(No Model.)

2 Sheets—Sheet 1.

H. A. HARVEY & C. S. CLARK.

MACHINE FOR NICKING SCREW BLANKS.

No. 314,936. Patented Mar. 31, 1885.

FIG. 2.

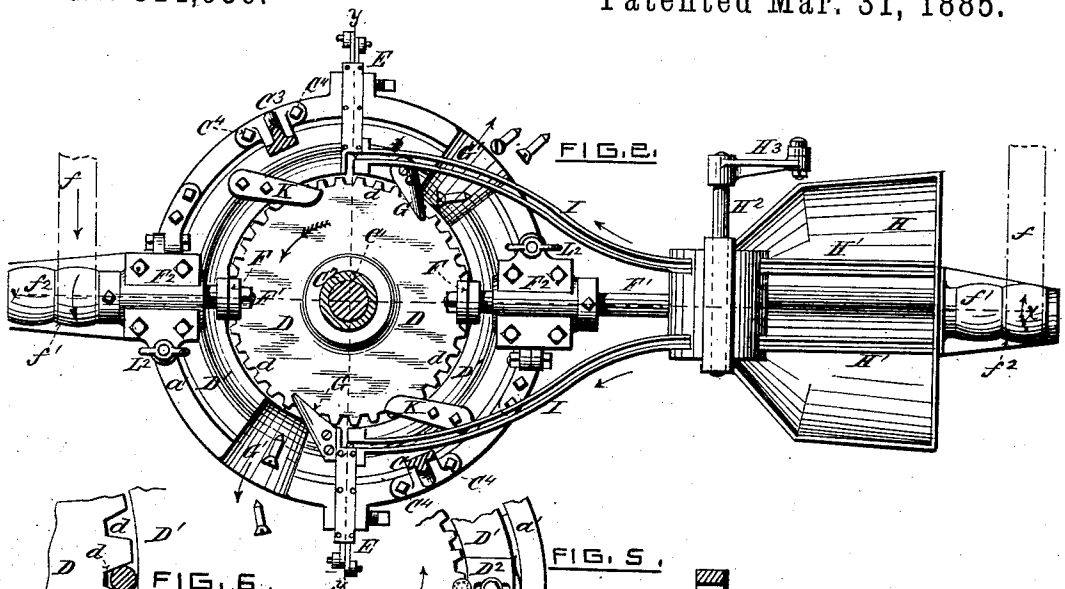


FIG. 6.

FIG. 5.

FIG. 1.

WITNESSES.

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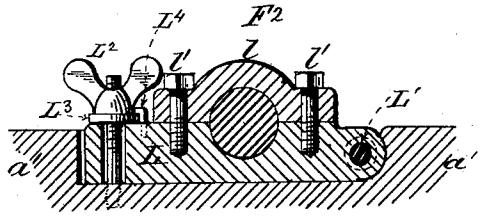


FIG. 4.

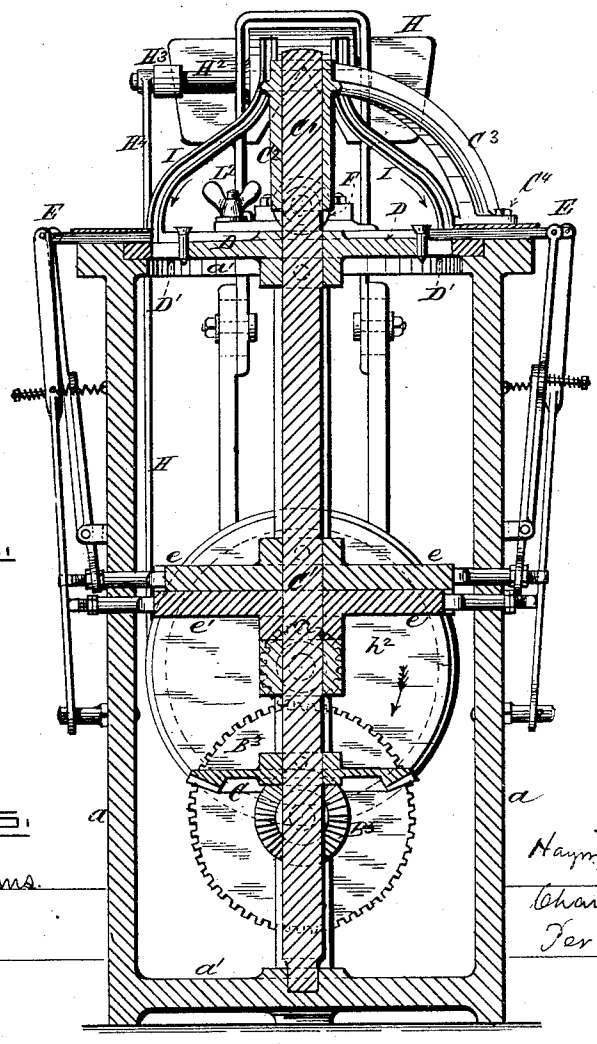


FIG. 3.

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UNITED STATES PATENT OFFICE.

HAYWARD A. HARVEY, OF ORANGE, NEW JERSEY, AND CHARLES S. CLARK, OF PROVIDENCE, RHODE ISLAND; SAID CLARK ASSIGNOR TO THE HARVEY SCREW AND BOLT COMPANY, OF CONNECTICUT.

MACHINE FOR NICKING SCREW-BLANKS.

SPECIFICATION forming part of Letters Patent No. 314,936, dated March 31, 1885.

Application filed March 24, 1884. (No model.)

To all whom it may concern:

Be it known that we, HAYWARD A. HARVEY, of Orange, New Jersey, and CHARLES S. CLARK, of Providence, Rhode Island, have invented a certain Improvement in Machines for Nicking the heads of Screw-Blanks, of which the following is a specification.

Our improvement relates to a type of screw-machines in which the blanks while being operated upon occupy vertical positions in notches formed in the periphery of a horizontal rotating carrying-table partly surrounded by a stationary guard or segment which holds the blanks in the notches during their sidewise motion in a circular path.

Our present invention comprehends the provision of V-shaped notches in the periphery of the table for the reception of the blanks, so that the blanks will be firmly held therein by the pressure upon them of the inclosing-guard during that portion of their sidewise motion in the course of which they are having the nicks cut in their heads. The cutting of the nicks is effected by means of a circular saw, rotating on a horizontal axis and mounted in stationary bearings in such a position that its lower edge projects into the path of the heads to a sufficient distance to cut the nicks to the proper depth as the blanks are successively carried under the saw by the rotation of the carrying-table. The carrying-table may be made to rotate either upon a vertical or a horizontal axis. In either case the stationary guard or segment presses the blanks into the V-shaped grooves with sufficient force to hold them steady while they are being subjected to the action of the saw.

It will be seen that, by reason of the V shape of the grooves in which the blanks are deposited, the shank of each blank has three lines of bearing, two of which are contributed by the opposite walls, respectively, of the V-shaped groove, while the other is contributed by the external guard. By reason of the greater friction upon the blank of its two bearings in the V-shaped groove, it is made to slide around the concave face of the stationary guard, and does not turn upon its longitudinal axis.

The accompanying drawings of a machine for nicking the heads of screw-blanks, embodying our improvements, represent a machine in which the carrying-wheel rotates upon a vertical axis and in which there are two feeding devices upon opposite sides of the carrying-table, two segments for pressing the blanks into the V-shaped grooves, and two saws for cutting the nicks in the blanks as they are carried under the saws, and two strippers to strip the blanks out of the grooves after they have been nicked. It will be understood, of course, that, by employing a carrying-wheel of larger diameter, space will be afforded for the employment of three or more feeding devices, three or more saws, and three or more segments, as the case may be, it being only necessary to provide in each case an arc of a circle long enough to allow for feeding a blank into one of the grooves, and then carrying the blank under the saw and discharging it.

The drawings are as follows: Figure 1 is a central vertical section taken through the line *x x* on Fig. 2. Fig. 2 is a top view, partly in section. Fig. 3 is a vertical section through the line *y y* on Fig. 2. Fig. 4 is a transverse vertical section through one of the adjustable boxes in which the saw-shafts have bearings. Fig. 5 is a top view of a portion of the carrying-wheel, showing one of the spring-jaws for pressing the blank tightly in its notch in the carrying-wheel while it is being carried under the saw. Fig. 6 is a top view of a portion of the carrying-wheel and the jaw, showing one of the blanks in transverse section, and illustrating the manner in which the shank of the blank is held in its seat in the carrying-wheel by the pressure upon it of the external jaw.

The drawings represent a machine in which the frame is composed of the upright members *a* and the horizontal members *a'*.

Power to drive the machine is applied by means of a belt to the pulley B, affixed to the horizontal prime shaft B', to which is affixed the pinion B^2, which engages the gear B^3, keyed to the counter-shaft B^4, provided upon its inner end with the bevel-pinion B^5, which en-

gages a bevel-wheel, C, affixed to the vertical shaft C′, to which the carrying-wheel D is attached. The carrying-wheel D is provided upon its periphery with the transverse V-shaped notches, *d*, and is partially surrounded by the stationary segments or guards D′.

By means of checking mechanisms E E, of ordinary and well-known construction, blanks are successively fed into the V-shaped notches *d* upon opposite sides of the carrying-wheel, and are held therein by the pressure upon them of the concave faces of the stationary guards D′ D′, respectively.

In the machine represented in the drawings there are two feeding devices, respectively upon opposite sides of the carrying-wheel. Each blank, after having been fed into one of the V-shaped notches, is carried sidewise in a curved path by the carrying-wheel, and its head is thus fed against one of the rotating saws F. The saws are respectively affixed to the horizontal shafts F′ F′, mounted in vertically-adjustable bearings. The rotation of the saw in each case is effected by means of a driving-belt, *f*, applied to a pulley, *f′*, affixed to its shaft F′. Each of the shafts F′ is also provided with the loose pulleys f^2, to which the belt can be shifted, if required. While the blank is being carried under the saw and having the nick cut in its head, it is firmly held in its seat in the one of the notches *d* which it occupies by the pressure upon it of the concave face of the spring-jaw D^2. This jaw is pressed radially toward the center of the carrying-wheel, as shown in Fig. 5, by the spring D^3, interposed between the outer face of the jaw D^2 and the inner face of the surrounding horizontal member *a′* of the frame. As the carrying-wheel continues to revolve, the blank, after having been carried under the saw, and after having had the nick sawed in its head, is carried against the inclined edge of the stripper G, and is thereby forced out of its notch in the carrying-wheel and dropped into the chute G′. The shields surrounding the carrying-wheel and the upper horizontal member *a′* of the frame are notched on opposite sides to form the two chutes G′ G′, as shown in Fig. 2. The shaft C′ of the carrying-wheel has its upper bearing in the hollow boss C^2, supported by the yoke C^3, which is secured to the upper horizontal member *a′* of the frame by the bolts C^4 C^4 C^4.

The machine is provided with the usual hopper, H, arranged with the usual lifters, H′ H′, affixed to the rock-shaft H^2, and provided with a crank, H^3. The rocking of the shaft H^2 is effected by means of the pitman H^4, connected at its upper end with the crank H^3 and at its lower end with the crank H^5, upon the counter-shaft *h*, which is rotated by means of the bevel-gear *h′* engaging the bevel-wheel h^2, affixed to the prime shaft B′ of the machine. The blanks slide by their own gravity down the usual ways, I I, by which they are respectively carried to opposite sides of the carrying-wheel and successively fed into the notches in the periphery of the carrying-wheel by the usual checking mechanisms, E E. The levers for operating the checks are respectively driven in the usual way by the cams *e* and *e′*, fastened to the carrying-wheel shaft C′.

In order to insure the proper presentation of the heads of the blanks to the saws, each blank, after it has been fed to the carrying-wheel, and before it has reached the jaw by which it is pressed into its seat, is carried under one of the stationary guides K K, and, by the collision of the head of the blank with the under side of the guide, the blank is forced down until the head alone projects above the upper surface of the carrying-wheel.

Provision is made for regulating the height of the saws above the carrying-wheel by means of the adjustable boxes in which the saw-shafts F′ are respectively provided with bearings. One of these boxes is shown on an enlarged scale in section on Fig. 4. The lower member, L, of the box is provided with a horizontal axis of oscillation by means of the pivot L′, secured to the upper horizontal member *a′* of the frame. The lower member, L, of the box is raised or lowered by means of a thumb-screw, L^2, which is tapped into the frame *a′*, and loosely inserted through a hole in the lower member, L, of the box. The thumb-screw L^2 is provided with a collar, L^3, which bears upon the top of the lower member, L, of the box, and a clamp, L^4, inserted into the top of the member L of the box, bears upon the upper surface of the collar L^3. The usual cap, *l*, forming the upper member of the journal, is secured to the lower member by the bolts *l′ l′*.

It will be understood that, if desired, only one saw need be used, or that any desired larger number of saws may be employed by suitably enlarging the diameter of the carrying-wheel, so as to provide arcs of circles large enough to allow for the feeding, nicking, and discharging of the blanks.

We claim as our invention—

In machines for nicking the heads of screw-blanks, a carrying-wheel provided with transverse V-shaped notches in its periphery, mechanism for feeding screw-blanks into such notches, and a segment or segments partially surrounding the periphery of the carrying-wheel, so arranged that their concave faces bear upon the shanks of the blanks contained in the notches, in combination with a saw rotating upon an axis at right angles to the axis of the carrying-wheel, and having its cutting-edge intersecting the plane in which the heads of the blanks are moved by the rotation of the carrying-wheel.

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