

J. GRAHAM.
MACHINE FOR MAKING PAPER AND LIKE BAGS.
APPLICATION FILED FEB. 3, 1912.

1,032,366.

Patented July 9, 1912.

3 SHEETS—SHEET 1.

Fig. 1.

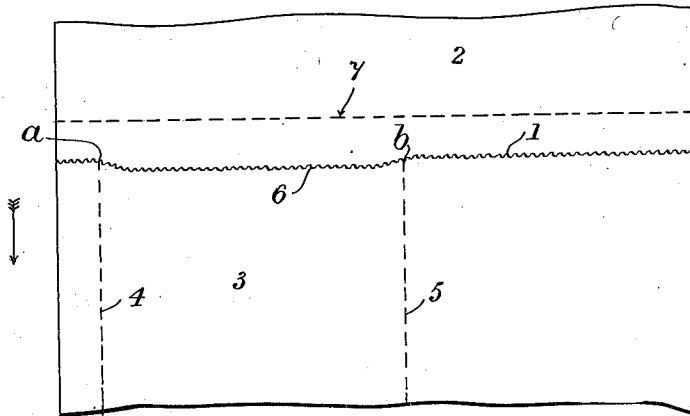
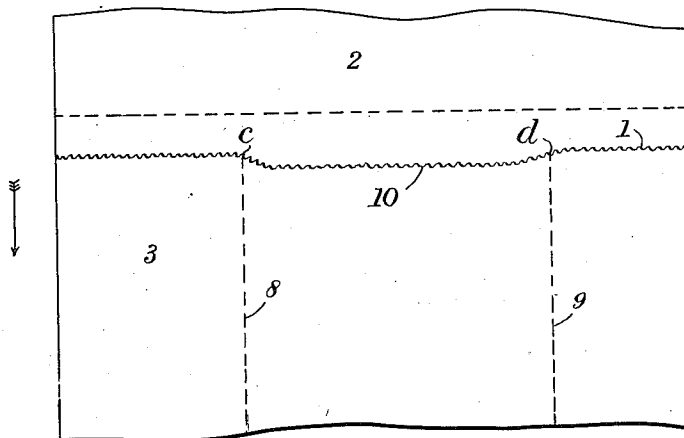


Fig. 2.



Witnesses.

Wm. H. Hatten
H. W. Primmer

Inventor.

James Graham
Charles W. Fisher, Witherspoon & Co. Attorneys

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3 SHEETS-SHEET 2.

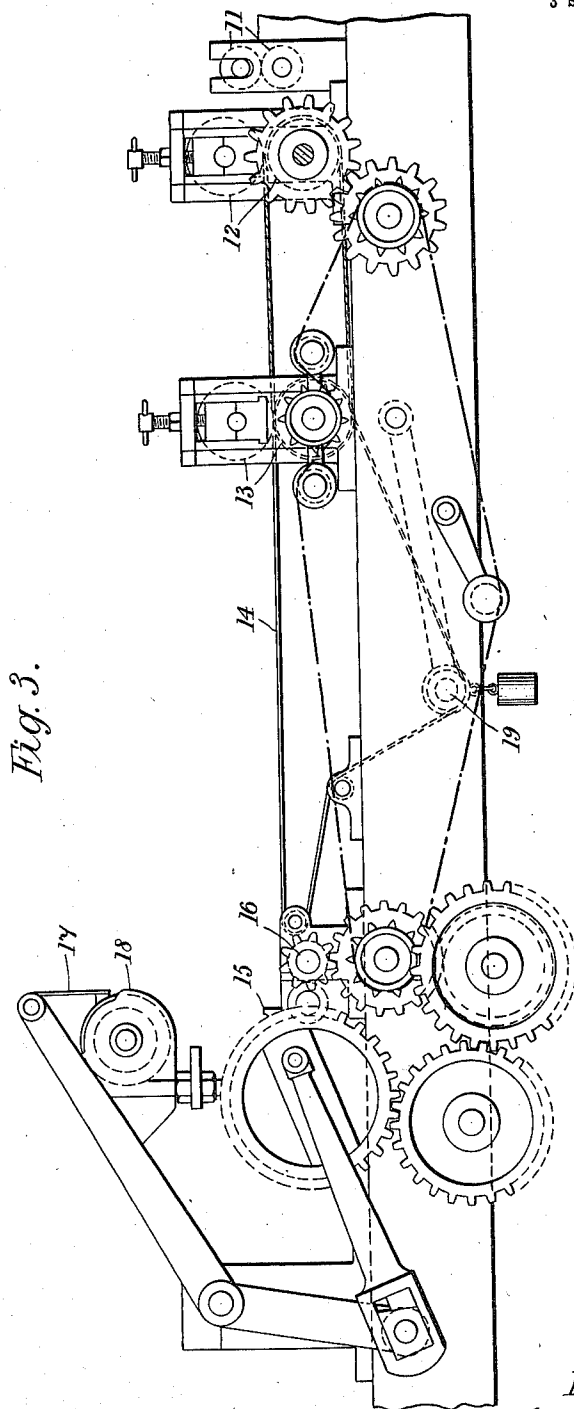


Fig. 3.

Witnesses.
Sturges Matthews.
H. W. Pinner

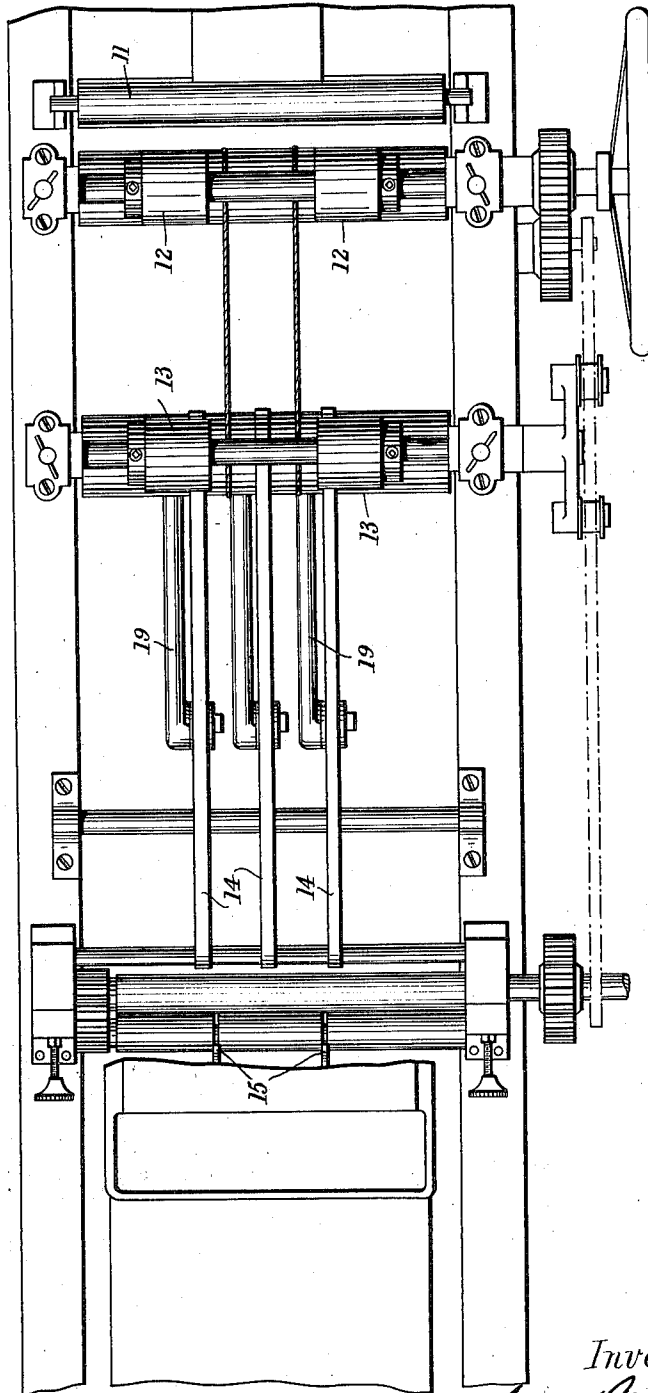
Inventor.
James Graham,
Lawrence, Fisher, Witherspoon & Spence
Attorneys

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3 SHEETS—SHEET 3.

Fig. 4.



Witnesses.

Thos. W. Mat. Co.
N. W. Primm

Inventor.

James Graham
G. H. Johnson, Thos. W. Mat. Co. & N. W. Primm
Attorneys

UNITED STATES PATENT OFFICE.

JAMES GRAHAM, OF EAST HAM, LONDON, ENGLAND.

MACHINE FOR MAKING PAPER AND LIKE BAGS.

1,032,366.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, JAMES GRAHAM, a subject of His Majesty the King of Great Britain and Ireland, residing at East Ham, London, England, have invented new and useful Improvements in Machines for Making Paper and Like Bags, of which the following is a specification.

This invention relates to machines for making paper and like bags from a continuous strip or web of paper or like material, such machines usually comprising, feed rollers for drawing the web, folding and pasting devices for forming the web into a continuous flat seamed tube, a cutter or breaker for severing the length of tube required to form a bag and a bottom forming device which turns up and pastes down the bottom or end of the bag.

An object of my invention is to provide an improved means for manufacturing paper bags from a continuous flat paper tube divided into bag lengths by lines of perforations extending in different transverse planes across the respective walls of such flat tube and meeting at the side edges of the latter, thereby producing a strong and inexpensive paper bag having a pasting strip extending across its bottom. Such a machine used in the manner hereinafter fully described, enables a bag of constant length and uniform bottom fold or turn up, to be made.

According to this invention, instead of having the usual breaker or cutter the machine is provided with a pair of breaking rollers. These breaking rollers run at a greater speed than the feed rollers of the machine and may be of a uniform circumference throughout their entire surface, so as to exert a regular strain, snatch or pull on the paper passing between them, or said breaking rollers may be of a greater circumference at one end than at the other so as to exert a greater strain, snatch or pull at one side of the paper, and so help in the breaking of same. The speed of these breaking rollers is such as to cause a drag or pull which may be in a line with or at an angle to the paper sufficient to tear off a bag length at the perforations in the flat tube as the folded web is fed forward. Each severed bag length is then carried between or upon fast moving tapes or the equivalent which run at a greater speed than the feed of the

web, to the usual bottom pasting and folding devices at which point however, each bag length is arrested by a fixed stop. While thus arrested the bottom is pasted by a dipper or other suitable device and folded, and the bag removed in the usual manner. The position of the stop may be regulated according to the amount of fold required on the bottom of the bag, and the action of the pasting device timed to the travel of the drawing rollers in any suitable manner.

To enable the invention to be fully understood it will now be described by reference to the accompanying drawings in which:—

Figures 1 and 2 show as an example portions of a web of paper or the like perforated into bag lengths and adapted to be formed respectively into a side seam bag and a center seam bag, by means of a machine constructed according to the invention. Fig. 3 is a side elevation and Fig. 4 is a plan view of a portion of a paper bag making machine constructed according to one form of my invention the usual folding devices being omitted.

As shown in Figs. 1 and 2 the web of paper or the like is divided into bag lengths by lines of perforations such as 1. The web passes through the machine in the direction of the arrows, the upper portion 2 in each case being adapted to form the bottom of a bag, the portions 3 being the tops of the previous bags.

Referring first to Fig. 1, in order to form a side seam bag the lines of perforations are provided with two bends or zig-zags *a*, *b* the bend *a* being near the edge or side fold of the web represented by the dotted line 4, while the bend *b* is at a point nearer the center fold, represented by the dotted line 5. In the operation of the machine the web is folded over from right to left along the line 5 and from left to right along the line 4, paste being applied between the folded edges so that a flat tube having a seam at the left hand side is formed, the width of said tube being equal to the distance between the dotted lines 4, 5. It will be obvious, considering the top portion 2 of the web, that when same is folded over as above described, and the portion 3 detached, a projecting portion 6 will be left at the bottom, so that when the bottom of the tube is pasted preparatory to folding over along the dotted line 7 to form the bottom of the bag, the said

projecting portion 6 will catch the paste and thus effective closing of the bag will be insured.

In Fig. 2, the line of perforations 1 is provided with two bends or zig-zags *c, d*, placed at points nearer the center of the web than in the previous case, so that when the edges are folded toward each other along the dotted lines 8, 9, a flat tube having a center seam will be formed, and as before, when the portion 3 has been detached a projecting portion 10 will be left at the bottom of the tube to receive the paste and so insure effective closing of the bottom. In this case the width of the bag is represented by the distance between the dotted lines 8, 9, and it will be obvious that the width of the bag and the positions of the bends may be varied as described according to the size of the bag and overlap of seam required.

The web is preferably printed on its underside, so that when folded in the machine the printed matter will be upon the outside of the bag, upon the back or front of same, or both, as desired.

Referring to Figs. 3 and 4 the web of paper perforated as above described, and also printed if desired, is placed in a roll (not shown) at the right hand end of the machine, and is drawn through the usual folding devices (not shown), and between tension rollers 11 by means of feed rollers 12. Instead of the usual breaker or cutter a pair of breaking rollers 13 are provided, running at a greater rate than the feed rollers 12, said rollers 13 being adapted to grip the web, now folded into the form of a flat tube, and to impart a drag or pull thereto sufficient to tear off a bag length at the line of perforations. The severed bag length is then carried by fast running tapes 14, driven preferably as shown, at a greater speed than the speed imparted to the web by the feed rollers 12, until it meets an adjustable stop 15. The stop 15 is adjusted to arrest the bag length in correct position over the rollers 16 which cooperate with the dipper 17 to turn in and close the bottom of the bag. The dipper 17, supplied with paste by the pasting roller 18, operates in the usual manner, descending on the stationary bag length and simultaneously pasting and turning up the bottom thereof and forcing the bag between the rollers 16 which latter press it and feed it forward on to the usual moving belt or other conveyer for the finished bags. By adjusting the stop 15, the length of the bottom fold of the bag may be regulated and set to any desired measurement and it will be obvious that by thus positively arresting each bag at the same point, uniformity in the depth of the bottom fold of a series of bags can be obtained. Tension may be applied to the tapes 14 by means of weighted tension arms 19, pivoted to the machine

frame. Any suitable gearing may be employed for driving the rolls 13 and tapes 14, the arrangement shown giving good results.

If desired, to assist in the breaking of the paper a member having preferably a rounded surface can be caused by suitable means to come into contact with the paper from above or below same, at a point between the feed rollers 12 and the breaking rolls 13, said member being adapted to put a strain on the paper and so assist in breaking it. This member may be timed to come into operation at regular intervals, for example, it may be operated at a speed equal to that of the dipper 17.

By carrying the severed bag lengths to the bottom folding devices upon tapes or the like moving at a speed greater than that of the feed of the web and by arresting the bag at a definite point previous to folding the bottom over, the whole operation is made independent of the feed, and bags of constant length and constant length of fold at the bottom are produced. It follows that save for such slight inaccuracies as may arise in printing and perforating the web, any printed matter upon the bags formed in a machine constructed according to this invention will be in the same relative position upon each bag. The printing and perforating may be separate operations, or they may advantageously be carried out on a combined printing and perforating machine in which case as the actions of printing and perforating would be practically simultaneous the relative positions of the printed matter on each bag would be practically identical.

It is to be understood that the invention is not limited to a machine for the manufacture of center and side seam bags of the kind described only, but may obviously be applied to machines for the manufacture of other kinds of bags, such as sugar bags with square or oblong shaped bottoms, money bags, tea bags, and the like.

What I claim is:—

1. In a machine for the manufacture of paper bags from a continuous flat paper tube divided into bag lengths by lines of perforations extending in different transverse planes across the respective walls of such flat tube and meeting at the side edges of the latter, the combination of feeding rolls for pressing the walls of such flat tube in contact across the side edges thereof, and breaking rolls for tightly maintaining such contact of the walls and drawing the paper tube from said feeding rolls with a sufficient tension to cause initial separation of the walls at the meeting point of such perforated lines.

2. In a machine for the manufacture of paper bags from a continuous flat paper tube divided into bag lengths by lines of

perforations extending in different transverse planes across the respective walls of such flat tube and meeting at the side edges of the latter, the combination of feeding
5 rolls for pressing the walls of such flat tube in contact across the side edges thereof, tensioning rolls for delivering the flat tube under uniform tension to said feeding rolls, and breaking rolls for tightly maintaining
10 such contact of the walls and drawing the paper tube from said feeding rolls with a

sufficient tension to cause initial separation of the walls at the meeting point of such perforated lines.

In witness whereof I have hereunto set my hand in the presence of two subscribing witnesses.

JAMES GRAHAM.

Witnesses:

RICHARD GRAHAM,
W. A. SUNGER.