E. B. STIMPSON.

SETTING MACHINE.

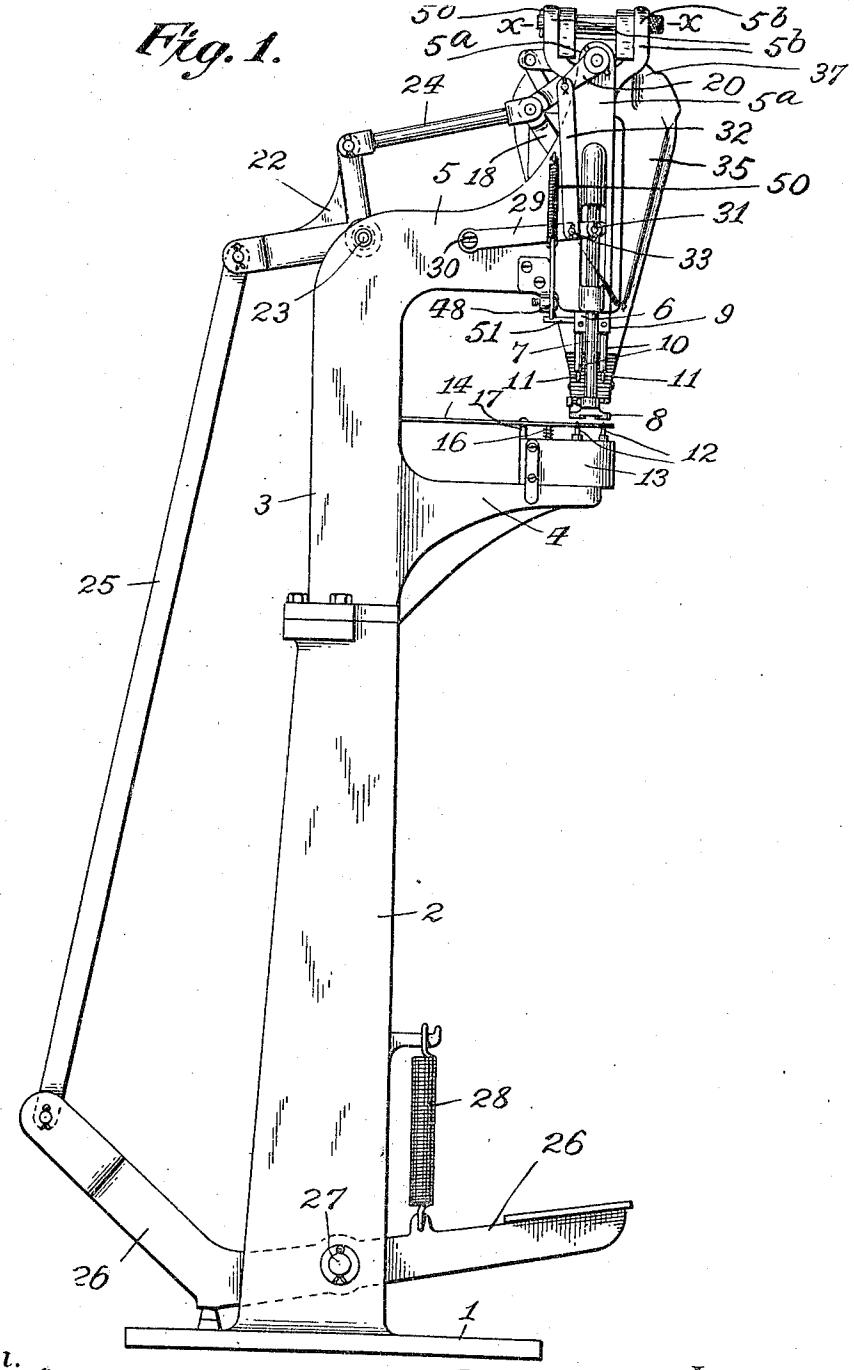
APPLICATION FILED JULY 25, 1911.

1,079,996.

Patented Dec. 2, 1913.

4 SHEETS—SHEET 1.

Fig. 1.



Attest.

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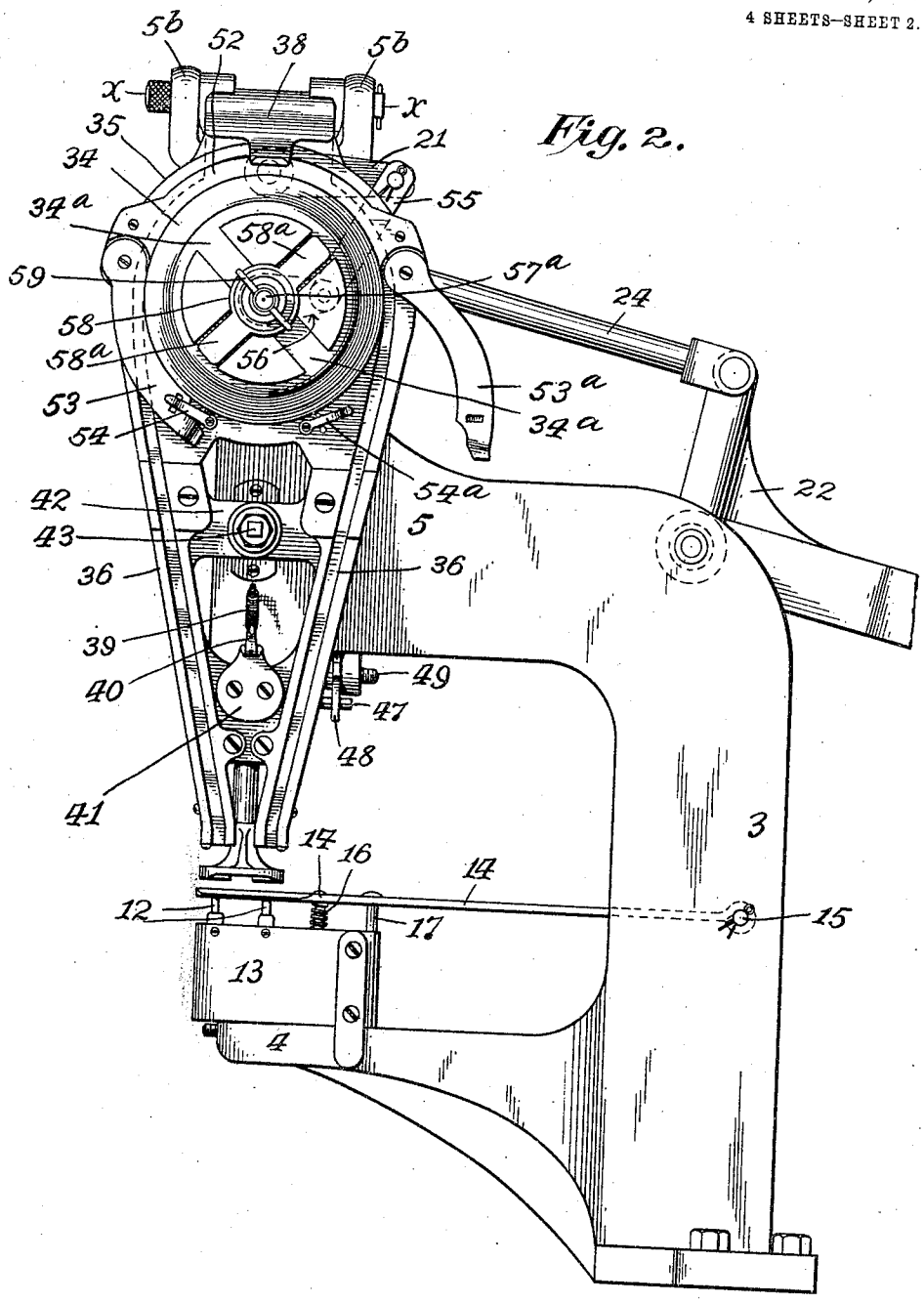
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4 SHEETS—SHEET 2.

Fig. 2.



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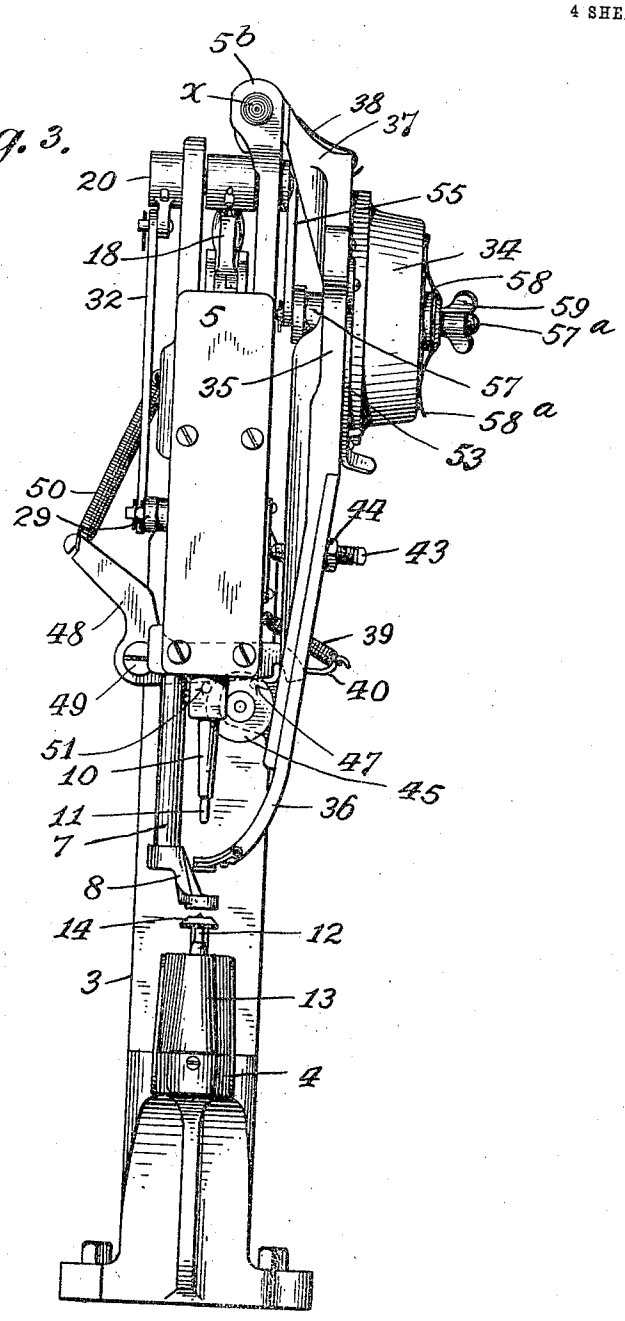
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4 SHEETS—SHEET 3.

Fig. 3.



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SETTING MACHINE.

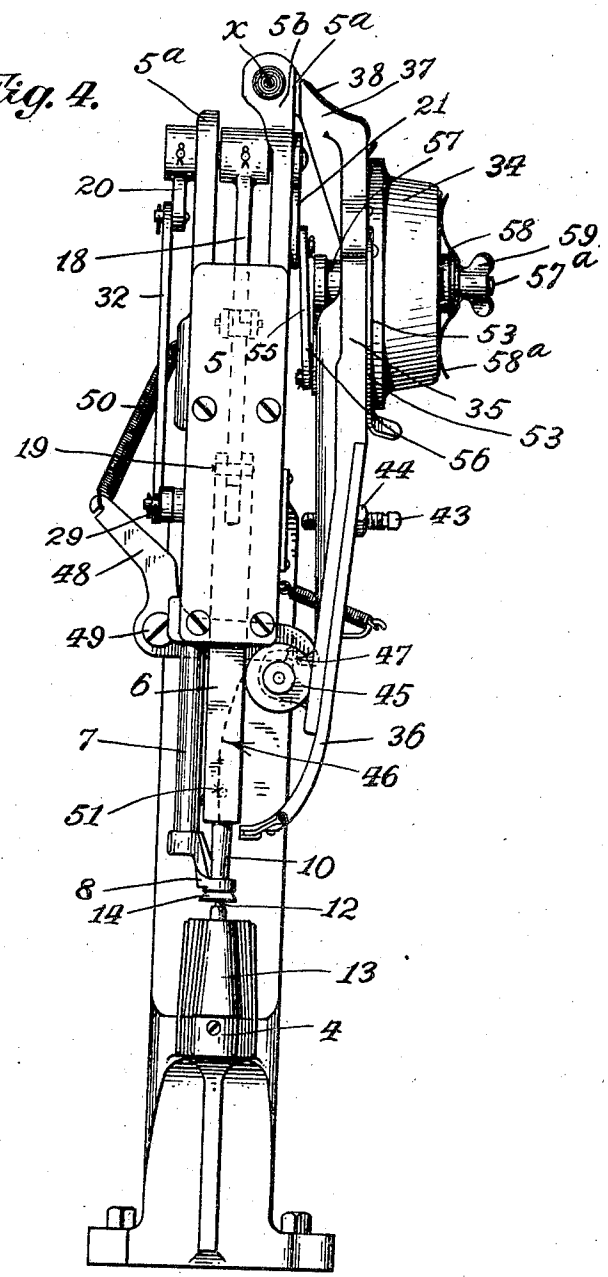
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4 SHEETS—SHEET 4.

Fig. 4.



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UNITED STATES PATENT OFFICE.

EDWIN BALL STIMPSON, OF BROOKLYN, NEW YORK.

SETTING-MACHINE.

1,079,996. Specification of Letters Patent. Patented Dec. 2, 1913.

Application filed July 25, 1911. Serial No. 640,499.

To all whom it may concern:

Be it known that I, EDWIN BALL STIMPSON, a citizen of the United States, residing at Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Setting-Machines, of which the following is a specification.

My present invention relates to a setting machine including a machine for simultaneously setting a plurality of fastening devices, the particular machine shown being adapted to set eyelets, but by appropriate modifications obvious to those skilled in the art the same machine can be made to simultaneously set a plurality of snap-fasteners and the same applies to other fastening devices.

In the drawings which as stated show one specific form of machine within my invention, Figure 1 is a side elevation of a machine which sets a pair of eyelets simultaneously; Fig. 2 is an enlarged elevation of the reverse side of the upper or body portion of the machine of Fig. 1; Fig. 3 is a front view of the head looked at from the left in Fig. 2, the plunger being up; Fig. 4 is the same view with the parts shown in the positions occupied when the plunger is down.

I will now describe the devices of the drawings, reserving it to the claims to point out the novel features and to define the scope of the invention, it being understood that the claims will be given due range of equivalents.

1 is the base of the machine, 2 the pillar, and 3 the body supported on said pillar, said body having a horizontally extending arm 4 and a horizontally extending head 5 which overhangs said arm. The head is provided with a pair of vertically extending sockets located side by side. One socket is rectangular in cross-section and in it slides the plunger 6. In the other socket slides a stem 7 carrying the presser-foot 8. Supported on the lower end of the plunger 6 is a cross-piece 9 from which in turn depend a pair of driving stems 10, each having the usual telescoping stem 11, adapted when pressed to telescope upwardly into its driving stem 10 but normally being held yieldingly extended as shown by a coiled spring (not shown) located between it and the driving stem. The presser-foot 8 has a pair of vertical openings through it, alined with the respective driving stems 10 and sufficiently large to receive said stems freely through them. The presser-foot supporting stem 7 is of course splined or otherwise adapted to its socket to prevent it from rotating therein.

12 designates a pair of piercing points supported from a block 13 on arm 4 and extending vertically upward in alinement with the openings in the presser-foot and with the stems 11.

14 is a long horizontally extending arm, pivoted at 15 to the body of the machine a good distance from the piercing-points 12 and there having openings through it for the passage of said points.

16 is a compression spring between the block 13 and arm 14 which keeps the latter yieldingly upheld.

17 is a headed pin passed through an opening in the arm 14 into the block 13 and whose head acts as a stop limiting the upward movement of the arm 14 impelled by the spring 16. During the operation of the machine, the work is supported on this arm 14, the presser-foot then descends forcing the piercing points through the material and gripping it firmly preparatory to the descent of the driving stems to set the eyelets in the holes in the material formed by the piercing points.

The plunger 6 is reciprocated vertically by means of a foot lever acting on toggle-arms. Thus 18 designates said toggle-arms, the lower of which is pivotally connected to the plunger 6 by a pin 19 passing through the slotted upper end of the plunger within which the toggle arm works. The upper toggle arm has an enlargement at its free end from which project trunnions that extend with bearing fit through the arms 5^a of a fork in the head 5 of the machine. Upon the free ends of these trunnions are fixedly secured crank-arms 20 and 21 respectively for purposes soon to be described.

22 is a bell crank lever fulcrumed at 23 (Fig. 1) to the back of the head of the machine, its upper arm being connected by a

link 24 with the knuckle of the toggle and its lower arm being connected by a link 25 with the rear end of a foot lever 26 pivoted at 27 to the pillar. The result is that when the foot is applied to the forward end of the lever 26 to press it down, it results in straightening the toggle to lower the plunger 6. On the other hand, releasing the foot lever relaxes the toggle and elevates the plunger by reason of the lifting action of the spiral spring 28 connecting the foot lever with the pillar of the machine.

The above is the means for reciprocating the plunger 6, and driving stems. I will now describe the same for the presser-foot stem 7:—29 is a horizontal link pivoted at one end 30 to the machine-head and at the other 31 to the presser-foot stem. 32 is a vertical link connecting said horizontal link 29 at 33 with the crank-arm 20. In this arrangement, the arms 20 and 32 (Fig. 1) constitute a pair of toggle-arms which straighten (on the partial down-pressing of the foot lever 26) before the main toggle-arms 18 straighten, with the result that the presser foot 8 is forced into its "down" position to drive the piercing points 12 through the material before the plunger 6 is fully carried into its "down" position. However, upon the completion of the down stroke of the foot lever 26, the main toggle-arms 18 also become straightened and thereby force the plunger 6 and the driving stems 10 and 11 into their fully "down" position to set the eyelets (which they have meanwhile picked up from the roadway) into the material.

Describing now the eyelet delivery parts and their operation—34 is the box of a magazine whose base is a plate 35 supporting a pair of roadways 36, which converge from opposite sides of the magazine toward the delivery ends of the roadways.

37 is a rearward hollow extension from the upper back portion of the plate 35 thereby forming a hopper for loading the magazine with eyelets through the open mouth of the said hopper, the cover of which is designated 38. A rear extension from the hopper is supported between a pair of vertical lugs 5ᵇ to hinge about a horizontal axis X—X in Fig. 2.

Referring to Fig. 3, it will be noted that the delivery ends of the roadways 36 curve inwardly to bring them into alinement with the stems 10 and 11, into which position they normally tend by gravity, due to the weight of the magazine 34 located to one side of the pivotal support X. This normal position is likewise positively insured by a suspension spring 39 connecting the side of the machine head 5 with a hook 40 on a brace 41 connecting the roadways. 42 is a similar brace above, having a bolt 43 threaded therethrough, which by contacting with the side of the machine head 5 acts as a stop which can be adjusted to stop the motion of the roadways (under the described action of gravity and the spring 39) at the point at which the eyelets in their delivery-ends are in the exact path of the stems 11, so that the latter in their descent thread through said eyelets and pick them out of the roadways. A lock nut 44 secures the stop bolt 43 in its proper "stopping" position of adjustment. After the stems 11 have entered the eyelets as aforesaid, the following cam-means automatically carries the roadways outwardly from their position in Fig. 3 to their position in Fig. 4: 45 is a roller mounted in central position on the rear side of the brace 41 (Fig. 2) between the roadways. It rolls in a vertical cam-groove in the side of the plunger 6, the bottom of said groove having the contour indicated by the dotted line 46 in Fig. 4, so that as the plunger descends beyond the point where the stems 11 have entered the eyelets, the roller 45 and the roadways are forced gradually outwardly—the effects of which are first to disengage the end-eyelets from the roadways and permit them to be carried down on the stems 11; and second:—to put the roadways in a position which does not interfere with the reciprocation of the plunger, in which position the roadways are temporarily locked until automatically released as follows:—47 is a pin projecting from the side of the brace 41 connecting the roadways. 48 is an elbow-shaped latch pivoted at 49 to the machine head. The lower edge of the horizontal arm of this latch is notched to receive and interlock with the pin 47 and retain the roadways in the outer position into which they are carried by the described coaction of the plunger-groove 46 and roller 45. A spring 50 connects the elbow-shaped latch with the head of the machine to carry the latch yieldingly into its described locking position until released as follows:—After the plunger 6 has completed its down stroke and the setting stems 10 and 11 have set their eyelets in the material, and after said parts have reached a point on their up stroke where they are above and therefore clear of the ends of the roadway, then a pin 51 projecting rearwardly from the plunger 6 strikes the horizontal arm of the latch 48 during the continued up-stroke of the parts, and disengages the notch of said latch from the roadway pin 47 as shown in Fig. 3, so that the roadway then automatically returns to its alined position, preparatory to delivering another pair of eyelets to the stems 11 upon the next down stroke of the plunger.

The magazine box 34 which is of the preferred construction with internal grooves,

etc., shown in my copending application, Serial No. 624173, coöperates as usual within circular flanges on its base-plate 35, part of which 52 (Fig. 2) is fixed and permanent and parts of which 53 and 53ª on either side are removable or pivotable out of the way as shown at the right in Fig. 2, to uncover the channels in the roadways where they connect with the delivery openings from the magazine box and so relieve any jam at these points. Latches 54 and 54ª retain the pivotable flanges in working position. The eyelets by a rotary oscillation of the magazine box 34 are fed therefrom into the channels of both roadways 36. The direct and return rotary oscillations of said box occur simultaneously with the up and down strokes of the plunger 6. Thus 55 (Figs. 2 and 4) is a link connecting crank arm 21 with a crank arm 56 fixed on a pin 57 rotatably supported in a bearing through the plate 35. The outer end of this pin extends through the sleeve of the box 34 and beyond the top of said box is squared or flattened on the side to fit a correspondingly shaped opening through the center of a spring 58 having radiating spring arms 58ª. A washer and wing-nut 59 on the reduced threaded end 57ª of this same pin, keeps the spring member 58 thereon. The top of the box 34 has radial grooves 34ª (Fig. 2) so that the spring arms normally lie in these grooves. Thus the box normally partakes of the same rotary oscillation as the spring arms 58ª, which in turn are carried by the pin or rock shaft 57, the latter in turn being rocked by its crank 56 driven by link 55 from the crank 21. Should however a jam occur of the eyelets in the box 34, then the spring arms 58ª will ride up out of their grooves and slip idly over the top of said box. Whereas the magazine box in the ordinary machine has an intermittent rotary movement always in the same direction, it is to be noted in the machine shown that the box oscillates, the eyelets being delivered at each oscillation to one or the other roadway alternately.

What I claim is:—

1. The combination with a supporting frame, of a setting device movably mounted thereon, a magazine pivotally mounted above its upper end on the frame and swinging toward and from the same, a roadway carried by the lower portion of the magazine and having its lower end swinging toward and from the setting device, and means for swinging the magazine and roadway when the setting device is operated.

2. The combination of a magazine, roadways depending from the magazine, vertically reciprocating setting devices, and means for moving the magazine and roadways to and from the setting devices, the aforesaid magazine and roadways vertically depending from a horizontal axis located over the setting devices and above the magazine, from which axis they swing to carry the delivery ends of the roadways into and out of alinement under the setting devices.

3. The combination of a magazine, a roadway depending from the magazine, vertically reciprocating setting devices, and means for moving the magazine and roadway to and from the setting devices, the aforesaid magazine and roadway vertically depending from a horizontal axis located above the magazine from which axis they swing to carry the delivery end of the roadway into and out of alinement under the setting devices, the delivery end of the roadway being substantially under the aforesaid horizontal axis and the magazine being at one side of said axis.

4. The combination of setting-devices, including a vertically reciprocating plunger, a driving stem carried by the lower end of said plunger and plunger operating toggle-arms above it; a magazine comprising a base-plate and its box operatively supported on said plate, said plate depending downwardly from a horizontally extending hinging axis located over the toggle; and a roadway extending downwardly from said plate with its delivery end reaching under the end of the up-position of the driving stem and substantially under said hinging axis, the magazine being located at one side of said axis to carry the roadway toward the driving stem.

5. The combination of setting-devices including a vertically reciprocating plunger, a driving stem carried by the lower end of the plunger, and plunger operating toggle-arms above it; a magazine comprising a base-plate and its box operatively supported thereon, said plate depending downwardly and having a hollow extension from its upper back portion forming a hopper leading to the magazine-box, said hopper and plate both depending from the same horizontally extending hinging axis located at the back of the hopper and over the toggle; and a roadway extending downwardly from said plate with its delivery end reaching under the end of the up-position of the driving stem and substantially under said hinging axis, the magazine being located at one side of said axis to carry the roadway toward the driving stem.

6. The combination of setting devices including a vertically reciprocating plunger, driving stems carried by said plunger, and toggle arms operating said plunger, a magazine, a pair of roadways supported from the magazine to receive the articles from the same, the magazine and roadways depend-

ing vertically alongside the setting devices from a horizontally extending hinging axis located at the top of the magazine over the toggle arms and the delivery ends of the roadways reaching under the up-position of the driving stems, and means for swinging said magazine and roadways to and from the setting devices.

7. The combination of a vertically reciprocating plunger and driving stem, toggle-arms for reciprocating the plunger, a vertically reciprocating presser-foot alongside the plunger and driving stem, a crank-arm carried with the upper toggle-arm but shorter than it, a link which at its upper end connects with said crank-arm and which below connects by a lateral extension with the presser-foot stem.

8. The combination of a vertically reciprocating plunger and driving stem, toggle-arms for reciprocating the plunger, a vertically reciprocating presser-foot alongside the plunger and driving stem, a crank-arm carried with the upper toggle-arm but shorter than it, a link which at its upper end connects with said crank-arm and which below connects through a horizontally extending link pivoted to the frame of the machine, with said presser foot.

9. The combination of setting-devices including a vertically reciprocating plunger having a driving stem and operating toggle-arms; a vertically reciprocating presser-foot stem on one side of said setting-devices; a connected magazine and roadway depending in vertical position on the other side of setting-devices hinged at a point adjacent to the top of the magazine to swing to and away from said side of the setting-devices, the magazine being uppermost and the delivery end of the roadway extending under the up-position of the driving stem; means for swinging said roadway and magazine to and away from the setting-devices; and operative connections between the toggle and the presser-foot stem and magazine respectively.

10. The combination of setting-devices including a vertically reciprocating plunger having a driving stem and operating toggle-arms; a vertically reciprocating presser-foot stem on one side of said setting-devices; a connected magazine and roadway depending in vertical position on the other side of setting-devices hinged to swing to and away from said side of the setting-devices, the magazine being uppermost and the delivery end of the roadway extending under the up-position of the driving stem; means for swinging said roadway and magazine to and away from the setting-devices; and operative connections between the toggle and the presser-foot stem and magazine respectively, the connection with the presser-foot stem comprising a relatively short crank-arm carried with the upper toggle-arm, a lateral extension from the presser-foot stem and a vertical link connecting said crank-arm and lateral extension, and the connection with the magazine comprising a crank-arm carried with the upper toggle-arm, and a link connecting same with another crank-arm on a rotary oscillatable pin carrying the moving part of the magazine.

11. The combination of setting-devices including a vertically reciprocating plunger having a driving stem and operating toggle-arms; a vertically reciprocating presser-foot stem on one side of said setting-devices; a connected magazine and roadway depending in vertical position on the other side of the setting-devices hinged to swing to and away from said side of the setting-devices, the magazine being uppermost and the delivery end of the roadway extending under the up-position of the driving stem; operative connections between the toggle and the presser-foot stem and the magazine respectively; cam-means acting between the plunger and the roadway which swings the roadway away from the driving stem during its descent; means for releasably latching the roadway in its "swung away" position; and means on the plunger which disengages the latching means toward the end of the up-stroke of the plunger when its driving stem is above the delivery end of the roadway, the magazine and roadway having normal tendency to swing toward the setting-devices.

12. The combination of an upright piercing point, an apertured presser-foot reciprocatable in vertical alinement with said piercing point, a horizontally-extending work-supporting bar hinged to the machine-frame and extending between the piercing point and presser-foot where said bar is apertured to receive through it the piercing point, said bar being long and being hinged far away from the piercing point so that it remains substantially horizontal in hinging downward on said point; and means yieldingly upholding said bar.

13. The combination with a supporting frame, of a setting device movably mounted thereon and including a plunger, a magazine pivotally mounted above its upper end on the frame and swinging toward and from the same, a roadway carried by the lower portion of the magazine and having its lower end swinging toward and from the setting device, and means operating with the plunger and engaging the roadway for swinging the magazine and roadway when the setting device is operated.

14. The combination with a supporting frame, of a setting device movably mounted thereon, a magazine having an upwardly

and rearwardly extending bracket pivoted on top of the supporting frame, a roadway depending from the magazine and swinging therewith toward and from the setting device, and means for swinging the magazine and roadway when the setting device is operated.

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

EDWIN BALL STIMPSON.

Witnesses:
WM. J. MURPHY,
HENRY V. RAU.