

J. GARDNER.
Capping Wood Screws.

No. 55,767.

Patented June 19, 1866.

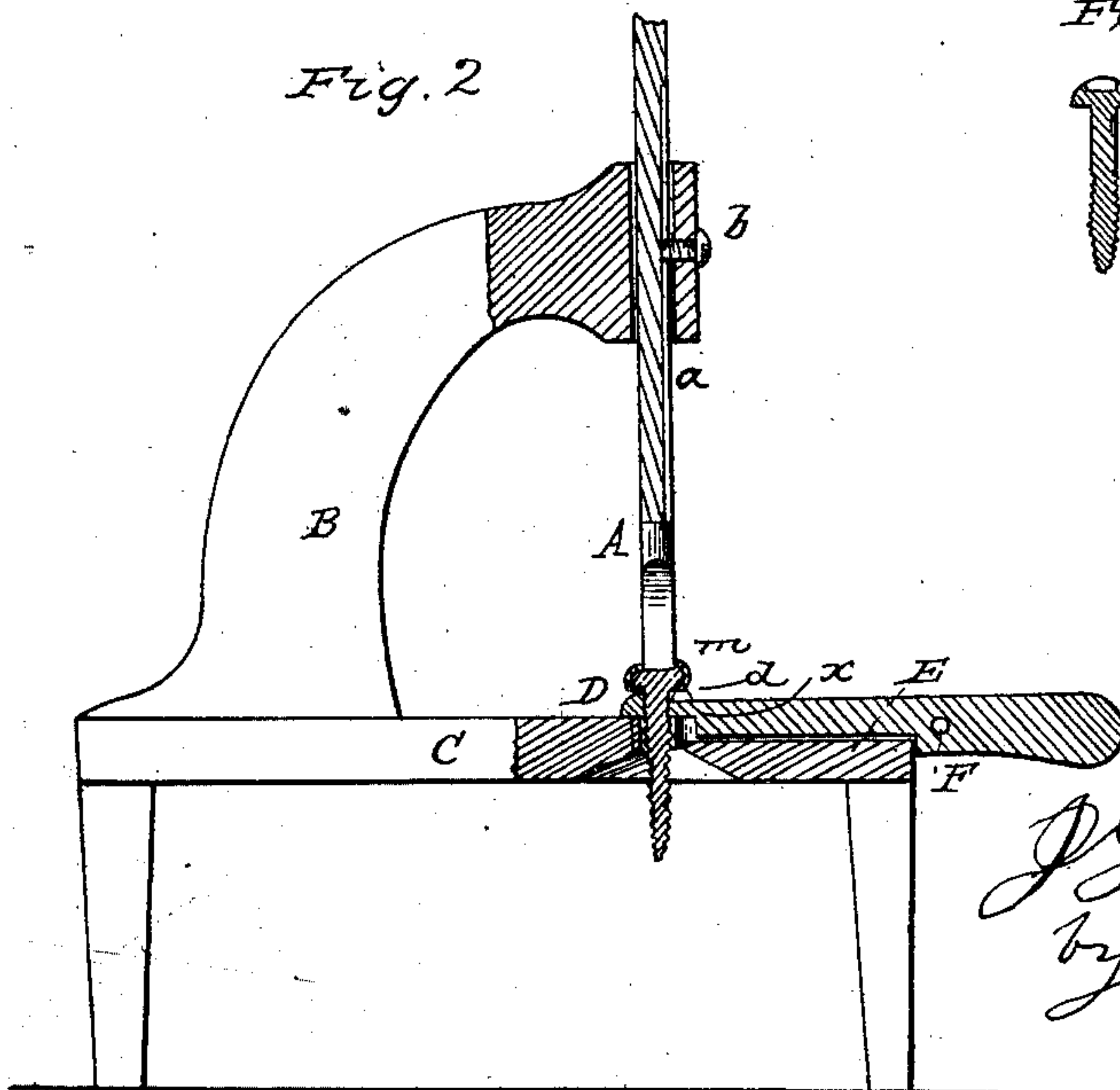
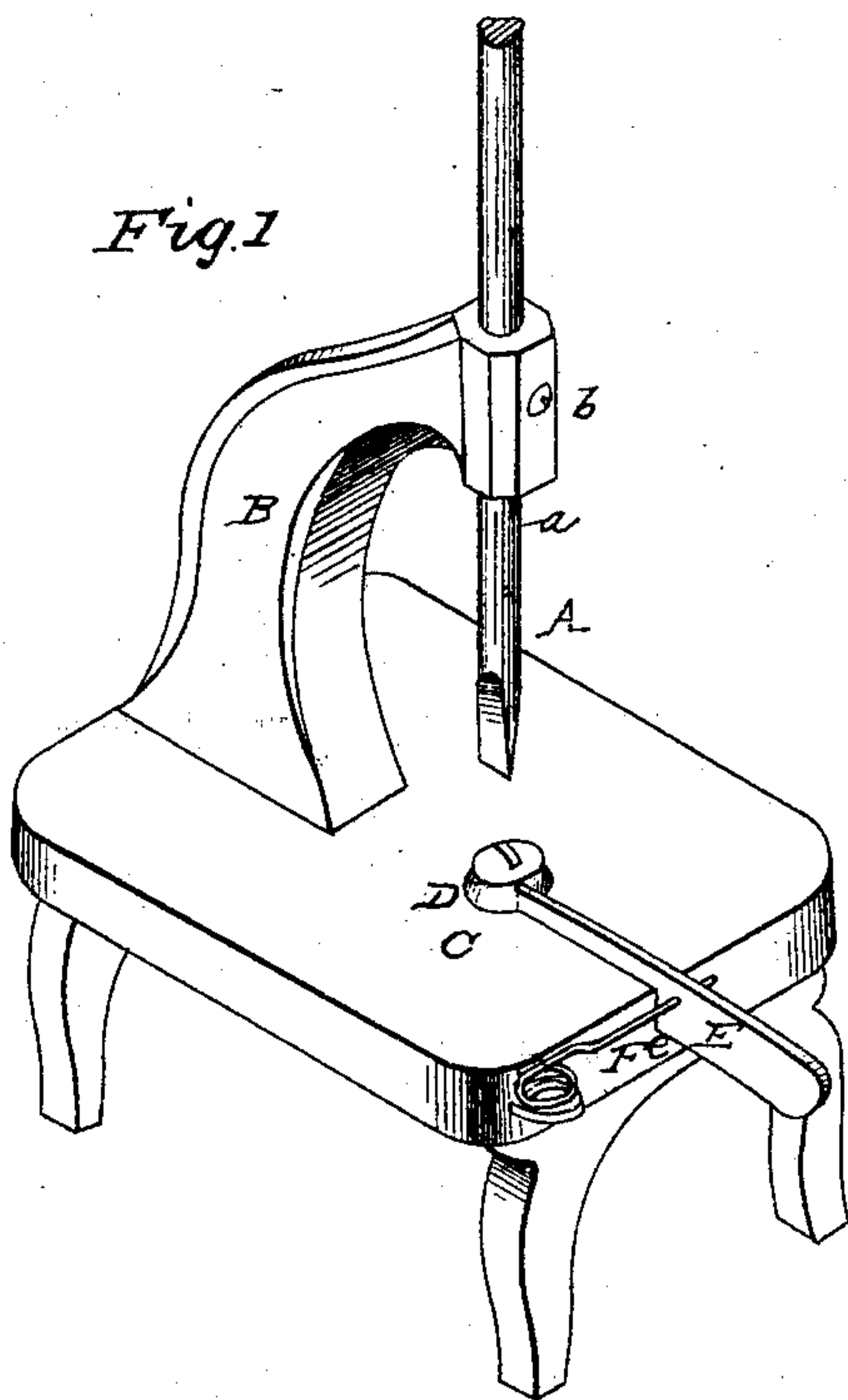


Fig. 3



Fig. 4



witnesses
W. J. Kelly
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his atty

UNITED STATES PATENT OFFICE.

JOHN GARDNER, OF NEW HAVEN, CONN., ASSIGNOR TO CHAS. T. GRILLEY.

IMPROVEMENT IN CAPPING WOOD-SCREWS.

Specification forming part of Letters Patent No. 55,267, dated June 19, 1866.

To all whom it may concern:

Be it known that I, JOHN GARDNER, of New Haven, in the county of New Haven and State of Connecticut, have invented certain new and useful Improvements in Capping Screws; and I hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, in which—

Figure 1 is an isometrical perspective view of a machine constructed in accordance with my invention, being shown lifted, so as to be disengaged from the nicked or slotted screw-head; and Fig. 2, a longitudinal vertical section of the same, the punch in this case being lodged in the slot in the screw-head.

My invention relates to improvements in the method of capping screws for which Letters Patent were issued to Charles T. Grilley on the 20th April, 1852. By that method the cap, before being fitted to and closed on the screw-head, is nicked or slotted, so as to correspond with the nick or slot in the iron screw-head. The force or pressure employed in order to close this slotted cap upon the screw-head has, however, the effect also of closing partially or altogether the slot in the cap, which slot must be opened again by means of a hand-punch, and this latter operation causes the cap to set loosely on the screw-head, and, moreover, injures and mars its appearance.

The object of my invention is to remedy these defects in the manufacture of capped screws, and I accomplish this result by nicking or slotting the cap after instead of before it is closed upon the screw-head by the means and in the manner hereinafter described—that is to say, I take a cap-blank which has not been nicked or slotted, and close it upon the screw-head by any suitable means, as indicated in the hereinbefore-mentioned patent of C. T. Grilley. I then take the screw to which the blank cap has thus been fitted and place it head upward in the die-plate of the machine for punching a slot in the cap, constructed as hereinafter described, in such manner that the nick in the iron screw-head shall be directly under the punch.

In order to find the slot in the screw-head after the blank cap has been closed upon it, I make a longitudinal notch or indentation in the

shank of the screw at any time before the cap is fitted to the head, located underneath the nick in the screw-head, and so placed that when a spring-catch, as hereinafter described, catches in said notch the nick in the screw-head shall be in the same plane with the edge of the punch.

When the screw has been placed in the die-plate of the machine, as has been said, it is turned in the die until the nick in its shank is caught by a projecting pin or stud actuated by a spring, which pin is so placed in the machine as to lie in a vertical plane which shall be at the same angle with the vertical plane of the punch as the angle formed by the vertical plane of the notch in the screw-shank with that of the nick in the head, such planes passing through the axis of the punch. It will therefore be seen that when the screw is in this position the punch and the nick in the screw-head will lie in one and the same plane, so that when the punch descends upon the screw it will be forced through the cap and into the nick in the screw-head, thus forming a slot in the cap corresponding to the nick in the head of the screw. By this means the cap is more closely united and held more firmly to the screw than by the ordinary method, as above set forth, the edges of the cap around the nick in the screw being brought into close contact with the head, whereas the ordinary method of reopening the already slotted cap tends to cause the cap to open out from and set very loosely on the head.

An incidental advantage arising from my invention is that the bottom of the slot in the screw-head is lined with the metal cut out from the cap by the punch, thus imparting the appearance of silver or brass to the slot, and preventing it in some degree from showing rust should the screw be exposed to dampness.

To enable those skilled in the art to make and use my invention, I will now proceed to describe it by reference to the accompanying drawings.

The machine shown in the drawings is in most respects like an ordinary punching-machine. The punch A moves perpendicularly up and down in the sleeve formed for its reception in the arm or goose-neck B, being secured in this position by the set-screw or spline

b, which fits in the longitudinal slot or groove *a* in the punch A. The goose-neck B is fastened to the bed piece C of the machine in any suitable manner. I mortise through this bed-piece just underneath the punch, and in the hole or opening I fit the die-plate or annular piece of metal D, whose interior diameter should be a little greater than the diameter of the shank of the screw to be operated on. Around that part of the die which is above the surface of the bed is a flange which rests upon the bed-piece and prevents the die from being driven farther into the recess or opening in which it fits.

In the side of the die is a longitudinal slot, *d*, which receives the head of the spring-catch, as hereinafter described. This spring-catch E, as has been above said, consists of a strip or thin bar of steel, or other suitable metal, so shaped as to fit and slide easily in the longitudinal dovetail groove *e*, formed in the bed-piece C. To the outer end of this bar is secured one end of the spring F, the other end of which is fastened to the stationary part of the frame.

The inner end of the bar E, or that end which slides in the groove, is provided with a stud or projection, *x*, which passes through the slot *d* in the side of the die-plate D, for the purpose which will be shortly indicated.

When it is desired to punch the slot in the head of the capped screw, whose shank has been first marked or notched, as seen at *y*, Figs. 3 and 4, the screw is inserted in the annular die-plate D, through which it passes until its head, being of greater diameter than the annular opening, is caught on the die D, on which it rests, and is thus supported against the pressure of the punch. When thus placed the projection or stud on the end of the spring-catch, which is brought in contact with the shank of the screw at the point where it passes through the slot in the die D, is pressed firmly against said shank by means of the spring F. The screw is now turned in

the die until the nick *y* in its shank comes opposite the slot in the die, when the projection or stud *d* on the end of the bar D catches in the notch, and, being held therein by the pressure of the spring, prevents any further rotary motion of the screw on its axis. This notch being placed relatively to the nick in the screw-head, as hereinbefore stated, and the spring-catch being placed in the same relative position as regards the punch, it follows, therefore, that when the punch descends upon the blank cap it will strike that part of it just over the nick in the screw-head, and, penetrating the cap, it will finally be lodged in the nick, as shown at *m*, Fig. 2.

It will thus be seen that by means of the nick in the shank I am enabled to find the nick in the iron screw-head after the blank cap has been closed upon it, and by this means can nick the cap after its application to the said screw-head.

The advantages which result from the employment of this process in the manufacture of capped screws have been set forth by me in the first part of this specification, and it is unnecessary to recapitulate them here; but I will proceed to state the improvements which I claim as my invention, and desire to secure by Letters Patent, which are as follows:

In the manufacture of capped screws, for operation upon screws, for this purpose specially provided with a notch in their shanks, the punching apparatus and spring-catch or equivalent mechanism, as described, so that the screw when capped may be adjusted in its proper relation to and its cap nicked by the punch, substantially as and for the purposes herein set forth.

In testimony whereof I have signed my name to this specification before two subscribing witnesses.

JOHN GARDNER.

Witnesses:

LEONARD F. MORSE,
A. POLLOK.