T. M. AVERY.

APPARATUS FOR MAKING PAPER BAGS.

APPLICATION FILED JAN. 23, 1915.

1,144,630.

Patented June 29, 1915.

2 SHEETS—SHEET 1.

Fig. 1.

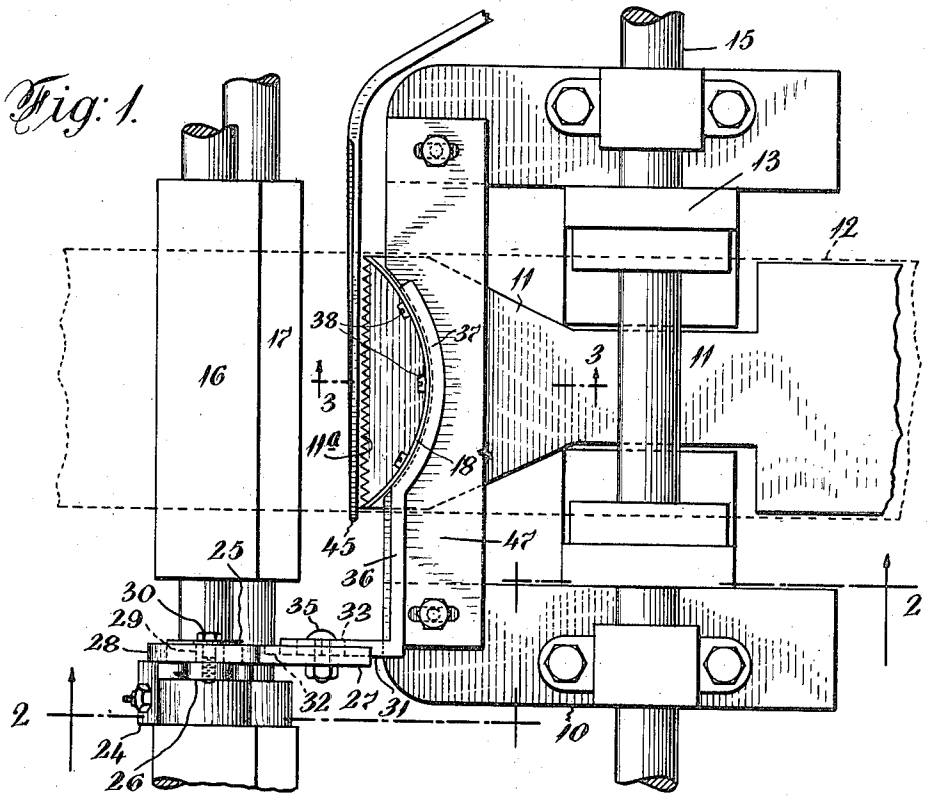
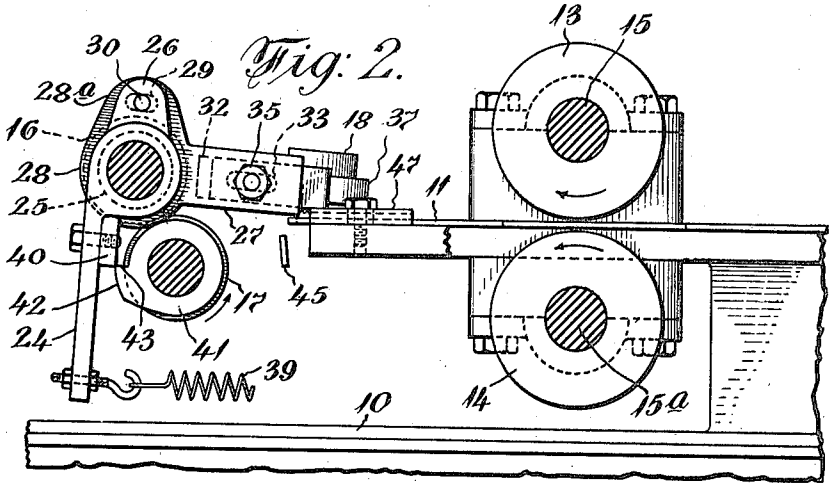


Fig. 2.



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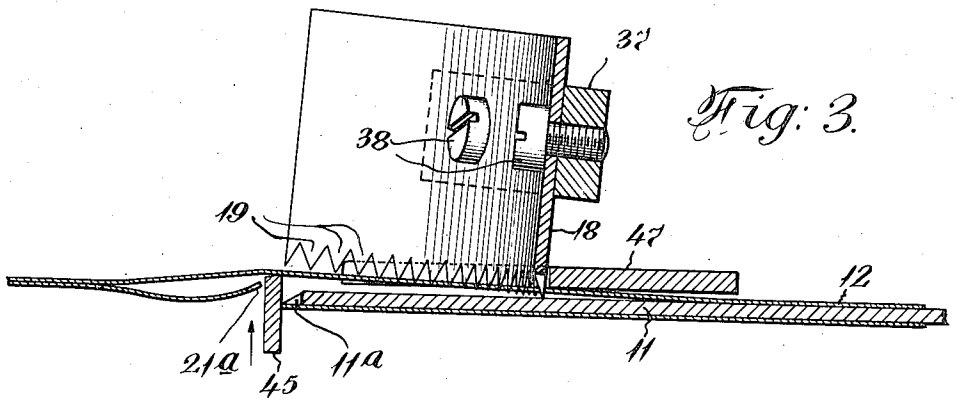


Fig. 3.

Fig. 4.

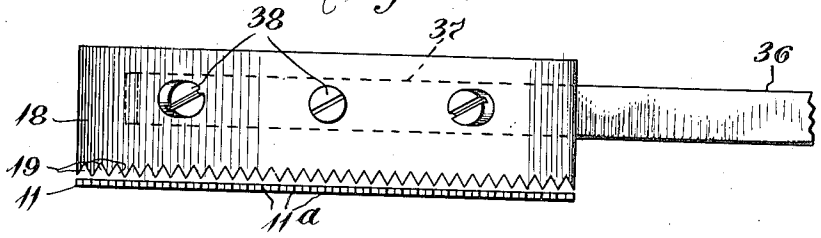


Fig. 5.

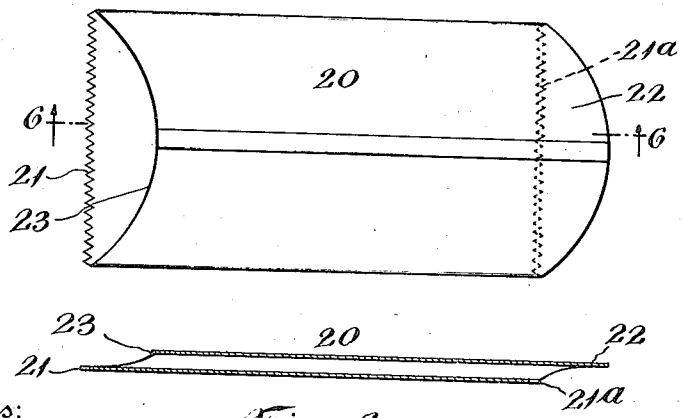


Fig. 6.

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UNITED STATES PATENT OFFICE.

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APPARATUS FOR MAKING PAPER BAGS.

1,144,630. Specification of Letters Patent. Patented June 29, 1915.

Application filed January 23, 1915. Serial No. 3,854.

Be it known that I, TRUE M. AVERY, a citizen of the United States, residing at Glens Falls, New York, have invented certain new and useful Improvements in Apparatus for Making Paper Bags, of which the following is a clear, full, and exact description.

This invention relates to apparatus for making paper bags, particularly those bags known as flat and notion bags, and one of the objects of the invention is to provide means for severing the flat paper tube in such way as to produce a substantially clean cut along the edge of the lip or flap.

Another object is to improve the method of severing paper bags of the class mentioned from a paper tube so as to produce the flaps or lips, before the bag is finished by a bottoming device.

Further objects are to provide an efficient and practical machine for producing bags of the class mentioned.

These being among the objects of the present invention, the same consists of certain features of novelty in apparatus for making paper bags, which will be hereinafter fully described and then particularly pointed out in the claims with reference to the accompanying drawings illustrating a suitable embodiment of the invention and in which—

Figure 1 is a plan view of so much of a paper bag machine as will suffice to illustrate the present invention; Fig. 2 is a side elevation partly in section on line 2—2 Fig. 1; Fig. 3 is an enlarged section on the line 3—3 Fig. 1; Fig. 4 is a detailed front elevation of the two severing portions; and Figs. 5 and 6 are respectively a plan and a longitudinal section on the line 6—6 Fig. 5 of a blank of a flat and notion bag made by the present improvements.

Referring to the drawings, the frame 10 of a suitable bag forming machine is shown as provided with a former plate 11 which extends in the direction of travel of the flat paper tube 12 which is formed thereon, the same being terminated by a serrated or toothed edge 11^a so that said former plate constitutes a severing member. The tubular blanks which are cut off from the paper tube are afterward led to a bottoming device (not shown) which makes the finished bag. The paper tube 12 is drawn over the former by means of suitable draw rolls 13, 14, carried on shafts 15 and 15^a mounted on frame 10, and is passed over the severing edge 11^a of the former, at which edge the straight transverse cut is made at the front of the bag. This leaves the paper serrated or toothed. It is, however, desirous to make the flap or lip on the back of the bag as smooth as possible, to which end there are incorporated with the described parts instrumentalities which coöperate therewith for making the said flap or lip.

Beyond the severing member 11, 11^a, there is located a pair of pinch rolls 16, 17, which are suitably mounted on the machine, the function of these being to pinch the paper tube and hold it taut, while a breaker-bar 45 mounted on a well known part passes through the gap between the serrated edge 11^a and the said pinch rolls in order to separate the tube into blanks.

Associated with the severing member 11, 11^a, is a bowed blade or knife 18 provided along one edge with serrations or teeth 19, which, like the teeth 11^a of the member 11, extend transversely of the path of movement of the paper tube 12, except that the said blade or knife is adapted to be presented edgewise with its serrations or teeth 19 toward the severing member 11, while the said blade or knife is so bent that it is adapted to form a flap or lip, when associated with suitable instrumentalities. In Figs. 5 and 6 a flat bag blank 20 is shown, which is provided with serrations 21, 21^a, formed at each end of one wall, while at one end of the other wall a flap or lip 22 is provided, and at the opposite end of said other wall there is a recess or cut away portion 23 which represents the material removed to form the lip of another blank. It will be noticed that the edges of the flap or lip 22 and the recess 23 are substantially clean cut. This is in part accomplished by presenting the severing member 18 perpendicularly to the paper tube when the same is to be severed. The severing position of member 18 is shown in Fig. 3.

The mechanism for operating the flap or lip forming severing member 18 is as follows: An arm 24 is provided with a sleeve 25 which fits movably upon the shaft of the pinch roll 16. Located on the sleeve 25 is a lug 26. An arm 27 extends angularly with respect to the arm 24, and is provided with a sleeve 28 which is adapted to fit over the end of sleeve 25 although said sleeve 28 may be turned with respect to the sleeve 25. To

permit this, a slot 29 is located in a lateral extension 28ª of sleeve 28, and through this slot there passes a cap-screw 30 which screws into the lug 26. This affords an adjustment for the arm 27 relatively to the arm 24 for a purpose to be hereinafter mentioned. An angular arm 31, 36, is mounted upon the arm 27, to which end the said arm 27 is provided with a groove or recess 32 into which fits the shorter arm 31 of the angle arm 31, 36, so that said shorter arm 31 can be slid endwise in said recess 32, in which said shorter arm 31 is rigidly yet adjustably fixed by means of a slot 33 in said part 31 and a bolt 35 which passes through the arm 27 and through said slot. The longer arm 36 of the said angle arm 31, 36, extends inwardly and transversely of the machine and is provided with a bowed or bent portion 37, into the concavity of which is fitted the bowed or bent severing blade or member 18, while screws 38 secure the said parts together, and position the said severing member 18 properly with respect to the paper tubing and the severing member 11. It will be noticed from Fig. 1 that when the bowed severing member 18 is in active position it curves or bows away from the transverse serrated edge 11ª of the former or severing member 11, while the ends of said blade or severing member 18 terminate at points opposite the ends of the serrated edge 11ª. In other words, the span of the bowed blade or severing member 18 covers a distance equal to the length of the serrated edge 11ª. It will be seen that means for properly adjusting the blade or severing member 18 are provided by the adjusting screw and bolt 30 and 35 respectively. By means of the screw 30, the relative distance between the serrated edge of the severing member 18 and the former or severing member 11 may be regulated so that when the blade or severing member 18 moves toward severing blade 11, it will stop at the proper point. By means of the bolt 35, the adjustment of the serrated edge of the severing member 18 with respect to the serrated edge 11ª may be regulated.

Means are provided for tending to urge the bowed severing member 18 away from the former or severing member 11, such means preferably comprising a helical tension spring 39 which is connected with the arm 24. In order to cause the severing member 18 to stand perpendicularly with respect to the paper and still permit the paper to pass on unobstructed after it is severed, it is necessary that the said severing member recede from the paper. This is preferably accomplished by rigidly mounting a block or abutment 40 upon the arm 24, the same preferably being composed of hardened steel, and the said abutment or block 40 is adapted to work upon the cam 41 which is secured to the shaft of the pinch roll 17, and is provided with a cam projection 42 terminated by an abrupt shoulder 43. Now it will be seen that as the said cam 41 turns in the direction of the arrow, its cam projection will force the arm 24 away from it, and that at the proper moment when the severing blade 18 is to recede from the paper, the lug or block 40 will snap behind the shoulder 43, or drop off of the cam projection. The shoulder 43 is set at just the right point of the rotary motion of the cam as that its disengagement from the abutment or block 40 and the receding of the severing member 18 will occur just as the cut in the paper is finished by said severing member. The receding of the severing member 18 allows the next blank following to continue on its course.

It will be seen from the above description that with properly timed parts, the severing member 18 will move perpendicularly toward the paper tube 12 and that when this movement is completed, the breaker-bar 45 will force one wall 12ª of the paper tube along a transverse line, against the serrated severing edge 11ª of member 11 which will sever the said wall transversely, while a slight continued movement of the breaker-bar 45 will press the other wall 12ᵇ of the paper tube against the serrated and perpendicularly presented edge 19 of severing member 18, and by a continued movement cause the said wall 12ᵇ to be cut or torn along a line coincident with the serrated edge 19. Thereby the lip or flap 22 of the bag blank will be formed with substantially clean cut edge as shown in Fig. 5. The blank which has been separated from the paper tube will be carried by the pinch rolls 16, 17, to a suitable bottoming device. In order to hold the former or severing blade 11 against movement when the paper is being cut, a transverse stripper-plate 47 is mounted on the frame of the machine just behind the bowed severing member 18. Said stripper-plate also prevents the paper from following the teeth of the serrated edge of member 18.

It is of course to be understood that the term "paper bags" is broad enough to include any other inclosure of paper or similar material, such as envelops.

Obviously this invention is susceptible of modification, as parts may be omitted, parts added, and parts substituted without departing from the scope of the invention as expressed in the claims and of course the improvements can be adapted to any style bag machine with but slight change in the construction of the operating parts to conform to the special machine on which it is desired to use it.

What I claim is:—

1. In a machine for making paper bags,

the combination of a blade provided with a series of cutting teeth, means for holding a piece of material which is to be cut, means for moving said blade toward said piece of material and presenting said teeth, with their points foremost, to said piece at substantially right angles thereto, and means for pressing said piece of material onto said teeth while thus presented to said piece, so that it will be cut thereby.

2. In a machine for making paper bags, the combination of a transverse severing member over which a flat paper-tube is adapted to pass, a second transverse severing member movable perpendicularly toward one wall of said tube, and means for moving the other wall of said tube against the first said severing member and the first said wall against said second severing member successively.

3. In a machine for making paper bags, the combination of a transverse severing member over which a flat paper-tube is adapted to pass, a second transverse severing member comprising a bowed serrated blade movable perpendicularly toward one wall of said tube, and means for moving the other wall of said tube against the first said severing member and the first said wall against said second severing member successively.

4. In a machine for making paper bags, the combination of a former member, over which a flat paper-tube is adapted to pass, a transverse severing member comprising a bowed blade, means for moving said blade perpendicularly toward said former member, and means for moving one wall of said tube against said blade.

5. In a machine for making paper bags, the combination of a former member having a serrated transverse edge, over which a flat paper-tube is adapted to pass, a transverse severing member comprising a bowed blade having a serrated cutting edge, means for moving said blade perpendicularly with its said serrated edge toward said former member, and means for moving one wall of said tube against said edge of said former member and the other wall against said edge of said blade.

6. In a machine for making paper bags, the combination of a bowed blade having a serrated edge, means for presenting said blade perpendicularly toward, and with its said edge against, one wall of a flat paper-tube, and means for moving said wall against said edge.

7. In a machine for making paper bags, the combination of a bowed blade having a serrated edge, means for presenting said blade perpendicularly toward, and with its said edge against, one wall of a flat paper-tube, means for adjusting said blade laterally of itself, means for adjusting the movement of said blade with respect to the position of said tube, and means for moving said wall against said edge.

8. In a machine for making paper bags, the combination of a former member having a transverse severing edge, and over which a flat paper-tube is adapted to pass, a normally retracted transverse severing blade having the outline of a bag flap or lip, means for supporting said blade edgewise toward said former member, a movable trip cam for moving said blade edgewise toward said former member, and breaker means for moving one wall of said tube toward the first said severing edge and the other wall of said tube toward said severing blade, to sever said tube and form a flap or lip.

9. In a machine for making paper bags, the combination of a former member having a serrated transverse severing edge, and over which a flat paper-tube is adapted to pass in the direction in which the teeth of said member extend, a normally retracted transverse severing blade having a serrated edge disposed along the outline of a bag flap or lip, means for supporting said blade edgewise toward said former member, a movable trip cam for moving said blade edgewise toward said former member, and breaker means for moving one wall of said tube toward the first said severing edge and the other wall of said tube toward said severing blade, to sever said tube and form a flap or lip, said cam being adapted to release said blade when said tube is severed.

Signed at Glens Falls, N. Y. this 18th day of December 1914.

TRUE M. AVERY.

Witnesses:
WALTER A. CHAMBERS,
SCOTT B. COONS.