E. BRINER.

PRESS FOR FORMING SPRING-SHANKS FOR SHOES.

No. 172,697. Patented Jan. 25, 1876.

Fig: 1.

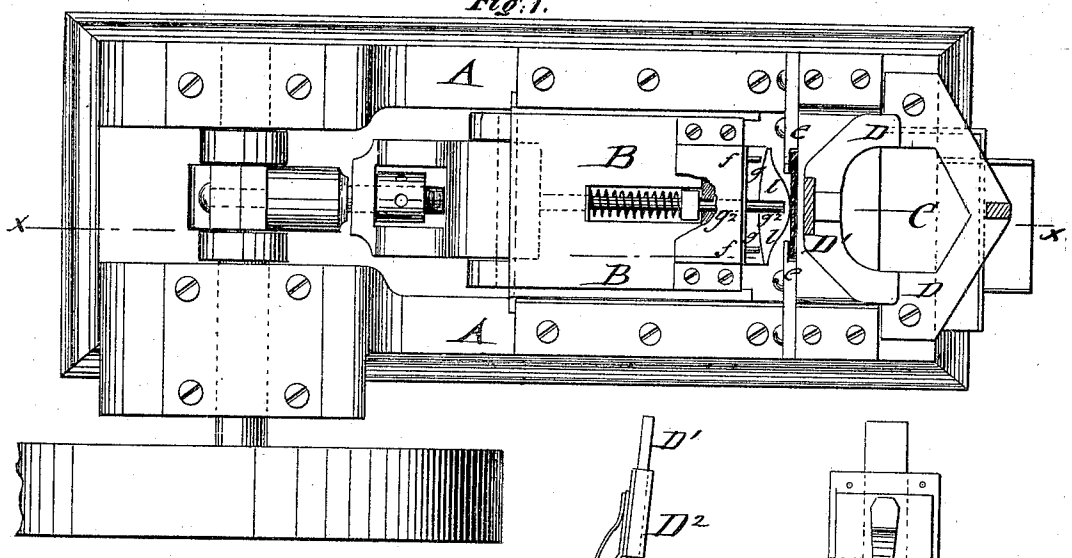
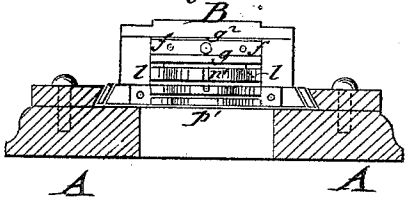
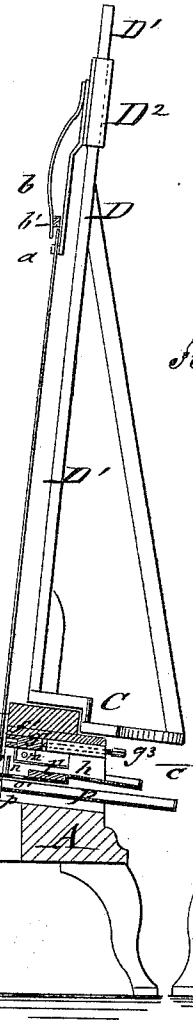


Fig: 4.





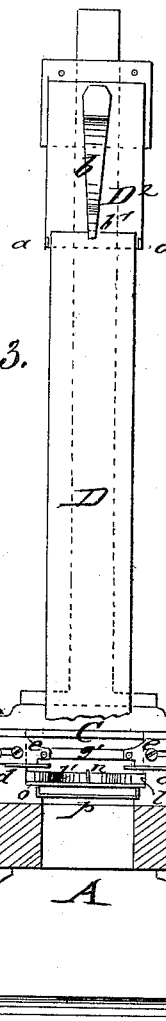
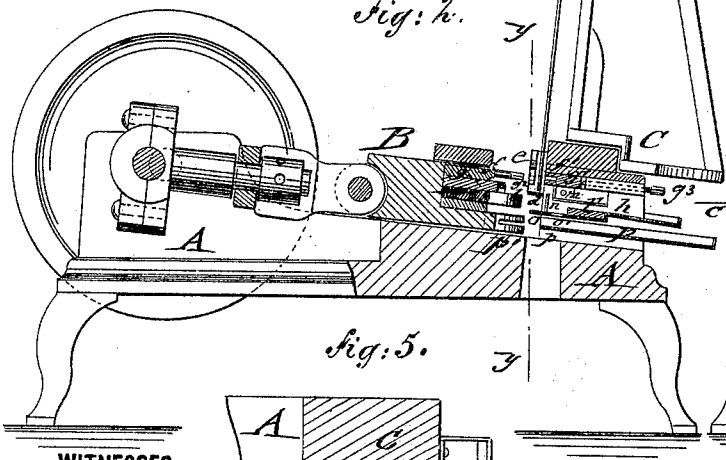


Fig: 3.

Fig: 2.



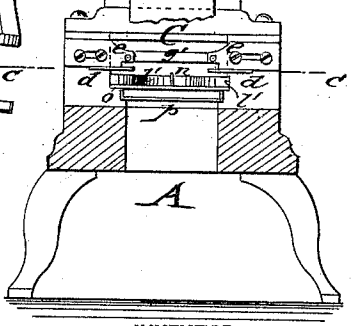
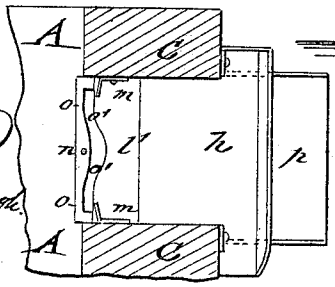


Fig: 5.



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EMIL BRINER, OF NEW YORK, N. Y.

IMPROVEMENT IN PRESSES FOR FORMING SPRING-SHANKS FOR SHOES.

Specification forming part of Letters Patent No. **172,697**, dated January 25, 1876; application filed December 18, 1875.

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 Forming Spring-Shanks for Shoes, of which the following is a specification:

In the accompanying drawing, Figure 1 represents a top view of my improved press for punching spring-shanks for shoes. Figs. 2 and 3 are vertical longitudinal and transverse sections of the same, respectively, on the lines *x x*, Fig. 1, and *y y*, Fig. 2. Fig. 4 is an end view of the plunger on larger scale, and Fig. 5 a detail horizontal section of the drop-pan taken on the line *c c*, Fig. 3.

Similar letters of reference indicate corresponding parts.

The object of the present invention is mainly to so improve and perfect the press or dies for forming spring-shanks for shoes, for which Letters Patent have heretofore been granted to me under date of February 9, 1875, and No. 159,559, that the manufacture of them is still more facilitated, and accomplished with greater rapidity, uniformity, and reliability.

The invention will first be described in connection with drawing, and then pointed out in the claims.

In the drawing, A represents the stationary supporting-frame of my improved press for forming spring-shanks; B, the reciprocating plunger, that is guided in suitable manner on frame A, motion being imparted to it by a crank-shaft and cross-head, operated by suitable power.

The reciprocating plunger B is made of a number of parts, namely, of perforating-punches and a blank-holding spring-bolt, and of cutting, shaping, and pushing dies arranged subjacent below each other.

A stationary casing, C, corresponds in the general arrangement of the punching, cutting, and shaping dies with the plunger, but is furthermore provided with a guide mechanism, D, for feeding the sheet-metal shank-plates, and with pans for conducting off the punchings and finished shanks.

The guide device D is secured to the top of the casing C, and made of an upright standard, D^1, along which the carrier D^2 slides, moving down along the standard until the last piece of the shank-plate is fed to the dies. The carrier D^2 holds between side lugs *a* at the lower end, and a top spring, *b*, with stop *b'*, the sheet-metal plate in nearly vertical position, so that the same is allowed to adjust itself readily in vertical position to be fed evenly to the dies, being left free throughout its entire length, and resting merely with the lower edge on the rest-pieces *d* at both sides of the casing.

The free suspension of the sheet metal plate produces the cutting of uniform sizes of shanks, even in case the plates are not uniformly straight throughout their length, but, as is more frequently the case, slightly bulging to one side or the other, and varying from the straight shape of the plate.

Adjustable plate-holders *e* are placed at both sides of the casing C in front of the cutting-die of the same, and extended symmetrically over both sides of the shank-plate and perforated to allow the punching-dies *f* of the plunger to pass through the holes and enter the corresponding die-holes *f'* of the cutter-die *g'*, so as to punch the perforations at the ends of the shanks. The holders *e* retain the shank-plate in position on the return of the plunger, and prevent the plate from being drawn away from the casing C by the punching-dies.

Centrally between the punches *f* of the plunger is arranged a sliding spring-bolt, g^2, that is carried with the forward motion of the plunger against the shank-plate for pressing the same closely against the cutting-die g^1 of the casing, and facilitating the perforating of the shank-plate and the shearing off of the blank by the cutting-die *g* of the puncher. The cutting-die *g* is concaved to shear off more easily the blank, which is accomplished simultaneously with the punching of the holes at the next adjoining blank of the plate.

The cutting-die g^1 of casing C is made adjustable by set-screws g^3 acting on the rear part of the die. The punchings are dropped from the die-holes in suitable manner on an inclined pan, *h*, that forms the extension of the shaping-die of the casing, and from which they are conducted off to some receptacle. The cutting-die *g* is recessed or slotted at both ends for the rest-pieces *d* to allow of the cutting-die

to pass beyond the same to the cutting-die of the casing.

The shaping-die *l* is arranged immediately below the cutting-die *g*, and made like the corresponding die *l'* of the casing of greater curvature than the shank to be formed, to allow for the spring of the shank, and obtain thereby the required bend of the same. The sheared-off blank is carried against side guard-pieces *m*, Fig. 5, and then dropped on the shaping-die *l*, as the same protrudes considerably beyond the cutting-die *g*.

On the return stroke of the plunger B the blank is prevented from going back with the shaping-die *l* by a pin, *n*, of the drop-plate *o*, a slot, *n'*, of the shaping-die *l* being arranged for pin *n*, and a recess below the die for the drop-plate *o* for the purpose of admitting the unobstructed passage of these parts past each other for the accomplishment of their functions, and for bringing thereby the parts within small compass, so that the blanks have to pass only through short distances during the different operations to which they are exposed.

The blank resting against pin *n* is taken up by the next stroke of the plunger and carried forward by the shaping-die of the plunger against the die of the casing, the rapid motion of the plunger carrying the straight blank over the slot *o'* of the drop-plate *o*. As soon as the blank is acted upon by the shaping-dies, and the plunger drawn back, the shank will assume the regular bent shape which it is intended to receive, and spring thereby in forward direction. The slot *o'* corresponds in shape to that of the shank, and is made wide enough to admit the ready dropping of the shank to the pan *p* below. A centrally-recessed pushing-die, *p'*, of the plunger, passes over the pan *p* and carries then the shank forward, arranging the same back of the others in front. The shanks are thus gradually pushed forward and fed in regular order from the mouth of the fan to a suitable receptacle or directly to the annealing-oven.

A bottom recess of frame A below the working dies of the casing admits the dropping of any scalings, and impurities, and also the introduction of means to keep the lower parts clean and in order.

At each stroke of the plunger a shank-blank is perforated, cut, shaped, dropped, and fed forward, so that a completely-formed shank is produced by each stroke. The shanks are of uniform size and shape, and may be manufactured by the press in economical and reliable manner.

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

1. In a press for forming spring-shanks, the combination of the punching-dies and steadying spring-bolt of the plunger, with the perforated plate-holders, die-holes, and drop-pan *h* of the stationary casing, to perforate the shank-blanks and carry off the punchings, substantially as set forth.

2. The combination of the cutting-dies *g g'* of plunger, and casing with the side guard-pieces *m* and guide-pin *n*, to convey the sheared-off blanks to the drop-plate ready for the action of the shaping-dies, substantially as described.

3. The combination of the shaping-dies *l l'*, slotted drop-plate *o*, pan *p*, and recessed pusher *p'*, for the purpose of shaping, dropping, and feeding forward the shanks, substantially in the manner specified.

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