

UNITED STATES PATENT OFFICE.

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IMPROVEMENT IN PROCESSES OF MAKING BLIND-STAPLES.

Specification forming part of Letters Patent No. 130,809, dated August 27, 1872.

To all whom it may concern:

Be it known that I, JEREMIAH KEITH, of the city and county of Providence and State of Rhode Island, have invented certain new and useful Improvements in the Process of Forming Blind-Staples; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawing, which forms a part of this specification, in which—

Figure 1 represents a side view of the mechanism for cutting the screw-thread upon the wire. Fig. 2 represents an end view of the same. Fig. 3 represents a plan view of the mechanism for cutting the wire and bending the staples. Fig. 4 represents a detached sectional view to illustrate the operation of cutting and bending the wire; and Fig. 5 represents, upon an enlarged scale, a side view of the finished staple as produced by my improved process.

My improved process of forming blind-staples is as follows: The wire A being first drawn smooth and of the proper size, it is passed through a screw-threading mechanism, (see Figs. 1 and 2,) consisting of a hollow spindle, B, having a pulley, C, at one end and a head-plate, D, at the other, upon which plate D a pair of screw-cutting dies, *a a*, are secured, and suitable adjusting-mechanism combined therewith to facilitate the proper adjustment of the dies. The spindle B and dies *a a* are revolved rapidly by means of a belt running on the pulley C, and the wire is drawn forward by the dies, passing through the oil-sponge *b* before it enters the hollow spindle, which sponge supplies the wire with the desired amount of oil for lubricating the thread-cutting dies *a a*. The wire A is drawn from a suitable supporting-reel through the dies *a a*, and a second reel is arranged for rewinding it after the screw-thread has been cut thereon. This second reel is operated by a friction or weight device, so as to rewind the wire as fast as it is moved forward by the dies or cutters, and no faster, consequently causing no undue strain upon the dies. After the screw-thread has been formed upon the wire it is passed through a cutting and bending machine, a plan view of which is shown in Fig. 3, which cuts off the wire and bends down the ends to form the staples. The machine consists of the

benders E E¹, cutters F F¹, cutter-guide G, feeder H, and clamps I, which parts are arranged at the ends of suitable levers, and are operated by cams upon the shaft J, the latter being revolved by means of a belt running on the pulley K. The roll of wire is supported upon a suitable reel, and its end drawn into the machine by the feeder H, first passing through guides *d d* and beneath the clamp I, which latter holds the wire while the feeder-arm moves back to renew its hold. The feeder H is provided with a spring-dog, *c*, which holds to the wire A as the feeder-arm moves forward, and releases its hold when the arm moves back, thus carrying forward the wire with an intermittent motion as the staples are cut off and bent. From the feeder the wire passes through the cutter-guide G to the cutters F F¹, which latter cut the wire of the proper length for the staples. The guide G is made with a hole through one side and a slot in its end, through both of which the wire passes, and is thereby properly presented to the cutters, while the end of the wire is at the same time guided to the proper position to be acted upon by the benders. The cutters are arranged to operate upon opposite sides of the wire, and are made of angular form, so as to cut a small section out of the wire of the form shown in Fig. 4 at *f*, thus producing double beveled points upon the ends of the wire, the bevels being at the lower side thereof, so that when the ends are bent down and the staples formed, the extremities *e* of the points will be at the outside of the legs, and the edges of the intersecting bevels at the inner side of the legs; the intersection of the two beveled surfaces, as well as the extreme points, being as nearly as possible in a vertical plane parallel with and passing through the axis of both legs of the staple. The piece of wire A¹ which is taken off by the cutters has its ends bent down by the two small rolls *h h* of the bender E across the bending-lug E¹ in the manner indicated in Fig. 4. The rolls *h h* are serrated upon their faces to fit the thread, so as not to injure or flatten the screw-thread of the wire, when they are pressed down to bend the staples, and said rolls are arranged upon the ends of swinging bars that have their rear ends supported in the end of the bender-lever E², and they are held

apart by an elastic cushion or spring, *n*, when the lever E^2 is raised; but when the lever E^2 is depressed the bars are pressed inward by inclined studs or guides *x*, thus causing the rolls *h h* to advance toward each other. The rolls *h h* press down upon the wire A^1 and hold it in position upon the lug E^1 while the cutters are in operation, and when the wire is severed they descend to the position indicated by dotted lines, thereby forming and completing the staple; and as the rolls are again elevated the lug E^1 recedes and allows the staple to drop from the machine into some suitable receptacle placed for its reception. A side view of the finished staple is shown in Fig. 5 drawn to an enlarged scale. *i i* indicate the bevels of the points, and *m* the screw-thread. It will be understood that the bevels *i* upon only one side of the staples are seen in the drawing and that those upon the other side are formed to correspond with those seen. By screw-threading the wire throughout its entire length the metal thereof is condensed, while the thread forms a continuous stiffening-rib upon its surface; consequently the wire is rendered much stiffer and far less liable to bend than smooth wire of the same size and quality. It will thus be seen that the whole staple is strengthened so that it is not likely to cripple or flatten at the top when driven. Then again, in cases where the blinds are painted, the screw-threaded surface on the loop of the staple holds the paint and prevents it from scaling off and exposing the metal to oxidation by the action of the weather. The wire is cut and bent into staples in a very rapid manner by the cutting and bending machine, and there is no subsequent manipulation for the staples to go through after they are cut except bending, the holding surfaces or screw-thread having been previously formed upon

the wire; consequently, their points are left true and perfect, and the staples are very uniform in quality and shape, which is a very important feature in blind-staples, since, when so constructed, they drive much better and are less liable to turn out laterally and split the wood. Then, again, by cutting out a piece of the wire and forming double bevels upon the ends, the points do not act like wedges to split the wood, but the intersections of the beveled ends with the screw-threaded surfaces form saw-like teeth or serrations at the sides of the legs, which cut across the fibers of the wood, when the staples are driven, and the severed ends of the fibers force themselves forward into the depressions of the screw-threaded surface and thereby retain the staples very securely in position.

The machine for producing the screw-thread and for forming the staples I intend to make the subject-matter of applications for separate Letters Patent, and consequently a more minute explanation of their construction and operation is at present unnecessary. I also propose to apply for separate Letters Patent for the screw-threaded wire as an improved article of manufacture.

What I claim as new and of my invention, and desire to secure by Letters Patent, is—

The improved mode of manufacturing blind-staples from wire by first screw-threading the wire and then cutting it in the manner and form described, and bending and finishing the same into staples, substantially as shown and described.

JEREMIAH KEITH.

Witnesses:

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