by a clip 3a which extends over the free ends of this cross bar and supports it rigidly but permits longitudinal adjustment of the front bar portion. Secured near the lower inner sides of the members 2 are the lower ends of the frame members 4 and they extend on an incline and are secured to the inner sides of the members of the member 1. Secured on the upper side of these frame members 4 is the inclined feed plate 7 which serves to support the lower edges of the flat bags, all as shown best in Fig. 2 of the drawings. This feed plate extends past the sides of the member 4 when the front portion is constricted for narrow bags, but is of approximately the same width as the frame member 1 at the back and upper side.

Secured between the upper edges of the frame member 1 at both sides and the inner sides of the members 2 parallel with the plate 7 are the bag guide members 5 and 6 which serve to guide the edges of the bag in their movement along the inclined plate as they automatically feed toward the front of the machine.

Loosely mounted on the guide member 5 is a roller member 19 which is provided with an enlarged central portion 19a which prevents its

shifting endwise off of the guides 5 and this member is adapted to roll on said guides against the bags tending to force them forwardly into position and which may be readily removed and replaced back of the bags when placing the bags in position between the guide members 5 and 6 with their lower edges on the plate 7. The guide members 5 and 6 are supported on rods 5a upon which are mounted compression springs 5b which tend to hold the guide members in separated relation from each other but permit them to be pressed towards each other, to facilitate placing the bags centrally in position ready for feeding toward the front end.

Secured between the clip 2a and the nut 2b is a bracket 8a which extends forwardly, then upwardly and backwardly and which forms a support for the motor 8 which is rigidly secured thereon. Secured on the shaft of the motor 8 is a fan 9 which is mounted in a cage 10 secured against the front side of the motor enclosing the fan except at the front portion which is open to admit air. This cage is provided with a downwardly extending portion 10a which serves as an exit for the air. Mounted over the mouth of this extended portion 10a is an extended air conducting portion 11 which is supported by means of a spring member 11a which extends over the bolt receiving portion 18a for the bolt 18 for holding said air conducting member in position for conducting air downwardly into the open end of the bag for opening the same, as shown best in Fig. 2 of the drawings.

The member 18 is adapted to be screwed into the end of the member 18a and adjusted by means of the nut 18b, thus providing means for adjustably supporting the two upright members of the frame members 2 in spaced relation. Near the lower end of the members 2 is a similar bolt receiving portion 17a which receives the bolt 17 and which is also provided with a nut 17b for securing the lower ends of these upright members in certain spaced relation, the clip member 3a permitting the extension of the member 3 between the lower ends of these uprights.

Pivotally mounted on one of the members 2 is a bracket 12a upon which is pivotally mounted by means of a nut 12b the bag flap holder 12. It being noted this bag flap holder 12 is provided with two bag engaging portions 12c and 12d to provide for adjustment, the portion 12c being used when the bag is short and the portion 12d being used when the bag is longer, and may be shifted to various positions and supported rigidly by the nut 12b.

The lower end of the plate 7 is provided with a slot 7a which is adapted to receive the reduced portion of the bag support 7b and the enlarged portion extends upwardly and outwardly on an angle to retain the lower edge of the bag in position but permits the bag to be drawn upwardly over the edge and directly forward, thus providing for drawing the bag forwardly and directly outwardly. However, in some cases this clip 7b may be omitted and the bag held by the clips 15 and 16 which are provided with extended portions 15a and 16a which extend over the lower edge of the bag and are held in adjusted relation by means of nuts 15b and 16b mounted on threaded lugs secured on the lower ends of the members 2. If desired, however, either the lug 15 or 16 may be shifted backwardly out of position and the member 7b in position. The bag may then be moved sidewise after being filled

instead of straight forward or downwardly, thus providing for various ways of removing the bag after it has been opened and filled. It being noted that in some bag contents the filling operation may be advanced by pressure downwardly which removes the bag at the same time it is filled.

For temporarily supporting the upper side of the bag until it is released by the air pressure from the fan there is provided clips 13 and 14 which are adjustably mounted upwardly and downwardly on the members 2 and extend slightly past the edges of the bags when the bags are in flat position, but the pressure from the fan releases the same, as shown best in Fig. 1 of the drawings.

Though I have shown and described a particular construction, combination and arrangement of parts and portions, and certain modifications thereof, I do not wish to be limited to this particular construction, combination and arrangement, nor to the modifications, but desire to include in the scope of my invention the construction, combination and arrangement substantially as set forth in the appended claims.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:

1. In a bag opening machine, a frame, an inclined member mounted on said frame, an opening for the exit of bags in vertical position in said frame at the lower end of said inclined member, an air directing means mounted on said frame immediately above said opening, means for adjusting the width of the front end of the frame, guide means on said frame above said inclined member, a roller mounted on a portion of said guide means intermediate said inclined member and the upper edges of the bags tending to hold said bags downwardly and forwardly in said frame on said inclined member, clips with extended portions extending slightly over said opening adapted to engage the edge of the bags when at the forward position in said opening, means for adjusting said clips, and spring means tending to hold said guide means outwardly in said frame at the rear side but compressible for positioning the bags.

2. In a bag opening machine, a frame member provided with spaced apart uprights, an inclined member positioned between said uprights, guide means between said uprights above said inclined member, means for adjusting the uprights at the lower end of said inclined member inwardly and outwardly towards each other, an air conductor positioned above and in front of the forward frame arranged to direct air under pressure downwardly toward the space between the forward uprights, an adjustable bag flap holding member mounted on said frame and arranged to engage one side of the upper edge of the front bag between said uprights, means tending to press said bags forwardly and downwardly, a motor mounted on said forward frame, a fan in connection therewith, a cage for said fan with downwardly directed air conductor means communicating with said fan, and means for permitting the inward movement of said guide means towards each other on said frame.

3. In a bag opening machine, a frame, an inclined member mounted on said frame, an opening for the exit of bags in vertical position in said frame at the lower end of said inclined member, an air directing means mounted on said

frame immediately above said opening, means for adjusting the width of the front end of the frame, guide means on said frame above said inclined member, clips with extended portions extending slightly over said opening adapted to engage the edges of the bags when at the forward position in said opening, and spring means tending to hold said guide means outwardly in said frame at the rear side but compressible for positioning the bags.

4. In a bag opening machine, a frame, an inclined member mounted on said frame, an opening for the exit of bags in vertical position in said frame at the lower end of said inclined member, an air directing means mounted on said frame immediately above said opening, means for adjusting the width of the front end of the frame, guide means on said frame above said inclined member, means tending to hold bags forwardly and downwardly in the frame on said inclined member, clips with extended portions extending slightly over said opening adapted to

engage the edge of the bags when at the forward position in said opening, and spring means tending to hold said guide means outwardly in said frame at the rear side but compressible for positioning the bags.

5. In a bag opening machine, a frame, an inclined member mounted on said frame, an opening for the exit of bags in vertical position in said frame at the lower end of said inclined member, an air directing means mounted on said frame immediately above said opening, means for adjusting the width of the front end of the frame, guide means on said frame above said inclined member, clips with extended portions extending slightly over said opening adapted to engage the edge of the bags when at the forward position in said opening, means for adjusting said clips, and spring means tending to hold said guide means outwardly in said frame at the rear side but compressible for positioning the bags.

IRA SHAFER.