(No Model.)

E. J. MANVILLE.

SCREW THREADING MACHINE.

No. 304,945. Patented Sept. 9, 1884.

Fig. 1.

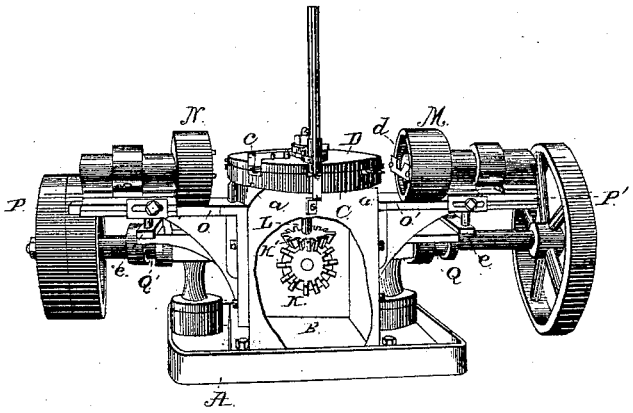

Fig. 2.

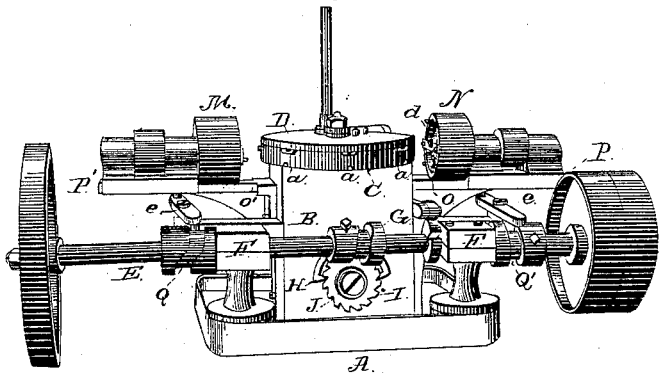

Fig. 3.

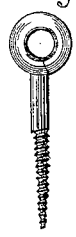

Fig. 4.

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ELI J. MANVILLE, OF WATERBURY, CONNECTICUT.

SCREW-THREADING MACHINE.

SPECIFICATION forming part of Letters Patent No. 304,945, dated September 9, 1884.

Application filed February 15, 1884. (No model.)

To all whom it may concern:

Be it known that I, ELI J. MANVILLE, of Waterbury, in the county of New Haven and State of Connecticut, have invented a new and useful Improvement in Screw-Threading Machines; and I do hereby declare that the following is a full and exact description of the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

At present eye-screw blanks are screw-threaded in a slow and expensive manner by hand, one at a time; and my design is the production of a machine by which automatically eye-screw blanks may be screw-threaded more rapidly and cheaply and quite as perfectly as by the old method.

The novelty in my machine consists in the various combinations of the operative mechanism, all as more fully hereinafter described and claimed.

For the better comprehension of the construction of said machine, I will describe it in connection with the drawings thereof, in which—

Figure 1 is a front elevation of the machine with the front plate broken away; Fig. 2, a rear elevation of the machine; and Figs. 3 and 4 represent the eye-screws as partially and as completely threaded.

Similar letters denote corresponding parts in each figure.

A represents a suitable base for the machine, upon which is mounted a shell, case, or frame-work, B, upon which, in turn, is mounted a revolving disk, C, having recesses *a a*, (eight being shown, equidistant from each other,) which carries the eye-screw blanks which are to be threaded; and upon this, in turn, is mounted another disk, D, which is stationary, and carries a slotted feed-tube, through which the blanks are fed into the recesses *a a*, and has an opening, *c*, where the completed eye-screw is discharged.

E is the main driving-shaft, having at one end a driving-pulley, and at the other end a fly-wheel. This shaft is journaled in boxes F F′, mounted upon pedestals which rest upon the base. In order to give revolution to the disk C, this shaft has secured upon it, between the boxes F F′, a cam-grooved sleeve, G, the groove of which, when the shaft E is rotated, rocks a pivoted ratchet-lever, H, whose upper end is preferably furnished with a friction-roller, (not shown,) and the ratchet-jaws of this lever engage with the teeth of a ratchet-wheel, I, whose rotation in one direction may be prevented by a pawl, said wheel being mounted on a shaft, J, which extends into the shell, and at its inner end has a bevel-gear, K, which engages with another bevel-gear, K′, at the lower end of a shaft, L, which is secured to and depends from the disk C, said shafts J and L being suitably supported and journaled within the case B. This shaft preferably passes through both disks, turning in the disk D, but keyed to the disk C, and this disk D may be secured against rotation in any convenient way. These parts just named are so constructed and arranged that in the instance described, where there are eight recesses, *a a*, equidistant in the periphery of the disk C, when the main shaft revolves once, then, by means of the rocking in one direction of the ratchet-lever H, the ratchet-wheel I is turned a partial revolution, and at the same time, by the same revolution of the main shaft, the ratchet-lever is rocked in the opposite direction, disengaged from the teeth of the ratchet-wheel, and returned to its starting-point, where it becomes engaged with the teeth of the ratchet-wheel, and is ready to give it another partial revolution in precisely the well-known method of revolving ship-windlasses. By this partial revolution of the ratchet-wheel I the shaft J is partially revolved, and by means of the bevel-gears K K′ the shaft L and the disk C is turned one-eighth part of a revolution, or the precise distance between the centers of two of the recesses *a a*. In each of these recesses there is held an eye-screw blank, with its point extending out horizontally from the periphery of the disk C, and by the first step in its revolution the point of the blank is presented to a die in the chuck M, which cuts a gimlet-point in the blank, as shown in Fig. 3, and a further succession of partial revolutions presents the same blank to a die in another chuck, N, which cuts and completes the threading of the blank. The dies referred to in the foregoing sentence are the well-known threading-disks grooved and screw-threaded on their peripheries and loose upon their shafts, and with these shafts have also rotary movement

around the blank which is to be screw-threaded. By a still further revolution of the disk the completed eye-screw is brought round into line with the opening *c* in the disk D, where, the projecting portion of the eye-screw being the heaviest, it discharges itself from the machine by gravity. At all other points, the disks C and D fitting closely together, the disk D holds the eye-screw in a horizontal as well as radial position.

The screw-cutting portion of the apparatus consists of tables O O′, (shown as supported on wings connected to the case A,) upon which tables are carriages P P′, which have movement back and forth. Each of these carriages carries a shaft provided with a pulley for revolving it, and has at its inner end a chuck, *d*, provided with suitable cutting-dies. This back-and-forth movement of the carriage is produced by connecting each of them by a lever-arm, *e*, whose end is provided with a proper anti-friction roller, with grooved cams Q Q′ on the main driving-shaft E, outside of the boxes F F′. The revolution of the chucks and their shafts is constant in one direction; but the feeding of the chucks forward and back is effected by the revolution of the main shaft, acting, through the grooved cams Q Q′ and the lever-arms *e* and their connections with the carriages P P′, in such a way that a single revolution of the main shaft feeds the chuck forward, and then returns it to the starting-point. It will be observed that a greater extent of reciprocation should be given to the threading-die, which may be done by increasing the pitch of its cam Q′ or changing the pivotal point on the lever *e*. The adjustment of the grooved cams Q Q′ is such as regards the grooved cam G that the feeding forward of the chuck with its die takes place in the intervals of the revolution of the disk C, which at the end of a certain partial revolution presents the point of the eye-blank directly in line with the die for cutting the gimlet-point, and at the end of a subsequent revolution presents the point of the same blank to the proper die for completing the thread-cutting, and by a subsequent partial revolution discharges the completed eye-screw, as before explained.

It will be understood from this explanation of my machine that its principal essential elements are a holder for the blanks rotating step by step, and presenting the points of the blanks in the intervals of revolution to suitable screw-threading dies, which are fed forward to their work and withdrawn in the same intervals between the partial revolutions of the holder; and it is evident that a variety of mechanical equivalents may be substituted for the construction which I prefer and have described without a departure from the spirit of my invention.

It will be observed that in my machine the only manual labor required is simply that of placing a sufficient number of the blanks in the feeding-tubes, which may be done by a little girl or boy.

Having thus described my invention, what I claim as new therein, and wish to protect by Letters Patent, is—

1. In a screw-cutting machine, the combination of a rotating disk-holder with radial recesses for the blanks, a covering-disk to hold the blanks in place, reciprocating screw-cutting dies, and a main driving-shaft, by which the holder is rotated and the screw-cutting dies are reciprocated at different intervals of time, substantially as described.

2. In a screw-cutting machine, a holder composed of a rotating disk with radial recesses for the reception of the screw-blanks, and a stationary disk covering said rotating disk, and serving to hold the screw-blanks in a radial position, substantially as described.

3. In a screw-cutting machine, a holder for screw-blanks, composed of a revolving disk with recesses to receive the screw-blanks, and a covering-disk to hold the blanks in place, and provided with a feeding-tube, and a discharge-opening for the completed screws, substantially as described.

4. In a screw-cutting machine, a main driving-shaft provided with a cam-grooved sleeve, G, in combination with a ratchet-lever, H, ratchet-wheel I, shaft J, bevel-gears K K′, and shaft L, to rotate the blank-holder step by step, substantially as described.

5. In a screw-cutting machine, a main driving-shaft provided with a cam-grooved sleeve, G, and grooved cams Q Q′, in combination with a ratchet-lever, H, ratchet-wheel I, shaft J, bevel-gears K K′, shaft L, levers *e*, and carriages P P′, by which the blank-holder is rotated step by step and the screw-cutting dies are reciprocated back and forth at each interval in the rotation of the blank-holder, substantially as described.

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

ELI J. MANVILLE.

Witnesses:
R. C. MANVILLE,
M. H. BRENNAN.