J. E. Coffin. Sheet 1. 3 Sheets.

Paper Folding Mach.

No. 84,091. Patented Nov. 17, 1868.

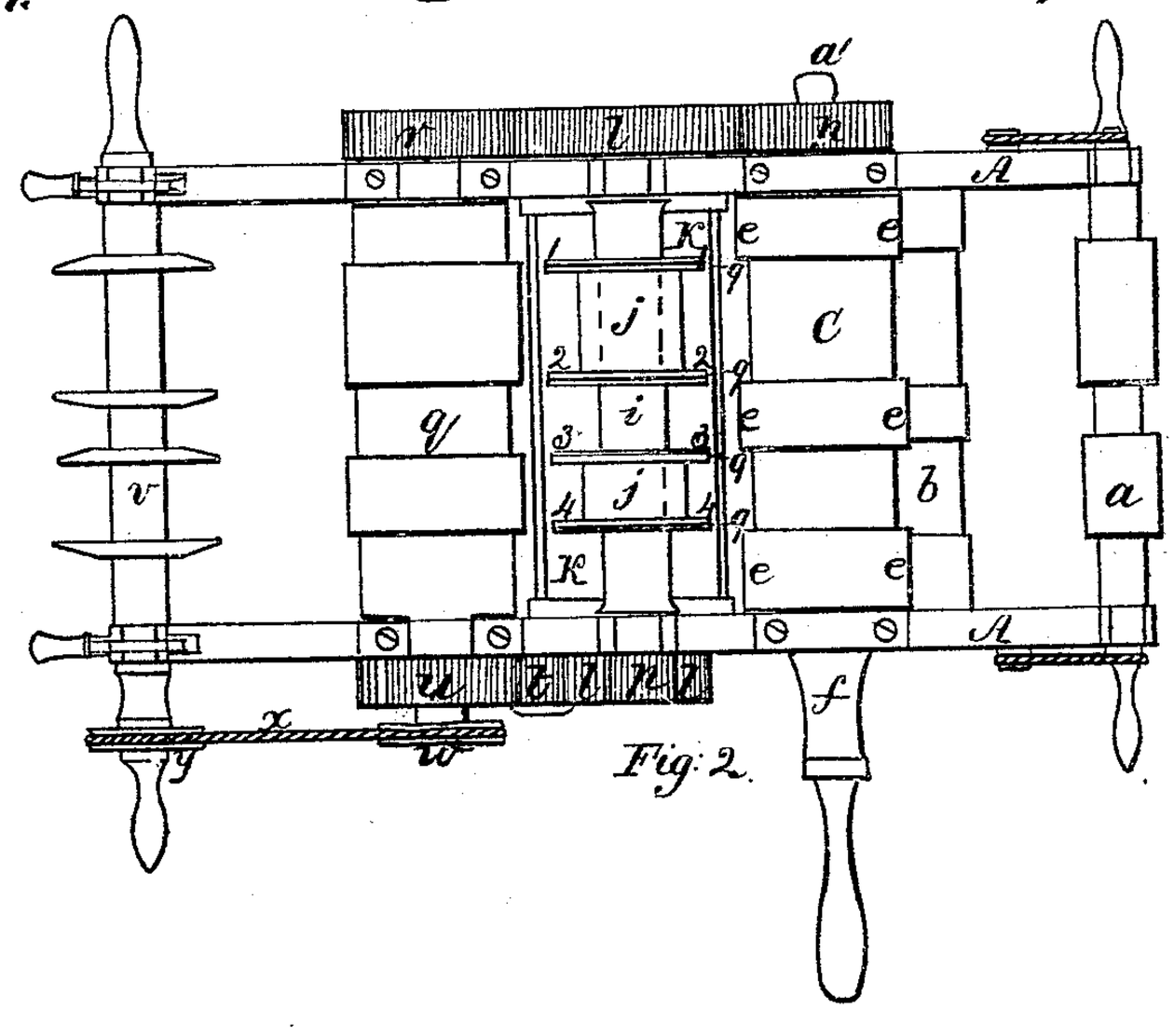

Fig: 2.

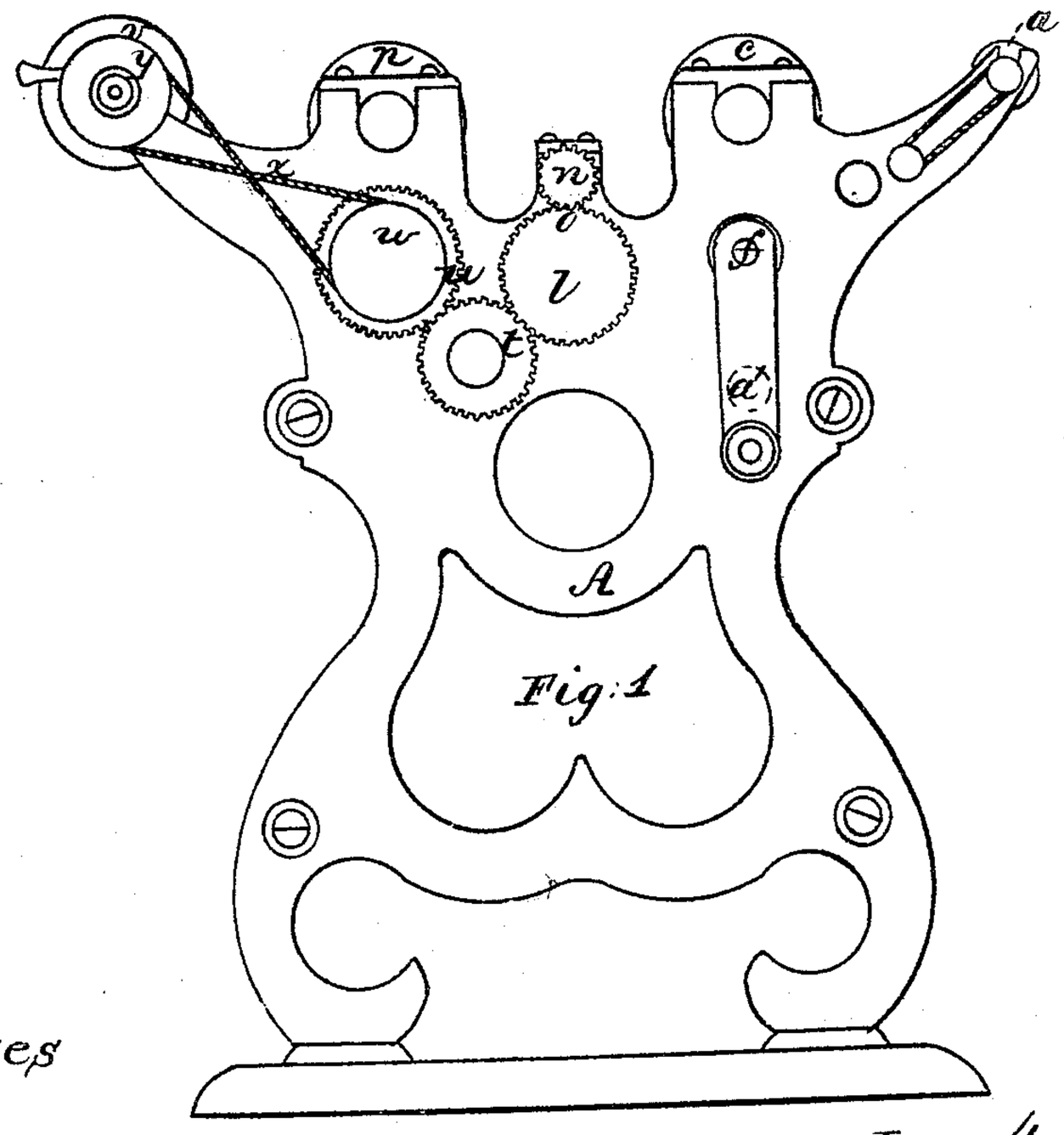

Fig: 1

Witnesses

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John E Coffin

J. E. Coffin. Sheet 2. 3 Sheets

Paper Folding Mach.

No. 84091. Patented Nov. 17, 1868

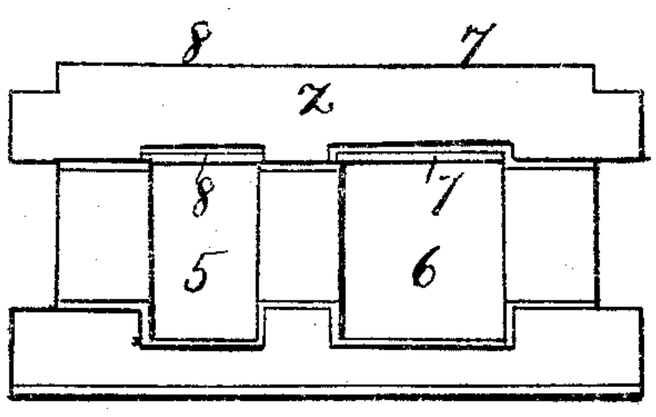

Fig: 2.

Fig: 3.

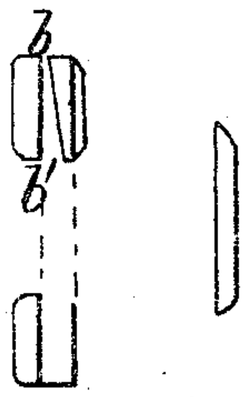

Fig: 4.

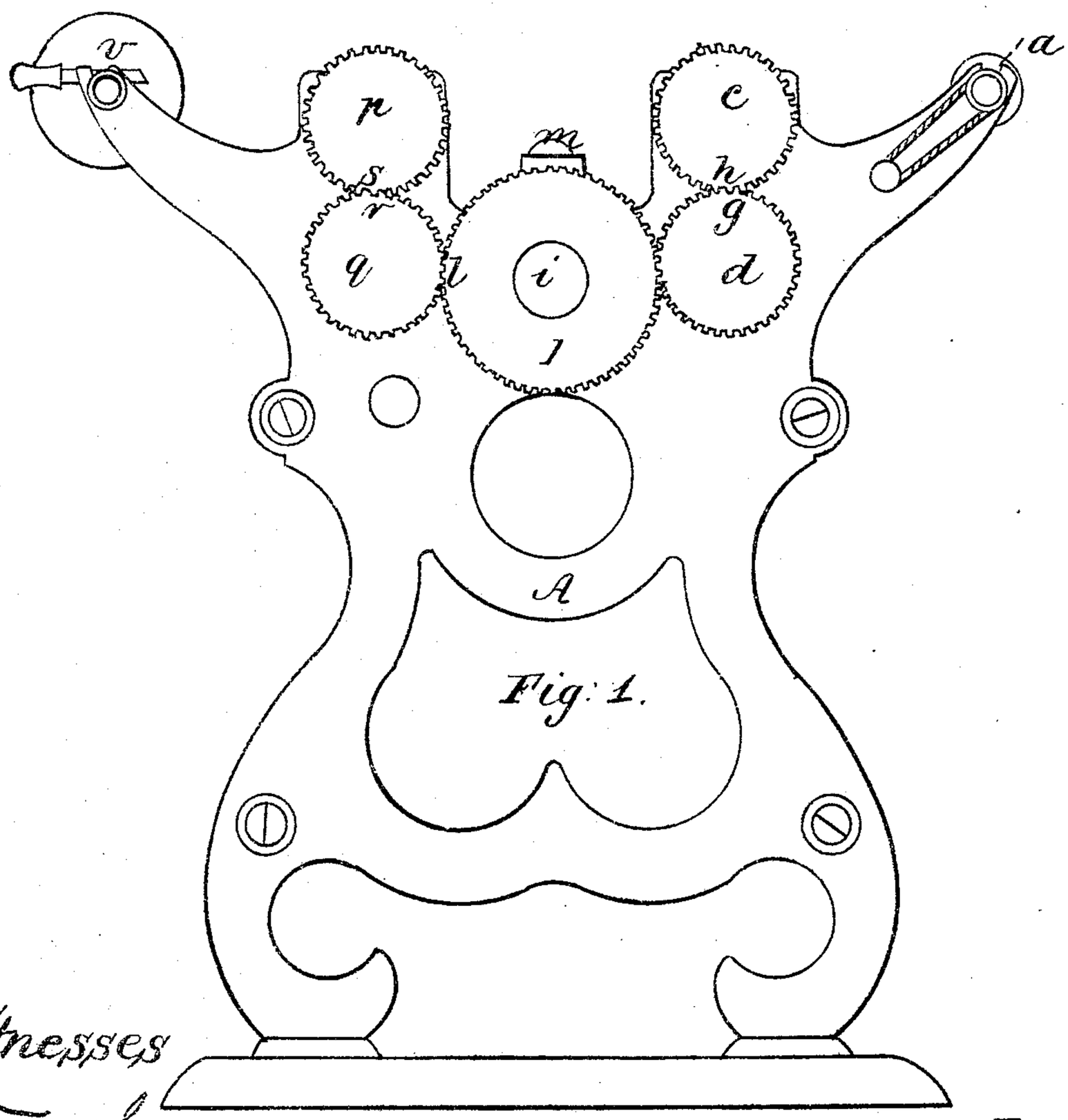

Fig: 1.

Witnesses

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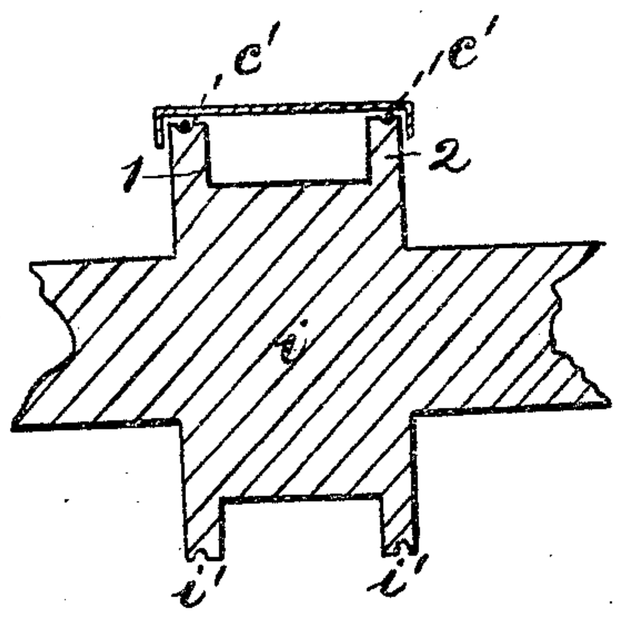
J. E. Coffin. Sheet 3. 3 Sheets.

Paper Folding Mach.

No. 84,091. Patented Nov. 17, 1868



Witnesses

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JOHN E. COFFIN, OF PORTLAND, MAINE.

Letters Patent No. 84,091, *dated November* 17, 1868.

IMPROVEMENT IN MACHINERY FOR FOLDING AND CORDING THE EDGE OF PAPER.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, JOHN E. COFFIN, of Portland, in the county of Cumberland, and State of Maine, have invented a new and useful Machine for Folding and Cording the Edge of Paper Goods; and I hereby declare the following to be a full, clear, and exact description thereof, which will enable others to make and use my invention, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1, Plate I, shows a side elevation of my invention.

Figure 2 is a top plan of the same, with the guide-rack removed.

Figure 1, Plate II, is an elevation of the opposite side from fig. 1, Plate I.

Figure 2 is a plan of the guide-rack.

Figure 3, an end view of the rack.

Figure 4 is a transverse section of the rack, showing the throats, with a detail of one of the throats, showing the slope thereof.

Plate III shows a longitudinal vertical section of a portion of the paste-roll, with the cord and paper passing through the same, (enlarged section.)

The purpose of my invention is to provide an automatic machine for folding and cording the edge of paper goods. The goods to which this machine is applicable are manufactured with an edge of the same folded down upon itself, being provided with some adhesive substance to retain it, and having a cord or thread enclosed within the fold.

The purpose of this machine is to fold the edge, apply the mucilage or adhesive substance, and run and envelop the cord within the fold.

Reference to the accompanying drawings will aid in the specification of this invention.

A shows the frame of the machine, of convenient form, size, and material.

a is a roller, to hold the paper to be corded, which paper is placed in rolls or coils upon the roller, and unwound as the process is accomplished.

b is a guide-bar, under or over which the paper enters the machine.

c d show two larger rolls, the upper, *c*, having annular projections *e*, and the under, *d*, corresponding annular indentations or grooves, into which fit and work the projections *e*.

d is set upon a shaft, *f*, and communicates its motion to *c*, by the gears *g h*, fig. 1, Plate II.

Set upon the shaft *i* is the paste-roll *j*, revolving so that the trucks 1, 2, 3, 4 shall take up a sufficient quantity of the adhesive substance from the trough *k*. This paste-roll is revolved by the gear *l* matching the gear *g*. (See fig. 1, Plate II.)

Over the paste-roll is placed the presser-roll *m*, revolved by the gear *n*, matching the gear *o* on the end of the shaft of the paste-roll *j*.

p q show two forming-rolls, similar to *c d*, and which complete the operation, hereafter described, of folding and pressing the edge of the paper.

These are placed one above another, like *c d*, and receive motion by the gear *l* matching the gear *r*, and also *r* matching *s* on the shaft of the upper roll *p*, and furthermore, by the gear *o*, pinion *t*, and gear *u*, on the other end of the shaft of the under forming-roller *q*.

v is a winding-roll, to receive the goods when the process is complete, and is revolved automatically with the machine by the truck *w*, band *x*, and truck *y*.

z shows a guide-rack, fig. 2, Plate II, placed over the paste-roll *j*, and under the press-roll *m*.

This guide-rack has apertures 5 6, and tapering throats, with convex bottoms and curved sides; the apertures being on the side of the rack next to the rollers *c d*, and the tapering throats 7 8, towards the two forming-rolls *p q*. Up in the centre of apertures 5 6, project, for a certain distance, the trucks 1, 2, 3, 4 of the paste-roll *j*, so as to meet the periphery of the press-roll *m*.

a' shows a shaft under the two rolls *c d*, which has free spools thereon, to contain the cord or other material which is laid in the fold of the edge of the paper.

The operation of my invention is as follows: Sufficient quantity of paste or other adhesive or mucilaginous substance is placed in the trough *k*. Cord is wound on to the proper spool or spools on the shaft *a'*, and the paper to be corded is wound or placed upon the roller *a*.

The power is applied at and motion imparted to the shaft *f*, where a crank is shown in the drawing. Sufficient cord is first wound from its spool or spools on the shaft *a'*, to pass up through the apertures 5 6 of the guide-rack, over the paste-roll *j* in minute grooves 9 on the trucks thereof, in order to be ready for insertion into the partially-formed fold of the paper at this point. The paper is then carried from its unwinding-roller *a*, either over or under *b*, and so directed as to pass between the rolls *c d*, when, being taken by these rolls *c d*, the edges are bent at right angles, by the projections and corresponding grooves on the upper and under rolls.

The width of the folded part is controlled entirely by the height of the projections and depth of the grooves on the two rolls.

Passing between these rolls, the paper next enters the apertures 5 6 of the guide-rack, and passes over the paste-roll *j*, where that part of the paper upon which the folded part is to rest, receives its supply of adhesive substance from the trucks 1, 2, &c. The folded or turned edge of the paper laps down over the edge of these trucks, and consequently over the cord in the groove on the trucks, as seen in Plate III. At this point the paper and cord are carried by the revolution of the paste-roll and its trucks into the throats 7 8.

These throats are made tapering, as seen at *b'*, fig. 4, Plate II. The folded or bent edge of the paper, to-

gether with the cord, enters these throats, and as it is carried up into the same, the fold of the paper gradually laps over upon that part which has received the paste, at the same time enclosing the cord, which, with the paper, has entered the throats from the paste-wheel *j*.

Emerging from the narrow or thin end of the throats, the paper with its cords passes between the rolls *p q*, whose pressure completes the process, pressing the folded edge down closely over the cord, and upon the paper, after which the finished article is wound up on roll *v*.

p and *q* may be made smooth, if desired, as their function is simply to press the folded paper.

Thus the paper is carried through the machine by the revolution of the rolls, and the different operations performed as described.

The cord may be carried entirely through the machine to the winding-rod *v*, if desired, before the paper is started, but if carried no further than the trucks of the paste-roll, the paper with its adhesive coating would then carry the cord with it.

The formation of the edge is controlled by the construction of the projections and grooves on the rolls *c d*.

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

1. The creasing-rolls *c d*, chutes *b b'* of guards *z*, pasting-disks 1, 2, 3, grooved as shown, pressing-roll *m*, and finishing-rolls *p q*, all arranged and combined substantially as and for the purposes set forth.

2. The pasting-disks 1, 2, 3, provided with grooved edges to receive the cord *c'*, substantially as shown.

JOHN E. COFFIN.

Witnesses:

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HENRY C. HOUSTON.