E. BRINER.

Dies for Forming Spring-Shanks for Shoes.

No. 159,559. Patented Feb. 9, 1875.

Fig. 1.

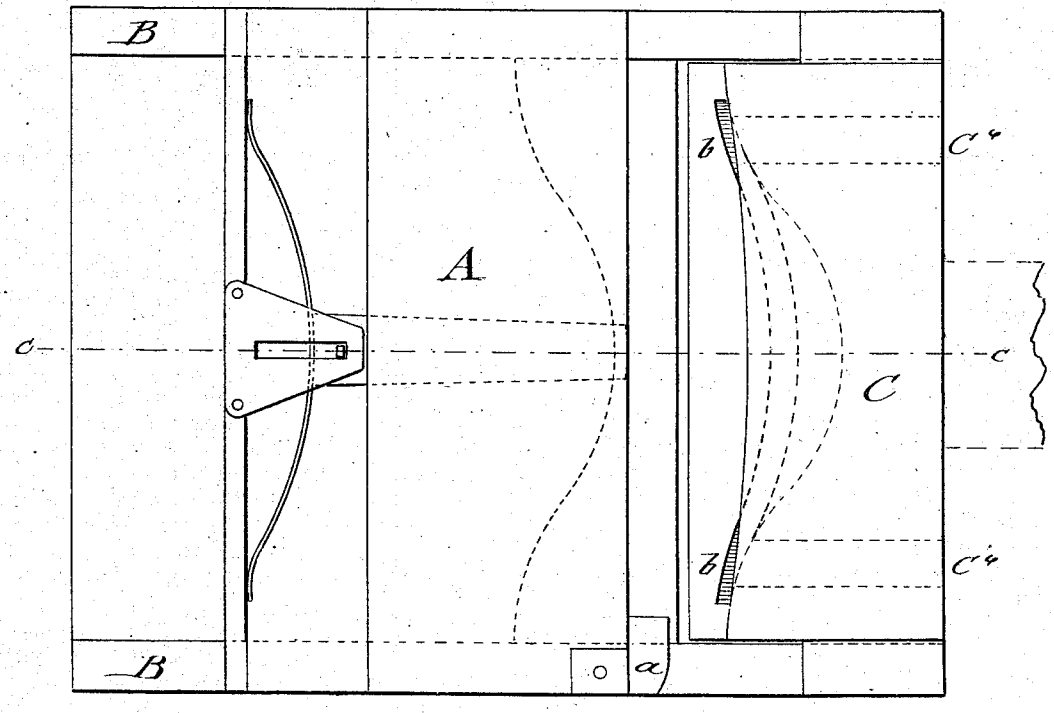


Fig. 2.

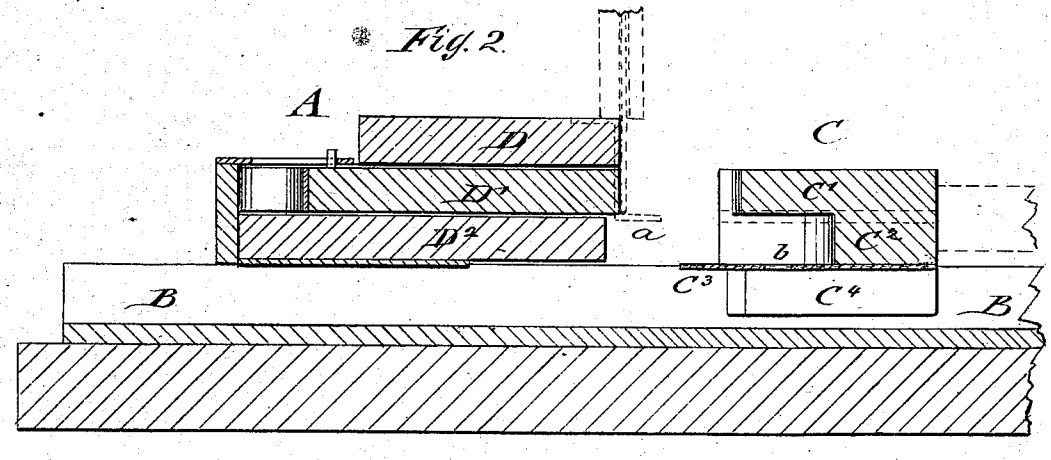
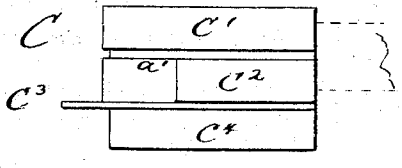


Fig. 3.



WITNESSES:

E. Wolff

A. J. Terry

INVENTOR:

Emil Briner

BY Munn & Co.

ATTORNEYS.

UNITED STATES PATENT OFFICE.

EMIL BRINER, OF NEW YORK, N. Y.

IMPROVEMENT IN DIES FOR FORMING SPRING-SHANKS FOR SHOES.

Specification forming part of Letters Patent No. **159,559**, dated February 9, 1875; application filed December 12, 1874.

To all whom it may concern:

Be it known that I, EMIL BRINER, of the city, county, and State of New York, have invented a new and Improved Press for Punching Spring-Shanks, of which the following is a specification:

In the accompanying drawing, Figure 1 represents a top view; Fig. 2, a vertical longitudinal section on the line *c c*, Fig. 1, of my improved press for punching spring-shanks; and Fig. 3, a side view of the plunger for cutting off the blanks.

Similar letters of reference indicate corresponding parts.

The invention will first be fully described, and then pointed out in the claims.

In the drawing, A represents the stationary main part or casing of my improved punching-press, which is securely attached to side guide-pieces, B, on a supporting-bed, forming between the guide-pieces a cavity or pan, into which the shanks are dropped for being fed forward in regular order. The main part A is constructed of three separate parts, having entirely different functions, and forming a kind of casing, into which the plunger C enters when sliding forward on pieces B, or other suitable guide mechanism, reciprocating motion being imparted to the same by machinery of suitable power. At the uppermost part of main casing A is arranged rigidly the steel cutting plate or die D, which has above the cutting-edge a vertical guide-frame, through which the piece of sheet metal from which the shank-blanks are made is fed along the face of the cutting-plate to projecting guide-plates *a*, arranged at one or both sides of the main casing, at such a depth below the lower edge of the cutting-plate D that the exact width of the shank is cut off therefrom by the plunger. The plunger C is also constructed of three different parts with a top cutting plate or die, C^1, whose upper cutting-edge, however, is at the height of the lower cutting-edge of the die-plate of the main casing, and concaved slightly from the edges toward the center, for the purpose of shearing off the blank gradually without cutting across its whole width at the same time. This facilitates the cutting considerably and requires less power, while imparting at the same time to the blank a tendency to bend easier at the middle part. Below the cutting-plate D of main casing A is arranged a sliding spring-acted bolt, D^1, which is thrown forward, its movement being limited by guide-slot and stop-pin, to such a position that its face is vertically in line with that of the cutting-plate D, and comes in contact with the punched-off blank on each stroke of the plunger, pressing the same, while receding against the face of the cutting plate or die of the plunger, and preventing the dropping of the blank. Upon the return of the plunger the blank cut from the plate on the forward movement is carried between the spring-bolt D' and the cutter, until the bolt reaches its extreme forward position, when the continued retreat of the cutter releases the blank, which falls down past the gage-pieces *a*, the ends of the blank being bent by the curved form of the cutter, so as to permit its passage. The blank is received on a projecting plate, C^3, in front of the shaping-die C^2, below the cutting-die C^1. The shaping-die C^2 of the plunger C corresponds to the form of the spring-shank to be produced, the curved or concaved part of the same being, however, curved to a greater extent than the shape of the finished shank, for the purpose of allowing for the elasticity or spring of the metal. The correspondingly-curved convex shaping-die D^2 of the main part fits exactly to the die C^2, and imparts therewith the required degree of curvature or spring to the shank. The drop-plate C^3 is provided with a shank-shaped slot, *b*, at such a distance in front of the concave shaping-die C^2 that when the shank is released by the return motion of the plunger from the shaping-dies the same springs forward toward the slotted recess *b*, for assuming its permanent curved shape, and drops through the same to the pan below. The curved recess *b* is made of such width that shanks of metal of slightly-varying tension, and consequently different extent of spring motion, may readily fall within the slot and be dropped through the same. The rapid forward motion of the plunger carries the punched-off blank over the recess without any chance of its passing through the same, while instantly after the commencement of the return stroke the shank drops into the pan below, arranging itself regularly

back of the others in front. Set-pieces C^4 at both sides of the plunger below the drop-plate C^3 extend with their faces forward to the drop-re:ess, and correspond in shape therewith, for feeding the whole set of shanks in the pan in forward direction at each forward stroke of the plunger, producing thereby a space sufficient for the unobstructed dropping of the next shank. The guide-plates *a*, on which the metallic sheet for cutting off the blank is seated, project toward the inside, and serve, in connection with side grooves, *a'*, of the plunger, as steadying devices for securing the accurate and regular action of the press.

The shanks are fed forward on the drop-pan, either to a suitable receptacle or directly through the annealing-oven, for being tempered to the required degree of spring power. A set of main casings and plungers may be arranged sidewise of each other for the same or different sizes of shanks, so that at each stroke several of them are produced ready for annealing, and thereby the manufacture of spring-shanks not only greatly expedited, but also economized, as the space and time through which the shanks have to pass are reduced by the compact shape and construction of the press to a small and very effective compass.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. The combination of the cutters C^1 D, spring-follower D^1, supports *a*, and shaping-dies C^2 D^2, in the manner and for the purpose specified.

2. The combination, with plunger C, of the subjacent pushers C^4 C^4 and casing A, having passage below the die D^2, as and for the purpose set forth.

EMIL BRINER.

Witnesses:
PAUL GOEPEL,
T. B. MOSHER.