S. VANSTONE.

MACHINE FOR MAKING SCREW-THREADED STOCK

No. 186,906. Patented Jan. 30, 1877.

Fig. 1.

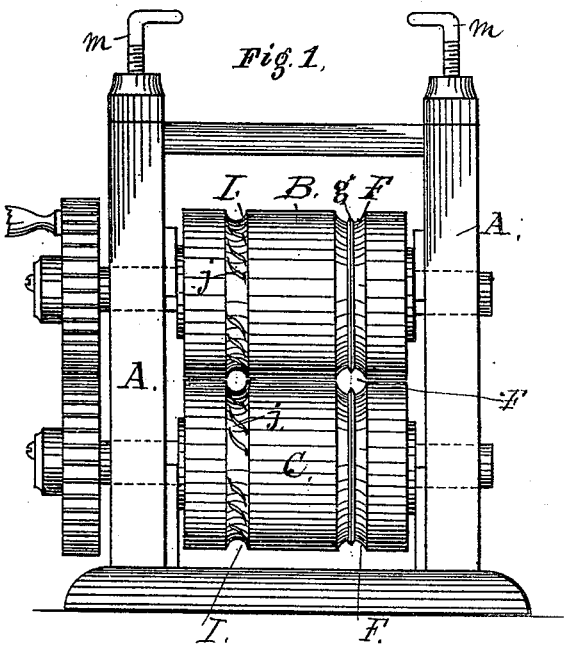


Fig. 2.

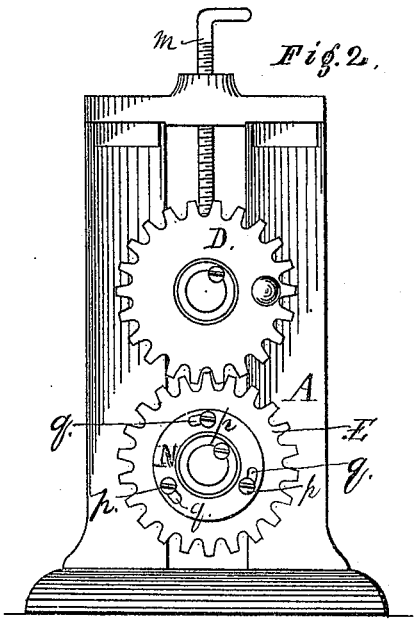


Fig. 3.

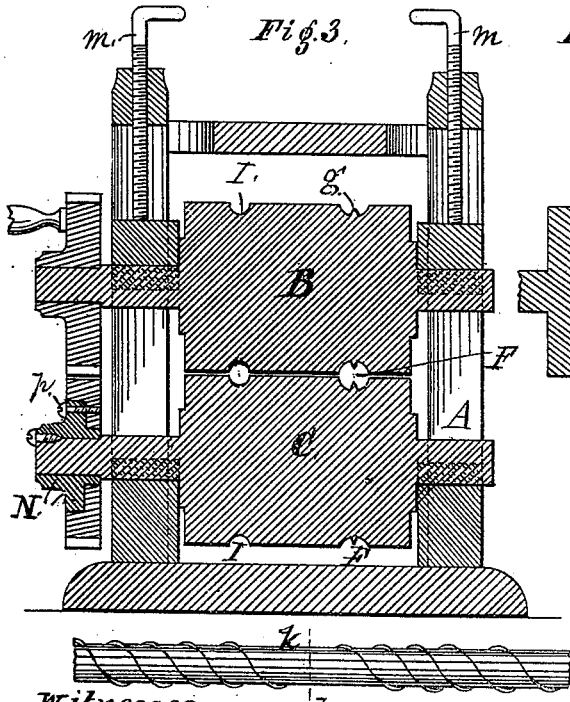


Fig. 7. Fig. 5

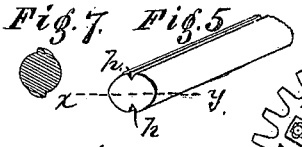


Fig. 10.

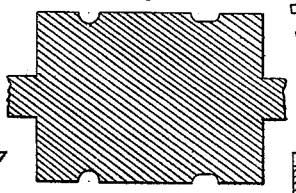
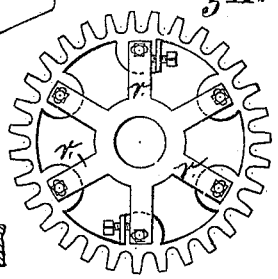


Fig. 11.



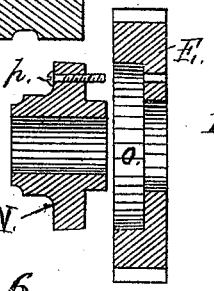


Fig. 4.

Fig. 6

Witnesses

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M. R. Edelen.

Fig. 9

Fig. 8.

Inventor.

Samuel Vanstone.

by J. J. Halsted.

his Atty.

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UNITED STATES PATENT OFFICE.

SAMUEL VANSTONE, OF PROVIDENCE, RHODE ISLAND, ASSIGNOR OF ONE-HALF HIS RIGHT TO JOHN W. HOARD, OF SAME PLACE.

IMPROVEMENT IN MACHINES FOR MAKING SCREW-THREADED STOCK.

Specification forming part of Letters Patent No. **186,906**, dated January 30, 1877; application filed September 2, 1876.

To all whom it may concern:

Be it known that I, SAMUEL VANSTONE, of Providence, in the county of Providence and State of Rhode Island, have invented a certain new and useful Improvement in Machines for Making Screw-Threaded Stock for Nails and Screws; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

My invention consists in a machine adapted to impart a particular shape to, and to form a thread upon, a wire, substantially such as are shown and described in an application made by myself and John W. Hoard, for United States Letters Patent, which was allowed on or about July 26, 1876, and in certain details of construction hereinafter more particularly set forth.

Figure 1 is a side elevation; Fig. 2, an end elevation, and Fig. 3 a longitudinal vertical section, of a machine embodying my improvements; Fig. 4, a detail of the adjustable hub; Fig. 5, a section (enlarged) of wire prepared for threading; Fig. 6, portions of the threaded wire; Figs. 7 and 8, end view and cross-section of the same; Fig. 9, a cross-section of wire prepared with flat, instead of grooved, sides; Fig. 10, a section of one of a pair of rollers, adapted for making the same; and Fig. 11, a modification of the adjustable hub.

A is a frame of any suitable kind, adapted to support the rolls B C, which are provided with appropriate gearing D E, whereby one may be driven by the other. The grooves F F are made, as shown, each somewhat in excess of a semicircle, so that the two may impart to the wire, which is rolled through between them, a form in cross-section oblong or somewhat elliptic; and each of these grooves has a central rib or bead, *g*, the object of which is to impart to the wire longitudinal depressions or grooves *h h*, as shown in Fig. 5, representing the wire at this stage. I I are other grooves, (which may be in the same pair of rollers with the grooves F F, or in independent rollers, as desired,) designed for taking the wire, after it has been reduced by the grooves F F to the elliptical and longitudinally-grooved form just described, and reducing it to its ultimate form, having a cylindrical cross-section, with peculiar raised threads thereon, as shown in Figs. 6, 7, and 8. These grooves I I are each semicircular in cross-section, as shown, but the grooves are also scored diagonally, as shown at *j j*, these scores being each of somewhat crescent shape, being deepest and broadest at the center, and terminating or diminishing to nothing at their ends. Thus each roller I imparts to the wire its own set of raised crescent-shaped threads, extending only about half-way around the wire in a spiral direction, the opposite side of the wire having similar threads, not directly connected with those on the other side, but yet in spiral line therewith. In passing the wire from the grooves F F to I I the wire enters the rolls I I, with its grooves *h h* in horizontal line with each other, and with the larger diameter *x y* vertically, so that the rolls shall compress the main body of the wire to a cylindrical form, while leaving a portion of the metal in the scores *j j* to form the threads, and the same action forces the excess of metal together to close the longitudinal grooves *h h*, thus preventing the formation of webs or fins lengthwise of the wire where the peripheries of the rollers meet.

From the above description it will be seen that the peculiar form imparted to the wire by the grooves F prepare it for receiving the raised thread by having for this purpose a larger supply of metal at its larger diameter *x y*, and that the avoidance of longitudinal webs or fins is insured by making the grooves *h h*, through the instrumentality of the ribs or beads *g*.

The series of scores *j j*, I prefer should be alternated with blank spaces *k k*, so that the threaded wire shall, when severed at such blank spaces, (say at or about *l*,) give a short unthreaded portion at each end, to form the head and point of the complete nail or screw; such head may be upset, if desired, or left cylindrical; and the opposite end can be at will turned down to a point by any appropriate

means. The rolls are made adjustable for varying the pressure by any well-known means—as, for instance, by set-screws *m m*.

For the purpose of adjusting one of the rolls relatively to the other, in order that the scores *j j* of both may be properly positioned or registered to each other, to cause the threads of the wire to align spirally, I have devised the following means, and by which I can attain the nicest and most exact adjustment without disengaging or disturbing the gears D E. I provide a hub, N, adapted to be splined to the axis of one of the rollers, (preferably the lower one,) so that when so splined they must revolve together as one. This hub lodges in a circular cavity, *o*, made in the outer face of the gear, and is then secured to it by means of set-screws *p p p*, which pass through elongated holes or short slots *q q q* in this hub. When the hub is, by means of these screws, held firmly to the gear, after the rolls have been previously adjusted to each other by turning the adjustable one a trifle upon its axis, the whole is firm, and the adjustment will have been made without disconnecting the teeth of the gears. Upon the occurrence of any, the slightest, disarrangement during the working of the machine a readjustment can be readily made, as above stated.

Instead of the positive ridges or beads *g*, the bottom of the grooves F F may be made flat, as shown in Fig. 10, the object being still to so form the wire as to prevent longitudinal webs or films; but in any case the wire must be somewhat elliptic in cross-section, so as to give it a form having a longer and a shorter diameter.

By my machine it will be seen that the coil or continuous wire, as it is fed or drawn through the forming-rollers, is simply drawn, and that the wire does not turn or revolve upon its axis.

As an equivalent for the adjustable hub above described, though perhaps better adapted for the larger and stronger machines, the hub may have arms *r r*, adjustable, by set-screws, to the desired position on the gear-wheel, as shown in Fig. 11.

The blank spaces *k k*, between the several sets or groups of scores, may taper, if desired, and they may be a little shallower, or a little deeper, than the threaded or scored part. In running the wire stock through the rolls ordinary guides (not necessary to be shown) are employed on both sides of the rolls.

I claim—

1. In a machine for making a thread or threads on a continuous wire, shaping-rollers, provided with grooves, adapted to impart to the wire a form somewhat elliptical in cross-section, and having longitudinal grooves therein, substantially as shown and described.

2 In a machine for making a thread or threads on a continuous wire, shaping-rollers, provided with grooves having diagonal scores therein, and adapted to produce a true cylindrical stock, having raised threads thereon, alternating with the cylindrical unthreaded portions, substantially as and for the purpose set forth.

3. The combination, with a pair of geared rolls, each provided with diagonal scores *j* therein, for the purpose described, of an adjustable hub, applied to the shaft and to the gear of one of such rolls, whereby the scores of the two rolls may be adjusted relatively to each other without disconnecting the gears.

SAMUEL VANSTONE.

Witnesses:

JOHN C. PURKIS,

HENRY K. POTTER.