

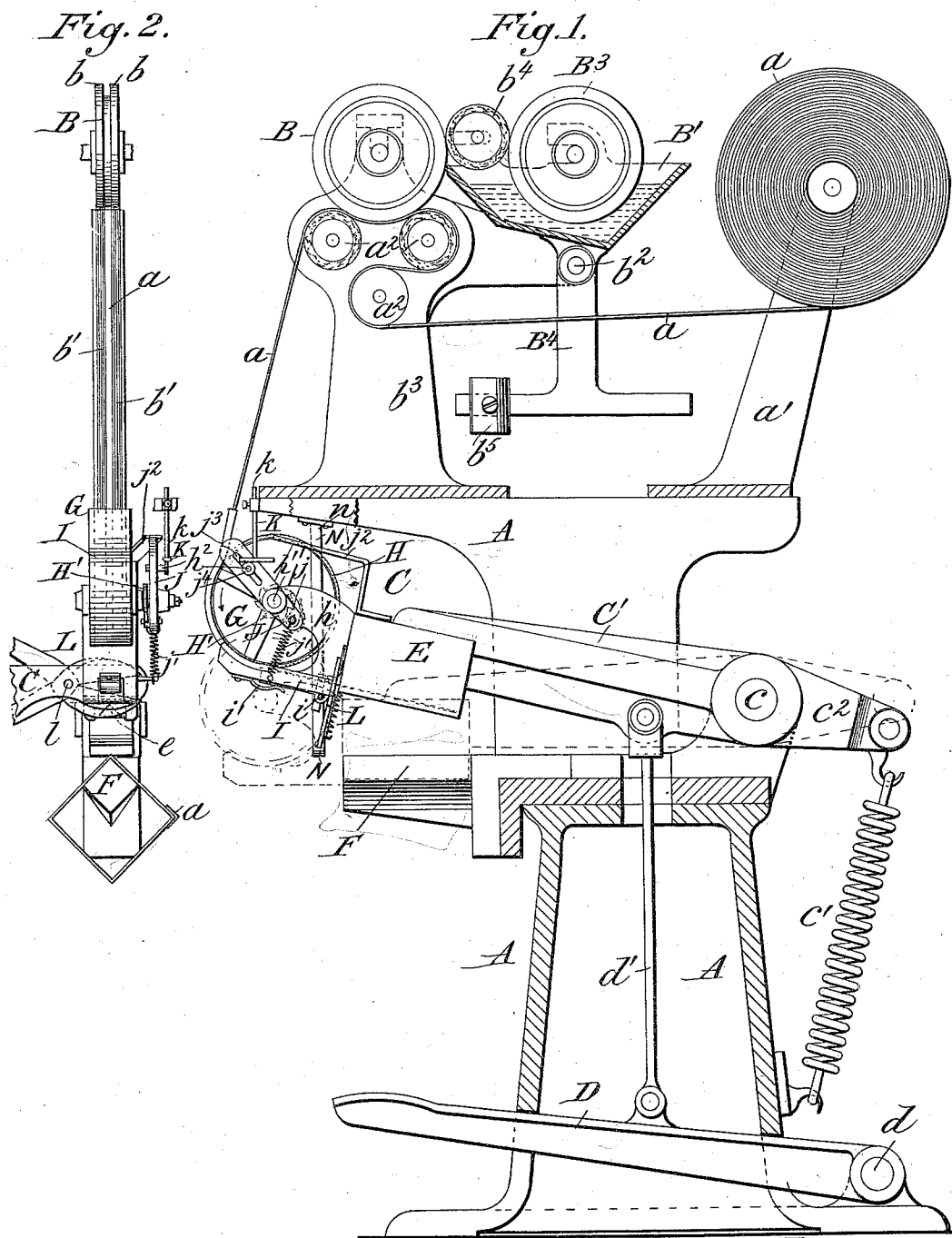
(No Model.)

3 Sheets—Sheet 1.

J. MOHS.
BOX STAYING MACHINE.

No. 545,808.

Patented Sept. 3, 1895.



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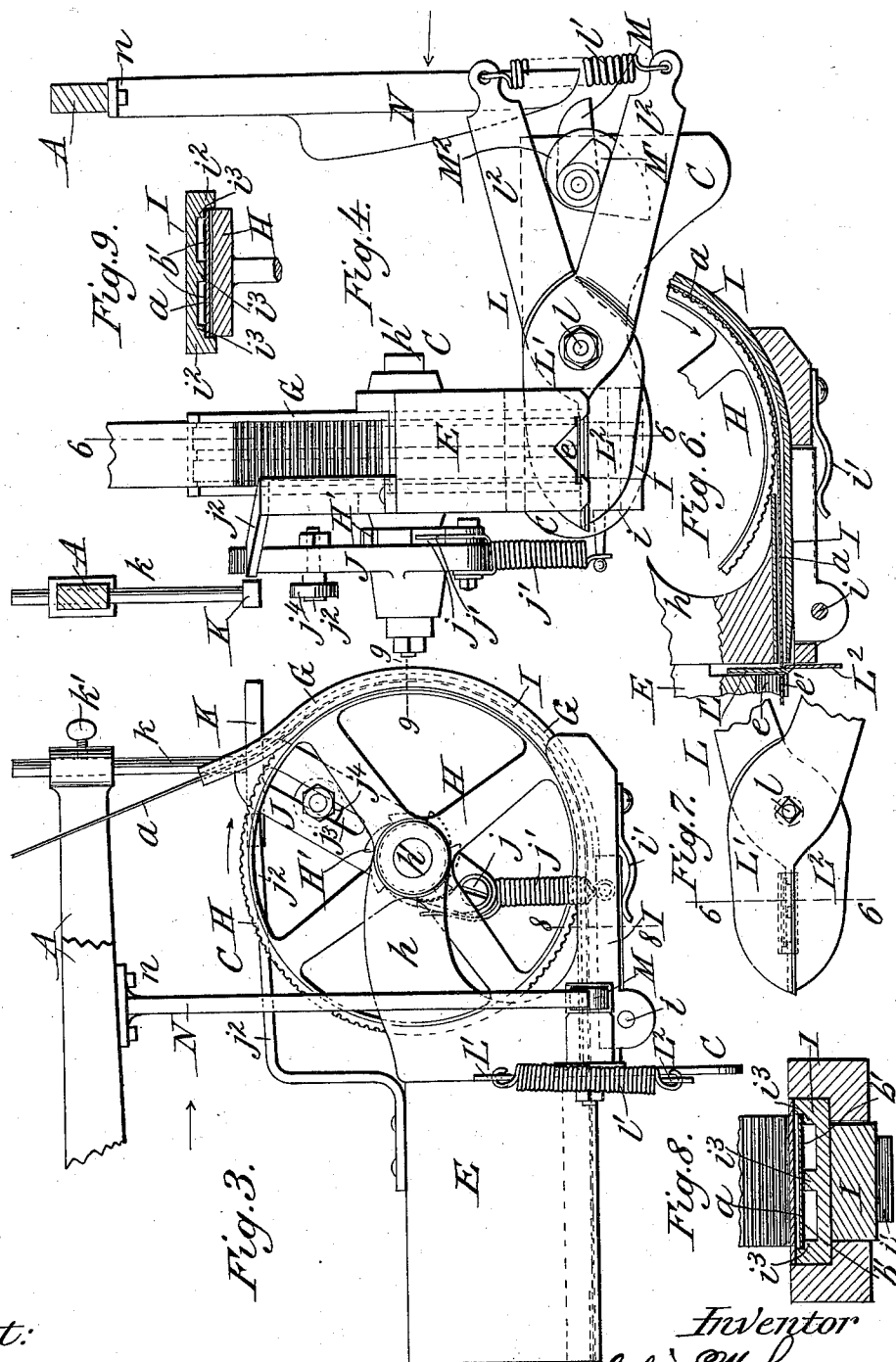
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Inventor
Julius Mohs
by Max Tengü
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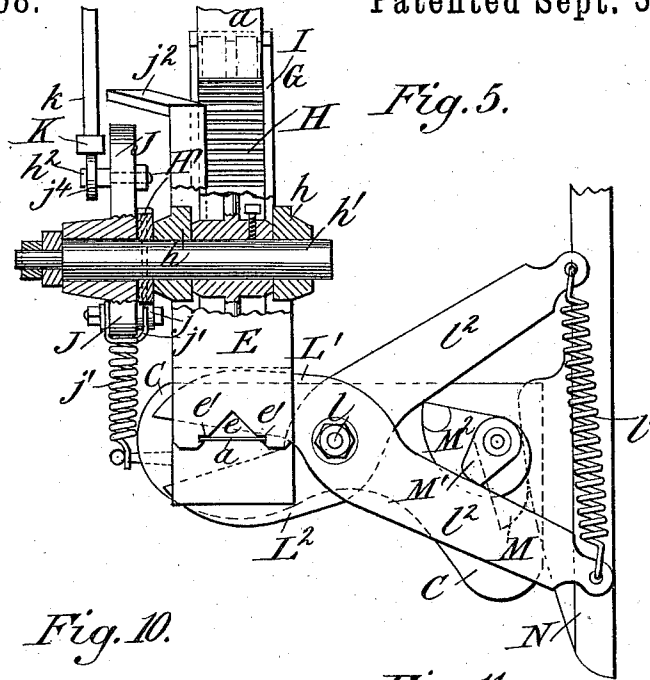


Fig. 10.

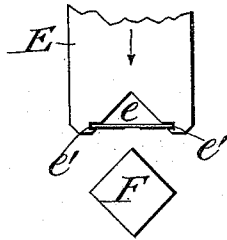
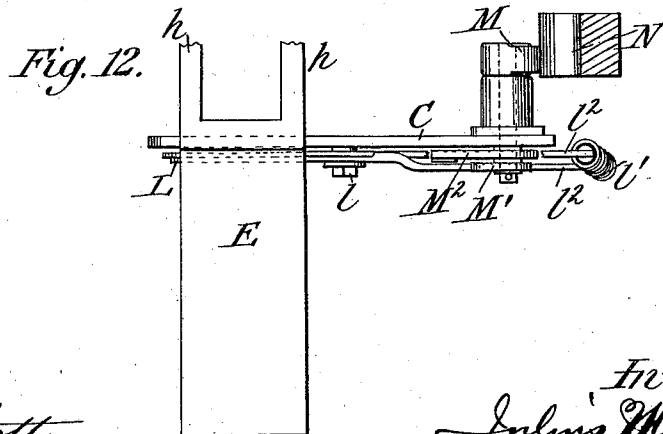
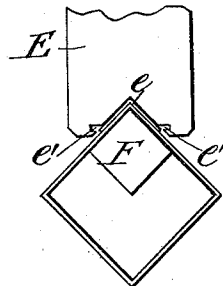


Fig. 11.



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UNITED STATES PATENT OFFICE.

JULIUS MOHS, OF DRESDEN, ASSIGNOR TO THE BERLINER KUNSTDRUCK
UND VERLAGS-ANSTALT, VORMALS A. & C. KAUFMANN, OF BERLIN,
GERMANY.

BOX-STAYING MACHINE.

SPECIFICATION forming part of Letters Patent No. 545,808, dated September 3, 1895.

Application filed December 1, 1894. Serial No. 530,532. (No model.)

To all whom it may concern:

Be it known that I, JULIUS MOHS, a citizen of Germany, residing at Dresden-Altstadt, Germany, have invented certain new and useful Improvements in Box-Staying Machines; and I do hereby 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.

This invention relates to box-staying machines, and more particularly to that class of box-staying machines in which a strip of paper, linen, or similar sheet material is cut in suitable lengths and pasted on the corners of the box to be stayed, thereby strengthening the same at such corners.

The object of my invention is, in the first place, to insure a perfect and accurate feeding of the stay-strip to the point at which it is to be applied to the box and to prevent any tendency of such strip to arrive at the corners of the box out of alignment or in such a position in which it would not lie straight on the corners of the box.

The object of my invention, moreover, is to prevent all tendency of an accumulation of gum or other adhesive matter in the working parts of the machine, whereby the same would become clogged and thrown out of working condition.

A further object of my invention is to secure absolute certainty that the strip will be fed into the hammer portion of the head, so that the same can be applied to the corner of the box, which rests upon an anvil below said hammer portion.

With these objects in view a machine embodying my invention comprises, in connection with an anvil, a reciprocating plunger or head on which are mounted and fixed with regard to each other the recessed hammer portion into which the strips as they are cut off are fed, an intermittent strip-feeding device, and a cutting device preferably located between the hammer portion and the strip-feeding device. The strip-feeding device consists, essentially, of a feed-roller intermittently actuated and the yielding presser-frame between which and the feed-roller the strip is pressed and fed clear. The said

presser-frame is flanged at both sides, and is provided on its inner side with a rib or ribs which press against the unpasted portions of the strip as it is fed forward.

My invention, moreover, comprises such features, elements, and combinations of elements as will be hereinafter set forth, and particularly pointed out in the claims.

In the drawings accompanying this specification, Figure 1 represents a side elevation, partially in section, of a machine embodying my invention; Fig. 2, a front elevation of the same; Fig. 3, a side elevation, viewed from the side opposite to that in Fig. 1, of the reciprocating head of the box-stay machine; Figs. 4 and 5, rear elevations of the said head, also on an enlarged scale and showing the same occupying two different positions; Fig. 6, a detail view in longitudinal section of a portion of the said head on line 6 6, Figs. 4 and 7; Fig. 7, a detail view of the shears; Figs. 8 and 9, transverse sections of the strip-feeding device on lines 8 8 and 9 9, Fig. 3; Figs. 10 and 11, detail views of the strip-applying device, showing the same in two different positions; and Fig. 12, a plan view of the shears together with contiguous parts.

By referring to the drawings it will be noted that the said strip *a*, which may be of any suitable material—such as paper, linen, and the like—is arranged in a web mounted in a standard *a'* on a frame *A* of the machine, and is thence conducted over rollers *a*² into contact with a paste-applying roller *B*, which, as shown, is cut away in part, so as to form annular ribs *b b*, by which the paste or other adhesive material is applied to the strip *a* in longitudinal stripes *b'*, as shown in Fig. 2. The paste or adhesive material, in a liquid or semi liquid condition, is contained in the paste-trough *B'*, which in the present instance is pivoted at *b*³ on an arm extending from the standard *b*³, which supports the rollers *b* and *a*². The paste is transferred from the fountain-roller *B*³, which dips into the paste-trough, to the transfer or doctor roller *b*⁴, and thence to the paste-applying roller *B*. A T or L shaped arm *B*⁴ extends downward from the trough and is provided with an adjustable weight *b*⁵, as shown, whereby the pressure of the doctor-roller *b*⁴ against the paste-applying

roller may be regulated at pleasure. The parts thus far described constitute the pasting device. The strip a passes from this pasting device to the reciprocating head C, which in the present instance is shown as secured to, or forming part of, an arm C', pivoted at c to the machine-frame. The head is normally held in an upright position by a spring c' , connected at one end to the rearwardly-extending part c^2 of the arm C' and at the other end to the machine-frame A. A treadle D, fulcrumed at d to the machine-frame and connected with the arm C' by a link d' , serves to depress the said arm and with it the head C. It is evident that any other means for giving a reciprocating motion to the head C may be substituted in lieu of the means just described without departing from my invention. The head C comprises the hammer or plunger E, which, in conjunction with the anvil F, rigidly secured to the frame A, serves to apply the severed and pasted strip to the corners of the box. The anvil F, for this purpose, is in the shape of the corner of the box to be acted upon, as shown in Figs. 2, 10, and 11, and the plunger E is provided with a recess e , Figs. 4 and 10, also conforming to the shape of the corner of the box. In addition to this recess the plunger is provided with guide-grooves e' , (best seen in Figs. 4, 10, and 11,) which hold the strip in the proper position prior to its being applied to the corner of the box.

The strip-feeding device G is best explained in connection with Figs. 1, 3, 4, and 6. As there shown, the same comprises the parts now to be described: the feeding-roller H, having a toothed, corrugated, or otherwise roughened periphery and journaled in an arm h , extending from the head C, a presser-frame I, partially encircling the roller H, pivoted at i to the side of the head and yieldingly held against the feed-roller H by a spring i' , a ratchet H', connected with the feed-roller, a pawl-lever J, carrying a spring-pawl j and loosely mounted on the journal h^1 of the feed-roller H, and the stop K, mounted preferably adjustable, as shown, in the frame A and against which a lug or projection h^2 on the pawl-lever J is adapted to strike at every upward stroke of the head C. The pawl-lever J is normally held upward by a spring j' , and its upward motion is limited by a stop j^2 . The lug h^2 is made adjustable in a slot j^3 on the pawl-lever J, as shown, and is preferably provided with an antifriction-roller j^4 , to reduce friction as much as possible. By making the lug h^2 adjustable, the amount of feed at each upward stroke of the head C and hence the length of the strip to be cut off can be regulated to suit various sizes of boxes. The stop K is made adjustable in the frame A by passing its shank k through a socket in the said frame and providing a thumb-screw or other suitable equivalent device for holding it in its various positions of vertical adjustment. By this means the stop can be accurately adjusted so as to be struck at the

proper moment in the upward stroke of the head C.

The form of the presser-frame I in cross-section is best shown in Figs. 8 and 9. As there shown, the same is provided with flanges i^2 i^2 to prevent the strip a from slipping laterally and hence coming out of proper alignment with relation to the corner of the box on the anvil F, and also with a rib or ribs i^3 , longitudinally arranged so as not to coincide with or overlap the stripes b' b' of paste applied to the paper strip a , or, in other words, to bear only against those portions of the strip to which no paste has been applied.

The cutting device L, as shown, is preferably arranged between the strip-feeding device and the plunger E. The same consists of two shear-blades L' L², pivoted at l on a bracket forming part of the head C, and normally held closed by a spring l' , connected with the two rearwardly-extending arms l^2 l^2 of the shear-blades. Between the two arms l^2 l^2 and on the head C are pivoted the two cams M' M², adapted to bear against the arms l^2 of the shear-blades L' L², respectively. Connected with these cams is a lug or toe M, which, in connection with the guide or cam rail N, acts to operate the cams, and hence to open and close the shear-blades at each stroke of the head, the guide or cam rail N being, of course, fixed or rigidly secured to the frame A, as shown at n , or otherwise held stationary with respect to the frame. The cams M' M², the toe M, and cam-rail N are so arranged with relation to each other that as the head C is elevated the shears are opened into the position indicated in Fig. 5, and as the said head descends the lower shear-blade is first acted upon and moved upward until its cutting-edge reaches the horizontal position exactly in line with the lower edge of the strip a , as indicated in Figs. 6 and 7, whereupon it is arrested, and the head continuing to move downward the upper blade L' begins to move downward until its cutting-edge overlaps the cutting-edge of the shear-blade L², thus severing the length of strip to be applied to the corner of the box. It is essential that the lower shear-blade L² is arrested entirely after it has once reached its horizontal position, just bearing against the lower surface of the strip a , as if it should move farther upward it would tend to hold the end of the strip a , after a piece had been cut therefrom, out of alignment with the guide e' in the plunger E, and hence interfere with the proper action of the machine.

The operation of the machine thus described is as follows: By pressing treadle D the head C is depressed, and by drawing upon the paper strip a causes a suitable length of the same to be unwound from the reel or web and to be passed forward through the paste-applying device B, a^2 , &c. The toe M moving along the guide or cam rail now causes first the cam M² to release the shear-blade L² and allow it to move upward until its cutting-edge

is in the horizontal position, and then the cam M' to release the other blade L', causing it to descend and cut the strip of paper *a* against the lower shear-blade L², it being assumed, of course, that the end of the strip *a* has been brought forward into the guide-grooves *e'* of the plunger E. The shear cut having thus been made, the further descent of the plunger E, in conjunction with the anvil F, bends, presses, and pastes the length of the paper strip *a* cut off against the corner of the box. (See Figs. 10 and 11.) The treadle D being now released, the head C rises, releasing the plunger E from the anvil F and permitting another box-corner to be put into position on the anvil for staying. The shear-blades are also opened in this upward movement as the toe travels over the cam-rail N, and the lug *h*², as it strikes against the stop K, causes the pawl-lever to turn, and through it the wheel H to revolve and to feed the paper strip *a*, which is clamped between it and the presser-bar I, forward, so as to take up the slack and fit another length of paper into the plunger E. On again depressing the plunger the above operations are repeated, &c.

The particularly essential feature of my invention is the fact that the feeding device and the plunger are rigidly connected, whereby I obtain the advantage that the strip is fed into the plunger accurately and with certainty, and all liability of these parts to change their relative positions being eliminated there is no danger of the machine getting out of order.

The mounting of the cutting device on the same head with the two last-named organs is also of importance, inasmuch as by so arranging them all liability of these parts to change their relative positions, and hence interfere with the operation of the machine, is obviated.

My particular feeding device, embracing the feed-roller in connection with the flanged presser-frame partially encircling and yieldingly held against the same, results in an absolutely accurate advance of the paper strip, so that it will occupy the exact position with relation to the corner of the box to which it is to be stayed.

The particular means for reciprocating the head C (shown by way of illustration) is not essential, and any other suitable or convenient means for reciprocating the said head may be substituted in lieu thereof.

Other means than the guides *e'* for supporting the strip below the plunger may also be devised, and in general the machine may be greatly modified without departing from the spirit of my invention.

What I claim, and desire to secure by Letters Patent, is—

1. In a box staying machine, a head, and a strip-feeding wheel journaled therein, in combination with a presser frame partially encircling the feeding roller and pivoted in the

head, and means for yieldingly pressing the same against the feeding roller, substantially as set forth.

2. In a box-stay machine, a head, and a strip-feeding roller having a roughened periphery and journaled in the head, in combination with a presser frame partially encircling the feeding roller and pivoted in the head, and means for yieldingly holding the said frame against the feeding roller, substantially as set forth.

3. In a box-stay machine, a head and a strip-feeding roller having a roughened periphery and journaled in the head, in combination with a presser frame partially encircling the feeding roller and pivoted in the head, and means for yieldingly holding the said frame against the feeding roller, the inner surface of the presser frame being provided with a longitudinal rib or ribs, so as to come in contact with only a part of the strip to be fed, substantially as set forth.

4. In a box-stay machine, a paste-applying roller having a longitudinal paste-applying rib or ribs so as to apply the paste in a stripe or stripes on the stay strip, in combination with a strip-feeding roller and a presser frame partly encircling the feeding roller yieldingly bearing against the same and having a longitudinal rib or ribs arranged so as to bear only on the unpasted portions of the strip, substantially as set forth.

5. In a box-stay machine, a head and a strip-feeding roller journaled therein, in combination with a presser frame partially encircling the same and having inward-extending flanges to embrace the inner edges of the same, and means for yieldingly pressing the presser frame against the strip-feeding roller, substantially as set forth.

6. In a box-stay machine, a head and a roughened strip-feeding roller journaled therein, in combination with a presser frame partially encircling the same and having inwardly-extending flanges to embrace the inner edges of the same, and means for yieldingly pressing the presser frame against the strip-feeding roller, the inner surface of the presser frame being provided with a longitudinal ridge to bear only on a portion of the strip to be fed, substantially as set forth.

7. In a box-stay machine, a reciprocating head, a strip-feeding roller journaled therein and provided with a ratchet, in combination with a presser frame yieldingly held against the strip-feeding roller, a pawl lever carrying a pawl adapted to engage the ratchet, and a stop on the machine frame arranged in the path of the pawl lever, substantially as set forth.

8. In a box-stay machine, a reciprocating head, a pair of shear blades pivoted thereon, and means for normally and yieldingly holding the shear blades closed, a pair of cams arranged between the rear arms of the shear blades, swiveled on the head and provided with a lug or toe, in combination with a guide

or cam-rail mounted on the machine frame in the path of the lug or toe, substantially as set forth.

9. In a box-stay machine, the combination,
5 of an anvil against which the corner of the box to be stayed is held, with a reciprocating head provided with the following parts: a strip-feeding roller journaled therein and a presser frame yieldingly bearing against the
10 same, a ratchet connected to the same, and a pawl lever having a pawl engaging the ratchet, a plunger having guide ways for the stay strip, a cutting device, a cam device for actuating

the cutting device, swiveled in the head and provided with a lug or toe, a stop or abutment 15 on the machine frame, arranged in the path of the pawl lever, and a guide rail also on the machine frame arranged in the path of the toe on the cam device, all substantially as set forth. 20

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

JULIUS MOHS.

Witnesses:

EDMUND ZAREK,
HERMANN TANDSBERG.