

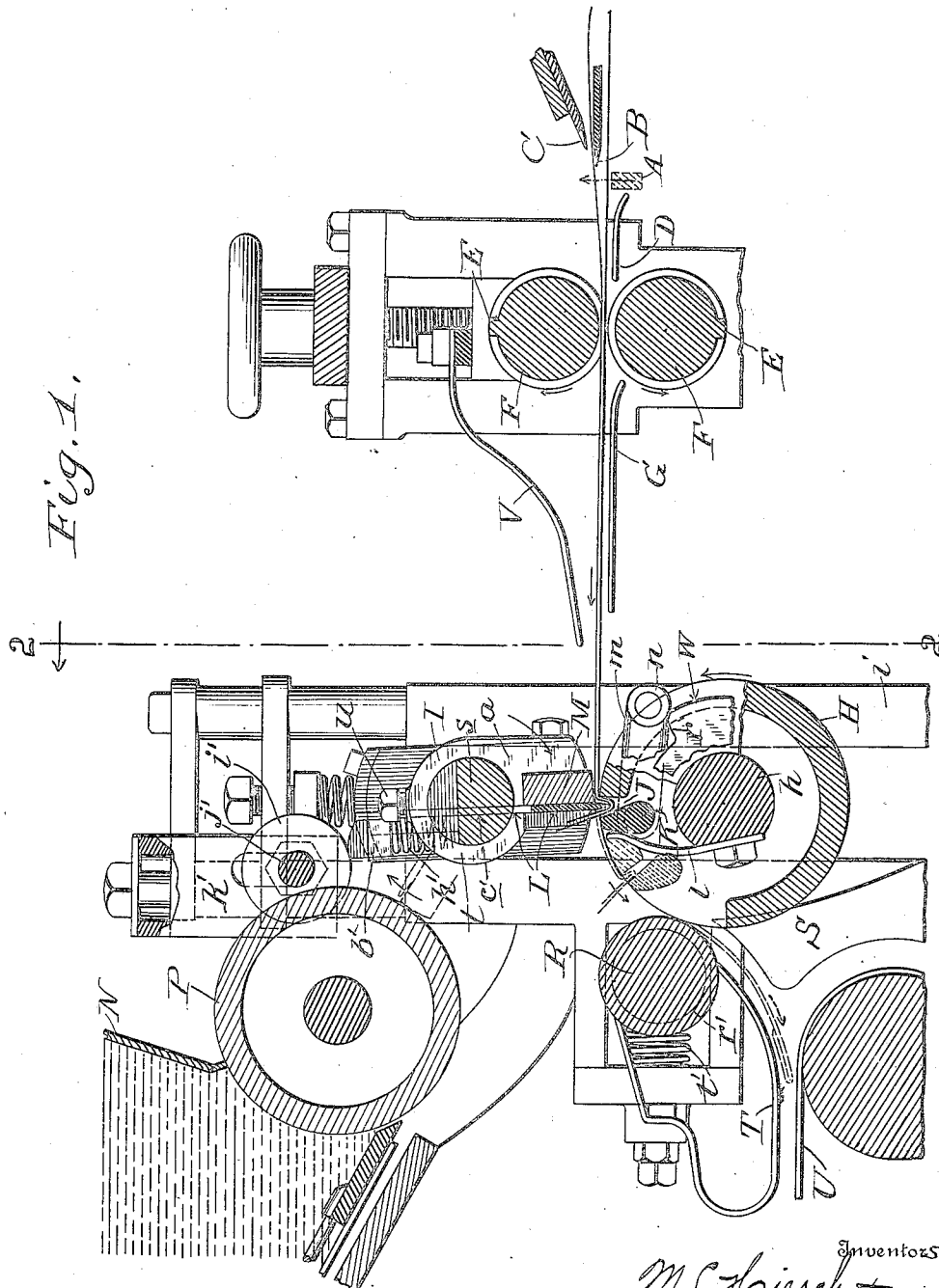
M. L. HIRSCH & M. H. EICHBERG.
MACHINE FOR MAKING PAPER BAGS.

APPLICATION FILED MAY 17, 1909.

Patented Jan. 18, 1910.

3 SHEETS—SHEET 1.

946,967.



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334

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3 SHEETS—SHEET 2.



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3 SHEETS—SHEET 3.

Fig. 3.

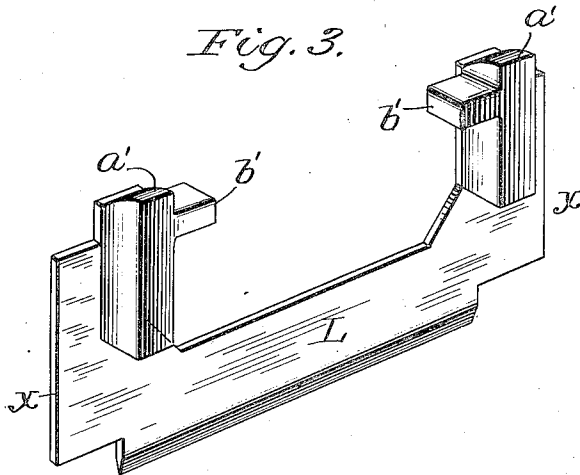


Fig. 4.

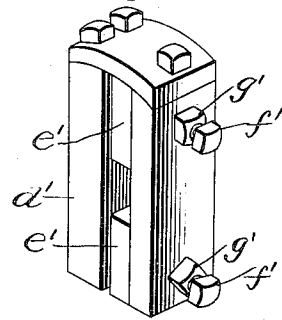


Fig. 5.

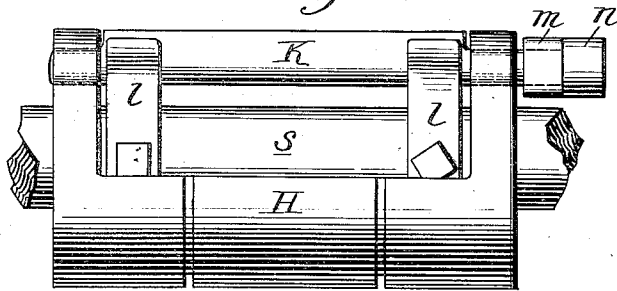


Fig. 6.

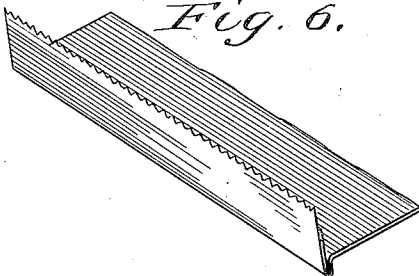
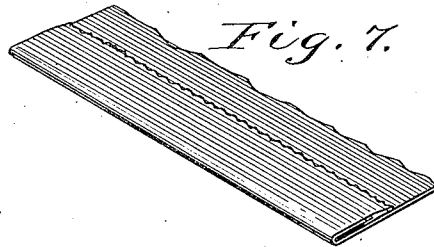


Fig. 7.



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UNITED STATES PATENT OFFICE.

MONTEFORE L. HIRSCH AND MAURICE H. EICHBERG, OF BALTIMORE, MARYLAND.

MACHINE FOR MAKING PAPER BAGS.

946,967.

Specification of Letters Patent.

Patented Jan. 18, 1910.

Application filed May 17, 1909. Serial No. 496,361.

To all whom it may concern:

Be it known that we, MONTEFORE L. HIRSCH and MAURICE H. EICHBERG, citizens of the United States, residing at Baltimore, State of Maryland, have invented new and useful Improvements in Machines for Making Paper Bags, of which the following is a specification.

Our present invention relating to paper-bag manufacture, has to do with machines for feeding a tube of paper in the direction of its length, dividing the tube into sections, and closing each section at one end thereof to provide the same with a bottom.

The present invention contemplates the provision of means for applying paste to each paper-tube section and folding the same, in such manner that the closure of one end of the section is effected properly and quickly and without retardation of the endwise passage of the sections so that it is practical to run the machine at a high rate of speed and secure a great output in a short period of time. This will be better appreciated when it is stated that machines constructed in accordance with our present invention and at present in practical operation, each effect the closure of 500 tube sections per minute, and that one of said machines recently effected the closure of 255,000 tube sections in a continuous operation of ten hours' duration.

The present invention also contemplates the provision in combination with means for severing sections from a rapidly fed tube, of means for holding each section only during the infinitesimal period occupied by the said separation, and then permitting the section to move forwardly without hindrance or delay, this being materially advantageous since it conduces to the running of the machine at a very high rate of speed.

With the foregoing in mind, the invention will be fully understood from the following description and claims when the same are read in connection with the drawings, accompanying and forming part of this specification, in which:

Figure 1 is a longitudinal vertical section of so much of a paper bag making machine as is necessary to illustrate the best practical embodiment of our invention that we have as yet devised; the said section being taken in the plane indicated by the line 1—1 of Fig. 2. Fig. 2 is a transverse view taken in

the plane of the line 2—2 of Fig. 1, looking in the direction of the arrow. Fig. 3 is a perspective view showing the tucker blade and its appurtenances removed. Fig. 4 is a detail perspective view of one of the guides comprised in the rotary head by which the tucker-blade and paste-applier are carried. Fig. 5 is an elevation showing the side of the roll H opposite to that shown in Fig. 2. Fig. 6 is a detail perspective view showing a portion of the bag as the same appears when tucked or folded. Fig. 7 is a similar view showing said portion as completely closed.

Similar letters of reference designate corresponding parts in all of the views of the drawings.

In the practice of our invention, the paper tube is formed and fed forwardly in the direction of its length in the ordinary well known manner or in any other manner consonant with the successful practice of our invention, and the bag sections are severed from the tube by the usual striker A, which operates from below upward, in combination with the serrated edges B and C, or by any other means suitable to the purpose.

Forward of the transverse path of the striker A is a plate or other small support D over which the paper tube passes to the means for holding the tube sections only during the quick severance of the sections from the tube. The said holding means comprises narrow transverse bars or ribs E revoluble toward and from each other and adapted to meet with the tube section between them and hold said section only during the instant of the severance and to then release the section and thereby avoid retarding the forward progress thereof. We prefer to arrange the bars E on the perimeters of opposed transverse rolls or shafts F of such diameter that ample clearance is afforded between their perimeters for the free and easy passage of the successive tube sections. When severed from the tube, each tube section is fed forwardly over a small plate or other support G until its forward portion is interposed between a transverse roll or cylinder H and a transverse rotary head I opposed to the same, which roll and head rotate in the directions indicated by arrows in Fig. 1 at a high rate of speed and contribute greatly to the capacity of the machine. The roll H is provided in its periph-

ery with a tuck or fold-receiving opening J, extending in the direction of its length, and in said opening J is arranged a tuck or fold-clamping bar K that is movable laterally or
 5 sidewise toward and from the rear side wall of opening J, with reference to the direction in which the roll rotates. Carried by the rotary head I is a reciprocatory tucker-blade L and a paste-applier M, while interposed
 10 between the head I and a paste-receptacle N is a roll P adapted to receive paste from the receptacle and supply an adequate quantity of the same to the paste-applier M as the latter wipes past the roll.

15 When the forward portion of a tube section is received between the roll H and the head I, as before described, the tucker blade L, engaging the tube section at a suitable distance behind the forward end thereof, forces a portion of said section into the
 20 opening J of roll H and thereby forms the transverse tuck or fold in the tube section. Thereupon the paste-applier M puts an adequate quantity of paste on the tube section back of the tuck or fold thereof. Then practically coincident with and immediately following the recession of the tucker blade, the
 25 bar K clamps and securely holds the tuck or fold against the rear wall of the opening J, and the tuck or fold is so held until it reaches a point between the roll H and a roll R which latter coöperates with the roller H to press the flap of the tube against the paste-bearing major portion thereof and thereby completes the bottoming of the bag. After passing
 30 between the rolls H and R, the bags are successively chuted between guide means S and guard means T to a conveyer U or any other means placed to receive the same.

40 The rolls F are mounted in the manner shown in Fig. 1 or in any other workmanlike manner, and are driven in the directions indicated by arrows through gearing that we have deemed it unnecessary to illustrate.
 45 It is well to state, however, that said rolls F are so timed that the bars E will meet with a tube section between them coincident with each coöperation of the striker A with the serrated edges B and C.

50 At V is a guard that we prefer to employ to prevent undue upward movement of the tube sections while *en route* between the rolls F and the coöperating roll H and head I. The roll H is provided with trunnions *h*,
 55 journaled in suitable frame work *i*, and the bar K is pivoted at *k k* in said roll and is backed and moved toward the rear wall of the opening J by spring strips *l* shown in Figs. 1 and 5. At one end the bar K is
 60 provided with a crank *m* on which is a lateral projection *n*, preferably in the form of an anti-friction roller as shown, designed to coöperate with a fixed cam W located adjacent one end of the roll H. It will be noted
 65 by reference to Fig. 1 that the fixed cam W

is provided at *r* with an abrupt shoulder positioned to permit at the proper time the before described movement of bar K toward the back wall of the opening J, and by comparison of Figs. 1 and 2 it will be understood that at the proper point in advance of the shoulder *r*, the periphery of the cam is increased in diameter to coöperate with the roller *n* and move the bar K away from the rear wall of the opening J and thereby release the tuck or fold of the tube section.

The rotary head I comprises a shaft having trunnions *s* journaled in the frame sides *i*, the paste-applier M, holders *t* for the paste-applier, which holders *t* are fixed by set screws *u* on the reduced intermediate portion of the shaft and are connected to the paste-applier by screws *v*, the reciprocatory tucker blade L having end portions *x* extending through and guided in slots *c'* in the shaft, castings screwed or otherwise connected to the said end portions *x*, and having shoes *a'* and inwardly extending projections *b'*, guides *d'* suitably fixed on the shaft and receiving the end portions *x*, and having wear plates *e'* adjustably fixed by screws *f'* and jam-nuts *g'*, and coiled springs *h'* interposed between the reduced or flattened portion of the shaft and the projections *b'*, and having for their office to retract the tucker blade L. In order to project the tucker blade L against the action of the springs *h'*, we provide parts *i'* adapted to coöperate with the shoes *a'*, the said parts *i'* being preferably in the form of anti-friction rollers loosely mounted on a transverse shaft *j'*, connected through hangers *k'* with the frame sides. By virtue of this provision it will be manifest that incidental to each rotation of the head I, the anti-friction rollers *i'*, by coöperating with the shoes *a'*, will project the blade L beyond the face of the paste-applier M, and then when the shoes *a'* pass out of engagement with the anti-friction rollers *i'*, the springs *h'* will operate to retract the tucker blade L so that the latter will not interfere with the wiping of the face of the paste-applier M past the paste roll P. See in this connection the dotted lines in Fig. 1. The paste roll P has trunnions *m'* journaled in suitable bearings, and the roll R is provided with trunnions *r'* journaled in movable bearings which are backed by springs such as *t'*; the said springs having for their office to yieldingly press the roll R against the perimeter of the roll H.

One of the trunnions *h* of the roll H is equipped with a spur gear A' which is designed to be connected with and derive motion from another rotary part of the machine through a train of gearing which we have deemed it unnecessary to illustrate, and one of the trunnions *s* of the head I is provided with a spur gear B', intermeshed with

the spur gear A', and also with a spur gear C' on the trunnion m' of the paste roll P. We would also have it understood that while it is not necessary to positively rotate the roll R through a spur gear connection, yet if deemed expedient such connection may be employed between the rolls H and R.

The gear connection described between roll H, head I and paste-roll P is substantially the same as that shown in our prior patent Number 903,570 of November 10, 1908, the rolls F are connected by spur gears (not shown) in the same manner as the rolls I and J of said patent, the gear on the lower roll F is connected with the gear A' on roll H by an interposed gear (not shown) after the manner disclosed in the patent, and power is transmitted from a transverse shaft (not shown) to the gear on the lower of the rolls F, also after the manner disclosed in the patent. The driving connection of the parts is, however, unimportant, and manifestly any appropriate driving connection may be employed in the discretion of the maker of the machine.

As before stated, the construction herein illustrated and described constitutes the best practical embodiment of our present invention of which we are at the present cognizant, but it will be understood that in the future practice of the invention such changes or modifications may be made as do not involve departure from the scope of our invention as defined in the claims appended.

Having described our invention, what we claim and desire to secure by Letters-Patent, is:

1. In a machine for making paper bags, the combination of a rotary device, a paste-applier carried by said device, means for supplying paste to said paste-applier, a tucker blade carried by and movable outward and inward with respect to the rotary device, a second rotary device opposed to the first-named rotary device and having an opening to receive the tucker blade when the same is projected, means carried by and movable with respect to the second-named rotary device for taking hold of the tuck or fold in a bag, positive means for projecting the tucker blade of the first-named rotary device, resilient means for retracting said blade when the same is out of engagement with the projecting means, resilient means for moving the tuck-holding means against a tuck coincidently with the retraction of the tucker blade, means arranged to cooperate with the second-named rotary device and press the portion of a bag at one side of the tuck therein against the portion of the bag at the opposite side of the tuck, means for moving the tuck-holding means away from the tuck while said means is opposed to the pressing means, and bag-re-

ceiving and guiding means extending from the lower adjacent portions of the second-named rotary device and the pressing means.

2. In a machine for making paper bags, the combination of frame sides, hangers fixed thereto, a transverse shaft carried by said hangers and provided with parts i' , a rotary head comprising a shaft having trunnions journaled in the frame sides and also having slots, guides fixed on the shaft, a reciprocatory tucker blade having end portions extending through and guided in the slots of the shaft and also guided in the guides on the shaft and provided with shoes and with inwardly extending projections, springs interposed between the shaft and the said inwardly extending projections, and a paste-applier, means for supplying paste to said paste-applier of the rotary head, a roll disposed below the rotary head and having trunnions journaled in the frame sides and also having an opening adapted to receive the tucker blade when the same is projected, a bar pivoted in said roll and having at one end a crank, spring strips backing said bar and adapted to move the same toward the rear wall of said opening, means arranged to cooperate with said roll and press the portion of a bag at one side of the tuck therein against the portion of the bag at the opposite side of the tuck, a cam fixed to one frame side for cooperating with the crank of the pivoted bar and moving said bar away from the tuck while said bar is opposed to the pressing means, a bag receiving and guiding means extending from the lower adjacent portions of the roll and the pressing means.

3. The combination in a machine for making paper bags, of frame sides, hangers fixed thereto, a transverse shaft carried by said hangers and provided with parts i' , and a rotary head comprising a shaft having trunnions journaled in the frame sides and also having slots, guides fixed on the shaft, a reciprocatory tucker blade having end portions extending through and guided in the slots of the shaft and also guided in the guides on the shaft and provided with shoes and with inwardly extending projections, and springs interposed between the shaft and the said inwardly extending projections.

4. The combination in a machine for making paper bags, of frame sides, hangers fixed thereto, a transverse shaft carried by said hangers and provided with parts i' , and a rotary head comprising a shaft having trunnions journaled in the frame sides and also having slots and a flattened portion, guides fixed on the shaft and having adjustably fixed wear plates, a reciprocatory tucker blade having end portions movable in the slots and guides and against the wear plates of the latter, castings fixed on the

said end portions and having shoes adapted to coöperate with the said parts *i'* and also having inwardly extending projections, and springs interposed between the said projections and the flat portion of the shaft.

5 5. The combination in a machine for making paper bags, of frame sides, hangers fixed thereto, a transverse shaft carried by said hangers and provided with parts *i'*
10 and a rotary head comprising a shaft having trunnions journaled in the frame sides and also having slots and a flattened portion, guides fixed on the shaft and having adjustably fixed wear plates, a reciprocatory
15 tucker blade having end portions movable in the slots and guides and against the wear plates of the latter, castings fixed on the

said end portions and having shoes adapted to coöperate with the said parts *i'* and also having inwardly extending projections, 20
springs interposed between the said projections and a flat portion of the shaft, a paste-applier arranged alongside the tucker blade, and holders connected to the paste-applier and fixed on the flat portion of the 25
shaft.

In testimony whereof we have hereunto set our hands in presence of two subscribing witnesses.

MONTEFORE L. HIRSCH.
MAURICE H. EICHBERG.

Witnesses:

H. M. GURISCH,
E. M. THOMPSON.