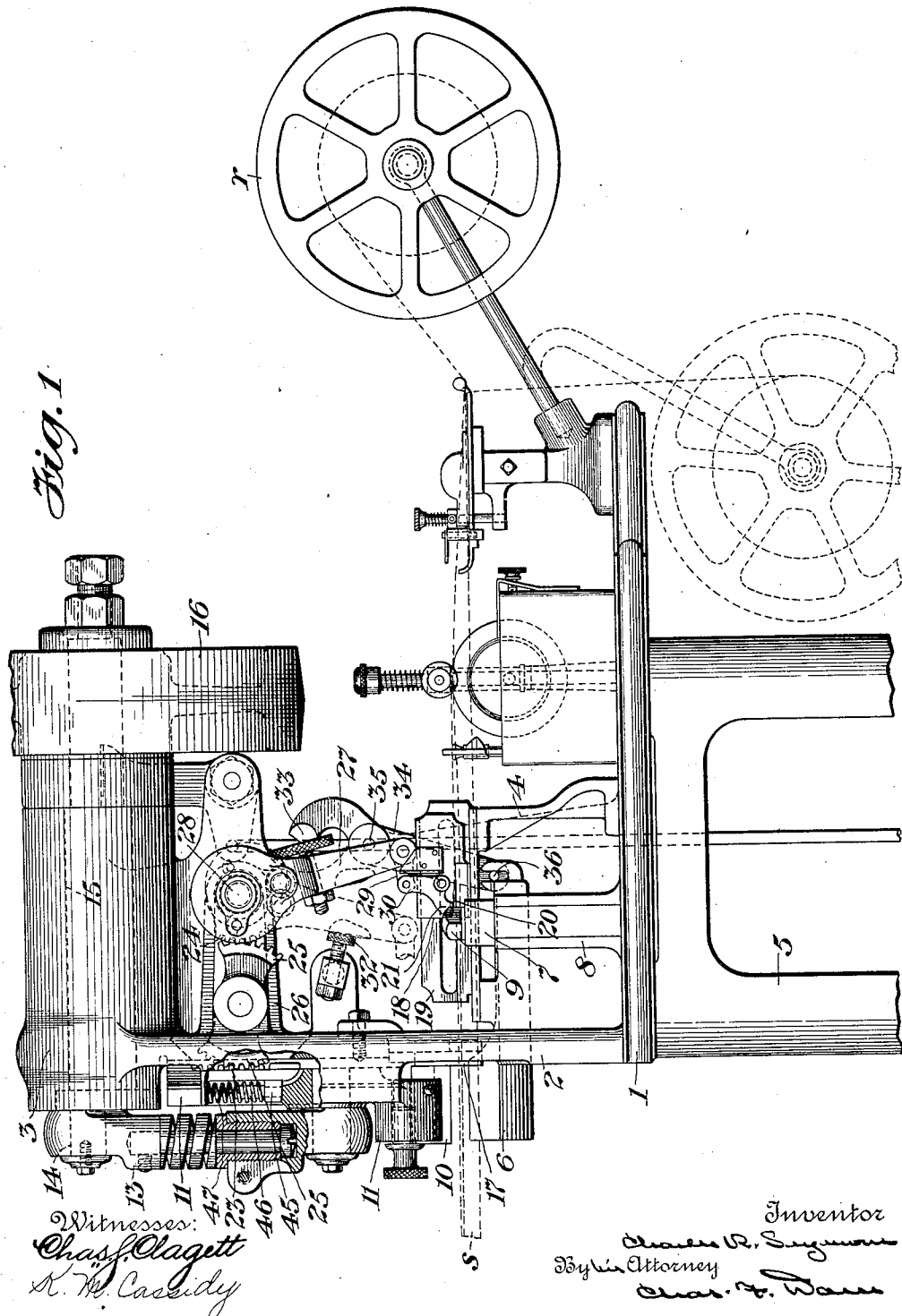


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APPLICATION FILED DEC. 20, 1909.

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3 SHEETS—SHEET 1.



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Fig. 2

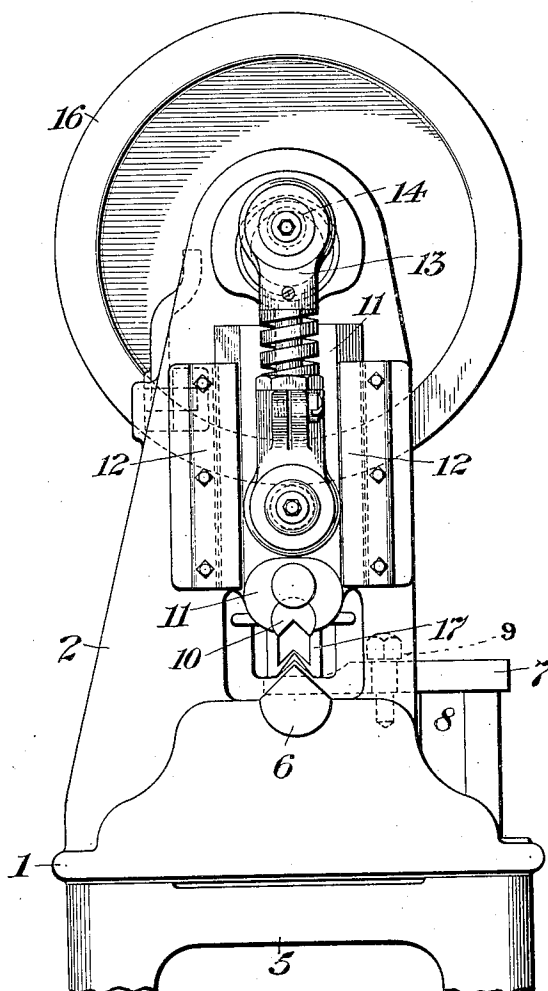
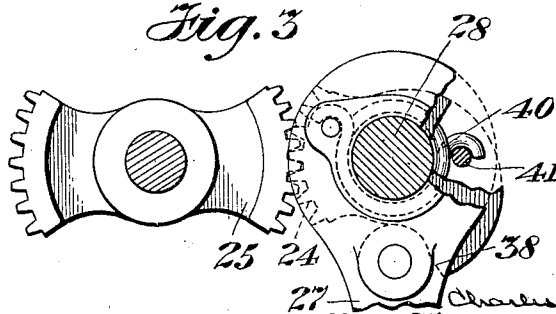


Fig. 3



Witnesses:
Chas. Claggett
R. W. Casidy

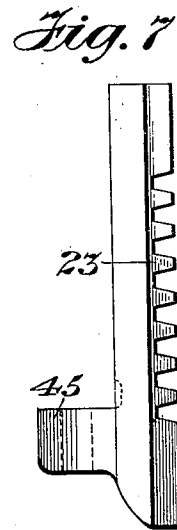
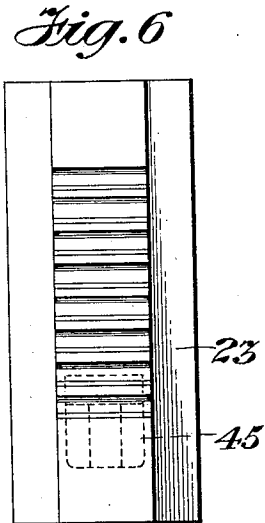
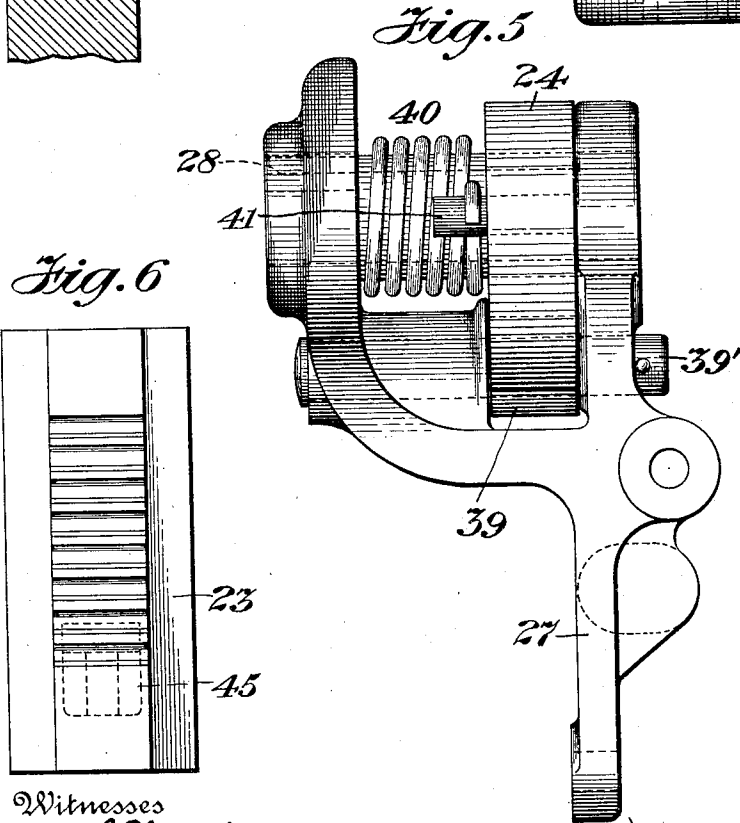
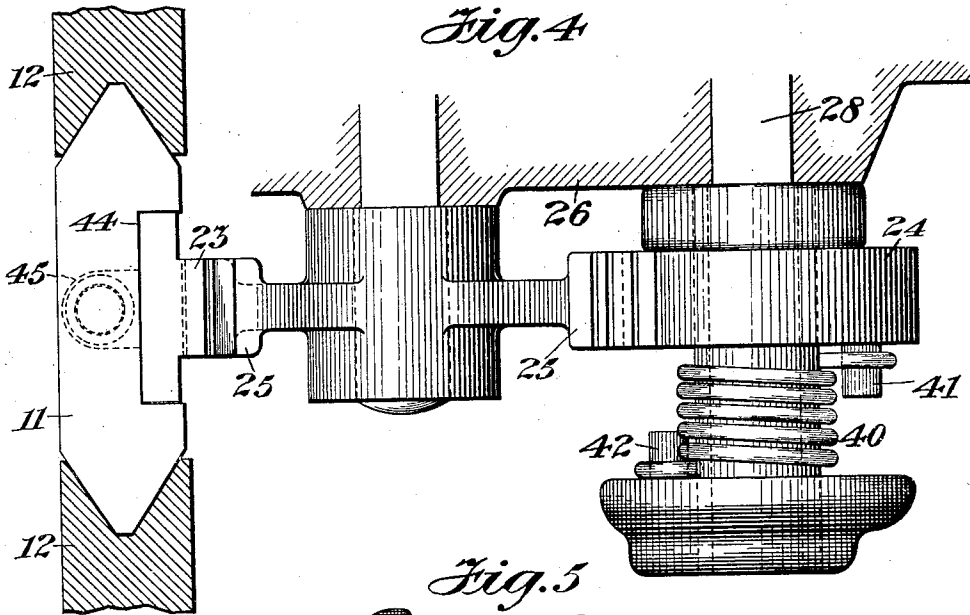
Inventor
Charles R. Seymour
By *Attorney*
Chas. F. Davis

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Witnesses
Chas. J. Olagett
K. M. Cassidy

Inventor
Charles R. Seymour
By his Attorney
Wm. F. Dore

UNITED STATES PATENT OFFICE.

CHARLES R. SEYMOUR, OF ROCHESTER, NEW YORK, ASSIGNOR TO M. D. KNOWLTON COMPANY, OF ROCHESTER, NEW YORK, A CORPORATION OF NEW YORK.

MACHINE FOR APPLYING BOX-CORNER STAYS.

1,037,063.

Specification of Letters Patent.

Patented Aug. 27, 1912.

Application filed December 20, 1908. Serial No. 534,111.

To all whom it may concern:

Be it known that I, CHARLES R. SEYMOUR, citizen of the United States, and resident of Rochester, in the county of Monroe and State of New York, have invented certain new and useful Improvements in Machines for Applying Box-Corner Stays, of which the following is a specification.

This invention relates to that class of machines adapted for applying stays or reinforcing strips to the corner joints of boxes or other receptacles made of paper-board or like material, and in which are embodied stay-strip applying means and stay-strip feeding means; the said feeding means being operative to feed a continuous stay-strip from a supply roll to said applying means to be acted upon thereby in usual and well-known manner.

The present invention relates particularly to improvements in the stay-strip feeding mechanism of such class of machines, and has for its object the provision of a feeding mechanism that will be capable of effective operation under all conditions of work and without liability of undue friction or wear on the working parts thereof. This object is attained by means of the novel features of construction and combinations of parts hereinafter described and claimed.

Referring now to the accompanying drawings forming part of this specification,—Figure 1 is a side elevation, partly in section, of a machine embodying my invention. Fig. 2 is a front elevation of the machine. Figs. 3 to 7 inclusive, are enlarged detail views of different parts of the feeding mechanism to be hereinafter referred to.

Similar reference characters designate like parts in the several figures of the drawings.

As shown in said drawings, the main frame of the machine is formed by an integral casting embodying a horizontal bed-plate 1, a vertical standard 2, at one end of said bed-plate, a horizontal arm 3 at the upper end of said standard overlying the bed-plate 1, and a vertical web 4 connecting at its margin with the said bed-plate, the standard and overlying arm. This frame, upon which the several operative parts of the machine are mounted, is supported at

the proper height upon a suitable sub-frame or support 5, a portion only of which is shown in the drawings.

The stay-applying means of this machine is substantially the same as that of other machines of the same class and includes two coöperating presser dies, one of which is normally stationary and the other reciprocatory.

The stationary die, which is also termed an anvil, is indicated at 6. This die is in the form of an elongated bar arranged horizontally and supported in the standard 2 somewhat above the bed-plate 1 with its front end extending beyond the face side of the standard to support the boxes or other work thereon. The said die or anvil 6 is fitted to slide longitudinally in its seat or bearing in the supporting frame so that its front end portion may be extended a greater or less distance from the face of the standard 2 according to the depth of the box to be stayed. Said die or anvil may be secured in its adjusted position by any suitable means, the means herein shown for such purpose comprising a clamp-bar 7 resting at one end on a riser 8 on the bed-plate and at its other end resting on the upper flattened portion of the rear end of the anvil and being adapted to be held in clamping engagement with said anvil by means of a clamp-screw 9. The other or reciprocatory die, indicated at 10, is located at the front side of the standard 2 for coöperation with the upper face of the projecting front end of the lower die or anvil 6, and is suitably attached to a vertically acting slide or plunger 11 which is operative in guides 12, 12, at the face side of the standard 2 and connected through the medium of a suitably constructed pitman 13 with an actuating part, here shown as a crank-pin 14 carried at the front end of a driving shaft 15 mounted in the upper horizontal arm 3 of the supporting frame; said shaft being adapted to be connected with or disconnected from a driving pulley 16 through the medium of a suitable clutch (not shown) for the purpose of controlling the action of the die 10 and associated working parts.

In the operation of the machine, as hereinbefore referred to, the stay-strip, indicated by dotted lines at *s*, is fed by a suit-

able feeding mechanism from the supporting reel 7 to a position between the dies 6—10 and over the corner of a box supported on the lower die; following which, a downward movement of the plunger 11 first causes a cutter 17 carried thereby to sever the stay to be applied to the box from the continuous strip, and thereafter causes the die 10 also carried thereby to apply the severed stay to the box corner by cooperation with the lower die, in usual and well-known manner. I will now describe the construction and operation of the said stay-feeding mechanism. This feeding mechanism comprises a reciprocatory strip-engaging device together with means for operating said device in a manner whereby it will be caused to engage and carry forward the strip in its forward feeding movement and then become released from the strip at the limit of its forward movement so as to move backwardly without producing any corresponding movement of the strip. Said strip-engaging device itself is of substantially usual and well-known construction and comprises a plate 18 slidably connected with a stationary guide-plate 19 and having connected therewith two cooperating gripping jaws arranged to permit of the passage of the stay-strip therebetween; one of said jaws, indicated at 20, being fixed with respect to the plate 18 and located in position for engagement with the stay-strip at the under-side thereof, and the other jaw, indicated at 21, being pivoted to the plate 18 and located in position for engagement with the strip at the upper side thereof. With this construction of device, the movable or pivoted jaw 21 should be caused to cooperate with the jaw 20 to engage and carry forward the strip upon the forward movement of the device, and to release the strip at the limit of the forward movement of the device and maintain such release during the return movement of the device. Such operation of the strip-engaging device is effected in the present case and in accordance with my invention by suitable means operated from the vertically acting plunger 11 of the strip-applying means. The said plunger 11 has connected therewith at its rear side a rack-gear 23 which meshes with a sector-gear 24 through an intermediate sector-gear 25 to impart an oscillating movement thereto, the said sector-gears both being mounted on bearing pins or studs projecting from a boss 26 on the frame standard 2. The oscillating movement so given the gear 24 is in turn imparted through suitable connections to a lever 27 which at its upper end is pivotally connected with the bearing-pin 28 of the gear 24 and at its lower end is connected through a link 29 with a lever-arm 30 of the movable or piv-

oted gripping jaw 21 of the strip-engaging device, which latter is operated by such movement of the lever 27 in usual manner, that is, upon the forward throw of the lever the said device is given a corresponding forward movement with the jaw 21 in gripping engagement with the strip and upon the backward or return throw of the lever the said device is given a corresponding backward movement with the jaw 21 raised and released from engagement with the strip.

As well known by those familiar with the art, the length of stay fed between the dies 6—10 should vary according to the depth of the box to be stayed, and this is arranged for by the provision of means for regulating the length of the feed-stroke or movement of the strip-engaging device. In the present case two stops are provided for engagement with the feed lever 27 to regulate the extent of its movement and thereby that of the connected strip-engaging device; one of the stops, indicated at 32, limiting the forward movement of the lever and the other stop, indicated at 33, limiting the backward movement of the lever. The stop 33 is shown as being formed at the upper end of a lever 34 which is pivoted to the web 4 of the supporting frame at 35 with its lower end having a slot and pin connection 36 with the rear end of the die or anvil 6. With this connection of the stop-lever 34 with the anvil 6, forward or backward adjustment of the latter to accommodate different depths of boxes also operates to shift the position of the connected stop 33 and thereby effect a corresponding adjustment in the extent of movement of the lever 27 and connected strip-engaging device, whereby different lengths of stay will be fed to correspond to different depths of boxes.

In view of the fact that the plunger 11 has a substantially fixed or predetermined length of stroke, while that of the strip-engaging device is adjustable, it will be understood that the connections between the said plunger and the strip-engaging device should be sufficiently yieldable to permit of any difference in the movements of said parts. For instance, the movement of the gear 24 as imparted thereto from the plunger 11 is sufficient to impart a maximum length of feed-stroke to the strip-engaging device, but in case the stop 33 is set to cause a shorter length of feed-stroke to said strip-engaging device, the feed lever 27 will be engaged by the stop 33 and its movement be limited thereby prior to the limit of upward movement of the plunger. To provide for this and permit of the full movement of the plunger without breakage or other damage to the connecting parts, the connection between the sector 24 and the lever 27 is a

flexible or yielding one and is provided as follows: The sector and the lever are respectively provided with a shoulder 38 and an anti-friction roll 39 (the latter being mounted on a pin 39' connected to the lever) which said shoulder and roll are yieldingly held in engagement with each other by a coiled spring 40 located on a sleeve or bushing on the bearing pin 28 with its opposite ends engaging pins 41 and 42 located respectively on the said sector and lever. With this construction and arrangement of parts, when the lever 27 comes in contact with the stop 33 prior to the completion of the up stroke of the plunger, as referred to, the spring 40 will yield and permit of further movement of the connecting gears and said plunger without breakage or other damage to the parts. On the down stroke of the plunger, the movement of the gears will again bring the shoulder 38 of the sector 24 into engagement with the roll 39 of the lever 27 and cause a positive forward or feeding movement to said lever and the connected strip-engaging device.

Upon the forward or feeding movement of the lever 27 and connected strip-engaging device, the said lever is brought into engagement with the forward stop 32 prior to the limit of the down stroke of the plunger and connected parts. In view of this and in order to permit of the complete stroke of said plunger, a yieldable connection is also provided between the plunger and the rack-gear 23 in a manner as follows: The said gear, which is slidably fitted within a way 44 in the plunger, is provided with a perforated ear 45 fitting over a vertical pin 46 in a cutaway portion or recess of the plunger and yieldingly held against the lower wall of said recess by a spring 47 interposed between said ear and the upper wall of the recess, as clearly shown in Fig. 1. With this construction and arrangement of parts, when the feed lever 27 is limited in its forward movement by the stop 32, as indicated by dotted lines in Fig. 1, the continued downward stroke of the plunger, for the purpose of operating the cutting and clamping devices, is permitted by the yielding of the spring 47 without undue strain, breakage or other damage to the associated parts. Upon the return upward stroke of the plunger, said plunger positively engages the rack-gear and operates the several connected parts to return them to position for another feeding stroke, as before described.

What I claim is:

1. In a machine for applying box-corner stays, the combination with stay-strip applying means including two cooperating pressing dies, and a reciprocating slide carrying one of said dies and moving it to and from a position for cooperation with

the other, of a stay-strip feeding mechanism including a reciprocating strip-engaging device, means for transmitting movement to the strip-engaging device from said slide, said transmitting means embodying spring-connected parts and being yieldable in opposite directions, and means for varying the movement or stroke of said strip-engaging device.

2. In a machine for applying box-corner stays, the combination with stay-strip applying means including two cooperating pressing dies, and a reciprocating slide carrying one of said dies and moving it to and from a position for cooperation with the other, of a stay-strip feeding mechanism including a reciprocating strip-engaging device, means for transmitting movement to the strip-engaging device from said slide, said transmitting means embodying intermeshing gear parts and being yieldable in opposite directions, and means for varying the movement or stroke of said strip-engaging device.

3. In a machine for applying box-corner stays, the combination with stay-strip applying means including two cooperating pressing dies, and a reciprocating slide carrying one of said dies and moving it to and from a position for cooperation with the other, of a stay-strip feeding mechanism including a reciprocating strip-engaging device, means for transmitting movement to the strip-engaging device from said slide, said transmitting means embodying intermeshing gear parts one of which has a yielding connection with said slide, and means for varying the movement or stroke of said strip-engaging device.

4. In a machine for applying box-corner stays, the combination with stay-strip applying means including two cooperating pressing dies, and a reciprocating slide carrying one of said dies and moving it to and from a position for cooperation with the other, of a stay-strip feeding mechanism including a reciprocating strip-engaging device, means for transmitting movement to the strip-engaging device from said slide, said transmitting means embodying intermeshing gear parts one of which has a yielding connection with said slide and is movable therewith, and means for varying the movement or stroke of said strip-engaging device.

5. In a machine for applying box-corner stays, the combination with stay-strip applying means including two cooperating pressing dies, and a reciprocating slide carrying one of said dies and moving it to and from a position for cooperation with the other, of a stay-strip feeding mechanism including a reciprocating strip-engaging device, means for transmitting movement

to the strip-engaging device from said slide, said transmitting means embodying inter-meshing gear parts one of which is mounted on said slide and has a yielding connection therewith, and means for varying the movement or stroke of said strip-engaging device.
Signed at Rochester, in the county of

Monroe and State of New York, this 13th day of December, A. D. 1909.

CHAS. R. SEYMOUR.

Witnesses:

RALPH W. DAVIS,
OTTO M. HOCH.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."