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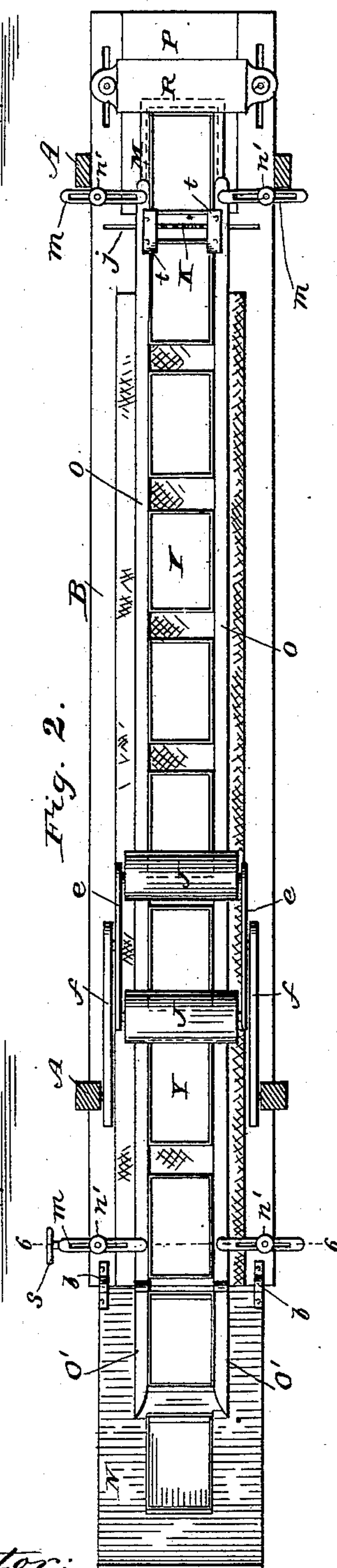
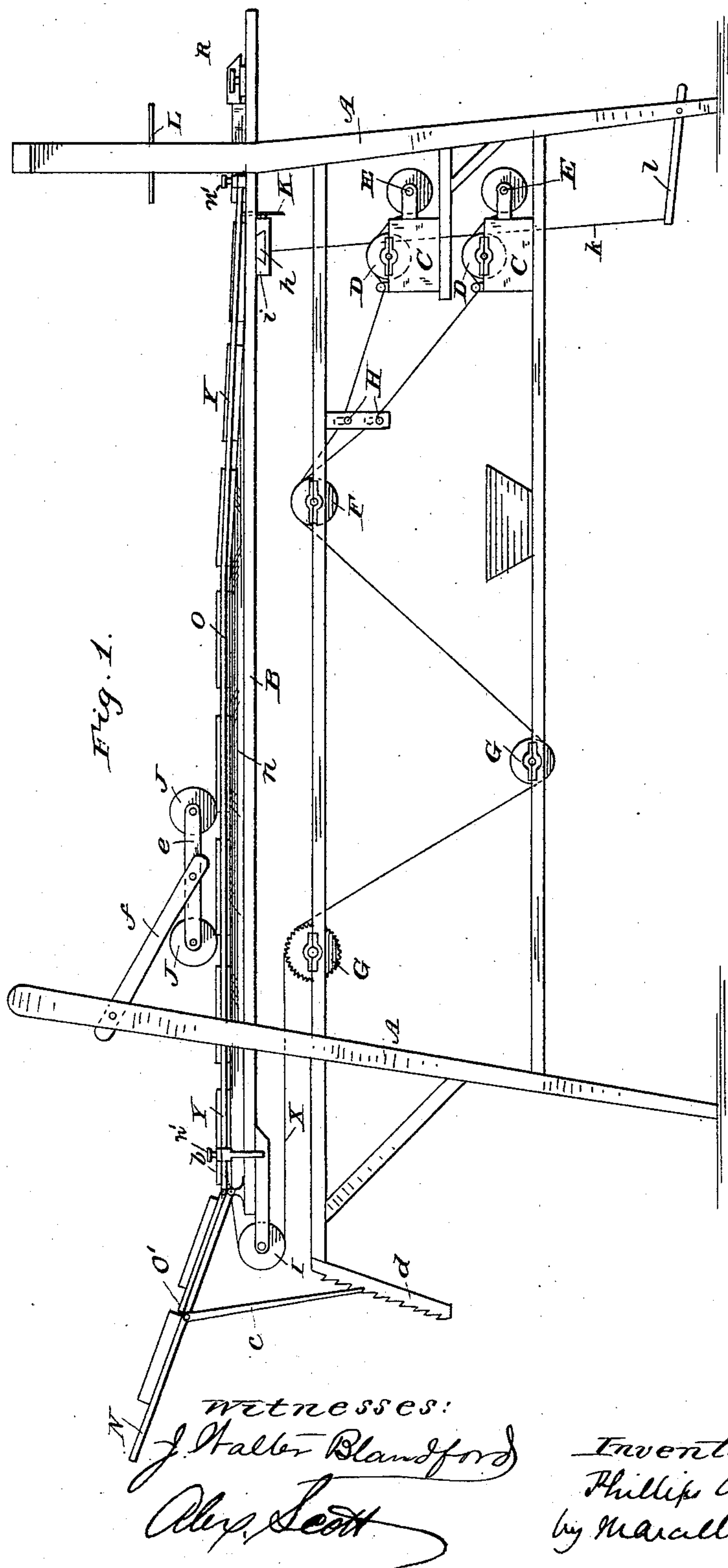
2 Sheets—Sheet 1.

P. ABBOTT.

MACHINE FOR COVERING BOXES AND COVERS.

No. 303,600.

Patented Aug. 12, 1884.



N. PETERS. Photo-Lithographer, Washington, D. C.

(No Model.)

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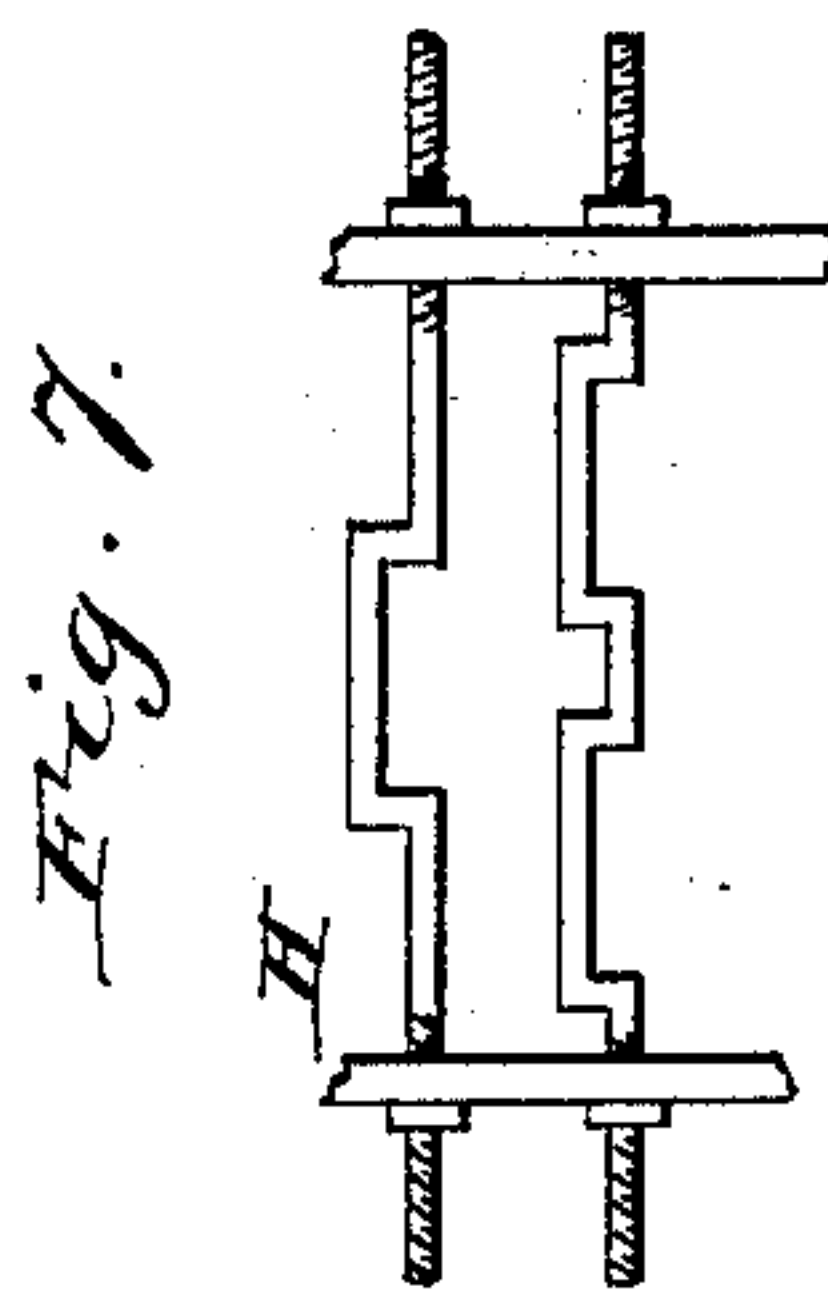
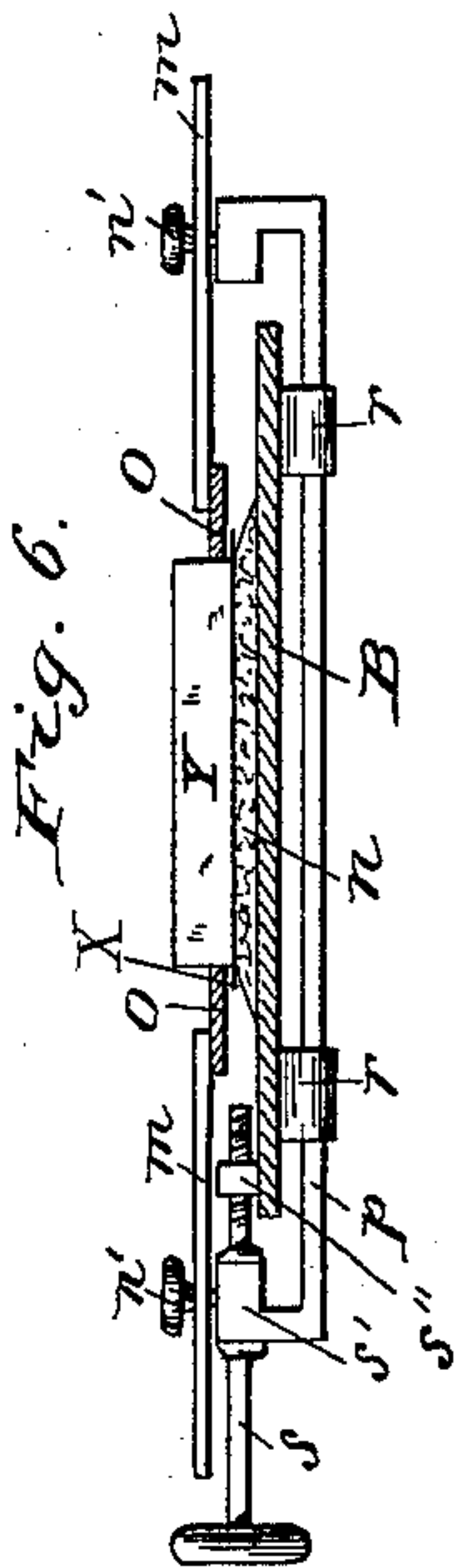
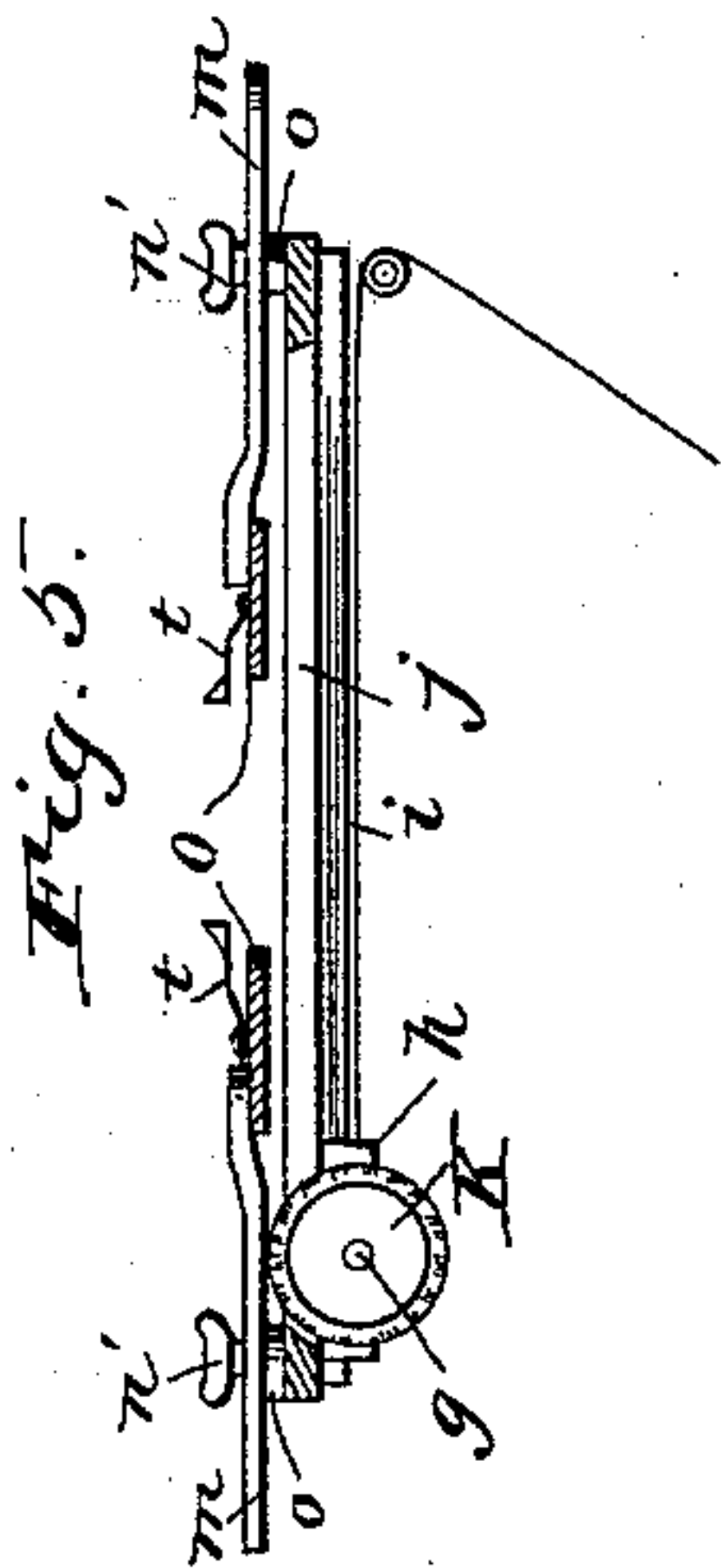


Fig. 3.

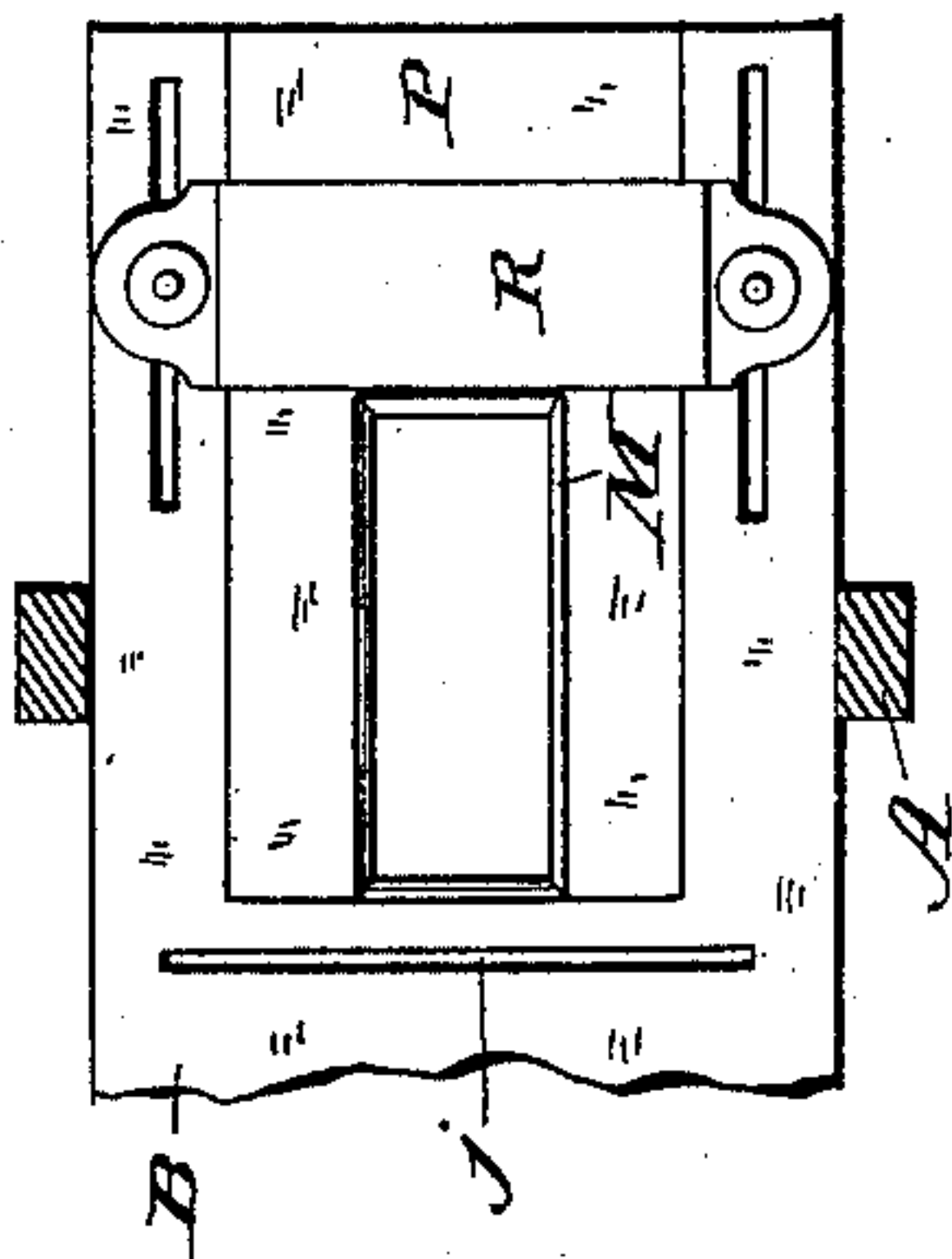
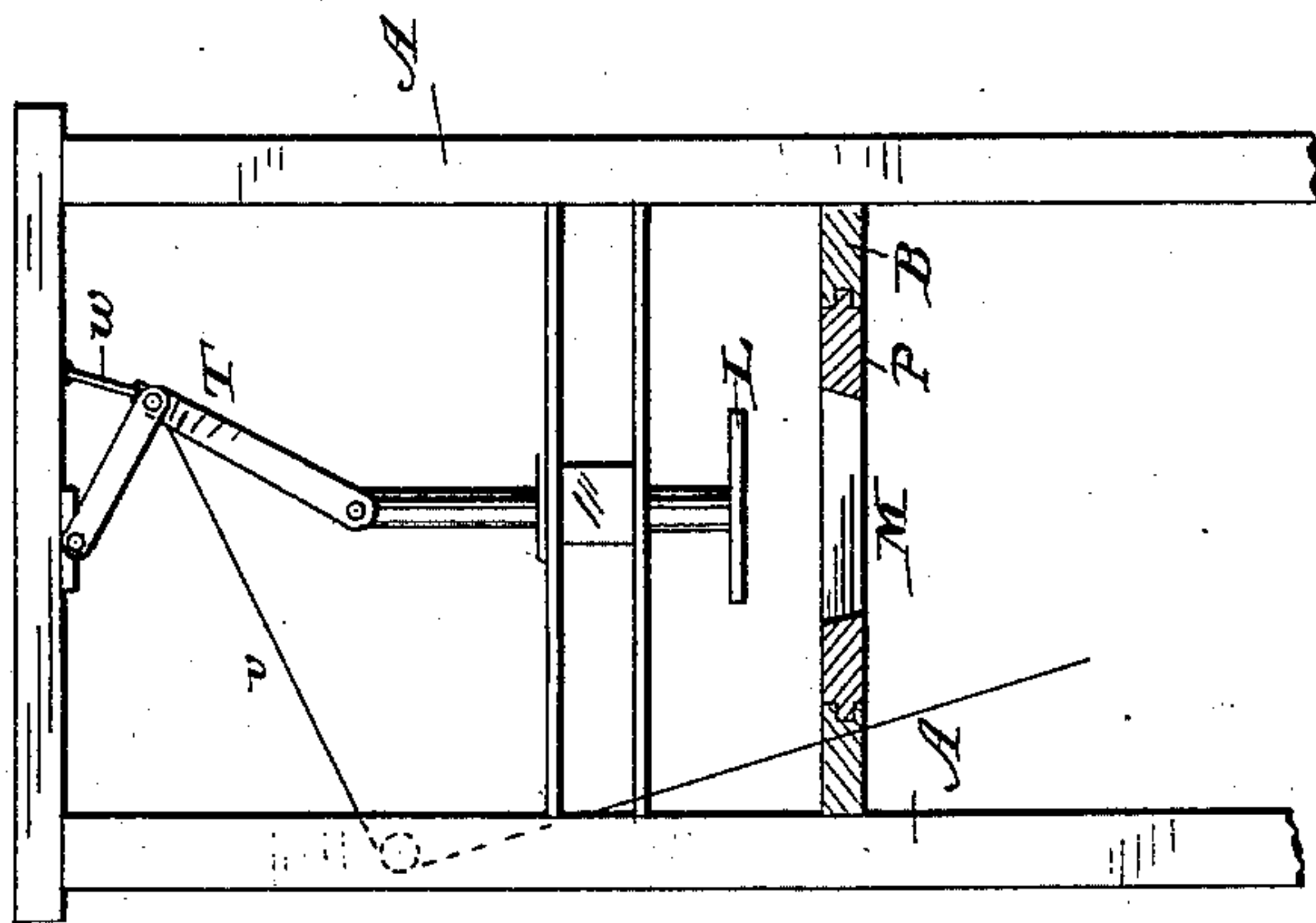


Fig. 4.



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UNITED STATES PATENT OFFICE.

PHILLIPS ABBOTT, OF BROOKLYN, NEW YORK.

MACHINE FOR COVERING BOXES AND COVERS.

SPECIFICATION forming part of Letters Patent No. 303,600, dated August 12, 1884.

Application filed December 21, 1883. (No model.)

To all whom it may concern:

Be it known that I, PHILLIPS ABBOTT, of Brooklyn, Kings county, New York State, have invented certain new and useful Improvements in Applying Covering Material to Boxes and Box-Covers, of which the following is a specification.

The invention has relation to covering with paper, cloth, or like covering or finishing material the bottoms of boxes and tops of box-covers or pieces of straw-board designed for the same. In performing this operation I make use of a strip of covering material coated on one side with paste, by which term I intend any adhesive substance. This strip (which is somewhat wider than the article to be covered) is drawn along over a table pasted side uppermost. The articles to be covered are successively placed thereon at proper intervals apart, and are pressed down, so as to insure their adhesion to the paper, the covering material is severed or cross-cut in the intervals between the article, and the edges of the material thus severed from the main strip are turned up around and pressed upon the sides of the article which rests on said material.

By this improvement in the art of covering box-bottoms and box-cover tops I am enabled expeditiously and conveniently to apply the covering material to the articles in succession, the operation being practically continuous, the only stop in the feed movement of the continuous covering-strip being that which takes place during the severing operation.

The apparatus employed by me to carry out the foregoing improvement comprises, essentially, a table over which the paste-coated covering-strip is drawn, a presser which presses down in succession upon the covering-strip each box or cover deposited upon it by the workman, guides which insure the proper direction of travel of the strip and line of boxes or covers deposited thereon and adhering thereto, a cutter for cross-cutting or severing the covering-strip in the intervals between the boxes. In conjunction with these parts I can, and in practice do, use an inclined table, down which the boxes or covers are fed to the strip, the object of making the table inclined being to provide means by which the successive boxes or covers deposited upon the strip can be automatically spaced; also, a die

through which the box or cover with the severed part of the material carried by it is forced by a plunger for the purposes of turning the protruding edges of said material up onto the sides of the said box or cover; also, a stop whereby the box or cover can be assured in its proper position with respect to the cutter and the die and plunger, said stop being adjustable, so as to adapt it for use with varying sizes of boxes or covers.

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

Figure 1 is a side elevation of the apparatus. Fig. 2 is a plan of the same. Fig. 3 is an enlarged top view of the die through which the box or cover is forced. Fig. 4 is a sectional end elevation of the plunger and its adjuncts. Fig. 5 is a cross-section on the line of the cutter. Fig. 6 is a cross-section on line 6 6, Fig. 2. Fig. 7 is a front elevation of the guides H, hereinafter referred to.

The apparatus shown in the drawings is the preferred embodiment of my invention. Forming part of it is a mechanism for producing from a plurality of strips in the roll a compound covering-strip coated on one side with paste. This mechanism requires no special description, inasmuch as it is like that shown and described in Gordon Munro's United States Patent No. 298,879, of May 20, 1884. It is sufficient to say that it comprises spindles E, which carry the covering and trimming strips, respectively, paste or glue rollers D, paste-pots C, guides H, (shown separately in Fig. 7,) for the pasted trimming and covering strips, respectively, a "uniting-roller," F, and tempering-rollers G, all of these parts being suitably supported in the frame A of the apparatus, and the tempering roller or rollers with which the pasted side of the compound strip makes contact being fluted or ribbed longitudinally. These parts all operate together the same way as the corresponding parts described and shown in the aforesaid Letters Patent, to produce a compound strip coated with paste on one side only, and they therefore need not be further described here. From the final tempering-roller the prepared strip (designed to be used as a covering-strip) passes over a guide-roller, I, to

the apparatus devised by me to effectuate my improvement. The covering-strip (lettered X) passes up over guide-roller I, and from it along over a table-top, B, being drawn along by a workman who stands at the end of the table opposite that at which the guide-roller I is located. As the strip moves along, an attendant places on it at proper intervals apart the articles to be covered, which in this instance are box-covers Y. These covers are placed top downward on the strip, and when thus placed adhere to and are carried along with the strip. As they pass along under the presser J, they are pressed down upon the strip so as to insure thorough and intimate union of the two. The strip carrying this row of covers is drawn along to the cutter K, which severs or cross-cuts the strip in the intervals or spaces between the covers, and each one of the latter, after it is thus separated from the others, is by a plunger, L, forced down through a die, M, of proper size and shape, by which the protruding edges of the strip are turned up around and pressed into contact with the sides and corners of the cover.

Having indicated in a general way the principal parts of the organization and the method of operating therewith, I now proceed to a more particular description of the several portions of the apparatus.

The table-top is padded or cushioned, as seen at *n*, along the line of travel of the covering-strip, rounding up from each edge toward the center, thus affording a convex surface, which serves to stretch out wrinkles which might otherwise form in the covering material that passes along over it. This padding gradually thins down and terminates before it reaches the point where the cutter is located.

For some kinds of work the padding may not be necessary; but the top of the table should, preferably, always be covered with felt or cloth-like material.

A convenient means for feeding the covers Y to the paste-coated strip is furnished by the inclined feed-tablet N, down which the covers are fed by an attendant, the angle at which the tablet stands to the table producing the necessary separation or interval between the successive covers passing from one to the other. The tablet should be adjustable as to inclination with a view to vary this interval, for which purpose it is hinged at its lower edge to the table-top by hinges *b*, and is supported in its adjusted position by a prop, *c*, jointed to it and taking into one of the notches or teeth of a stationary rack, *d*. The proper interval between the covers can with a little practice be given by the attendant without making use of the inclined tablet, and in such event the tablet can be let down level with the table. The covering-strip passes from roller I to the table-top through an opening left for that purpose between the table-top and the lower edge of the feed-tablet.

The presser J shown in the drawings consists

of rollers J, mounted to revolve in a frame, *e*, supported by inclined arms *f*, pivoted at their lower ends to the frame, and at their upper ends to a vertical extension of frame A. The weight of the rollers and frame will usually be sufficient to insure the requisite pressure. If it is not, the frame may be additionally weighted. The frame is preferably made with loose joints, and all the bearings between it and the supporting-arms and rollers are made somewhat free, so that the rollers may accommodate themselves to inequalities in the upper edges of the covers or boxes, and maintain a substantially equal pressure thereon. There may be as many pressure-rollers as desired, and if more than one be used they may be mounted all in one frame or in separate frames, as desired.

Coming now to the cutter K, I remark that I may avail myself of any suitable known form of cutter—for instance, a striking-knife such as described in my Patent No. 297,484, of April 22, 1884. I prefer, however, to make use of a circular knife, because it is comparatively noiseless and does not jar the machine. Such a cutter is represented in the drawings. This circular cutter, which preferably has a serrated cutting-edge, is mounted to revolve on a stud, *g*, fastened to a slide-block, *h*, mounted in the usual manner in or on dovetailed ways *i* on the under side of the table-top, and arranged to move crosswise of the table. A cross slit or slot, *j*, of proper length is formed in the table-top, and through this slit the circular cutter projects far enough to meet the covering-strip at the point where the latter is to be cut. The cutter is moved in the one direction by suitable means—as, for instance, by a cord, *k*, and treadle *l*—and is retracted in the opposite direction by a spring or weight, which I have not deemed it necessary to show, inasmuch as the arrangement is one familiar to the mechanic.

In order to guide the boxes or covers on their way through the machine, I employ two adjustable guides, O, running lengthwise of the table and elevated above the same sufficiently to permit the side edges of the covering-strip X to pass beneath them without impediment. To allow them to be set nearer together or farther apart, according to the size of the boxes or covers passing between them, they are provided at each end with slotted arms *m*, through which pass the binding-screws *n'*, that hold them in place. At the cutter end of the machine these screws enter stationary socket-pieces *o*. At the feed end of the machine they enter socket-pieces formed on the ends of a cross-bar, *p*, mounted on the under side of the table-top in guides *r*, in which it can slide. This cross-bar is actuated through the instrumentality of a set or adjusting screw, *s*, which passes loosely through a boss, *s'*, on one end of the cross-bar, and screws into a boss, *s''*, fastened to the table-top. The screw is provided with a flange on each side of the boss *s'*, so that the cross-bar will move crosswise of

the machine one way or the other according as the screw is turned in or out. The object of this arrangement is to permit the guides at their front ends to be shifted laterally, bodily, and together to conform to slight changes in the position of the covering-strip, which may at times occur. When such an adjustment is made, there will be a little divergence from right lines in the guides; but the lateral movement of adjustment is so slight that such divergence is practically immaterial. The guides at the front have hinged extensions O', which rest on the inclined feed-tablet and rise and fall with it.

The workman during the operation of cross-cutting the covering-strip X with the cutter K will usually prevent the adjacent boxes or covers from rising by gently pressing them down with his hand; but, if desired, there may be used for this purpose two small metallic plates, t, secured to guides O at the cutting-point, and arranged so as to project inwardly over and above the boxes or covers. They may be made adjustable vertically, so as to accommodate boxes or covers of varying heights, and their front ends should be turned up, so as to allow the boxes or covers to slide under them easily.

The die-opening M is formed in the table-top in rear of the knife-slot. The sides of the opening flare outwardly from below up, and should be lined with yielding material, such as thick soft felt. The opening conforms in shape to the covers or boxes, and should be of such size to fit the latter snugly enough to insure the turning over of the protruding edges of the covering-strip at the edges and corners of the boxes, at the same time allowing the boxes to be pushed down through it without exerting too much pressure upon them. The size of the die-opening must of course vary as the sizes of the boxes and covers operated on vary. A convenient way of making it variable in size is to form three of the faces of the die—the rear and two side faces—in a slide, P, fitting in ways in the table-top, and adapted to move up against and join the fourth or front face, which is formed in that portion of the table-top just in rear of the knife-slot, as seen more plainly in Figs. 2 and 3. By having a number of interchangeable slides, P, with die-openings therein of varying sizes, the size of the opening can readily be adapted to the size of the boxes or covers operated on. The die is so placed that when the cutter operates on the covering-strip in the interval between any two boxes the box to the rear of the cutter will be over the die-opening, so that as soon as the strip is cross-cut the box can be pressed down through the opening. A stop-gage, R, which straddles the slide P, and is attached to and adjustable lengthwise of the table-top, serves to stop the boxes in position where the cutter can properly act. The boxes can be pressed through the die by hand, if desired. I have, however, represented in the drawings a plunger, L, which can be used for the pur-

pose. The acting face or end of the plunger is of a size somewhat smaller than the interior of the box or cover on which it is to act, and is removable from the rod on which it is mounted, so that it may be replaced by another of such size as may be called for from time to time by variations in the size of the boxes or covers operated on. The plunger is placed directly over the die-opening, and is supported in proper bearings in a vertical extension of the frame A, in which it can slide up and down.

I may use any suitable means to operate the plunger. The means shown in the drawings consist of a toggle-lever, T, jointed at its lower end to the top of the plunger, and at its upper end to a suitable part of frame A. The upper arm of the toggle is preferably shorter than the lower, and the toggle is actuated to depress the plunger by means of a cord, v, attached to the toggle at its elbow, and connected at the other end to the same treadle, which works the cutter. A strong rubber spring, w, serves to retract the toggle, and consequently the plunger. The arrangement of the parts is such that the plunger in its descent will not come in contact with the box or cover until nearly the end of the treadle movement and after the knife has cut the covering-strip. The workman thus by one movement of the treadle can both sever the covering-strip and force the box or cover down through the die. The adjustment of the plunger and the depth of the die-opening may be such that one or more covers will remain in the latter until forced out by succeeding covers, thus giving more time for perfect adhesion of the turned-over edges of the covering material.

The plunger-supporting frame may, if desired, be made adjustable longitudinally of the machine to conform to extreme variations in size of boxes or covers.

I also desire to remark that, if preferred, the plunger and its coacting parts may be separated from the machine proper, and the covering material be turned over the edges of the boxes and covers as a separate operation.

The mode of operation of the apparatus has been sufficiently set forth in the course of this specification, and requires no further description.

Under my invention the tops and bottoms of the covers and boxes are covered first, and the sides are covered afterward, thus reversing the order heretofore usually adopted. The covering material put on the sides will effectively cover the turned-over edges of the material applied by my machine. When flat pieces of straw-board not yet formed up into boxes or covers are to be covered, then the guides O should, preferably, not extend along the table-top, but on the feed-tablet only, and they may be made adjustable on the tablet by a device the same as that shown at the front end of the guides O. The flat pieces of straw-board will not need to be passed through the die, but, on the contrary, will be severed by

simply bending them upwardly as they come to the end of the machine, thus breaking off the covering material. If, however, it be a cloth-like substance, a knife, operated by hand, should be used to sever them. When covering flat pieces, the stop-gage R need not be used, and a slide, which has no hole in it, may be inserted, so that the table will be unbroken.

Having described my improvement and the best way known to me of carrying the same into effect, I wish it to be understood that I do not limit myself to the details of construction or arrangement herein shown and described; but

What I consider to be new and of my own invention is—

1. The described improvement in the art of applying covering material to boxes and other articles hereinbefore specified, consisting in feeding along the paste-coated covering-strip pasted face uppermost, successively placing the articles on said strip, uniting the two by pressure, and finally dividing the strip in the intervals between the articles, substantially as hereinbefore set forth.

2. The improvement in the art of applying covering material to boxes and box-covers, consisting in feeding along the paste-coated covering-strip pasted face uppermost, successively placing the boxes or covers thereon, uniting the two by pressure, dividing the strip in the intervals between the boxes or covers, and finally turning over the edges of the covering-strip upon the sides of the boxes or covers, substantially as hereinbefore set forth.

3. The combination, with paste-applying devices and tempering-rollers, of the table over which the covering-strip passes from the tempering-rollers, pasted face uppermost, the presser, and the cutter, and cutter-operating mechanism, substantially as and for the purposes hereinbefore set forth.

4. The combination, substantially as hereinbefore set forth, with paste-applying devices and tempering-rollers, of the table over

which the covering-strip passes from the tempering-rollers, pasted side uppermost, the presser, the cutter, the die, and plunger, and means, substantially as described, for operating the cutter and plunger, respectively.

5. The combination, with the table, the presser, and the cutter, of guides between which the boxes or covers, successively deposited upon the paste-coated covering-strip which passes along over the table are conducted to the cutter, substantially as and for the purposes hereinbefore set forth.

6. The guides adjustable to greater or less distance apart, and also laterally movable and adjustable at their front ends bodily and together, in combination with the table, the presser, and the cutter, substantially as and for the purposes set forth.

7. The adjustably-inclined feed-tablet, in combination with the table, the presser, the cutter, and the guides extending from the feed-tablet to the cutter, substantially as and for the purposes set forth.

8. The combination of the table over which passes the covering-strip, and boxes or covers deposited thereon, the cutter, the die, and the adjustable stop-gage, substantially as and for the purposes hereinbefore set forth.

9. The table having a cushioned or padded face convex in cross-section, in combination with the presser, as and for the purposes set forth.

10. The combination of the table over which the covering-strip passes, and an adjustable feed-tablet, whereby the space separating successive boxes or covers deposited on the covering-strip can be determined by the elevation or depression of the tablet, as hereinbefore set forth.

Signed at New York, in the county of New York and State of New York, this 13th day of December, A. D. 1883.

PHILLIPS ABBOTT.

Witnesses:

JOHN J. CAULDWELL,
WALTER H. CRITTENDEN.