

(No Model.)

A. BRÜSTLE & A. SIEGEL.

DIE FOR MAKING AXES.

No. 351,492.

Patented Oct. 26, 1886.

Fig. 1.

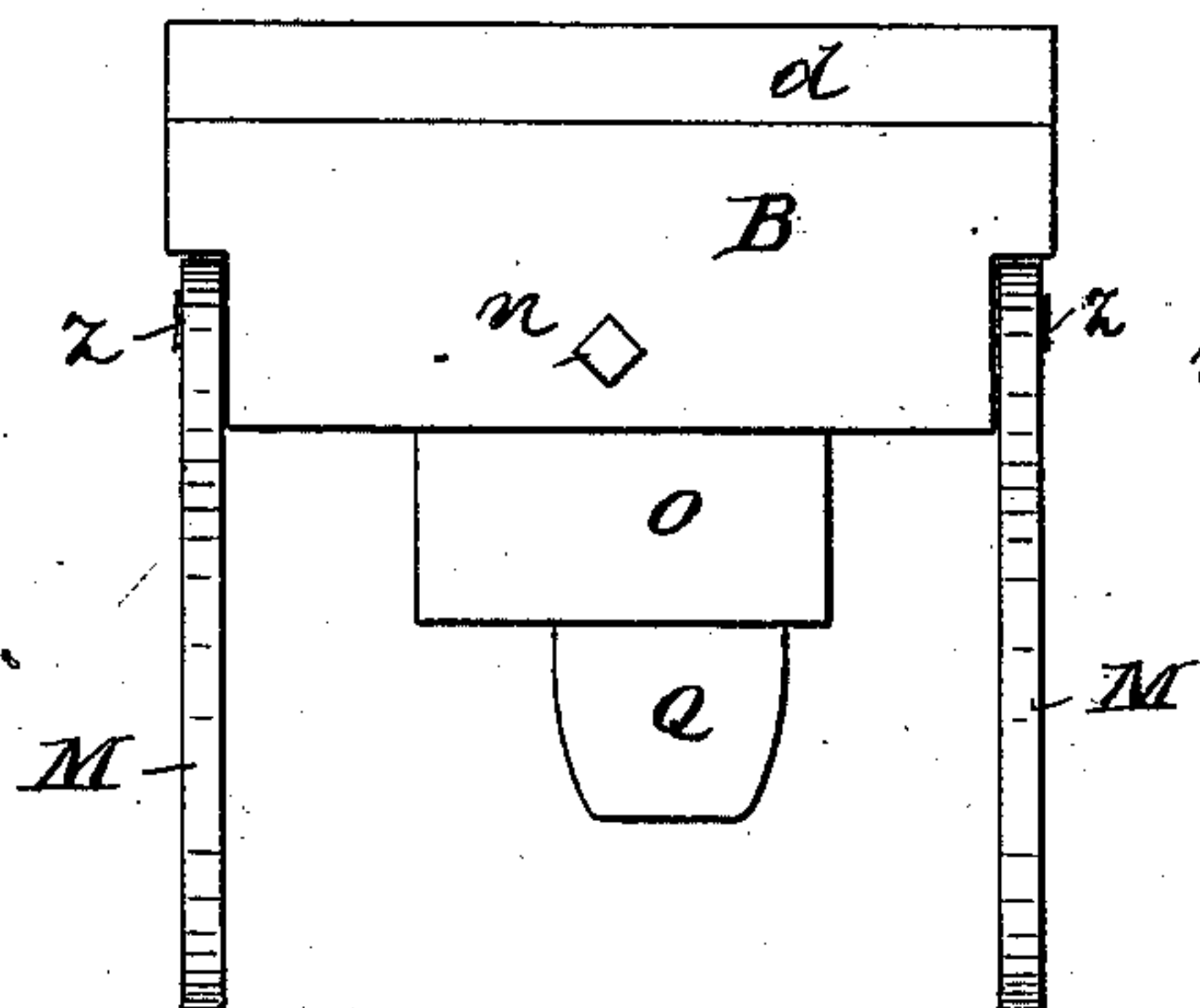


Fig. 3.

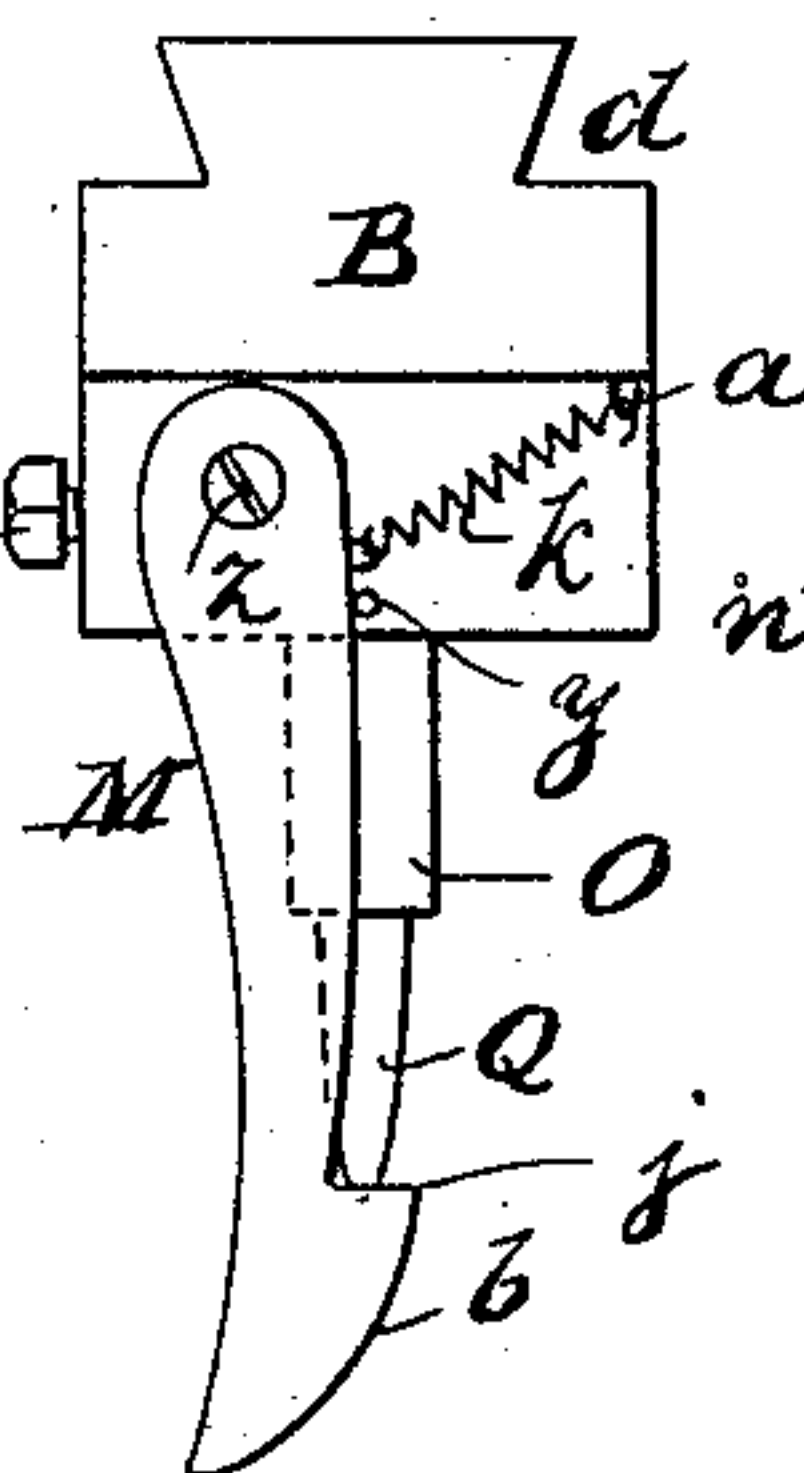


Fig. 5.

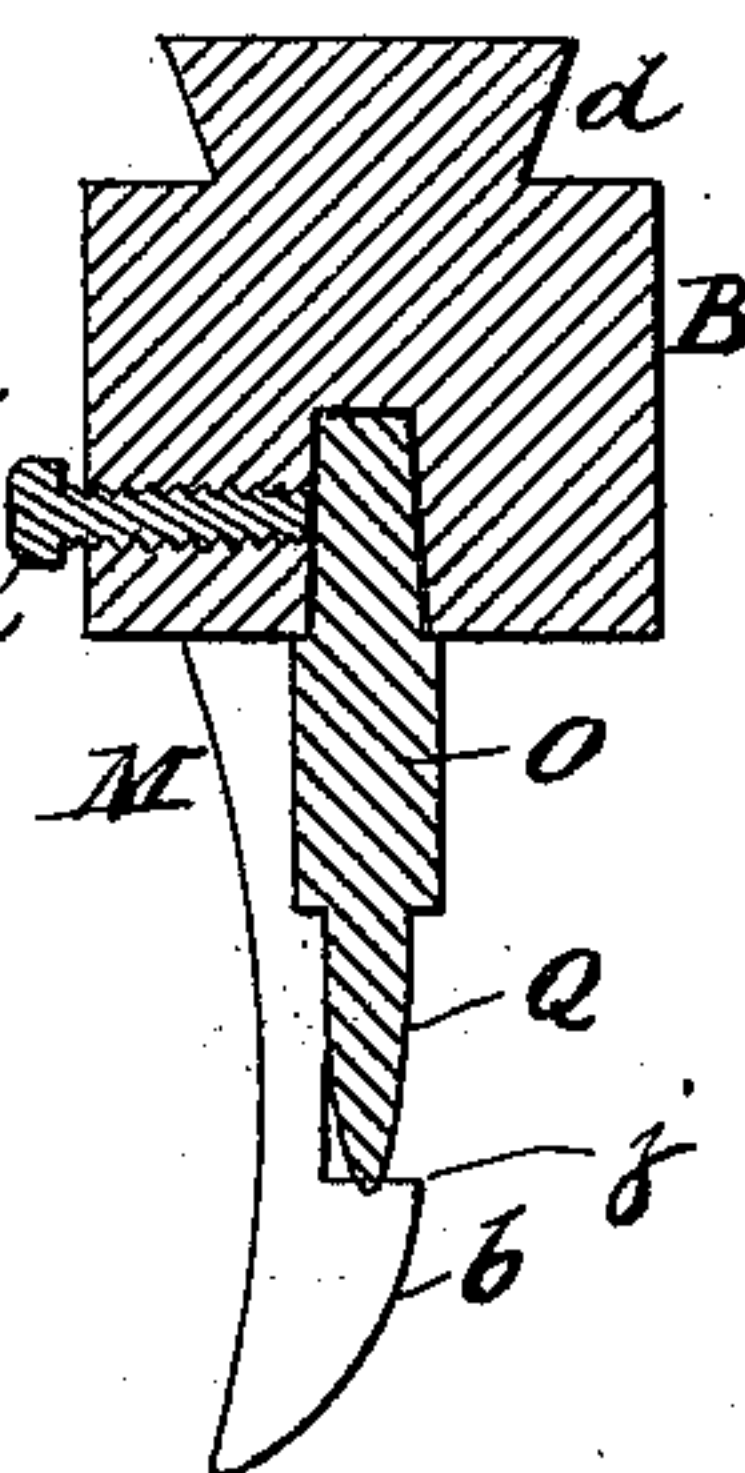


Fig. 2.

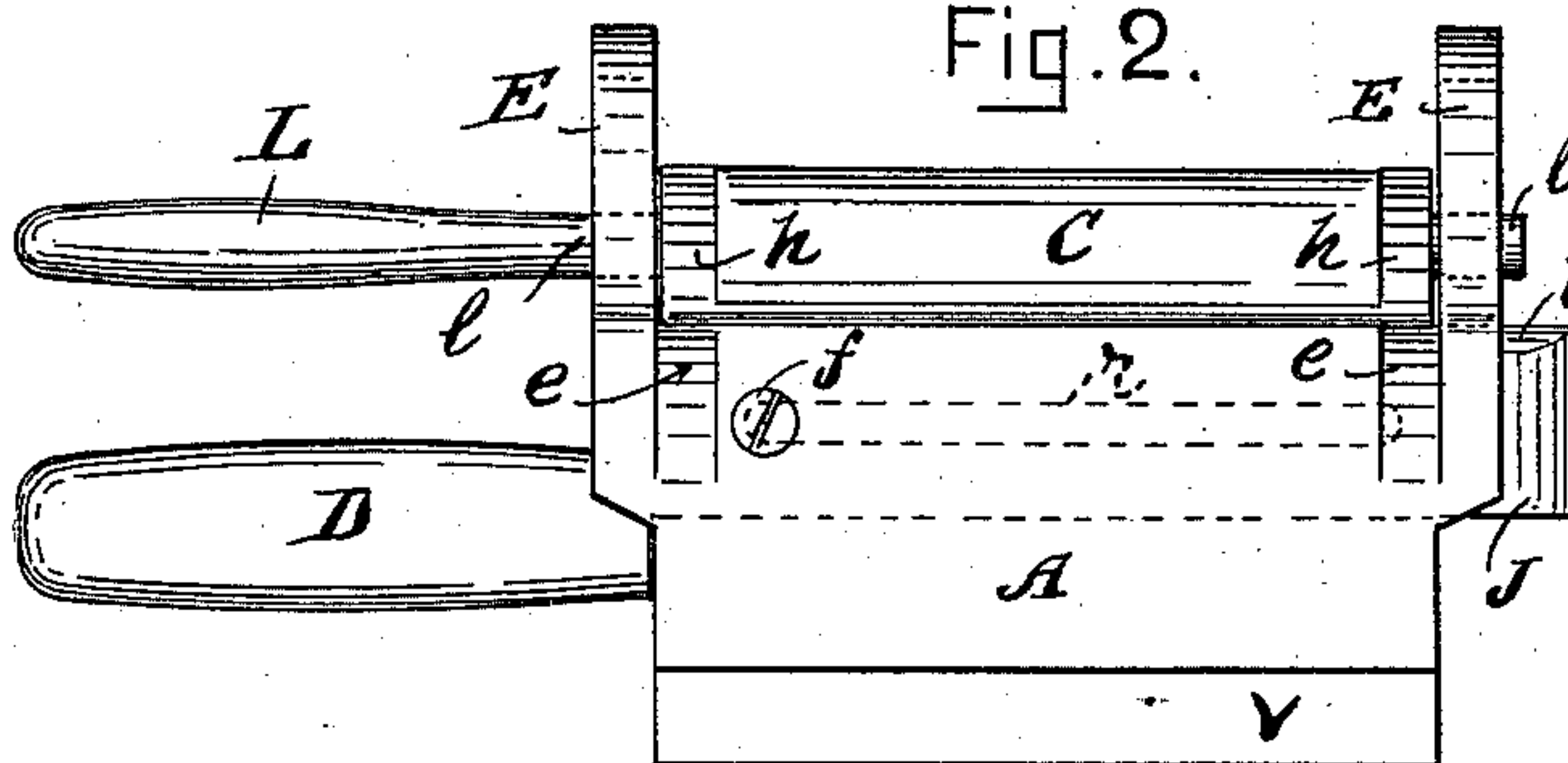


Fig. 4.

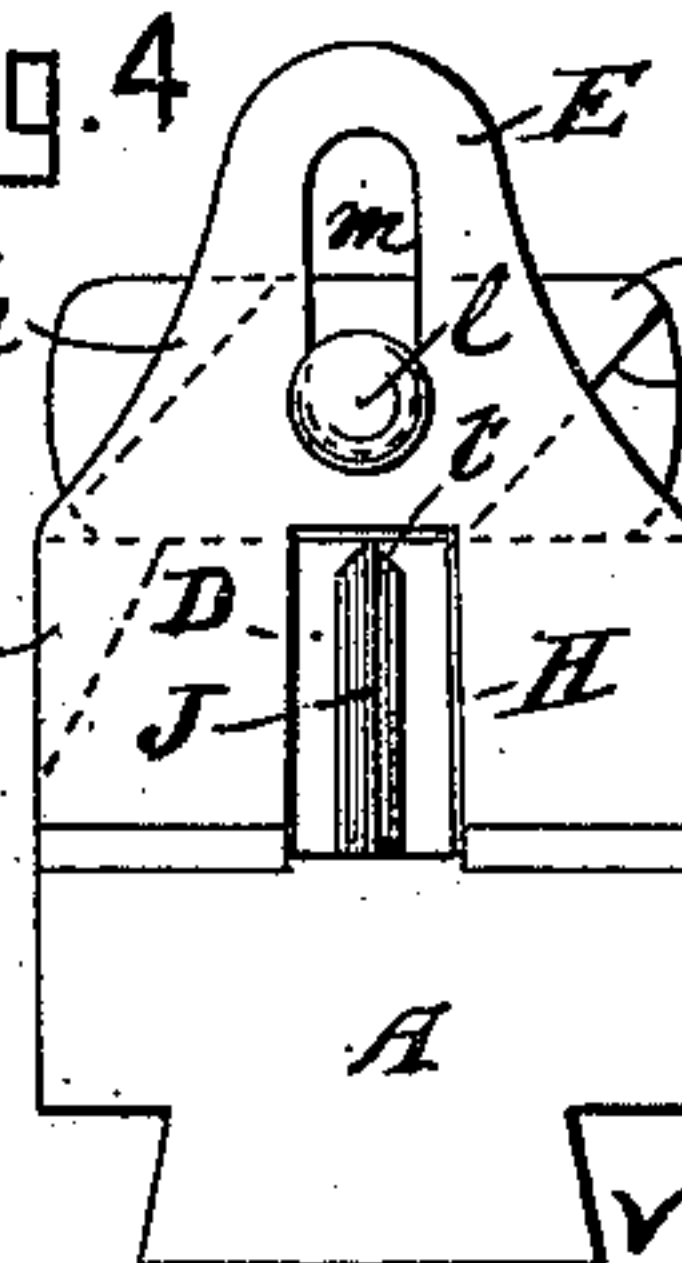


Fig. 6.

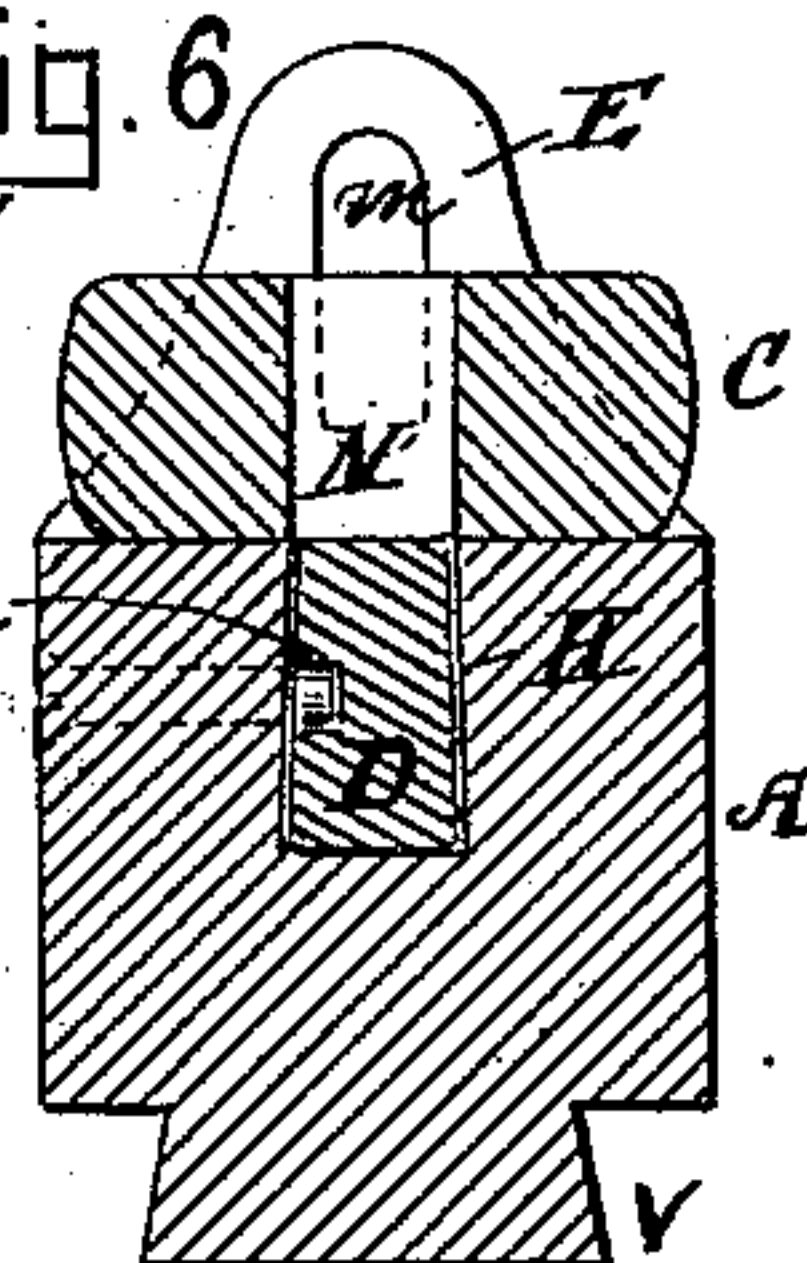


Fig. 7.

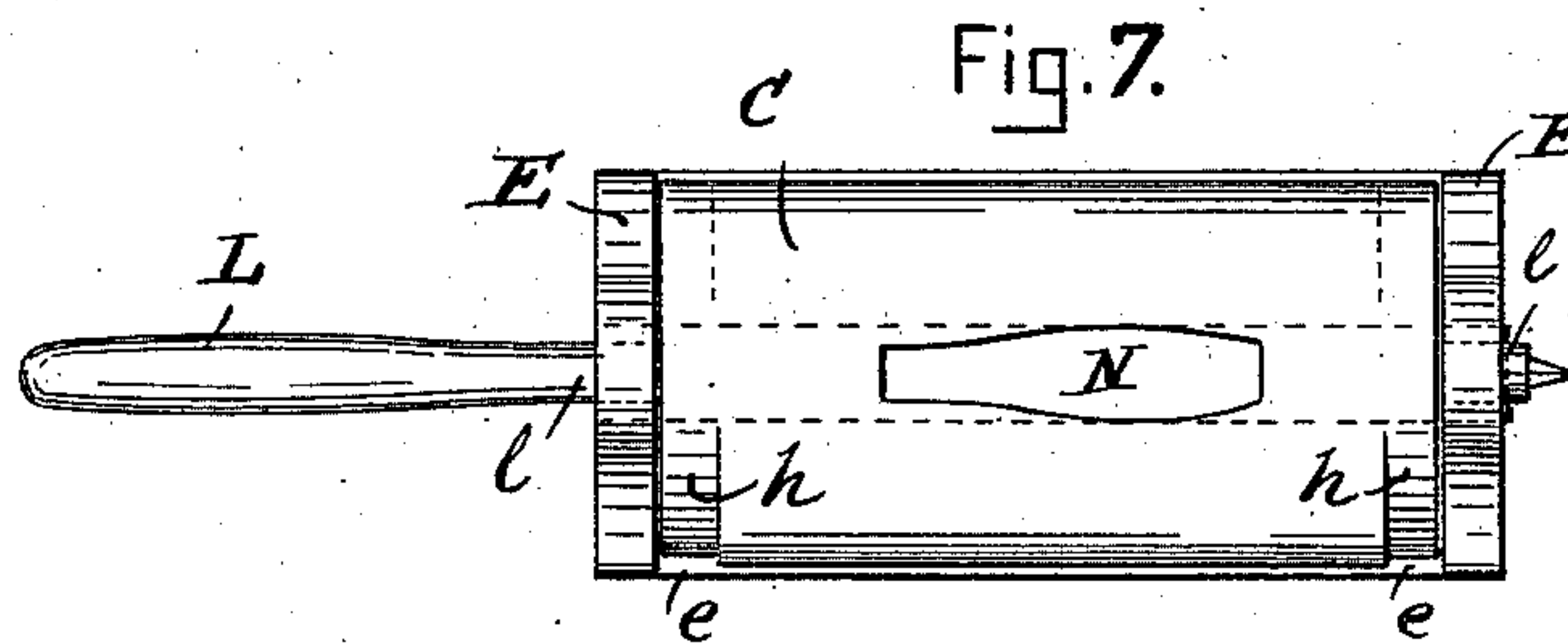


Fig. 8.

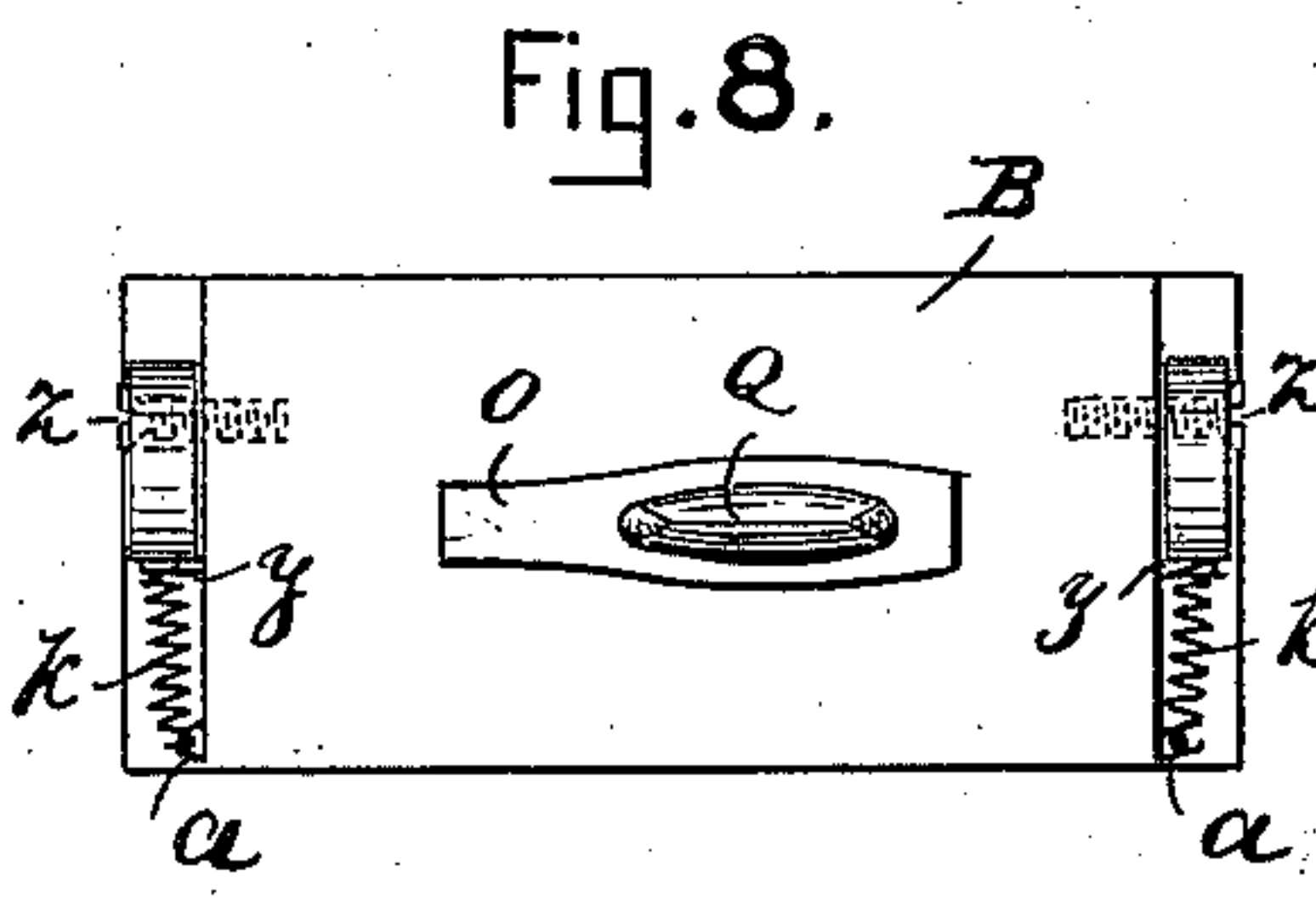


Fig. 9.

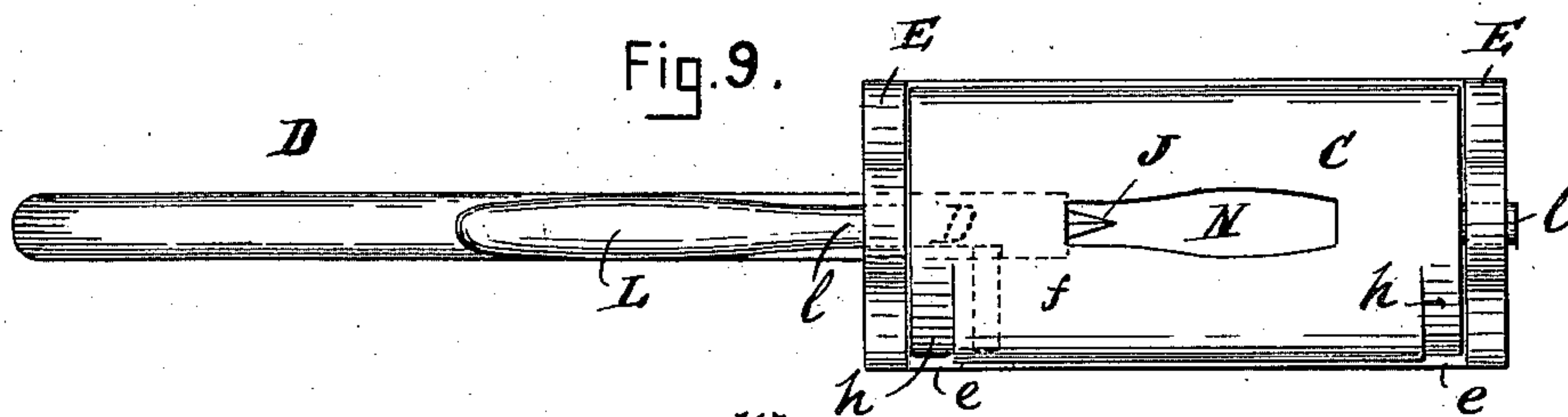


Fig. 10.

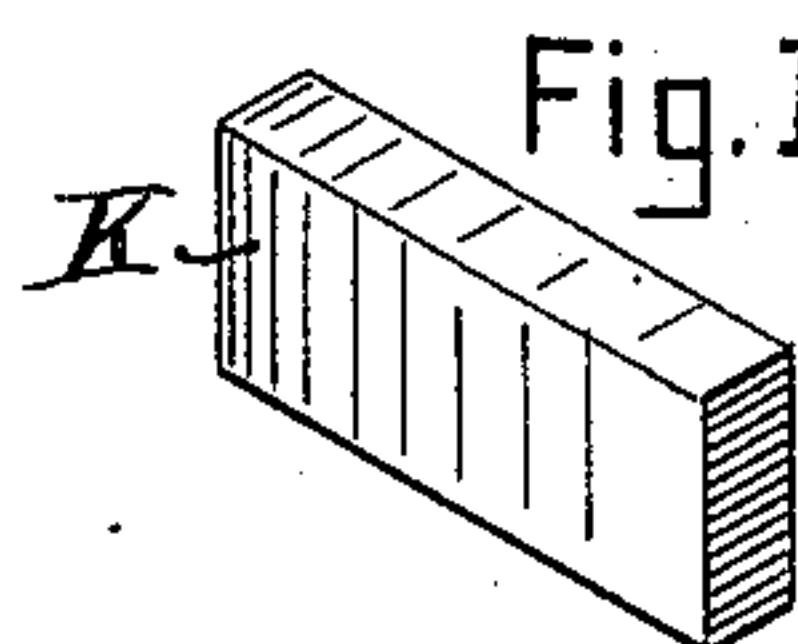
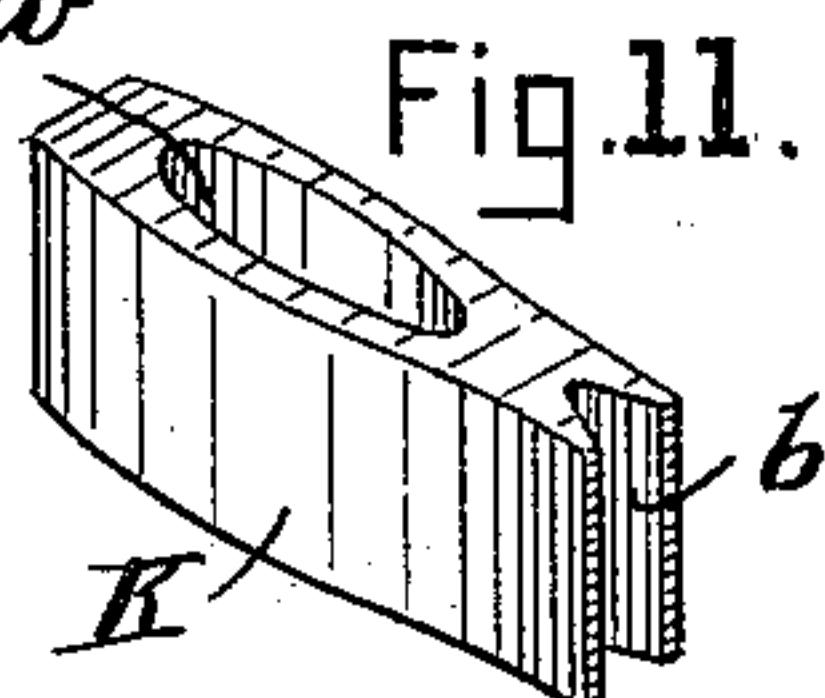


Fig. 11.



Witnesses.

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UNITED STATES PATENT OFFICE.

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DIE FOR MAKING AXES.

SPECIFICATION forming part of Letters Patent No. 351,492, dated October 26, 1886.

Application filed March 29, 1886. Serial No. 196,989. (No model.)

To all whom it may concern:

Be it known that we, ANDREW BRÜSTLE and ANDREW SIEGEL, of Hyde Park, in the county of Norfolk, State of Massachusetts, have invented
5 a certain new and useful Improvement in Dies, of which the following is a description sufficiently full, clear, and exact to enable any person skilled in the art or science to which said invention appertains to make and use the same,
10 reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a side elevation of the upper or movable die; Fig. 2, a side elevation of the
15 lower or bed die with the stripper in its normal position and the plunger inserted; Fig. 3, an end elevation of the upper die; Fig. 4, an end elevation of the lower die, showing the cutter of the plunger; Fig. 5, a vertical transverse
20 section of the upper die; Fig. 6, a vertical transverse section of the lower die with the plunger inserted; Fig. 7, a top plan view of the lower die with the plunger inserted; Fig. 8, a bottom plan view of the upper die; Fig.
25 9, a top plan view of the lower die with the plunger withdrawn; Fig. 10, a perspective view of the blank before being submitted to the action of the dies, and Fig. 11 a like view
30 action of the dies.

Like letters of reference indicate corresponding parts in the different figures of the drawings.

Our invention relates to that class of dies
35 which are employed in the manufacture of axes and similar articles for giving them shape and forming the eyes to receive the handles or helvies; and it consists in the novel construction and combination of parts, hereinafter more
40 fully set forth and claimed, the object being to produce a more effective device of this character than is now in ordinary use.

The nature and operation of the improvement will be readily understood by all conversant with such matters from the following
45 explanation.

In the drawings, A represents the bed-die; B, the upper die; C, the stripper, and D the
50 plunger.

The bed-die is provided with a rabbet or dovetail, *v*, on its lower side, to fit a corresponding groove in the bed or support (not

shown) on which it is mounted, the upper die being also provided with a rabbet or dovetail, *d*, on its upper side, to enable it to be secured
55 to the cross-head or plunger of the drop-press. (Not shown.) Projecting upwardly at either end of the bed-die there is a standard, E, provided with a vertical groove, *m*. A vertical
60 groove, H, which is rectangular in cross-section, is formed in the upper portion of the bed-die, said groove running longitudinally and centrally of the body of the die, and opening
outwardly through the standards E. Disposed
65 in said groove, and arranged horizontally therein, is a plunger, D, provided with a longitudinal groove, *r*, in one of its sides, a screw, *f*, being inserted in the body A, and projecting into
said groove, the screw acting as a stop to prevent the plunger from being entirely with-
70 drawn.

The plunger D is provided at its inner end with a wedge-shaped cutter, J, which is A-shaped in cross-section at its top, and stands centrally in the groove H, said cutter being
75 adapted to cut or form the groove or slot *b* in the blade portion of the blank K, for receiving the "steel" of the ax, as shown in Fig. 11.

The stripper C is rectangular in form, and provided centrally at one end with a stud, *l*,
80 which is fitted to work in the slot *m* of one of the standards E, and at the other end with a corresponding stud, *l*, which is fitted to work in a slot, *m*, in the other standard E, said last-named stud being elongated to form the handle
85 L. The upper portion of the stripper, at one of its sides, is cut away at either end to form an incline, *h*, its under portion at the opposite side being also cut away at either end to form an incline, *i*, the inclines being ar-
90 ranged in parallelism with each other. A hole, N, is formed in the body of the stripper C, said hole being arranged longitudinally therein, and extending vertically through the center of the same from top to bottom, the
95 shape of the hole conforming approximately with the shape of the blank shown in Fig. 11.

Pivoted at *z* to either end of the upper die, B, there is a vertically-arranged hook, M, which is curved or rounded at its lower end,
100 as shown at *b*. A coiled spring, *k*, is secured by one of its ends to each of the respective hooks M, below its pivot *z*, the opposite end of the spring being attached to the body of

the die B at *a*, said spring acting contractively to draw the hook against a stud or stop, *y*, projecting laterally from the body of the die. A vertically-arranged follower, O, is secured in the die B by a screw, *n*, said follower being adapted to fit loosely in the hole N of the stripper C. Projecting from the lower end of said follower there is a vertically-arranged punch, Q, adapted to punch or form the eye *w* in the blank K.

In the use of our improvement, the dies A, B being first properly adjusted and secured in the press, the plunger D is pushed in until its cutter J projects through the end of the die, as shown in Fig. 7. The blank K, (shown in Fig. 10,) being first heated, if necessary, is then placed edgewise in the hole N of the stripper C, and permitted to rest on the top of the plunger D. The press is then operated to drop the die B and cause the punch Q to enter the blank and punch or form one-half of the eye *w*, at the same time forcing the blank outward or expanding it and wedging it in the hole N. As the die B descends, the curved portions *b* of the hooks M strike the inclines *h* on the stripper C, thereby forcing the hooks outward until the hooks proper, *j*, have passed the stripper, after which they are held in position to engage the stripper by means of the springs *k*, the hooks proper, *j*, being drawn by said springs inwardly into sockets *e*, formed in the upper portion of the die A, beneath the ends of the stripper, when the die B is raised. The die B being down, the punch Q in the blank K, and the hooks M in position to engage the stripper C, as described, the press is now operated to raise the upper die, thereby withdrawing the punch Q from the blank and causing the hooks M to turn the stripper on its studs or journals *m*, the blank in the hole N being of course turned with the stripper. After the stripper and blank have been turned, as described, the upper die B is again dropped, causing the punch Q to form or punch the other half of the eye *w* in the blank, after which the upper die is again raised, the punch withdrawn from the blank, and the stripper turned by the hooks in substantially the same manner as already described, the blank being left in the stripper. The plunger D is now withdrawn until stopped by the screw *f*, thereby bringing the cutter J into proper position to form the groove or slot *b*, after which the die B is again dropped, causing the punch Q to enter the eye *w* and the follower O to strike the blank K and force it out of the hole N down into the groove H, the groove *b* in said blank being formed by the cutter J as the blank descends. The groove H in the lower die is slightly wider than the hole N in the stripper, and as the blank strikes the bottom of said groove it is expanded by the follower O and punch Q, so that when the upper die is again raised the stripper will strip it from the punch and leave it in said groove. The upper die, B, being again raised and the blank left in the groove H, with the eye *w* punched

and the slot *b* formed, the plunger D, which is then in the position shown in Fig. 9, is forced inwardly until brought into the position shown in Fig. 7, thereby pushing the blank out of the die A, and leaving the dies in readiness to repeat the operation. The sides or edges of the stripper C are rounded, and as the die B and its punch Q rise to withdraw the punch from the blank while it remains in the hole N, the blank, being wedged in said hole, will cause the stripper to be carried upwardly with the punch until the studs or journals *l* reach the upper ends of the slots *m*, when the punch will be disengaged from the blank, the stripper at the same time being turned on its studs *l* by the hooks M, and dropped onto the die A, the elevation of the stripper, as described, enabling it to be turned to better advantage than when not elevated.

The handle L is for enabling the stripper to be turned by the workman in case the hooks M for any reason should fail to perform their functions properly. It also enables the hooks to be dispensed with, if desired.

The hole N corresponds approximately in horizontal section at any given point with a horizontal section of the blank shown in Fig. 11, taken at a corresponding point before the groove *b* is formed, said hole being approximately of the same shape as a finished ax, and hence comparatively little labor is required to complete the ax after it leaves the die.

We do not confine ourselves to making the groove H wider than the hole N, as the friction produced by pressing the blank into said groove and onto the cutter J, as described, will be sufficient usually to enable the punch Q to be withdrawn from the blank when the die B rises, without withdrawing the blank from said groove, the friction between the punch and blank being less than that between the blank and sides of the groove and cutter after the blank has been forced into the groove by the follower O, as described. Neither do we confine ourselves to the use of the groove H, plunger D, and cutter J, as the bed-die may be made without said groove, and the slot *b* formed in the blank by other means, if desired. One hook M may also be used, instead of two, by arranging it centrally of the stripper.

The device may be used in the manufacture of other articles than axes, if desired, and hence we do not confine ourselves to using it for any special purpose.

The plunger D may, if desired, be connected by suitable appliances with mechanism adapted to operate it by power. The stripper L may also be turned by other mechanical means than the hooks M, if preferred.

Having thus explained our invention, what we claim is—

1. In a device for punching or forming the eye of an ax or similar article, the combination of the following instrumentalities, to wit: a bed-die provided with a stripper and a movable die provided with a punch and hook or

hooks, the stripper being adapted to be revolved or turned and provided with a hole adapted to receive the blank to be punched, said hole conforming approximately in shape with the shape of the finished ax or other article, and the hook or hooks adapted to engage the stripper as the movable die rises, and turn the stripper and blank, substantially as described.

2. In a device for punching or forming the eye of an ax or similar article, the combination of a bed-die provided with a stripper and a cutter and a movable die provided with a punch, a follower, and a hook or hooks, the stripper being adapted to be revolved or turned and provided with a hole adapted to receive the blank to be punched, said hole conforming approximately in shape with the shape of the finished ax or other article, the hook or hooks adapted to engage the stripper as the movable die rises, and turn the stripper and blank, and the follower adapted to force the blank against the cutter and cut or form a groove or slot in its blade portion for receiving the steel, substantially as and for the purpose set forth.

3. In a device for punching or forming the eye of an ax or similar article, the combination of a bed-die provided with a stripper, a cutter, and a plunger, and a movable die provided with a punch, a follower, and a hook or hooks, the stripper being adapted to be revolved or turned and provided with a hole adapted to receive the blank to be punched, said hole conforming approximately in shape with the shape of the finished ax or other article, the hook or hooks adapted to engage the stripper as the movable die rises, and turn the stripper and blank, the follower adapted to force the blank against the cutter and cut or form a groove or slot in its blade portion for receiving the steel, and the plunger adapted to expel the blank from the die after the eye has been punched and the groove formed for receiving the steel, substantially as described.

4. In a device for punching or forming the eye of an ax or similar article, the combination of the bed-die A, provided with the stripper C, having the hole N, and the movable die B, provided with the punch Q, said stripper being adapted to be revolved, substantially as set forth.

5. In a device for punching or forming the eye of an ax or similar article, the die B, provided with the punch Q and hooks M, in combination with the die A, provided with the stripper C, having the hole N, said stripper being adapted to be revolved by the hooks, substantially as described.

6. In a device for punching or forming the eye of an ax or similar article, the combination of the die A, provided with the groove H, the plunger D, provided with the cutter J, the stripper C, provided with the hole N, and the die B, provided with the punch Q and follower O, substantially as set forth.

7. In a device for punching or forming the eye of an ax or similar article, the combination of the die A, provided with the groove H, the plunger D, provided with the cutter J, the stripper C, provided with the hole N, and the die B, provided with the punch Q, follower O, and hooks M, substantially as described.

8. In a device for punching or forming the eye of an ax or similar article, a bed-die and a plunger, said plunger being provided with a cutter adapted to cut or form the slot or groove in the blank for receiving the steel, in combination with a follower adapted to force the blank against said cutter to form said groove, said plunger being also adapted to expel the blank from the die after the groove is formed, substantially as and for the purpose set forth.

9. In a device for punching or forming the eye of an ax or similar article, the revolving stripper C, provided with the hole N and inclines *i h*, in combination with a bed-die, the die B, punch Q, and hooks M, substantially as described.

10. In a device for punching or forming the eye of an ax or similar article, the die A, provided with the sockets *e*, in combination with the revolving stripper C, die B, and hooks M, whereby said hooks are aided in engaging said stripper, substantially as set forth.

11. In a device for punching or forming the eye of an ax or similar article, the die A, provided with the groove H, plunger D, and revolving stripper C, having the hole N, in combination with the punch Q and follower O, said groove being wider than said hole, substantially as described.

12. The improved device herein described, the same consisting of the bed-die A, provided with the groove H and standards E, the plunger D, provided with the cutter J, and the die B, provided with the punch Q, follower O, hooks M, and springs *k*, combined and arranged substantially as described.

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