(No Model.) 3 Sheets—Sheet 1.

E. S. PARSONS.

MACHINE FOR CUTTING OFF BLANKS FOR NEEDLES.

No. 394,661. Patented Dec. 18, 1888.

Fig. 1.

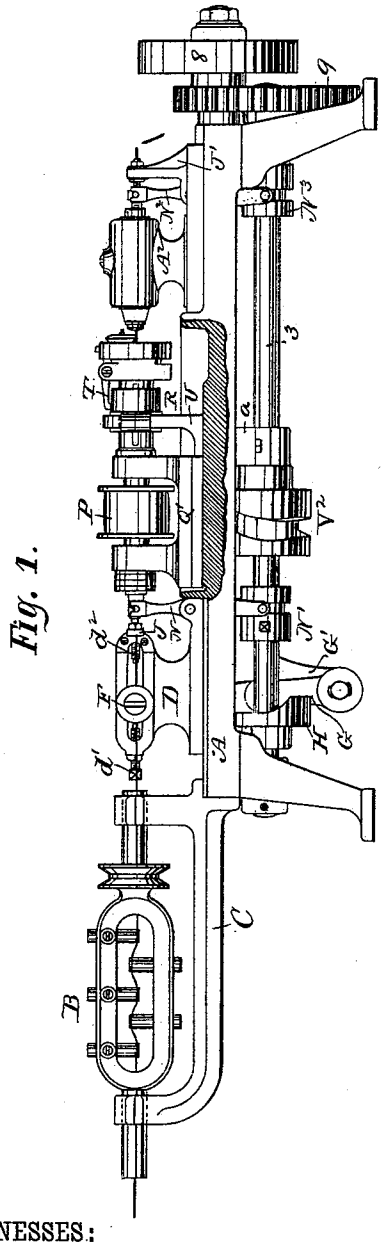
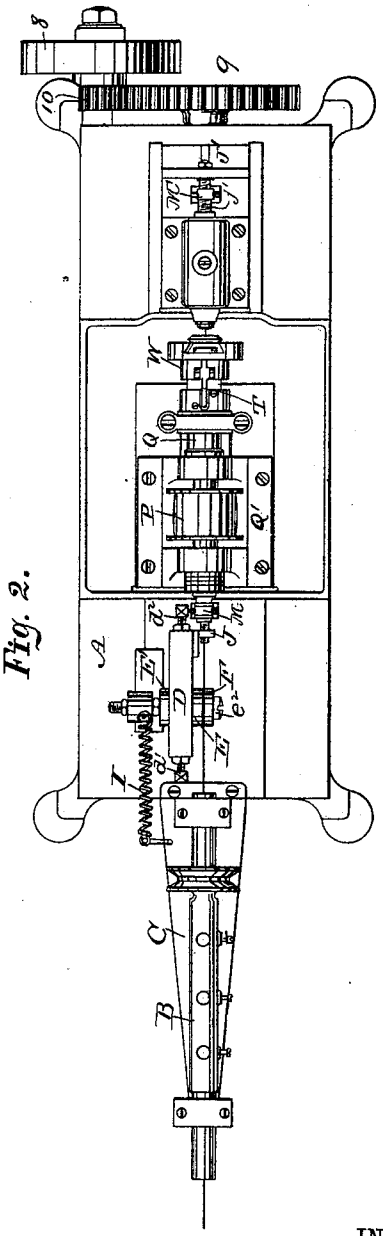


Fig. 2.



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MACHINE FOR CUTTING OFF BLANKS FOR NEEDLES.

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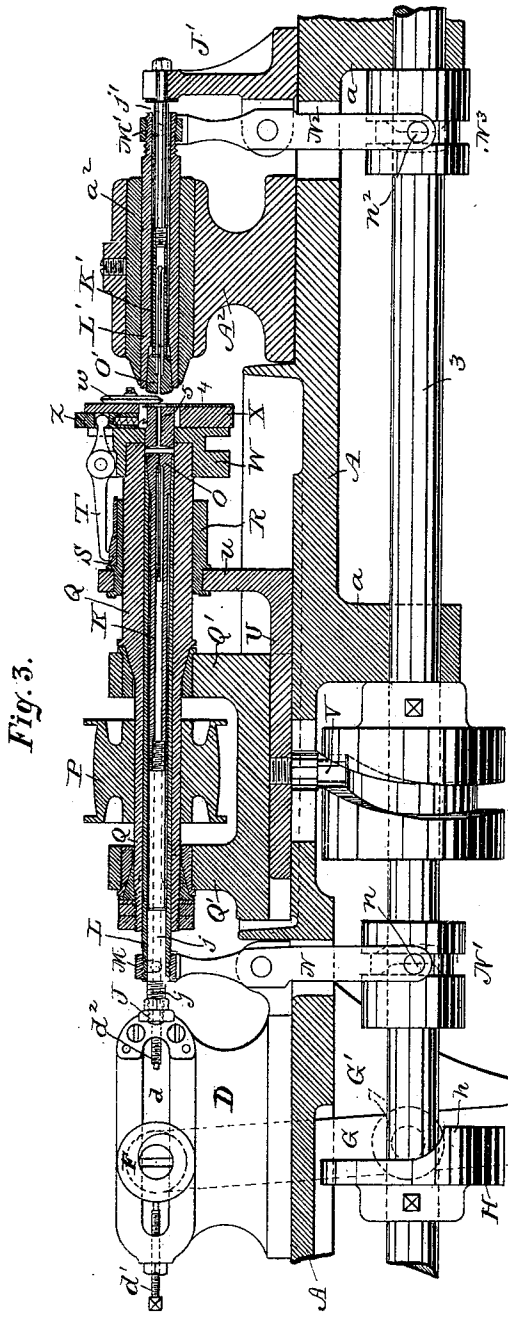


Fig. 3.

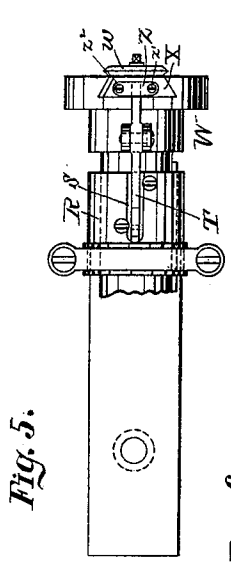


Fig. 5.

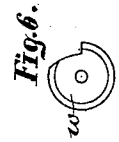


Fig. 6.



Fig. 8.

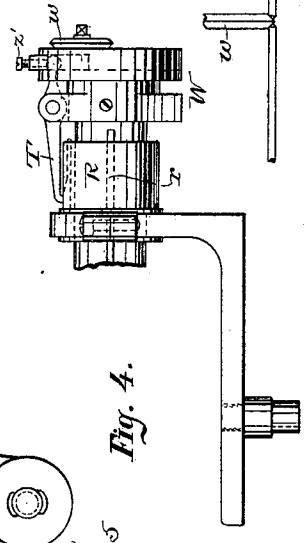


Fig. 4.

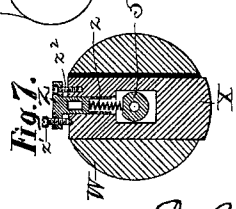


Fig. 7.

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(No Model.) 3 Sheets—Sheet 3.

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Fig. 9.

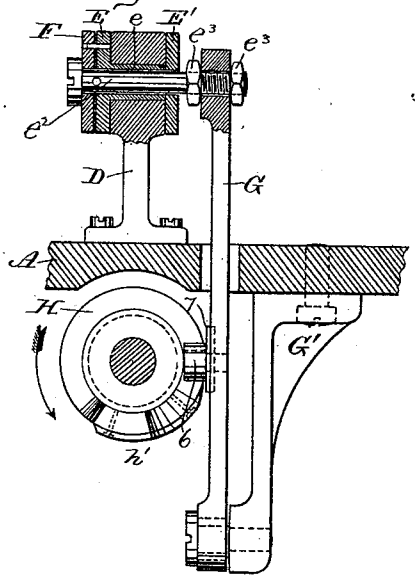


Fig. 10.

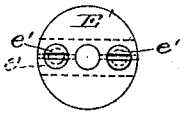


Fig. 11

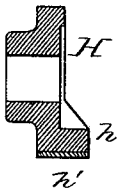


Fig. 12.

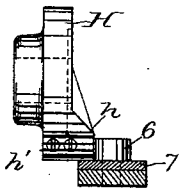
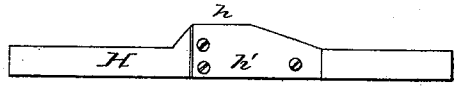


Fig. 13.



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UNITED STATES PATENT OFFICE.

EMORY S. PARSONS, OF ELIZABETH, NEW JERSEY, ASSIGNOR TO THE SINGER MANUFACTURING COMPANY OF NEW JERSEY.

MACHINE FOR CUTTING OFF BLANKS FOR NEEDLES.

SPECIFICATION forming part of Letters Patent No. 394,661, dated December 18, 1888.

Application filed July 6, 1888. Serial No. 279,170. (No model.)

To all whom it may concern:

Be it known that I, EMORY S. PARSONS, a citizen of the United States, residing at Elizabeth, in the county of Union and State of New Jersey, have invented certain new and useful Improvements in Needle-Blank-Cutting Machines, of which the following is a specification, reference being had therein to the accompanying drawings.

The object of my invention is to provide a simple and reliably-operating machine for cutting off blanks for sewing-machine needles from a continuous length of wire, the blanks being severed in such a manner that the ends thereof are smooth and of uniform shape, and the wire from which the blanks are cut being fed forward automatically as the cutting operations continue.

To this end I have constructed the machine illustrated in the accompanying drawings, in which—

Figure 1 is a side elevation, partly broken away, of my improved machine. Fig. 2 is a plan view of the same. Fig. 3 is a longitudinal sectional elevation of the same on a larger scale than Figs. 1 and 2, some parts at the ends of the machine being omitted. Fig. 4 is a detail side view of the cutter-head and adjacent parts. Fig. 5 is a plan view of the parts shown in Fig. 4. Fig. 6 is a detail side view of the circular cutter. Fig. 7 is a section of the cutter-head and cutter-carrying slide and the regulating-gage for the latter. Fig. 8 illustrates the operation of the cutter. Fig. 9 is a detail sectional view to illustrate the wire-feeding clamp. Fig. 10 is a detail end view of the wire-feeding slide forming part of the wire-feeding clamp. Fig. 11 is a detail section of the cam which operates the wire-feeder. Fig. 12 is a plan view of said cam, showing the wire-feeding lever in section. Fig. 13 is a diagram or projection of the wire-feeding cam.

A denotes the bed of the machine, provided with hangers *a*, in which is journaled a cam-shaft, 3, provided with a gear-wheel, 9, meshing with a pinion, 10, rigidly connected with a driving-pulley, 8, rotating on a suitable shaft or stud attached to the bed or machine-frame, said cam-shaft carrying the wire-feeding cam-disk H, the chuck-operating cams N′ and N^3, and the cutter-slide-operating cam V^2.

B is a rotary wire-straightener mounted in a bracket, C, attached to the bed A.

D is a bracket attached to bed A and provided with a guiding-slot, *d*, in which slides the clamping wire-feeder consisting of the block *e*, of the form indicated by dotted lines, Fig. 10, and having the flanges E and E′ and the clamping-disk F. The flanges E and E′ embrace the upper part of the bracket D, as shown in Fig. 9, the flange E being integral with the block *e* and the flange E′ being attached to said block by screws *e′*, as shown in Fig. 10. Passing loosely through the disk F and flanged block *e* is a bolt, e^2, having a head impinging against said disk, said bolt being secured to the upper end of a lever, G, pivoted at its lower end to a bracket, G′, attached to the bed A. The bolt e^2 passes loosely through the said lever and is attached to the latter by the nuts e^3.

The lever G is provided with a roller-stud, 6, which is held in contact with a slide or face cam, *h*, on the cam-disk H by a spring, I, said lever having also a hardened plate, 7, let into it in proper position to be engaged by the peripheral cam *h′* on the said cam-disk. The said peripheral cam *h′*, acting against the plate 7, will impart a slight lateral movement to the lever G, and thus cause the bolt e^2 to force the disk F toward the flange E, and thereby clamp or grasp the wire passing between said disk and flange, so that as the lever G is moved forward by the face-cam *h* acting against the roller stud 6 the wire thus grasped will be fed forward a distance equal to the throw of the wire-feeding clamp. The cams *h* and *h′* are so constructed that they both act on the lever G at the same time, and thus when the said lever reaches the forward end of its stroke the wire will be released, and the wire-feeding clamp can then move freely backward as the lever is retracted by the spring I.

The bracket D is provided with adjusting-screws *d′* d^2. The screw *d′* limits the backward movement of the wire-feeding clamp and lever G, and thus determines the length of feed, and the screw d^2 is adjusted so as to prevent overthrow of the wire-feeding clamp, so

that the feed will always be exactly uniform for a given adjustment of the screw d'.

Attached to the bracket D is an angle-bracket, J, which serves as a support for the rear end of a tube, j, through which the wire passes to the chucks and on which slides the sleeve L, having an inclined inner face at its forward end to operate the rear chuck, O, carried by the chuck-spindle K, the latter having a screw-threaded connection with said tube. The rear end of the sleeve L is threaded to receive a screw collar or nut, M, having pins resting in notches in the upper forked end of a lever, N, pivoted to a part of the bracket D, and having at its lower end a pin or roller-stud, n, which enters the groove of the cam N′ on the shaft 3.

O′ is the forward chuck carried by the spindle K′, having a screw-threaded connection with the tube j', supported by the bracket J′, attached to the bed A. The said chuck O′ is operated to cause it to bite the wire by the sliding sleeve L′, having an inclined inner face at its operating end, and on said sleeve is mounted the screw-collar M′, provided with pins resting in the forked upper end of the lever N^2, pivoted to the bracket J′, said lever having a pin or roller-stud, n^2, entering the groove of the cam N^3, and the said sleeve L′, sliding in a tube, a^3, fastened in the support A^2 on the bed A.

The screw collars or nuts M and M′ may be turned on the threaded ends of the sleeves L and L′ to compensate for wear of the cams N and N^3.

Q is a hollow cutter-carrying spindle or shaft provided with a driving-pulley, P, and having bearings in the spindle-head or support Q′, fastened to the bed A. Attached to the forward end of the spindle or shaft Q is the cutter-head W, which is provided with a dovetailed recess for the reception of the slide X, to which is screwed or otherwise suitably secured the circular cutter w. The screw or bolt by which the circular cutter w is secured to the slide X holds the said cutter rigid with relation to the said slide, so that as the latter rotates with the cutter-head the cutter will act against the wire to be severed in the same manner that an ordinary cutting-die would as the cutter-carrying slide is forced inward. The said cutter-head is also provided with the bushing 5, through which the wire passes to the said cutter. The front of the slide X is covered by a sheet-metal guard, 4, to prevent chips from clogging the joints of the said slide.

Partly beneath the spindle head or support Q′ is a slide, U, having a roller-stud, V, entering the groove of the cam V^2 on the shaft 3, the said slide having an upwardly-extending arm, u, engaging a sleeve, R, connected with the shaft Q to rotate therewith by the spline r, Fig. 4, said sleeve being provided with an incline or former, S, on which rests the rear end of a lever, T, pivoted in the cutter-head W, and having a rounded forward end which enters a slot, z^3, in an adjusting-gage, Z, attached to the cutter-carrying slide X. As the slide U and sleeve R move forward, the cutter-carrying slide X will be operated to force the cutter inward to sever the wire, and as the lever T has an adjustable connection with said slide X through the gage Z it is obvious that the inward movements of the cutter can be regulated with greatest exactness, the incline or former S and cam V^2 being shaped to allow a rest to the cutter after the blank is severed to make a smooth and uniform end to the wire from which the next blank is to be formed.

Between the gage Z and the bushing 5 is a spring, z, received in a recess in said gage, said spring serving to effect the outward movement of the cutter-carrying slide and to hold the rear end of the lever T against the incline or former S.

The gage Z is preferably attached to the slide X by the screws z' z^2, the former arranged to push the said gage outward by abutting against said slide, and the screws z^2 serving to draw said gage inward by being tapped in the slide, all as clearly shown in Fig. 7.

When the machine is in operation, the shaft Q is rapidly rotated by a belt running on the pulley P, and the cam-shaft 3, operating independently of the shaft Q, is more slowly rotated from the pulley 8 through the pinion 10 and gear 9. The wire is fed forward by the feeding-clamp consisting of the block e, its flange E′, and the disk F to the chucks O and O′, the said chucks being operated to grasp the wire by the sliding sleeves L and L′, the operating mechanism of the said chucks being so timed that they will grasp the wire before the feeding-lever G flies back, a short rest being allowed said lever after it has completed its forward stroke, as will be understood from the shape of the cam h, as shown by Fig. 13, to give the chucks time to grasp the wire. When the wire has been grasped by the chucks, the slide U and sleeve R move forward, and the incline or former S on the latter causes the lever T to force the cutter-carrying slide X inward, and thus cause the cutter rotating with the cutter-head and traveling around the wire to impinge against the latter and sever the blank, a rest being given to the cutter at the end of its inward movement after a blank has been severed to smooth the end of the wire from which the next blank is to be cut, as hereinbefore stated. The severed blanks are pushed forward through the chuck-spindle K′ and the tube j', falling from the latter into any proper receptacle which may be placed for them. Thus the operation continues, cutting the blanks automatically so long as the machine is in motion and is supplied with wire.

Although I have described my machine as specially designed for cutting blanks for sewing-machine needles, it is obvious that it may be used for cutting other blanks from a con-

tinuous wire, and I do not, therefore, wish to be understood as limiting the use of my machine to cutting needle-blanks. It will also be understood that the details of my machine may be varied within the province of mechanical skill without departing from the spirit of my invention.

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

1. In a needle-blank-cutting machine, the combination, with a rotary wire-straightener and a wire-feeder, of two wire-holding chucks and a rotary cutter arranged to sever the wire between the said chucks.

2. In a needle-blank-cutting machine, the combination, with a wire-feeder and two wire-holding chucks, of a rotary cutter-head, a cutter-carrying slide mounted in said head, a cutter rigidly secured to said slide and arranged to sever the wire between the said chucks, a lever pivoted to said head and serving to operate said slide, and a sliding sleeve rotating with said head and having an incline or former to operate said lever.

3. In a needle-blank-cutting machine, the combination, with a rotary spindle or shaft and a cutter-head attached thereto, of a cutter-carrying slide mounted in said head, a lever for operating said slide, a sliding sleeve rotating with said shaft and having an incline or former for operating said lever, a wire-feeder, two wire-holding chucks, a cam-shaft rotating independently of the cutter-carrying shaft, and having cams connected with and serving to operate said wire-feeder, chucks, and sliding sleeve.

4. In a needle-blank-cutting machine, the combination, with two hollow chuck-spindles and two chucks carried thereby, of two sliding sleeves having inclined ends to operate said chucks and cause them to grasp the wire, a rotary cutter arranged to sever the wire between said chucks, two levers to operate said sleeves, and a cam-shaft having cams to vibrate said levers.

5. The combination, with the bracket D, having the angle-plate J, of the tube *j*, attached to the said angle-plate, the chuck-spindle K, attached to said tube, the chuck O on said spindle, the sliding sleeve L, having the flaring or inclined forward end to close the jaws of the said chuck, the screw collar or nut M on said sleeve, the lever N, the cam N′, the shaft 3, and the hollow shaft Q, in which said sleeve slides.

6. The combination, with the bracket J′, of the tube *j*′, attached thereto, the chuck-spindle K′, connected to said tube, the chuck O′, carried by said spindle, the sliding sleeve L′ to close the jaws of the said chuck, the screw collar or nut M′, the lever N^2, the cam N^3, the shaft 3, and a tubular or hollow support in which said sleeve slides.

7. The combination, with the bed A, of the spindle head or support Q′ thereon, the spindle or shaft Q, journaled in bearings in said support and provided with the pulley P, the sliding sleeve R, splined or otherwise connected to said shaft to rotate therewith, the slide U to reciprocate said sleeve, the stud or pin V, the cam V^2, and the shaft 3.

8. The combination, with the spindle or shaft Q, of the cutter-head W, secured thereto, the slide X, mounted in said cutter-head, the cutter *w*, carried by said slide, the slide-operating lever T, the gage Z, forming an adjustable connection between said lever and slide, and the sliding sleeve R, having the former or incline S to operate said lever.

9. The combination, with the shaft Q, the cutter-head W, and the cutter-carrying slide X, of the gage Z, having the slot z^3, the screw *z*′, abutting against said slide, the screw z^2, tapped in said slide, the lever T, having a rounded forward end entering said slot, the spring *z*, and the sliding sleeve R, having the incline or former S.

10. The combination, with the cutter-head W and the cutter-carrying slide X, of the sheet-metal guard or plate 4, to cover the joints between said slide and head.

In testimony whereof I affix my signature in presence of two witnesses.

EMORY S. PARSONS.

Witnesses:
PHILIP DIEHL,
JAMES G. GREENE.