

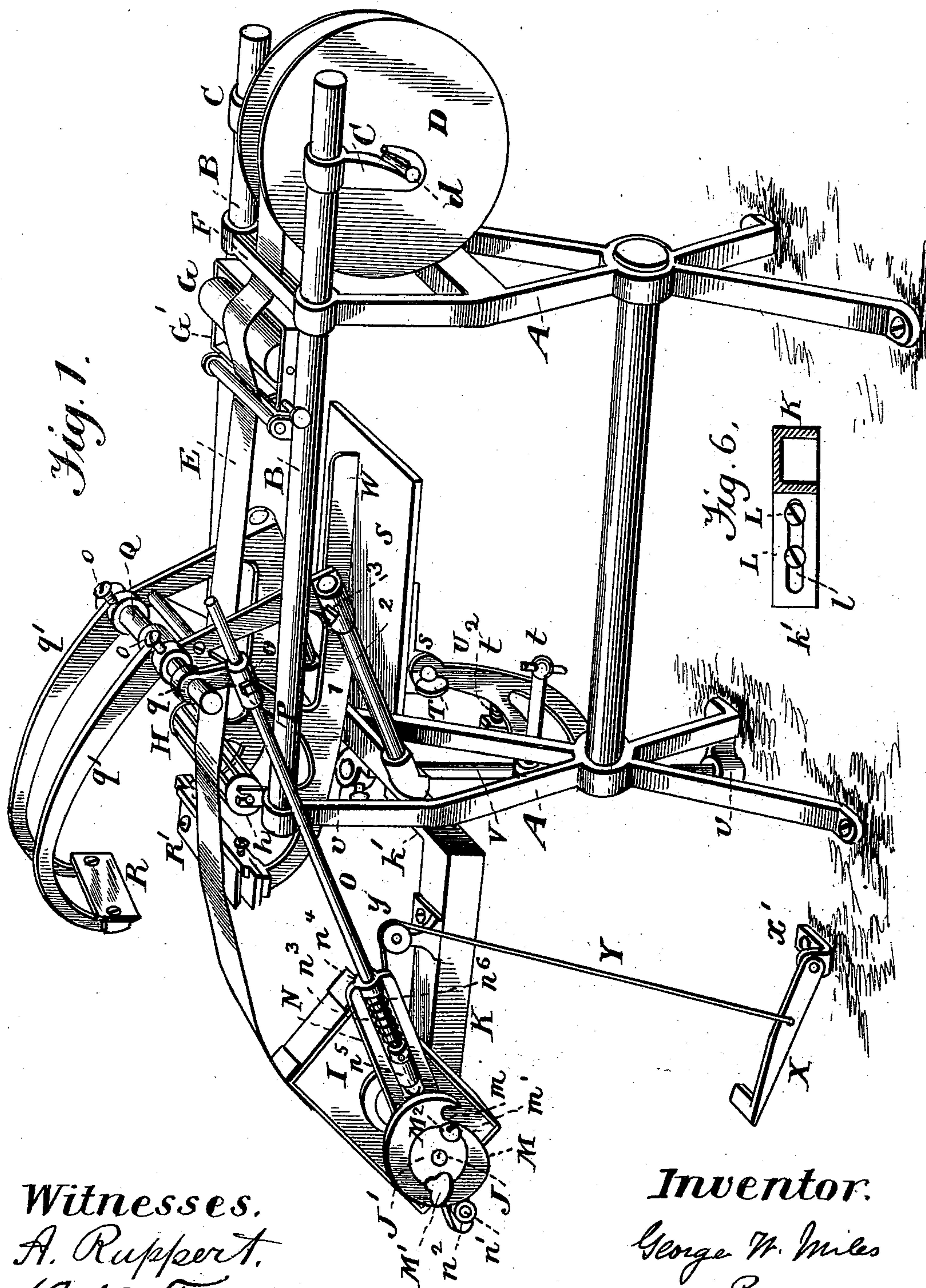
(No Model.)

3 Sheets—Sheet 1.

G. W. MILES.
CUT-OFF FOR PAPER BOX MACHINES.

No. 551,130.

Patented Dec. 10, 1895.



Witnesses.
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G. B. Towles

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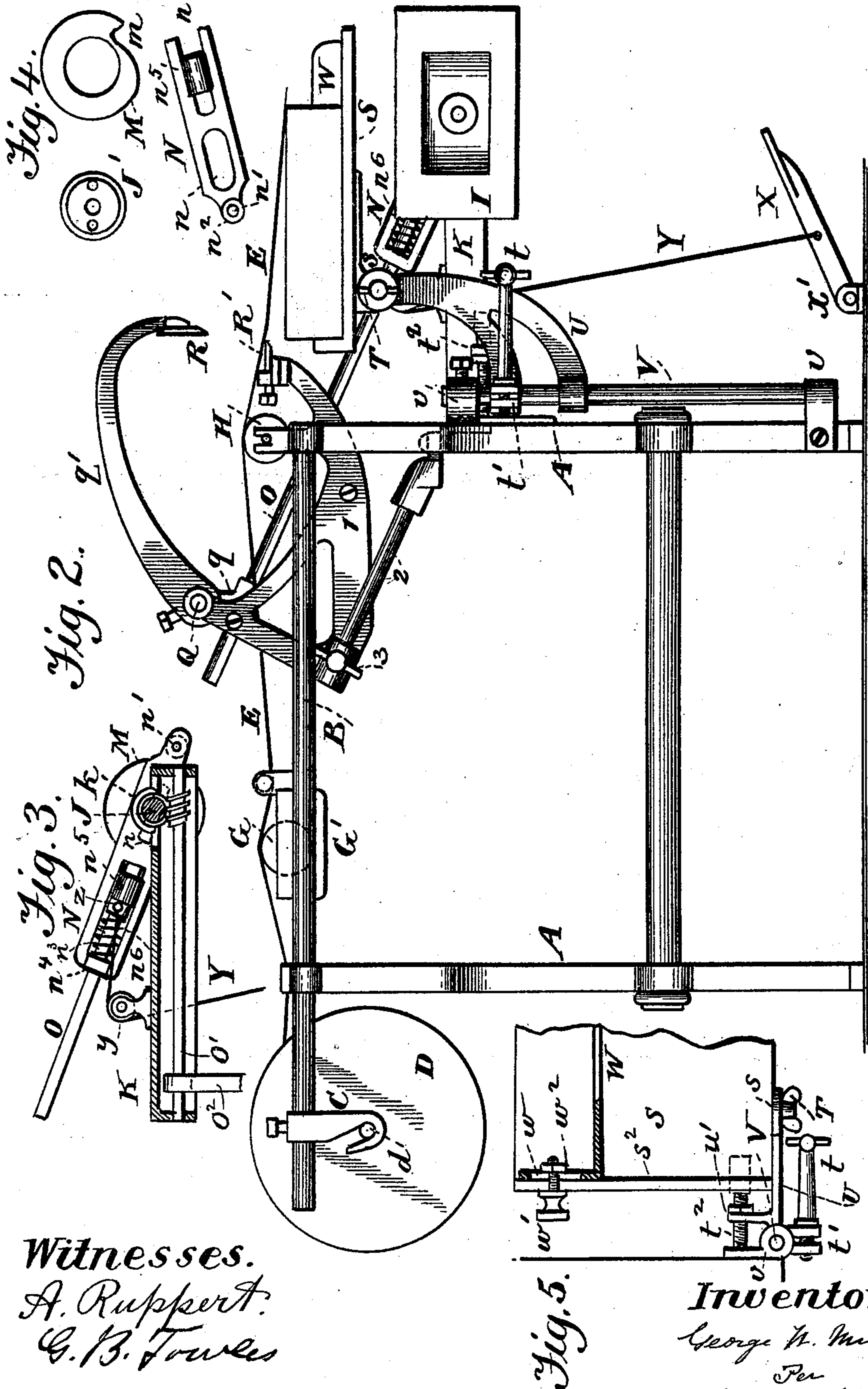
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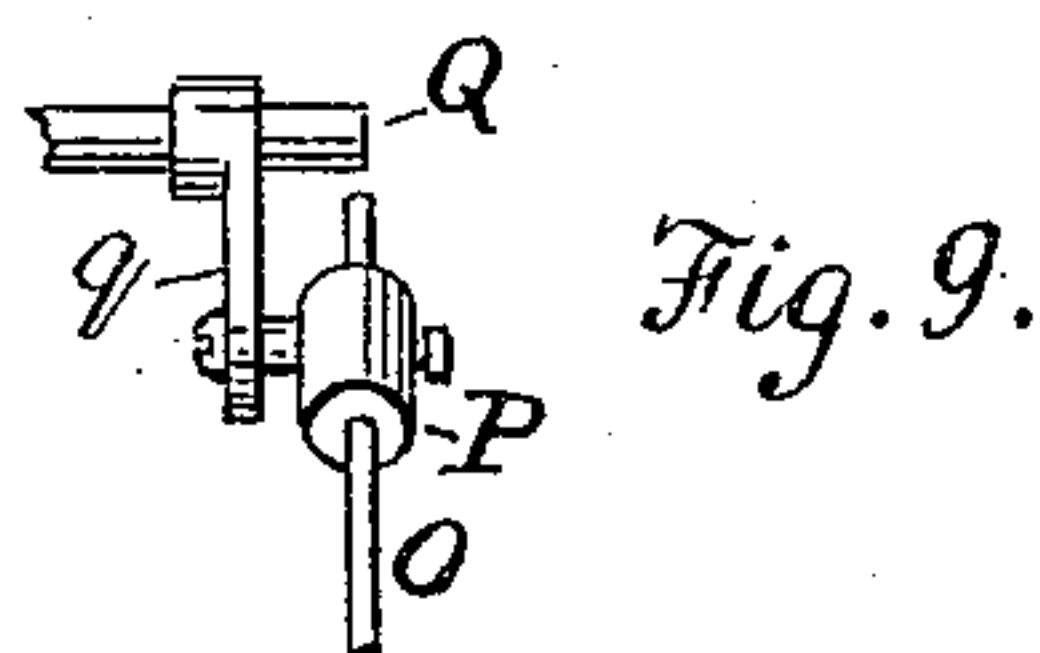
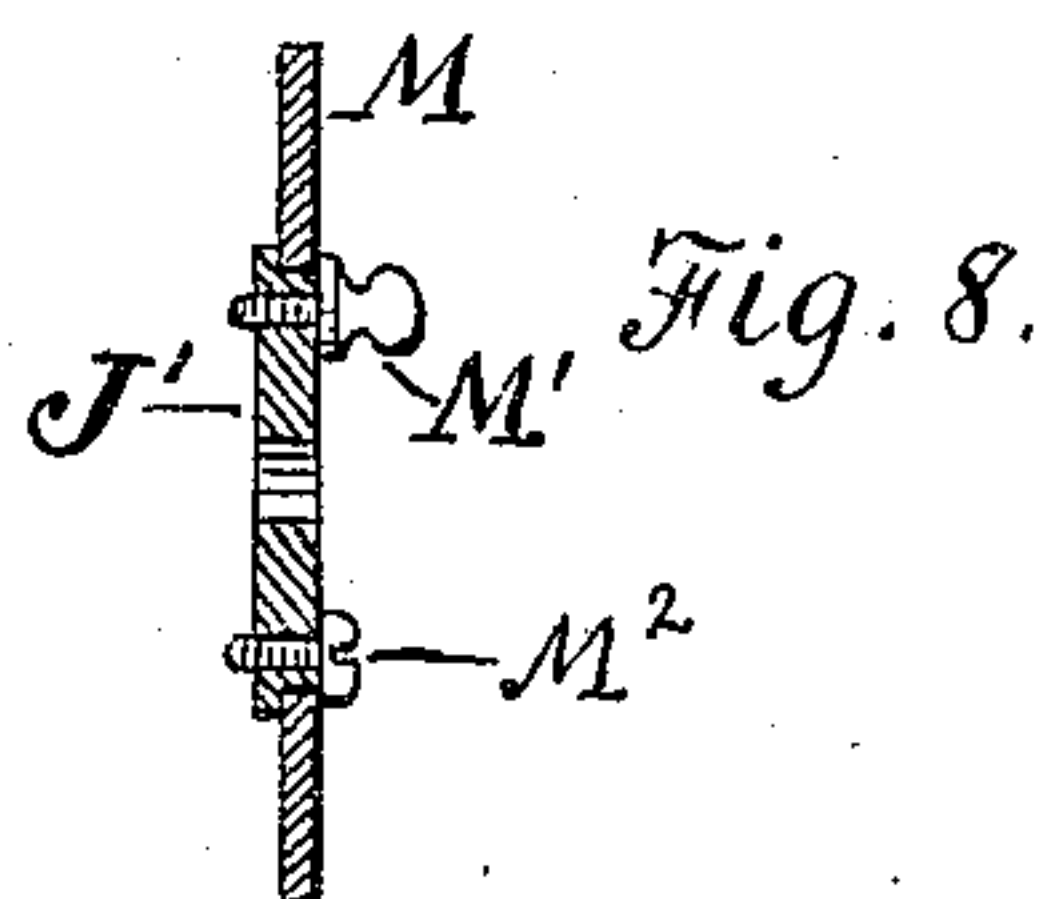
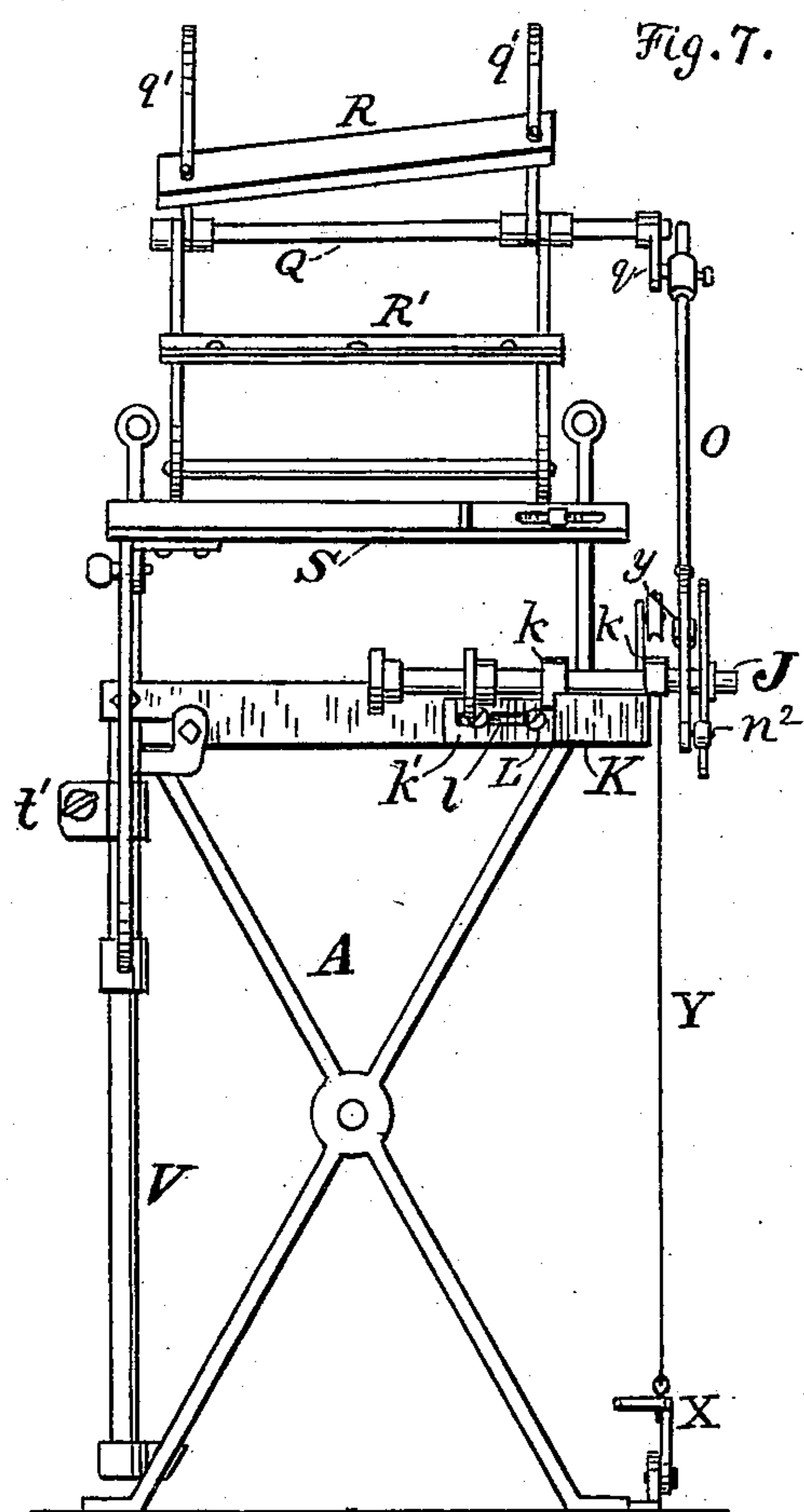
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3 Sheets—Sheet 3.

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Patented Dec. 10, 1895.



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UNITED STATES PATENT OFFICE.

GEORGE W. MILES, OF PHILADELPHIA, PENNSYLVANIA.

CUT-OFF FOR PAPER-BOX MACHINES.

SPECIFICATION forming part of Letters Patent No. 551,130, dated December 10, 1895.

Application filed July 31, 1893. Serial No. 481,962. (No model.)

To all whom it may concern:

Be it known that I, GEORGE W. MILES, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Cut-Offs for Paper-Box Machines; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

The object of the invention is to construct a paper-box machine with a cut-off which shall be automatic in its operation and which may also be operated by devices independent of the principal cut-off mechanism.

In the accompanying drawings, Figure 1 represents a perspective view of a paper-box machine having my improvements as in use when applying a paper strip to the sides and ends of a box. Fig. 2 is a side view of the machine as it appears when used for cutting the paper strip applied to the top of a box. Fig. 3 is a sectional view illustrating the worm-gearing through which the shaft which carries the box-form is driven and other details. Fig. 4 represents two parts of a cam and a slotted plate which are employed in connection with the shaft which carries the box-form. Fig. 5 is a plan view illustrating an adjustable platform. Fig. 6 shows a cross-section of a hollow bar or housing in which a worm-shaft is mounted. Fig. 7 is an end view showing the end of the machine on which the cutters are mounted, with a platform in position for applying the paper to the top of the box. Fig. 8 shows a section of a cam on a shaft on which a box-form is mounted. Fig. 9 illustrates a swivel connection of a rod with an arm of the cutter-shaft.

A designates the supporting-frame, which is provided with two parallel rods or bars B, to which are suspended the hanger-bearings C for the journals *d* of a ribbon-spool D. E indicates the ribbon or strip of paper which passes from said spool through the guides F over the roll G, which rotates in a paste-box G', then over a guide-roll H and over a sta-

tionary cutter R' to the box on which the paper is to be pasted. The said box is placed on a box-form I, which is removably mounted on a rotative shaft J, which has bearings *k* on a horizontal hollow bar or housing K, secured to the supporting-frame by bolts L, passed through a slot *l* in an arm or lug *k'*. (See Figs. 6 and 7.) The guide-roll H has two heads connected by transverse wires, so that as little of the paste-surface of the paper ribbon as possible shall come in contact with said roll, the latter being mounted in bearings carried by the frame A. The operator manipulates the paper ribbon so as to paste it on the box as the shaft J revolves.

Mounted at one end of the frame A is a cutter-frame, which has two side parts 1, which are adjustably connected with two inclined rods 2, which are made fast at their lower ends to a cross-bar of the frame A, and the cutter-frame may be adjusted upward or downward on said rods 2 by means of the set-screws 3, to adapt it for boxes of different sizes.

To a cross-bar of the cutter-frame is adjustably secured a stationary cutter-blade R', and in the upper part of said frame is mounted a cutter-shaft Q, from which extend the curved arms *q'*, which are adjustably secured to the shaft Q by set-screws. To the free ends of the arms *q'* is secured a cutter-blade R, which is inwardly inclined to correspond with the bevel of the cutting-edge of the stationary blade R', and also to make a shearing cut.

On one end of the shaft J is secured a cam, which is made in two parts, the central part being formed of a circular disk J', which has a rabbeted or flanged edge and is fast on said shaft J. The other part of said cam is formed of a ring-disk M, into which the disk J' is fitted, as shown in Fig. 8. A thumb-screw M', in a threaded hole in the disk J', is used to tighten the ring-disk M thereto, and a screw M², passed through the disk J' so that the head of the screw will bind the ring-disk, serves to hold the two parts of the cam together when the thumb-screw is turned to loosen the ring-disk to adjust it in position on the circular disk.

The ring-disk M is formed with a notch or cavity *m* and a cam-form *m'*, and the ring-disk is adjusted on the circular disk with the

cavity m at the proper point to allow the cutter R to make its stroke to cut off a suitable length of the paper ribbon.

N indicates a slotted plate having at one end a stud n' , on which is placed a friction-roller n^2 . At the opposite end of said plate is a socket n^4 , through which is passed one end of a rod O, which is connected with a cylindrical bearing n^5 , which moves in the slot n^3 of the plate, and a spring n^6 is placed on the rod O, between the socket n^4 and the cylindrical bearing. The upper end of the rod O is held in a sleeve P, which is adjustable on the rod and is swiveled to or loosely connected with a crank-arm q of the cutter-shaft Q. The plate N is movably connected with the shaft J, the latter extending through a slot n in said plate to allow a longitudinal movement of the rod O, and the cam M J' is secured to the outer extremity of said shaft after the shaft has been passed through said plate.

Rotary motion is imparted to the shaft J, which carries the box-form and the cam M J', through a worm-shaft O', which is in gear with shaft J and is mounted in the hollow bar K, as shown in Fig. 3, a wheel on shafts O' and belting being indicated by O². At the box-form, with the box thereon, is rotated, the cam, moving against the roller n^2 on plate N, draws the rod O, which is connected with an arm on the shaft of the cutter R, and the cutter is thus raised the required height, and when the roller slips from the cam, as the cavity m is reached, the cutter R descends automatically by gravity and severs the paper ribbon.

S indicates a platform which is used to hold the box in position for pasting paper on the top. (See Figs. 2 and 5.) The said platform is supported by a bracket U, which is adjustably secured to a vertical shaft V, mounted in bearings carried by the frame A. The said platform is secured to the bracket by means of a thumb-screw T, passed through a hole in the bracket and through a lug on the lower side of the platform. The bracket is secured to the shaft V by means of a screw t and a clamp t' . W indicates a right-angular plate having a slot w , said plate being adjustably secured in position on the platform to hold the box, placed thereon, in the right relative position for applying the paper strip. The plate W is secured by a thumb-screw w' , which is passed through a cleat s^2 of the platform and a slot w of said plate. A set-screw t^2 is carried by an arm w' of the bracket, said screw forming an adjustable stop for contact with the main frame when the platform is swung to the front of the machine for use. When not in use, it is in a depressed position at one side of the machine.

When the paper is to be pasted to the top of the box, the box-form with the box thereon is removed from the shaft J, the clamp t' on the shaft V is loosened, and the platform is raised, the clamp is again tightened and the platform is swung around to its proper po-

sition in front of the machine. The box-form with the box is then placed on the platform, its position being regulated by the plate W and cleat s^2 , and the paper is applied to the top of the box by the operator. Cut-off mechanism, independent of the shaft J and its driving mechanism, is provided and is employed for cutting the paper when applied to the top of the box. A foot-treadle X is pivoted to a plate x' , secured to the floor or to the base of the machine, and a cord Y is connected with the treadle, passed over a pulley y , mounted on the bar K, and connected at z with the rod O.

The cutter R being held in its raised position by the spring n^6 on the rod O, the operator presses the treadle X with his foot when the paper is to be cut, thus moving the said rod upward and partly rotating the cutter-shaft, so that the cutter R descends and severs the paper strip.

The cutter-frame being adjustable on the fixed oblique rods 2, and the cam with the adjustable ring-disk, formed with the cavity m , are considered important features of the machine.

I claim—

1. The combination with a supporting frame, of a cutter-frame mounted therein, a fixed cutter-blade, a cutter shaft carried by said cutter-frame and provided with a crank-arm, a movable cutter connected with said cutter-shaft, a rotative shaft and a box-form thereon, a cam provided with a cavity m , and secured to said rotative shaft, a plate having a slot n , through which said rotative shaft extends, and a slot n^3 , a bearing piece which is movable in said slotted plate, a roller carried by said plate and adapted for engagement with said cam, a rod, one end of which is loosely connected with the crank-arm of said cutter-shaft, said rod extending through a socket in said plate and being connected with said bearing piece, and a spring placed on said rod and adapted to be compressed by said bearing piece, substantially as and for the purposes described.

2. In cut-off mechanism for paper-box machines, the combination with a supporting frame, of a rotative shaft, to carry a box-form, two inclined rods, fixed to said frame, and a cutter frame, adjustably connected with said inclined rods, whereby said cutter frame, with the cutting blades, may be adjusted vertically, or toward or from said rotative shaft, to adapt the machine for boxes of different sizes, substantially as and for the purposes described.

3. The combination, with a cutter shaft, having a crank-arm at one end, of a rotative shaft, a cam, formed of a circular, flanged disk, secured to said rotative shaft, and a ring-disk, having a cavity m , and a cam-form, said ring-disk fitting on said circular disk and being adjustably secured thereto, a rod, one end of which is loosely connected with the crank-arm of said cutter-shaft, the other end

of said rod being provided with devices adapted for engagement with said cam and for effecting an endwise movement of said rod, substantially as set forth and described.

- 5 4. The combination with the cutter-shaft, provided with a crank-arm, of a rod, O, a sleeve P, adjustably secured on said rod and having a swivel connection with said crank-arm, a rotative shaft, J, a plate provided with
10 a slot n , through which shaft J, extends, and a slot n^3 , into which rod, O, extends, said rod being passed through a socket in one end of said plate, a bearing piece secured to said rod and movable in said slotted plate, a spring
15 on said rod, in position to be compressed by said bearing piece, a cam secured to shaft J, and a roller carried by said plate and in position to engage with said cam, substantially as and for the purposes described.
- 20 5. The combination with a supporting frame, of the fixed, inclined rods 2, a cutter-frame, adjustably connected with said rods, a cutter-shaft, provided with a crank-arm and journaled in said cutter-frame, a shaft J, and
25 a box-form thereon, a cam secured to shaft J, a rod loosely connected with shaft J, and adapted to engage with said cam, a sleeve P, adjustably secured to the upper end of said last mentioned rod and loosely connected with
30 the crank-arm of said cutter shaft, substantially as set forth and described.

6. The combination, with a frame, of a cutter shaft provided with a crank-arm, a rod, one end of which is loosely connected with said crank-arm, a slotted plate, loosely connected with a shaft, J, and with the lower
35 end of said rod which extends through a socket in one end of said plate, a bearing piece movably mounted in said slotted plate and secured to the end of said rod, a spring on said
40 rod, adapted to be compressed by said bearing piece, a treadle X, a pulley y , and a cord connected with said treadle, passed over said pulley and secured to said rod, substantially as and for the purposes described. 45

7. The combination, with a frame, of a vertical shaft mounted in bearings secured to said frame, a bracket U, adjustably connected with said shaft, a screw-clamp by which said bracket is vertically adjustable on said shaft,
50 a platform detachably secured to said bracket, a set screw carried by an arm of said bracket and forming an adjustable stop for the lateral movement of said platform, the latter being
55 vertically and laterally adjustable, substantially as and for the purposes described.

In testimony whereof I affix my signature in presence of two witnesses.

GEORGE W. MILES.

Witnesses:

OWEN CHUTE,

MATTHEW BARRETT.