

(No Model.)

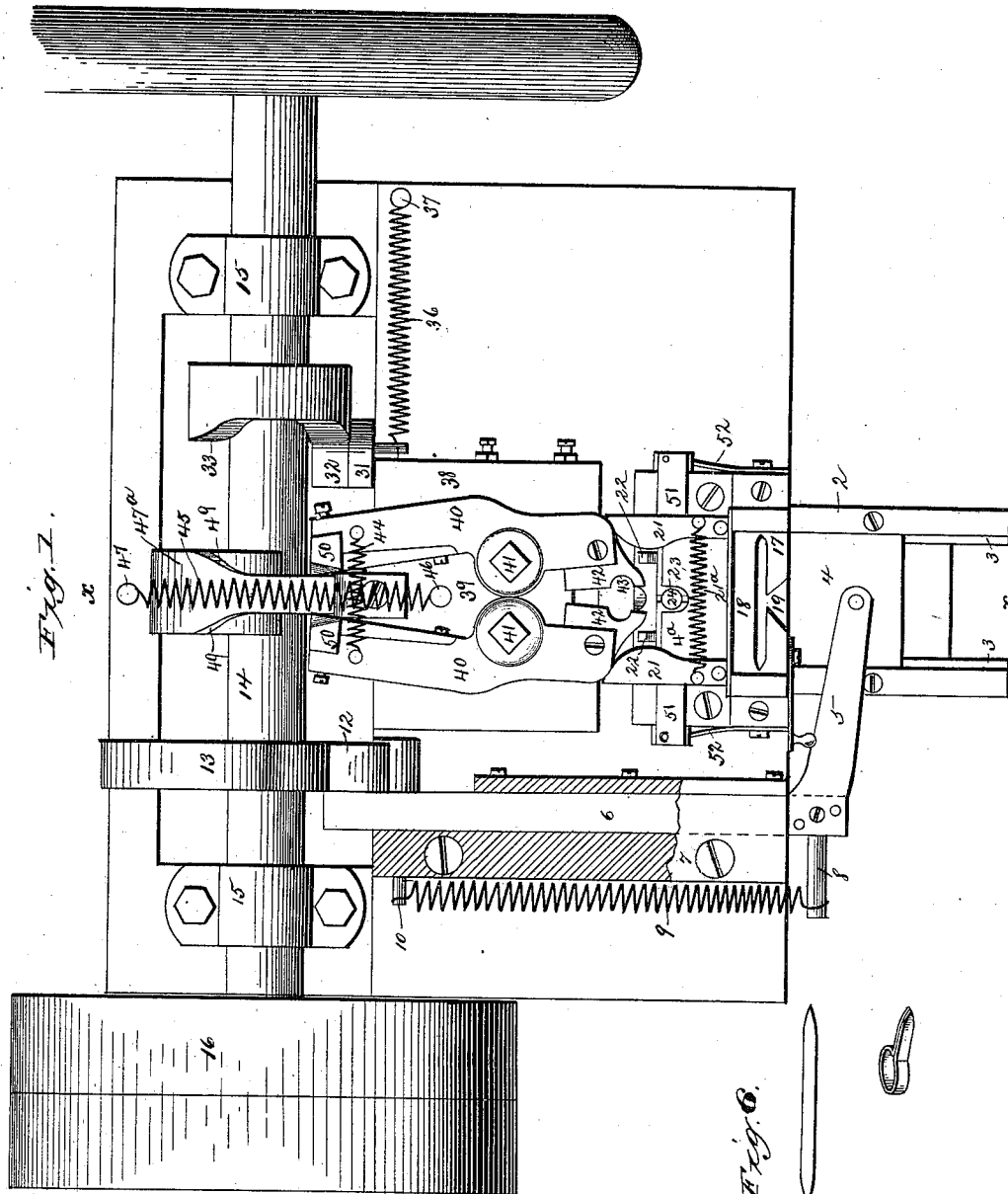
R. J. SHIPLEY.

2 Sheets—Sheet 1.

MACHINE FOR MAKING PAPER FASTENERS.

No. 418,533.

Patented Dec. 31, 1889.



Witnesses

E. L. Smith
A. H. Morris

Inventor

Ralph J. Shipley
By his Attorney
James L. Norris

(No Model.)

2 Sheets—Sheet 2.

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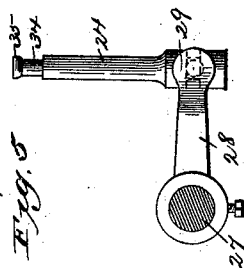


Fig. 4.

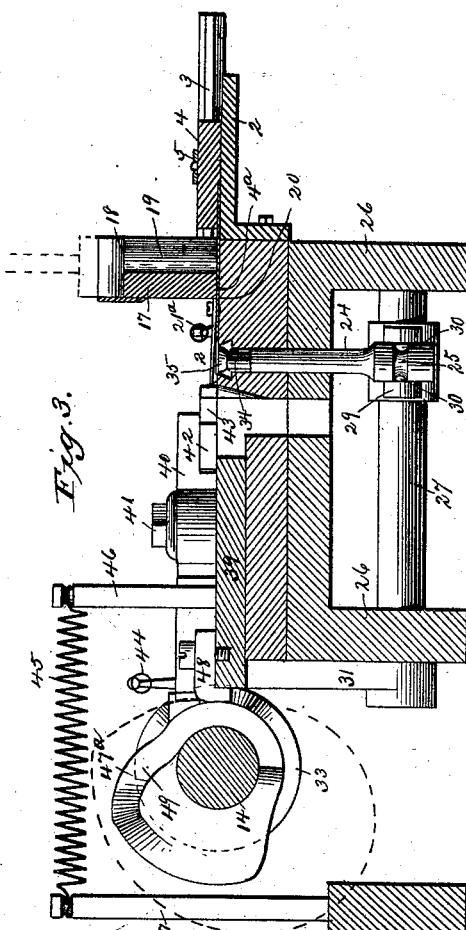
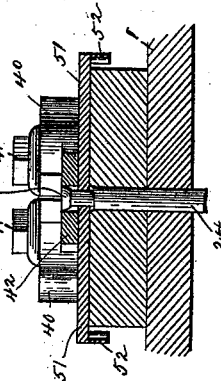


Fig. 3.

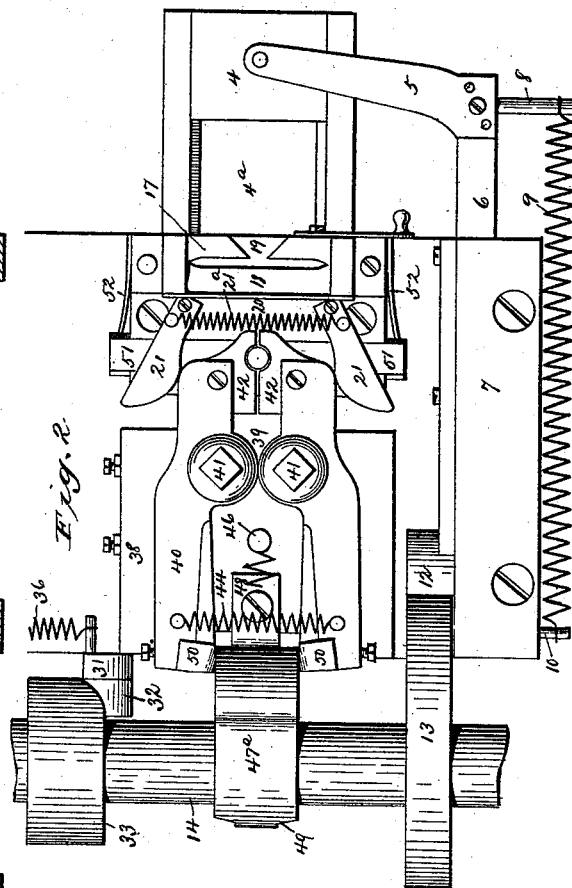


Fig. 2.

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UNITED STATES PATENT OFFICE.

RALPH J. SHIPLEY, OF WATERBURY, CONNECTICUT, ASSIGNOR TO GEORGE W. MCGILL, OF RIVERDALE, NEW YORK.

MACHINE FOR MAKING PAPER-FASTENERS.

SPECIFICATION forming part of Letters Patent No. 418,533, dated December 31, 1889.

Application filed October 22, 1889. Serial No. 327,811. (No model.)

To all whom it may concern:

Be it known that I, RALPH J. SHIPLEY, a citizen of the United States, residing at Waterbury, in the county of New Haven and State of Connecticut, have invented new and useful Improvements in Machines for Manufacturing Sample-Mounting Paper-Fasteners, of which the following is a specification.

My present invention relates to mechanism for the manufacture of sample-mounting paper-fasteners of that type in which the prongs are formed of two flat strips laid face to face, while the head consists of a circular loop integral with said prongs.

It is the purpose of said invention to provide automatic apparatus whereby the blanks may be fed successively into position to be acted upon by the looping-jaws to form the circular head or loop and double the blank to bring the prongs together, whereupon the swaging-head of the forming-pin is forcibly drawn through the loop while the latter is supported by the looping-jaws, spreading it to the full capacity of the jaws, drawing the prongs closely together, setting them in that position, and accurately forming the fastener.

The invention consists in the several novel features of construction and new combinations of parts hereinafter fully described, and then definitely pointed out in the claims following this specification.

In order to enable others skilled in the art to practice my invention, I will describe the same in detail, reference being had to the accompanying drawings, in which—

Figure 1 is a plan view of the entire machine. Fig. 2 is a partial plan view showing the operative parts in a different position. Fig. 3 is a vertical section of Fig. 1, taken from the front to rear in the line *x x*. Fig. 4 is a vertical transverse section taken through the forming-pin and the ends of the looping-jaws. Fig. 5 is a detail view of the forming-pin with its actuating arm and shaft. Fig. 6 is a view of the blank and of the completed fastener formed therefrom.

In the said drawings, the reference-numeral 1 denotes the frame of the machine, in which the operating parts are supported, and upon the front of said frame is mounted an angle-bracket 2, having parallel slideways 3, upon

which is arranged a slide-plate 4. To this plate is connected the end of an arm 5, forming part of an L-shaped slide 6, reciprocating within a housing or guide 7, mounted on the frame 1. To a pin 8 on the end of this slide is connected a coiled spring 9, fastened at its other end to a pin 10 on the end of the housing 7. Upon the end of the slide-bar 6 is journaled a friction-roll 12, which rests against a cam 13, carried by a shaft 14, which is journaled in brackets 15 on the frame 1 and driven by a pulley 16, the feed-slide being retracted by the cam and its operative stroke being effected by means of the spring 9.

Immediately in front of the slideway 3 a blank-receiver 17 is placed, resting on the frame 1, and having a seat 18 to receive the cob from which the blanks are supplied. These blanks consist of narrow strips of thin metal, pointed at their ends, and lying flat one above another in the cob and receiver, an opening 19 being formed in the latter to show the blanks and rectify any misplacement or binding by which their free descent to the feeder is prevented.

In front of the receiver 17 is arranged a flat feed-surface 20, upon which the blanks pass as they emerge from the bottom of the receiver under the impulse of the feed-plate. Upon each side of this surface are pivoted spring-guides 21, overhanging the pointed ends of the blanks and drawn inward or toward each other by a spring 21^a. At the extreme edge of the feed-surface 20 are arranged two small brackets 22, slightly inclined upward, and so located that when the blank is fed from the receiver it is pushed upon these brackets and left there with one edge slightly higher than the other.

In the center of the feed-surface 20 is an opening 23, over which the blank passes just before reaching the brackets 22. In this opening lies a vertical pin 24, extending downward beneath the frame 1, and having an enlarged lower end, in which is formed a half-round circumferential groove 25. Journaled in depending brackets 26 on the frame 1 is a rock-shaft 27, having a rigid arm 28, provided at its end with a fork 29, which incloses the lower end of the pin, the branches of the fork being provided upon their inner faces with

nipples 30, which engage the half-round groove 25. The rock-shaft 27 is provided with an arm 31 at its end, which extends upward beside the shaft 14, and upon the end of said arm is mounted a friction-roll 32, bearing upon a face-cam 33 on the shaft. The pin 24 is provided at its upper end with a reduced cylindrical portion 34, above which is a head 35, having substantially the shape of an inverted frustum of a cone. The parts are so arranged and timed that the pin is lowered until its head is concealed and caused to lie perfectly flush with the feed-surface 20 during the forward feed movement of the blank, this movement being produced by a spring 36, connected to the arm 31 and to a pin 37 on the frame 1.

Arranged upon the frame, between the receiver and the shaft 14, is a slideway 38, in which is mounted a slide-block 39, upon which are pivoted two levers 40, mounted upon strong pivot-pins 41. Upon their forward ends these levers are provided with jaws 42. These jaws are each provided with a half-round opening 43, so formed that when the jaws are closed they constitute a circular opening having the same size as the loop to be formed in the blank. The jaws are normally held open by the tension of a spring 44, connected to the rearward ends of the levers, and the parts are so timed and arranged that when the slide-block 39 is retracted to its full extent, which is effected by a spring 45, connected to a post 46 on the slide and a post 47 on the rear of the frame, the points of the jaws will lie close to or against the raised edge of the blank as the latter rests upon the brackets 22.

Upon the shaft 14 is mounted a pushing-cam or edge cam 47^a, which lies between the ends of the levers 40 and bears against a friction-block 48 on the slide-block 39. The edge cam 47^a passes into two opposite face cams 49, which act upon friction-blocks 50 on the ends of the levers 40 and force them apart, closing the jaws 42 with great force. These cams are so timed that the edge cam drives the slide-block 39, carrying the lever 40, forward before the two face cams close the forming-jaws 42, and simultaneously with this forward movement the forward rounded ends of the levers 40 impinge upon the curved inner edges of the spring-guides 21 and open them, as shown in Fig. 2. Set flush in the feed-surface, upon each side of the head of the pin 24, is a slide 51, having half-round recesses in their ends, which embrace the reduced cylindrical portion 34 of the pin. These slides are normally thrown toward each other to close these ends upon the pin by means of springs 52.

The operation of the machine is as follows: The blanks being piled in the hopper or receiver, the feed-slide 4, carrying the thin feed-plate 4^a, is operated by the revolution of the shaft, pushing the lowermost blank out of the hopper or receiver and advancing it edgewise, with its points lying beneath the

spring-guides 21, until, the pin 24 being lowered so that the blank can pass over its flat head, it is pushed upon the brackets 22, the edge nearest the jaws 42 being raised. The pin 24 now rises until its cylindrical portion 34 is above the feed-surface and the slide-block 39 advances, opening the spring-guides 21 and causing the points of the open jaws 42 to turn the raised blank upon its edge and carry its flat face against the cylindrical portion of the forming-pin 24. The further advance of the jaws bends the blank at its central point around the end of the pin, and the jaws, having advanced until they inclose the latter, are brought together by the action of the face cams 49. The jaws now remain closed, while the face cam 33 swings the arm 31, turning the rock-shaft 27 and drawing the pin 24 downward, its expanding-head entering the metal loop of the blank inclosed by the laws and spreading the metal against the circular recess of the jaws, in which the loop lies. During this operation the blank is sustained by the slides 51, its edge resting upon the ends of the said slides. When the pin-head has passed through the loop, the fastener is completely formed, its loop or head being of the required shape, while the inner surfaces of the prongs are brought or sprung by the spreading action of the pin closely together and thereby set and retained permanently in that position. The pin having drawn down out of the loop, the jaws inclosing it are retracted and opened and the completed fastener falls through an opening in the frame to the floor below or into a suitable receptacle. The function of the pin 24 is to afford a central rigid support around which the blank may be bent to bring its pointed ends into parallelism, or substantially so. When brought into this form, the jaws 42 close upon the bent portion, wholly inclosing it and bringing the pointed ends of the blank into close contact, and while thus held the head of the pin is drawn downward through the bent portion of the blank, swaging it into a ring in the manner already set forth.

What I claim is—

1. In a machine for making paper-fasteners, the combination, with a forming-pin having a cylindrical portion around which the blank is bent, and provided with an expanding-head, of jaws which bend and sustain the blank, and means for forcing the expanding-head of the pin down through the loop formed in the blank while the same is inclosed by the jaws, substantially as described.

2. In a machine for making paper-fasteners, the combination, with a feed-surface having inclining brackets, of a feed-plate pushing the blanks upon said brackets and raising one edge, a forming-pin rising in front of the blank and having an expanding-head, a pair of open jaws having recesses which when closed form a circular opening, a cam advancing said jaws, turning the blank upon its edge and bending it centrally around the forming-

pin, means for closing said jaws, and a rock-shaft drawing the expanding-head of said pin through the loop as it lies in said jaws, substantially as described.

5 3. In a machine for making paper-fasteners, the combination, with a vertically-moving forming-pin, of jaws having recesses capable of inclosing said pin, means for advancing
10 said jaws to bend the central portion of the blank around the forming-pin, a rock-shaft drawing an expanded head on said pin through the loop thus formed in the blank while the jaws remain closed, and spring-actuated
15 slides having recesses in their ends which receive the forming-pin, said ends constituting supports for the loop under the spreading action of the pin, substantially as described.

4. In a machine for making paper-fasteners, the combination, with a feed-surface and
20 with a hopper or receiver containing blanks each consisting of a flat strip of metal sharpened at both ends, of a feed slide or plate feeding the lower blank upon brackets, by which one edge is raised, a forming-pin having a cylindrical portion surmounted by an
25 expanding-head, a rock-shaft raising said pin in front of the center of the blank, a pair of levers pivoted on a slide-block and having normally-open jaws, a cam advancing said

jaws against the blank, turning it on its
30 edge and bending it around the forming-pin, a double face cam closing the jaws, a cam actuating the rock-shaft and drawing the expanding-head through the loop inclosed by
35 the jaws, and slide-bars supporting said loop, substantially as described.

5. In a machine for making paper-fasteners, the combination, with a feed-surface and with a receiver or hopper, of a reciprocating
40 feed-plate, spring-guides lying upon each side of brackets, which receive and raise one edge of the blank, a forming-pin having an expanding-head rising in front of the inclined blank, a pair of levers pivoted on a slide-
45 block and having jaws held open by a spring, a cam advancing the slide-block, a double face cam closing the jaws, a cam drawing the forming-pin down and forcing its expanding-head through the loop, and spring-closed
50 slides supporting said loop, substantially as described.

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

RALPH J. SHIPLEY.

Witnesses:

F. L. ADAMS,
H. H. WALKER.