No. 859,416. PATENTED JULY 9, 1907.

F. TYSON.

PAPER BAG MACHINE.

APPLICATION FILED MAR. 30, 1904.

2 SHEETS—SHEET 1.

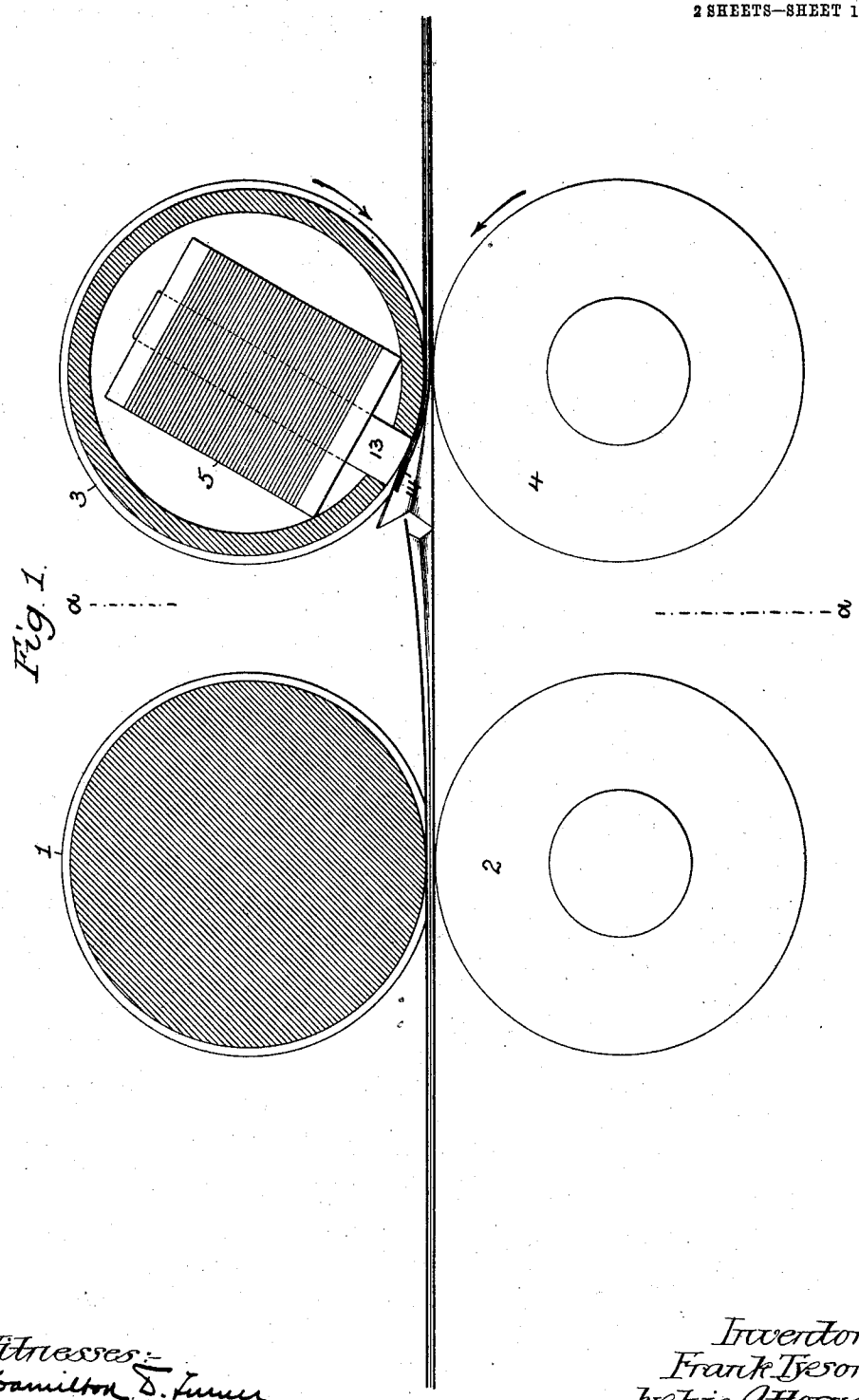


Fig. 1.

Witnesses:-
Hamilton D. Turner
Titus D. Sons.

Inventor:-
Frank Tyson,
by his Attorneys
Howson & Howson

THE NORRIS PETERS CO., WASHINGTON, D. C.

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2 SHEETS—SHEET 2.

Fig. 2.

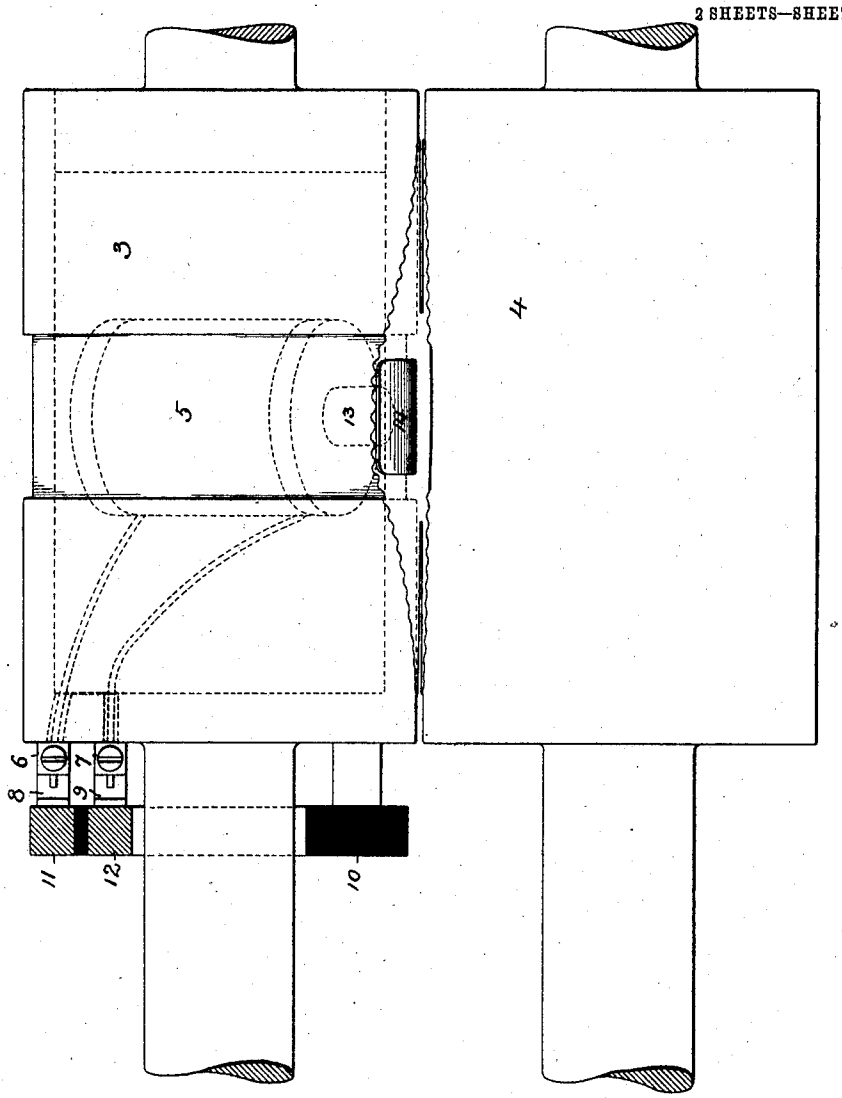
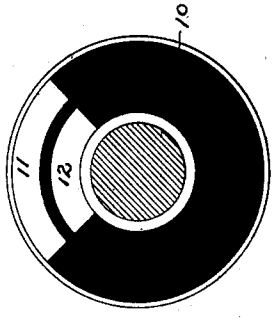


Fig. 3.



Witnesses:
Hamilton D. Turner
Titus N. Goss.

Inventor:
Frank Tyson,
by his Attorneys,
Howson & Howson

THE NORRIS PETERS CO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

FRANK TYSON, OF PHILADELPHIA, PENNSYLVANIA.

PAPER-BAG MACHINE.

No. 859,416. Specification of Letters Patent. Patented July 9, 1907.

Application filed March 30, 1904. Serial No. 200,811.

To all whom it may concern:

Be it known that I, FRANK TYSON, a citizen of the United States, residing in Philadelphia, Pennsylvania, have invented certain Improvements in Paper-Bag Machines, of which the following is a specification.

My invention relates to that class of machines for making paper bags, in which a tube of paper, usually with bellows-folded sides and having its upper ply severed at intervals determined by the length of the desired bag blank, is fed forwardly, and, during such movement, has the mouth or forward end of each blank expanded and the upper ply of the tube turned back upon the lower ply to form what is known as the "primary" or "diamond" fold, to be subsequently subjected to further folding operations in the production of a satchel-bottomed bag.

The object of my invention is to provide simple and effective means for opening said forward end or mouth of each bag blank or starting such opening movement.

In the accompanying drawings:—Figure 1, represents a longitudinal sectional view of sufficient of a paper bag machine to illustrate my improved means for opening the mouth of the blank; Fig. 2, is a transverse section on the line *a*—*a*, Fig. 1, and Fig. 3, is a face view of one of the elements of the machine.

I have shown my invention as embodied in that class of paper bag machines in which the paper tube is fed forwardly between rollers, two pairs of which, represented respectively at 1 and 2, and 3 and 4, are illustrated in the drawing, said rollers causing either a constant or an intermittent forward feed of the paper tube, and the opening and folding back of the severed upper ply of the tube, or mouth of the bag blank, being effected while said blank is passing from the rollers 3 and 4 to the rollers 1 and 2. The upper roller 3 has within it an electro-magnet 5, the terminal wires of which extend to binding posts 6 and 7 at one end of the roller, and these binding posts have projecting contact fingers 8 and 9, which travel in contact with the inner face of a ring at the end of the roller, this ring being partly of insulating material 10 and partly of conducting material 11 and 12, as shown in Fig. 2, the conducting portion comprising two segments (Fig. 3,) insulated from each other and intended to be in connection, respectively, with the positive and negative poles of a battery or other generator of electricity. The pole piece 13 of the magnet 5 extends to the periphery of the roller 3, and when the magnet is energized it serves to attract an armature, which, as shown in the drawing, consists of a flexible tongue 14, of metal located between the upper and lower plies of the paper tube and suitably supported at its rear end so that the forward end is free to swing vertically. When, therefore, the rollers 3 and 4 are rotated in the direction of their respective arrows, the paper tube or succession of bag blanks will be fed forwardly between them, and, if the magnet 5 is energized when it is in the position shown in Fig. 1, it will attract the tongue 14 and lift the same so as to raise the upper ply of the tube and thus open the mouth of the bag blank. This opening action may be only sufficient to afford opportunity for the entrance of devices whereby the backward folding of the upper ply of the tube is continued and completed, or the distension of the mouth of the blank may be continued as long as the armature 14 is under control of the magnet, the length of time and arc of travel during which the magnet 5 is energized, being dependent upon the extent and position of the segments 11 and 12. Instead of using the flexible metallic finger as an armature to be acted upon by the magnet, the upper ply of the paper tube may itself constitute an armature, being rendered susceptible to magnetic action by printing or otherwise applying to it a strip of ink or sizing carrying magnetic metallic powder, such strip either extending continuously throughout the length of the paper tube, or being formed at intervals adjacent to the forward end or mouth of each bag blank. The bag blank may, in some cases, pass downwardly around the lower roller 4, instead of horizontally forward to a second pair of rollers, 1, 2, the tongue 14 swinging downwardly to permit the passage of the folded upper ply of the blank over the same, when said tongue is free from the attraction of the magnet 13, hence the term "forwardly" as used in the claims, is not to be interpreted as meaning forward movement in a horizontal plane.

While I have shown and prefer in all cases to use an electro-magnet, a permanent magnet may be substituted therefor in some cases, if desired, the influence of this magnet upon the armature ceasing as the magnet passes beyond the end of said armature.

Having thus described my invention, I claim and desire to secure by Letters Patent,

1. A paper bag machine in which are combined means for feeding the bag blank forwardly, an armature acting upon a ply of the bag blank, and a magnet acting intermittently upon said armature to effect separation of one ply of said blank from the other at a certain stage of the forward travel of the blank.

2. A paper bag machine in which are combined means for feeding the bag blank forwardly, an armature acting upon a ply of the bag blank, and a magnet mounted to travel in a path different from the path of movement of the bag blank, said magnet acting upon the armature to effect separation of one ply of the blank from the other.

3. A paper bag machine in which are combined means for feeding the bag blank forwardly, an armature acting upon a ply of the bag blank, an electro-magnet acting upon said armature to effect separation of one ply of the blank from the other, and means for alternately supplying current to and cutting it off from said electro-magnet.

4. A paper bag machine in which are combined means for feeding the bag blank forwardly, an armature acting upon a ply of the bag blank, an electro-magnet mounted so as to travel in a path different from the path of move-

ment of the blank, and means for alternately supplying current to and cutting it off from said electro-magnet.

5. A paper bag machine in which are combined means for feeding the bag blank forwardly, a flexible armature inserted between the plies of the blank, and a magnet movably mounted in respect to said armature and serving, by its action upon the same, to effect separation of one ply of the blank from the other.

6. A paper bag machine in which are combined means for feeding the bag blank forwardly, a flexible armature inserted between the plies of the blank, an electro-magnet movably mounted in respect to said armature and serving, by its action upon the same, to effect separation of the plies of the blank, and means for alternately supplying current to and cutting it off from said electro-magnet.

7. A paper bag machine in which are combined a pair of feed rolls whereby the blank is fed forwardly, an armature acting upon a ply of the bag blank, and a magnet carried by one of the feed rolls and serving, by its action upon said armature, to effect separation of one ply of the blank from the other.

8. A paper bag machine in which are combined a pair of feed rolls whereby the bag blank is fed forwardly, an armature acting upon a ply of the bag blank, an electro-magnet carried by and rotating with one of said feed rolls and serving, by its action upon said armature, to effect separation of one ply of the blank from the other, and means for alternately supplying current to and cutting it off from said electro-magnet.

9. A paper bag machine in which are combined a pair of feed rolls, whereby the bag blank is fed forwardly, a flexible armature interposed between the plies of the blank, and a magnet carried by one of the feed rolls and serving, by its action upon said armature, to effect separation of one of the plies of the blank from the other.

10. A paper bag machine in which are combined a pair of feed rolls for feeding the bag blank forwardly, a flexible armature interposed between the plies of the blank, an electro-magnet carried by and rotating with one of the feed rolls and serving, by its action upon the armature, to effect separation of one of the plies of the bag blank from the other, and means for alternately supplying current to and cutting it off from said electro-magnet.

In testimony whereof, I have signed my name to this specification, in the presence of two subscribing witnesses.

FRANK TYSON.

Witnesses:
HARRY FREASE,
MINNIE F. ANTHONY.