No. 661,239. Patented Nov. 6, 1900.

C. S. ELLIS.

DIES FOR MAKING UPHOLSTERERS' BUTTONS.

(Application filed Jan. 9, 1899.)

(No Model.)

Fig. 1.

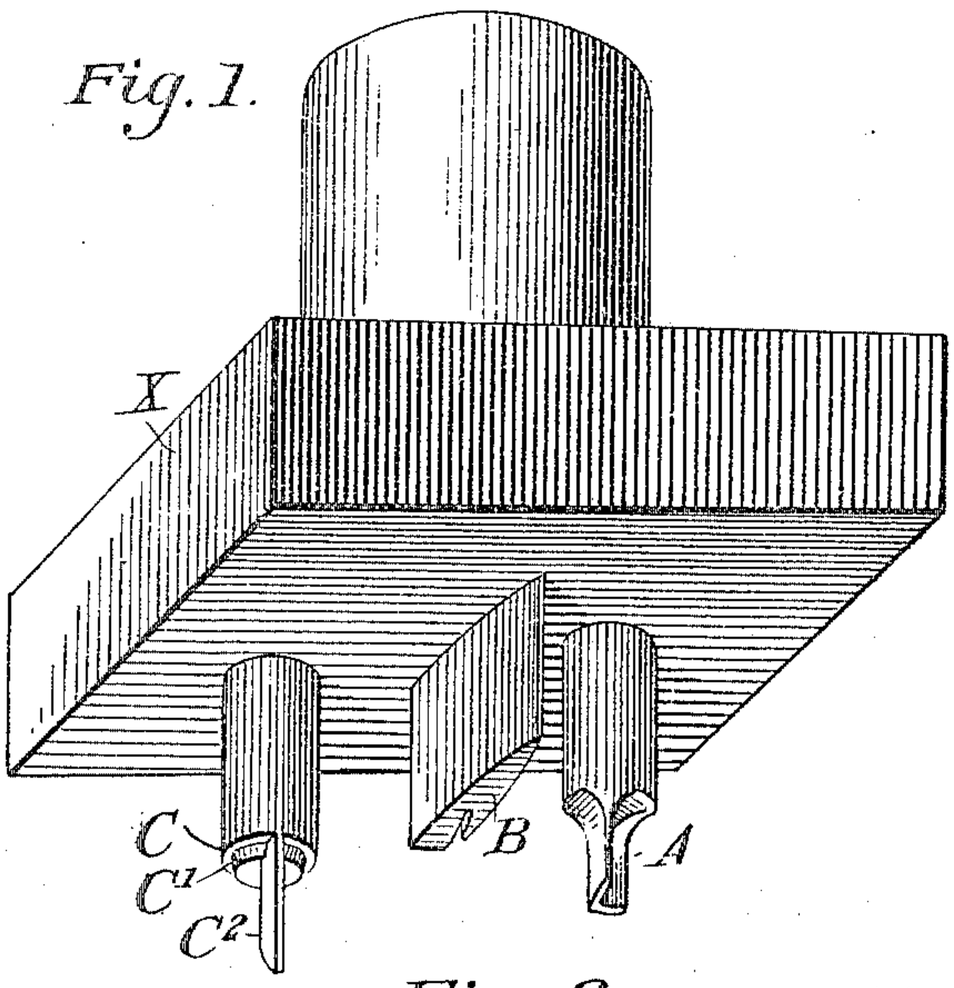


Fig. 2.

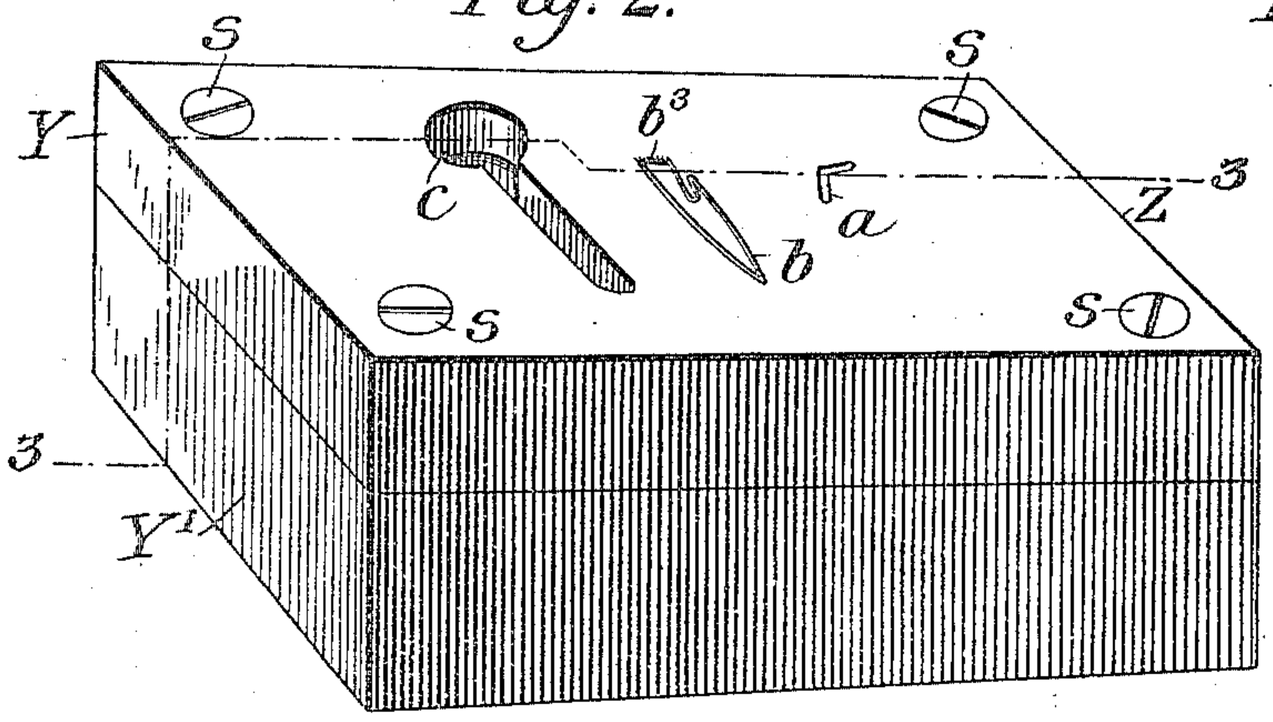


Fig. 3.

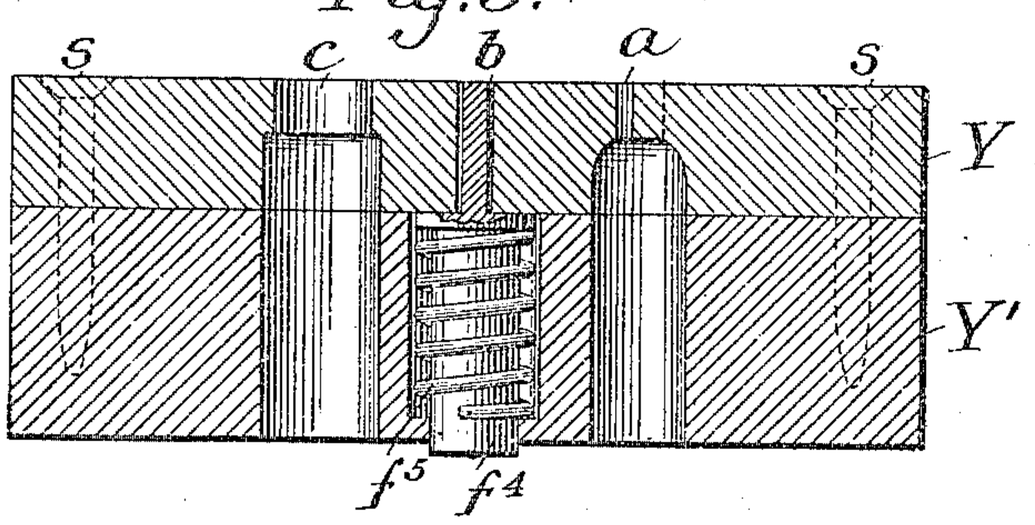


Fig. 4.

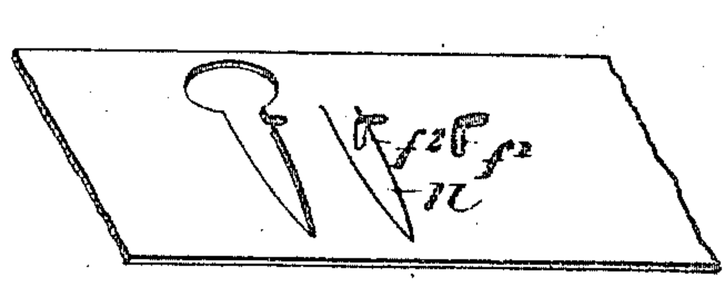


Fig. 5.

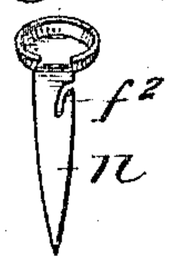


Fig. 6.

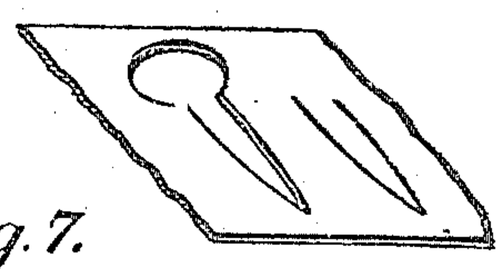


Fig. 7.

Fig. 8.

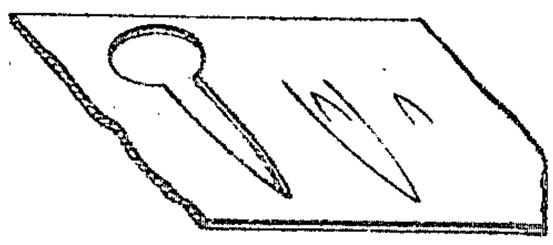
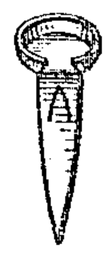


Fig. 9.



Witnesses.
Jannette E. Lee
Chas S. Burton

Inventor.
Chas. S. Ellis
By Donald C. Cattell
his attorney

UNITED STATES PATENT OFFICE.

CHARLES S. ELLIS, OF CHICAGO, ILLINOIS, ASSIGNOR TO THE DOAN & GATES COMPANY, OF SAME PLACE.

DIES FOR MAKING UPHOLSTERERS' BUTTONS.

SPECIFICATION forming part of Letters Patent No. 661,239, dated November 6, 1900.

Application filed January 9, 1899. Serial No. 701,690. (No model.)

To all whom it may concern:

Be it known that I, CHARLES S. ELLIS, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a certain new and useful Die for Making Upholsterers' Buttons, of which the following is a specification.

My invention relates to that class of dies which perform the office of forming and cutting an article out of a sheet of metal.

The principal object of my invention is to provide a simple, economical, and efficient die for the purpose of making upholsterers' buttons of metal with the least expenditure of energy.

My invention consists principally in a male die composed of punches set in a metal plate and extending outwardly therefrom, one of the said punches being provided with a bending-finger for the purpose of bending the prong of the button into a position perpendicular to the head thereof, and a female die consisting of a metal plate having depressions and apertures corresponding in number, position, and shape to the punches of the male die.

The devices herein shown are applicable generally to machines for the manufacture of articles by the use of dies, but are more particularly designed for use in the manufacture of upholsterers' buttons, similar to those described in my application for Letters Patent filed August 15, 1898, the same bearing Serial No. 688,660.

I shall not describe any mechanism for operating my device, for I claim no invention of any machine for that purpose. My dies may be operated by hand or automatically through the use of steam or other power.

In the accompanying drawings, Figure 1 is a view in perspective of the male die, showing the punches extending outwardly from the metal plate hereinbefore referred to and the bending-finger extending outwardly from the head of one of the punches. Fig. 2 is the female die, showing the depressions and apertures hereinbefore referred to. Fig. 3 is a cross-sectional view of the female die. Figs. 4, 6, and 8 are plan views of a strip of stock after being fed through the dies. Figs. 5, 7, and 9 are views of the buttons made by the die. Fig. 6 is a plan view of a strip of stock after being fed through the die, showing apertures made by punches of modified form or design. Fig. 7 is a view of a button which may be made by a die having punches modified in form and design, so as to make the apertures in the stock shown in Fig. 6. Fig. 8 is a plan view of a strip of stock after being fed through the die, showing apertures made by punches of modified form or design. Fig. 9 is a view of a button which may be made by a die having punches modified in form and design, so as to make the apertures in the stock shown in Fig. 8.

In the construction of the die in accordance with my designs I provide a metal plate X as a retaining-plate for the punches of the male die. In this plate I fix two or more of the punches. My design shows three punches; but in the construction of my die the work done by the punches A and B can be performed by a single punch having a shape corresponding with the depression *b*. I do not care, therefore, in this application to be limited to a die-consisting of three punches.

In Fig. 1, A represents a punch made of steel or other hardened metal designed for the purpose of cutting the aperture *f'* in the metal strip, as shown in Fig. 4.

The second punch B (shown in Fig. 1) is designed for the purpose of cutting the edges marked f^2 in the said strip, as shown in Fig. 4. This punch is designed to cut out the prong of the button shown in Fig. 5, leaving the same, however, still attached to the stock at the upper extremity of the prong.

C represents the third punch. (Shown in Fig. 1.)

C' represents a protuberance on the punch designed for the purpose of stamping the head of the button.

C^2 represents the bending-finger hereinbefore referred to. The office of this bending-finger C^2 will be hereinafter described.

Y is a hard-metal plate forming the upper portion of the female die, across which the stock or strip of metal from which the buttons are to be made may be fed through a feeding-guide and underneath an overhanging stripper. (Not shown in my drawings.) This stripper may be simply a sheet of metal fastened to the said plate Y and extending

over it just above the face of the plate, leaving space enough between the plate and the stripper to permit of the uninterrupted passage between them of the stock. In this stripper or sheet and above the apertures *a*, *b*, and *c* may be cut spaces for the purpose of permitting of the passage of the punches A, B, and C therethrough to engage the stock beneath.

Y′ represents the base of the female die, to which the plate Y may be attached by means of screws or bolts *s*.

The letter *a* shows the aperture through which the portion of the stock cut out by the punch A may fall. This aperture is provided with cutting edges to act in connection with the cutting edges of the punch A to cut out the stock in the manner shown in Fig. 4.

The letter *b* shows the depression corresponding with the punch B and provided with cutting edges throughout except along the line b^3. Inasmuch as the stock cut by the punch B is not entirely disengaged from the strip, but is held along the line b^3, it is necessary that a means be provided for disengaging the stock from the said depression *b* after the conclusion of the process of cutting. I therefore provide for this purpose a lifting-post f^4, actuated by a helically-coiled spring f^5, the office of this post being to force the stock out of the depression *b* when the punch B shall have been removed from contact therewith.

The letter *c* shows the aperture corresponding at its upper end with the punch C and being of a size sufficient at its lower end to permit of the passage therethrough of the stock cut by the punch B. This aperture I provide with cutting edges corresponding with the edges of the punch.

The female die may be provided with a gage to check the strip at proper intervals as it is fed across the face of the die beneath the punches.

The mechanism operating the dies being set in motion, a strip of metal of proper width may be fed across the face of the female die, beginning at the point Z, and underneath the stripper. As the stock passes beneath the punch A the actuating mechanism brings the punch into contact with the stock and punches out of it a portion thereof corresponding in shape with the aperture *a*. The portion of the stock cut out will then drop through the aperture into a receptacle designed to receive the same. The stock may then be advanced by the feeding mechanism into such position as will bring the portion marked f' in Fig. 4 into position corresponding to f^2 in Fig. 4, so that the stock immediately surrounding may be properly engaged by the punch B. The die again descending, the punch B will cut the stock along the edges marked f^2 in Fig. 4, leaving it still attached to the strip along the line b^3. In the meantime the punch A will have cut out of the stock another portion corresponding in shape to the portion marked f' in Fig. 4. On the withdrawal of the punches the lifting-post f^4, actuated by the spring f^5, will lift the prong *n* out of the aperture *b* and disengage it therefrom, so as to permit of its passage beyond. The punches being withdrawn from contact with the stock and the prong being disengaged from the aperture *b*, the actuating mechanism will again advance the strip until the portion cut by the punch B comes beneath the punch C. On descending the bending-finger C^2 will engage the prong *n* shown in Fig. 5 and force it downward through the aperture *c* until it reaches a position perpendicular to the strip out of which it has been cut. The protuberance C′, coming into contact with the stock, will tend to depress it, as shown in Fig. 5, and the cutting edges of the punch C, engaging the stock, will entirely free the button from the strip, so that it may drop through the aperture *c* and into a receptacle placed to receive it. In the meantime the punches A and B will have performed their work on other portions of the strip at the same instant of time. With each subsequent descent of the male die a complete button will be turned out.

I am aware that a protuberance upon a punch similar to that shown by me and marked C′ has been used, and this I do not claim.

While I have described my invention with more or less minuteness as regards details of construction and as being embodied in certain precise forms, I do not desire to be limited thereto unduly or any more than is pointed out in the claims. On the contrary, I contemplate all proper changes in form, construction, and arrangement, the omission of immaterial elements, and the substitution of equivalents, as circumstances may suggest or necessity render expedient.

I desire to state specifically that I do not wish to be limited to a die for the manufacture of a button having a notched prong, as shown in Fig. 5. A die constructed on the principle hereinbefore described, one of the punches being provided with a bending-finger, will suffice for the manufacture of upholsterers' buttons having prongs of any shape, and I contemplate the manufacture of all such buttons by the use of dies constructed as herein set out.

Having described my invention, what I claim is—

1. The combination of a plurality of punches for cutting the prong of an upholsterer's pin or button, and another punch for cutting the head thereof, the latter being provided with a protuberance for indenting the head, and with a bending-finger for bending the prong into a position at a substantial right angle to the head, all substantially as described.

2. The combination of a plurality of punches for cutting the prong of an upholsterer's pin or button, and a punch for cut-

ting the head of the button, this prong being proyided with a protuberance for indenting it, and with a bending-finger for bending the prong into a position at a substantial right angle to the head, and a female die with apertures corresponding in number, size and position with the punches, all substantially as described.

3. The combination of a plurality of punches for cutting the prong of an upholsterer's pin or button, a punch for cutting the head of the button, said punch being provided with a protuberance for indenting the head of the button and a bending-finger for bending the prong into a position at a substantial right angle to the head, and a female die provided with a lifting-post actuated by a spring so arranged as to disengage from the die the cut stock, and containing apertures corresponding in number, size and position with the punches, all substantially as described.

4. In a die for making upholsterers' buttons, the combination of a plurality of punches for cutting the prong and head of a button, and a bending-finger, all constructed for the purpose and substantially in the manner described.

5. The combination of a plurality of punches for cutting the prong of an upholsterer's button, a punch for cutting the head of the button provided with a protuberance for indenting it, and a bending-finger, all substantially as described.

6. The combination of a plurality of punches for cutting the prong of an upholsterer's button, a punch for cutting the head of the button, this punch being provided with a protuberance for indenting it, a bending-finger and a female die with apertures corresponding in number, size and position with the punches, all substantially as described.

7. The combination of a plurality of punches for cutting the prong of an upholsterer's button, a punch for cutting the head and provided with a protuberance for indenting the head of the button, a bending-finger, and a female die provided with a lifting-post actuated by a spring so arranged as to disengage from the die the cut stock, and containing apertures corresponding in number, size and position with the punches, all substantially as described.

8. The combination of a cutting-punch provided with a protuberance and a bending-finger, a second cutting-punch, and a lifting-post provided with the coiled spring, substantially as described.

CHAS. S. ELLIS.

Witnesses:
J. B. DOAN,
E. S. GATES.