(No Model.)

J. H. BULLARD.

MACHINE FOR SWAGING NEEDLE BLANKS.

No. 260,655. Patented July 4, 1882.

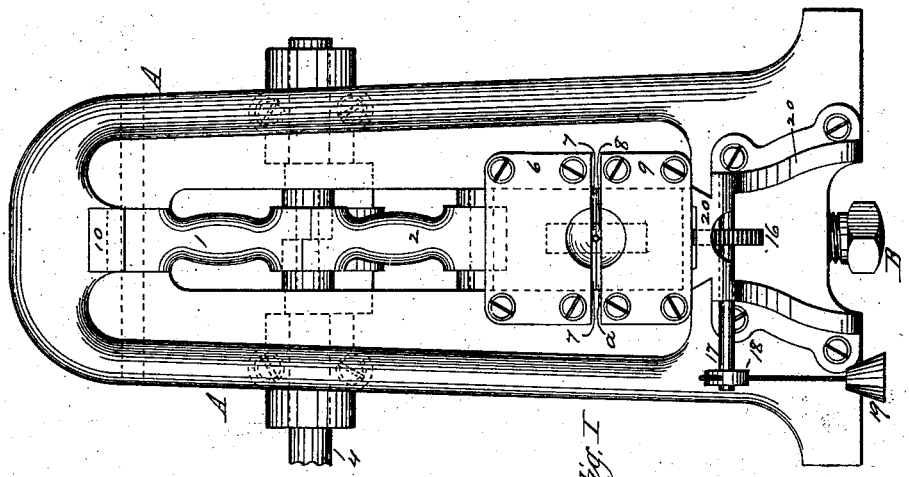

Fig. I.

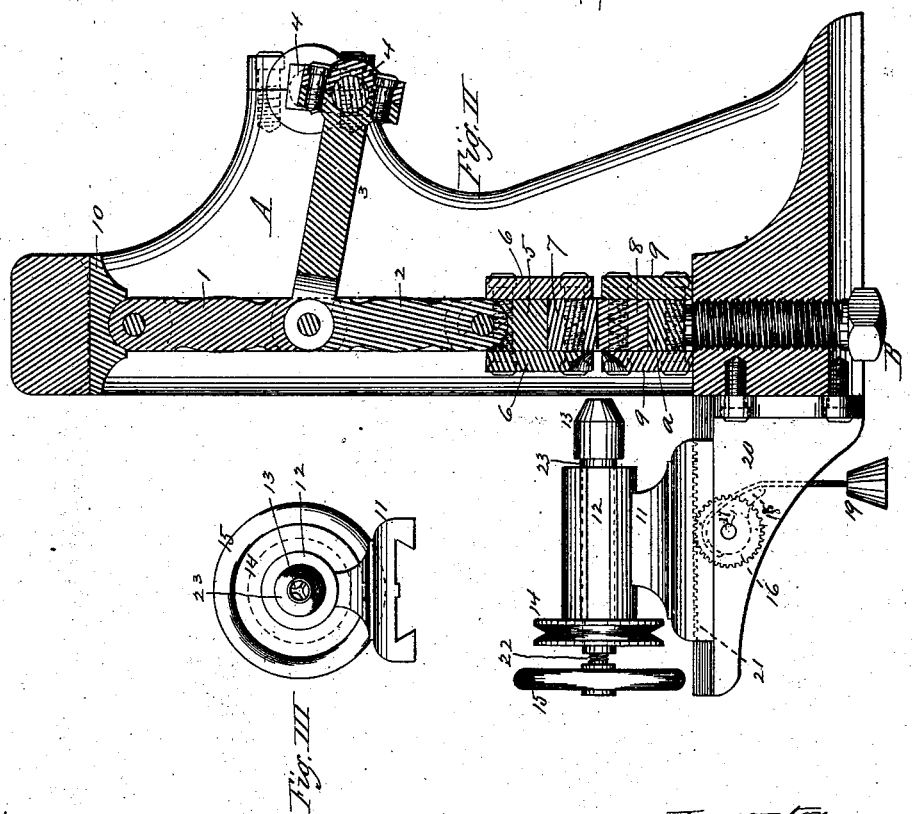

Fig. II.

Fig. III.

Witnesses.
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UNITED STATES PATENT OFFICE.

JAMES H. BULLARD, OF SPRINGFIELD, MASSACHUSETTS.

MACHINE FOR SWAGING NEEDLE-BLANKS.

SPECIFICATION forming part of Letters Patent No. 260,655, dated July 4, 1882.

Application filed August 19, 1881. (No model.)

To all whom it may concern:

Be it known that I. JAMES H. BULLARD, of Springfield, in the county of Hampden and State of Massachusetts, have invented a new and useful Improved Machine for Forming Needles, of which the following is a specification and description.

The object of my invention is to give the approximate form to sewing-machine and other needles by subjecting the wire from which they are made to a rapid succession of compressions between two dies while the wire or blank is being rapidly revolved by a chuck or holder; and I accomplish this by the mechanism substantially as hereinafter described, and illustrated in the accompanying drawings, in which—

Figure I is a front view of a compressing-machine, made according to my invention with the movable chuck and its carriage removed. Fig. II is a vertical section of the same by a plane through the axis of the dies; and Fig. III is an end view of the revolving chuck or holder, which holds and revolves the needle-blank while being formed.

In the drawings, A represents the frame, which should be sufficiently strong and heavy, in which a crank-shaft, as 4, revolves in suitable bearings, with a pitman, as 3, connected at one end with the crank of said shaft, and which at the other end is pivoted to two knuckle-bars, as 1 and 2, the former being pivoted, at its upper end, to the upper part of the frame or to a piece, as 10, secured therein, and the other knuckle-bar 2 pivoted, at its lower end, to a plunger, as 5, containing a die, as 7, said plunger being movable between two guide-plates, as 6; and the die 8 is secured in a firm position in a stationary block, as *a*, properly secured in the machine, preferably between two plates, as 9, bolted to the front and back of the machine, with an adjusting screw, as B, turned up through the lower end of the machine and against said block *a*, by which means the die 8 may be adjusted up or down by loosening the plates 9, turning the screw B either up or down, with the block *a* resting thereon, and then tightening the plates 9 against the block *a* when the vertical adjustment is completed.

The carriage-way 20 is bolted to the front of the frame, and on this is arranged, to slide freely toward and from the frame, the carriage 11, with a spindle-chuck, as 23, having jaws, as 13, at one end, into or between which the wire or blank is inserted and held while being formed or compressed. This spindle is provided with a small pulley, as 14, to receive a cord or band to cause the spindle and jaws to revolve rapidly, and the jaws 13 may be opened and closed by a screw, as 22, turned into the rear end of the spindle and operating the jaws.

In order that the carriage 11 may move automatically toward the dies 7 and 8 a shaft, as 17, is made to revolve in suitable bearings in the carriage-way, the shaft lying at right angles to the track on which the carriage moves and having an arm, as 18, attached to said shaft, and a cord and weight, as 19, attached to said arm, and with a toothed wheel or pinion, 16, secured to said shaft and engaging with a rack made upon or attached to the lower side of the carriage 11, as shown clearly in dotted lines in Fig. II.

If the end of the cord is secured to the cam-shaft, or to the cam itself near the shaft, and extends over the cam, with a weight suspended at the free end of the cord, when the cam extends toward the dies the weight will pull harder to revolve the shaft and move the clutch toward the dies than it will when the cam extends in a vertical direction, and if, when the cam extends toward the dies the needle-blank—already placed in the chuck—is brought up to the dies, the weight will exert its greatest force on the shaft and feeding-carriage through the medium of the cam to force the blank in between the dies, and after it has passed in and the needle has been formed the cam will then have moved down into a position such that the weight will exert little force upon it to force the needle-blank any farther in between the dies.

Instead of the weight being attached to a cord and the latter passing over the cam, the weight may be suspended directly from the cam, and the result will be precisely the same. The adjustment of the forming-dies 7 and 8 is such that the axis of the matrix formed by them, which gives the desired form to the needle when the dies are brought together, and the axis of the holding-jaws 13 coincide, so that when a blank is placed in the jaws and held

between the dies 7 and 8, and the spindle-chuck and needle-blank are revolved rapidly, the blank will be uniformly compressed at all points toward its axis by the rapid vertical movement of the movable die in the plunger, this die making two movements or compressions against the needle at each revolution of the crank-shaft.

It is evident that the carriage 11 may be moved toward and from the dies by the hand placed on the hand-wheel 15, by which the screw 22 is turned in and out, and without using the automatic feeding mechanism, if desired; but by using the feeding mechanism two machines, placed side by side, may be attended to by one operator, who in that case will only be required to pull back the carriage after one needle is formed, remove the latter from the jaws, and insert another blank, leaving the carriage and chuck to move up itself while the blank is held therein.

Having thus described my invention, what I claim as new is—

In a needle-forming machine, the combination of two compressing-dies, one fixed and the other movable, between suitable guideways or plates, and actuated by a crank and a pitman pivoted to two knuckle-bars toggled together, one of which bars is connected to a fixed pivot and the other to a plunger carrying said movable die, a revolving chuck or holder for holding and revolving the needle between said dies while being formed, and a movable carriage provided with a rack engaging with a revolving pinion actuated by an arm and a weight attached thereto, substantially as described.

JAMES H. BULLARD.

Witnesses:
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