(No Model.) 2 Sheets—Sheet 1.

H. B. BAKER.

EYELET SETTING MACHINE.

No. 567,287. Patented Sept. 8, 1896.

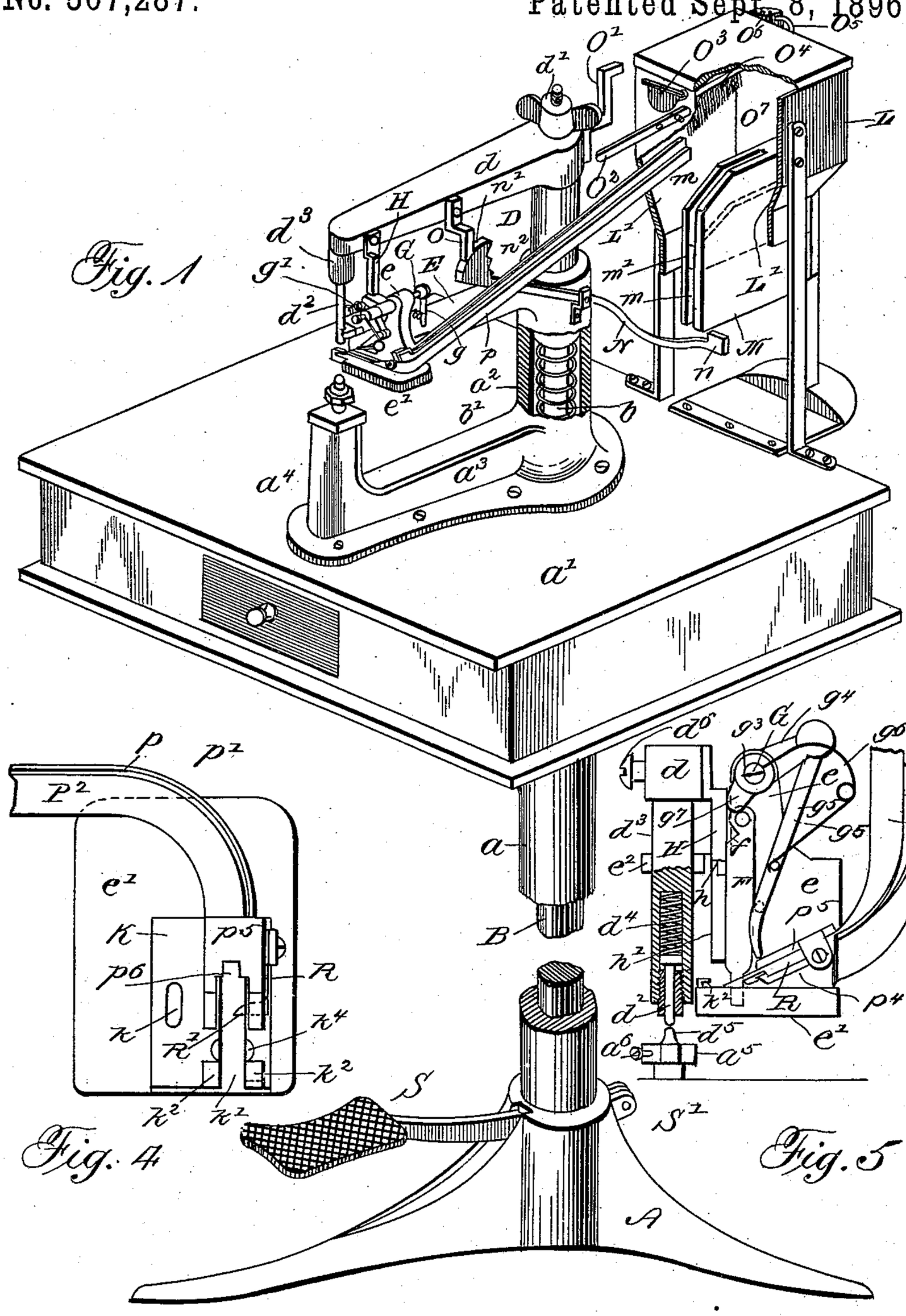

Fig. 1

Fig. 4

Fig. 5

WITNESSES:

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(No Model.) 2 Sheets—Sheet 2.

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Fig. 2

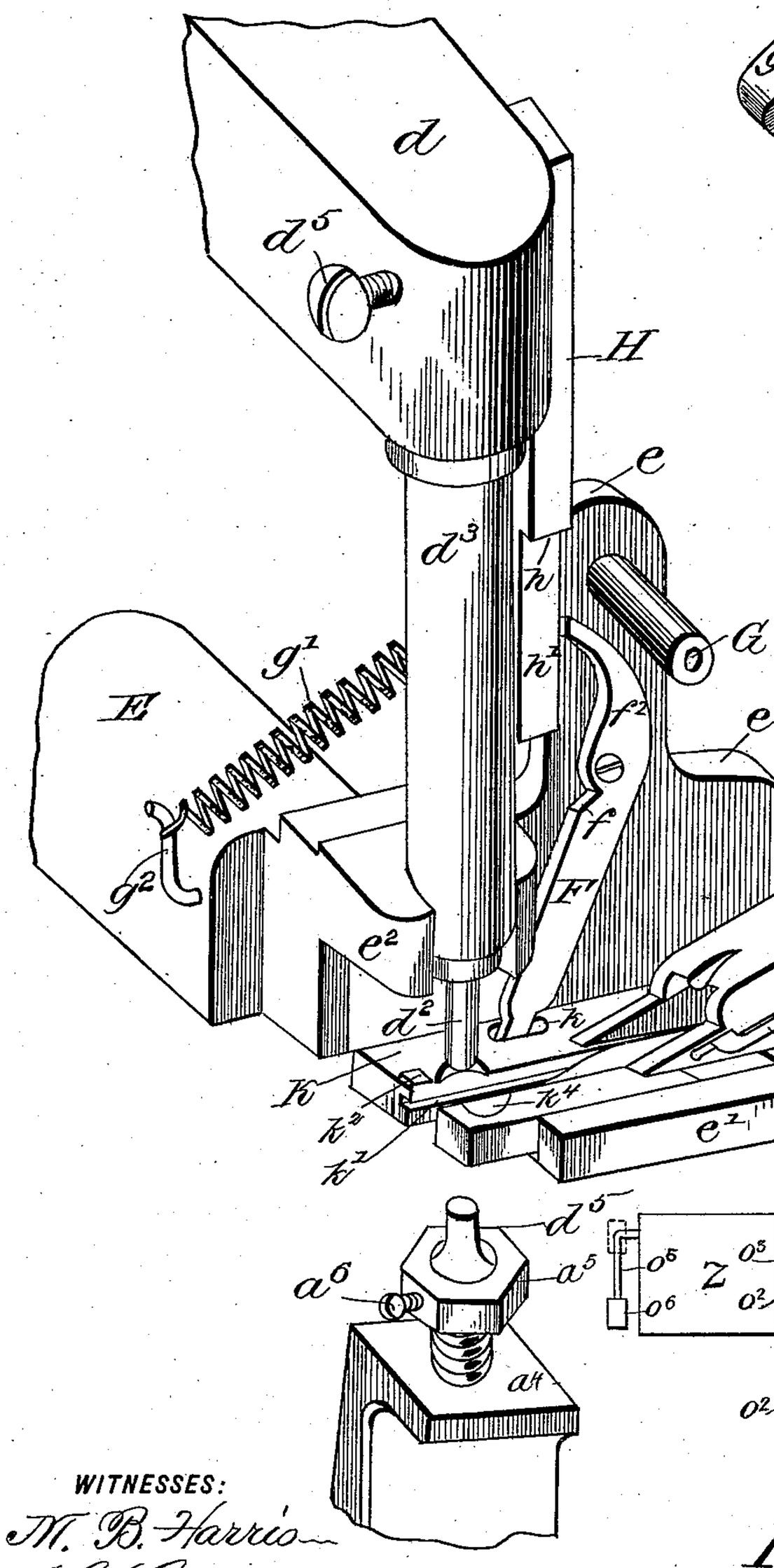


Fig. 3

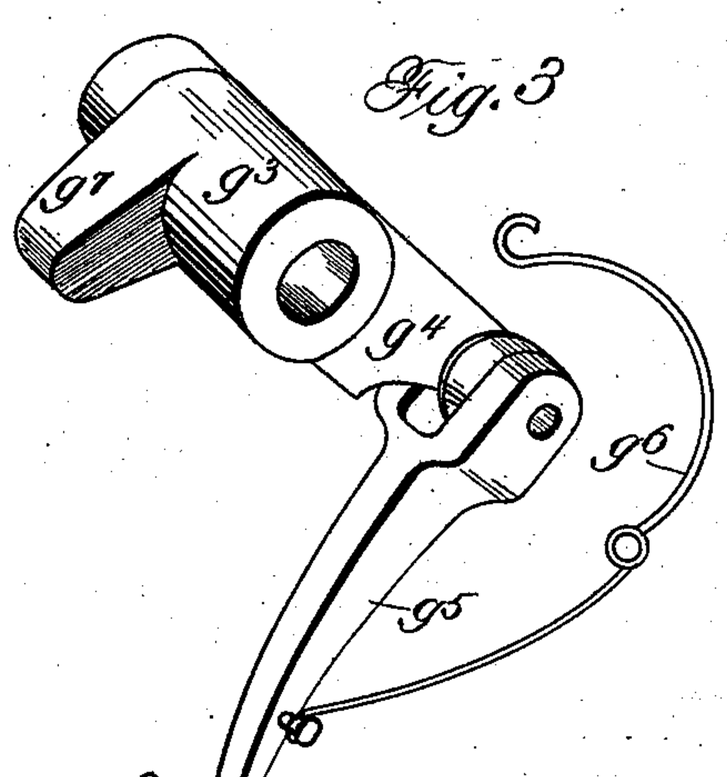


Fig. 6

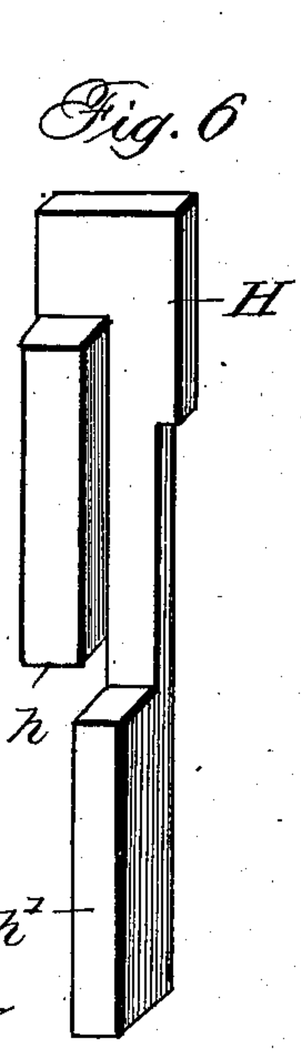
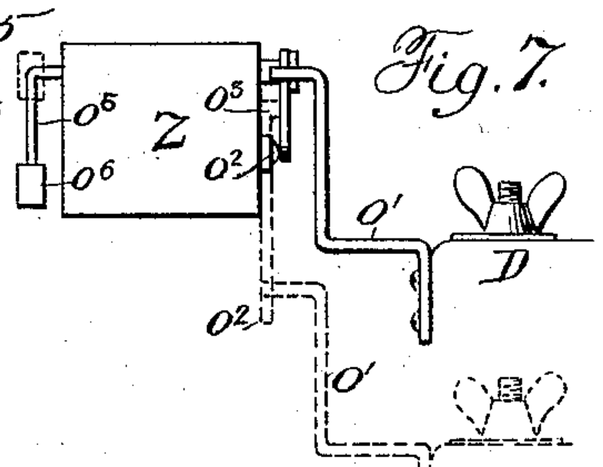


Fig. 7.



WITNESSES:

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UNITED STATES PATENT OFFICE.

HARRY BEECHER BAKER, OF DIGHTON, MASSACHUSETTS.

EYELET-SETTING MACHINE.

SPECIFICATION forming part of Letters Patent No. 567,287, dated September 8, 1896.

Application filed October 25, 1895. Serial No. 566,877. (No model.)

To all whom it may concern:

Be it known that I, HARRY BEECHER BAKER, a citizen of the United States, and a resident of Dighton, in the county of Bristol and State of Massachusetts, have invented certain new and useful Improvements in Eyelet-Setting Machines, of which the following is a specification, reference being had to the accompanying drawings, forming a part thereof, in which similar letters of reference indicate corresponding parts.

This invention relates to eyelet-setting machines, and especially to that class thereof which are adapted for setting celluloid eyelets, although, as will hereinafter appear, it may be used for setting eyelets in shoes and for any other and similar purposes, and the object thereof is to provide a machine of this class which may be operated either by belt or foot power, and which is simple in construction and operation; and with this and other objects in view the invention consists in the construction, combination, and arrangement of parts hereinafter described and claimed.

The invention is fully disclosed in the following specification, of which the accompanying drawings form a part, in which—

Figure 1 is a perspective view of my improved eyelet-setting machine, parts thereof being broken away or shown in section to better illustrate the construction; Fig. 2, a similar view from the opposite side, showing the parts on an enlarged scale. Fig. 3 is a perspective view of the tubular arm carrying the spring-operated setting-finger. Fig. 4 is a plan view of the eyelet-plate and lower portion of the chute. Fig. 5 is a perspective view showing feed-chute, side plates, tubular head, and some of their connections; also, partly in section, the tubular head containing the setting punch or plunger. Fig. 6 is a perspective view of the compound plunger. Fig. 7 represents a side elevation showing in full lines the normal position of the lever O^2 and arm O' and in dotted lines their secondary operating position.

In the practice of my invention I provide a base or support A of any desired form, with which is connected a vertical tubular standard a, which is secured to a table a', and within said tubular standard a is a vertically-movable rod B, and secured to the upper part of the table a' is a tubular head a^2, through which passes an extension b of the vertically-movable rod B, at the upper end of which and secured thereto is a plunger D, and mounted on the extension b of the rod B is a spring b', the lower end of which has a bearing at the bottom of the tubular head a^2 (not shown) and the upper end of which has a bearing beneath the plunger D, and the operation of the spring b' is to support or hold in the highest position the plunger D.

The plunger D is provided with a forwardly-directed arm d, which is secured thereto by means of a bolt or set-screw d', or in any desired manner, and at the forward end of the arm d is a vertically-movable setting-punch d^2, mounted in a tubular head d^3, in which is placed a spring d^4, by which the depressible point of said setting-punch is normally depressed, said punch being provided with a head at its upper end which forms a bearing for said spring, and the head d^3 is held in the arm d by means of a set-screw d^6.

Secured to or formed on the lower end of the tubular head a^2, which forms a continuation of the tubular standard a, is a forwardly-directed arm a^3, at the forward end of which is a standard a^4, and secured to the upper end of this standard by means of a screw-head a^5 and a set-screw a^6 is a female setting-dye d^5, which forms a counterpart of the setting-punch d^2.

Secured to the upper end of the tubular head a^2 is an arm E, which projects in line with the arm d of the plunger D and with the extension a^3 at the lower end of the tubular head a^2, and secured thereto or formed thereon is a standard e and an end plate e', which projects from the bottom thereof forwardly in the direction of the standard a^4 and to the right thereof, and secured to the said arm E is a guide e^2 for the tubular head d^3, in which the setting-punch d^2 is placed. Pivotally connected at its upper end with the standard e is a finger F, provided near its upper end with a notch or recess f, and passing through the upper end of said standard E is a shaft G, provided at its inner end with a downwardly-depending arm g, with the lower end of which is connected a spring g', the outer end of which is connected with the arm E by means of a lug or

projection g^2, and mounted on the outer end of the shaft G and movable therewith is a tubular head g^3, to which is secured an outwardly and upwardly directed arm or lever g^4, on which is pivotally mounted a finger g^5, which is operated by a spring g^6, one end of which is secured to the end of the shaft G and the other to said finger, about the middle thereof, and secured to or formed on the inner side of the tubular head g^3, almost opposite the arm or lever g^4, is a shoulder or lug g^7.

Secured to the outer end of the arm d, immediately over the lug or projection g^7 on the tubular head g^3, is a compound plunger H, provided with a shoulder h and an extension h', and the object of the shoulder h is to operate the lug or projection g^7 and of the extension h' to operate the finger F, as hereinafter described.

Secured in the plate E, and at the outer left-hand corner thereof, is a sliding plate K, in the edge of which is formed a slot k, and in the outer edge or outer end of which is formed a slot k', which opens outwardly and through which the eyelets are fed in the operation of the machine, as hereinafter described, and formed adjacent to the outer end of said slot on one side is a stop or shoulder k^2, which is designed to arrest the movement of the finger g^5, as will be hereinafter described. At the rear of the table a', in line with the tubular head a^2 and the standard a^4, is a hopper L, the upper portion of which is preferably rectangular in cross-section and the lower side walls of which are inclined inwardly and downwardly, as shown at L', so as to form a narrow opening in the bottom thereof, in which is placed a vertically-movable chute M, composed of two similar plates, which are separated by a narrow space m, through which projects a stationary ejector-plate m', the end of which is shown in Fig. 1 and the form of the upper side thereof being shown in dotted lines and being the same as the form of the upper side of the vertically-movable chute M. It will be understood that a portion of the front of the hopper L and of the top and of one side thereof is broken away, this arrangement being for the purpose of showing the interior thereof, and that the opening in the bottom of the hopper is longitudinal thereof or extends in the direction of the tubular head a^2, and that the top of the vertically-movable chute M, when in its lowest position, is level with the bottom of the hopper or the inclined side walls thereof, and that the ejector-plate m', or the top thereof, is even with the top of the movable chute.

Pivotally connected with the side of the tubular head a^2 is a lever N, the outer end of which projects beneath the vertically-movable chute M, and is provided with a head n, by which said chute is operated, and the inner end of said lever N projects inwardly to about the middle of the arm d, and is provided with a cam-head n', the cam-surface of which is directed outwardly and the inner side of which, or that side adjacent to the tubular head a^2, is slightly inclined and provided with teeth or projections n^2, and secured to the arm d, immediately over the cam-head n', is an angular projection or arm O, by which the lever N is operated, as hereinafter described.

Secured to the rear of the plunger D, and at or near the top thereof, is an angular arm O', designed to operate a lever O^2, which is pivotally connected with the side of the hopper L and adapted to operate a cam-head O^3, mounted on the outer end of a shaft O^4, and which extends through the hopper, and the outer end of which is provided with an arm O^5 and a weight O^6, and secured to the shaft O^4, within the hopper, is a brush O^7, which is designed to sweep off all misplaced eyelets from the surface of the movable chute, as will be hereinafter described. Connected and communicating with the front side of the hopper L is a stationary chute P, which extends through the front side of the hopper, which is not shown at this point, and on an exact level with the upper inclined side of the movable chute when the latter is in its highest position, and said chute P is provided with a slot P', which is adapted to communicate with the slot m in the top of the movable chute and to carry the eyelets therefrom down to the operating-plunger and setting-punch in the operation of the machine. This chute may be made in any desired manner, but I prefer to form it of angle-iron and to provide a cover P^2 therefor, and the lower end of the chute, which is inclined, as shown at P^4, is provided with an inclined cap P^5, in the lower end of which is a slot P^6, which communicates with the slot k' in the sliding plate K, and into this slot P^5 and through the slot k' the end of the finger g^5 projects when said finger is driven downward by the arm or lever g^4, as hereinafter described. The lower end of the finger g^5 is backwardly curved, as shown in Fig. 5, and is provided with a side lug or projection g^8, which extends inwardly and rests on the plate P^5 at the side of the slot P^6.

Secured to the inclined side P^4 of the chute is a spring R, the lower end of which is provided with a pointed projection R', which is adapted to project into the slot h' and to hold the eyelets in position to be operated upon by the finger g^5 and to prevent said eyelets from sliding out, except as they are forced out by said finger in the operation of the machine.

The sliding plate K holds the eyelets under the point of the setting-punch b^2 and is withdrawn when said point passes through the eyelets by the finger F, and said plate is held in the extended position by said finger until the proper time for its withdrawal. The finger g^5 picks the eyelets from the lower end of the chute in the operation of the machine, as will be hereinafter described, and places them successively into the depression

k^4 in the sliding table directly under the setting-punch when said plate is in the proper position therefor, and the spring g^6 operates to hold the setting-finger g^5 in the desired position with reference to the chute, and the spring R operates, as hereinbefore described, to hold each successive eyelet in the position to be operated upon by said finger.

The operation is substantially as follows: The plunger D and the arm d are operated by the vertically-movable rod B, which is operated by the lever S, which is pivotally connected therewith, said pivotal connection being not shown, and the said lever S being pivoted at S′, and when the plunger D is forced downward the finger F is moved backward by the plunger h on the compound plunger H, said shoulder h striking the notch or recess f of the finger, and the finger F carries backwardly the sliding plate K, and the limit of the backward motion is such that the slot k' therein extends beyond the projection R′ of the spring R, and at the same time the movable chute M is raised by the lever N by the operation of the angular arm O on the cam-head n' thereof until said chute has been raised about three-quarters of its upward movement, when the arm O reaches the upper portion of the cam-head B′, which is practically level, thus allowing a momentary pause in the upward movement of the chute M, and during which the arm O′ on the back or rear portion of the plunger by continued downward movement of the plunger works the brush O^7 inside of the hopper across the top of the movable chute, sweeping off all misplaced eyelets and leaving all those properly placed in position in the slot m. The movable chute M being made of two pieces, with a space m between them just the width of the body portion of an eyelet, allows all the eyelets which get into the slot m in the proper position, with the rims thereof resting on the sides of the slot, to remain therein, and those which are not so positioned are thrown into the hopper again by the brush O^7. Those getting into chute M sidewise fall down between its plates to be ejected by ejector when chute M is at its lowest point. After the brush O^7 has swept the top of the movable chute, the arm O passes over the rear portion or lost-motion space of the cam n' and continues the upward movement of the chute M, when all the eyelets on the top thereof will, by reason of the slant in the chute from back to front thereof, slide into the permanent or stationary chute P, and said eyelets pass downwardly through said chute to the spring R or the projection R′ thereof, which extends into the slot P^6. When by the downward movement of the plunger D the depressible end of setting-punch d^2 in the tubular head d^3 passes through the eyelet in the depress or cavity k^4 in the sliding plate, said plate is withdrawn from under the setting-punch by the finger F, which is worked by the compound plunger H, as hereinbefore described, thus leaving the eyelet on the depressible point of setting-punch, which carries it downward to the setting-die d^5, and by the continued downward movement of the plunger D and the arm d the depressible point of punch is driven into the tubular head d^4 or the plug in the lower end thereof, through which the setting-punch passes, during which time the eyelet is held in position until the punch sets it right side up. On the upward movement of the plunger the placing-finger g^5 catches an eyelet from behind the projection of the spring R in the permanent chute and slides it into the slot in the movable plate K directly under the depressible point of setting-punch, the sliding plate having been pushed into position by the finger F and held there until the proper time for withdrawal, and in this operation all the other motions or movements of the parts hereinbefore described are reversed, the movable chute M being forced to the bottom of the box, the brush O^7 being carried over the top thereof back to the side of the chute, and, as will be readily understood, these operations may be repeated as often or as rapidly as desired. The object of the arm O^5, connected with the brush-shaft O^4, and the weight O^6, connected with said arm, is to assist in operating said brush-shaft, the latter being turned in one direction across the movable chute by the lever O^2 and the arm O′ and in the other direction by said weight O^6 and the arm O^5. It will also be seen on an examination of Fig. 2 that the finger F is provided at its upper end with an inwardly-directed projection f^2, and this inwardly-directed projection is adapted to operate in connection with that portion of the compound plunger H above the lower portion h', and the shoulder h is formed by means of a raised portion h^3, secured to or formed on the plunger H, and said lower portion h' also consists of an enlarged portion which extends outwardly therefrom, and by means of this construction the finger F is caused to operate the sliding plate K, as hereinbefore described, and it will also be seen that the arm or lever g^4 is operated to produce the result hereinbefore set out by means of the lug or projection g^7, which is also operated by the compound plunger H.

It will be understood that my invention is not limited to the shape or form of the hopper L, or to the shape or form of the plunger H and the arm d, and many changes in and modifications of the construction hereinbefore described may be made without departing from the spirit of my invention or sacrificing its advantages; and I therefore reserve the right to make all such alterations therein and modifications thereof as fairly come within the scope of the invention.

I may also provide means for operating my improved machine by steam or other power, as will be readily understood, all that is necessary for this purpose being to gear the vertically-movable plunger D, or the vertically-

movable rod B, in connection with said motor or power-generator, and it will therefore be observed that my invention is not limited to the means herein described for operating said plunger D.

Having fully described my invention, I claim and desire to secure by Letters Patent—

1. In an eyelet-setting machine, the combination with a vertically-movable plunger, provided with an arm, with which is connected a vertically-movable setting-punch; of a tubular head through which said plunger passes, an extension connected therewith, which supports a counter-die, in connection with which said setting-punch operates, an arm connected with said tubular head and provided with devices operated by the plunger, and the arm connected therewith, for placing the eyelets, a hopper designed to receive said eyelets, a chute leading from said hopper and connecting with said setting devices, and means for feeding the eyelets, into said chute from the hopper, comprising a vertically-movable chute having a slot in the upper side thereof, and the upper portion of which is inclined forwardly, said vertically-movable chute being operated by means of a lever, connected with the arm which is connected with the vertical plunger, substantially as shown and described.

2. In an eyelet-setting machine, the combination of a vertical standard or support, a vertically-movable plunger connected with the upper end thereof, an arm connected with the upper end of said plunger, a tubular head through which said plunger passes, said tubular head being provided with an extension, below said arm, a vertically-movable setting-punch, connected with the outer end of said arm, and a die connected with said extension, and adapted to operate in connection therewith, an arm connected with said tubular head and extending in line with said plunger-arm and said extension, and between the same, eyelet-placing devices connected with the outer end of the arm which is connected with the tubular head, a chute leading from said devices to a hopper containing a vertically-moving chute and means for feeding eyelets into said chute from the hopper, substantially as shown and described.

3. In an eyelet-setting machine, the combination of a vertical standard or support, a vertically-movable plunger connected with the upper end thereof, an arm connected with the upper end of said plunger, a tubular head through which said plunger passes, said tubular head being provided with an extension, below said arm, a vertically-movable setting-punch, connected with the outer end of said arm, and a die connected with said extension and adapted to operate in connection therewith an arm connected with said tubular head and extending in line with said plunger-arm, and said extension, and between the same, eyelet-placing devices connected with the outer end of said arm, a chute leading from said devices to a hopper, and means for feeding eyelets into said chute from the hopper, comprising a vertically-movable chute located therein, said chute being provided with a slot in the upper side thereof extending vertically through it, and an ejector located therein, and said vertically-movable chute being inclined on its upper surface, and the chute connected with the placing devices, being also inclined, and said vertically-movable chute being operated by a lever which is operated by an arm connected with the plunger, substantially as shown and described.

4. In an eyelet-setting machine, the combination of a vertical standard or support, a vertically-movable plunger connected with the upper end thereof, an arm connected with the upper end of said plunger, a tubular head through which said plunger passes, said tubular head being provided with an extension, below said arm, a vertically-movable setting-punch, connected with the outer end of said arm, and a die connected with said extension and adapted to operate in connection therewith, an arm connected with said tubular head and extending in line with said plunger-arm and said extension, and between the same, eyelet-placing devices connected with the outer end of said arm, a chute leading from said devices to a hopper, and means for feeding eyelets into said chute from the hopper, comprising a vertically-movable chute located therein, said chute being provided with a slot in the upper side thereof extending vertically through it, and an ejector located therein, and said vertically-movable chute being inclined on its upper surface, and the chute connected with the placing devices, being also inclined, and said vertically-movable chute being operated by a lever which is operated by an arm connected with the plunger, one end of said lever being in operative connection with the vertically-movable chute, and the other end being provided with a cam-head, and said plunger-arm being provided with an angular arm by which said cam-head is operated, substantially as shown and described.

5. In an eyelet-setting machine, the combination of a vertical standard or support, a vertically-movable plunger connected with the upper end thereof, an arm connected with the upper end of said plunger, a tubular head through which said plunger passes, said tubular head being provided with an extension, below said arm, a vertically-movable setting-punch, connected with the outer end of said arm, and a die connected with said extension and adapted to operate in connection therewith, an arm connected with said tubular head and extending in line with said plunger-arm and said extension, and between the same, eyelet-placing devices connected with the outer end of said arm, a chute leading from said devices to a hopper, and means for feeding eyelets into said chute from the hopper, comprising a vertically-movable chute

also located therein, said chute being provided with a slot in the upper side thereof extending vertically through it, and an ejector located therein, and said vertically-movable chute being inclined on its upper surface, and the chute connected with the placing devices, being also inclined, and said vertically-movable chute being operated by the lever which is operated by the arm connected with the plunger, one end of said lever being in operative connection with the vertically-movable chute, and the other end being provided with a cam-head, said plunger-arm being provided with an angular arm by which said cam-head is operated, and said plunger being provided with the arm which operates the lever connected with the hopper, and a shaft mounted in said hopper, and provided with a cam-head, in connection with said lever, and said shaft being provided with a brush, which operates in connection with the vertically-movable chute, substantially as shown and described.

6. In an eyelet-setting machine, the combination of a vertical standard or support, a vertically-movable plunger connected with the upper end thereof, an arm connected with the upper end of said plunger, a tubular head through which said plunger passes, said tubular head being provided with an extension, below said arm, a vertically-movable setting-punch, connected with the outer end of said arm, and a die connected with said extension and adapted to operate in connection therewith, an arm connected with said tubular head and extending in line with said plunger-arm and said extension, and between the same, eyelet-placing devices connected with the outer end of said arm, a chute leading from said devices to a hopper, and means for feeding eyelets into said chute from the hopper, comprising a vertically-movable chute also located therein, said chute being provided with a slot in the upper side thereof extending vertically through it, and an ejector located therein, and said vertically-movable chute being inclined on its upper surface, and the chute connected with the placing devices, being also inclined, and said vertically-movable chute being operated by the lever which is operated by the arm connected with the plunger, one end of said lever being in operative connection with the vertically-movable chute, and the other end being provided with a cam-head, and said plunger-arm being provided with an angular arm by which said cam-head is operated, and said plunger being provided with the arm which, operates the lever connected with the hopper, and a shaft mounted in said hopper, and provided with a cam-head on one end and weight on the other designed to return said shaft to its normal position after it has been released by the cam-operating lever, in connection with said lever, and said shaft being provided with a brush, which operates in connection with the vertically-movable chute, the outer end of the brush-shaft being also provided with an arm, to which is secured a weight hereinbefore mentioned, said shaft being turned in one direction by said weight and in the other direction by the cam-lever, substantially as shown and described.

7. An eyelet-setting machine constructed substantially as herein shown and described comprising a support, and a table, a vertically-movable plunger provided with a plunger-arm, in the outer end of which is secured a tubular head, in which is placed a movable setting-punch, a tubular head in which said plunger moves, said tubular head being provided with an extension on the outer end of which is supported a die, which operates in connection with the setting-punch, an arm connected with said tubular head and projecting in line with and between the plunger-arm, and said extension, and said arm being provided with eyelet-placing devices, comprising a plate secured thereto, a sliding plate mounted therein, and provided with a standard connected with said arm, a finger pivotally connected therewith, by which said sliding plate is operated, a shaft connected with said standard, on which is mounted an arm or lever, a finger pivotally connected with said arm or lever, for placing the eyelets, and means connected with the plunger-arm, for operating the finger, by which the sliding plate is operated, and also for operating the arm or lever by which the eyelet-setting finger is operated, and means for feeding the eyelets comprising a hopper, a vertically-movable chute, located therein, a stationary inclined chute, leading from the hopper, to the eyelet-setting devices, and means for operating the vertically-movable chute and feeding the eyelets into the stationary chute, substantially as shown and described.

8. In a machine for setting eyelets, the combination of a table or support, a tubular head mounted on said table, a vertically-movable plunger mounted in said head, a plunger-arm connected therewith, an extension connected with the tubular head and extending in the same direction, a setting-punch connected with said plunger-arm, and a die connected with said extension adapted to operate in connection with said setting-punch, an arm connected with said tubular head and extending in line with and between said plunger-arm, and said extension, a plate secured to said arm, a sliding plate mounted therein, and provided with a slot, having a cavity or recess for receiving the eyelets, a standard formed on or secured to said arm, a shaft passing therethrough, and provided at one end with an arm to which is secured a spring, one end of which is secured to the arm connected with the tubular head, a finger pivotally connected with said standard, and to operate the sliding plate, a tubular head mounted on said shaft, and provided with an arm or lever, a placing-finger pivotally con-

nected with said arm or lever and operated by a spring connected with said shaft, a compound plunger connected with said plunger-arm for operating said fingers, and means for feeding the eyelets into position to be operated upon by the setting-finger, and the setting-punch, substantially as shown and described.

In testimony that I claim the foregoing as my invention I have signed my name, in presence of the subscribing witnesses, this 5th day of October, 1895.

HARRY BEECHER BAKER.

Witnesses:

ANNIE M. SULLIVAN,

GEO. L. SOUTHWORTH.