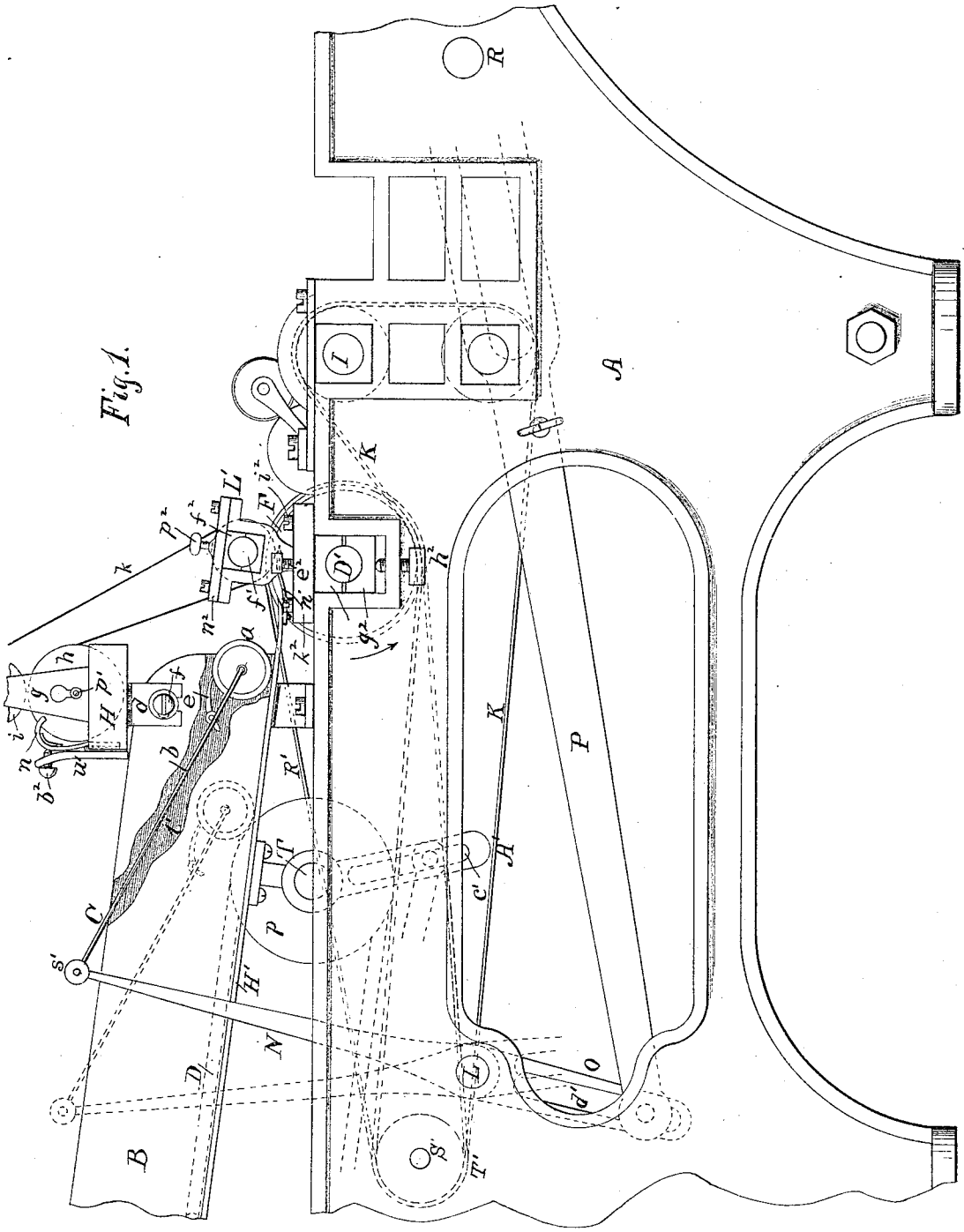
(No Model.) 4 Sheets—Sheet 1.

H. R. CORKHILL, Sr.

FEEDER AND PASTER FOR PAPER BAG MACHINES.

No. 350,974. Patented Oct. 19, 1886.

Fig. 1.



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(No Model.) 4 Sheets—Sheet 2.

H. R. CORKHILL, Sr.

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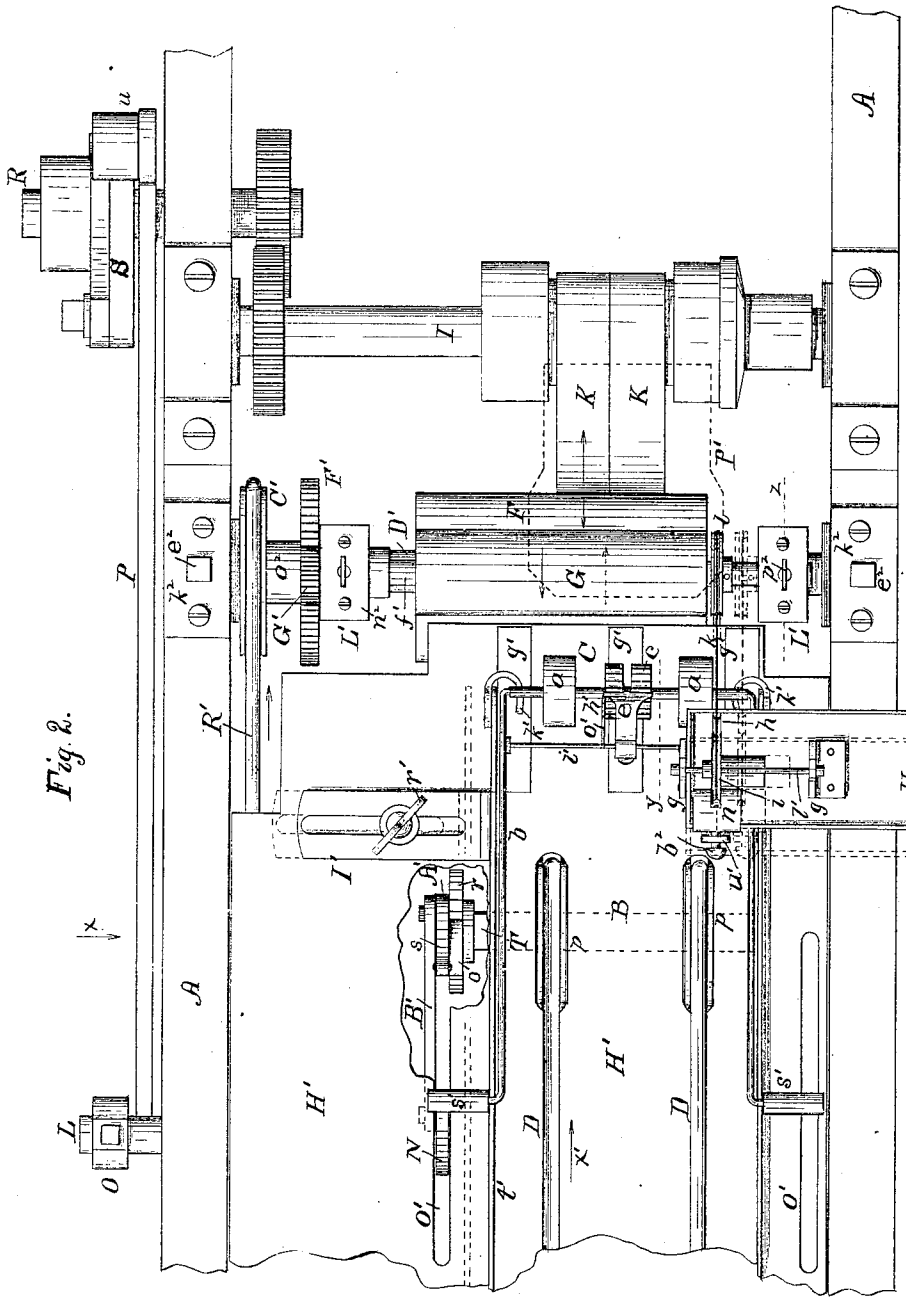


Fig. 2.

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(No Model.) 4 Sheets—Sheet 3.

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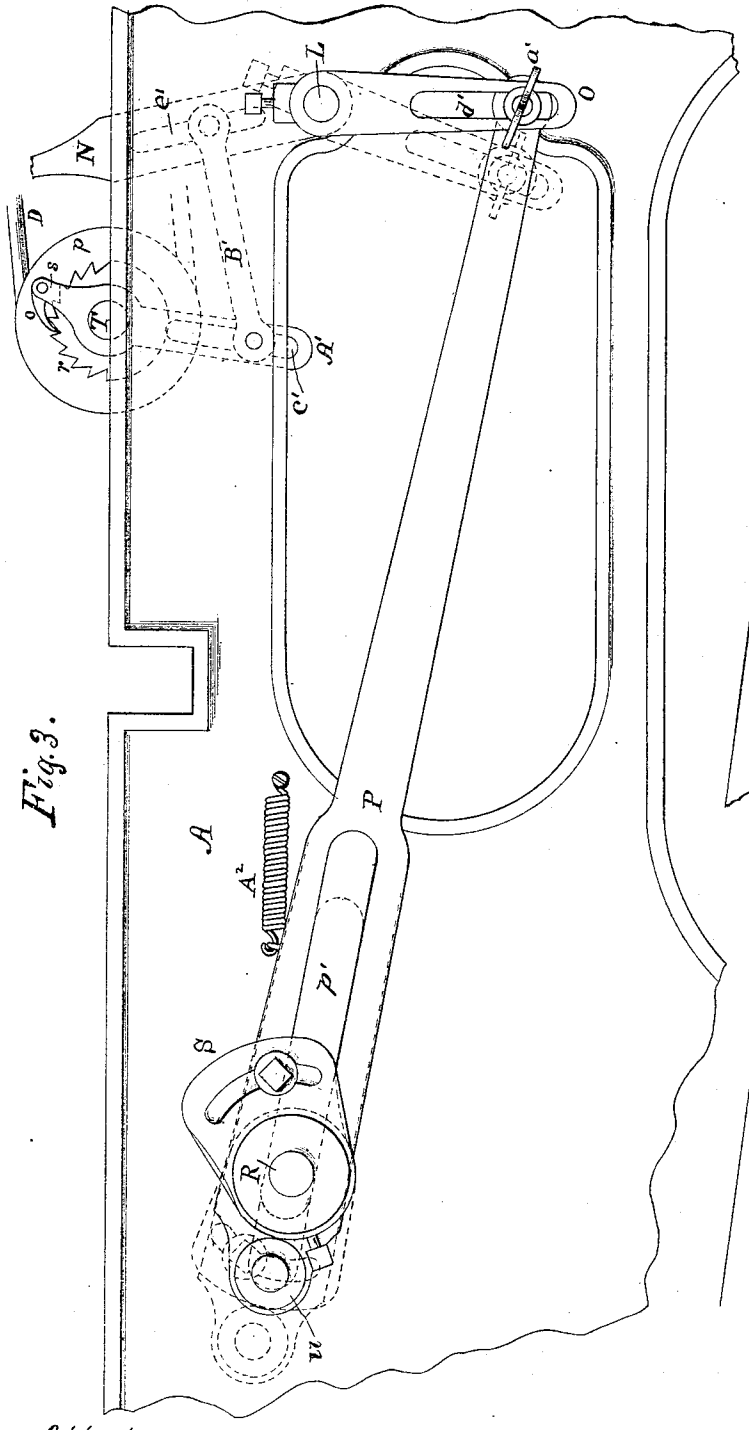


Fig. 3.

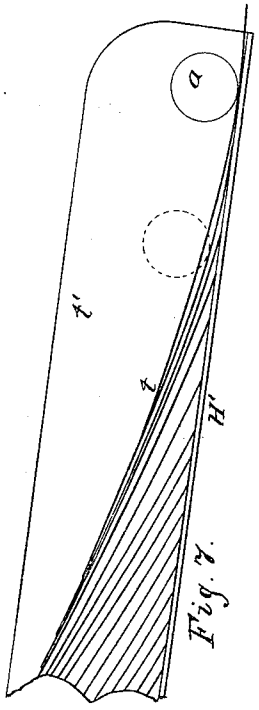


Fig. 7.

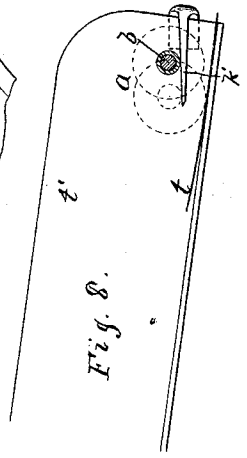


Fig. 8.

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(No Model.) 4 Sheets—Sheet 4.

H. R. CORKHILL, Sr.

FEEDER AND PASTER FOR PAPER BAG MACHINES.

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Fig. 4.

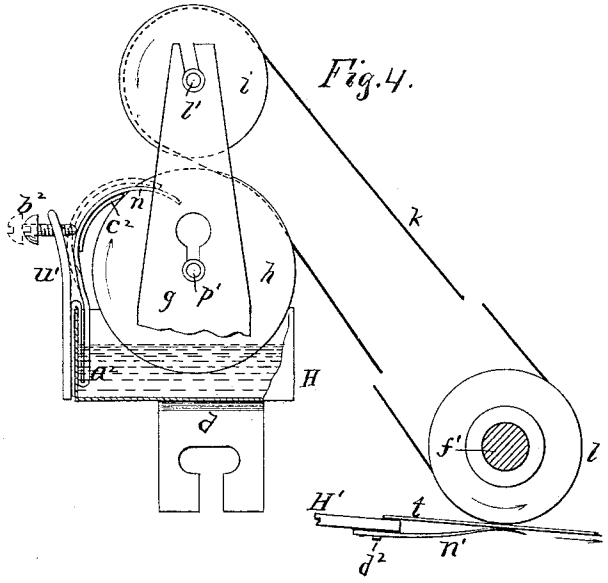


Fig. 6.

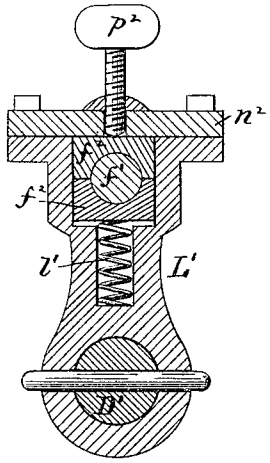
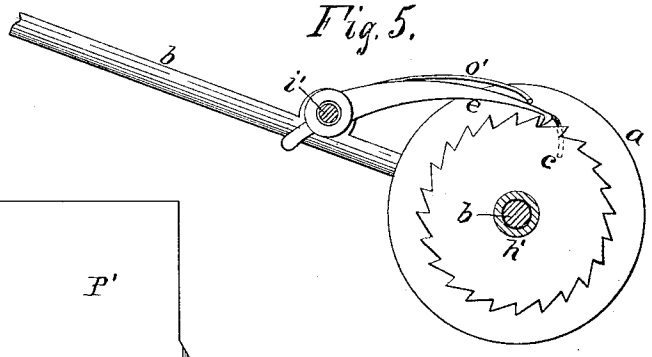


Fig. 5.



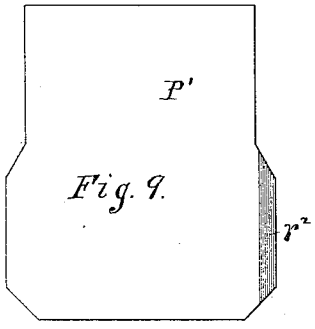


Fig. 9.

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UNITED STATES PATENT OFFICE.

HENRY R. CORKHILL, SR., OF ROCHESTER, NEW YORK.

FEEDER AND PASTER FOR PAPER-BAG MACHINES.

SPECIFICATION forming part of Letters Patent No. 350,974, dated October 19, 1886.

Application filed September 2, 1885. Serial No. 176,031. (No model.)

To all whom it may concern:

Be it known that I, HENRY R. CORKHILL, Sr., of Rochester, in the county of Monroe and State of New York, have invented a new and useful Improvement in Feeder and Paster for Paper-Bag Machines, which improvement is fully set forth in the following specification and shown in the accompanying drawings.

The object of my invention is to produce an improved device for supplying paste to and feeding to a paper-bag machine the sheets cut to shape to form the bags, in which device the paste is evenly and unerringly carried onto the sides of the sheets as they pass in, and the latter fed singly to the rollers of the bag machine.

Referring to the drawings, Figure 1, Sheet 1, is a front side elevation of my improved feeding and pasting device, showing most of the parts in place, parts being broken away, other parts shown in two positions by full and dotted lines, and parts not essential to the figure being omitted; Fig. 2, Sheet 2, a plan of the same; Fig. 3, Sheet 3, a rear side elevation of the same viewed in the direction indicated by arrow *x* in Fig. 2, drawn to show the manner of dividing the feeding device, parts being shown in two positions by full and dotted lines; Fig. 4, Sheet 4, an end elevation of the paste-tray and parts held thereon, viewed in the direction Fig. 1 is seen, drawn to an enlarged scale to show more fully the construction of the same, the end of the tray and a part of one standard being broken away to show the feed-wheel as it dips into the paste, parts being shown in different positions of adjustment by full and dotted lines; Fig. 5, a part of the feeding mechanism viewed as Fig. 1 is seen, drawn to a larger scale to better show the pawl and ratchet, (the frame being vertically sectioned,) as on the dotted line *y* in Fig. 2; Fig. 6, a vertical sectional elevation of one of the standards holding the upper feed-roller, sectioned as on the dotted line *z* in Fig. 2, and viewed as Fig. 4 is seen, drawn to a larger scale to show the manner of adjusting said roll for different thicknesses of paper; Fig. 7, Sheet 3, a view of a part of the spout, with the side nearer the observer omitted to show the sheets of paper arranged within, and to further show the manner in which the little wheels operate upon said sheets; Fig. 8, a similar view of the lower end of the spout, drawn to show the manner in which the feed-frame slides up the inclines to lift the small wheels off the sheets of paper; Fig. 9, Sheet 4, a view of one of the sheets of paper cut to form, numbers of which being placed in the spout to be fed to the folder and paster.

The devices here shown and described are attachments or parts of a more extensive paper folding and pasting machine which it is my present intention to make the subject of future applications for patents.

Referring to the parts, A is the frame of the device standing upon the floor; B, the feed-spout for holding the sheets to be made into bags, from which they are fed to the rollers.

C is the feeder working within the spout, consisting of a frame or holder, *b*, made of wire bent to form feed-wheels *a* to carry the sheets forward, ratchet *c*, pawl *e*, and other parts.

D are parallel belts at the bottom of the feed-spout, hitched along by pawl-and-ratchet motion, which urge the superincumbent sheets forward to be caught by the wheels *a*.

F and G are respectively the large and small rotating rollers of a pair that assist to both single out and carry forward the sheets brought to them by the wheels *a* of the feeding device.

H is the paste-tray, secured to the spout by means of a foot, *d*, and screw *f*.

g are standards secured to the paste-tray for holding the wheels *h* and *i* of the pasting device.

k is a thread for carrying the paste to the delivery-wheel *l*.

n is an adjustable stripper for the dipping-wheel *h*, which serves to clear the latter of superfluous paste carried up by the said wheel.

I is a transverse shaft parallel with the rolls F and G, which carries the belts K for turning the lower roll, F.

L is a rock-shaft provided with arms N, which latter hold and carry the frame *b* of the feeder.

O is a pendent slotted arm of the shaft L, to which is connected a rod, P, reaching from a cam-shaft, R, carrying a cam, S, by the rotation of which latter the shaft L is rocked to operate the feed.

A^2 is a spiral spring secured to the frame A

and said connecting-rod B, which serves to bring said rod back each time after being carried forward by the cam.

T is a shaft holding the wheels *p*, which latter carry the belts D of the feeding device.

A′ is a slotted arm or lever for the shaft T, and B′ the connecting-strap for the said arm A′ and the slotted arm N, carrying the frame.

r is a ratchet secured to the shaft T, and *o* a pawl for the ratchet, pivoted at the end *s* of the pawl-lever A′.

The rotating of the cam S causes the arms N to vibrate, which carries the holder *b* and wheels *a* backward and forward within the spout. When the wheels *a* move backward, they are carried upon the sheets *t*, which are arranged in the spout, as shown in Fig. 7. The vibrations of the arms N cause the pawl *o* to turn the ratchet *r* at intervals, which causes the carrying-belts D to move intermittingly in the direction indicated by arrow *x*′ in Fig. 2.

The paper sheets to be formed into bags are placed in the feed-spout B upon their edges, the same resting upon the carrying-belts D, which being moved by the pawl and ratchet, as above described, carry said sheets to the feed-wheels *a* as fast as they are taken away by the latter.

The rod P is provided with a friction-roller, *u*, which rolls upon the face of the cam as the latter rotates. Said rod is also formed with a slot, *p*′, through which the shaft R passes, the latter thus forming a guide for the arm as it is reciprocated by the rotation of the cam and action of the spring A^2 aforesaid. The arm O is secured to the rod P by means of a thumb screw, *a*′, passed through a slot, *d*′, of said arm, and by loosening said thumb-screw and carrying it farther up or down along the slot the distance of the motion or throw of the feed-wheels *a* may be regulated. The slot *c*′ of the arm A′, and the slot *e*′ of the arm N allow the connecting-strap B′ to be adjusted to cause the pawl *o* to cover more or less teeth of the ratchet *r*, to regulate the rate of motion given the belts D.

C′ is a cord-pulley, and F′ a spur-gear in one piece with the pulley, both being parts of a sleeve, o^2, which runs loose upon the shaft D′.

G′ is a pinion secured to the shaft *f*′ of the roller G, which pinion is turned by the gear F′, by means of which said feed-roller G receives a rapid motion. The pulley C′ is turned by a cord, R′, running upon a pulley of the transverse driving-shaft S, Fig. 1, resting in bearings in the sides of the frame.

The roller F runs loose on the shaft D′, and is rotated in the direction in which the roller G turns by means of belts K, which run on the shaft I, said belts receiving their motion from a pulley, T′, secured to said shaft S′. The pulleys on the driving-shaft S′ that carry the belts K and R′ are of the same diameter, and the pulley C′ and roller F on the shaft D′ are about equal in diameter, on account of which said pulley C′ and roller F turn at about the same rate of speed. The relative swiftness of the motion of the roller G arises from the use of the intermediate gear, F′, and pinion G′, secured, respectively, indirectly to the pulley C′ and roller G. The companion rollers G and F turn in the same direction, which causes their adjacent or opposing faces to move in opposite directions—that is to say, the lower part of the face of the roller G moves in the direction in which the sheets move as they leave the spout, while the upper part of the face of the roller F moves in a contrary direction. This is for the purpose of preventing more than one sheet from entering the machine at once. It is also important to have the upper roller, G, much less in diameter than its companion F, for the reason that being much smaller it obscures to a less extent the sheets or blanks as they pass through, thus enabling the attendant to better watch the progress of his work; also, in making the upper roller smaller than the lower one, it enables me to bring the front edge of the floor of the feed-spout much nearer the line of contact of the rollers than could be done were the upper roller of the same diameter as the lower one, thus furnishing a more safe delivery of the paper sheets to said rolls. Again, in making the sidewise adjustments of the roller G, hereinbelow mentioned, it would, at some positions of adjustment, overhang the nether roller if of the same diameter, and crowd the feed-spout too far back.

When the wheels *a* move forward or toward the roller G, they are intended to carry a sheet between the rollers G and F, and should two sheets slightly adhere and tend to move together the friction of the roller F on the surface of the under sheet tends to carry said sheet back and prevent its going forward into the machine with the upper one.

The rollers G and F are preferably made of india-rubber, and the former one is turned more rapidly than the latter, so as to carry the sheets of paper which it successively bears against forward in spite of the contrary-acting roller F, as stated. From the rollers F and G the sheets pass to a creaser and folder. (Not shown.)

g′ are friction-strips, made of emery-cloth, india-rubber, or other substance, secured to the bottom plate of the spout, which from their rough surfaces cause a slight friction to the nether sheets as they lie in the inclined spout, and which also tend to prevent more than one sheet moving forward at once.

The wheels *a* are secured to a sleeve, *h*′, which is fitted to turn freely upon the wire of the holder *b*. *c* is a ratchet, also secured rigidly to the sleeve to turn with said sleeve and the wheels *a*. The holder or frame *b* is further provided with a rigid cross-rod, *i*′, upon which is hung a pawl, *e*, to engage the teeth of the ratchet, said pawl being held gently downward by a light spring, *o*′. (Better shown in Fig. 5.) By means of this construction of parts the wheels turn upon the frame or holder when they are drawn backward by the arms

N, but slide when they move forward to carry a sheet into the rollers G and F. In rolling backward over the sheets the wheels *a* move with comparatively little friction upon said sheets of paper, and there is little tendency to move them backward, while in sliding forward the surfaces of the wheels adhere to the sheet upon which they rest and more certainly carry it forward. These wheels are also preferably made of india-rubber.

At the lower end of the spout two small inclines or lifters, *k'*, for the wheels (better shown in Fig. 8) are secured in position to receive the ends of the sleeve *h'* just as the forward motion of the wheel-holder *b* is about to cease, which sleeve, riding slightly up said inclines, lifts the wheels off the sheet they have just brought forward, for the purpose of releasing the same, so its continued forward motion into the machine from the action of the roller G may not be hindered thereby.

l is the wheel that delivers the paste in a narrow band along the surface of the sheet of paper as it passes through between the rollers G and F. The face of this wheel is preferably grooved or notched for the purpose of better holding the paste brought to it in small quantities by a thread, *k*, which latter runs in one of the grooves of said wheel *l*. The thread *k* receives its supply of paste from running for a short distance in contact with the grooved periphery of the dipping-wheel *h*, the lower part of which runs in the paste, as shown in Fig. 4. The paste carried onto the wheel *l* by the thread spreads over the face thereof, and, moving in contact with the passing sheet of paper, lays a narrow band of paste thereon adjacent to the edge. The sheet of paper, as it moves forward, is held gently against the face of the delivery-wheel by means of a slender spring, *n'*, as shown in Fig. 4, to insure a continuous band of paste to be imparted to the sheet.

The wheel *l* is secured to a horizontal shaft, *l'*, resting in bearings at the tops of the standards *g*, and the wheel *h* is held by a similar shaft, *p'*, resting in bearings in said standards, both of which wheels are made laterally adjustable upon their respective shafts, as indicated by dotted lines in Fig. 2. The delivery-wheel *l* is also adjustable upon the shaft *f'*, to which it is secured, by means of which adjustment of the wheels the relative position of the band of paste deliverd to the sheets may be regulated. The wheels *l* and *h* are both turned by the thread *k*, the latter receiving motion from the rotating wheel *l*.

The side *t'* of the spout for holding the sheets of paper is held to be laterally adjustable upon the bottom plate, H', of the spout by means of a slotted holder or bracket, I', and thumb-screw *r'*. This is for the purpose of regulating the width of the spout to receive sheets of different width for different sized bags. The upper ends of the arms N are formed with long cylindrical bearings *s'*, for the outward-turned ends of the wire of the frame *b*, to give the latter sufficient bearing-surface therein. The belts D, friction-pieces *g'*, frame *b*, and pasting device do not necessarily need to be moved when the side *t'* of the spout is adjusted, as above stated.

w' is a standard connected with the stripper *n* by means of a fold or loop, a^2, which passes down over a side of the paste-tray to secure the stripper *n* in place. Being thus formed and joined to the tray, it may be laterally adjusted to correspond to the adjustments of the dipping-wheel *h*, above mentioned. The stripper *n* is a curved strip of metal, slotted at its free end and held to straddle the wheel *h*, and provided on its inner curved surface with a strip of india-rubber, c^2, which touches gently the periphery of the wheel *h*, to remove therefrom superfluous paste carried up by said wheel, the branches of the part *n* on either side of the wheel serving to scrape off the paste that adheres thereto.

b^2 is an adjusting-screw for the stripper, threaded transversely in the standard *w'*, and having its point resting against the rear surface of the stripper, by means of which the india-rubber strip c^2 of the latter may be urged with more or less force against the wheel *h*.

The foot *d*, beneath the paste-tray, is slotted both vertically and horizontally, so that said tray may be adjusted forward or backward or vertically upon its holder. The pressure-spring *n'* is held by a single screw, d^2, so that it may be turned laterally or adjusted to the adjustments of the delivery-wheel *l* above described.

The shaft D', carrying the roller F, does not rotate, but rests without motion in its bearings in the frame. The shaft *f'* of the roller G rotates in bearings f^2 of hangers I', Figs. 2 and 6, secured rigidly to the shaft D' at points respectively at some little distance from either end of the roller F.

The bearings g^2 in the frame for the shaft D' are held between adjusting-screws e^2 and k^2, the upper screws of the respective bearings passing through caps k^3, secured rigidly to the frame by clamp-screws i^2. By means of the screws e^2 and k^2 the roller F may be vertically adjusted. It is also desirable to adjust the roller G forward or backward over the roller F in working sheets of paper of different lengths, to do which the upper screws, e^2, are slightly loosened, which allow the hangers L' to be swung forward or backward with the roller G, as necessity may require.

The arms N reach up through slots O', formed in the plate H', which plate reaches substantially from side to side of the frame, constituting a sort of cover for the parts beneath. The arm N nearest the middle of the machine only is slotted to receive the pin of the connecting-strap B', as above stated.

It is necessary at times to adjust the roller G in directions toward or from the roller F to compensate for wear of said rollers, and to accommodate paper of different thicknesses. To effect this I rest the shaft *f'* in movable

bearings f^2, within the hangers L′, said bearings being supported by vertical spiral springs l', occupying recesses in the respective hangers, and arrange thumb-screws p^2 to bear upon the upper surfaces of the bearings f^2, to act in opposition to the springs. These thumb-screws pass vertically through caps n^2 for the hangers. By turning the screws downward or upward the roller G is moved toward or from said roller F for the purposes stated.

The spout is preferably slightly inclined, and may be made of any length desirable, the belts D being extended nearly to the farther or upper end and passed over pulleys or wheels similar to those shown at p. The spout is filled with the sheets of paper to be made into bags, said sheets being placed upon the belts D in an inclined position, substantially as shown in Fig. 7.

The devices here shown are automatic in all their movements, motion being communicated to them through the cord-belt R′ and the flat belts K.

I claim as my invention—

1. In a feeding device, a rotating cylinder and a contiguous contrary-rotating cylinder, said cylinders having continuous unbroken convex faces, in combination with reciprocating feeders a, substantially as shown and described.

2. In combination with vibrating arms of a feeding device for a paper-bag machine formed with rests s', a looped or U-shaped holder for the feed-wheels, having its extreme ends bent in contrary directions to enter said rests, a sleeve fitted to turn upon the middle section or part of said holder, provided with feed-wheels and ratchet, a pawl for said ratchet, and a holder for said pawl secured to said holder for the feed-wheels, substantially as shown and described.

3. In combination with the frame and an adjustable pasting-wheel of a pasting device for a paper-bag machine, a flat spring secured to said frame and held to press the sheet of paper against said pasting-wheel, said spring being held to said frame by a pivot-bolt, so that it may be swung laterally or adjusted to the different positions assumed by said pasting-wheel in its adjustments, substantially as described.

4. In a feeding device for paper-bag-folding machines, conjointly-operating feed-rollers rotating in such directions that the part of the surface of the lower roller touching the paper sheets moves contrary to the direction in which said sheets move, and the opposing face of the upper roller moves with said sheets, the surface of the latter roller moving more rapidly than the surface of the former roller, and being less in diameter than said lower roller, substantially as and for the purpose set forth.

5. The combination of a feeding device for paper-bag machines, of the feed-spout with carrier-belts therein, frame with wheels for moving the sheets of paper, pawl and ratchet to influence the action of said wheels, and vibrating arms to reciprocate the frame, substantially as described.

6. In combination with the paper-feeding wheels of a folding and pasting machine, the holder for said wheels, and connected vibrating driving-arms, lifters for said wheels to raise them from the sheets of paper, substantially as described.

7. In combination with the shaft D′ and its roller F of a paper folding and pasting machine, a sleeve, o^2, with pulley C′, and gear F′, a shaft, f', and its roller G, with hangers L′, and pinion G′ for said gear, and driving-belt for said pulley, substantially as described.

8. In combination with the shaft D′ of a paper folder and paster and a roller turning loosely thereon, a companion shaft with roller, said latter shaft being held in adjustable bearings in hangers or standards secured to said shaft D′, substantially as shown.

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Witnesses:
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M. KENDRICK.