S. N. SMITH.

Making Shoe Stays.

No. 107,300. Patented Sept. 13, 1870.

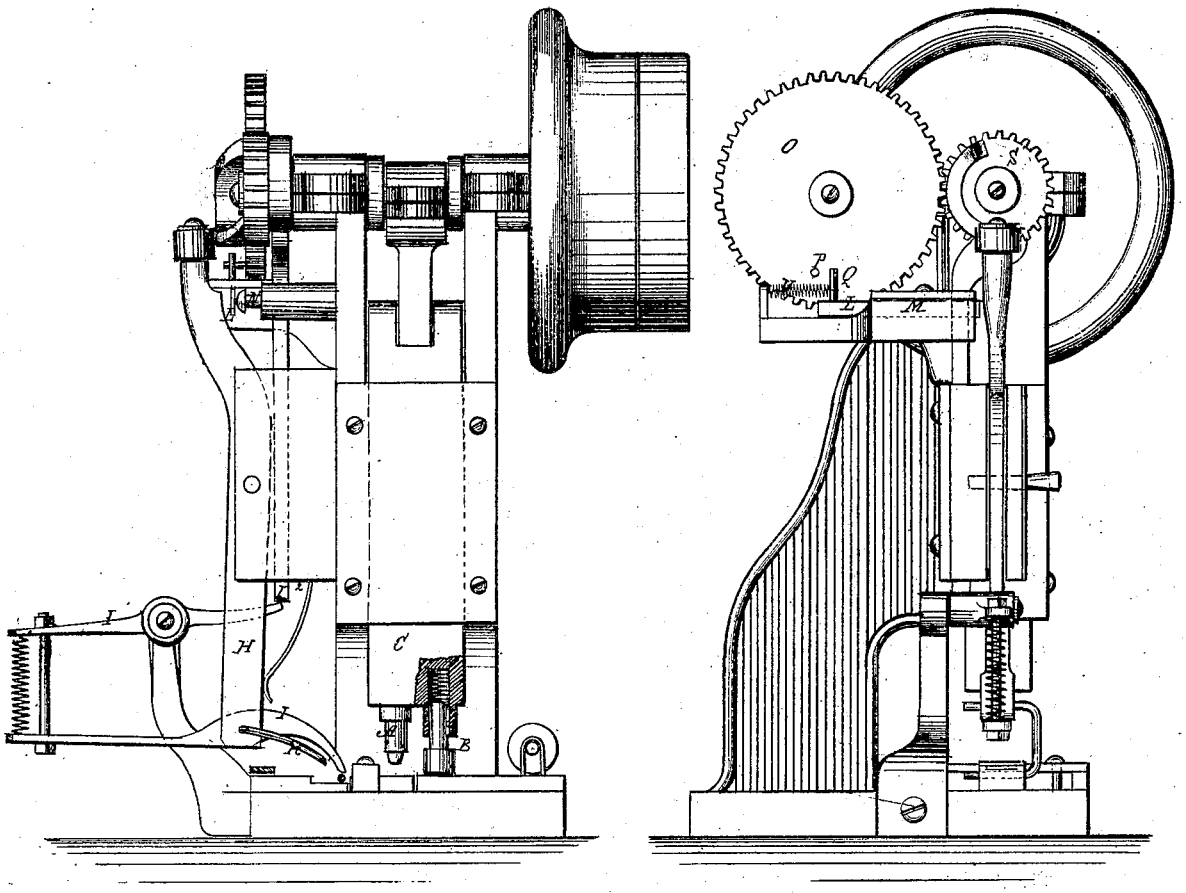

Fig. 3

Fig. 4

Fig. 5

Fig. 6

Witnesses:

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UNITED STATES PATENT OFFICE.

STEPHEN N. SMITH, OF PROVIDENCE, RHODE ISLAND, ASSIGNOR TO THE UNION EYELET COMPANY, OF SAME PLACE.

IMPROVEMENT IN SHOE-STAY STOCK AND IN MACHINES FOR MAKING THE SAME.

Specification forming part of Letters Patent No. **107,300**, dated September 13, 1870.

To all whom it may concern:

Be it known that I, STEPHEN N. SMITH, of Providence, in the county of Providence and State of Rhode Island, have invented an improved shoe-stay stock, and also certain new and useful improvements on or additions to machines for making eyelet-stock, in virtue of which said eyelet-stock machines are adapted to the manufacture of my improved shoe-stay stock; and I do hereby declare that the following is a full and clear description of the eyelet-stock machine with my improvements attached thereto, and also of my improved shoe-stay stock, reference being had to the accompanying drawings, forming part of this specification.

The invention relates to and consists in a shoe-stay stock having the cups arranged in a peculiar manner to economize the metal, and also in a certain combination of instrumentalities to produce alternately a long and short feed of the metal strip.

Figure 1 is a front elevation of my improved machine. Fig. 2 is a side elevation of the same. Fig. 3 is a side elevation of a strip of metal on which the cups for the shoe-stays have been formed by a uniform feed. Figs. 4 and 5 show the strip in which the cups have been formed by my improved feed in elevation and plan, and Fig. 6 represents the finished shoe-stay.

Similar letters of reference indicate corresponding parts.

A is the cupping-punch, and B a spring-retainer arranged in a sliding stock, C, worked up and down in a machine to work, in connection with suitable dies, for forming the cup D on the strips of sheet metal E, to be formed into eyelets to be cut out of the strips in pairs connected together, forming the shoe-stays.

It will be seen that if the cups D are formed at regular intervals, as shown in Fig. 3, a considerable amount of metal between each pair will be wasted; hence the importance of feeding the strips by alternate short and long movements to forms the cups closely together between the ends of the stays. To make this alternate long and short feed, I employ, in connection with the vibrating lever H, on which the feeding-pawl I and finger K are mounted and move to grip the plate for feeding, in a well-known way, back and forth, a sliding stop, L, arranged to slide in between the upper end of the lever H and the stop-screw stud N, at every alternate movement of the said lever, to cause it to make a short backward movement of the feeding-pawl I and finger K, to make a corresponding short forward movement with the strip. For operating this sliding stop I employ a toothed wheel, O, with a pin, P, to come in contact with a pin, Q, on the slide at each revolution and push the slide forward, making the wheel with twice the number of teeth that its driver on the main shaft has, so that it has only one revolution to two movements of the other parts, and in connection with this wheel for moving the slide forward I employ a spring, U, for moving it back.

I also use, in connection with the feed-pawl I, a tension-lever, I', a push-bar, I^2, and an actuating-cam, the latter arranged on the driving-shaft, to cause the feed-pawl to hold the strip firmly while feeding, and to release it when it is acted upon by the punch, to allow freedom to the strip to contract equally from each side.

The mode of operation is as follows: The pawl and finger I K being carried by the cam and lever to the farthest limit of their movement, the strip is ready for the formation of the first cup as soon as their hold is removed. Now, the spring-retracted lever H, instead of being allowed to return to its original point of departure, is arrested, after it travels back a short distance, by the interposed slide L. The cam on the end of the driving-shaft then catches it at this advanced point, moves it out upon a smaller arc than usual, and causes the forward feed movement of the strip to be consequently very short. The pins Q and L becoming disengaged by the further revolution of the large spur-wheel, the slide L is withdrawn and another long feed is given.

Having thus described all that is necessary to a clear understanding of my invention, what I claim as new, and desire to protect by Letters Patent, is—

1. The combination, with the lever which carries the feed-pawl and the cam which vibrates said lever, of the stop or bar L and

mechanism to force, at every alternate revolution of the cam, said stop or bar forward, across the path of vibration of said lever, to temporarily cut off its return to the cam and to then withdraw it therefrom, substantially as and for the purpose described.

2. The improved shoe-stay stock having the cups formed and arranged as shown in Fig. 4 of drawings, and for the purpose described.

STEPHEN N. SMITH.

Witnesses:
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