

(No Model.)

H. INMAN.
BOX STAYING MACHINE.

No. 555,816.

Patented Mar. 3, 1896.

Fig. 1.

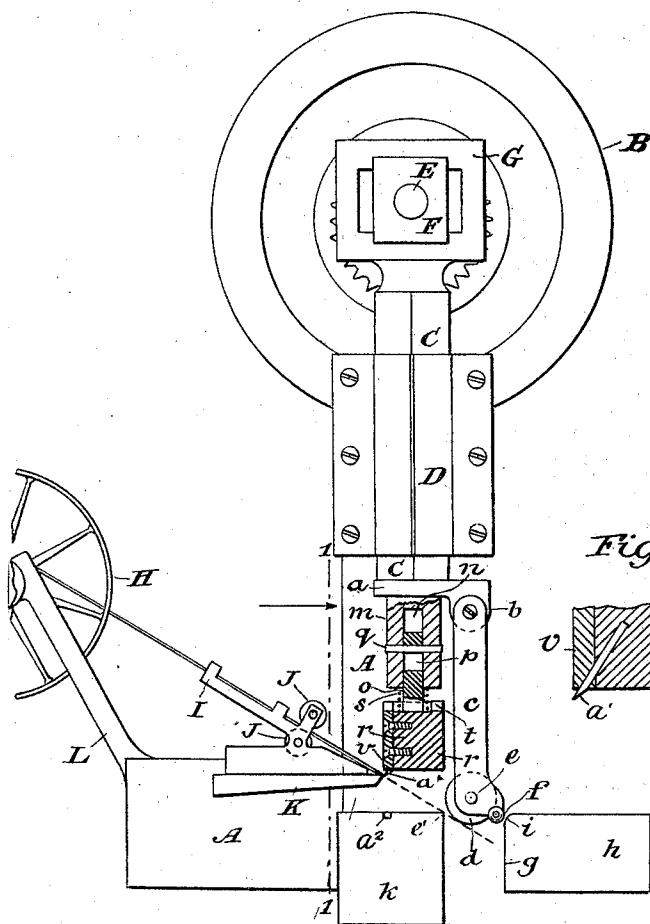


Fig. 2.

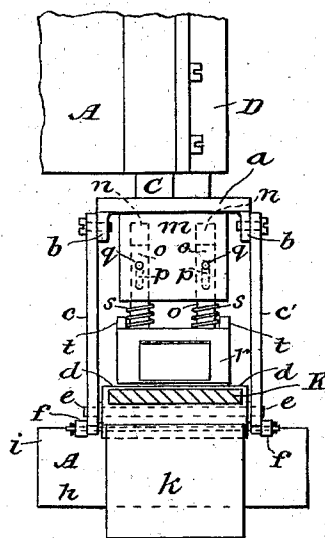
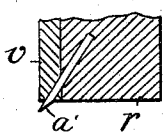


Fig. 3.



Inventor:
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UNITED STATES PATENT OFFICE.

HORACE INMAN, OF AMSTERDAM, NEW YORK.

BOX-STAYING MACHINE.

SPECIFICATION forming part of Letters Patent No. 555,816, dated March 3, 1896.

Application filed January 23, 1896. Serial No. 576,540. (No model.)

To all whom it may concern:

Be it known that I, HORACE INMAN, a citizen of the United States, and a resident of Amsterdam, in the county of Montgomery and State of New York, have invented certain new and useful Improvements in Box-Staying Machines, of which the following is a specification.

My invention relates to improvements in box-staying machines; and it consists, generally stated, in the peculiar construction, arrangement and operation of those parts of the machine whereby the staying-strip is attached to the corners of the box.

The invention likewise embraces certain other modifications in the construction and operation of the machine, which will be hereinafter set forth.

In order that the general construction of the machine as a whole may be more fully understood, I refer to the United States Letters Patent granted to me on the 9th day of April, 1895, No. 537,205, my present invention being applicable to a machine constructed and arranged generally as the machine therein described is, and I consequently in this present application illustrate and describe those parts only which specially appertain to it, referring to said prior patent for a more general description of the construction and operation of the machine.

Referring to the drawings, Figure 1 illustrates a front elevation, partly in section, of the parts embodied in the invention. Fig. 2 illustrates a side view in elevation, taken in the direction of the arrow on the line 1 1 in Fig. 1. Fig. 3 is an enlarged detail view showing the pins.

A illustrates a portion of the main frame of the machine; B, a portion of the driving mechanism; C, the plunger; D, the front plate of the plunger-slideway; E, the wrist-pin of the crank; F, the slide-block for the wrist-pin; G, the slideway for the slide-block attached to the top of the plunger C. H is the reel for holding the coil of stay-strip. I are the guides for the stay-strip; J, the pasting or dampening rollers for the stay-strip; K, the stationary blade of the knife or cutter. All of the above specified parts may be substantially the same as set forth in my above-stated patent, excepting that the reel H for the stay-strip is

elevated upon an arm L and the other parts of the stay-strip-manipulating mechanism—to wit, the guides I and the pasting or dampening rollers J and the coacting parts—are likewise arranged so that the stay-strip will be fed to the cutting and attaching devices at an angle instead of in a horizontal line, as in my said previous patent.

Referring now to the parts which more particularly appertain to the present invention, *a* is a plate attached to the lower end of the plunger C. It has downwardly-extending lateral ears *b*. *c c'* are two links pivoted to those ears, and at the lower end they support a roller *d*, the axis of which is a shaft *e* extending across from link to link.

f f are two little antifriction-rollers pivoted at the outer edge of the lower ends of the links *c c'*, the outer arcs of which project beyond the line of any portion of said links and in such manner as to engage with the vertical surface *g* of a block *h*, which is rigidly attached to any suitable part of the frame of the machine, and the upper edge of this block *h* is beveled, as at *i*, so as to allow the antifriction-rollers *f* to smoothly pass that edge on their downward movement.

k is the anvil or support for the box-blank, having a square corner *e'*. One side of the anvil is at right angles to the plane of the movement of the plunger, and the anvil *k* is separated from the block *h* at such distance as that when the roller *d* moves down between them the small antifriction-rollers *f* engaging with the vertical surface *g* of the block *h* will force the roller *d* into close contact with the right-hand vertical side of the anvil *k*. *m* is a block attached to the under side of the plate *a* and forming in effect an extension of the plunger C. It has two holes *n n* drilled in its under surface upwardly, which receive two squared pins or dowels *o o*, which are slotted, as at *p*, and a pin *q* passes through each of these slots and also through the metal of the block *m*.

r is a metallic block attached to the lower end of the dowel-pins *o*, and relatively stiff springs *s s* encircle the dowels between the upper surface of the block *r* and the lower surface of the block *m*.

t t are pieces of metal which may be formed on or attached to either the block *r* or the

block *m* and which limit the upward movement of the block *r*, thus preventing crushing of the springs *s s*.

v is a strip of case-hardened steel fastened by screws to the side of the block *r*, and the lower edge of it is slightly beveled, so as to form a knife edge which engages with the stationary knife *K* during the descent of the plunger.

a' are needle-points set in the block *r*, which project downwardly at a slight angle, as shown, and *a²* are slight recesses or pits made in the upper surface of the anvil *k*, which exactly register with these needle-points and into which they again enter when the block *r* is brought down firmly upon the anvil.

The operation of the apparatus is as follows: The operator applies the corner of a box-blank to the corner marked *e'* of the anvil. He then touches the pedal or other lever of the machine, whereupon it starts in operation. The stay-feeding mechanism feeds the strip of stay material downwardly diagonally across the corner of the box, as shown in dotted lines in Fig. 1. Immediately thereafter the plunger and the parts attached to it descend. Thus the roller *d* is brought in contact with the portion of the stay-strip which projects beyond the corner *l*, bending it down over that corner, and simultaneously therewith, or at substantially the same time, the anti-friction-rollers *f f* engage with the vertical surface *g* of the block *h*. Thus the roller *d* is forced with great pressure against the stay-strip and box-corner on the vertical side of the anvil. I counteract any tendency on the part of the roller *d* to slide the stay-strip over the corner of the box by providing the needle-points *a'*, which penetrate the stay-strip during the descent of the block *r* and thus carrying the severed end of the stay-strip and thus holding it against any possible pulling or slipping action of the roller *d*. During the descent of the plunger the cutter-blade *v* shears across the edge of the stationary cutter *K*, thus severing the strip, and the severed portion is carried downwardly by the block *r* in conjunction with the front portion of the blade, and is firmly pressed by these devices down upon the horizontal part of the corner of the box, the construction being such that when the block *r* rests solidly down upon the stay-strip and box-corner the plunger will, nevertheless, continue to descend, pressing the springs *s*, the pins *q* passing through the slots *p*, and when the blocks *t* engage with the under surface of the block *m* the great final squeeze is exerted, which is intended to be substantially the same as the pressure of the roller *d* against the side of the corner upon which it acts. When the block *r* is in its lowermost or substantially lowermost position, then the needle-points *a'* puncture or at least penetrate the strawboard of the box-corner and passing through it enter the little recesses or pits *a²* in the anvil. Thus they are not injured by the squeezing

operation. After the stay-strip has been attached to the box-corner, as above described, the return movements of the machine are made, during which all parts return to their primary position. The box is then shifted, presenting another corner, as before, and thereupon a repetition of all the above-stated movements and operations takes place, and thus on indefinitely.

I do not limit myself to the details of construction and operation described and illustrated, because it will be evident to those who are familiar with this art that modifications may be made therein without departing from the spirit of my invention.

I claim—

1. The combination of a support for the corner of a box, a reciprocating plunger, a roller carried by the plunger adapted to engage with one side of the box-support, a stationary block to press the roller against the box-support, and means to press the strip against the other side of the box-support, for the purposes set forth.

2. The combination of a support for the corner of a box, a reciprocating plunger, a roller carried by the plunger adapted to engage with one side of the box-support, a stationary block to press the roller against the box-support, means to press the strip against the other side of the box-support, and a cutting device actuated by the descent of the plunger, for the purposes set forth.

3. The combination of a support for the corner of a box, a reciprocating plunger, a roller movably connected with the plunger, a stationary block to force the roller toward the box-support when opposite it, and a block yieldingly attached to the plunger, adapted to engage with the opposite side of the box-support, for the purposes set forth.

4. The combination of a support for the corner of a box, a reciprocating plunger, a roller movably connected with the plunger, means to force the roller toward the box-support when opposite it, a block yieldingly attached to the plunger adapted to engage with the opposite side of the box-support, and a cutter-blade attached to said block, for the purposes set forth.

5. The combination in a corner-staying machine, of devices for attaching the stay to the corner of the box, comprising, essentially, a support for the box, a roller and a pressure-block, both operated by the plunger of the machine, and adapted respectively to press the stay-strip toward opposite sides of the corner of the box-support and a stationary block to force the roller toward the support, for the purposes set forth.

6. The combination in a corner-staying machine, of devices for attaching the stay to the corner of the box, comprising, essentially, a support for the box, a roller and a pressure-block, both operated by the plunger of the machine, and adapted respectively to press the stay-strip toward opposite sides of the

corner of the box-support, a stationary block to force the roller toward the support and a cutting device actuated by the descent of the plunger, for the purposes set forth.

5 7. In a corner-staying machine, the combination of a support for the corner of the box, a reciprocating plunger, a roller movably connected to the plunger, a stationary block to press the roller toward the box-form when
10 opposite it, a pressure-block movably connected to the plunger, and a cutter-blade attached thereto, for the purposes set forth.

8. In a corner-staying machine, the combination with feeding devices for the stay-strip and cutting devices therefor, of a device
15 adapted to press the stay upon the corner of the box, provided with pins which penetrate the stay-strip and carry and hold it in position, for the purposes set forth.

20 9. In a corner-staying machine, the combination of separate and independent devices

for pressing the stay upon opposite sides of the corner of the box, and means applied to one of them to carry and hold the severed piece of stay in position, for the purposes set forth. 25

10. In a corner-staying machine, the combination of a roller adapted to press the stay-strip upon one side of the corner of the box, another subsequently-acting device adapted to press the stay upon the other side of the
30 corner, and means upon said subsequently-acting device for holding the stay against the displacing action of the device which operates first, for the purposes set forth.

Signed at New York, in the county of New
York and State of New York, this 17th day of
January, A. D. 1896. 35

HORACE INMAN.

Witnesses:

PHILLIPS ABBOTT,
E. SIMPSON.