(No Model.) 4 Sheets—Sheet 1.

C. E. SARGENT.

MACHINE FOR SHAPING THE SHANKS OF AX HANDLES.

No. 369,262. Patented Aug. 30, 1887.

Fig. 1.

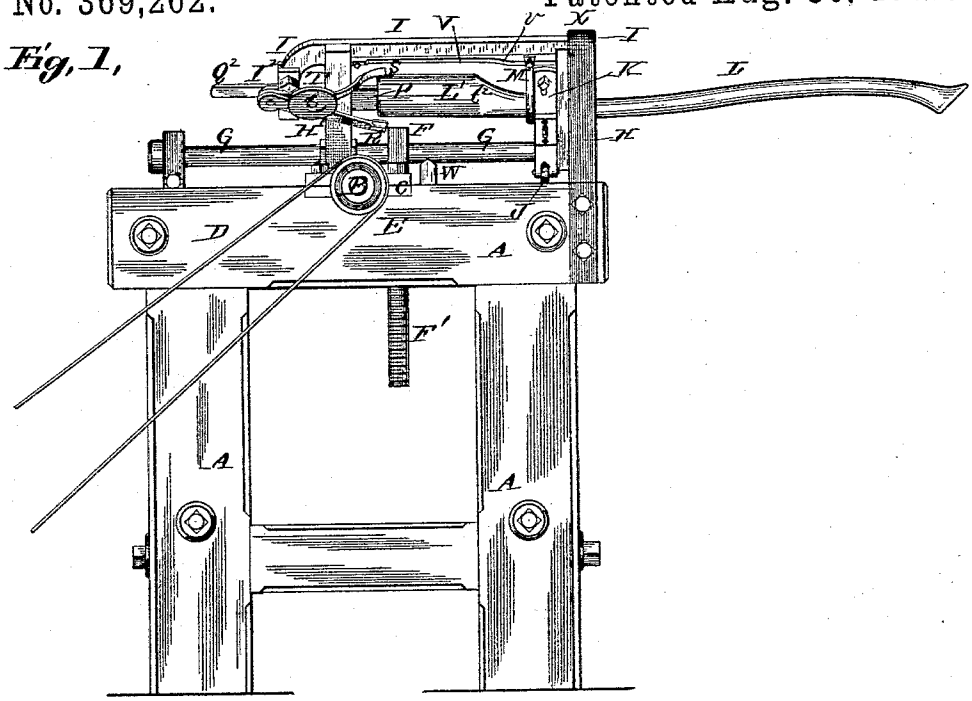
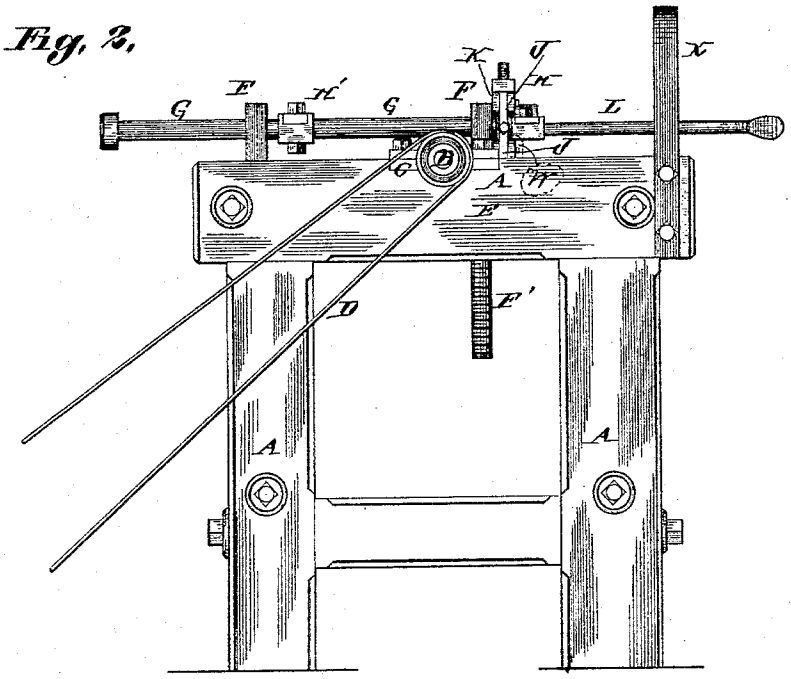


Fig. 2.



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Fig. 3,

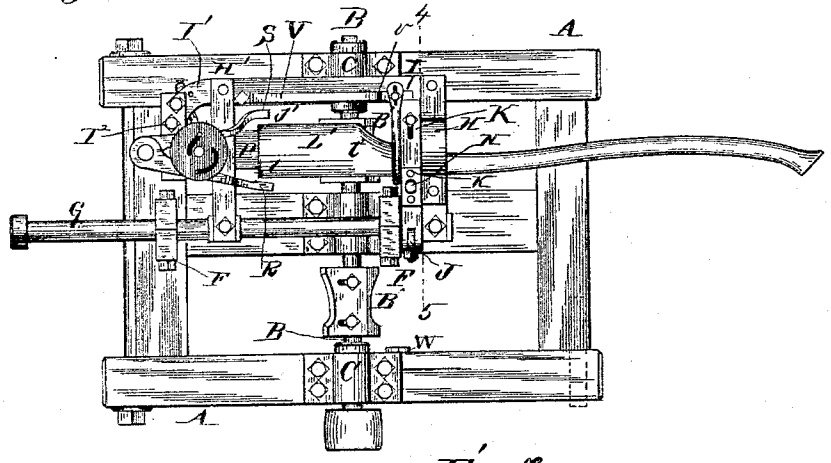


Fig. 4,

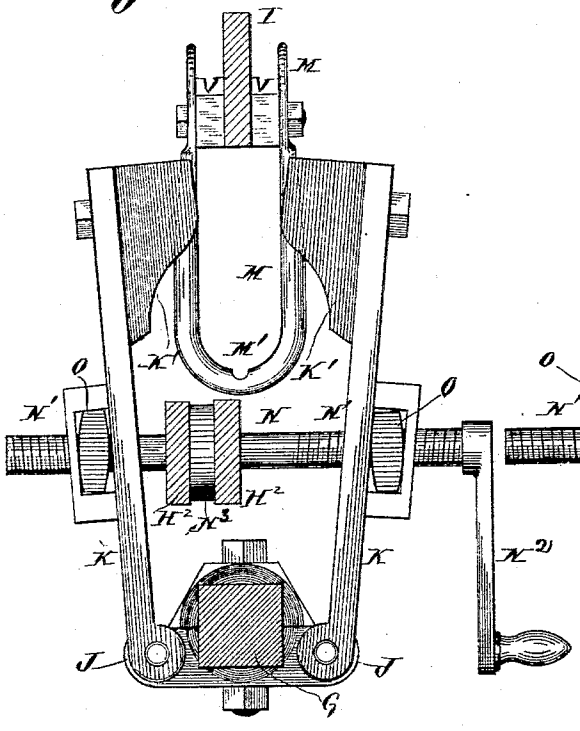
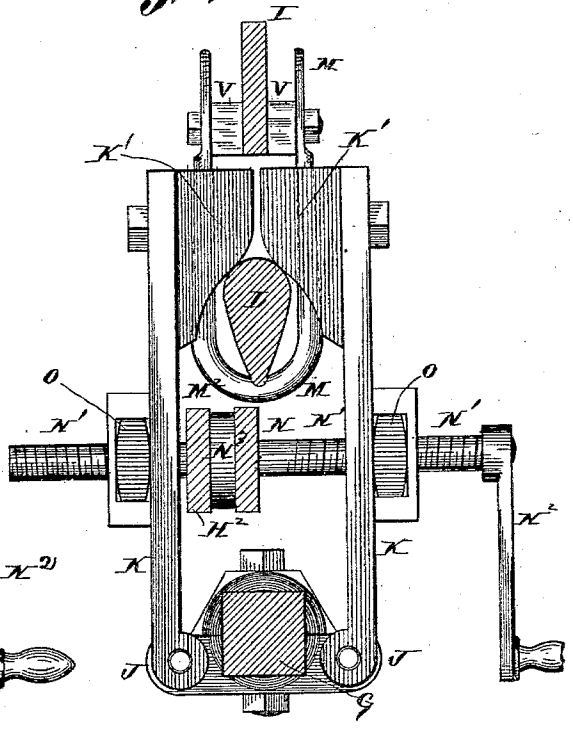


Fig. 5,



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Fig. 6,

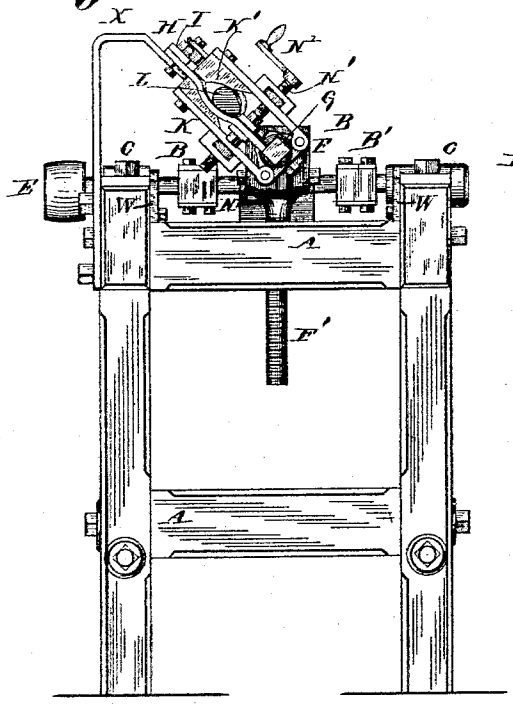


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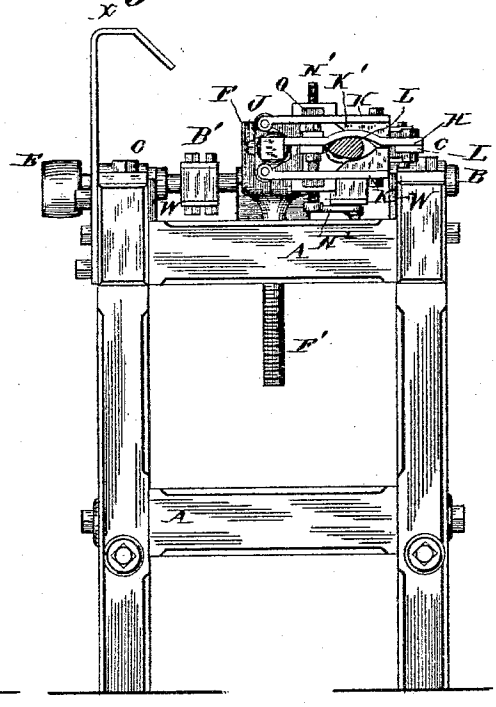
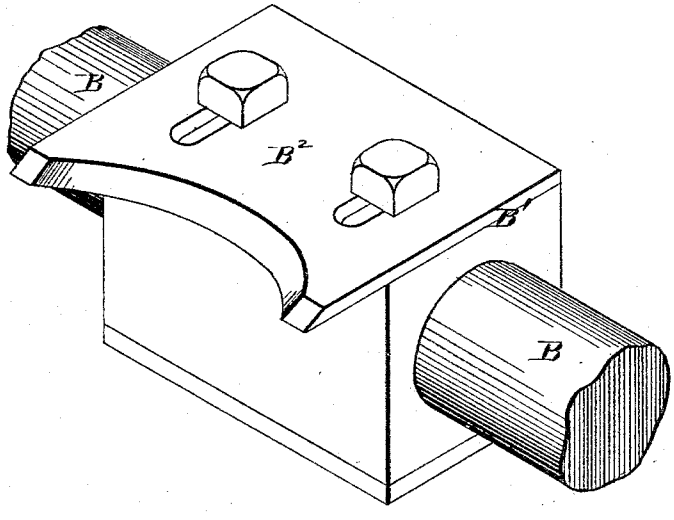


Fig. 8,



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Fig. 12,

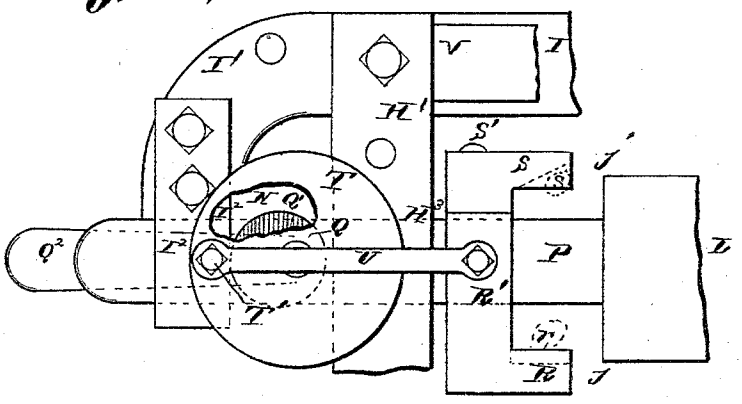


Fig. 13,

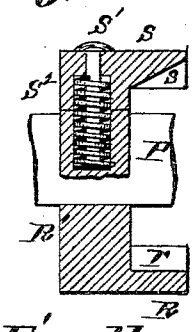


Fig. 9,

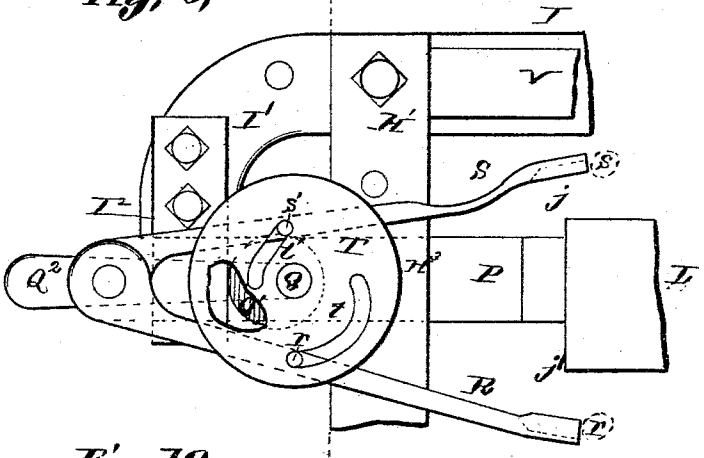


Fig. 11,

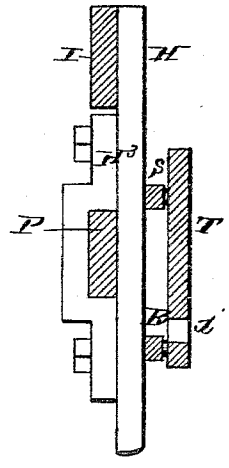
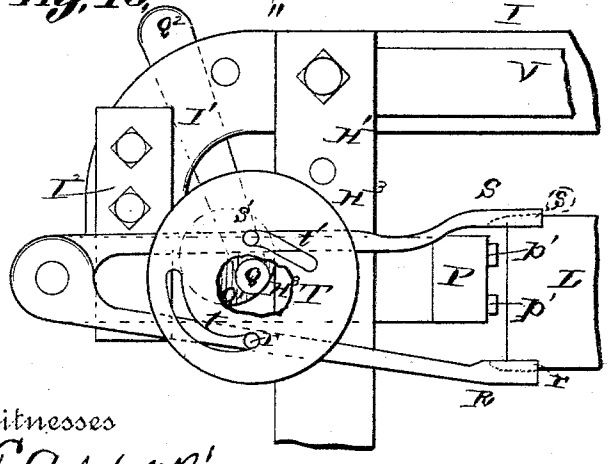


Fig. 10,



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UNITED STATES PATENT OFFICE.

CHARLES E. SARGENT, OF ST. LOUIS, MISSOURI, ASSIGNOR TO THE CHESTER & KELLER MANUFACTURING COMPANY.

MACHINE FOR SHAPING THE SHANKS OF AX-HANDLES.

SPECIFICATION forming part of Letters Patent No. 369,262, dated August 30, 1887.

Application filed June 28, 1886. Serial No. 206,419. (No model.)

To all whom it may concern:

Be it known that I, CHARLES E. SARGENT, of the city of St. Louis, in the State of Missouri, have invented a certain new and useful Improvement in Machines for Shaping the Shanks of Ax-Handles, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification, and in which—

Figure 1 is a side view of the machine, showing the ax-handle inserted in the carriage ready to be operated (or ready for removal after having been operated on.) Fig. 2 is a side view of the machine, showing the carriage in its lower and advanced position. Fig. 3 is a top view of the machine, showing the carriage in its lower and advanced positions. Figs. 4 and 5 are enlarged vertical sections at 4 5, Fig. 3, showing the clamp respectively in the open and closed positions. Fig. 6 is an end view of the machine at rest. Fig. 7 is an end view of the machine in operation. Fig. 8 is an enlarged perspective view of one of the rotary cutters. Fig. 9 is a detail side view showing the centering device for the end of the handle, showing the jaws open. Fig. 10 is a similar view showing them closed. Fig. 11 is a vertical transverse section at 11 11, Fig. 9. Fig. 12 is a side view showing a modification of the centering device. Fig. 13 is a longitudinal section through the jaws shown in Fig 12.

A is a frame, which may have any suitable construction.

B is the cutter-shaft turning in bearings C and rotated by a belt, D, on pulley E.

F F are vertically-adjustable boxes, whose shanks F′ are screw-threaded and rest in screw-sockets of the frame. The construction is such that the standard may be adjusted vertically by turning the shank in its socket. The upper ends of the standards are formed in boxes, which give bearing to the guide-rod G, that forms a guide for the carriage, the rod having endwise and oscillatory movements in the boxes.

H H′ are arms fixed to the spindle and extending rectangularly therefrom. These arms are connected together by a bar, I.

J J are ears on the spindle, to which are hinged the jaws K K for clamping the handle L.

M is a stirrup, which is suspended from the bar I in proximity to the two jaws K. When the ax-handle is to be secured in the carriage, it is passed between the jaws K and into the stirrup and the jaws forced together upon it to push it down in the stirrup and clamp it fast at that point. In order that the jaws may force the handle downward, they have inclined faces K′. At the bottom of the stirrup is a notch, M′, to receive the edge of the handle, so that it shall be held accurately in position by means of the two inclined faces K′ and the notch. As a means of operating the jaws, I have a screw-rod, N, passing through the jaws, and engaging in nuts O, which are held in the jaws. The screw-threads N′, which engage in the nuts O, are respectively right and left hand, so that when the rod is turned the jaws are drawn together or forced asunder.

N^2 is a hand-crank on the screw-rod, by which it is turned. To prevent any endwise movement in the right-and-left screw-rod N, it has a boss or fixed collar, N^3, which turns in bearing H^2 of the arm H. Owing to this construction, the two jaws are at all times equidistant from the central plane of the carriage, so that when they are drawn together upon the handle the handle is in this central plane. The bar I is curved downward at I′, and has a box, I^2, giving bearing to a center bar, P, which also has bearing in a box, H^3, of the arm H′. The end of the bar has teeth P′, which engage in the end of the handle to hold it fast while the cutter-heads are acting upon it.

Q is an eccentric-shaft passing through the center bar, P, and carrying an eccentric, Q′, extending from box I^2 to H^3, so that when the shaft is turned the center bar is moved endwise to engage the teeth P′ in the end of the handle or to disengage them therefrom.

In order to guide the end of the ax-handle into the proper position as it enters, it enters between two jaws, R and S. These jaws are hinged to the arm H′, and act like a pair of tongs to grasp the upper and lower corners, *j j′*, of the handle, as seen in Fig. 10. These jaws have recesses *r s*, as indicated by broken

lines in Figs. 9 and 10, to receive the said corners *j j'*, to insure the proper position of the end transversely. To move the jaws from the position shown in Fig. 9 to that shown in Fig. 10, and vice versa, the jaws have studs *r'* and *s'*, which enter cam-grooves *t t'* in a cam-disk, T, upon the shaft Q. The shaft Q is turned by a handle, Q^2. As the lower edge of the handle with its corner *j* is always right, the jaw R is made inflexible, so that the corner is brought always to a certain position; but, as the end varies in breadth from *j* to *j'*, it will be seen that some provision must be had to allow the end of the jaw S to accommodate itself to the ends of different breadths. This is done by making the jaw S flexible. When the cutters B' are operating on the handle, the jaws R S must be thrown out of the way. This position of the jaws is shown in Fig. 9, where the end of the handle L is held by the teeth P'.

In Figs. 12 and 13 is shown a modification of the guide-jaws R S and manner of operating them. In this modification the jaw R is rigidly fixed to a head, R', which slides endwise on the center bar, P, while the jaw S is fixed to the head by a pin, S', which allows the jaw to rise. The pin enters a socket made in the head and is drawn inward by a spiral spring, S^2, one end of which is secured to the pin and the other to the bottom of the socket. The jaws are removed from the course of the rotary cutters by a pitman-link, U, by which the head R' is connected to a wrist-pin, T', on the disk T.

The edges of the cutter-blades B^2 are so formed that each cutter-head shapes one side of the shank L' as the carriage is laid down, first upon one side and then upon the other, to bring the shank in contact with the cutters, over which it is given an endwise movement. The shank is made with shoulders l^2 at its base, so that it will be seen the free edge of the carriage cannot move at an even level over the cutters, but must be higher when the cutters are at the shoulders. To give it this variable movement pattern-bars V are attached to the sides of the bar I, such pattern bars sliding on the top of the posts W, for the purpose set forth. Thus it will be seen that by changing the shape of the pattern the shape of the shank may be changed.

In the use of the machine the carriage is drawn into the position shown in Figs. 1 and 6, and leans against the side support, X. Then the handle is pushed through the stirrup M, the handle being pushed in until the corners *j j'* enter the recesses *r s* in the jaws R S, and the end of the handle reaches the teeth P'. The jaws K are now forced inward on the handle, the inclines K' pushing the edge of the handle down into the notch M'. The lever Q^2 is now turned down into the position shown in Fig. 9, which forces the teeth P' into the handle, and at the same time throws out the jaws R S. The carriage is now moved forward a little distance and turned down until the pattern V rests on the post W, and then moved forward until the cutter has finished the shank L and reached the shoulder l^2 of the shank, whereupon the inclined part *v* of the pattern V will cause the proper movement of the handle from the cutter. The other side of the shank may then be finished in a similar manner.

I claim as my invention—

1. The combination, with a horizontal rod and a carriage capable of endwise movement on said rod, and also of oscillatory movement above said rod, of a clamp carried by said carriage, a horizontal shaft located beneath said rod in close proximity and transversely thereto, a pair of cutters fixed to said shaft upon opposite sides of the center of oscillation of the carriage, and a pair of pattern-guides for sustaining the carriage in (approximately) a horizontal plane while the blank is being operated upon, substantially as set forth.

2. The combination, in the oscillating carriage, of the stirrup M, the jaws K, having inclined faces *k*, and the actuating-rod having right and left screws working in nuts having bearing in the jaws, and having a collar, N^3, preventing the endwise movement of the rod.

3. The combination, in the oscillating carriage, of the center bar, P, with teeth engaging the end of the handle, and expanding guide-jaws, with a cam-shaft carrying eccentric Q', and cam-disk T, constructed to project the center-bar and expand the jaws simultaneously, for the purpose set forth.

4. The combination, with the carriage, with its bearing-rod G, of the bearing-boxes F, with screw-shanks F', for the purpose set forth.

5. The combination, in the carriage, of the stirrup M, jaws K, the center bar, P, and jaws R S, with suitable devices for actuating the same, substantially as and for the purpose set forth.

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