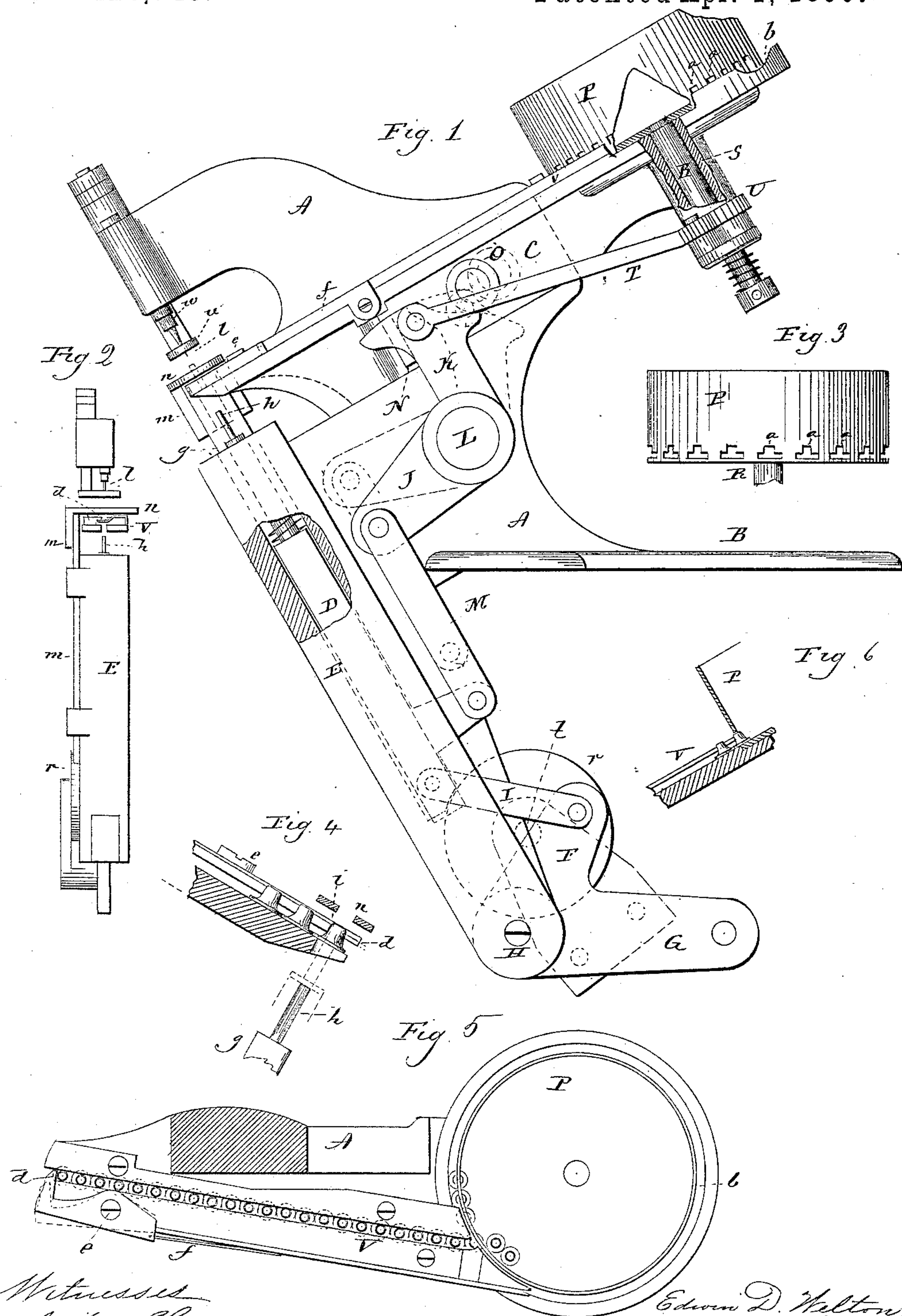


(No Model.)

E. D. WELTON.
EYELET SETTING MACHINE.

No. 424,745.

Patented Apr. 1, 1890.



Witnesses
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UNITED STATES PATENT OFFICE.

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EYELET-SETTING MACHINE.

SPECIFICATION forming part of Letters Patent No. 424,745, dated April 1, 1890.

Application filed August 5, 1889. Serial No. 319,799. (No model.)

To all whom it may concern:

Be it known that I, EDWIN D. WELTON, of Waterbury, in the county of New Haven and State of Connecticut, have invented a new Improvement in Eyelet-Setting Machines; and I do hereby declare the following, when taken in connection with accompanying drawings and the letters of reference marked thereon, to be a full, clear, and exact description of the same, and which said drawings constitute part of this specification, and represent, in—

Figure 1, a side view of the machine complete, portions broken away to illustrate the construction; Fig. 2, a front view of the machine on a reduced scale; Fig. 3, a side view of the hopper detached; Fig. 4, a vertical section centrally through the lower end of the channel, illustrating the setting-punch, follower, and work-plate in relation thereto; Fig. 5, a top view of the channel and hopper detached; Fig. 6, a vertical central section through the channel at the hopper, showing a portion of the hopper and its relation to the channel.

This invention relates to an improvement in that class of machines for setting eyelets in which a mass of eyelets are placed in a hopper and delivered therefrom to a channel, which will lead them to the setting devices, and so that the successive feeding of the eyelets is automatically produced, the setting being performed by a mechanism at the delivery end of the channel, so that the first eyelet in the column is taken therefrom by the mechanism, which will introduce and set the eyelet. In this class of machines it is necessary that the channel shall stand in an inclined position, so that the eyelets introduced therein will run down the channel by their own gravity.

The invention consists in the construction as hereinafter described, and particularly recited in the claim.

A represents the frame or base which supports the mechanism. It is constructed with a flange B in a horizontal plane, adapted to secure the frame to a bench, in front of which the operator may stand.

In the frame a sliding carriage C is arranged in suitable guides, but in a position inclined downward and forward at an angle of about

thirty degrees to the horizontal bed. At the forward side of the frame a slide D is arranged in a suitable guide E, and so as to receive reciprocating movement at right angles to the carriage C. The reciprocating movement is imparted to the slide D and the carriage C by means of a bell-crank lever F G, hung upon an axis H, at the lower end of the guide portion E of the frame. To the arm G of the said lever a pedal-connection is applied, (not shown,) and by which, through the foot, a vibratory movement may be imparted to the said lever. From the other arm F of the said lever a connecting-rod I joins the said arm F with the slide D, and so that the vibratory movement of the said lever F G will impart a corresponding reciprocating movement to the slide D.

Below the carriage C a second bell-crank lever J K is hung upon an axis L. A connecting-rod M joins the arm J of the said second lever with the slide D, as seen in Fig. 1. The arm K of the said second lever works between a lug N and an anti-friction roll O on the carriage, and so that the reciprocating movement of the said slide D will impart a corresponding reciprocating movement to the carriage C, as indicated in broken lines, Fig. 1.

P represents the hopper which is of cup-shape, its bottom closed. This hopper stands in a plane parallel with the carriage C, and is fixed to a shaft R, supported in a bearing S in the said carriage and so that the hopper may receive a reciprocating movement from the said carriage at the same time a rotary motion is imparted to the hopper P by means of a pawl T, hung to the arm K of the said second lever, working into a ratchet-wheel U on the hopper-shaft R. There is a lost motion between the arm K of the said second lever and the points of bearing on the carriage C, so that in the first part of the backward movement of the said lever K the said pawl T will operate upon the ratchet U before the arm comes into engagement with the anti-friction roll O, and thus will impart one step rotation to the hopper P.

Above the carriage and in a plane parallel therewith the channel V is arranged. This

channel runs upward and terminates at the periphery of the hopper in a plane with the bottom of the hopper, as seen in Figs. 5 and 6.

The hopper is constructed with a series of 5 openings *a* through its side and in the plane of its bottom. Each of these openings is in the shape of the vertical central section of an eyelet, but slightly larger, so that an eyelet placed in the hopper, with its flange on the 10 bottom of the hopper, may pass through either of the said openings, as represented in Fig. 6. The hopper near its bottom is surrounded by a flange *b*, distant from the hopper, so that 15 an eyelet may enter the openings and stand therein, but be prevented from passing outward, as clearly seen in Fig. 5. At a point corresponding to the channel this flange is omitted, so that the eyelets carried by the said openings in the hopper as they reach the chan- 20 nel may escape from the hopper into the channel, as clearly seen in Fig. 5.

The mass of eyelets is placed in the hopper, and the intermittent rotation imparted to the hopper agitates the mass, so as to cause 25 them to constantly change their position, and so that those upon the bottom having the flange downward and coming into the path of the openings *a* will enter therein, as seen in Fig. 5, and be carried around until they 30 reach the channel, and thus will keep the channel constantly supplied with eyelets.

At the lower end of the channel a stop *d* is hung, as at *e*, and so as to swing in a plane 35 parallel with the plane of the channel. This stop is of L shape, its pivot *e* being the end of the setting-punch *g*, the spindle being of a diameter corresponding substantially to the internal diameter of an eyelet, and the posi- 40 tion of the setting-punch and the spindle is such with relation to the channel that when the channel is in the down position, as seen in Fig. 1, and as also seen in Fig. 4, the first 45 eyelet *i* in the channel will stand directly over the spindle, and so that as the spindle rises, as seen in broken lines, Fig. 4, it will pass through the said first eyelet *i*. After the spindle has thus entered the said first eyelet the carriage C retreats, taking the channel and the column of eyelets rearward; but the 50 first eyelet, being held by the spindle *h*, cannot so retreat. The stop *d* yields, as seen in broken lines, Fig. 5, and so that the said first eyelet will remain upon the spindle *h* while the column retreats.

55 In the frame above the spindle and setting-punch *g* and in axial line therewith the stationary piercer *l* is arranged, this piercer being provided to pierce the hole in the material through which the eyelet is to be intro- 60 duced.

m represents a slide on the side of the frame, arranged to move parallel with the slide D. At its upper end it is turned at right angles to form a work-plate *n* above the channel and 65 directly over the setting-punch *g* and spindle *h*, as seen in Figs. 2 and 4.

A vertical reciprocating movement is imparted to the slide *m* by means of a roller *r*, hung upon an axis *t* on the arm F of the foot-pedal lever. This roller acts as a cam against 70 the lower end of the slide *m*, as seen in Fig. 2, and also seen in broken lines, Fig. 1, and so that under the vibration of the said pedal-lever G in one direction the work-plate *n* will be raised, and on the return of the said lever the 75 said work-plate will drop, as indicated in broken lines, Figs. 1 and 4.

The work-plate *n* has an opening through it corresponding to the flange of the eyelet, and so that the eyelet may pass up through 80 that work-plate. Above this work-plate is a spring presser-foot *u*, through which the piercer *l* may work. This spring presser-foot and the work-plate *n* serve as clamps, between which the material in which the eyelet is to 85 be set may be introduced, and in the usual manner of eyeleting-machines. Under this construction, whereby the setting mechanism is arranged at right angles to the inclined channel, the channel is straight throughout 90 and delivers the eyelets to the setting mechanism in the same plane in which they leave the hopper. Consequently the clogging because of the curve of the hopper before mention is avoided. 95

In operation the carriage C stands in its forward position with the lower end of the channel and the first eyelet directly over the setting-punch and spindle *h*, as seen in Fig. 4.

In operation the material into which the 100 eyelet is to be set is introduced between the work-plate *n* and the spring presser-foot *u*. Then the slide D is forced upward, carrying the spindle *h* through the first eyelet *i*, as before described. At the same time the work- 105 plate *n* rises and clamps the work between it and the presser-foot *u*. The carriage C, with the channel, then recedes, leaving the eyelet upon the spindle, which, continuing its upward movement, strikes upon the under side 110 of the material to which the eyelet is to be introduced and follows that material, the spring of the spindle yielding as may be necessary. The work-plate and the presser-foot, with the work clamped between, also rise, 115 carrying the material onto the piercer *l*, which punches the hole through the material. The spindle stops when it comes in contact with the point of the piercer; but the setting-punch *g* continues and forces the eyelet through the material and against its companion setting- 120 punch *w* above, and so as to set the eyelet into the material in the usual manner. Then, the parts returning to their normal position, the material is moved to the position for the 125 second eyelet and the next eyelet taken from the channel, set, and so on, successive eyelets are taken from the channel and set.

The peculiar construction of the hopper, which I have described, may be employed in 130 eyelet-setting machines in which the mechanism for setting is arranged vertically, in-

stead of at right angles, to the plane of the channel, as I have described. I therefore do not wish to be understood as limiting my invention to the relative arrangement of the setting mechanism and the channel, which I have described.

I do not wish to be understood as claiming, broadly, a rotating hopper for an eyeletting-machine having openings through its side for the escape of eyelets from the hopper into the channel, as such, I am aware, is not new; but I am not aware that such a hopper has been constructed with the bottom as substantially an integral part thereof, having the openings through the side of the hopper in the plane of the said bottom, and whereby the hopper is made of cup shape, fully open at the top, and so that the bottom and hopper rotate together, such being the essential features of this invention.

I claim—

In an eyelet-setting machine, the combination of a setting mechanism, a stationary chan-

nel leading thereto, adapted to receive and conduct eyelets to the said setting mechanism, a hopper of cup shape, the bottom of the hopper substantially an integral part thereof, the side of the hopper constructed with a series of openings extending up from the plane of the said bottom, each opening corresponding in shape substantially to the vertical central section of a single eyelet, the said hopper arranged upon a shaft at right angles to the plane of said channel, and so that the said hopper with its integral bottom may rotate in a plane parallel with the plane of said channel, and so that the said openings may at predetermined times successively register with said channel, and mechanism, substantially such as described, to impart intermittent rotation to said hopper, substantially as specified.

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Witnesses:

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