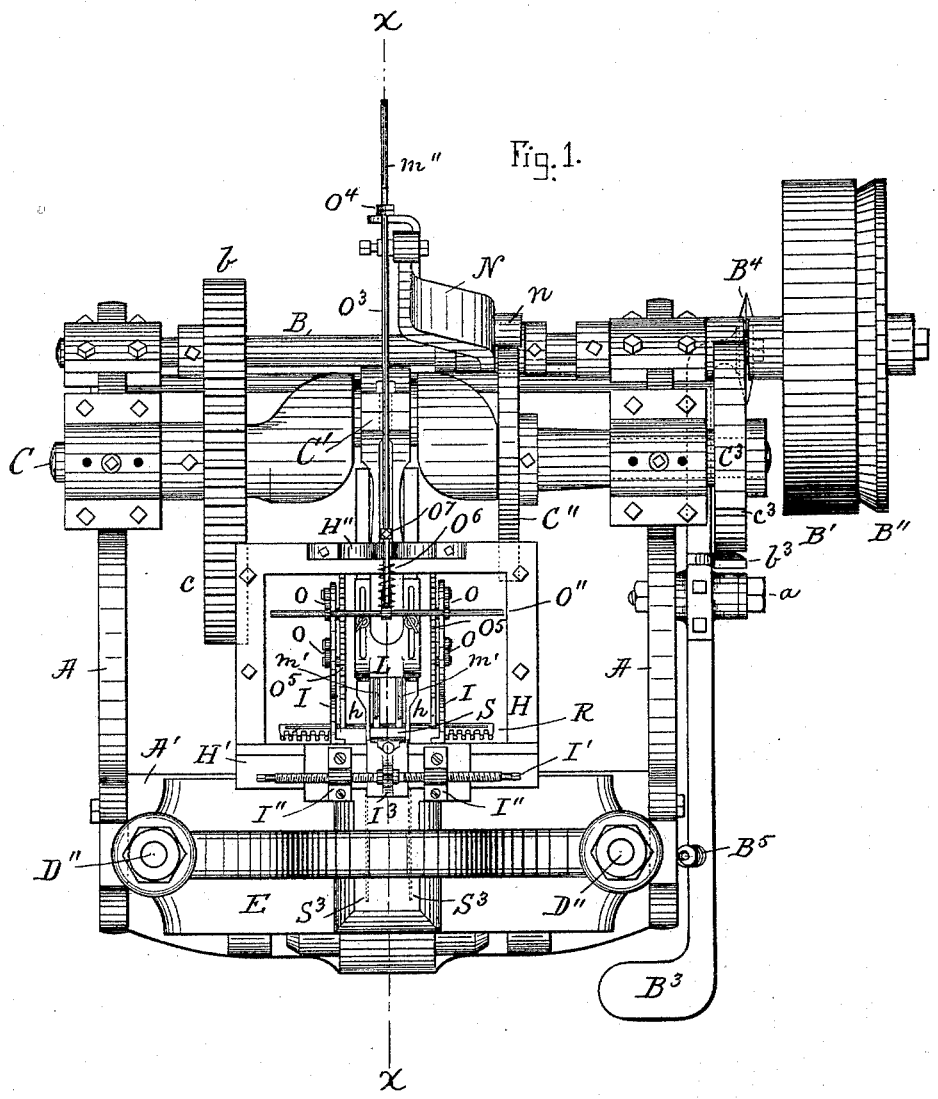
(No Model.) 5 Sheets—Sheet 1.

G. W. GLAZIER.

PAPER BOX SETTING-UP MACHINE.

No. 456,485. Patented July 21, 1891.

Fig. 1.



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(No Model.) 5 Sheets—Sheet 2.

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PAPER BOX SETTING-UP MACHINE.

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Fig. 2.

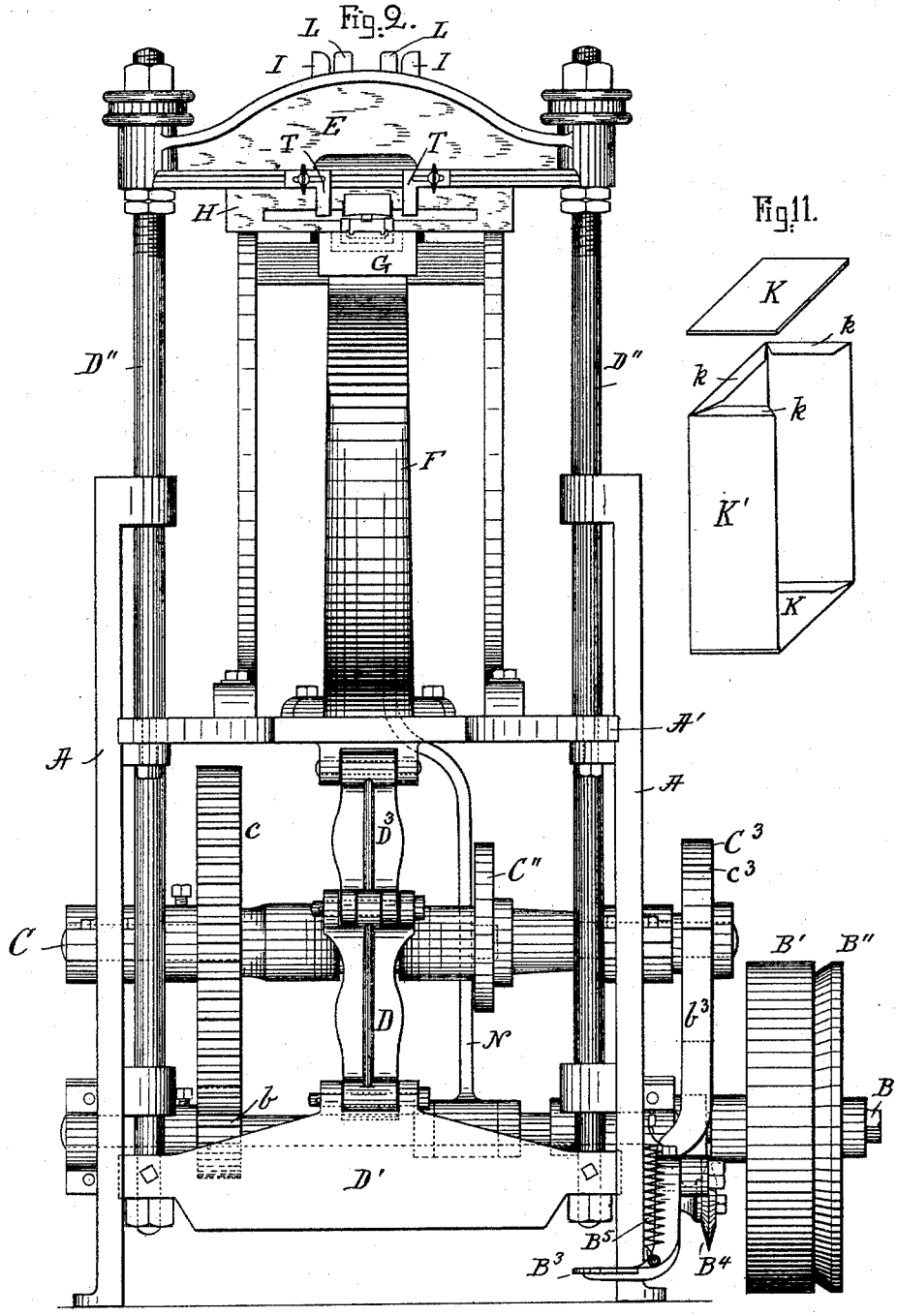

Fig. 11.

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G. W. GLAZIER.

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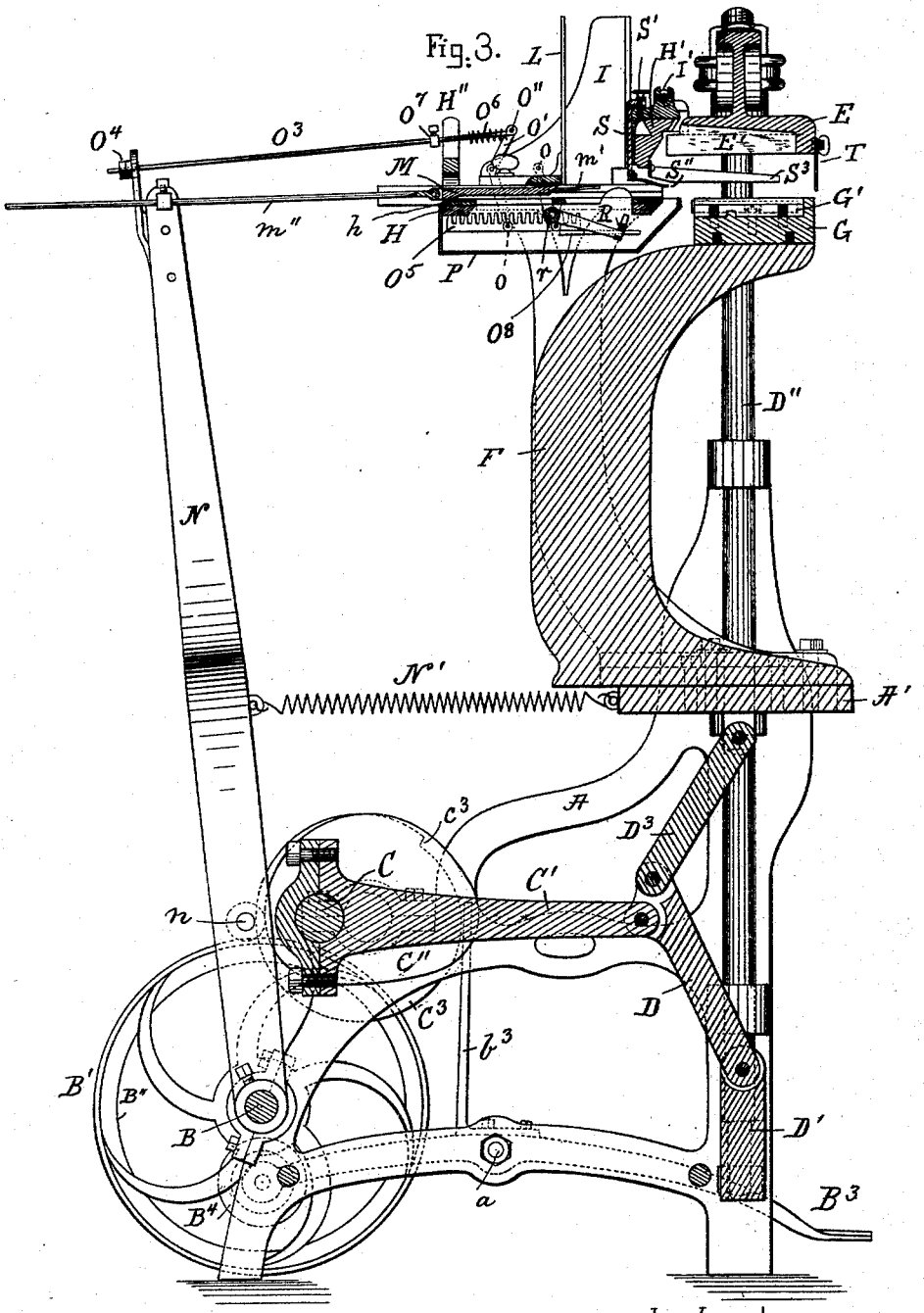
Fig. 3.



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(No Model.) 5 Sheets—Sheet 4.

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PAPER BOX SETTING-UP MACHINE.

No. 456,485. Patented July 21, 1891.

Fig. 4.

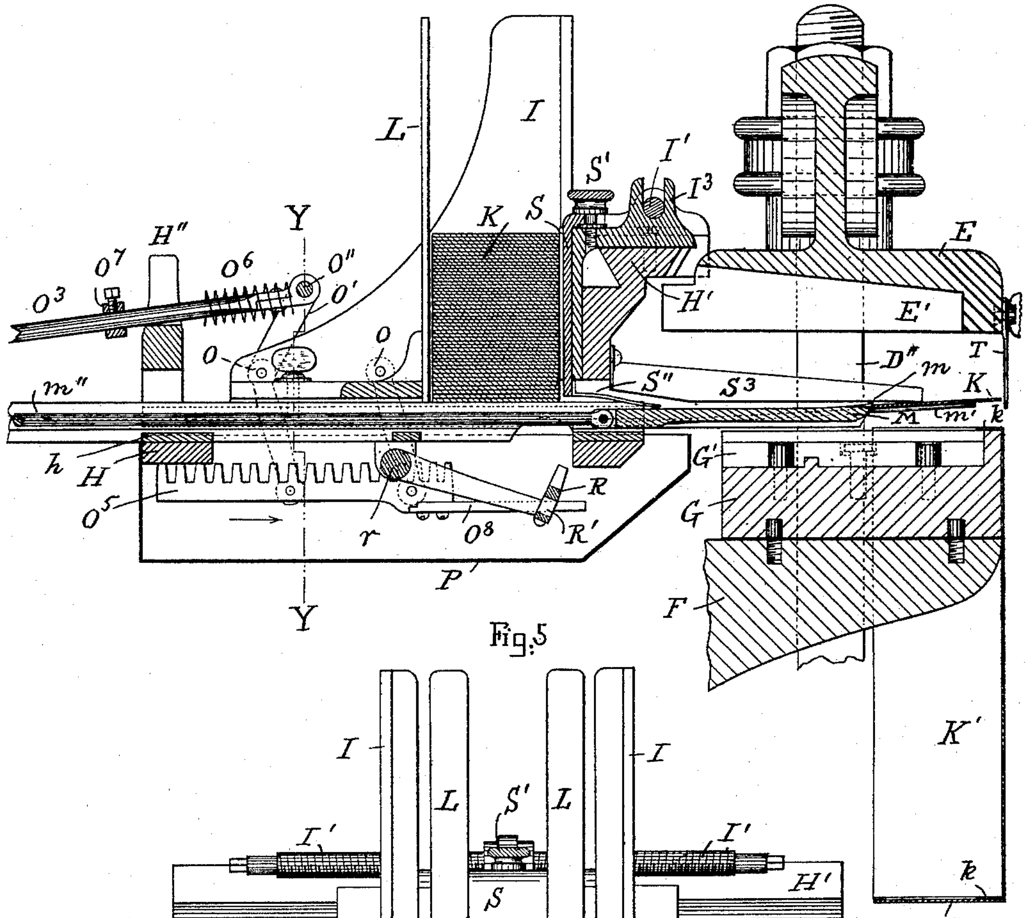
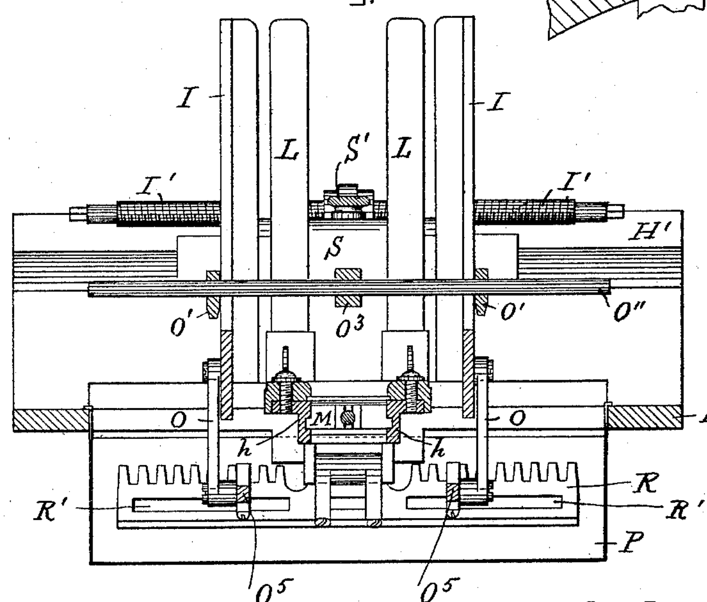


Fig. 5



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THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

(No Model.) 5 Sheets—Sheet 5.

G. W. GLAZIER.

PAPER BOX SETTING-UP MACHINE.

No. 456,485. Patented July 21, 1891.

Fig. 6.

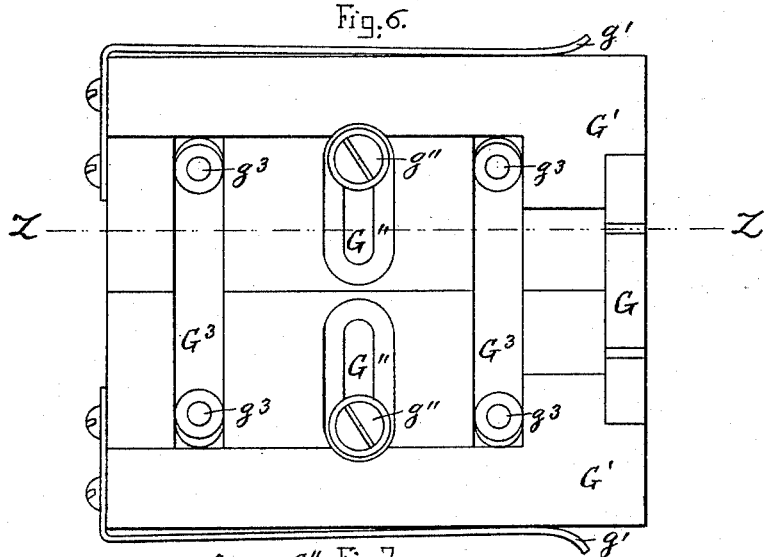


Fig. 7.

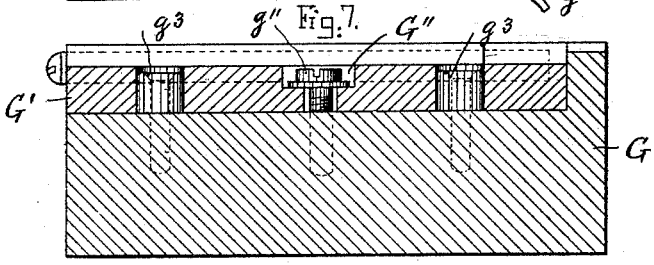


Fig. 8

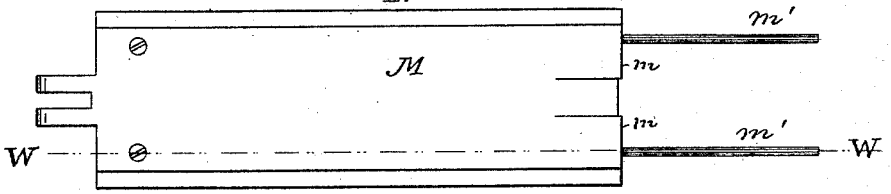


Fig. 9

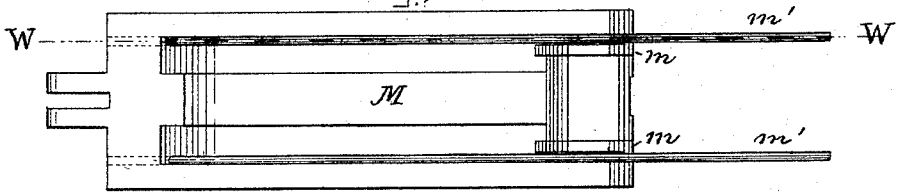
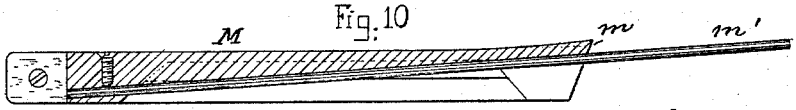


Fig. 10



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UNITED STATES PATENT OFFICE.

GEORGE W. GLAZIER, OF SALEM, MASSACHUSETTS, ASSIGNOR OF THREE-FOURTHS TO JOHN B. ROLLINS, OF SAME PLACE, AND GEORGE H. ALLEN, OF LYNN, MASSACHUSETTS.

PAPER-BOX-SETTING-UP MACHINE.

SPECIFICATION forming part of Letters Patent No. 456,485, dated July 21, 1891.

Application filed April 3, 1891. Serial No. 387,532. (No model.)

To all whom it may concern:

Be it known that I, GEORGE W. GLAZIER, a citizen of the United States, and a resident of Salem, in the county of Essex and State of Massachusetts, have invented new and useful Improvements in Paper-Box-Setting-Up Machines, of which the following, taken in connection with the accompanying drawings, is a specification.

This invention relates to improvements in paper-box-setting-up machines, and it is carried out as follows, reference being had to the accompanying drawings, wherein—

Figure 1 represents a top plan of the improved machine. Fig. 2 represents a front elevation of the same. Fig. 3 represents a vertical section on the line X X, shown in Fig. 1. Fig. 4 represents a detail vertical section of the end blank feeding, pasting, and setting-up mechanism. Fig. 5 represents a cross-section on the line Y Y, shown in Fig. 4. Fig. 6 represents a detail top plan of the box-support; and Fig. 7 represents a cross-section on the line Z Z, shown in Fig. 6. Fig. 8 represents a detail top plan of the end blank-feeder plate. Fig. 9 represents a bottom plan of the same. Fig. 10 represents a section on the line W W, shown in Figs. 8 and 9; and Fig. 11 represents a perspective view of the paste-board box that is being put together by the improved machine.

Similar letters refer to similar parts wherever they occur on the different parts of the drawings.

In the drawings, A A is the frame of the machine, in bearings in which is journaled the driving-shaft B, which is set in a rotary motion by means of belt-power applied to the pulley B′, which is loose on the shaft, and caused to be brought against a friction-clutch B″, secured to said shaft, when the machine is to be set in motion. The shaft B is started by the depression of a treadle B^3, pivoted to the frame A at *a*, and carries at its rear end a conical disk B^4, which comes in contact with and moves the pulley B′ in frictional contact with the friction-clutch B″ when the treadle B^3 is depressed, thus causing the shaft B to rotate until said treadle is released and returned to its normal position by the influence of a suitable spring B^5, (shown in Figs. 1 and 2,) when the loose pulley B′ is relieved from the friction-clutch B″, causing the machine to be stopped.

b is a pinion on the driving-shaft B, the teeth of which mesh in the teeth of the gear *c* on the crank-shaft C, which is journaled in bearings in the frame A A, as shown in Figs. 1 and 2.

C′ is a link, the rear end of which is journaled to the crank-shaft C, and having its forward end pivoted to the upper end of a lever D, which is pivoted in its lower end to a vertically-movable cross-bar D′, to which the upwardly-projecting rods or posts D″ D″ are secured, said rods being guided in suitable bearings on the frame A A, as shown in Figs. 1, 2, and 3. To the upper end of the link D is pivoted a similar link D^3, having its upper end pivoted to any stationary part of the machine, preferably to a plate or cross-bar A′, secured to the uprights or frame A A.

E is the head, adjustably secured to the upper ends of the rods D″ D″, as shown. By this arrangement a reciprocating movement is imparted to said head from the crank-shaft C.

To the stationary plate A′ is secured the post F, on the top of which is secured and rests the box-supporting block, which is preferably composed of a base-block G, resting on top of the post F. On the block G are arranged the laterally-adjustable box-supports G′ G′, preferably secured to the base G by means of screws *g″ g″* going through slots G″ G″ in the box-supports G′ G′. The parts G′ G′ are preferably guided on the block G by means of pins or pins and rolls g^3 g^3 on the block G going through parallel slots G^3 G^3 in the adjustable supports G′ G′, as shown in detail in Figs. 6 and 7. The parts G′ G′ are adjustable according to the width of the box that is to be set up in the machine.

g′ g′ are yielding springs secured to the sides of the box-supports G′ G′ for the purpose of holding the box in position on said supports while attaching the end pieces to it.

The machine for feeding and pasting the end pieces is constructed as follows:

To the upper ends of the frames A A is se-

cured a hollow frame H, having at its front portion a lateral dovetailed guide H′, on which the angular plates or blank-guides I I are laterally adjustable to and from each other, according to the width of the box ends that are to be loaded between said angular plates, said plates being preferably adjustable by means of a right and left handed screw I′, working in nuts on dovetailed ears I″ I″, that form parts of the angular plates I I, said ears being capable of adjustment on the dovetailed guide H′, for the purpose stated. The said adjusting-screw I′ is connected to a forked bracket I³ on the bar H′, so as to be prevented from longitudinal movement, although free to be turned around its axis while adjusting the positions of the blank-guides I I. To the hollow frame H are secured grooved guides *h h*, the forward ends of which serve as supports for the end blanks K K, that are to be successively pasted, fed to, and stuck on the turned-over edges *k k* of the box-body K′, as shown in Figs. 4 and 11.

L is the back wall for the blanks K K, which is adjustably secured to the guides *h h* in a suitable manner, so as to change its position relative to the front edges of the plates I I, according to the depth of the blank K that is being used.

M is the blank picker or feeder, by means of which one blank K at a time (the undermost in the pile in Fig. 4) is taken from the pile contained between the walls I I and L and carried to the box while held on the box-support, as shown in Fig. 4. Said feeder or picker has at its forward end an upwardly-projecting lip *m*, adapted to come in contact with the rear edge of the bottom sheet K in the pile, Fig. 4, and thereby carry it, one at a time, to the box-support.

m′ m′ are spring wires or bars on the under side of the picker M, which springs project beyond the forward edge of said picker and serve as yielding supports on which the blank is carried to the place where it is to be stuck on the box-body. Said wires, being elastic, will permit the blank to be depressed upon said box-body by the action of the head E.

The picker M is reciprocated by mechanism from the crank-shaft C, as follows: On the shaft B, or other suitable part of the machine, is pivoted the lever N, which is actuated in one direction by means of a cam C″ on the crank-shaft C acting on a pin or pin and roll *n* on said lever N, as shown in Figs. 1, 2, and 3. A spring N′ moves the lever N in an opposite direction. To the upper end of the lever N is adjustably connected a rod *m″*, the forward end of which is pivoted or otherwise connected to the picker M.

The pasting device for automatically applying paste or adhesive substance to the under side of the lowest blank K in the pile is constructed as follows: On each of the side plates I I are pivoted a pair of parallel links O O, one of which has an extension O′, through which passes loosely a transverse rod O″, to which is hinged the inner end of a rod O³, the outer end of which passes loosely through an ear on the lever N and is provided in its outer end with adjusting-nuts O⁴, as shown in Figs. 1 and 3. To the lower ends of each set of the parallel links O O is pivoted a rack or spotter-bar O⁵, having teeth or projections on its upper side, as shown in Figs. 1, 3, 4, and 5. P is a receptacle containing paste or suitable adhesive liquid, into which the racks or spotter-bars O⁵ O⁵ dip intermittently and transfer the paste in spots on the under side of the blank at or near its side edges. The said spotter-bars are operated in one direction by the lever N and in the opposite direction by means of a spring O⁶, interposed between the rod O″ and a bracket H″ on the plate H. The dip of said spotter-bars O⁵ is regulated by means of an adjustable collar O⁷ on the rod O³ coming in contact with the bracket H″ during the forward motion of the lever N, as shown in Figs. 1, 3, and 4. For the purpose of applying paste in spots to the under side of the blank at or near its forward edge I pivot at *r* a transverse rack or spotter-bar R, having slots R′ R′, adapted to receive projections or extensions O⁸ on the side racks O⁵ O⁵, by which an up-and-down rocking movement is automatically imparted to the said lateral rocker or spotter-bar O⁸ during the forward-and-back swinging motion of the side racks O⁵ O⁵.

On the rear side of the stationary bar H′ is arranged a vertically-adjustable gate S, which is adjusted up and down by means of a suitable regulating-screw S′. (Shown in detail in Fig. 4.) In using the machine the gate S is adjusted so that its lower edge is held in position above the bars *h h*, (on which the pile of blanks K rest,) so as to permit one blank at a time to be taken from the bottom of the pile and pushed forward by the feed-bar M. In practice I prefer to provide the gate S at its lower end with a forwardly-projecting foot-piece S″, adapted to hold the blank against the lip *m* on the feed-bar M after said lip has passed by the gate S, and thus preventing the blank from springing or moving upward away from said lip. I also prefer to use a pair of forwardly-projecting stationary bars S³ S³, secured to the stationary cross-bar H′ or frame H or other stationary part of the machine, for the purpose of holding the blank against the lip *m* on the feed-bar M while being fed onto the box-support, as shown in Figs. 3 and 4. If so desired, the said bars S³ S³ may be dispensed with and the foot S″ extended forward sufficiently to serve the purpose of and act as a substitute for said bars S³ S³ without departing from the spirit of my invention. The presser-head E has on its under side a cavity or recess E′, (shown in Figs. 3 and 4,) adapted to receive the guide-bars S³ S³ during its descent against the box-blank and box-supports G′ G′.

In practice I prefer to provide the machine with an automatic stopping device for the

purpose of stopping the machine after its crank-shaft has performed one complete revolution, so as to cause the head E to be raised to its highest position when the machine is stopped after setting up the box end, and for this purpose I secure to the crank-shaft C a cam C^3, having a recessed or reduced portion on its periphery, as shown at c^3 in Figs. 1, 2, and 3. In connection with such cam I use an upwardly-projecting bar or rod b^3 on the treadle B^3, as shown in Figs. 1, 2, and 3.

When the treadle is depressed, the machine is started, as hereinbefore described, and although the operator relieves his pressure on the treadle after the machine has been started said treadle will remain depressed by the cam C^3 acting on the treadle-bar b^3 and the friction-clutch B″, coupled to the pulley B′, until the crank-shaft C has completed one revolution, when the upper end of the treadle-bar b^3 moves into the cam-recess c^3 by the influence of the spring B^5, causing the treadle to be raised, the friction taken off the pulley B′, and the machine stopped automatically, leaving the head E in its highest position.

The operation of the machine is as follows: The blanks K are placed in a pile between the walls or guide-plates I I L, and the box-body K′ is placed in position on box-support G G′, as shown in Fig. 4. The machine is set in operation by depressing the treadle, causing the feed-plate M to be moved backward sufficiently to expose the lowest blank in the pile, after which the paster-bars or spotters O^5 O^5 R are caused to rise and transfer the paste in spots to the under side of the blank, after which said pasters drop into their normal position in the paste in the box P. The pasted blank is then fed by the plate M, while resting on the springs m' m', to the place where it is to be "set up" or stuck onto the overlapping edges k k k of the box-body. The head E descends and presses the pasted blank onto said edges of the box-body. The head then commences to rise to its highest position, and the operator in the meantime removes the box and reverses it on the box-support for setting up its other end, and so on during the operation of the machine.

T T are laterally-adjustable stops secured in a suitable manner to the front part of the pressure bar or head E, said stops having their lower portions projecting below said head and serve for the purpose of stopping the pasted end blank from being fed too far by the picker-bar and arresting it in its proper position relative to the box-body held upon the box-support.

Having thus fully described the nature, construction, and operation of my invention, I wish to secure by Letters Patent, and claim—

1. In a paper-box machine, the combination of a box-rest, a rising and falling pressure-head, laterally-adjustable blank-holding plates, a feeding device for advancing the blanks, a paste-receptacle below the blank-feeding device, rising and falling pasters in the paste-receptacle, pivoted oscillatory links by which the pasters are suspended, a vibratory actuating-lever, and connections between the actuating-lever and the oscillatory links for raising and lowering the pasters, substantially as described.

2. In a paper-box machine, the combination of a box-rest, a rising and falling pressure-head, laterally-adjustable blank-holding plates, a vertically-adjustable gate located between the pressure-head and the stack of blanks for insuring the advance movement of a single blank, a paste-receptacle below the blank-feeding device, rising and falling pasters in the paste-receptacle, oscillatory links by which the pasters are suspended, a vibratory actuating-lever, and connections between the actuating-lever and the oscillatory links for raising and lowering the pasters, substantially as described.

3. In a paper-box machine, the combination of a box-rest, a rising and falling pressure-head, laterally-adjustable blank-holding plates, a feed-plate provided with spring-extensions for supporting the blank while being carried to the box-rest, a vertically-adjustable gate located between the pressure-head and the stack of blanks for insuring the advance movement of a single blank, a paste-receptacle below the blank-feeding device, rising and falling pasters in the paste-receptacle, oscillatory links by which the pasters are suspended, a vibratory actuating-lever, and connections between the actuating-lever and the oscillatory links for raising and lowering the pasters, substantially as described.

4. In a paper-box machine, the combination of a box-rest G, a rising and falling pressure-head E, the blank-holding plates I and L, the reciprocating blank-feeding plate M, a paste-receptacle P, arranged below the blank-holding plates, rising and falling pasters in the paste-receptacle, the oscillatory links O, suspending the pasters and one of which is provided with an upward extension O′, a vibratory lever N, and a rod O^3, connecting the vibratory lever with the upward extension of the oscillatory link, substantially as described.

5. In a machine for the manufacture of paper boxes, a box-rest for the box-body, a reciprocating head arranged above it, and a receptacle for the blanks to be pasted, combined with a reciprocating feed-plate having spring-extensions adapted to support the pasted blank while being carried to the box-rest, substantially as and for the purpose set forth.

6. In combination, a box-rest and movable pressure-head, a blank-holder, a pasting and feeding mechanism, and an adjustable gate having a forwardly-projecting foot or extension adapted to hold the blank in position relative to the feed-plate while being carried to the box-rest, substantially as specified.

7. In a machine for the manufacture of paper boxes, a reciprocating blank-feeder, a

pasting device, a box-rest for the box-body, guide-bars for holding the blank on the feed-plate while being carried to the box-rest, and a reciprocating pressure-head having a cavity or recess on its underside for receiving the feed-plate and guides, substantially as described.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, on this 23d day of March, A. D. 1891.

GEORGE W. GLAZIER.

Witnesses:

ALBAN ANDRÉN,

ALICE A. PERKINS.