

(No Model.)

W. C. CROSS.

BAG MACHINE.

No. 244,861.

Patented July 26, 1881.

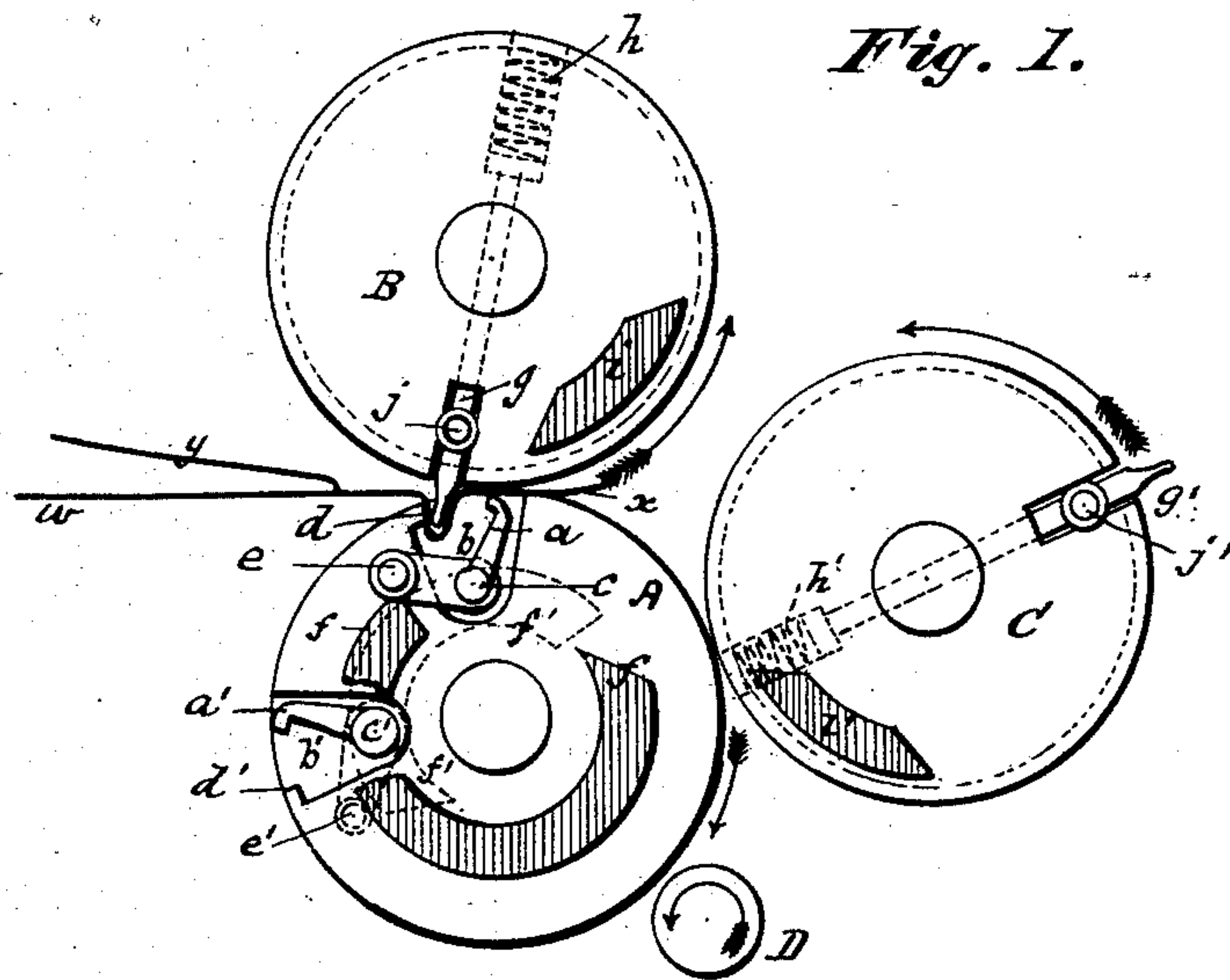


Fig. 1.

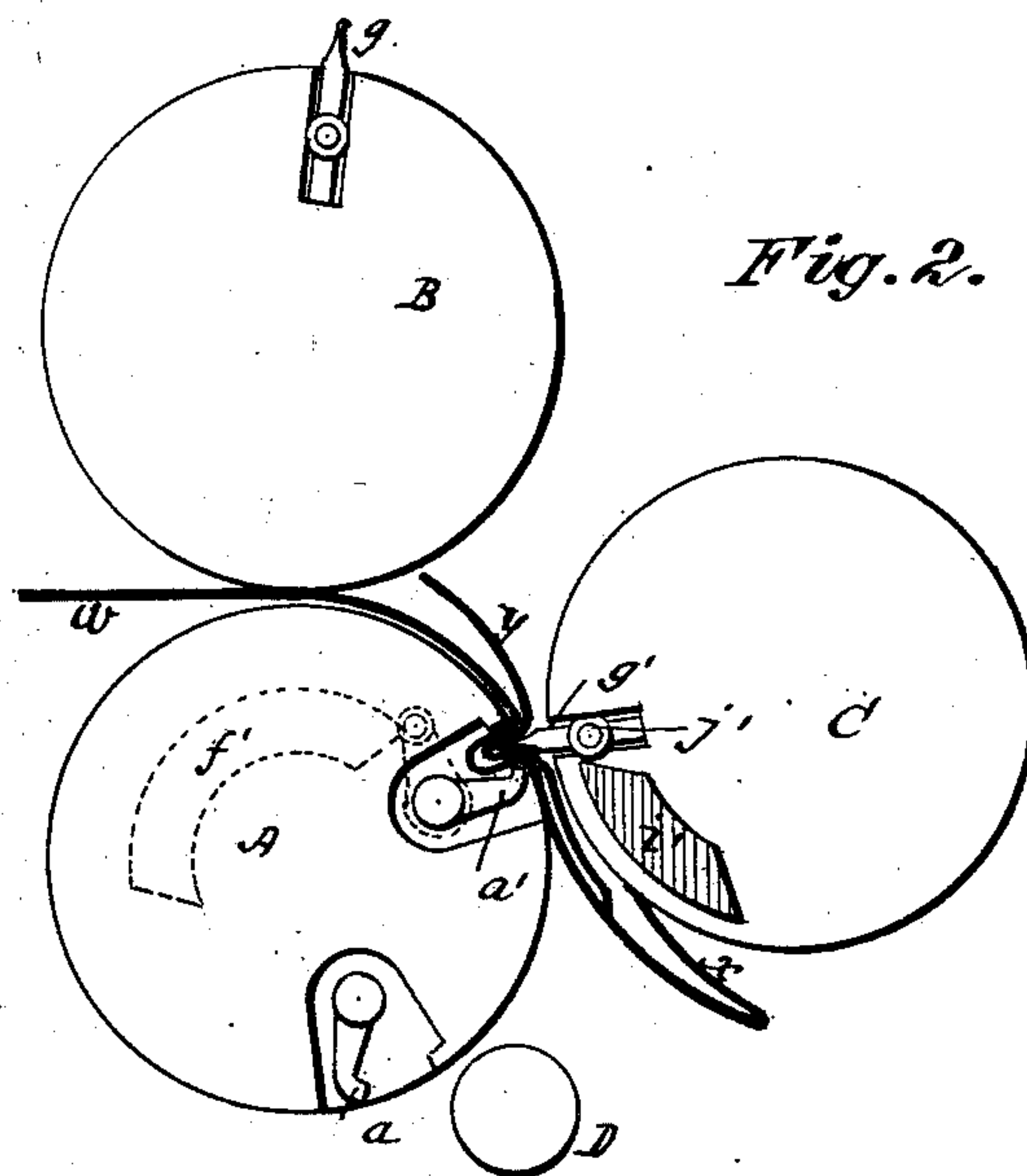


Fig. 2.

WITNESSES

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BAG-MACHINE.

SPECIFICATION forming part of Letters Patent No. 244,861, dated July 26, 1881.

Application filed May 17, 1881. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM C. CROSS, of Boston, in the State of Massachusetts, have invented certain new and useful Improvements in Paper-Bag Machines, of which the following is a specification.

My invention relates to machinery for making satchel-bottom paper bags. It refers particularly to that portion of the machine by which the end flaps of the diamond fold are folded over in order to make the second and the third or final folds of the satchel-bottom; and it consists in the combination and arrangement, substantially as hereinafter described, of three continuously-rotating folding-rolls, one carrying two separate vibratory clamping-jaws, and the other two carrying each a blade, the blade-rolls being arranged and adapted to operate successively in connection with the clamping-jaw-carrying roll, the one to make the second fold and the other to make the final fold.

The nature of my invention and the manner in which the same is or may be carried into effect will be understood by reference to the accompanying drawings, in which—

Figure 1 is a diagrammatic sectional side elevation of so much of a machine as is needed to illustrate my improvement. Fig. 2 is a like elevation, representing the parts in a different position.

For the sake of clearness I have omitted from the drawings a representation of the frame in which the parts are supported and of the gearing by which they are driven, these being within the knowledge of any competent mechanic.

The rolls are of the same size and are driven at the same speed. The shafts or journals of the blade-carrying rolls are supported in spring-boxes, and these rolls bear with yielding pressure against the jaw-carrying roll, so that they may conform to the thickness of the paper passing between them. The paper in the large roll is by well-known means pasted and formed into a tube, which is severed into blanks having the diamond fold formed on their front ends by suitable instrumentalities.

The diamond-fold-forming mechanism which I prefer, and in practice use, is that shown and

described in my Letters Patent No. 221,531, of November 11, 1879. From the delivery-rolls of that machine the diamond-folded blank passes between paste-rolls, one of which is provided with paste-ridges, which deposit parallel longitudinal lines of paste on each side of the longitudinal center line of the diamond, as shown, for instance, in Stocking's Letters Patent No. 222,544, of December, 1879. These mechanisms I do not deem it necessary to show, inasmuch as they are known and form no part of my present invention. From the paste-rolls just alluded to the diamond folded and pasted blank passes to the improved folding mechanism, which I now proceed to describe by reference to the drawings.

A is the clamping-jaw-carrying roll, which is a power-driven continuously-rotating roll, having its journals supported in proper bearings in the frame of the machine. In this roll are mounted two vibratory clamping-jaws, *a* and *a'*. The jaw *a* is situated in a peripheral recess, *b*, formed in and longitudinally of the roll, and is mounted on a rock-shaft, *c*, (supported in proper bearings in the roll,) so that it may move to and from the face *d* of the recess, which face *d* constitutes in effect a stationary clamping surface or jaw, against which the moving jaw *a* clamps that part of the blank tucked down between them. The rock-shaft *c* projects beyond one end of the roll, and on this projecting end of the shaft is fixed a crank-arm, *e*, which during the revolution of the roll passes over the periphery of and is acted on by a stationary cam, *f*, fixed to the frame of the machine. This cam, as well as the other cams hereinafter referred to, should be adjustable on the frame. The rock-shaft is encircled by a spiral spring fixed at one end of the roll, and at the other end to the shaft, whose function is to turn the shaft in the opposite direction from that in which it is moved by the cam. This jaw *a* is opened and held open by the cam, and, when released at the proper time from control of the latter, is closed by the spring.

I have not deemed it necessary to show the spring, inasmuch as a spring-and-cam-controlled clamping-jaw of this kind is a known instrumentality, being shown, for instance, in

Letters Patent No. 222,544, hereinbefore referred to, and also in my Letters Patent, No. 239,457 of March 29, 1881.

Mounted in a recess, *b'*, in the same roll A, at a distance in rear (relatively to the direction of rotation of the roll) of the jaw *a* is a second jaw, *a'*. This jaw is mounted on a rock-shaft, *c'*, which projects from the end of the roll opposite that from which projects shaft *c*, and is there provided with a crank-arm, *c'*, (indicated by dotted lines,) which operates in connection with a stationary cam, *f'*, (indicated by dotted lines,) fixed to the frame opposite that end of the roll. The jaw *a'* is, in fact, a spring-and-cam-controlled clamping-jaw, similar in all respects to jaw *a*, and operated in the same way, save that its cam *f'* is differently placed from cam *f*, inasmuch as the jaws require to be differently timed in their movements. Above, and in yielding contact with the roll A, and moving at the same surface speed therewith, is the power-driven blade-carrying roll B. In this roll is mounted a blade, *g*, which tucks the blank along the proper line of fold down into the bite of the clamping-jaw *a* in the roll below. This blade is supported in a radial recess extending lengthwise of the roll B, and is preferably movable back and forth therein. It is pressed forward by a spring, *h*, and is retracted against the stress of the spring by a cam, *i*, fixed to the frame of the machine, over which a stud, *j*, or friction-roller on the blade projecting laterally beyond the end of the roll is compelled to ride when the roll is in revolution. There is a cam, *i*, on each side of the frame, and a laterally-projecting stud or friction-roller, *j*, at each end of the blade.

The parts thus far described are so arranged and their movements are so timed relatively to the movement of the diamond-folded blank *w* (which enters diamond-folded end foremost between the rolls) that the jaw *a* and blade *g*, as shown in Fig. 1, are brought opposite one another just as the front flap, *x*, of the diamond has passed the proper distance between the rolls. The blade tucks this part of the blank along the proper line of fold down into the bite of the vibratory jaw, which, as seen in the figure, is about clearing its cam *f*. Continued rotary movement of the rolls releases the jaw from the control of its cam, allowing it to close upon the portion of the blank tucked between it and the stationary clamping-surface, *d*, after which the blade is withdrawn by its cam *i*, and the jaw presses and creases the blank along the line of fold, and carries it along between the bite of the roll A and the second roll, C, to be presently described. In passing between rolls A C the front flap, *x*, is wiped back and pressed down upon the blank, thus completing the second fold. After the jaw *a* passes beyond roll C it is by the action of its cam *f* opened, thus releasing the blank, which is now in the control of and in readiness to be acted on by the

rolls A C. The roll C is placed in front of, and in yielding contact with, the roll A, being power-driven and moving at the same surface speed with said roll A. It is provided with a blade, *g'*, controlled by a spring, *h'*, and cams *i'*, the construction and arrangement of these parts being exactly the same as the corresponding parts of the blade-carrying roll B, except, of course, that the cams *i'* are differently placed in order to properly time the movements of the blade *g'*. This blade is intended to co-operate with jaw *a'*. It is so placed with respect to the said jaw, and the roll C is so timed with respect to roll A, that during the rotary movement of the rolls the jaw and blade will come together or meet at the point of contact of the rolls; and the distance at which jaw *a'* is placed from jaw *a* is such that at the time the jaw *a'* meets the blade *g'*, the blank (with front flap folded) will have passed far enough between rolls A C to bring the rear flap, *y*, of the diamond fold opposite them on the proper line of fold for the last fold; and thus, as seen in Fig. 2, the blade *g'* will tuck the flap *y* along this line down into the bite of the jaw *a'*, tucking down also, along with the flap, the underlying body of the bag-blank. The blade withdraws just as or after the jaw is released from control of its cam, and the jaw consequently closes upon the blank, drawing it along, as the roll A revolves, under the wiper roll or bar D, which wipes back and down upon the body of the blank in rear of the point where the jaw holds it, the part of the blank in front thus, in effect, doubling the blank on itself, making a blind fold in the bag-body, and pressing down the pasted folds *x y*, in this way virtually completing the satchel-bottom. Subsequently the jaw *a'*, at the proper time, releases its hold on the bag, and the latter is discharged from the machine, usually dropping from the machine upon an apron or carrier, which straightens it out and conveys it to the drier.

Having described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a machine for making satchel-bottom paper-bags, and as means for forming the second and final folds thereof, the combination of the rotating clamping-jaw roll, two vibratory spring-and-cam-controlled clamping-jaws carried by the same, and two rotating blade-carrying rolls, each provided with a blade adapted to co-operate, the one with one clamping-jaw on the leading flap of the diamond, the other with the other clamping-jaw on the rear flap of the diamond, these parts being timed in their movements relatively to one another substantially as hereinbefore shown and set forth.

2. In a machine for making satchel-bottom paper-bags, mechanism for forming and completing the second and final folds thereof, comprising the rotating clamping-jaw roll and two vibratory spring-and-cam-controlled clamping-

5 jaws carried by the same, in combination with the two rotating blade-carrying rolls, each provided with a blade adapted to co-operate, the one with one clamping-jaw on the leading flap of the diamond, the other with the other clamping-jaw on the rear flap of the diamond, and the wiper roll or bar, said parts being timed in their movements relatively to one another

substantially as hereinbefore shown and set forth.

In testimony whereof I have hereunto set my hand this 10th day of May, A. D. 1881.

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WILLIAM C. CROSS.

Witnesses:

E. A. DICK,
N. C. LANE.