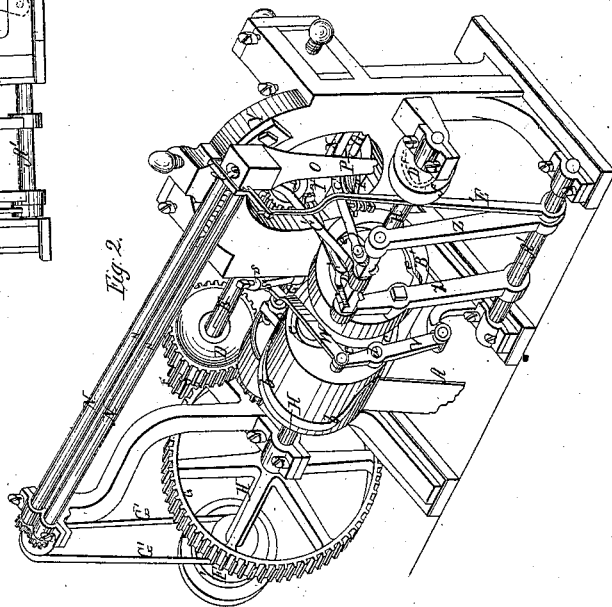
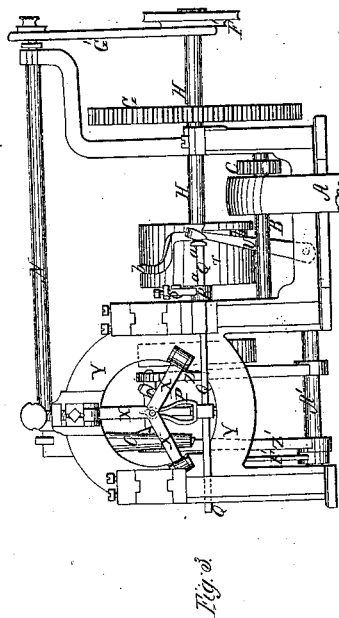
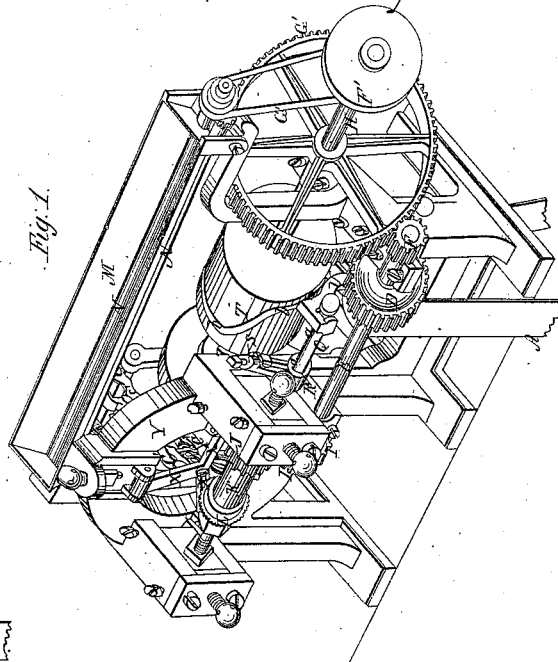


T. W. Harvey,

Nicking Heads of Wood Screws,

Nº 4,613,

Patented July 2, 1846.



UNITED STATES PATENT OFFICE.

THOMAS W. HARVEY, OF NEW YORK, N. Y.

IMPROVEMENT IN MACHINERY FOR NICKING SCREW-HEADS.

Specification forming part of Letters Patent No. 4,613, dated July 2, 1846.

To all whom it may concern:

Be it known that I, THOMAS W. HARVEY, of the city of New York, in the State of New York, have invented a new and Improved Manner of Constructing a Machine for Cutting the Nicks or Notches in the Heads of Blanks Preparatory to their Being Formed into Wood-Screws; and I do hereby declare that the following is a full and exact description thereof.

In the accompanying drawings, Figure 1 is a perspective view of my machine for cutting the nicks in the heads of blanks, taken from that side thereof on which the saw is placed. Fig. 2 is a perspective view thereof on the opposite side; and Fig. 3 is an elevation of a portion of the machine on the side shown in Fig. 1, the saw-shaft and the parts immediately concerned in driving it being removed for the purpose of showing portions that would otherwise be hidden.

In each of the figures the same letters of reference are used to designate the same parts.

Motion may be given to this machine by means of a belt A, embracing a driving-pulley on a shaft B, Fig. 3. A pinion C on this shaft gears into a spur-wheel D on a shaft E, Figs. 1 and 2, this pinion and wheel being to each other as one to three. On the outer end of the shaft E there is a pinion F, that gears into the large spur-wheel G on the shaft H. This pinion and wheel are to each other as one to eight. On the opposite end of the shaft E there is a cog-wheel I, Figs. 1 and 2, that gears into a cog-wheel J, of the same size, on the shaft K of the saw L. This saw is made adjustable by the sliding of the centers which sustain its shaft, as represented, so as to cut the nicks to the proper depth.

The blanks which are to have nicks cut into them are to be placed in a hopper M, Fig. 1, or between rollers N N, Figs. 1 and 2, operating as a hopper, the arrangement and operation of which are fully described in the specification of that part of my apparatus which is used for the cutting of the threads upon wood-screws, and also in that for turning the heads of such screws. The blanks contained in such hopper or between such rollers are to be dropped one by one into a vertical conveyer, and from this they are to be carried to the gripping-dies by an operation substantially the same with that set forth in the descrip-

tion of the threading apparatus, with such difference only (to be presently pointed out) as shall adapt the operation of the feeding-fingers to the nicking-machine herein specified.

O, Figs. 2 and 3, is the vertical conveyer through which the blanks are to pass, so as to be received by the feeding-fingers at the proper time.

P, Figs. 2 and 3, are the feeding-fingers, which are to receive the blank from the conveyer and deliver it between the gripping-dies. The feeding-fingers are affixed to a shaft Q, which is susceptible of a longitudinal and also of a rocking motion. The shaft Q slides endwise through a hole in a swiveling socket R in the hub of the arm S, the socket and arm rotating or rocking together by the aid of a feather *a* on that part of the shaft Q. The longitudinal motion is given to the shaft Q by means of the grooved cam T on the shaft H. A vibrating lever U, Figs. 1 and 3, which works on a joint-pin on its lower end, embraces the shaft Q between two collets, and has a guide-pin on it which enters the grooves *b b* on the cam T, and consequently causes the shaft Q to traverse endwise as the pin passes from one side of the cam to the other. The rocking motion is given to the shaft Q by the eccentric groove *c c* on the end or face of the cam T. A lever V, working on a joint-pin at its lower end, has on it a guide-pin *d*, which enters the groove *c c*, and at its upper end carries a connecting-rod W, that is jointed to the arm S, and consequently rocks the shaft Q, which it does to the extent of one-fourth of a revolution.

X X, Figs. 1 and 3, are the grippers or gripping-dies, which consist of three bars hinged at their outer ends to the iron circle Y, constituting a part of the frame-work of the machine. These bars meet in the center, where they are so formed as to grip the blank firmly while it is being nicked, and are so operated upon as to deliver the nicked blank and to receive a new one at the proper time. They are drawn back and advanced in the following manner:

Z Z is a vibrating frame attached to a rock-shaft A'. This frame is made to vibrate by means of the grooved-face cam B' on the shaft H, a guide-pin on said frame entering the groove *e e* on the face of the cam. For the sake of steadiness I have found it useful to

place a similar cam on the opposite side of the frame Z. This, however, is not shown in the drawings. This frame carries three rods C' C', which connect it by hinge-joints with the gripping-bars X and serve to open and close them at the proper time.

D' is a grooved cam on the shaft H, that operates the feeding-lever E', the lower end of which embraces the rock-shaft A', while its upper end carries the slide l, that separates a single blank and drops it into the vertical conveyer O in a manner fully described in the specification of the threading-machine. The groove on the face of the cam D' which receives the pin on the lever E' is not seen in the drawings, but is indicated by the dotted lines f. The hopper-rollers N are made to revolve by an arrangement the same with that employed in the threading apparatus, and need not be herein described. It is, however, shown distinctly in the drawings, in which the pulley F' is represented as connected by a band G' with said rollers. The feeding-fingers P are also formed and operate in the same manner with the feeding-fingers, as fully described in the specification of the threading apparatus.

The vertical conveyer O, through which the blanks are passed, is placed at some distance laterally from the center of the grippers X, this being necessary to make room for the operating of the rods C' C', and this gives rise to the necessity of moving the shaft Q, that carries the fingers, in a lateral direction to enable said fingers to receive the blank. The traversing motion of the fingers is equal to the distance of the line of the center of the gripping-dies and the center of the vertical conveyer, and is governed by the grooves b b on the cam T. The groove c c on the end or face of said cam acts in the manner described on the arm S, so as to rock the shaft Q and the feeding-fingers thereon one-quarter of a revolution, as before noticed, thereby bringing said fingers down from a vertical to a horizontal position, and vice versa. When in the horizontal position the traversing motion takes place and the fingers are carried under the vertical conveyer. At this moment a blank is made to fall through said conveyer and is received by the fingers, which

embrace it, and, by the action of the cam T, move it back until it is in a line with and opposite to the center of the gripping-dies. The arm S is then acted upon so as to bring the fingers into a vertical position delivering the blank into the grippers, the cam B' acting in unison therewith so as to effect the gripping at the right moment, after which the blank is released and the fingers are restored to the horizontal position. The cam B' is so formed as to close the grippers by one-eighth of its revolution, bringing the head of the blank in contact with the saw L and gradually advancing it sufficiently to cut the nick to the proper depth, which operation lasts during five-eighths of the revolution of the cam. The return and discharge of the blank are effected in one-eighth of such revolution. The grippers then remain at rest during one-eighth of the revolution, at which time a fresh blank is received from the fingers. In operating the machine a speed of about six hundred revolutions in a minute is given to the first or driving shaft for screws of a medium size.

What I claim as new in the machine herein described for cutting the nicks in the heads of wood-screw blanks is—

1. The manner herein described in which I have formed and arranged the grippers or gripping-dies X X and have combined them with the rods C' C' and with the vibrating frame Z Z, so as to be operated on by the aid of the cam B' or by some analogous device, in the manner above set forth, in gripping the blank and in carrying it gradually against the saw.

2. In combination with the foregoing, the particular manner in which I have arranged the feeding-fingers, so as to adapt them to the receiving of the blank from the vertical conveyer and the delivery of it into the gripping-dies by the aid of the shaft Q, which is made to slide and rotate by means of an apparatus substantially the same with that described.

THOS. W. HARVEY.

Witnesses:

A. H. HARVEY,
A. P. HAWLEY.