

V. HOXIE.

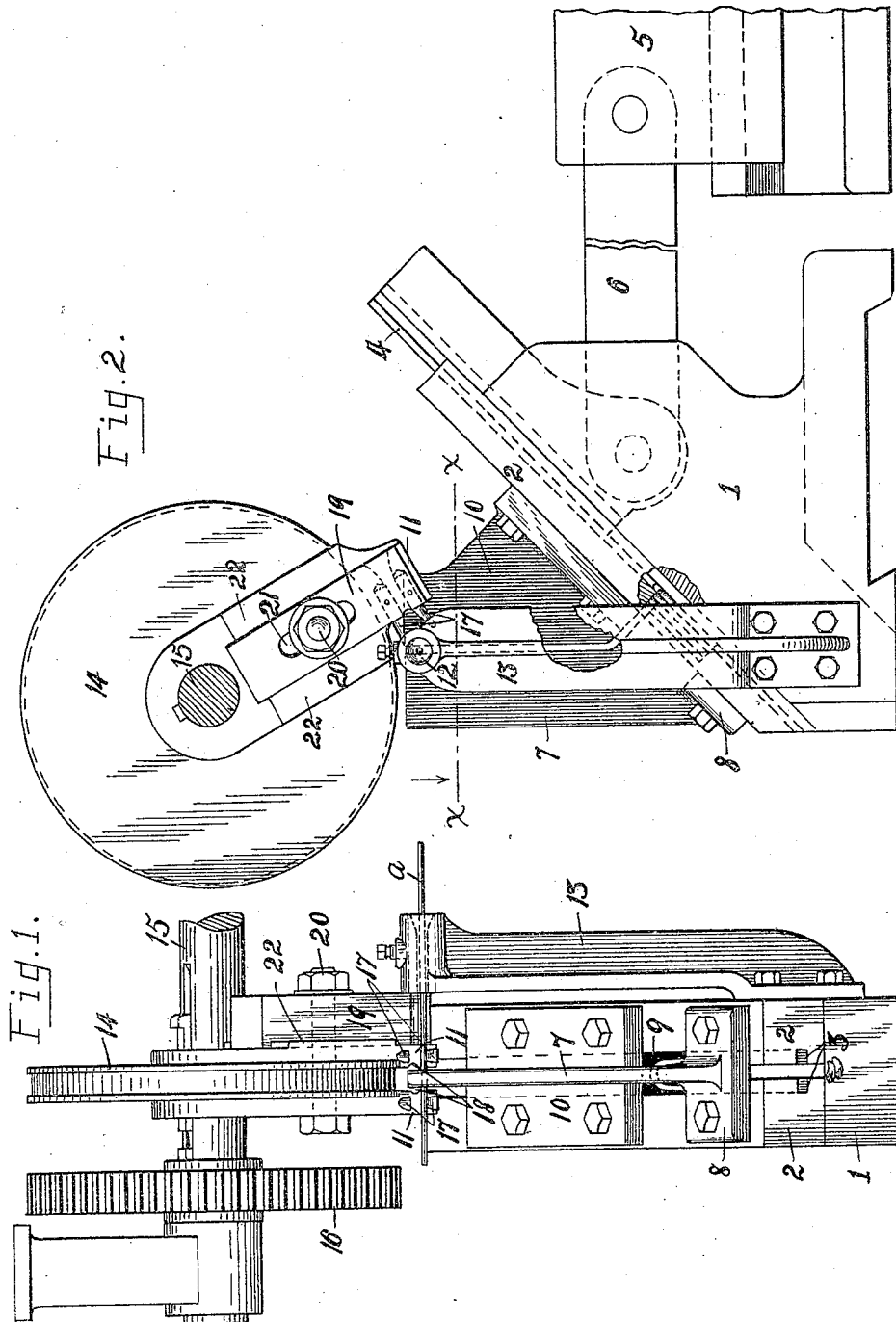
STAPLE FORMING AND DISCHARGING MECHANISM.

APPLICATION FILED MAR. 22, 1909.

Patented Dec. 14, 1909.

3 SHEETS—SHEET 1.

942,905.



WITNESSES:

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Ernest Kluender

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3 SHEETS—SHEET 2.

Fig. 4.

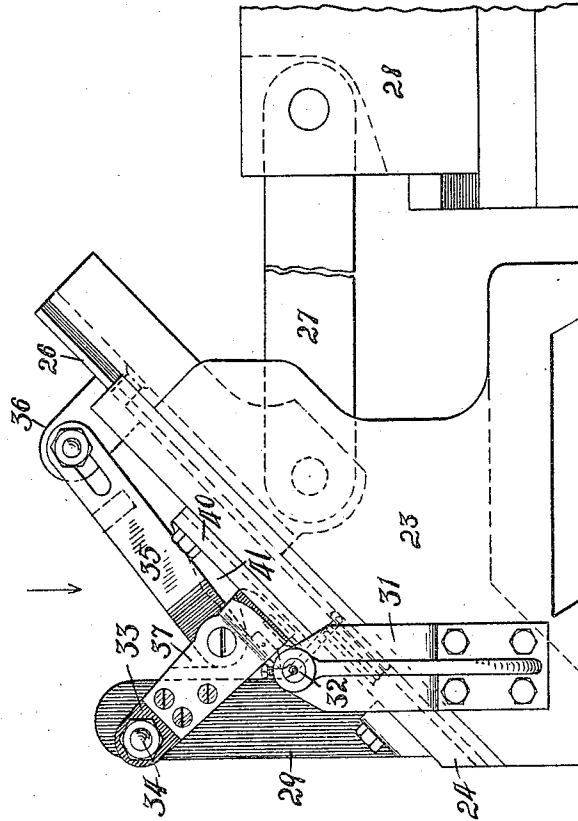
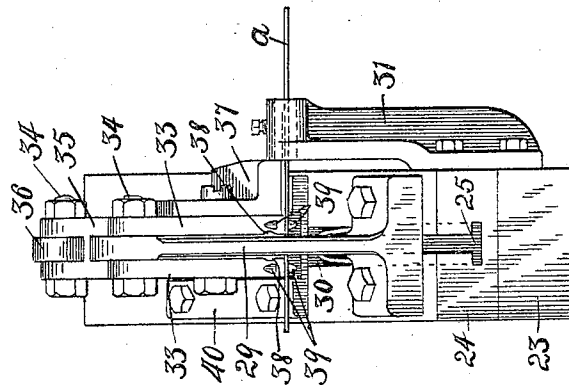


Fig. 3.



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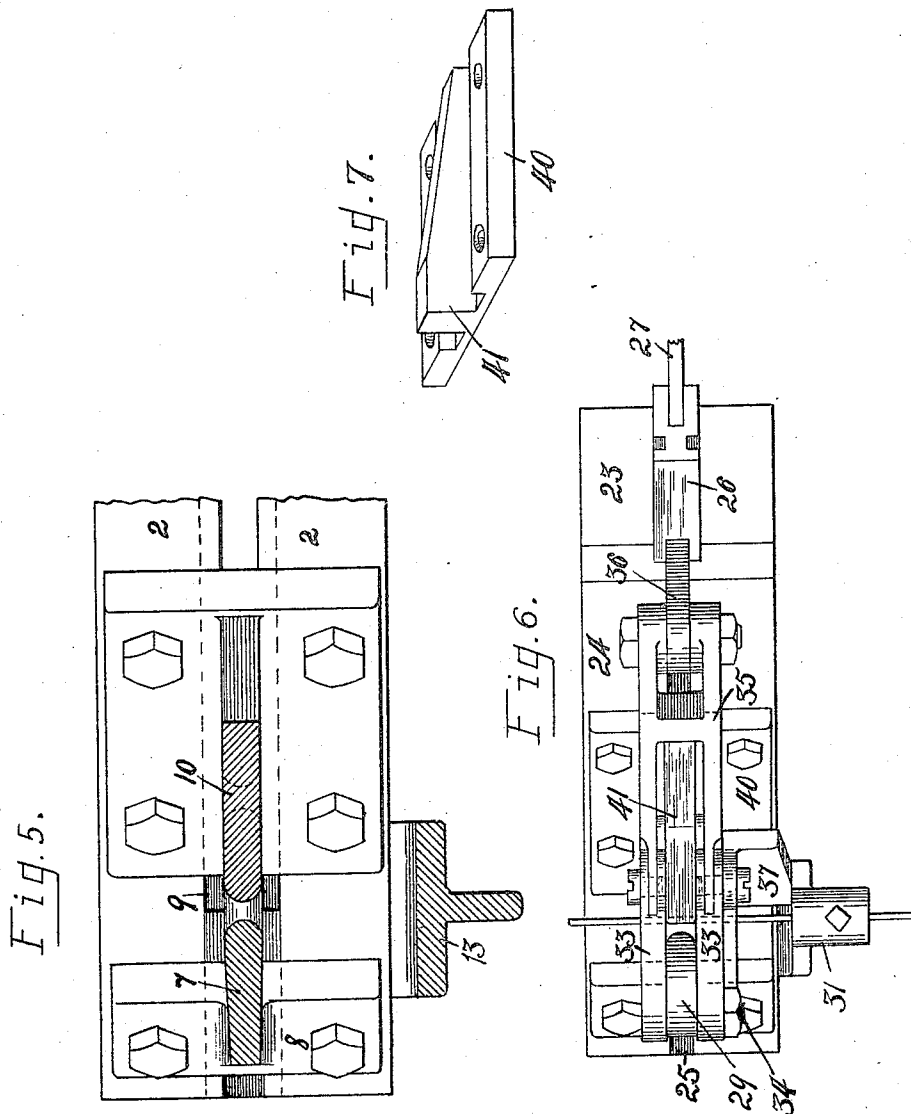
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3 SHEETS—SHEET 3.



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UNITED STATES PATENT OFFICE.

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STAPLE FORMING AND DISCHARGING MECHANISM.

942,905.

Specification of Letters Patent.

Patented Dec. 14, 1909.

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To all whom it may concern:

Be it known that I, VERNON HOXIE, a citizen of the United States, and a resident of Adrian, in the county of Lenawee and State of Michigan, have invented a certain new and useful Staple Forming and Discharging Mechanism; 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, reference being had to the accompanying drawings, and to the characters of reference marked thereon, which form a part of this specification.

My invention relates to mechanism of the class which is particularly applicable for use in conjunction with machines for the weaving of wire fabric to sever sections of wire intermittently fed thereto, form the same into staples and then to discharge the formed staples from such mechanism and clamp them about intersecting wires of the fabric.

The object of my invention is the provision of improved mechanism of this class, which is simple and efficient in its operation, cheap of manufacture and strong and durable in its construction.

The operation, construction and arrangement of the parts of the invention are fully described in the following specification, and two embodiments thereof illustrated in the accompanying drawings, in which—

Figure 1 is a front elevation of a mechanism comprising my invention. Fig. 2 is a side elevation of the same with portions broken away. Figs. 3 and 4 are similar views, respectively of a modified form of the invention. Fig. 5 is a section on the line *x x* in Fig. 2. Fig. 6 is a plan view of Fig. 4, and Fig. 7 is a perspective view of the stripper-block employed in the modified form.

Referring to Figs. 1, 2 and 5 of the drawings, 1 designates the base block or holder, which has its top preferably inclined, as shown, and faced with the two transversely spaced top-plates or bars 2, 2, which have their inner or contiguous sides longitudinally grooved; as at 3, to form a guide-way for the staple-discharging and clamping plunger 4 and a discharge-way for the formed staples. The plunger 4 has its lower portion working in a registering-groove or cored portion of the holder 1, and

may have reciprocatory movements communicated thereto from a reciprocatory table or block 5 through the medium of a link 6, said table being actuated in any suitable manner. Rising from the forward portions of the top-plates 2, 2 is the staple forming anvil 7, which has the broadened foot 8 at its lower forward edge for bolting to said plates. This anvil is of narrow construction to permit the formed staples to slide down the same, and has its lower rear portion projected down within a cut away portion 9 of the top plates to near the top of the grooves 3 at substantially a right-angle thereto to guide the staples from forming to discharging position. The formed staples are held to the slide or anvil 7 by a backing-block 10, which rises from the top-plates 2, 2 at the rear of and in slightly spaced relation to the rear edge of the anvil. The wire *a* from which the staple sections are severed is intermittently fed by any suitable mechanism, to the rear of the upper end of the anvil 7 in the path of movement of a pair of formers 11, 11 through an apertured die 12, which is carried at the upper end of an arm 13, rising from one side of the holder 1, as shown. The formers 11, 11 project radially from the sides of a disk or wheel 14 and are adapted, when revolved by a turning of the disk 14, to pass on opposite sides of the anvil 7 to cooperate therewith to form the wire sections into staples. The disk or wheel 14 is carried by a shaft 15, which superimposes the several staple forming devices of the machine and has its ends journaled in the machine frame. The shaft may be driven in any suitable manner, as by a gear 16 thereon meshing with suitable gearing (not shown) on the machine. 17, 17 designate upper and lower guide-fingers, which project from the forward edges of the formers 11, 11 and work on opposite sides of the fed lengths of wire to guide the same to forming position. The formers 11, 11 are permitted to pass by a staple after forming the same around the anvil 7, due to the provision of grooves 18, 18 (Fig. 1) in the inner faces of the formers 11, 11 through which the legs of the staples pass. 19 designates a cutter-plate, which is disposed at the side of the former 11, which is contiguous to the arm 13, and is intended to cooperate with the inner end of the die 12 to sever the fed wire section from its thread at approximately the instant of contact of

the formers therewith. This cutter-plate is shown as being carried for radial adjustment relative to the disk 14 by the securing bolt 20 passing through a longitudinal slot 21 in said plate. Shoulders 22, 22 coact with the sides of the cutter-plate to prevent a turning thereof relative to the disk 14. The operation of this form of my invention is as follows:—At each revolution of the disk 14 a section of wire is fed to the forming parts through the die 12, is severed by the shearing contact of the knife 19 with the inner end of such die, and is then formed into a staple around the anvil 7 due to the action thereon of the formers 11, 11. The formed staple, when freed by the formers passing out of contact therewith, drops by gravity down the slide formed by the anvil 7 and rests on top of the staples carried thereby, being held in place by the backing-block 10. When the plunger 4 is at the limit of its rearward throw, the forward end of its discharge nose has receded from under the staple column held by the slide 7, thus permitting the lower one of such staples to drop into the discharge-way 3 in advance of the plunger nose, as shown in Fig. 2. On the forward stroke of the plunger this staple is discharged from the holder and clamped about the registering intersecting portions of the fabric being woven. The movement of the parts is so timed that the disk 14 makes one revolution to a forward and back movement of the plunger.

In the modification illustrated in Figs. 3, 4, 6 and 7, 23 designates the holder or base block; 24 the top-plate having the staple-discharge way 25 therein; 26 the plunger working in said way; 27 the link connecting the plunger with the actuating table 28; 29 the anvil, which rises from the forward end of the top-plate 24 and has its lower rear portion angled rearwardly at approximately a right angle to the discharge-way 25 and projected down through a cutaway portion 30 (Fig. 3) of the top-plate to a point immediately above the plane of movement of the plunger, and 31 the arm which rises from the side of the holder 23 and carries the apertured die 32 at its upper end through which the wire *a* feeds to the forming parts. 33, 33 designate two oscillatory former-arms, which are pivotally carried at opposite sides of the anvil 29 by a bolt or pin 34 passing through their upper ends and the upper end of said anvil, and each is pivoted near its lower end to an arm of the forward forked end of the link 35, which connects at its rear end to a boss 36 rising from the plunger 26. A cutter-block 37 is secured to the side of the arm 33, which is contiguous to the arm 31, and is intended, on each forward movement of the arms 33, to coact with the inner end of the die 32 to sever the fed section of wire. The severed sections are

guided to the grooves 38 in the inner sides of the arms 33 by the forwardly projecting fingers 39 and on the continued forward movements of said arms they act on the severed sections to form them into staples around the anvil 29. On the receding or rearward movements of the former-arms 33 the formed staples are freed therefrom by a block 40, which is secured to the top-plate 24 at the rear of and in slightly spaced relation to the anvil 29 and has a stripper-part 41 rising between the paths of movements of the former-arms. In the operation of this form of my invention it is apparent that at each forward stroke of the plunger 26 a staple is discharged from the discharge-way 25, and that the forward movement of the arms 33, 33 by the plunger effects a severing of a section of wire and a forming of the same in staple-form around the anvil 29. On the rearward movement of the former-arms the formed staple is stripped therefrom by the stripper-part 40 and is then permitted to drop by gravity to rest on the top of the staples carried by the anvil. The feeding of the wire is timed to take place when the plunger is at the rear portion of its movements.

I wish it to be understood that my invention is not limited to any specific construction or arrangement of the parts except in so far as such limitations are specified in the claims.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent, is,—

1. In an apparatus of the class described, the combination of a holder having a staple discharge-way therein, a plunger movable in said way to discharge a staple therefrom, a combined staple forming anvil and slide fixedly rising from the holder and adapted to guide the formed staples to discharging position, and means pivotally movable to cooperate with the anvil to form a staple from a section of wire fed to the apparatus, and fixed means for preventing rearward movement of the staples from the anvil.

2. In an apparatus of the class described, the combination of a holder having a staple discharge-way therein, a reciprocatory plunger movable in said way to discharge staples therefrom, an anvil rigidly rising from the holder and serving to hold a plurality of staples and guide them to said way, a member carried by the holder for preventing a rearward movement of the staples carried by the anvil, an apertured die through which lengths of wire are fed to the forming parts, said die being disposed at one side of the anvil, means pivotally movable to cooperate with the anvil to form a staple from a section of wire fed thereto, and a cutter member carried by said means for cooperating with said die to sever a

length of wire fed to the forming parts at a predetermined point in the movement of said means.

3. In an apparatus of the class described, 5 the combination with a holder having a staple discharge way provided therein, and a staple discharge plunger movable in said way, of a staple guide rising from the holder immediately above said way and forming an 10 anvil, a pivotally movable member cooperating with said anvil to form a section of wire fed therebetween into U-shape, means cooperating with said guide to guide formed staples to said way, and means for actuating 15 the movements of the plunger and said pivotal member.

4. In an apparatus of the class described, the combination with a holder having a 20 staple discharge way therein, and a staple discharging plunger movable in said way, of an oscillatory member mounted above said way, means rising from said holder and adapted to cooperate with said member to 25 form a section of wire fed thereto into a staple and to guide the movement of such staple into said guide way, and means for actuating the movements of said oscillatory member.

5. In an apparatus of the class described, 30 the combination with a holder having its top provided with a staple-discharge way, and a plunger movable in said way to discharge staples therefrom, of a member carried by said holder and having a part rising 35 from immediately above said discharge way and forming an anvil, oscillatory means for cooperating with said member to form sections of wire fed thereto into staples, and means for actuating said oscillatory means. 40

6. In an apparatus of the class described, the combination with a holder provided in its top with a staple-discharge way, and a plunger movable in said way to discharge staples therefrom, of an oscillatory staple

forming member mounted above said way, 45 an anvil carried by said holder and adapted to cooperate with said oscillatory member to form sections of wire fed thereto into staples and to guide such staples to said way, and means for oscillating said member. 50

7. In an apparatus of the class described, the combination with a holder having a staple discharge way in its top, and a plunger movable in said way to discharge 55 staples therefrom, of a member carried by said holder and rising from immediately above said discharge way and forming a staple-forming anvil, also serving as a guide for delivering staples from forming position to said way, an oscillatory part operative to 60 cooperate with said member to form sections of wire fed thereto into staples, means cooperating with said member to guide the formed staples to said way and means for actuating said oscillatory part. 65

8. In an apparatus of the class described, the combination with a holder having a staple discharge-way in its upper portion, and a plunger movable in said way to discharge staples therefrom, of an oscillatory 70 member mounted above said way, an anvil cooperating with said oscillatory member to form sections of wire fed thereto into staples and forming a guide for guiding the gravity movements of the formed staples to said 75 way, the lower end of said anvil terminating over said way immediately above the plane of movement of the plunger, and means for actuating the movements of said oscillatory member. 80

In testimony whereof, I have hereunto signed my name to this specification in the presence of two subscribing witnesses.

VERNON HOXIE.

Witnesses:

C. E. CLEMENT,
THOS. MULLIN.