F. H. PERRY.

MACHINE FOR INSERTING FASTENINGS.

APPLICATION FILED SEPT. 27, 1905.

910,147.

Patented Jan. 19, 1909.

3 SHEETS—SHEET 1.

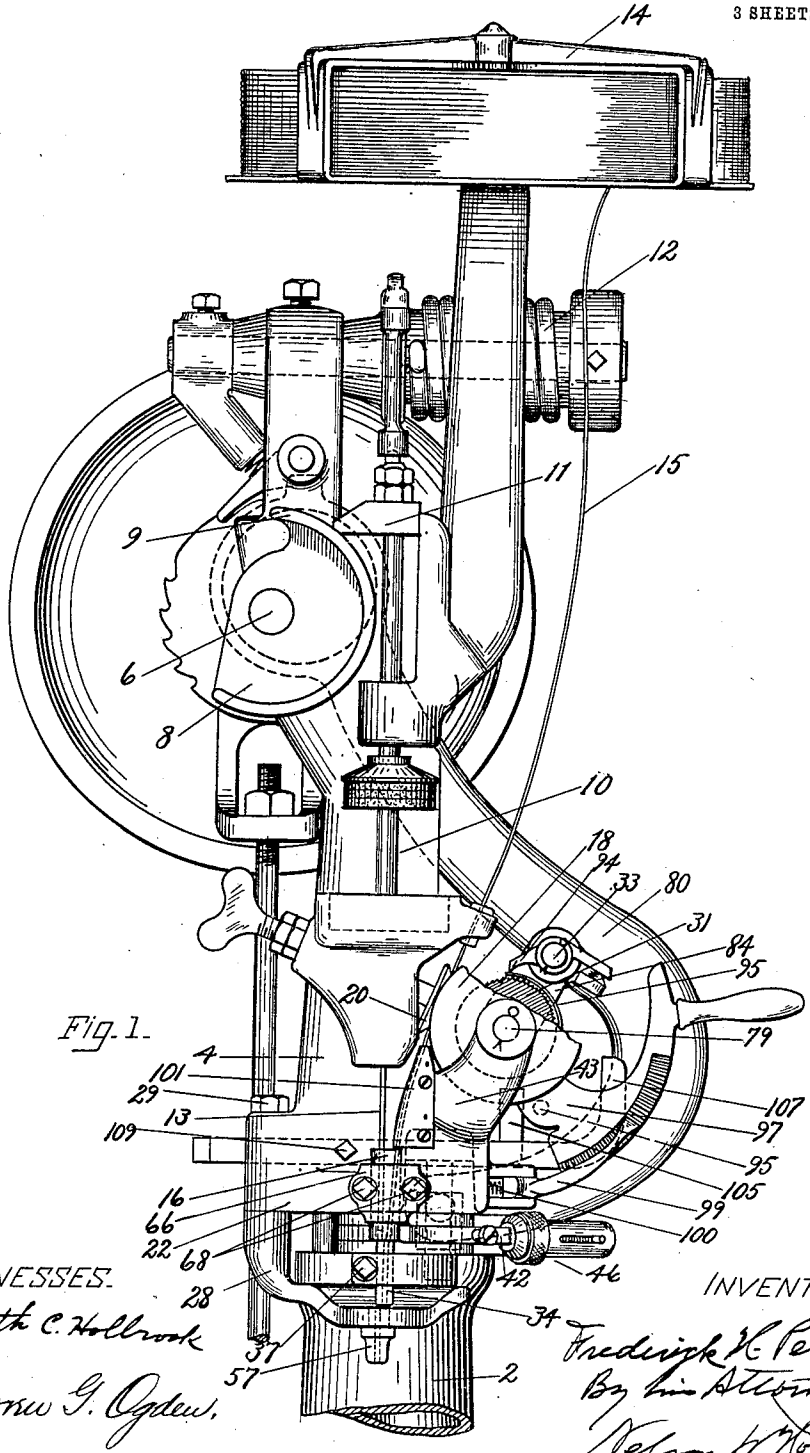

Fig. 1.

WITNESSES.

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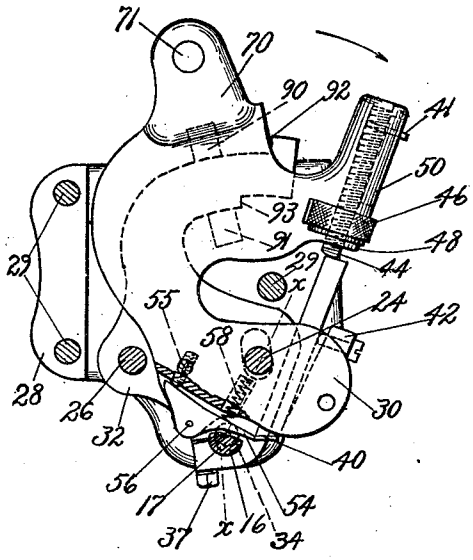

Fig. 2.

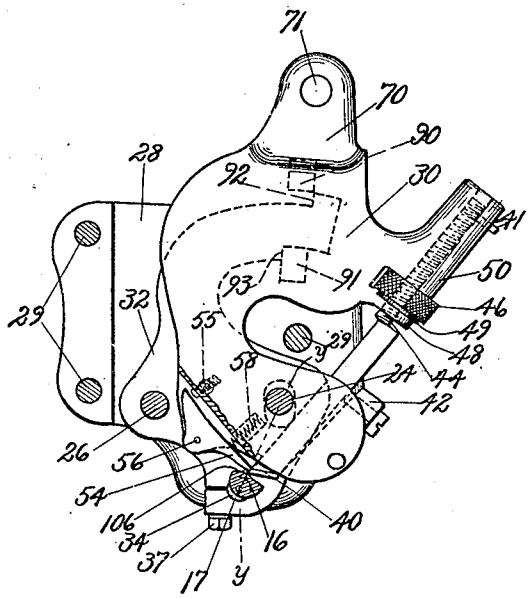

Fig. 3.

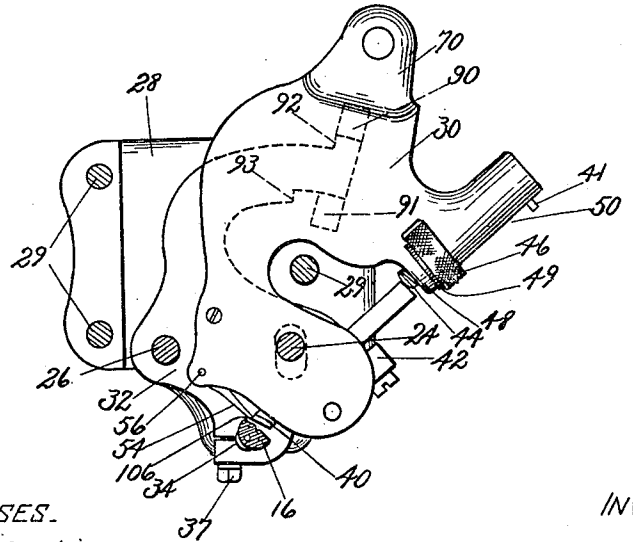

Fig. 4.

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3 SHEETS—SHEET 3.

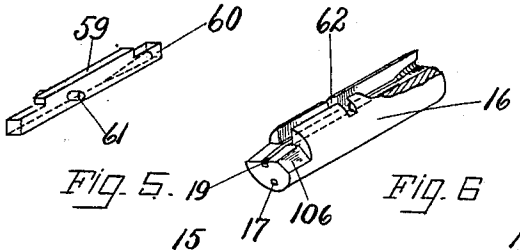

Fig. 5. Fig. 6

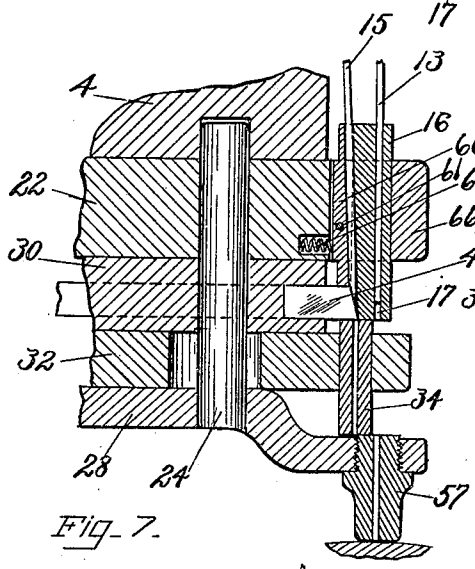

Fig. 7.

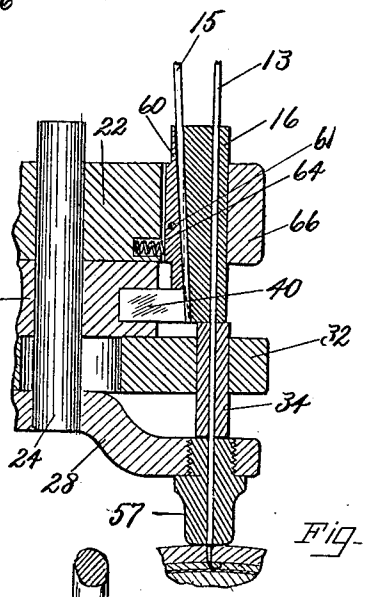

Fig. 8.

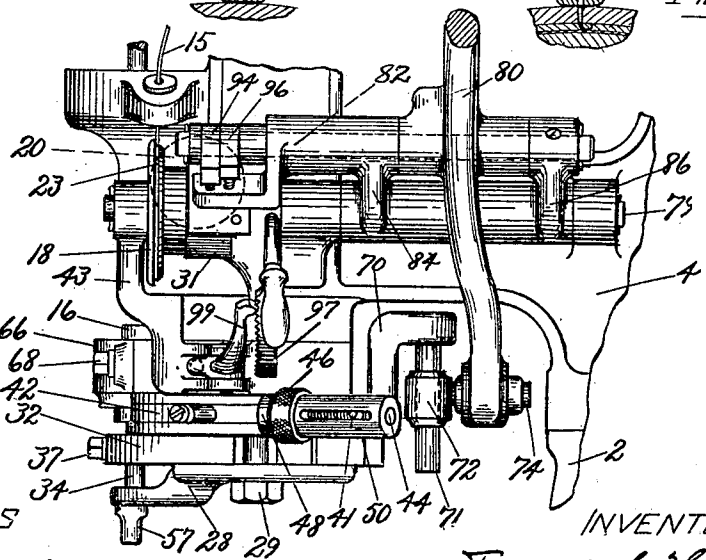

Fig. 9.

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UNITED STATES PATENT OFFICE.

FREDERICK H. PERRY, OF BEVERLY, MASSACHUSETTS, ASSIGNOR TO UNITED SHOE MACHINERY COMPANY, OF PATERSON, NEW JERSEY, A CORPORATION OF NEW JERSEY.

MACHINE FOR INSERTING FASTENINGS.

No. 910,147. Specification of Letters Patent. Patented Jan. 19, 1909.

Application filed September 27, 1905. Serial No. 280,313.

To all whom it may concern:

Be it known that I, FREDERICK H. PERRY, a citizen of the United States, residing at Beverly, in the county of Essex and Commonwealth of Massachusetts, have invented certain Improvements in Machines for Inserting Fastenings, of which the following description, in connection with the accompanying drawings, is a specification, like reference characters on the drawings indicating like parts in the several figures.

This invention relates to machines for inserting in certain classes of stock, more particularly leather, a short length of suitable material, preferably metal, which may be so short as to form merely a slug used for purposes of ornamentation or resisting wear, or may be of such length as to form a peg or nail used for securing together two or more layers of the stock into which it is inserted.

As machines embodying this invention may be used to insert devices of the kind described of any desired length, for convenience the term "fastening" will hereinafter be used generically to designate any device that may be used for any of the purposes named, and wherever the word "fastening" occurs herein it should be held to include a peg, nail or slug, or all of these, as the context may admit or require.

More particularly, the type of machine to which this invention relates is shown in United States Letters Patent to Stillman W. Robinson, No. 591,658, dated October 12, 1897.

In machines of the type above referred to fastening material is fed through a stationary quill into a passageway in a carrier plate, which is thereafter moved for severing said material to form a fastening and for placing the fastening in position to be acted upon by a driver which forces it into the stock. A cutting device is provided for forming a point on the end of the fastening, and during the operation of said cutting device the fastening material is held in position in the quill by a presser block which is mounted on the swing plate that carries the cutting device. The swing plate is actuated by mechanism operated from the main shaft, and the carrier plate is actuated by the movement of the swing plate through a connection therewith.

One of the objects of this invention is to provide improved means for holding the fastening material in position in the quill while the cutting device is operating upon said material.

Another object is to provide a chip remover for ejecting the chip that is cut from the fastening in forming a point thereon.

Another object is to provide an improved connection between the swing plate and the carrier plate for imparting movement from one to the other.

Other advantages of my invention will be hereinafter pointed out.

In the drawings:—Figure 1 is a front elevation of the head of the machine; Figs. 2, 3 and 4 are detail plan views of the mechanism with all above the swing plate removed, and partly in section, showing; first, the swing and carrier plates in the positions they will occupy when the fastening material is being fed into the passageway in the latter; second, the position of the carrier plate at the end of its forward and lateral movement when a fastening is in position to be driven; and third, the position of the swing plate at the end of its forward and lateral movement, the engaging lug thereon having passed out of engagement with the shoulder on the carrier plate; Figs. 5 and 6 are detail views of the improved quill; Figs. 7 and 8 are detail sectional views taken through the head of the machine, as indicated by line x—x of Fig. 2, and y—y of Fig. 3, showing the carrier plate first, in position for receiving the fastening material; and second, in position for a fastening to be driven therefrom; and Fig. 9 is an elevation showing a portion of the right-hand side of the head of the machine.

Referring to the drawings, 2 designates a base supporting a head 4 which carries the main shaft 6 that has mounted thereon a cam 8. Said cam is provided with a toe 9 that coöperates with a block 11 on a driver bar 10 for elevating said bar and its attached driver 13 after they have been depressed by the driver-actuating spring 12. The material from which the fastenings are formed, which is herein shown as wire 15, is sup-

ported in a reel 14, said wire being fed downwardly by rolls 18 and 20 through a passageway 19 in a quill 16 carried by a top plate 22 and into a tube 34 mounted in a carrier plate 32. The quill 16 is also provided with a driver passageway 17. Mounted some distance below the top plate 22 is a bottom plate 28 that is fastened to the head of the machine by screws 29, which also fasten the top plate to the head, and interposed between said top plate and bottom plate are the swing plate 30 and the carrier plate 32 which are fulcrumed respectively on studs 24 and 26 projecting downwardly from the top plate. Tube 34 is clamped in the carrier plate by a screw 37 and when the carrier plate is in position for receiving the wire, as shown in Fig. 2, the opening in said tube will be in alinement with the wire passageway 19 in the quill 16. As the carrier plate is actuated to place the opening in the tube 34 in alinement with the passageway 17 the upper end of said tube and the lower end of said quill coöperate to shear off the wire.

A cutting device, comprising a knife 40, is held in the swing plate 30 by a clamp 42, and bearing upon the end of the shank of said knife is an adjusting screw 44 on which a knurled nut 46 is threaded, said nut being confined between lugs 48 and 50 on the swing plate. The knife can be adjusted as its cutting edge wears away by loosening the clamp 42 and turning the nut 46 to cause the screw 44 to move forwardly, said screw being prevented from rotary movement by a pin 41 which enters a slot in the lug 50, as shown in Fig. 9. The nut 46 is held from accidental movement by a friction washer 49 interposed between the lug 48 and said nut. A chip remover 54 is pivoted to the swing plate at 56 and operates to eject the chip which the knife 40 removes in forming a point on a fastening. A spring 58 seated in the swing plate bears continuously against the acting end of the chip remover tending to force it outwardly, but this end is held substantially flush with the cutting edge of knife 40 by means of an adjusting screw 55 also mounted in the swing plate, as shown in Fig. 2. By means of screw 55 the relation between the chip remover and knife may be kept constant no matter what the adjustment of the latter.

The quill 16, which forms one of the most important features of my invention, has its lower end cut away, as shown in Fig. 6, to expose the passageway 19, so that the knife 40 can engage one side of the wire and remove a portion thereof to form a point on the fastening. For holding the wire securely in position while the knife is operating thereon, the quill is provided with a movable section 60 connected thereto by a pin 61 which rests in a notch 62 in the body of the quill, the lower end of said movable section being engaged and forced inwardly to bear upon the wire by a spring 64 that is confined in a recess in the top plate, see Figs. 7 and 8. When the wire is held by a clamp of this character it is practically impossible for it to be displaced from the lower end of the passageway 19 when the knife is operating thereon, because quite a portion of the wire is engaged by the movable section of the quill. Moreover as said movable section is held yieldingly in engagement with the wire any inequality in the size of the wire will not prevent it from being clamped properly. The movable section 60 is provided with a projecting lug 59, as shown in Fig. 5, and when the quill is in position, the lug is adapted to be seated in a recess in the top plate, said quill being held in position by a clamp 66 which is fastened to the top plate by screws 68. This construction permits the quill to be removed easily and insures its being positioned properly when it is replaced.

Projecting rearwardly from the swing plate is an arm 70 which is connected to the lower end of an actuating lever 80 by a block 72 having a pin 74 which enters an opening in the lower end of lever 80, said block also having an opening to receive a pin 71 projecting downwardly from the arm 70. The lever 80 is fulcrumed on a pin 82 carried by links 84 and 86 which project from a hub that is fulcrumed on a stud shaft 79 mounted in the head of the machine. At the upper end of said lever 80 is an eccentric strap which engages an eccentric on the main shaft, as shown in dotted lines in Fig. 1, whereby the rotary movement of said shaft will cause the lever 80 to oscillate on its pivot thus actuating the swing plate, and will also rock the links 84 and 86 thus actuating the feeding roll 18, as hereinafter described.

The swing plate is provided with downwardly projecting lugs 90 and 91, shown in dotted lines in Figs. 2, 3 and 4, which coöperate with shoulders 92 and 93 formed on an arm of the carrier plate, so that when the swing plate is actuated the lugs thereon will engage said shoulders and move the carrier plate therewith. Preferably the lugs and the coöperating shoulders are formed of hardened steel so that continual use does not cause these parts to wear away.

When the carrier plate is in the position shown in Fig. 2 the tube 34 will be in alinement with the wire passageway 19 in the quill, and the lugs 90 and 91 on the swing plate will stand some distance to the left of the shoulders 92 and 93 on the carrier plate. When the swing plate is moved forward and laterally, in the direction of the arrow in Fig. 2, the carrier plate will remain at rest until the lug 90 comes into engagement with the shoulder 92, and thereafter said carrier plate will move with the

swing plate until said lug and shoulder pass out of engagement, as shown in Fig. 3, the disengagement of the lug and shoulder being due to the fact that the swing and carrier plates oscillate about different centers.

The forward and lateral movement of the swing plate causes the knife 40 to shear off a chip from one side of the wire standing in the exposed portion of the passageway 19 in the quill, for forming a point on the fastening which is to be driven at the next cycle of operations. The movement of the carrier plate immediately thereafter severs the wire to form a fastening, and also carries said fastening into alinement with the driver passageway 17 in the quill, so that as driver 13 descends the fastening will be driven from the tube 34 through the throat block 57 and into the stock. In the forward and lateral movement of the swing plate the chip remover engages the wire and is rocked slightly against the stress of spring 58, as shown in Fig. 3. On the severance of the chip it passes on to the end of the chip remover, which, on passing out of engagement with the wire, is forced outwardly by spring 58 ejecting the chip from the machine, the lower end of the quill being beveled as shown at 106 to provide a clearance for this purpose.

After the lug 90 passes out of engagement with the shoulder 92, the swing plate continues to move, in order to lock the carrier plate in the position to which the swing plate just previously adjusted it, until it arrives in the position shown in Fig. 4. When the swing plate is moved in the opposite direction the lug 91 will engage the shoulder 93 and will return the carrier plate to its normal position shown in Fig. 2, the wire being then fed into the tube 34 in readiness to serve as the next fastening, on which the point was formed at the beginning of this cycle of operations.

The feed roll 18 is mounted on the stud shaft 79, which at its outer end is supported in a bearing 43 projecting upwardly from the top plate, and said roll is provided with a groove 23 for receiving the fastening material, which is also acted upon by the yielding roll 20. Fastened to the hub of the feed roll 18 is a ratchet wheel 31 and pivotally mounted on the end of pin 82 are a plurality of different length pawls 94 and 96 which engage and rotate the ratchet wheel 31 as the lever 80 is actuated.

For changing the length of the fastenings to be inserted, a pawl-controlling shield 95 is provided for varying the feed of the wire, said shield being fastened to a regulating lever 97 fulcrumed on the stud shaft 79. As shown in Fig. 1, the pawl-controlling shield partially encircles the ratchet wheel 31, so that during the first portion of their forward movement said pawls will ride upon the shield 95. Consequently by changing the position of said shield the time at which the pawls engage the ratchet wheel will be changed and thus the feed of the wire will be varied. For holding the shield in any position to which it may be adjusted, a dog 99 is pivoted to the top plate and is adapted to engage teeth formed on the side of lever 97, a spring 100 bearing against the inner end of said dog to hold it in engagement with said teeth.

In order that the operator may change the feed of the wire to produce the longest or the shortest fastenings without accurately determining the position of the pawl-controlling shield, the lever 97 is provided with a pin 95 which is adapted to engage stops 105 and 107 when the pawl-controlling shield is in either of its extreme positions, said stops being movably mounted in the head, where they are retained in adjusted position by a set screw 109, see Fig. 1.

A guide 101 is fastened to the bearing 43 and extends from the upper end of the quill to the feed roll, so as to prevent the fastening material from bending as it is being fed into said quill.

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

1. In a machine for inserting fastenings, a cutting device for acting upon the material from which the fastenings are formed, and a quill provided with means for clamping said material while the cutting device is operating thereon one face of said means forming a side of the material receiving passage in said quill.

2. In a machine for inserting fastenings, a cutting device for acting upon the material from which the fastenings are formed and a quill provided with means extending along and forming a wall of the material receiving passage in said quill for clamping said material, adjacent to the cutting device, while the latter is in operation.

3. In a machine for inserting fastenings, a cutting device for acting upon the material from which the fastenings are formed, and a quill provided with a movable section one face of which forms a side of the material receiving passage in said quill for engaging said material while the cutting device is operating thereon.

4. In a machine for inserting fastenings, a cutting device for acting upon the material from which the fastenings are formed and a quill provided with a movable section extending along and forming a wall of the material receiving passage in said quill for engaging said material, adjacent to the cutting device, while the latter is operating thereon.

5. In a machine for inserting fastenings, a cutting device for acting upon the material from which the fastenings are formed, a

quill provided with a movable section one face of which forms a side of the material receiving passage in said quill, and means for holding said movable section yieldingly in engagement with said material while the cutting device is operating thereon.

6. In a machine for inserting fastenings, a cutting device for acting upon the material from which the fastenings are formed, a notched quill provided with a longitudinally extending slot, a movable section mounted in said slot and provided with a pin for engaging said notches in the quill, and means for holding said movable section yieldingly in engagement with said material while the cutting device is operating thereon.

7. In a machine for inserting fastenings, a cutting device for forming a point on a fastening, a quill provided with means for clamping the fastening, and a chip remover for ejecting the chip removed from the fastening in forming the point thereon.

8. In a machine for inserting fastenings, a movable plate, a cutting device mounted thereon for forming a point on a fastening, a quill provided with means for clamping the fastening, a chip remover pivotally connected to said plate, and yielding means for holding the acting end of said chip remover in alinement with the edge of the cutting device.

9. In a machine of the class described, a swing plate provided with downwardly projecting lugs, a carrier plate provided with a rearwardly projecting arm that extends between said lugs, and shoulders on said arm which are adapted to coöperate with the lugs on said swing plate, whereby movement of one plate is imparted to the other plate.

10. The combination with fastening pointing means, of a quill through which the material is fed into position to be pointed, and means carried by the quill and forming a wall of the material passage for clamping the material in proximity to said pointing means during the pointing operation.

11. The combination with fastening pointing means, of a longitudinally slotted quill through which the material is fed into position to be pointed, a member seated in said slot and extending along the material to a point adjacent to said pointing means and means for maintaining said member in engagement with the material to clamp the same in position during the pointing operation.

12. The combination with fastening pointing means, of a slitted quill through which the material is fed into position to be pointed, a member pivotally mounted between the walls of said slot, and means for exerting a pressure on said member at a point adjacent to said pointing means for clamping the material in position during the pointing operation.

13. The combination with fastening pointing means, of a device for ejecting the chip removed from the fastening in forming its point.

14. The combination with movable fastening pointing means, of a device controlled by the movement of the pointing means for ejecting the chip removed from the fastening in forming its point.

15. The combination with fastening pointing means, of a device arranged to receive the chip upon its removal from the fastening, and means for thereafter imparting to said device an outward impulse to eject the chip.

16. The combination with adjustable fastening pointing means, of a chip remover, means for forcing the acting portion of said chip remover outwardly and means for varying the extent of its outward movement whereby it remains normally in alinement with the end of the pointing means.

17. In a machine for inserting fastenings, an integral quill forming three sides of a wire passage with a removable part forming the fourth side of said wire passage, a cutting device constructed and arranged to sever the wire while it is held in said quill, and means for actuating said removable portion to hold the wire while it is being operated upon by the cutting device.

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

FREDERICK H. PERRY.

Witnesses:
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ARTHUR L. RUSSELL.