A. H. MORRISON.

STRIP FEEDING MEANS.

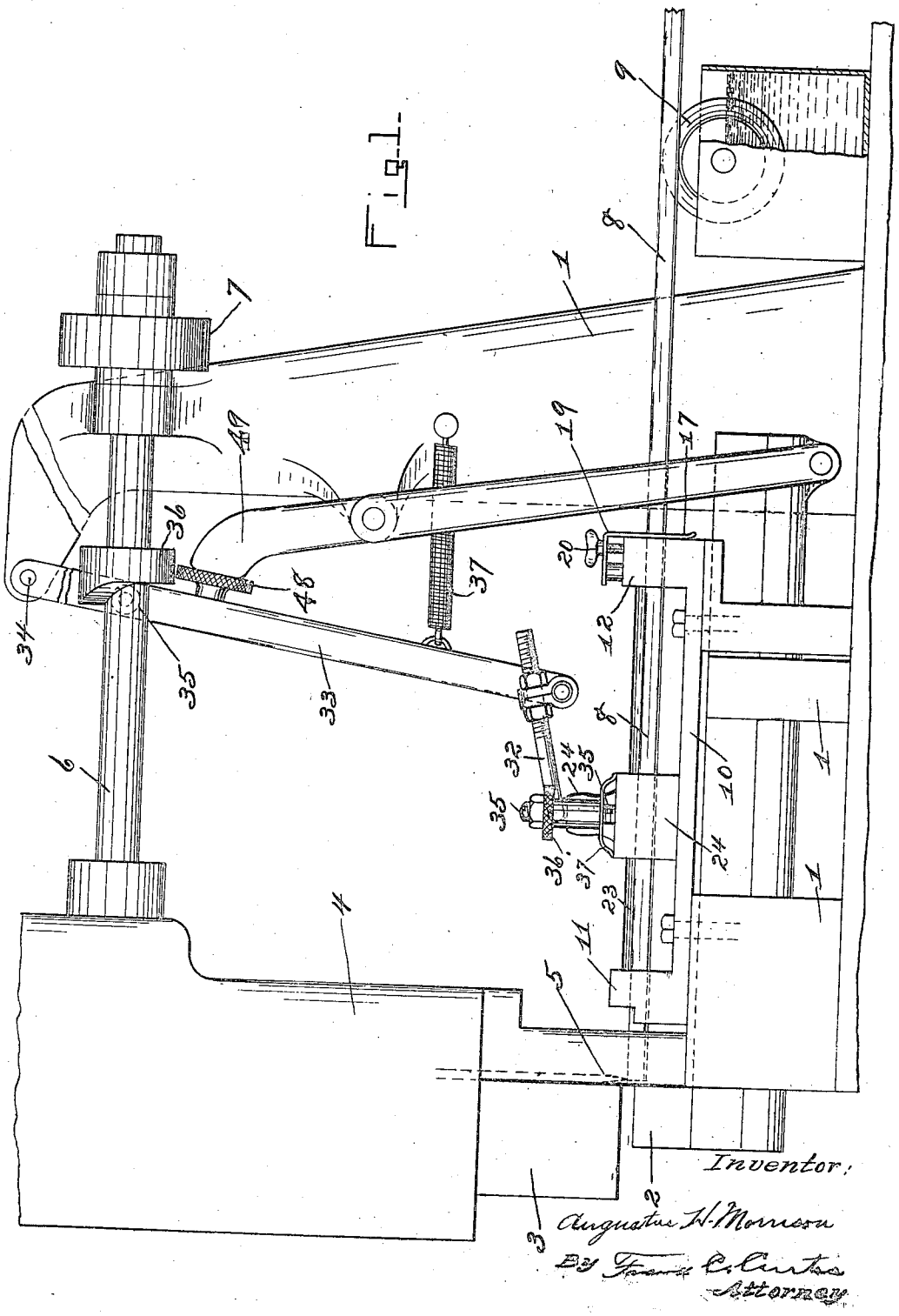
APPLICATION FILED FEB. 26, 1916.

1,252,140.

Patented Jan. 1, 1918.

3 SHEETS—SHEET 1.

Fig. 1.



Inventor:
Augustus H. Morrison
By Frank P. Curtis
Attorney

A. H. MORRISON.

STRIP FEEDING MEANS.

APPLICATION FILED FEB. 26, 1916.

1,252,140.

Patented Jan. 1, 1918.

3 SHEETS—SHEET 2.

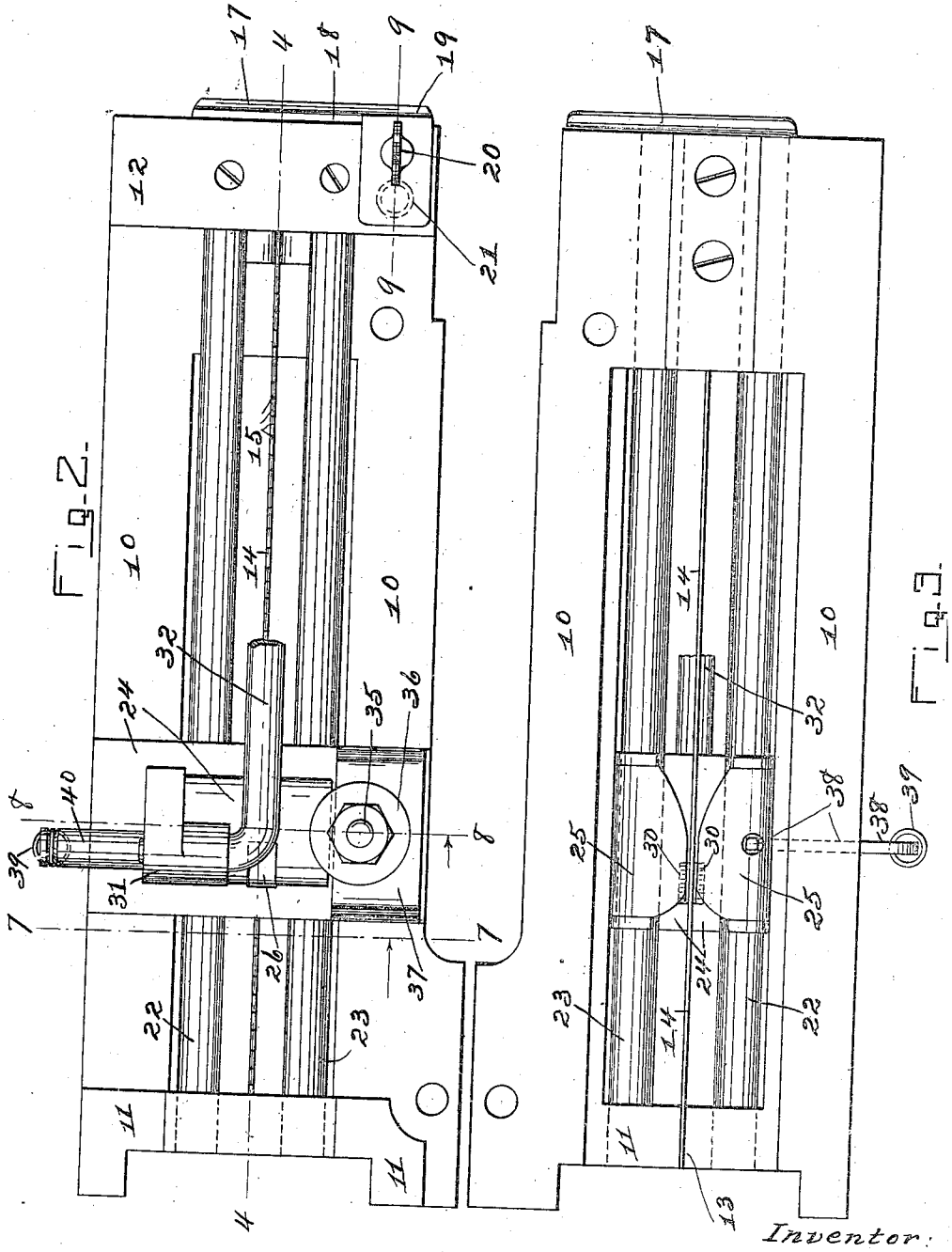


Fig. 2.

Fig. 3.

Inventor:

Augustus H. Morrison

By Frank C. Curtis

Attorney

A. H. MORRISON.

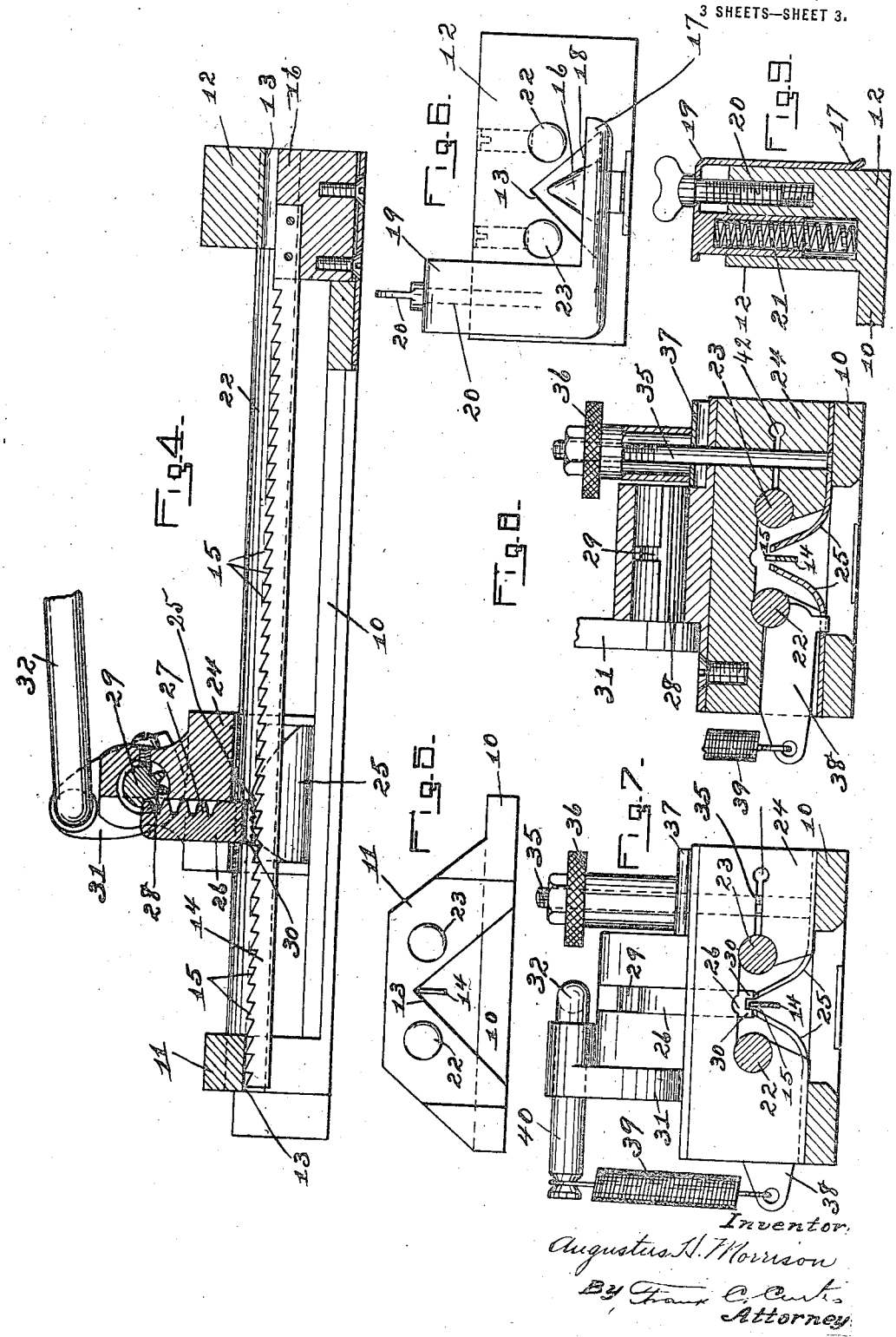
STRIP FEEDING MEANS.

APPLICATION FILED FEB. 26, 1916.

1,252,140.

Patented Jan. 1, 1918.

3 SHEETS—SHEET 3.



Inventor,
Augustus H. Morrison
By Frank C. Curtis
Attorney

UNITED STATES PATENT OFFICE.

AUGUSTUS H. MORRISON, OF AMSTERDAM, NEW YORK.

STRIP-FEEDING MEANS.

BEST AVAILABLE COPY

1,252,140. Specification of Letters Patent. Patented Jan. 1, 1918.

Application filed February 26, 1916. Serial No. 80,731.

To all whom it may concern:

Be it known that I, AUGUSTUS H. MORRISON, a citizen of the United States, residing at Amsterdam, county of Montgomery and State of New York, have invented certain new and useful Improvements in Strip-Feeding Means, of which the following is a specification.

The invention relates to such improvements and consists in the novel construction and combination of parts hereinafter described and subsequently claimed.

Reference may be had to the accompanying drawings, and the reference characters marked thereon, which form a part of this specification. Similar characters refer to similar parts in the several figures therein.

This invention is applicable to various machines in which a tape or strip is required to be fed by a step-by-step movement; and is particularly adapted for machines for applying box-corner stays formed from a stay-strip angular in cross section.

The invention relates more particularly to the means for imparting to the strip a step-by-step movement.

The principal objects of the invention are to secure a high degree of accuracy and uniformity in the successive feed-movements of the stay-strip; to prevent the feeding mechanism from becoming fouled by the adhesive coating on the strip; and to present the strip in substantially true angular cross-sectional form, both to the strip-feeding mechanism, and to the dies whereby sections of the strip are applied to the corners of the box.

Other objects will appear in connection with the following description.

Figure 1 of the drawings is a view in side elevation of part of a machine for applying box-corner stays provided with stay-strip-feeding mechanism in accordance with my invention.

Fig. 2 is a top plan view of the stay-strip-feeding mechanism attached.

Fig. 3 is a bottom plan view of the same.

Fig. 4 is a vertical longitudinal section of the same taken on the broken line 4—4 in Fig. 2.

Fig. 5 is a view in front elevation of the same.

Fig. 6 is a view in rear elevation of the same.

Fig. 7 is a vertical cross-section of the same taken on the broken line 7—7 in Fig. 2.

Fig. 8 is a vertical cross-section of the same taken on the broken line 8—8 in Fig. 2.

Fig. 9 is a vertical longitudinal section of the same taken on the broken line 9—9 in Fig. 2.

Referring to the drawings wherein the invention is shown in preferred form, as applied to a machine for attaching corner-stays to boxes, 1 is the frame of the machine having a stationary lower die or anvil, 2, and an upper die, 3, reciprocatory in a stationary head, 4.

The upper die, 3, and cutting knife, 5, are reciprocated vertically by suitable mechanism (not shown) within the head, 4, actuated by a driving-shaft, 6, having a pulley, 7, adapted to receive a driving belt, not shown.

The stay-strip, 8, which is angular in cross-section, on its way to the dies, 2 and 3, passes over a paste-wheel or glue-wheel, 9, whereby an adhesive substance is applied to the inner side of the angular strip, 8.

Between the paste-wheel, 9, and the dies, 2 and 3, the stay-strip passes through a guide-block, 10, fixed upon the frame of the machine and having at its respective ends upwardly projecting guide-posts, 11—12, each provided with an angular channel, 13, for the apex of the angular strip.

The angular strip is yieldingly held in the apex of the channel, 13, in the front guide-post, 11, and the return movement of the strip is prevented, by means of a rack, 14, having forwardly facing ratchet-teeth, 15, adapted to engage the inner side of the angular strip at its apex.

The toothed-rack, 14, is made of resilient material, and its rear end is fixedly mounted in the rear post, 12, in such a position that its front end tends to occupy the apex of the channel, 13, in the front guide-post, 11.

The ratchet-teeth on the front end of the rack, 14, thus bear yieldingly against the inner side of the apex of the stay-strip.

The rear post, 12, has an upwardly projecting member, 16, which extends into its channel, 13, and is adapted to engage the inner side of the strip in proximity to the apex of the channel and assist in guiding

the strip while leaving the strip free for automatic adjustment by means of a horizontal guiding member, 17, having a straight edge, 18, adapted to engage the edges of the strip.

The horizontal guide-member, 17, has an upwardly extending-shank, 19, overhanging the rear post, 12, and secured to the same by a thumb-screw, 20, which limits the upward movement of the member, 17.

A coil-spring, 21, interposed between the rear post and the overhanging portion of the shank, 19, yieldingly holds the guide-member, 17, at the limit of height permitted by the thumb-screw, 20.

The guide-member, 17, can thus be vertically adjusted to form with the wall of the channel, 13, in the rear post, 12, a triangular opening of a size adapted to receive an angular stay-strip of the particular cross-sectional dimensions which may be required from time to time.

If the strip before entering the rear post is somewhat opened out, or closed, or twisted, it will be automatically restored to its proper form and position by the described guiding means. By yieldingly supporting the guide-member, 17, it acts more gradually and flexibly in restoring a displaced or deformed strip, and it can be forced down by hand to facilitate the insertion of a new strip from time to time.

On opposite sides of the path traversed by the stay-strip between the rear guide-post, 12, and front guide-post, 11, are a pair of slideway-rods, 22 and 23, mounted at their opposite ends in the respective posts, along which slideway-rods a feed-carriage, 24, is adapted to be reciprocated to feed the stay-strip to the dies by a step-by-step movement. The inner sides of the slideway-rods, 22 and 23, form guides for the outer sides of the V-shaped strip.

Fixed upon the feed-carriage are a pair of upwardly convergent-wings, 25—25, having teeth on their upper edges adapted to engage the inner side of the stay-strip on opposite sides of its apex.

A strip-clamping dog, 26, having a toothed-rack, 27 thereon, is mounted to reciprocate vertically in a slideway in the carriage, 24, and is adapted to be so reciprocated by the engagement with the toothed-rack, 27, of teeth, 28, on the rock-shaft, 29, mounted in bearings on the carriage.

The dog, 26, has separated toothed jaws, 30—30, coöperative with the toothed edges of the respective wings, 25—25, to clamp the stay-strip on opposite sides of its apex, causing the strip, while clamped, to partake of the movement of the feed-carriage.

A rocker-arm, 31, on the rock-shaft, 29, is connected by a link, 32, with the lower end of the lever, 33, fulcrumed, at, 34, upon the frame of the machine and having a cam-follower, 35, adapted to be engaged by a cam, 36, fixed upon the driving-shaft, 6, which cam serves to impart a forward movement to the lever, 33, the return movement of said lever being induced by a coil-spring, 37, connecting the lever with the frame of the machine.

The return movement of the lever, 33, is limited by the engagement of an adjustable stop-screw, 48, on the lever with a stop-bar, 49.

The forward movement of the lever, 33, transmitted through the link, 32, to the rocker-arm, 31, first serves to partly rotate the rock-shaft, 29, to force the dog, 26, downward and tightly clamp the stay-strip on opposite sides of its apex between the toothed edges of the wings, 25, and the respective toothed jaws, 30, of the dog.

The continued forward movement of the lever, 33, is transmitted through the rock-shaft to the carriage to impart a forward feed-movement to the carriage and the clamped stay-strip.

The return movement of the lever, 33, transmitted through the link, 32 to the rocker-arm, 31, first serves to impart a partial rotation to the rock-shaft in a reverse direction to raise the dog away from the stay-strip and then imparts a return slide-movement to the feed-carriage, restoring it to its original position.

During the return movement of the feed-carriage, the wings, 25, being freed from the influence of the clamping dog, slide freely along the inner side of the stay-strip without imparting rearward movement to the strip, such rearward movement being prevented by the engagement of the teeth, 15, on the rack, 14, with the inner side of the apex of the strip, not only where the strip passes through the front guide-post, 11, but more or less throughout the length of the strip between the front and rear guide-posts.

The rack, 14, extends between the wings, 25, opposite and adjacent to the space between the separated toothed jaws of the clamping dog.

In the operation of the machine, the stay-strip will, between each two successive operations of the die, 3, be fed to the dies a distance equal to the forward movement of the feed-carriage.

To secure accuracy in the location of the feed-carriage at the end of its return movement, I provide brake-mechanism for creating greater frictional resistance to the rearward than to the forward movement of the carriage.

The carriage is formed with a split-bearing, 42, for the slideway-rod, 23, the members of which split-bearing are adapted to be drawn together by means of a screw-bolt, 35, and clamping-nut, 36, acting through a

spring-washer, 37, whereby said bearing can be made to fit said slide-rod as tightly as is desirable for the forward movement of the carriage.

The carriage is formed with a partial bearing only for the slideway-rod, 22, which rod is engaged by a brake-lever, 38, the outer end of which lever is connected by a coil-spring, 39, with the rocker-arm, 31, through the medium of an extension, 40, of the offset ends of the link, 32.

Rearward movement of the rocker-arm, 31, tends to place the spring, 39, under increased tension, thus causing the brake-lever, 38, to bear with greater force upon the slidway-rod, 22, during the rearward, than during the forward, movement of the feed-carriage.

The lost motion in the operation of the rocker-arm, 31, to reciprocate the feed-carriage is thus utilized not only to operate the strip-clamping mechanism but also to operate the brake-mechanism for the feed-carriage.

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

1. In a machine of the class described and in combination reciprocatory mechanism for imparting a step-by-step feed-movement to a stay-strip angular in cross-section coated with adhesive on its inner side; a guide provided with an angular channel for the stay-strip; and a rack having forwardly-facing strip-engaging ratchet-teeth yieldingly supported adjacent to the apex of said angular channel.

2. In a machine of the class described and in combination, a reciprocatory feed-carriage; convergent wings on the feed-carriage adapted to engage the inner side of a stay-strip angular in cross-section; and a dog movably mounted upon said feed-carriage having separated jaws coöperative with said wings respectively to clamp the stay-strip on opposite sides of its apex.

3. In a machine of the class described and in combination, a reciprocatory feed-carriage; convergent wings on the feed-carriage adapted to engage the inner side of a stay-strip angular in cross-section; and a dog movably mounted upon said feed-carriage having separated jaws coöperative with said wings respectively to clamp the stay-strip on opposite sides of its apex; and a stay-strip-engaging rack yieldingly supported between said wings adjacent to the space between the jaws of said dog.

4. In a machine of the class described and in combination, a reciprocatory feed-carriage; convergent wings on the feed-carriage adapted to engage the inner side of a stay-strip angular in cross-section; a dog movably mounted upon said feed-carriage having separated jaws coöperative with said wings respectively to clamp the stay-strip on opposite sides of its apex; and a rack having forwardly-facing stay-strip-engaging ratchet-teeth yieldingly supported between said wings adjacent to the space between the jaws of said dog.

5. In a machine of the class described and in combination, a reciprocatory feed-carriage; convergent wings on the feed-carriage having toothed edges adapted to engage the inner side of a stay-strip angular in cross-section; and a dog movably mounted upon said feed-carriage having separated toothed jaws coöperative with the toothed edges of said wings respectively to clamp the stay-strip on opposite sides of its apex.

6. In a machine of the class described and in combination, a reciprocatory feed-carriage; convergent wings on the feed-carriage having toothed edges adapted to engage the inner side of a stay-strip angular in cross-section; a dog movably mounted upon said feed-carriage having separated toothed jaws coöperative with the toothed edges of said wings respectively to clamp the stay-strip on opposite sides of its apex; and a rack having forwardly-facing stay-strip-engaging ratchet-teeth yieldingly supported between said wings adjacent to the space between the jaws of said dog.

7. In a machine of the class described and in combination, a reciprocatory feed-carriage; convergent wings on the feed-carriage adapted to engage the inner side of a stay-strip angular in cross-section; a dog movably mounted upon said feed-carriage having separated jaws coöperative with said wings respectively to clamp the stay-strip on opposite sides of its apex; a fixed guide provided with an angular channel for the stay-strip; and a rack having forwardly-facing stay-strip-engaging ratchet-teeth yieldingly supported adjacent to the apex of said angular channel, said rack extending between said convergent wings adjacent to the space between the jaws of said dog.

8. In a machine of the class described and in combination, strip-guiding means engageable with the inner side of a V-shaped strip; a pair of rods on opposite sides of the path of the strip forming guides for the outer sides of the strip; a reciprocatory feed-carriage slidably mounted on said rods; and strip-feeding mechanism mounted on said feed-carriage.

9. In a machine of the class described and in combination, a reciprocatory feed-carriage; strip-clamping mechanism mounted on said carriage including a reciprocatory toothed rack having a strip-engaging dog; a rock-shaft mounted on said carriage having teeth in engagement with said toothed rack; and a rocker-arm on said rock-shaft having means whereby it is adapted to be connected with a reciprocatory member of the machine.

10. In a machine of the class described and in combination, a pair of stationary slideway rods; a feed-carriage having a split-bearing for one of said rods; and a freely fitting bearing for the other of said rods; means including a screw and a spring for drawing together the members of said split-bearing; a lever-brake carried by said carriage engageable with said other rod; strip-clamping mechanism carried by said carriage having a movable clamp-member; a rock-shaft mounted upon said carriage in operative connection with said movable clamp-member; a rocker-arm on said rock-shaft for rocking said shaft and reciprocating the feed-carriage, said rocker-arm having means whereby it is adapted to be connected with a reciprocatory member of the machine; and a spring-connection between said rocker-arm and said lever, tending to exert a greater force upon said lever during the return movement, than during the forward movement, of the feed-carriage.

11. In a machine of the class described; guiding mechanism for a tape angular in cross-section comprising a pair of guide-members, one of said members being provided with an angular channel for the apex of the tape, the other member being yielding and adjustable toward and from the apex of said channel and having a straight-edge adapted to engage the edges of the strip.

12. In a machine of the class described; guiding mechanism for a tape angular in cross-section comprising a member provided with an angular channel for the apex of the strip, a member engageable with the inner side of the strip in proximity to the apex of said channel, and a yielding member adjustable toward and from the apex of said channel having a straight edge adapted to engage the edges of the strip.

13. In a machine of the class described and in combination, a pair of stationary slideway members; a feed-carriage having a divided-bearing for one of said slideway members and a freely-fitting bearing for the other of said slideway members; adjustable means for regulating the pressure of said divided-bearing upon the adjacent slideway member; a lever-actuated brake carried by said carriage engageable with said other slideway member; strip-clamping mechanism carried by said carriage; a carriage-reciprocating member mounted upon the carriage with provision for lost motion of said member having means whereby it is adapted to be connected with a reciprocatory member of the machine; and a bearing-connection between said carriage-reciprocating member and said brake-lever tending to exert a greater force upon said lever during the return movement than during the forward movement of the feed-carriage.

14. In a machine of the class described and in combination, means for feeding a V-shaped strip coated with adhesive on its inner side; means for supporting and guiding the outer sides of said strip; a support; and a rack mounted at its rear end upon said support, the front end of said rack being yielding and having teeth engageable with the inner side of the strip at its apex.

In testimony whereof, I have hereunto set my hand this 21st day of February, 1916.

AUGUSTUS H. MORRISON.

Witnesses:

JACOB C. MARKMAN,

GRANVELLE D. WHITLOCK.

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