R. B. SMITH.

EYELETING MACHINE.

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1,116,507.

Patented Nov. 10, 1914.

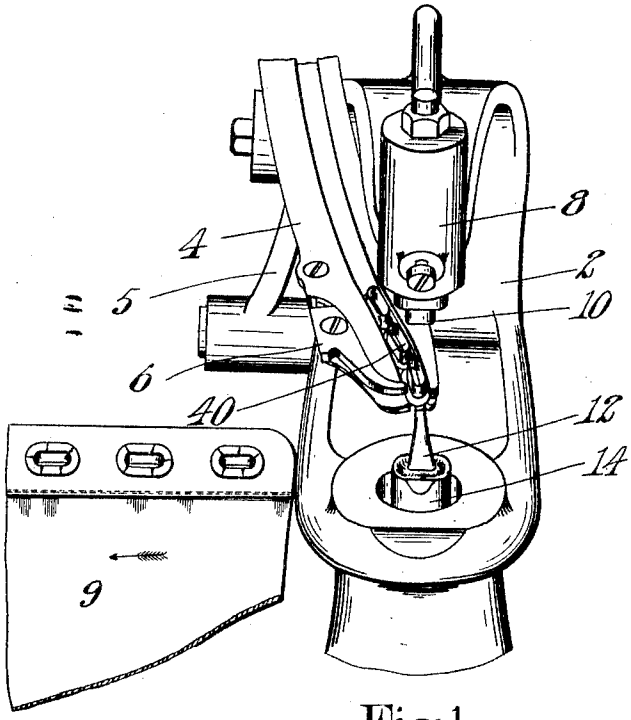

Fig.1.

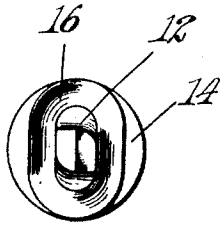

Fig.2.

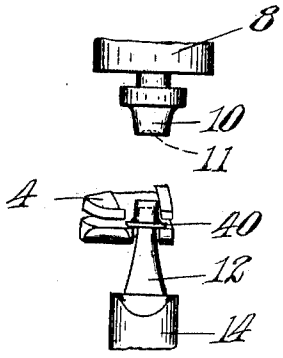

Fig.3.

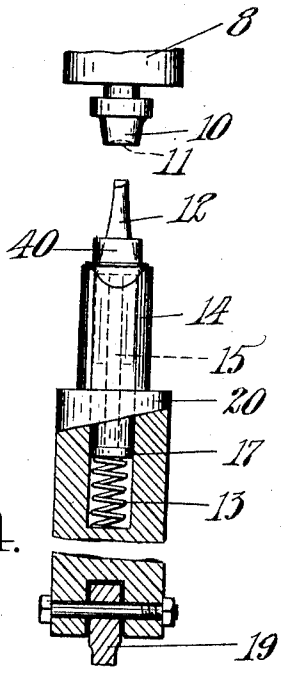

Fig.4.

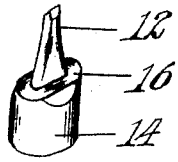

Fig.5.

WITNESSES.

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EYELETING-MACHINE.

1,116,507. Specification of Letters Patent. **Patented Nov. 10, 1914.**

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To all whom it may concern:

Be it known that I, ROBERT B. SMITH, a citizen of the United States, residing at Quincy, in the county of Norfolk and State of Massachusetts, have invented certain Improvements in Eyeleting-Machines, 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 setting fasteners such, for example, as eyelets; and it pertains more particularly to improved means for setting fasteners of various shapes in predetermined positions in the stock.

It is frequently necessary to set fasteners which are non-circular or unsymmetrically shaped in predetermined positions in the stock. In setting oval eyelets in boots and shoes, for instance, it may be required that the long axis of the oval should be parallel, or in other angular relation, with the edge of the lacing slit. Ordinarily machines for setting fasteners are provided with feeding devices which deliver the fasteners in the proper position to be set in the stock, that is, with their dimensions disposed in that relation to the stock which they are intended finally to have when set. The setting devices of such machines have been adapted merely to set fasteners in the prearranged position determined by the feeding devices. This is well exemplified in a familiar type of machine wherein feeding devices deliver fasteners in succession in axial alinement with the setting devices and the latter set the fasteners in the stock in the position determined by the action of the feeding devices. Evidently, in employing a machine having the above described characteristics, for setting fasteners in new or unusual positions, the construction and arrangement of the feeding devices might be adapted to deliver the fasteners in the required position. Such a change in the feeding devices would involve considerable inconvenience and, in fact, the general organization of most machines would not permit changes in the feeding devices of sufficient scope to provide for setting fasteners in many positions which might be desirable.

With these considerations in view it is an object of the present invention to obviate difficulties of this sort by permitting any desired form of feeding device to coöperate with means for receiving fasteners from the feeding devices and arranging them in a desired position which may be different from the position determined by the feeding devices.

In this connection an important feature of the invention comprises the combination of feeding devices and setting mechanism including means for receiving a fastener from the feeding devices and changing its position prior to the setting operation.

An object of the invention is to provide an improved and simplified device or mechanism for carrying out the latter functions in a direct and uniform manner and preferably without the employment of moving parts. A preferred embodiment of this feature consists in a machine for setting eyelets, having a raceway for delivering eyelets to the setting mechanism, which mechanism includes a tapering, and preferably spiral, spindle for receiving the eyelets from the raceway and turning them through the proper angle into the desired position for setting.

The preferred embodiment just referred to constitutes the subject of the detailed description hereinafter set forth for purposes of illustration, but it is to be understood that this invention is not limited in the scope of its application to use in connection with this specific embodiment or in connection with machines of the same type. The accompanying drawings represent portions of a machine of the general type shown in United States Patent No. 606,964, granted July 5, 1898. Enough of such a machine is shown and described herein to make clear its operation in connection with the improvements contemplated by this invention.

In the drawings,—Figure 1 is a view in perspective of an eyelet setting machine provided with the improved spindle; Fig.

2 is a plan view of the lower set and spindle; Figs. 3 and 4 illustrate successive steps in the operation of the machine; Fig. 5 is a view in perspective of part of the lower set and spindle.

The frame 2 of the machine is provided with the vertical retaining portion 8 in which is rigidly mounted the upper set 10. This set is of oval shape and is positioned in the machine with its longer diameter parallel to the edge of the work to be eyeleted. A pilot hole 11 is provided in the end of the set for a purpose to be hereinafter set forth.

Located in alinement with the upper set 10 is the lower set 14 which is mounted in the movable retaining member 20 as shown in Fig. 4. The member 20 is bored to receive the reduced portion of the set and provided with a pocket for the reception of the compression spring 13 which bears against a button 17 fast on the end of the cylindrical shank 15 of the spindle 12, whereby the spindle is normally held upwardly in the position shown in the drawings. The retaining member 20 is mounted for vertical reciprocation in the frame 2 and is connected with suitable actuating means by the lever 19 whereby it is moved bodily upward for setting an eyelet.

A raceway 4 mounted on one side of the frame 2 is actuated by the lever 5 to advance in a fixed path and deliver oval eyelets 40 successively to the spindle 12 and is moved rearwardly into an inoperative position after delivering each eyelet. The spring actuated detent 6 is pivoted near the end of the raceway and serves to retain the eyelets in the raceway but permits the lowest eyelet to be drawn out by the set 12 when the raceway is moved back from the position shown in Fig. 1.

The spindle 12 is of such a shape that when an oval eyelet is delivered to its upper end with its major diameter perpendicular to the edge of the work, the eyelet is turned at right angles as it slides down the spindle and when the set is reached it fits into the depression 16 with its major diameter parallel with the edge of the work. This result is accomplished by the action of the spindle on the inner surface of the eyelet. The spindle 12 is preferably made tapering and slightly spiral in shape and of such dimensions that the major diameter of the upper end of the spindle is shorter than the minor inside diameter of the eyelets to be set, while the major diameter of the spindle at its base is longer than the minor inside diameter of the eyelet but shorter than its major inside diameter. It will be apparent that in order to pass down a tapering spindle of the dimensions above set forth an oval eyelet must turn into a position in which its major diameter is parallel with the major diameter of the spindle. In order to insure that the eyelet shall turn in this manner and not stick upon the spindle the latter is made slightly spiral in shape. The spindle 12 is beveled at its upper end for engaging with the pilot hole 11 in the upper set, which construction tends to preserve the alinement of the setting instrumentalities.

In operation, the raceway 4 is advanced to its operative position and the lower set and spindle 12 are raised till the end of the spindle engages the lowermost eyelet in the raceway as shown in Fig. 3. The raceway is then retracted and the spindle draws the eyelet out of the raceway, the major diameter of the eyelet being still perpendicular to the edge of the work 9. As soon as the eyelet is clear of the raceway it slides down the spindle under the influence of gravity and is turned into the position shown in Fig. 4 during this step. After the raceway has been moved out of alinement with the sets, the lower set 14 continues to rise, carrying the eyelet into the work and meeting the upper set 10 with which it cooperates to set the eyelet. The spindle 12 has meantime engaged the pilot hole 11 in the upper set and is forced downwardly against the spring 13 into the set 14 where it remains during the setting operation.

In the construction herein shown and described the raceway makes approximately a right angle with the edge of the work and accordingly each eyelet has imparted to it a quarter turn. It will be apparent, however, that it is immaterial at what angle the raceway delivers the eyelets to the spindle since the final position will be the same in every case.

It will also be clear that my invention may be embodied equally well in a manually operated or in a power machine.

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

1. A machine of the class described, having, in combination, a raceway for delivering non-circular eyelets in predetermined angular position, a reciprocatory setting device correspondingly shaped but disposed throughout its movement in a position angularly different from that of the eyelets delivered by the raceway, and means located in the path of movement of the reciprocatory setting device for turning the eyelets from one position to the other.

2. A machine of the class described, comprising an eyelet raceway for delivering oval eyelets with their longer axis perpendicular to the edge of the work, and an angularly stationary set provided with an oval spindle tapering in its major diameter from a dimension less than to a dimension greater than the minor diameter of the eyelet, said

spindle being constructed and arranged for receiving the eyelets in the position determined by the raceway and turning them through a predetermined angle prior to the setting operation.

3. A machine of the class described, comprising eyelet delivering means and coöperating sets, one of the latter being provided with a spiral spindle for receiving an eyelet from said delivering means and turning it into a new position prior to the setting operation.

4. A machine of the class described, comprising a raceway and coöperating sets, one of the latter being provided with a spiral spindle of substantially oval cross section, the major diameter thereof at the base extending parallel to the edge of the work.

5. A machine of the class described, comprising an eyelet delivering means and cooperating sets, one of the latter being provided with a tapering spiral spindle of substantially oval cross section, the major diameter thereof at the base extending parallel to the edge of the work, and the major diameter of the upper end being shorter than the short diameter of an oval eyelet to be set.

6. A machine of the class described, comprising eyelet delivering means and coöperating sets, one of the latter being provided with a tapering spindle of substantially oval cross section, the major diameter at the upper end thereof being shorter than the short diameter of an oval eyelet to be set and the major diameter at the base being greater than the short diameter of the eyelet but shorter than the long diameter thereof.

7. A machine of the class described, comprising eyelet delivering means and coöperating sets, together with angularly stationary means for receiving an eyelet from the delivering means and imparting thereto an angular motion prior to the setting operation.

8. A machine of the class described, comprising eyelet delivering means and coöperating sets, together with an angularly stationary member located in axial alinement with said sets for receiving an eyelet from the delivering means and turning it through a predetermined angle.

9. A machine of the class described, comprising coöperating sets, means for delivering oval eyelets in line with and between the sets and in a prearranged position, and means for turning an eyelet into a new position after it leaves said delivering means and before it reaches either of said coöperating sets, said latter means being arranged to permit the uninterrupted passage of an eyelet between said delivering means and set.

10. A machine of the class described, comprising coöperating setting devices, one of which is arranged for reciprocation toward and from the work to insert a tubular fastener therein, means for delivering fasteners in line with and between the setting devices, and a device for guiding a fastener in its passage from the delivering means to said reciprocatory setting device, said guiding device acting upon the inner surfaces of the fastener to impart a predetermined angular movement thereto.

11. A machine of the class described, comprising a reciprocatory device for inserting tubular fasteners in the work, a raceway for delivering fasteners to said reciprocatory device, and means arranged to act upon the inner surfaces of said fasteners to impart a predetermined angular movement thereto relatively to said reciprocatory device.

12. A machine of the class described, comprising setting devices, a raceway for delivering non-circular eyelets thereto, and means so shaped as to act during bodily movement of an eyelet relative thereto for imparting an angular movement to the eyelet.

13. A machine of the class described, comprising a device for inserting non-circular tubular fasteners in the work, a raceway for delivering said fasteners to said device, and means operating upon the tubular inner surface of a fastener to impart an angular movement thereto relatively to said inserting device.

14. A machine of the class described, comprising setting devices, a raceway for delivering thereto eyelets having a portion which it is desired to locate in a predetermined position relative to the work, and means operating upon the inner surface of the eyelet barrel for turning the latter relatively to said setting devices into the desired angular position.

15. A machine of the class described, comprising a raceway for supplying non-circular eyelets, coöperating setting devices shaped to correspond with the eyelets to be set and arranged in unvarying angular relation, and a device separate from the raceway for turning an eyelet delivered in other angular position into parallel relation with the sets.

16. A machine of the class described, comprising a raceway for supplying oval eyelets with their major axes perpendicular to the edge of the work, oval sets arranged in unvarying angular relation with their major axes parallel with the edge of the work, and a device for turning an eyelet delivered by the raceway into parallel relation with the sets.

17. A machine of the class described, having, in combination, setting devices, a raceway for delivering eyelets thereto, said raceway being movable in an unvarying path toward and from said setting devices, and means for taking an eyelet from the end of

the raceway in one angular position and turning it relatively to both of said setting devices into a different angular position, said means being movable in a path coincident with the axis about which the eyelet is turned.

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

ROBERT BURNS SMITH.

Witnesses:
HERBERT W. KENWAY,
ARTHUR L. RUSSELL.