

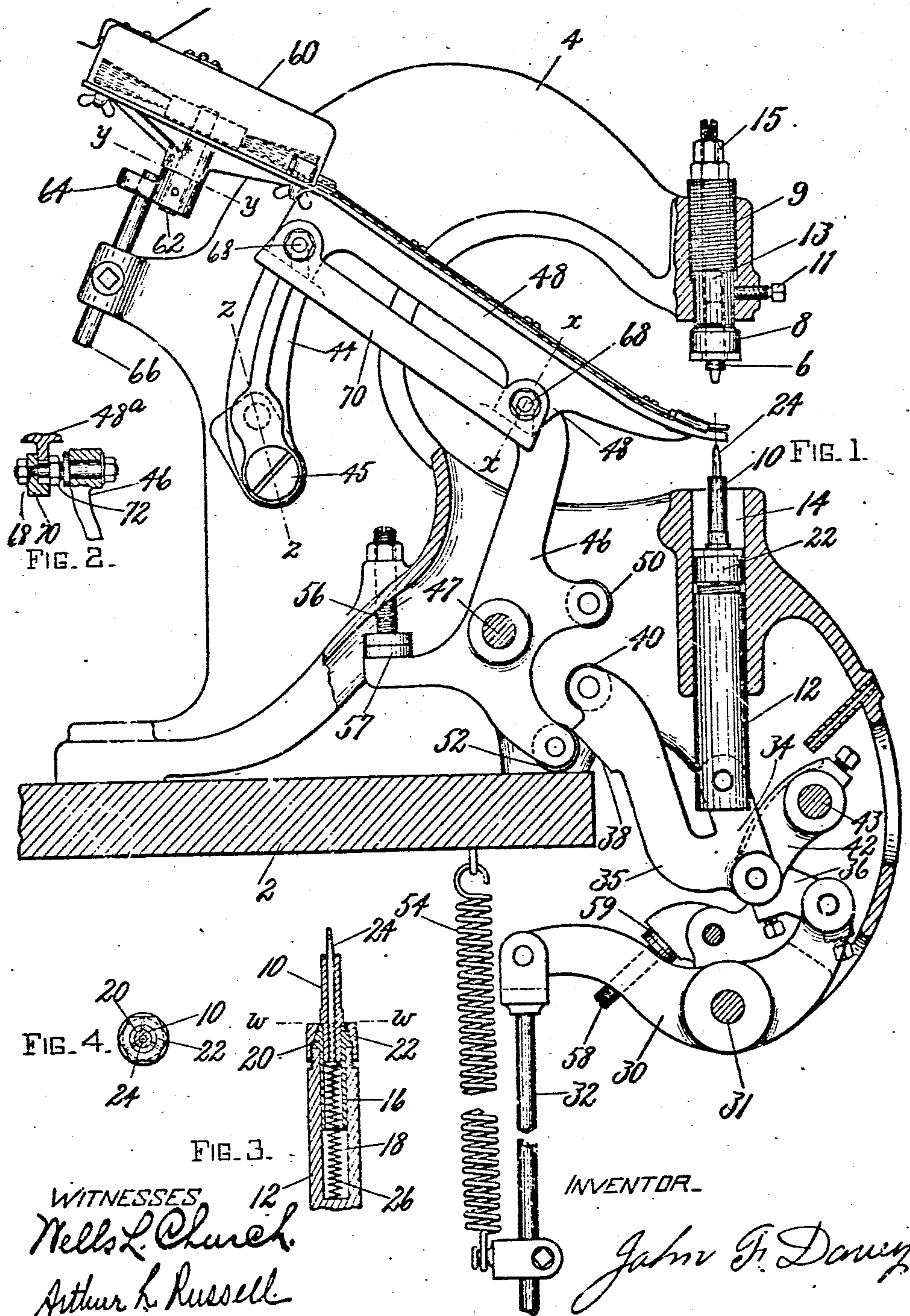
J. F. DAVEY.
EYELETING MACHINE.

APPLICATION FILED JUNE 24, 1904.

Patented Sept. 15, 1908.

2 SHEETS—SHEET 1.

898,729.

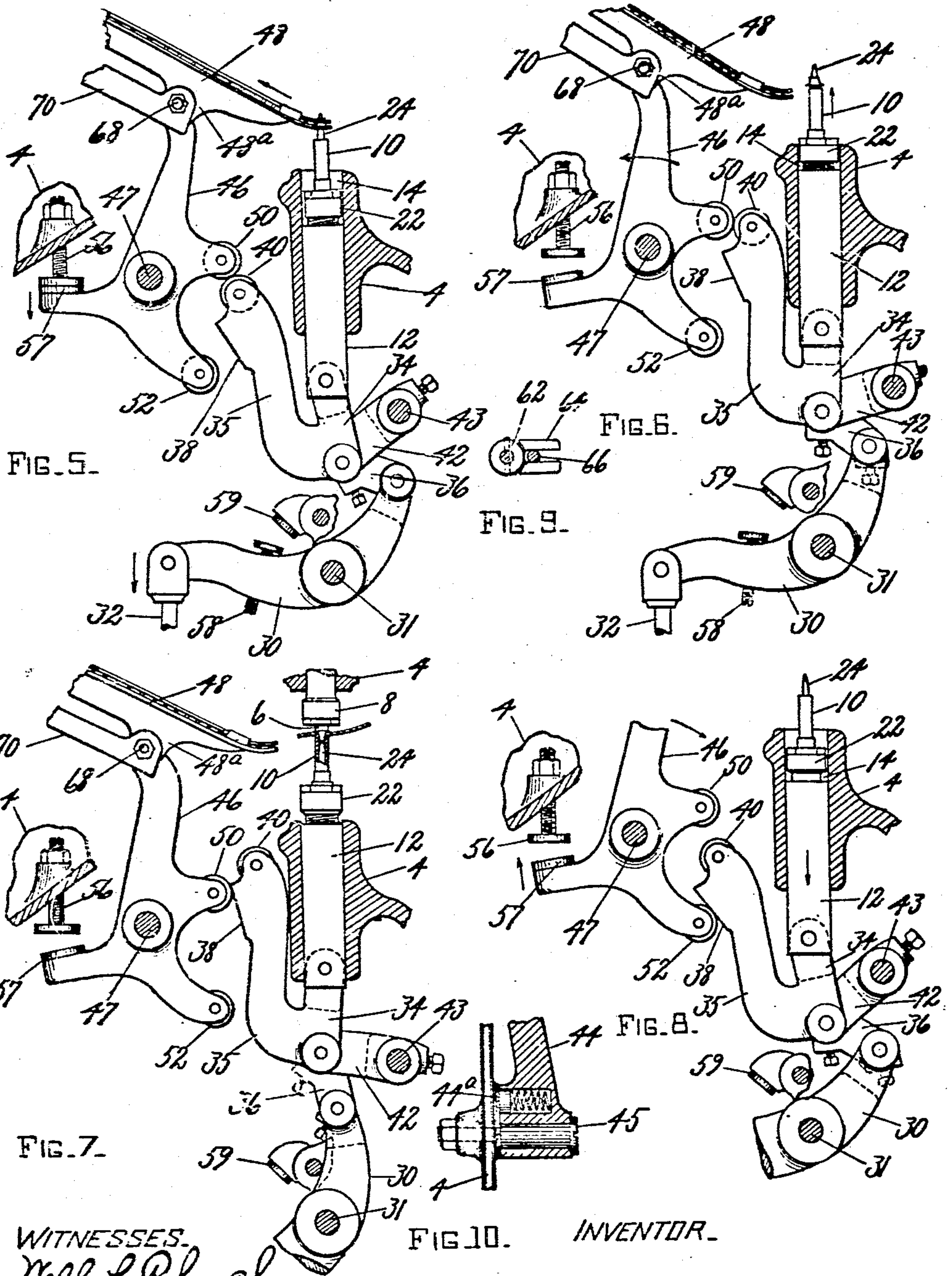


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2 SHEETS—SHEET 2.



WITNESSES.
Wells L. Church.
Arthur L. Russell.

FIG. 10. INVENTOR.
John F. Davey

UNITED STATES PATENT OFFICE.

JOHN F. DAVEY, OF BEVERLY, MASSACHUSETTS, ASSIGNOR TO UNITED SHOE MACHINERY COMPANY, OF PATERSON, NEW JERSEY, A CORPORATION OF NEW JERSEY.

EYELETING-MACHINE.

No. 898,729.

Specification of Letters Patent.

Patented Sept. 15, 1908.

Application filed June 24, 1904. Serial No. 214,023.

To all whom it may concern:

Be it known that I, JOHN F. DAVEY, a citizen of the United States, residing at Beverly, in the county of Essex and Commonwealth of Massachusetts, have invented certain Improvements in Eyeletting-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 eyelets, lacing hooks, and similar articles, and has for its object to provide improved means for detachably fastening the setting devices to the plungers or holders on which they are mounted.

Another object of the invention is to provide mechanism for imparting a powerful stroke to the plunger which carries one of the setting devices, and also to actuate the raceway by said mechanism.

Other novel features of my invention will be hereinafter pointed out.

The present invention is shown as embodied in an eyelet setting machine of that type which comprises a stationary upper eyelet-setting device, a movable lower eyelet-setting device, and a raceway adapted to be shifted into and out of the path of movement of the lower setting device for delivering eyelets thereto. Machines of this type are usually provided with detachable setting devices, so that eyelets of different form and size may be operated upon in the same machine, and the usual method of fastening the setting device to the plunger or holder on which it is mounted is to provide said plunger or holder with a socket to receive the shank of the setting device, a set screw projecting through the wall of the socket and engaging the shank of the setting device to retain it in place. This method of fastening a setting device to its plunger is objectionable in that the set screw which bears against the side of the shank of the setting device causes said device to incline more or less in one direction, thereby throwing it out of axial alinement with its plunger or holder and also out of alinement with the cooperating setting device. Consequently when the upper and lower setting devices are brought together, the eyelet being operated upon will be damaged. To overcome this objectionable feature I have provided a fastening de-

vice which will bear evenly upon all sides of the shank of the setting device to be retained in place, thereby insuring axial alinement of the upper and lower setting devices so that the eyelets will not be damaged during the setting operation.

Referring to the drawings, Figure 1 is a side elevation, partly in section, of a foot power eyeletting machine embodying the features of my invention; Fig. 2 is a sectional view on the line $x-x$ of Fig. 1 and shows a novel means for adjusting the raceway laterally; Fig. 3 is a vertical sectional view of the lower eyelet-setting device and shows the means for detachably fastening it to the plunger on which it is mounted; Fig. 4 is a sectional view on the line $w-w$ of Fig. 3; Fig. 5 is a detail view, partly in section, and shows the spindle of the lower setting device in engagement with the lowermost eyelet on the raceway, preparatory to removing it therefrom; Fig. 6 is a detail view similar to Fig. 5 and shows the relative positions of the lower setting device and raceway just after the eyelet has been removed; Fig. 7 is a view similar to Figs. 5 and 6, and shows the lower setting device cooperating with the upper device for setting an eyelet in a piece of stock; Fig. 8 is a detail showing the operation of the mechanism for restoring the raceway to its normal position; Fig. 9 is a sectional view on the line $y-y$ of Fig. 1 and shows the mechanism for rotating the brush or agitator mounted in the hopper; and Fig. 10 is a sectional view on the line $z-z$ of Fig. 1, and shows the friction device for retaining the raceway in its retracted position.

In the drawings, 2 designates a table or other support to which the frame 4 of the machine is attached. The upper eyelet-setting device 6 is carried by a holder 8 mounted in the frame, and the lower eyelet-setting device 10 is carried by a plunger 12 mounted in a guideway 14 formed in the lower part of the frame of the machine. The mechanism for imparting a reciprocating movement to the plunger 12 is connected to the lower end thereof and will be hereinafter fully described.

In Fig. 3 of the drawings is shown the preferred form of fastening device, which comprises a split sleeve 16 mounted in a socket 18 formed in the end of plunger 12, said sleeve being provided with a head 20 of frusto-conical form which is of greater diame-

ter than the part of the sleeve that projects into the socket 18, said head resting upon the end of plunger 12. The plunger 12 has a screw-threaded portion near its upper end on which is threaded a nut 22 provided with a tapered bore or inclined portion that surrounds and coöperates with the frusto-conical head to produce a contraction of the sleeve for clamping the shank of the setting device whenever the nut 22 is screwed downwardly. The shank of the setting device is reduced in diameter so as to form a shoulder which rests upon the head 20, and as said head rests upon the end of the plunger the setting device will always be maintained in the same elevated position relatively to the plunger. Mounted in a longitudinal bore of the lower setting device is a spindle 24 which normally projects above the acting face thereof, the said spindle being adapted to engage and remove the lowermost eyelet on the raceway during the upward movement of the setting device. A spring 26 confined within the socket 18 and bearing against the end of the spindle holds said spindle in its elevated position, but permits it to yield when the two setting devices are brought together. It will thus be seen that by turning the nut 22 in the desired direction the split sleeve 16 will be either contracted or allowed to expand to clamp or release the setting device, and as the pressure on all sides of the shank of the setting device is uniform it is impossible for said device to be thrown out of axial alinement with its supporting plunger. The holder 8 is provided with the same kind of fastening means for retaining the upper setting device 6 in place.

For operating upon stock of different thicknesses it is necessary for one of the setting devices to have a vertical adjustment, and in this embodiment of the invention I have shown the upper eyelet-setting device as being adjustable towards and from the lower device. This is accomplished by providing the holder 8 with a screw-threaded portion 9 which engages a corresponding screw-threaded portion formed in the frame, so that by rotating said holder its elevated position will be varied and the setting device carried thereby will be brought nearer to or farther away from the lower setting device. A set screw 11 is mounted in the frame and bears against the side of said holder for retaining it in its adjusted position. To insure a very fine adjustment of the upper setting device, said device is adapted to be moved relatively to its holder by means of an adjusting screw 13 mounted in the holder and bearing against the shank of said device, a lock nut 15 holding said screw in its adjusted position, as shown in Fig. 1.

The mechanism for imparting reciprocating movement to the plunger 12 is important. It comprises an actuating lever 30 pivoted

to the frame at 31 and connected with a treadle or other device by means of a rod 32. Intermediate the actuating lever 30 and the plunger 12 is a system of links arranged to form three toggle joints which are particularly effective for shifting the raceway, for moving the plunger, and for applying maximum pressure thereto when an eyelet is being clenched in the stock. The three toggles are supplied by a link 34 pivoted to the plunger 12, a link 36 pivoted to one end of the actuating lever 30, and a link 42 which has a fixed pivot 43. The links 34, 36 and 42 are pivoted to each other by a pin which constitutes a knuckle common to the three toggles (see Fig. 1). During the initial movement of the actuating lever 30 (in the direction of the arrow in Fig. 5), the first-acting toggle, consisting of links 36 and 42, serves to project the link 34 into axial alinement with the plunger (see Fig. 6), so that the clenching pressure, subsequently transmitted through the link 34, shall be applied to the plunger in the most effective direction. This initial movement of the actuating lever also elevates the plunger until the spindle 24 engages an eyelet (see Fig. 5). Progressing further, the movement of the actuating lever 30 tends to force the link 34 out of alinement with the plunger and away from the link 42; but said link 42 resists this tendency and, in effect, serves as a retracting force, applied at the knuckle of a second toggle composed of links 34 and 36, to cause said toggle to straighten out, with the result that a rapidly augmented pressure is exerted upon the plunger as it nears the limit of its movement to clench an eyelet. A raceway 48 is shifted through the agency of an arm 35 on the link 34, and this arm 35 and the link 42 constitute the third toggle above referred to. The movement of the actuating lever gradually increases the angle of the toggle 35, 42 (see Figs. 5, 6 and 7), and thereby causes an engaging face 38 and a roller 40 on the arm 35 to perform their proper offices as hereinafter explained.

The raceway 48 is supported by levers 44 and 46 which are pivoted to the frame at 45 and 47. The lever 46 has rollers 50 and 52 arranged to be engaged by the roller 40 and engaging face 38 on the arm 35 so as to produce a rocking movement of said lever which shall shift the raceway.

The normal inactive positions of the raceway, plunger and actuating mechanism are shown in Fig. 1, wherein, it will be seen, the end of the raceway projects over the upper extremity of the lower setting device. When the plunger 12 is elevated as already described, the spindle 24 will enter the barrel of an eyelet and detain it when the raceway is retreated. During the movement of the actuating lever 30, as the angle of the toggle composed of arm 35 and link 42 is increased,

the roller 40 on arm 35 engages roller 50 on lever 46, and rocks said lever in the direction of the arrow in Fig. 6. This shifts the feed end of the raceway out of the path of the lower setting device. The relative positions of the plunger and raceway at different stages in the machine's operation may be observed in Figs. 1 to 8 inclusive.

Throughout the above-described operation, the actuating lever has been depressed by the treadle rod 32. When the eyelet has been clenched the rod 32 is released and a spring 54, attached at one end to the frame and at the other end to the rod 32, retracts the actuating lever 30 thereby causing the various parts to resume their normal inactive positions. During this retraction of the actuating lever 30 the engaging face 38 of the lever 35 contacts with the roller 52 on lever 46 and depresses said roller, rocking the lever 46 and shifting the raceway so that its feed end is again projected into the path of the spindle 24 of the lower setting device. The position of the feed end of the raceway relative to the setting devices, may be varied by adjusting the stop 56, mounted in the frame, which limits the movement of the lever 46 by contacting with a buffer 57 carried by said lever. The retracting movement of the actuating lever 30 is limited by a stop 58 carried by the lever, and a buffer 59 on the frame.

A friction device comprising a spring-pressed plunger 44^a (see Fig. 10) is carried by lever 44 and bears against a part of the frame of the machine to prevent the raceway from being accidentally shifted.

The raceway herein shown can be readily removed from the machine when it is desired to substitute for it a raceway of different size or form, and means are also provided for adjusting the raceway laterally with respect to the setting devices. A hopper 60 is connected to the upper end of the raceway and within the hopper is a brush or agitator that is mounted on a spindle 62, as shown in dotted lines in Fig. 1. The spindle carries at its lower end an arm 64 which is bifurcated to engage a rod 66 mounted in an arm projecting from the frame, (see Fig. 9) whereby an oscillating movement of said spindle and brush is effected whenever the raceway is shifted. The raceway is provided with bifurcated feet 48^a which straddle collared studs 68, 68 carried by levers 44 and 46, said raceway being held in position by the clamping plate 70 which bears upon one side of the feet to force them against nuts 72 threaded on the studs, as shown in Fig. 2. When it is desired to move the raceway laterally to bring the end thereof into exact alinement with the setting devices, the nuts 72 and the clamping plate 70 are moved in the desired direction on the studs, and as the feet of the raceway are clamped between said nuts and plate the raceway will be moved laterally.

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

1. In a machine of the class described, a setting device; a holder for said device; and a fastening device, carried by the holder intermediate the holder and setting device, which is supported by the inner wall of said holder and grips the shank of the setting device on all sides with uniform pressure to secure said setting device in alinement with the holder.

2. In a machine of the class described, a setting device; a holder for said device; a fastening device carried by the holder intermediate the holder and setting device and held against sidewise movement by said holder; and means for causing the fastening device to grip the setting device.

3. In a machine of the class described, a setting device; a holder for said device; compressible fastening means carried by the holder and supported by the inner wall of the holder; and means for compressing said fastening means to grip the setting device.

4. In an eyeleting machine, a setting device; a holder for said device; a split sleeve intermediate the holder and setting device and held against sidewise movement by said holder; and means for causing said sleeve to grip the setting device uniformly on all sides.

5. In an eyeleting machine, a setting device; an adjustable holder for said device; means for securing said holder in adjusted position and means for adjusting said device independently of said holder.

6. In an eyeleting machine, a setting device, an adjustable setting device holder, means for securing said holder in adjusted position, an adjusting screw mounted in said holder and adapted to bear against the end of the setting device carried by the holder, and means for locking said screw in adjusted position.

7. In an eyeleting machine, a plunger, a setting device carried by said plunger, actuating means, two links pivoted to each other and to said plunger and said actuating means respectively, and means for causing the link pivoted to the plunger to be brought into alinement with said plunger and then to move forward in line therewith.

8. In an eyeleting machine, a plunger, a setting device carried by said plunger, actuating means, two links pivoted to each other and to said plunger and said actuating means respectively and together acting as a toggle to move the plunger, and a link pivoted at one end to a fixed pivot and at the other end to the common pivot of the other two links.

9. In an eyeleting machine, a plunger, a setting device carried thereby, a raceway, a movable support therefor, actuating means, two links pivoted to each other and to said plunger and said actuating means respec-

tively, a link pivoted at one end to a fixed pivot and at the other end to the common pivot of the other two links, and means carried by one of the links for engaging the movable support.

10. In an eyeleting machine, a stationary setting device, a raceway, a plunger, a movable setting device carried by said plunger, actuating means, two links pivoted to each other and to said plunger and said actuating means respectively, and means for causing the link pivoted to the plunger to be brought into alignment with said plunger to cause an eyelet in said raceway to be engaged, and then to cause said link to move forward in line with said plunger to bring the eyelet into contact with said stationary setting device.

11. In an eyeleting machine, a stationary setting device, a raceway, a movable support for said raceway, a plunger, a movable setting device carried thereby, actuating means two links pivoted to each other and to said plunger and said actuating means respectively, an arm carried by the link pivoted to the plunger and arranged to engage said movable support, and means for causing said latter link to be brought into alignment with said plunger to cause an eyelet in said

raceway to be engaged and the raceway to be retracted, and then to cause said link to move forward in line with said plunger to bring the eyelet into contact with said stationary setting device.

12. In an eyeleting machine, a raceway, supporting means provided with a stud on which said raceway rests, and means carried by the stud and adjustable longitudinally thereof for moving the raceway nearer to or farther away from the supporting means, substantially as described.

13. In an eyeleting machine, a raceway provided with bifurcated feet, supporting levers carrying studs that are adapted to be straddled by the feet of the raceway, and a clamping plate and adjusting nuts movably mounted on the studs and bearing upon opposite sides of the feet of the raceway, for the purpose described.

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

JOHN F. DAVEY.

Witnesses:

ARTHUR L. RUSSELL.
WELLS L. CHURCH.