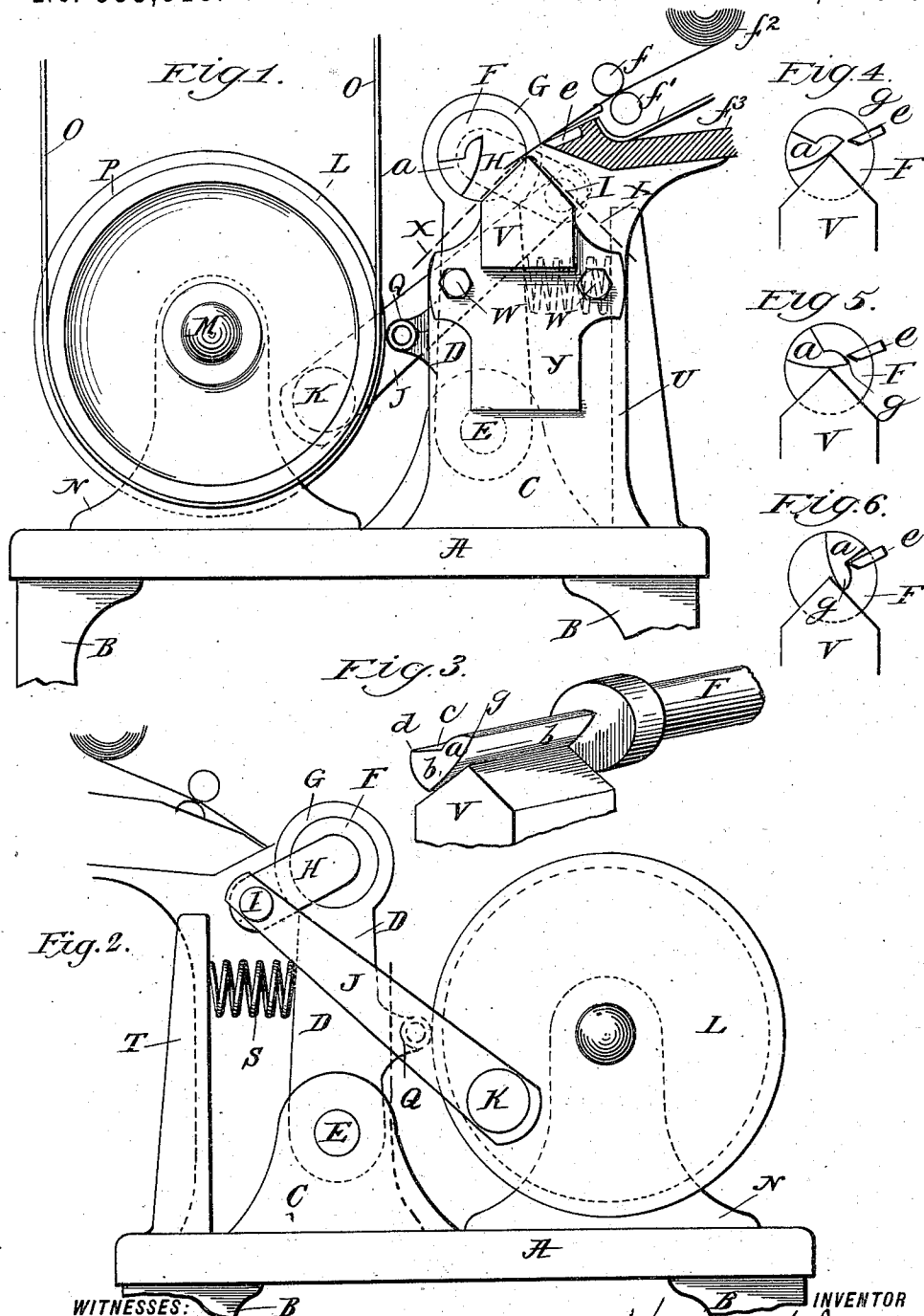


(No Model.)

H. A. INMAN.
CORNER STAYING MACHINE.

No. 555,818.

Patented Mar. 3, 1896.



WITNESSES:

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HARRY A. INMAN, OF AMSTERDAM, NEW YORK.

CORNER-STAYING MACHINE.

SPECIFICATION forming part of Letters Patent No. 555,818, dated March 3, 1896.

Application filed February 4, 1896. Serial No. 577,985. (No model.)

To all whom it may concern:

Be it known that I, HARRY A. 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 Corner-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 severed from the reel or ribbon and attached to the corners of the box.

In order that the purpose of the machine and its construction in certain particulars which are not involved in this present invention may be more fully understood, I refer to the United States Letters Patent granted to Horace Inman on the 9th day of April, 1895, No. 537,205. I wish it to be understood, however, that the devices especially covered by this present invention—to wit, those for severing the stay-strip and attaching it to the corner of the box—are essentially different in practically every particular from those shown in the said patent. I have referred to it simply for the purpose above given.

Generally stated, my invention consists in a suitable support for the corner of the box and in peculiarly-constructed mechanism for attaching the stay-strip to the corner of the box, which mechanism has imparted to it by the construction of the machine dual movements: first, a forward movement which brings the pressing device in contact with the stay-strip and presses it upon one side of the corner of the box, and then what can be called an "eccentric" rotary movement, whereby the stay-strip is "rolled," so to speak, down upon one side of the corner of the box with great pressure, and then, by a reversal of the position of the pressing device, the other part of the stay-strip is likewise rolled down upon the other side of the corner of the box, and during the reversal of the pressing device a part of it sweeps across the edge of a stationary cutter, thus severing the piece of the stay which is attached to that particular corner.

It will be observed that there are marked differences between this invention and the

machine described in said Horace Inman patent, No. 537,205, because in it the pressing devices conform to the angular shape of the corner of the box, and upon the descent of the plunger the piece of stay-strip is cut off and is pressed down upon the corner of the box and is clamped in that position for a certain time between the surfaces of the upper and lower die. Consequently if any air, as frequently occurs, gets between these continuous pressing-surfaces there is no escape for it. It will be compressed by the pressure of the plunger, but upon relief of the plunger will again assert itself, unless it has been forced out from between the two surfaces, and will puff up the stay-strip, thus occasioning a blister, and an imperfectly-stayed corner will be the result; also, the pressure required in the machine of the patent is very much greater than under my invention, and consequently more power is required and there is greater liability of fracture of some part of the machine because the resistance is equal to the entire area of the opposing surfaces of the upper and lower die, and, also, in the event of inequalities in the thickness of the stock or in especially dense portions, which are apt to occur in the strawboard from which the boxes are made, the strain upon the machine is greatly increased.

Under my invention I obviate all of these difficulties, because the pressure comes upon a circumscribed and limited portion of the stay-strip only, and the rolling action of the pressing device expels all air from in front of it, and the entire power of the machine is exerted upon a relatively small part of the entire surface of the stay-strip and box-corner. Furthermore, it has been found in practice that a rolling pressure is better than a direct clamping pressure.

Aside from the above advantages my machine is much smaller and simpler in construction, consequently less expensive in the first instance, and it requires less floor-space in the factory, which latter is a very important feature.

Referring to the drawings hereof, Figure 1 illustrates an elevation of the parts of the machine taken from the front. Fig. 2 illustrates an elevation of certain of the parts shown in Fig. 1, taken from the rear. Fig. 3 illustrates

a perspective of the box-supporting and stay-strip-attaching devices. Figs. 4, 5, and 6, respectively, illustrate the different positions of the strip-attaching devices.

5 A is the table or other suitable support for the machine.

B B are legs or other supports for the apparatus.

C is a base or standard to which is pivoted
10 an upwardly-extending arm D by a pivot E, which passes through an extended hub on the lower end of the arm D, and at the opposite end of it there is another base or standard C, so as to give firm support for the arm D.

15 F is a shaft which is journaled in an extended sleeve-bearing G, which is formed upon the upper end of the arm D.

H is a crank attached to the rear end of the shaft F, which is pivoted at I to a connecting-
20 rod J, which is connected by a wrist-pin K to a rotary wheel or plate L, which turns on a shaft M, which is supported in bearings N.

O is a belt which drives the machine by passing over a pulley P mounted on the shaft M.

25 Q is a boss or projection which forms part of the arm D, and on its outer extremity there is located a roller R, which engages with the periphery of the wheel L, which is somewhat eccentric. The eccentricity is not particularly
30 noticeable in the drawings, because it is relatively slight, being ordinarily not more than about a quarter of an inch, more or less.

S is a spring which maintains the roller R in contact with the eccentric periphery of the
35 wheel L.

T is a post or other suitable part of the machine against which the spring abuts.

U is an upwardly-extending portion of the frame of the machine, to the upper part of
40 which a support V for the corner of the box is attached by bolts W, which pass through a plate Y, to which the support V is attached or of which it forms a part. On the forward end of the shaft F the pressure device *a* is
45 formed. It is preferably integral with the shaft F. The pressing-surface *b* (see Fig. 3) of this device is somewhat curved, as shown, and on the rear side, as at *c*, it is cut away, for a purpose hereinafter stated, leaving a
50 thickened portion *d*, which runs longitudinally of this part, which gives strength and rigidity to it.

e (see Figs. 1, 4, 5, and 6) is the stationary cutting-blade, and *f*, *f'*, *f''*, and *f'''* illustrate
55 the stay-strip feeding and gluing or dampening devices, which are now too well known to require detailed description. They may be substantially the same as those shown in said Patent No. 537,205, although arranged to feed
60 the stay-strip in an inclined direction rather than in a horizontal one.

The operation of the apparatus is as follows: The machine is so adjusted and timed
65 that when it comes to rest the parts remain in the position shown in Fig. 1. The operator then takes a box or cover blank, as the case may be, and applies the corner thereof

upon the support V, as shown in Fig. 1, the box being represented by the dotted lines *x*
x. Thereupon, the starting-pedal or other lever
70 being manipulated, the machine starts, and its first operation is to feed the stay-strip forwardly across the edge of the stationary cutter *e* and then slide it forwardly in a diagonal direction beyond the corner of the box
75 or cover for the desired distance, as shown in Fig. 1. Then the further movement of the machine rocks the arm D to the right (reference being had to Fig. 1) by reason of the eccentricity of the periphery of the plate L en-
80 gaging with the roller R. This brings the pressure device *a* up against the stay-strip and presses it firmly against one side of the corner of the box. In Fig. 3 it is shown as not quite making this contact. As soon as it
85 has been made and the stay-strip is firmly pressed against the corner of the box the shaft F, which carries the pressure device *a*, begins to be rocked upon its axis by the operation of the crank K, connecting-rod J and
90 wrist-pin K, and during this operation the pressure device is held firmly against the stay-strip by the roller R and the cam-like periphery of the plate L. In this manner the pressing device *a*, (see Fig. 4,) owing to the
95 fact that it is set eccentrically relative to the axis of the shaft F, is carried upwardly in a curved line, so that it rides up on and "pivots," so to speak, over the apex of the support V, and all this time the point of the pressure
100 device *g*, (see Figs. 4, 5, and 6,) which is case-hardened or otherwise made into a cutting-edge, is moving nearer and nearer to the edge of the stationary cutter *e*, and as this movement of the machine continues the
105 pressing device finally rocks over the apex of the box-corner, which is sustained by the support V, until it attains the position shown in Fig. 5, and in so doing its cutting-edge *G* is sheared across the edge of the stationary
110 cutter *e* and severs the stay-strip. Thereupon, the operation being still further continued, the presser passes over to the other side of the box-corner, as shown in Fig. 6, and firmly presses the severed end of the
115 stay-strip down upon that side of the box-corner, and suitable space is allowed for the stationary cutter *e* by reason of the cut-out part *c* of the presser device. (See Figs 3 and 6.) During all the movements of the press-
120 ing device after it has first made contact with the stay-strip it maintains such contact, exerting the requisite pressure upon it to firmly attach it to the corner of the box.

The construction and the "timing" of the
125 machine are such that thereafter all parts quickly return to their normal position, as shown in Fig. 1, whereupon the machine may be permitted to come to rest, and the box or cover blank being turned, so as to present an-
130 other corner thereof to the machine, as just stated, the operations are all repeated.

It will be observed that the shaft F is a rock-shaft and not a rotary one.

It will be obvious to those who are familiar with this art that modifications may be made in the details of construction and operation of my invention without departing from the essentials thereof. I therefore do not limit myself to such details.

I claim—

1. In a box-staying machine, the combination of a rock-shaft supporting a pressure device eccentric to its axis, a support for the box-corner, and mechanism for moving the pressure device against the box-support, and for rocking the said shaft, for the purposes set forth.

2. In a box-staying machine, the combination of a rock-shaft supported upon a movable bearing, a pressure device attached to the rock-shaft eccentric to its axis, a stationary support for the box-corner, and mechanism for moving the supports for the shaft toward the box-support, and other mechanism for rocking the shaft upon its axis, for the purposes set forth.

3. In a box-staying machine, the combination of a rocking shaft having a pressure device attached to it eccentric to its axis, a support for the box-corner, a stationary cutter-blade, another cutter-blade upon the pressure device, and mechanism for moving the pressure device against the box-support, and for rocking said shaft, for the purposes set forth.

4. In a box-staying machine, the combination with a rocking pressure device constructed and arranged to press the stay-strip first upon one side of the box-cover and then upon the other, of means for moving the pressure device against the support, substantially as described.

5. In a box-staying machine, the combina-

tion with a support for the box-corner, of a rolling pressure device constructed and arranged to press the stay-strip against two sides of the box-cover successively by a rolling action, and means for moving the pressure device against the box-support, substantially as described.

6. In a box-staying machine, the combination with a support for the box-corner, of a rolling pressure device constructed and arranged to press the stay-strip against one side of the box-corner, then to pass over the apex thereof and press it upon the opposite side of the box-corner by a rolling action, substantially as described.

7. In a box-staying machine, the combination of a rock-shaft set in movable bearings and having a pressure device attached to it eccentric to its axis, a support for the box-corner, a cutter-blade upon the pressure device, and a stationary cutter so located as to engage therewith, and mechanism for moving the bearings of said shaft toward the box-supporting device, and additional mechanism for rocking said shaft, for the purposes set forth.

8. In a box-staying machine, a support for the corner of a box, and a rolling pressure device constructed and arranged to press the stay-strip against the two sides of the box-corner successively by a rolling action, for the purposes set forth.

Signed at Amsterdam, in the county of Montgomery and State of New York, this 31st day of January, A. D. 1896.

HARRY A. INMAN.

Witnesses:

ROBT. N. CLARK,
H. B. WALDRON.