

H. BILGRAM.  
BAG MACHINE.

(Application filed Dec. 22, 1899.)

(No Model.)

3 Sheets—Sheet 1.

FIG. 5.

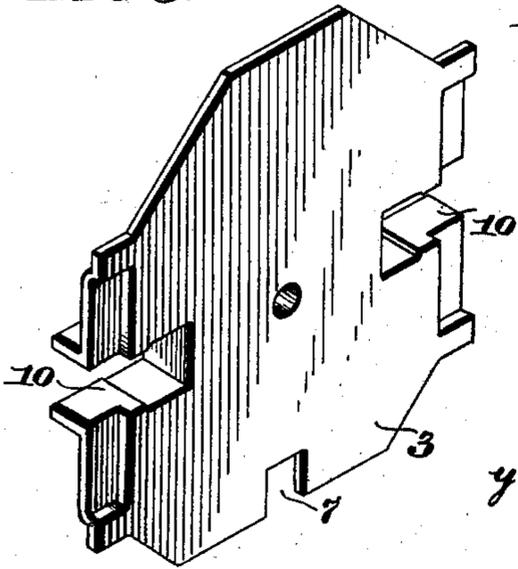


FIG. 1.

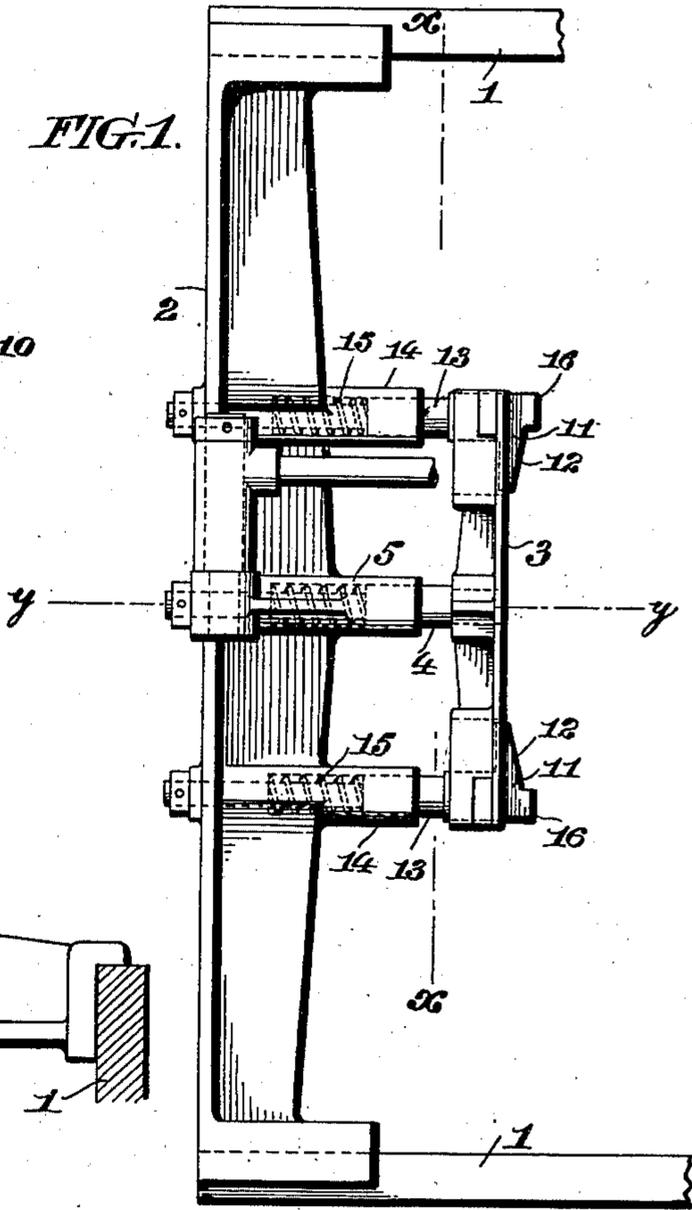


FIG. 2.

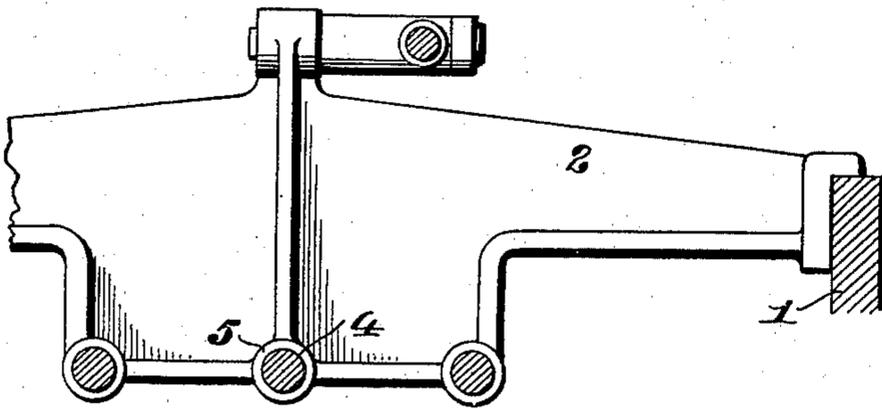


FIG. 4.

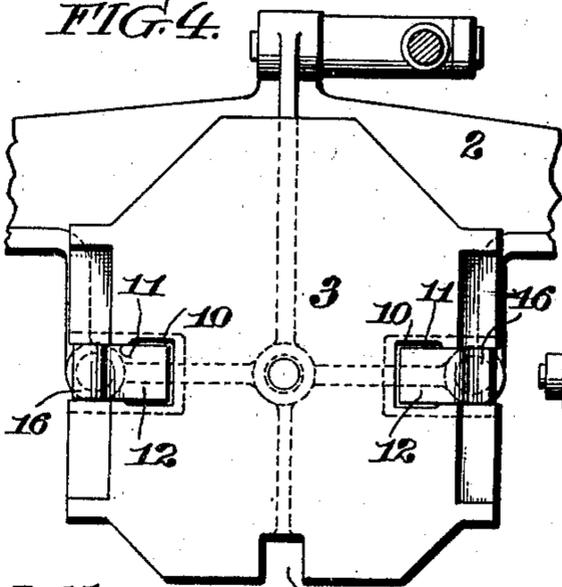
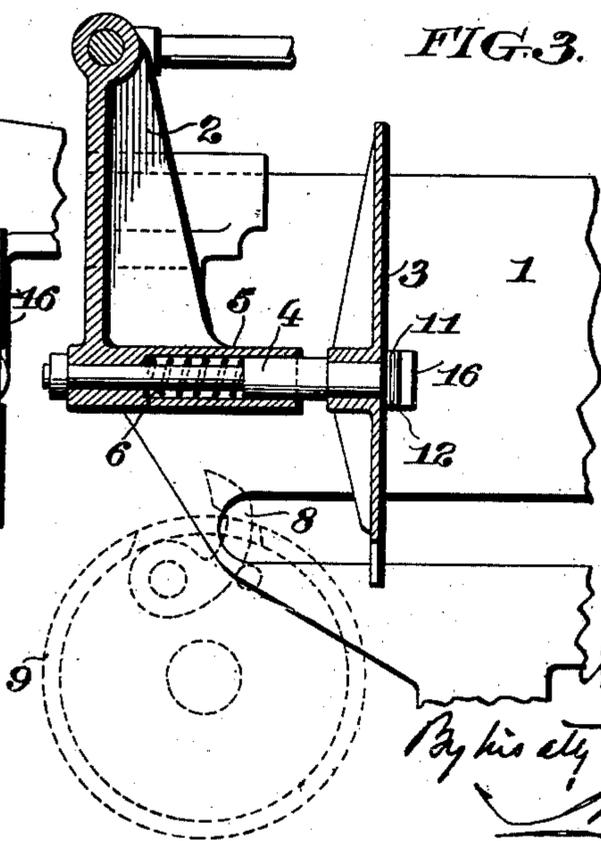


FIG. 3.



Witnesses:  
Camp Dancy  
R. M. Kelly.

Inventor:  
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By his atty  
*[Signature]*

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3 Sheets—Sheet 2.

FIG. 6.

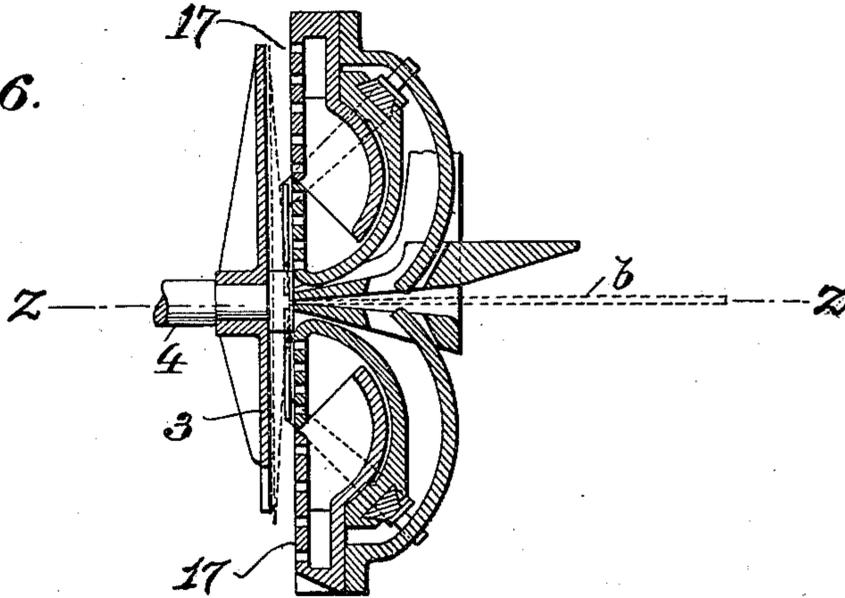


FIG. 7.

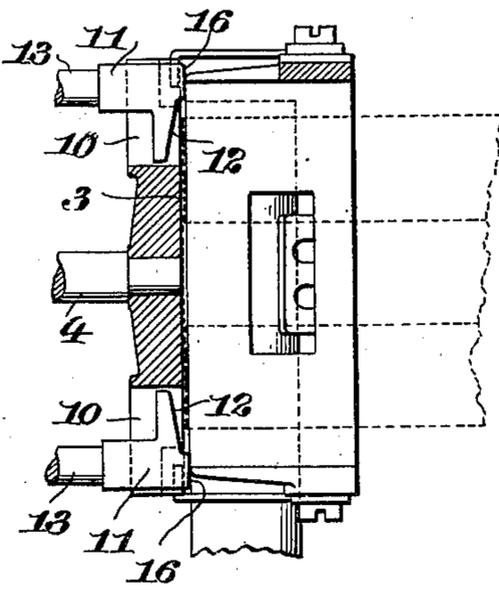


FIG. 8.

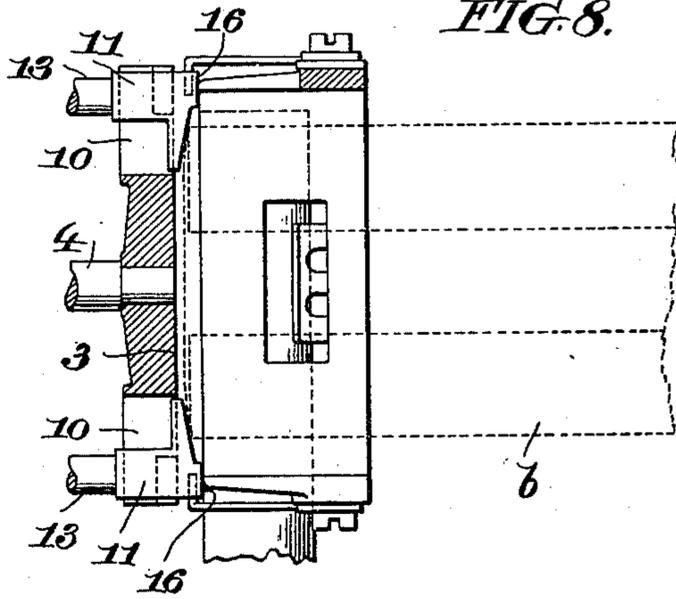


FIG. 9.

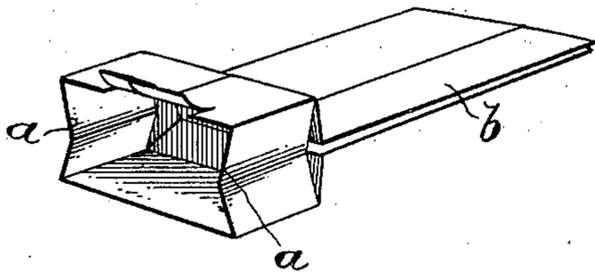
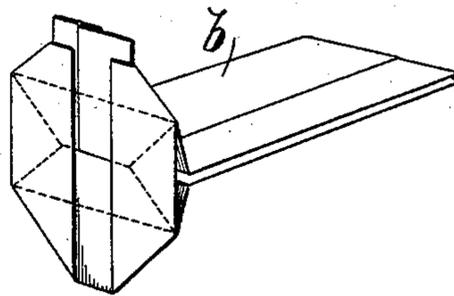


FIG. 10.



Witnesses:  
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*By [Signature]*

No. 656,340.

Patented Aug. 21, 1900.

H. BILGRAM.  
BAG MACHINE.

(Application filed Dec. 22, 1899.)

(No Model.)

3 Sheets—Sheet 3.

FIG. 11.

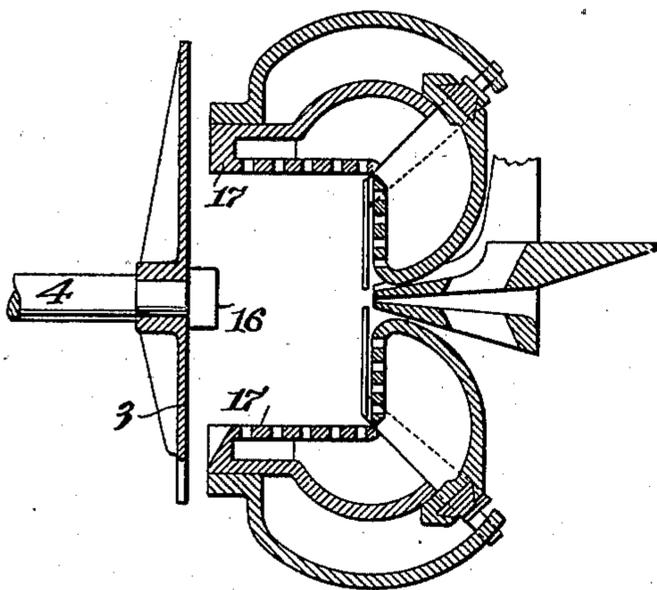
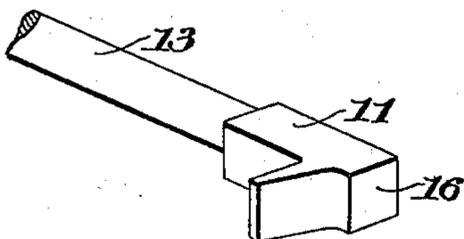


FIG. 12.



Witnesses:  
*Henry Damm*  
*R. M. Kelly*

Inventor:  
*Hugo Bilgram*  
*My true atty*  
*[Signature]*

# UNITED STATES PATENT OFFICE.

HUGO BILGRAM, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO THE  
EASTERN PAPER BAG COMPANY, OF CONNECTICUT.

## BAG-MACHINE.

SPECIFICATION forming part of Letters Patent No. 656,340, dated August 21, 1900.

Application filed December 22, 1899. Serial No. 741,216. (No model.)

*To all whom it may concern:*

Be it known that I, HUGO BILGRAM, of the city and county of Philadelphia and State of Pennsylvania, have invented an Improvement in Paper-Flattening Devices for the Bottom-Formers of Paper-Bag Machines, of which the following is a specification.

My invention relates to paper-flattening devices for the bottom-formers of paper-bag machines; and it consists of certain improvements which are fully set forth in the following specification and are shown in the accompanying drawings.

In the formation of the bottoms of paper bags in that class of machines in which the bottom of the paper tube is first opened out into a square or box shape and is then drawn out into a flattened condition, as described in Letters Patent No. 634,102, dated the 3d day of October, 1899, much difficulty has been experienced in flattening down the sides from the square box shape. In the patent referred to the bottom is first formed into the square box shape by the action of movable sectional suction-formers, and these formers are finally opened out to draw the paper down into a flattened condition to receive the pasting and final-folding-operations. To assist the formers in thus drawing out the paper into the flattened shape, folding-wings have been employed adapted to act upon the sides of the paper and fold it inward as the formers are opened out. Such folding-wings are shown in the Patent No. 634,102, above referred to, and also more particularly in Patent No. 634,099, dated October 3, 1899. My improvements are particularly designed for use with a machine of the general character shown in these two patents and are adapted to insure a more perfect folding in of the sides of the paper as it is drawn from the square box shape into the flattened condition and to thoroughly flatten out the paper and avoid the formation of wrinkles or imperfect folds. I do not mean, however, to limit my invention to machines of the exact character described in the patents referred to, as it may be used with other machines where similar operations are to be performed in the formation of a bag-bottom.

In the accompanying drawings, Figure 1 is

a plan view of my improved flattening devices for bottom-formers of paper-bag machines. Fig. 2 is a sectional view on the line  $xx$  of Fig. 1. Fig. 3 is a sectional view on the line  $yy$  of Fig. 1. Fig. 4 is a front elevation of the flattening devices. Fig. 5 is a perspective view of the main flattening-plate. Fig. 6 is a longitudinal vertical sectional view of the bottom-formers and flattening-plate, illustrating the operation thereof. Figs. 7 and 8 are horizontal sectional views on the line  $zz$  of Fig. 6, illustrating the operation at different periods. Figs. 9 and 10 are perspective views of a paper-bag section, illustrating steps in the formation of the bag-bottom. Fig. 11 is a view similar to Fig. 6, showing the bottom-formers partially opened; and Fig. 12 is a perspective view of one of the guiding-fingers.

1 1 are portions of the side frames of the machine.

2 is a cross-frame between the side frames by which the bottom-flattening devices are carried.

3 is a flat plate carried by a stud 4, supported and guided in a guide 5 on the frame 2 and normally held in a projected or forward position by a spring 6. The general shape of the plate 3 is made to conform to the general shape of the flattened bag-bottom, but this is not essential. The notch 7 in the base of the plate is provided for the gripper 8 of the stripping-roll 9, by which the bag-section after the partially-formed bag-bottom has been flattened out is stripped off from the formers and carried to the final-folding and pasting devices. The sides of the plate 3 are notched, as at 10, and in these notches are fitted fingers 11 11, having inclined or curved faces 12 12, normally projecting beyond the plane of the face of the plate 3. The fingers 11 11 are carried by independent studs 13 13, guided in guides 14 14 of the frame 2 and normally projected by springs 15 15, thus having freedom of movement with respect to the plate 3. The outer extremities of the inclined face 12 12 of the fingers 11 11 are provided with heads 16 16 for the purpose hereinafter described.

17 17 are the suction-formers by which the paper tube  $b$  is carried and by which its end is opened and folded, as set forth in the Letters Patent referred to.

The operation of these devices is as follows: As the formers carrying the paper-bag section move forward and open up the partially-formed bottom is drawn out by the formers from the square box shape shown in Fig. 9 into a flattened form substantially as shown in Fig. 10. This operation necessitates the accurate folding inward of the sides *a a*, and as the formers reach approximately the limit of their forward movement the sides *a a* of the paper come in contact with the inclined faces 12 12 of the fingers 11 11 and are guided inwardly, so as to be accurately folded down into the form shown. Before this operation is completed the frames of the formers strike the extremities 16 16 of the fingers 11 11, as shown in Fig. 8, and push them backward, and immediately thereafter the opened faces of the formers come in contact with the face of the plate 3, as shown in Fig. 7, and the bag-bottom now in the form shown in Fig. 10 is flattened out by the pressure between the opened faces of the formers and the face of the plate 3, the latter yielding slightly to prevent jar or injury under the action of the spring 6. As the formers start to move back, the paper is released from between the face of the plate 3 and the faces of the formers and is stripped off by the stripping-roll 9. The fingers 11 11 are prevented from moving forward and clamping the paper by the projecting heads 16 16, which are beyond the sides of the paper and make contact with the frame of the formers, as shown in Fig. 8, thus leaving the paper entirely free to be drawn off by the roll 9.

The details of construction shown may be varied without departing from the invention.

What I claim as new, and desire to secure by Letters Patent, is as follows:

1. In flattening devices for bottom-formers of paper-bag machines, the combination of a flattening-plate against which the paper is adapted to be pressed, with guiding-fingers

arranged at the sides thereof and adapted to guide the projecting edges of the paper down upon said plate. 45

2. In flattening devices for bottom-formers of paper-bag machines, the combination of a flattening-plate against which the paper is adapted to be pressed, with guiding-fingers having inwardly-inclined faces arranged at the sides thereof and adapted to guide the projecting edges of the paper down upon said plate. 50 55

3. In flattening devices for bottom-formers of paper-bag machines, the combination of a flattening-plate against which the paper is adapted to be pressed, with independently-yielding guiding-fingers arranged at the sides thereof and adapted to guide the projecting edges of the paper down upon said plate. 60 65

4. In flattening devices for bottom-formers of paper-bag machines, the combination of a flattening-plate against which the partially-formed bottom of the bag is adapted to be pressed, with independently-yielding guiding-fingers arranged at the sides thereof and having inwardly-inclined faces 12 and projecting heads 16, substantially as and for the purpose described. 70

5. The combination with the flat yielding plate 3, of the independently-yielding guiding-fingers 11, 11, arranged at the sides thereof, substantially as and for the purposes described. 75

6. The combination with the flat yielding plate 3, of the independently-yielding guiding-fingers 11, 11, arranged at the sides thereof and provided with inclined faces 12 and projecting heads 16, substantially as and for the purposes described. 80

In testimony of which invention I have hereunto set my hand.

HUGO BILGRAM.

Witnesses:

ISAAC THOMPSON,  
J. ROLLIN PARKER.