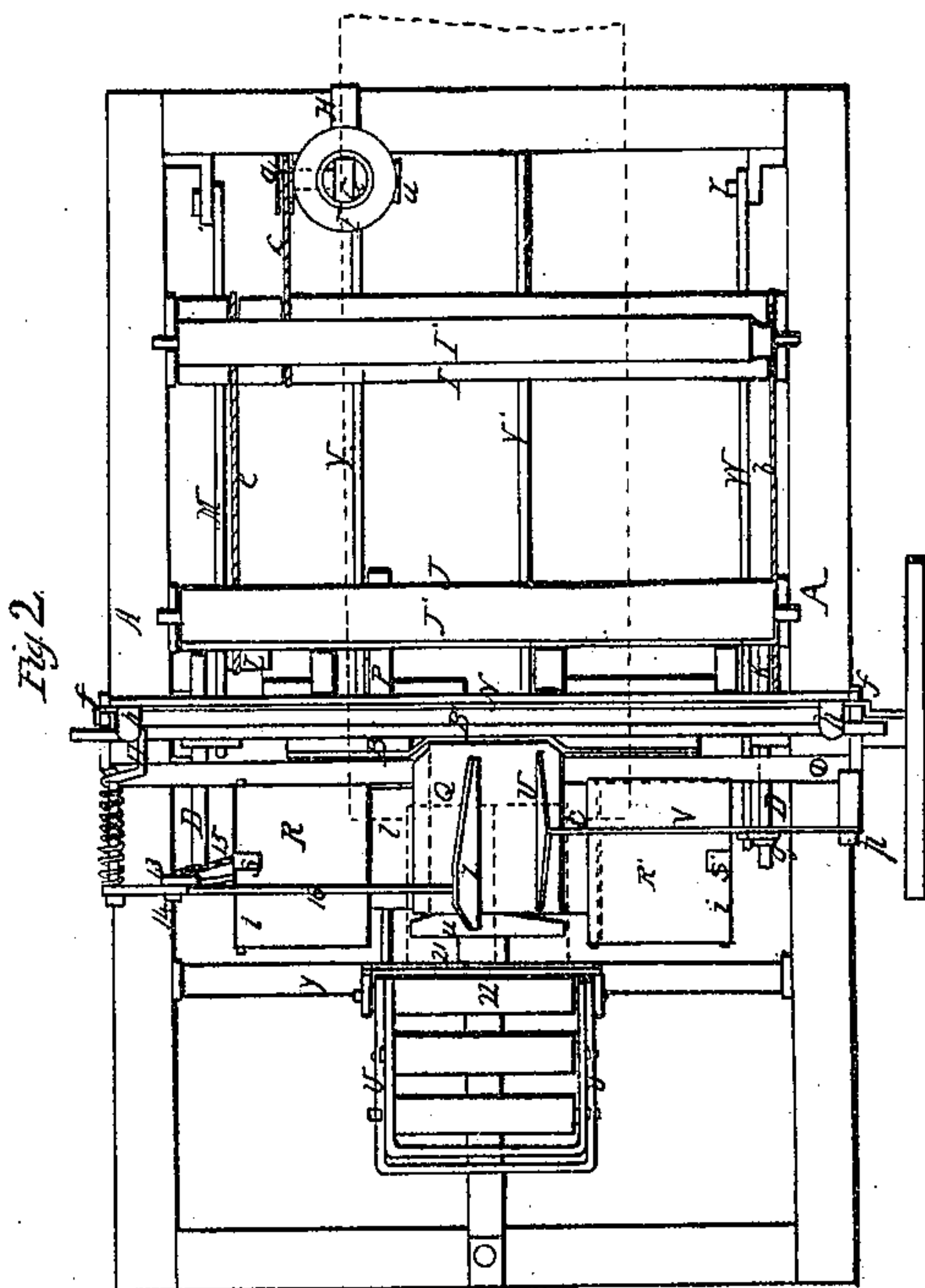
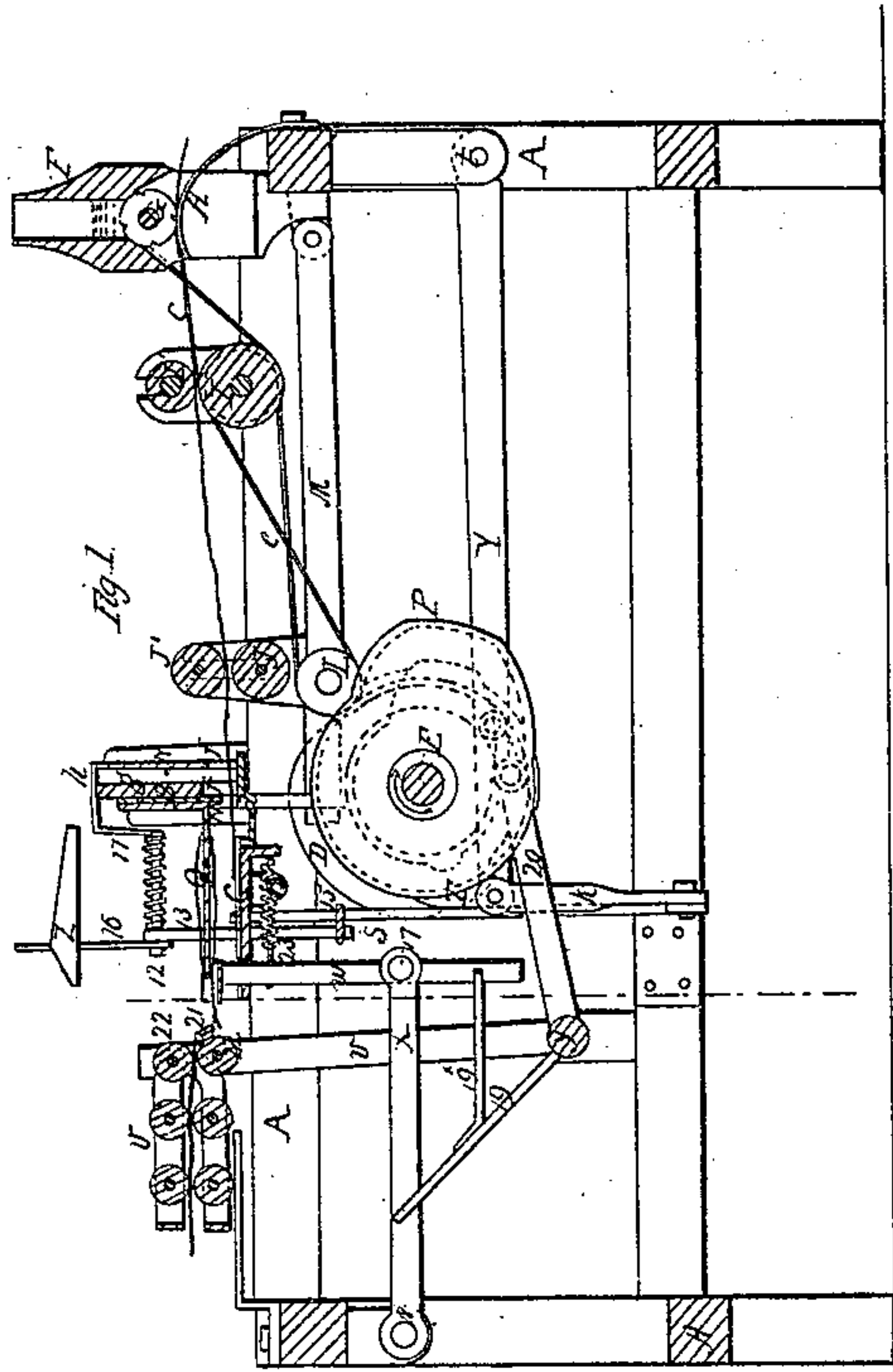
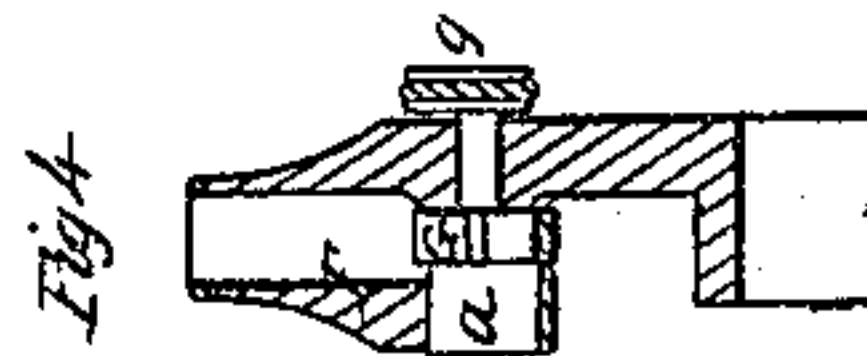
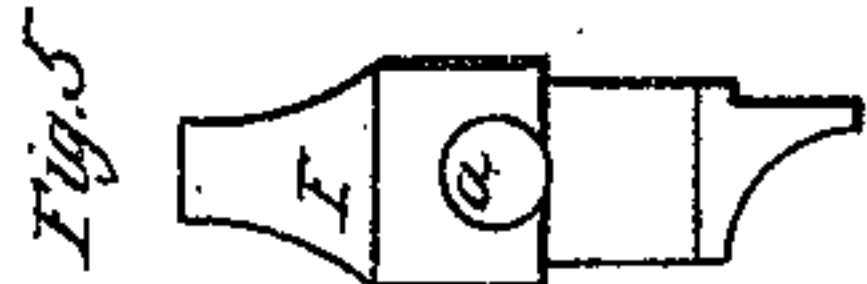
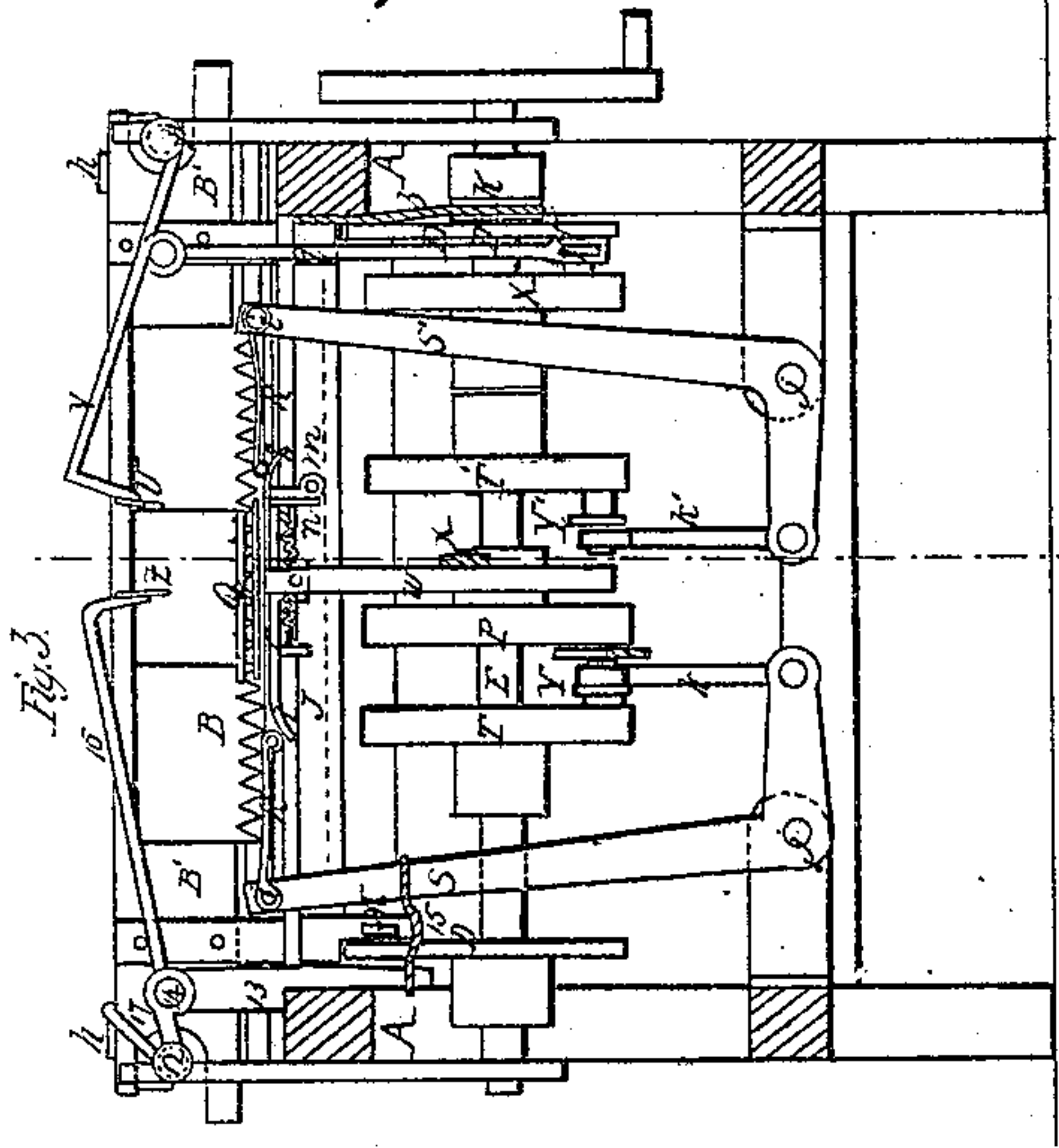


W. Goodale.
Paper Bag Mach.

N^o 25191.

Patented Aug. 23. 1859.



Witness:

Ernest Sayer
A. J. Goodale

Inventor:

William Goodale

UNITED STATES PATENT OFFICE.

WILLIAM GOODALE, OF CLINTON, MASSACHUSETTS.

MACHINE FOR MAKING PAPER BAGS.

Specification forming part of Letters Patent No. 25,191, dated August 23, 1859.

To all whom it may concern:

Be it known that I, WILLIAM GOODALE, of Clinton, in the county of Worcester and State of Massachusetts, have invented certain new and useful Improvements in Machinery for Making Paper Bags; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a longitudinal vertical section of a paper-bag machine with my improvements. Fig. 2 is a plan of the same. Fig. 3 is a transverse vertical section of the same. Fig. 4 is a vertical section at right angles to Fig. 1 of the pasting apparatus for the side lap of the bag. Fig. 5 is a side view of the same.

Similar letters of reference indicate corresponding parts in the several figures.

My invention relates, first, to an improved pasting apparatus for applying the paste to the edge of the paper for the purpose of forming seams in paper bags.

It also relates to an improved system of feed and measuring rollers for supplying the paper from a roll or continuous piece or web to the cutting and folding machinery.

It also relates to a drop applied, substantially as hereinafter described, in combination with the cutter which cuts the paper from the roll or sheet to the proper shape to form the bag for the purpose of holding the paper close to the knife during the cutting operation.

It also relates to the employment, to fold the paper upon in the formation of the bag, of a plate or its equivalent narrower than the bag, or of a plate the same width as, but shorter than, the bag.

It also relates to certain improvements in the creasing and folding apparatus for the sides of the bag; and it further relates to an improvement in the folding apparatus for the bottom of the bag.

To enable others to make and use my invention I will proceed to describe the construction and operation of the machine represented in the drawings, which machine in its general form and in many of its characteristics is like the machine described in the schedule of Letters Patent of the United States granted to

me, dated July 12, 1859, and cuts the paper to the same form and folds it in the same way to form the bag, but it differs from that machine in the before-recited particulars.

A is the framing of the machine.

B is the curved cutter, having a serrated edge which works through a slot *d* in the stationary table C.

B' is the cutter-bar to which the cutter is attached, and D D are the cams on the constantly-revolving main shaft E for operating the said cutter-bar and cutter at proper intervals.

The above-mentioned parts are all like the corresponding parts of my former machine, and therefore need no particular description.

Near the end of the machine where the paper enters is situated the paste-box F, from which paste is supplied all along one margin of the paper while in the piece as it passes on toward the cutter. The paper passing into the machine is shown by red lines in Figs. 1, 2, and 3, but the roll from which it is supplied is not represented.

G is a roller, of wood or metal, fitted to work in an opening in the bottom of the paste-box F, and having its periphery, which may be grooved or roughened, protruding below the said bottom for the purpose of applying paste to the paper by its revolution through the paste and in contact with the paper as the paper passes along under it continuously, the velocity of its revolution corresponding with the velocity of the movement of the paper. The said roller is inserted in the paste-box through a circular opening in one side thereof, and this opening is closed by a bung or stopper A, Figs. 2, 4, and 5, which also serves to regulate the supply of paste, letting more or less pass out with the roller according as it is screwed or pushed in more or less. Below the roller G there is attached to the framing of the machine a spring H, whose duty it is to hold the paper up to the said roller to receive the paste. This spring may be fitted with a roller to press against the paper.

I I' are a pair of rollers, which I call the "measuring-rollers," arranged not far from the paste-box F and revolving continuously at such a velocity relative to the movements of the knife as to draw from the roll of paper a sufficient length to form a bag during each

revolution of the main shaft E. The lower one I derives its motion through a band *b* from a pulley K on the main shaft E, and the upper one I', which is made sufficiently heavy or loaded with weights or springs, is made to rotate by the friction of the paper. A band *c*, running from the roller I to a pulley *g* on the paste-roller G, serves to drive the latter at the required velocity. J J' are a pair of intermittently-revolving feed-rollers which take the paper from the measuring-rollers I I' and deliver it onto the table C, said rollers being stationary during the greater portion of every revolution of the main shaft E for the purpose of merely holding up the front portion of the paper that has passed the measuring-rollers, and then being caused to revolve at a much higher velocity than the measuring-rollers, so as to take up all slack paper in front of the latter and leave it flat. These rollers J J' do not bite upon the paper so hard as the rollers I I', so that as they continue to revolve after having drawn up the slack they slip upon the paper. The said rollers J J' may be driven in various ways, two of which are represented in the drawings (see Fig. 1)—viz., one by the friction of a cam P on the main shaft coming in contact with the surface of the lower roller J, and the other by the friction of the roller L, attached to a lever M, the said roller deriving a continuous rotary motion through a band *e* from the lower measuring-roller I and being lifted up into contact with the roller J by the connection of the said lever M with the cutter-bar B'.

N is the drop, operating in combination with the cutter to hold the paper fixedly upon the table C during the operation of the cutter, said drop consisting of a bar or plate of metal arranged close behind the cutter, with its lower edge parallel with the face of the table and with its ends working in fixed vertical guides *f f*, close to the cutter-bar guides. Near the end of this plate there are two hook-like projections *h h*, overhanging the top of the cutter-bar B' in such a manner that as the edge of the cutter rises above the upper surface of the table C the said bar will lift the said drop to permit the rollers J J' to feed the paper forward onto the table when their revolution takes place. As the cutter descends the drop descends with it, and before the edge of the cutter touches the paper the drop comes down upon the latter, and so by its pressure holds the same flat upon the table and effectually prevents its advance during the continued descent of the cutter to produce the cut.

Q is the flat plate narrower than the bag, upon which the blank is folded to form the bag, attached to the cutter-bar in the same manner as the "former" of my before mentioned patented machine. This plate differs from the former of that machine in being narrower and shorter than the bag to be folded upon it; but as the improvements in the side creasing and folding apparatus, which constitute

part of the present invention, are in part applicable in combination with a former of the full width of the bag, I have, for the sake of illustrating the application of these improvements both in combination with the former and with the narrower plate, represented the plate Q as extended on one side—viz., the side nearest the top of Fig. 2 and toward the left hand in Fig. 3—sufficiently for the paper to fold close upon its edge, and have represented the proper position of the margin of the narrower plate by a blue line in Fig. 2. The folding of the sides of the bag is performed, whether the former or the narrower plate Q is used, by means of folders consisting of plates R R, one for each side, each hinged at one edge by a hinge *i* to one of two levers S S', working transversely to the direction in which the paper is fed into the machine on two fixed fulcrum-pins *j j'*, secured in the lower part of the framing, and the other edges of the said plates resting upon and working over the edge of the folding-table C. The operation of these folders is produced partly by the vibrating movements of the levers S S', effected by their connection by two rods *k k'* with two levers Y Y', which work each on a fixed fulcrum *t*, and are operated upon by two cams T T' on the main shaft F, and partly by two inclined planes *l'* and *l'*, Fig. 3, one on each side of the folding-table C.

The inclined plane *l*, for operating in combination with a former of the full width of the bag, is stationary and commences its descent from a line corresponding with the side edge of the former, and requires no creaser to operate in combination with the folder R, which, having had the blank deposited upon it while resting on the lower part of the said inclined plane *l*, produces the fold by simply running up the inclined plane and over the former, whose edge constitutes a creaser and determines the line of the fold. The inclined plane *l'* for operating in combination with the narrower plate Q, though combining with the folding-table C in the same form as *l*, is made of a separate piece hinged to the table by a hinge *m*, and has a spring *n* applied which tends to hold it close up to the side of the table, the junction of the said piece with the table being in the line where the fold is desired to take place and at some distance from the edge of the plate Q.

The creasing of the paper is effected by the operation, in combination with the detached inclined plane, of a creasing-blade U, attached to a lever V, Figs. 2 and 3, which works on a stationary fulcrum-pin *p*, which is caused to fall and rise again very quickly at suitable intervals of time by its connection, by a rod *q*, with another lever W, which works on a fixed fulcrum *r*, Fig. 2, and is operated by a cam X on the main shaft E. The edge of the creasing-blade U, descending upon the paper and entering with it a little way between the inclined plane *l'* and the adjacent edge of the table C, creases the paper so that when the

folder R' (which operates precisely like R) runs up the said inclined plane and over the edge of the plate Q, after the ascent of the creaser, it folds the paper in the line of the said crease. The folders R R' may be fitted with rollers to roll over the paper.

The folders R R' have not a precisely simultaneous action, but the one R, which folds the lap with the pasted edge, must operate a little after the other one, in order that the pasted lap may be laid over the other one and the seam along the side of the bag be properly made. The closing of the seam to produce the adhesion of the two laps is effected by means of a drop Z, Figs. 1 and 3, consisting of a straight-edged bar attached to a lever 16 17, which works on a fixed fulcrum 12, and which is held up till the proper time for the descent of the drop by means of a leg 13, which is jointed to the said lever by a pin 14, and which rests upon the side of the framing in the manner shown in Fig. 3. This leg 13 is connected by a cord 15 or by a chain or link with the lever S, which, in carrying the folder R up the inclined plane *l*, pulls the said leg off the framing and lets the lever 16 fall with the drop. The drop is raised again by the cutter-bar B', which acts upon the short arm 17 of the drop-lever, which overhangs the said bar, and when it is raised the leg 13 falls back by gravitation over the framing A, so that when the cutter-bar descends it drops onto the frame and holds up the drop Z till the folder R operates again.

u, Figs. 1, 2, and 3, is the "knock-off," whose duty it is to assist in folding the bottom lap of the bag and to knock off the folded bag from the former or plate Q upon which it has been folded, and *v* is a vibrating roller-frame for taking the bag from the knock-off and finishing it. The knock-off is in most respects like that described in my before-mentioned Letters Patent, but somewhat differently applied and operated. The roller-frame is precisely similar, except that it has the addition of a bar 21, extending all across it just below the entrance between its first pair of rollers 22 22. The knock-off is attached to a heavy upright lever-like stem *w*, which is attached by its fulcrum-pin 17* to the end of a lever *x*, which works on stationary fulcrum-pin 18. The upper part of the stem *w* is connected with the table C by a spring 23, Fig. 1, which pulls it toward the table, and the weight of the said stem and the knock-off is supported by the lever *x*, resting upon the arm 19 of the rock-shaft *y*, to which the roller-frame *v* is attached. This rock-shaft is operated upon to give the roller-frame the necessary movements to take the bag from the former or plate Q by the action upon its arm 20 of the cam P on the main shaft E. At the time when the folding of the side laps takes place the roller-frame is stationary at a distance from the knock-off *u*, and the latter is close to the end of the table C and has its upper face on a level, or nearly so, with

the face thereof; but after the side laps have been folded and the former or plate Q has risen from the said table in the manner described in my before-mentioned Letters Patent, the roller-frame is caused to move toward the said former or plate by the action of the cam P, and the arm 19 of the rock-shaft *y* is caused to lift up the lever *x*, and so to raise the knock-off along with the table. This elevation of the knock-off being accompanied by the advance of the roller-frame toward it causes that portion of the tube of paper constituting the partly-formed bag which hangs over the knock-off to be bent over the end of the knock-off by the combined action of the knock-off and the bar 21, the knock-off with the overhanging paper passing up nearly close to the said bar, bringing the paper in contact with the lower edge of the said bar. The roller-frame arrives with the entrance to its rollers 22 22 very near the knock-off, just as the latter has risen to a position directly opposite to the said entrance, and the knock-off is then moved away from the former or plate Q by the action upon the lower part of its stem of an arm 19*, which branches off from the arm 19, and so caused to start the partly-folded bag toward the rollers 22 22, which are combining their advance toward it, and to drive the partly-folded end lap between the said rollers, which, operating like the corresponding rollers described in my before-mentioned Letters Patent, quickly seize it and complete the fold. The bag is afterward carried between the several pairs of rollers in the frame V, and so finished.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The pasting apparatus consisting of the roller G, fitted to work in an opening in the bottom of a paste-box, the spring H, or its equivalent, and the adjustable stopper *a*, all combined to operate substantially as herein described.

2. The combination of the continuously-revolving measuring-rollers I I' and the intermittently-revolving feed-rollers J J', operating substantially as and for the purpose herein described.

3. The drop N, operating in combination with the cutter B and the feed-rollers, substantially as and for the purpose herein specified.

4. Folding the paper around a plate Q or flat piece of any material narrower than the bag itself, or of the same width as but shorter than the bag itself, substantially as herein specified.

5. The folders R R', applied and operating, in combination with the inclined planes *l l'* at the sides of the folding-table C, substantially as and for the purpose herein set forth.

6. The combination, with the folding-table and with a plate Q, narrower than the bag, to fold the bag upon, of one or more movable

inclined planes l' and creasing-blades U, operating substantially as herein described.

7. The drop Z, applied and operating substantially as and for the purpose herein described.

8. The bar 21, applied to the vibrating roller-frame and operating, in combination with

the knock-off u , substantially as and for the purpose herein set forth.

WILLIAM GOODALE.

Witnesses:

EZRA SAWYER,

H. T. GOODALE.