Dec. 6, 1927. 1,651,834

A. NOVICK

ENVELOPE FASTENER ATTACHING MACHINE

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Fig. 1.

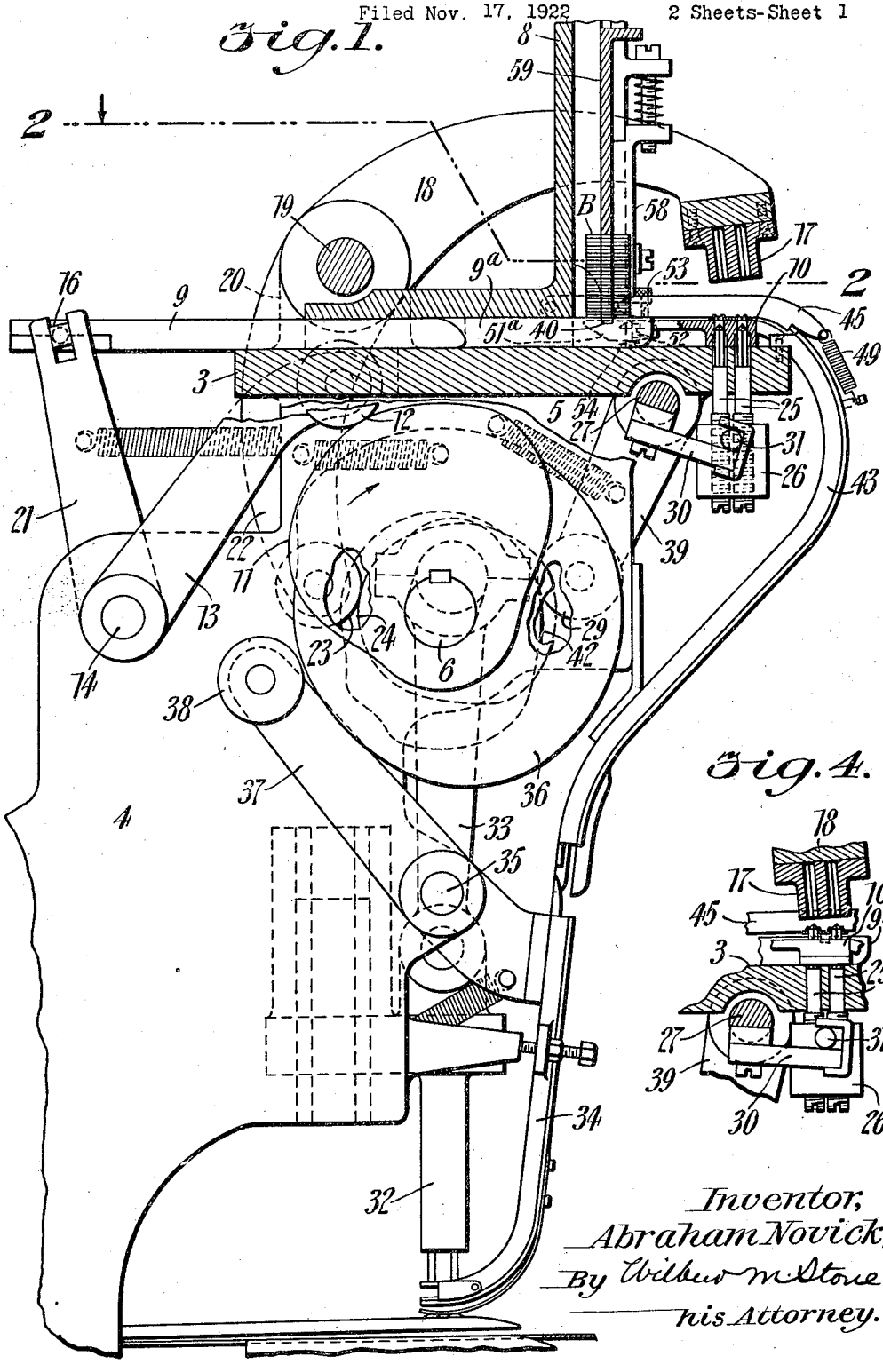


Fig. 4.

Inventor,
Abraham Novick;
By Wilbur M Stone
his Attorney.

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Fig. 2.

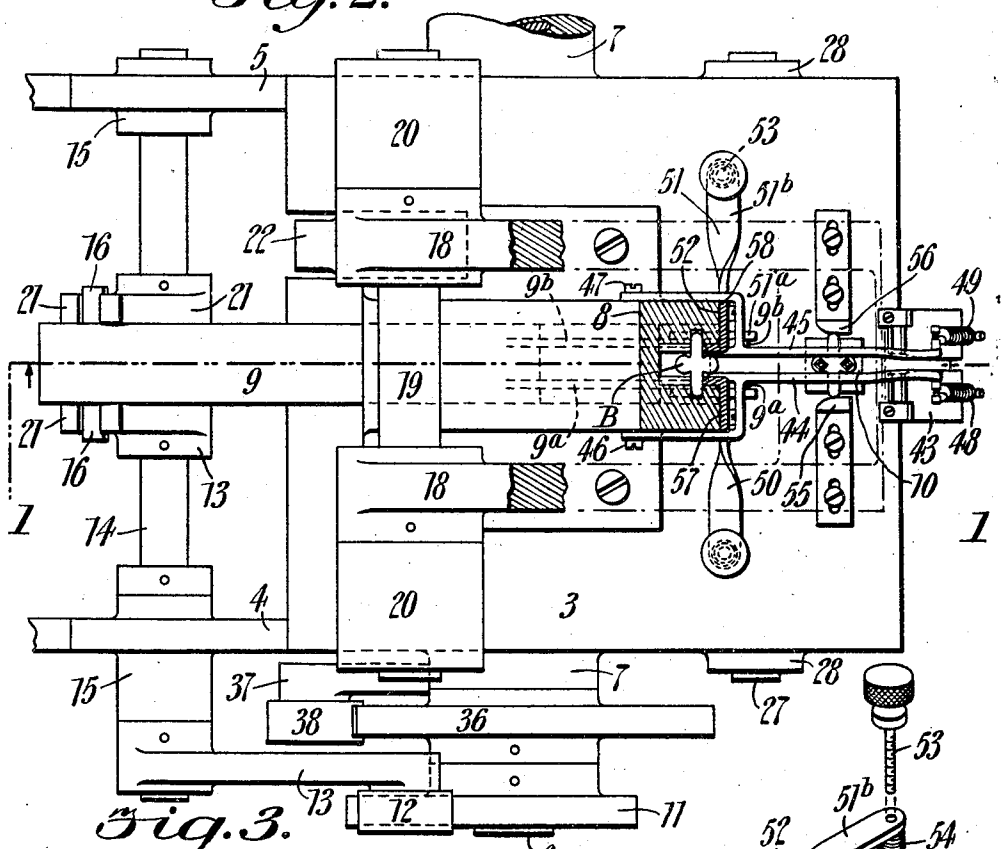


Fig. 3.

Inventor,
Abraham Novick;
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his Attorney.

Patented Dec. 6, 1927. 1,651,834

UNITED STATES PATENT OFFICE.

ABRAHAM NOVICK, OF BROOKLYN, NEW YORK, ASSIGNOR TO F. L. SMITHE MACHINE COMPANY, INCORPORATED, OF NEW YORK, N. Y., A CORPORATION OF NEW YORK.

ENVELOPE-FASTENER-ATTACHING MACHINE.

Application filed November 17, 1922. Serial No. 601,481.

This invention relates to envelope fastener attaching machines, and particularly to means for feeding and punching the fasteners as they proceed from a stack thereof to the place of attaching. The object of my improvements is to provide feeding and punching means of simplicity and reliability.

With these ends in view my improvements comprise features illustrated in their preferred embodiment in the drawings accompanying this specification, wherein:

Figure 1 is a side elevation partly in section on the line 1, 1 of Fig. 2. Fig. 2 is a plan view with those parts above line 2, 2 of Fig. 1 broken away to show more clearly the parts therebelow. Fig. 3 is a perspective view of several parts of the mechanism, separated to show their details. Fig. 4 is a fragmentary sectional elevation similar to a part of Fig. 1 but showing the parts in different positions, respectively. The figures are all to one scale, which is about half the actual size.

The present invention is in the nature of improvements on the subject matter of my copending application Serial No. 508,246, filed October 17, 1921, for envelope fastener attaching machines.

In said copending application the prongs of the fastener were formed by punches which descended toward a fixed die block on which the fastener rested, and into holes in which block the metal of the fastener was forced to form prongs. This required the lifting of said prongs out of the die block holes before the fastener could be advanced to setting position.

In the present case the prongs of the fastener are formed by punches which ascend from below, through a table, on which the fastener rests and which punches coact with a die block which descends upon the fastener and thereafter ascends, leaving the fastener with upstanding prongs ready to be moved horizontally off the table. This mode of operation permits simpler mechanism, and affords increased accessibility to the operative parts and to the fasteners in transit.

The top 3 of the machine may be conveniently supported by side frames 4, 5. Cam shaft 6 is rotatably mounted in fixed bearings 7, 7 projecting in opposite directions from frames 4, 5, respectively. The fastener blanks B, cruciform in shape, of thin sheet metal, are stacked in upright hopper 8 fixed on machine top 3. Said hopper may be provided with an adjustable mouth comprising opposite vertical members 57, 58 slidably mounted on the front of the hopper and the lower ends of which members, projecting downwardly over blades 9^a, 9^b, of slide 9, may be set to permit the exit of one blank at a time thereunder. The usual follower 59 may be employed for urging stack B downwardly. Formed in the under side of hopper 8 is a channel in which slide 9 is mounted for horizontal reciprocation. Said blades 9^a, 9^b are adapted for underriding the stacked blanks B and are provided with notches 40, 41 in their upper edges and near their outer ends, respectively, for engaging the opposite long arms, respectively, of the lowermost blank in the stack and for advancing said blank to position for punching on table 10. Said slide 9, carrying blades 9^a, 9^b, is actuated from cam 11 on shaft 6 through roll 12 pivotally mounted on the free end of arm 13 fixed to rock shaft 14 mounted in bearings 15, 15 in side frames 4, 5. Arm 21, also fixed to shart 14, is bifurcated at its free end and straddles the rear or left hand end of the slide 9, where it is provided with slots for engaging blocks 16, 16 pivoted to said slide.

Die block or head 17 is fixed to the right hand end of double arm 18, Fig. 1, pivotally mounted for oscillation on shaft 19, and which shaft has bearings 20, 20 upstanding from top 3. Extending downwardly from one of the branches of arm 18 is arm 22 carrying at its free end roll 23 in engagement with cam 24 fixed to shaft 6.

Punches 25, 25 are adjustably fixed in punch block 26 and may be actuated vertically into coaction with the dies in die block 17, from cam 42 fixed to shaft 6, by the following means: Rock shaft 27 is mounted in bearings 28, 28 of side frames 4, 5, respectively, and has fixed thereto arm 39 carrying at its free end roll 29 for engagement with cam 42. Said shaft 27 has also fixed thereto arm 30 having its free end in operative engagement with pin 31 of block 26.

Fastener setting plunger 32 is reciprocated vertically from an eccentric on shaft 6 through connection 33. Chute lower member 34 is oscillated about stud 35 from cam

36 fixed on shaft 6 through arm 37 and roll 38.

For governing the movement of the fasteners B, one at a time, from hopper 8 to punching position and thence to chute upper member 43, opposite pivotally mounted presser feet 44, 45 are provided. These feet are pivoted at 46, 47 on opposite sides of hopper 8 and have their outer ends yieldably held down by springs 48, 49, all respectively. For adjustably sustaining the stack of blanks B so that only one at a time will be removed by blades 9^a and 9^b as those blades move forwardly under said stack, opposite blank supports 50, 51 are provided. Directing attention particularly to support 51, a description of which will suffice for both, said support comprises rail 51^a lying below presser foot 45 and in parallelism therewith. Said rail is carried by arm 51^b extending at right angles therefrom, and said arm is pivotally mounted at 52 on the front of hopper 8. The outer end of arm 51^b is adjustable up and down by means of screw 53, and spring 54 offers a yielding resistance to said screw and arm. By this means rail 51^a may be raised or lowered as desired. For locating blank B transversely of the machine, at the punching station, adjustable stops 55, 56 are provided.

The operation of my improved machine is as follows: A supply of fastener blanks B having been inserted in hopper 8, cam shaft 6 is started rotating in clockwise direction, Fig. 1. Assuming that slide 9 and blades 9^a, 9^b are in the position of Fig. 1, the lowermost blank in hopper 8 will lie with its long arms in notches 40, 41 of said blades, respectively, blank support rails 50^a, 51^a sustaining said blank at a height which will present the upper face of the blank just above the plane of the upper faces of blades 9^a, 9^b. Then as said blades move forwardly to the right, Figs. 1 and 2, they will carry said blank along under presser feet 44, 45 to the punching station, over punches 25, 25, Fig. 4. Die block 17 then descends into engagement with the upper face of the blank, holding that blank securely against table 10. Punches 25, 25 then ascend, penetrate said blank and push out from the upper face thereof the usual projecting prongs. Die block 17 then retires upwardly, said prongs being stripped therefrom by presser feet 44, 45, and punches 25, 25 follow said die block a distance sufficient to lift the blank out of engagement with notches 40, 41 of blades 9^a, 9^b, thereby lifting presser feet 44, 45 slightly, Fig. 4, the friction of said prongs against said punches being sufficient to maintain the relation of the fastener and punches against the weak presser foot springs 48, 49. While said punched blank is thus held above blades 9^a, 9^b, said blades retire to the left, back to the position of Fig. 1 to receive another blank in their notches. Punches 25, 25 then retire downwardly and the blank rests upon table 10, ready to be discharged into chute upper member 43, and said punched blank is so discharged upon the next advance of slide 9, when the blank carried thereby pushes the punched blank to the right, Figs. 1 and 2, off from table 10.

I claim:

1. In a machine of the character described the combination of a hopper for holding a stack of fastener blanks, opposite blank supports under said stack of blanks, and means for adjusting said supports for raising or lowering said blanks.

2. In a machine of the character described the combination of a hopper for holding a stack of fastener blanks, a table for receiving said blanks for punching, means for advancing the lowermost blank in the stack to said table, a die head adapted and actuated for movement toward and from said table, a punch, and means for moving said punch into said die head when said die head is in coacting relation with the punch.

3. In a machine of the character described the combination of a hopper for holding a stack of fastener blanks, a table for receiving said blanks for punching, means for advancing the lowermost blank in the stack to said table, and opposite yieldable presser feet adapted for bearing upon the upper face of said blank in its passage from said hopper to said table.

4. In a machine of the character described the combination of a hopper for holding a stack of fastener blanks, a table for receiving said blanks for punching, means for advancing the lowermost blank in the stack to said table, opposite yieldable presser feet adapted for bearing upon the upper face of said blank in its passage from said hopper to said table, and adjustable stops for locating said blank on said table transversely to the direction of travel of said blank.

5. In a machine of the character described the combination of a hopper for holding a stack of fastener blanks placed face to face therein, a table for receiving said blanks for punching, a slide having means for engaging the lowermost blank in said stack, means for reciprocating said slide for delivering said lowermost blank to said table, and means for punching said blank and for lifting said blank out of engagement with said slide.

6. In a machine of the character described the combination of a hopper for holding a stack of fastener blanks, a table for receiving said blanks for punching, a slide having means for engaging the lowermost blank in said stack, means for reciprocating said slide for delivering said lowermost blank to said table, a die head adapted and actuated for movement toward and from said table, a punch, and means for moving said punch

into said die head when said die head is in coacting relation with said punch and for further moving said punch when said die head is retracted from said table for lifting said blank out of engagement with said slide.

7. In a machine of the character described the combination of a hopper for holding a stack of fastener blanks, a table for receiving said blanks for punching, a slide having means for engaging the lowermost blank in said stack, means for reciprocating said slide for delivering said lowermost blank to said table, an oscillatable die head, means for swinging said die head into and out of coacting relation with said table, a punch, and means for reciprocating said punch into said die head when said die head is in coacting relation with said punch and for further reciprocating said punch when said die head is retracted from said table for lifting said blank out of engagement with said slide.

8. In a machine of the character described the combination of a hopper for holding a stack of fastener blanks, a table for receiving said blanks for punching, a slide having means for engaging the lowermost blank in said stack, means for reciprocating said slide for delivering said lowermost blank to said table, an oscillatable die head, means for swinging said die head into and out of coacting relation with said table, a punch, means for reciprocating said punch into said die head when said die head is in coacting relation with said punch and for further reciprocating said punch when said die head is retracted from said table for lifting said blank out of engagement with said slide, and opposite yieldable presser feet adapted for bearing upon the upper face of said blank in its passage from said hopper to said table and for yieldably resisting the upward movement of said blank from said table.

9. In a machine of the character described the combination of a hopper for holding a stack of fastener blanks, opposite blank supports under said stack of blanks, means for adjusting said supports for raising or lowering said blanks, a table for receiving said blanks for punching, a slide having means for engaging the lowermost blank in said stack, means for reciprocating said slide for delivering said lowermost blank to said table, means for punching said blank and for lifting said blank out of engagement with said slide, and opposite yieldable presser feet adapted for bearing upon the upper face of said blank in its passage from said hopper to said table.

10. In a machine of the character described the combination of a hopper for holding a stack of fastener blanks, opposite blank supports under said stack of blanks, means for adjusting said supports for raising or lowering said blanks, a table for receiving said blanks for punching, a slide having means for engaging the lowermost blank in said stack, means for reciprocating said slide for delivering said lowermost blank to said table, an oscillatable die head, means for swinging said die head into and out of coacting relation with said table, a punch, means for reciprocating said punch into said die head when said die head is in coacting relation with said punch and for further reciprocating said punch when said die head is retracted from said table for lifting said blank out of engagement with said slide, and opposite yieldable presser feet adapted for bearing upon the upper face of said blank in its passage from said hopper to said table and for yieldably resisting the upward movement of said blank from said table.

11. In combination, a hopper for holding a stack of blanks, a reciprocal member for feeding said blanks from said stack, said member having a recess in its upper face for receiving the lowermost blank of stack, supporting rails for the lowermost blank, and means for adjusting the height of said rails so that the upper face of the lowermost blank will be just above the upper face of the said reciprocal member.

12. In a machine of the character described, the combination of means for holding a stack of fastening blanks, means for supporting the stacked blanks, means for thrusting the blanks one by one off the bottom of the stack, and means for adjusting said supporting means.

13. In a machine of the character described, the combination of means for holding a stack of fastening blanks, means for supporting the stacked blanks, means for feeding the lowermost blank from the stack, and means for adjusting the blank supporting means toward and from the blank holding means.

14. In a machine of the character described, the combination of means for holding a stack of fastening blanks, means for supporting the stacked blanks, means for feeding the lowermost blank from the stack, and means for relatively adjusting the blank supporting means and the blank holding means toward and from one another.

15. In a machine for forming prongs on fastener blanks, in combination, reciprocable means for individually moving the blanks to a prong forming station, a track for supporting the blanks at such station, presser means holding the blanks to the track, a die at the same side of the blank at which the presser means is located movable toward and from the blank, a former at the opposite side of the blank movable toward and from the blank, and spring means acting on the presser means to urge the same toward the track, said spring means being yieldable under the force of the former to permit the blank to be moved clear of the blank moving means,

but strong enough to strip the blank from the die and return it to the track when the former is retracted.

16. In a machine for forming prongs on fastener blanks, in combination, a track for the blanks, a prong former movable transversely of the track toward and from a blank, a cooperative die at the opposite side of the blank movable toward and from the blank transversely of the track, and means for engaging the blank and preventing it from being carried away from the track by the die in the retracting movement of the die.

17. In a fastener forming and setting machine, in combination, means for supporting a stack of individual form fastening blanks, means for advancing said blanks individually from the stack to a prong forming station, means for forming prongs on the blank at said station, and a magazine into which the pronged blanks are fed by said blank advancing means, said magazine constituting a reservoir for storing the pronged blanks and supplying them to the setting instrumentalities as required.

In witness whereof, I hereby affix my signature this 15th day of November, 1922.

ABRAHAM NOVICK.