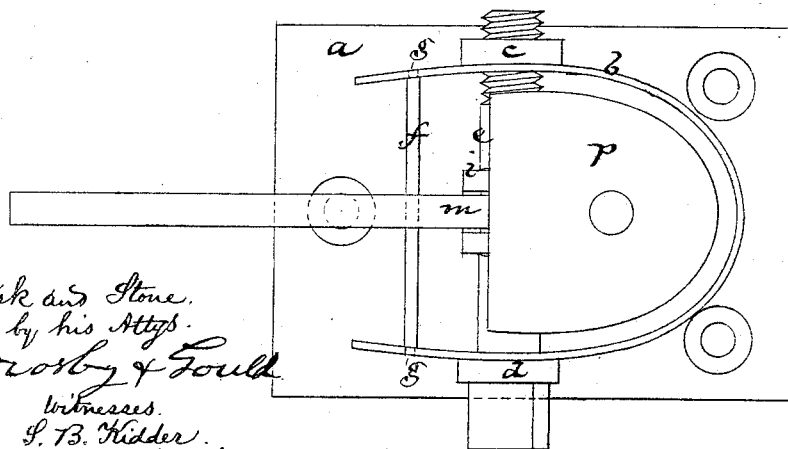
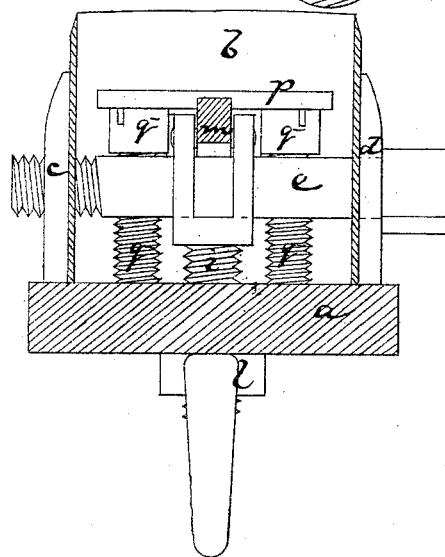
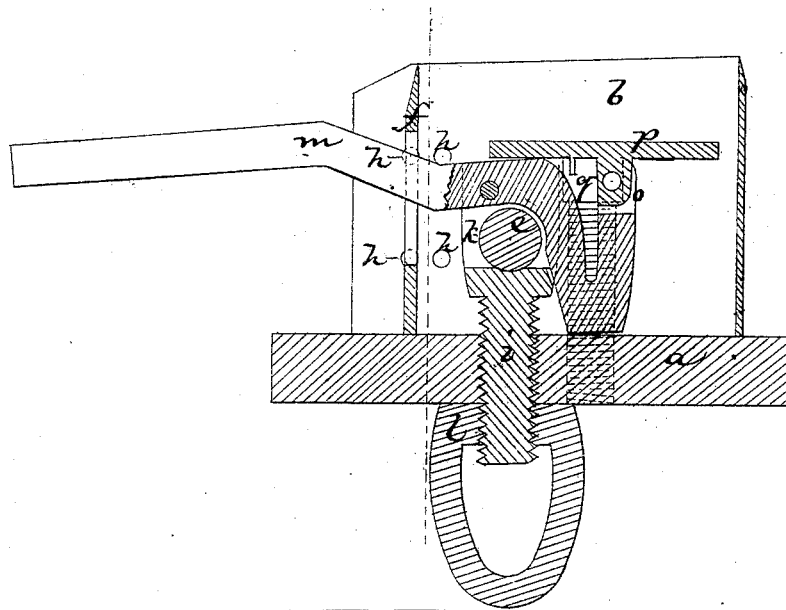


B. F. FISK & M. B. STONE.

Improvement in Heel-Dies.

No. 114,121.

Patented April 25, 1871.



*Fisk and Stone.*  
*by his Attys.*  
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*Witnesses.*  
*P. B. Kidder.*  
*W. W. Frothingham.*

# UNITED STATES PATENT OFFICE.

BENJAMIN F. FISK AND MARK B. STONE, OF HAVERHILL, MASSACHUSETTS.

## IMPROVEMENT IN HEEL-DIES.

Specification forming part of Letters Patent No. **114,121**, dated April 25, 1871.

*To all whom it may concern:*

Be it known that we, BENJAMIN F. FISK and MARK B. STONE, both of Haverhill, in the county of Essex and State of Massachusetts, have jointly invented Improvements in Heel Punches or Dies; and we do hereby declare that the following, taken in connection with the drawing which accompanies and forms part of this specification, is a description of our invention sufficient to enable those skilled in the art to practice it.

The invention relates to the arrangement of parts and method of constructing heel punches or dies for punching out heel-lifts or forming heels for boots and shoes.

In ordinary heel-punching dies there is no provision for adjustment of the cutting-edge to cut more than one size of heel, the edge being formed of one piece of metal or a continuous band; nor is there provision in such dies for expelling the punched lifts without injuriously straining them or forcing them out of shape; neither is there provision for adjustably determining the depth of heel which can be formed in the punch. Such provisions being the object we have had in view, we make a die or punch with its opposite sides (which are of spring-steel) embraced between clamp-bars which are connected by a stout screw-bolt passing through the punch from side to side, the head of the bolt bearing upon one clamp, and the screw-threaded end passing through a nut-thread in the other, so that by screwing up the bolt the sides of the punch can be pressed in to cut a narrow heel, the sides pressing out (as the screw is loosened) by their own spring or elasticity.

The breast-cutter is an independent piece from the curved knife that cuts the sides and rear of the heel, and this cutter is removably fixed, and has provision for setting it more or less in from the end of the punch, so that a shorter or longer heel may be punched.

The punch is held down to the plate upon which it is mounted by a screw bolt and nut, the head of the bolt having an eye or eyes through which the cross-bolt passes, and on the cross-bolt is fulcrumed a lever, one arm of which extends through the breast-forming cutter, while the other arm extends back from the bolt and has pivoted upon it a swiveling

gage and lifter-plate, which, by throwing down the outer end of the lever, is thrown up and ejects the heel-lifts, while, when in normal position, it forms a bottom plate for the lifts to rest upon as they are punched and successively enter or are brought together in the punch. This gage and lifter-plate, in normal position, rest on the heads of two adjusting-screws, and by turning these screws more or less the depth to which the gage-plate sinks into the punch is adjustably varied, so that heels of greater or lesser thickness may be formed, and, whatever the thickness, the plate, when it is thrown up, preserves its horizontality, and thus forces the heel-lifts from the punch without injuring, straining, or distorting them.

These details constitute the several features of our invention.

The drawing represents in plan, in central vertical section, and in vertical section through or in line with the cross-bolt, a heel-cutting punch or die embodying the invention.

*a* denotes a strong metal base-plate, to which the die is fastened. *b* denotes the main cutter, formed of sheet-steel, with a sharp cutting-edge, and bent into shape, its sides being held between the clamps *c d* by the screw-bolt *e*, and they being kept at proper distance apart by the breast-cutter plate *f*.

The sides may, however, be more or less contracted, with reference to the plate *f*, by turning the bolt, and the punch may be made longer or shorter by changing the position of the breast-cutter *f*, pins *g* at the edges of which may enter either set of a series of holes, *h*, formed to receive them.

*i* denotes the bolt by which the spring is fastened to the base-plate, the upper part of the bolt having eyes *k*, through which the bolt passes, and the bolt being drawn down by the nut *l*, working on the screw-threaded end of the bolt and against the bottom of the plate.

Fulcrumed on the cross-bolt, between the two prongs of the bifurcated head of the bolt *i*, through which the cross-bolt passes, is a lever, *m*, the long arm of which extends through the breast-cutter, and the short arm of which has pivoted to two ears, *o*, extending from its end, the gage and lifter plate *p*, the pivotal connection enabling the plate to

swivel in the punch, so that, at whatever its position as to height in the punch, it can be parallel to the top of the cutting-edge.

The lifter-plate is thrown up and down by the lever, and when down it rests upon the heads of the two adjusting-screws *g*, extending from and working in nut-threads in the plate *a*; and in such position the plate determines the thickness of heel which can be formed in the punch, the heel-lifts entering the punch as they are formed until it is full from the plate to the top of the cutting-edge.

By setting the screws higher or lower heels of various thicknesses can be formed, and when thus formed by the punch and upon the gage-plate the outer arm of the lever is depressed and forces up the gage-plate, which keeps its horizontality as it rises, and thus ejects the heel-lifts squarely, or without twisting or distorting them.

The punch may be made of one band and its sides connected by the cross-bolt, and so that they may be brought more or less distant; but for full-size heel-lifts we prefer the two cutters.

We claim—

1. The heel-cutting punch or die having its

opposite sides connected by a cross-bolt, *e*, substantially as and for the purpose described.

2. The heel-cutting punch or die formed of the curved cutter-plate *b* and the straight cutter-plate *f*, made separate and connected by the pressure of the curved plate upon the edges of the straight plate and suitable pins, substantially as described.

3. In combination with the curved cutter *b*, the adjustable breast-cutter *f*, substantially as shown and described.

4. In combination with the punch or die, the lifter and gage plate *p* and the lever *m* for operating the plate, substantially as described.

5. In combination with the swiveling gage-plate *p*, the adjusting-screws *g*, for adjustably regulating the normal position of the plate, substantially as described.

6. The combination of the cross-bolt *e* and the center-bolt *i*, for fastening the sides of the punch together and the punch to the plate, substantially as shown and described.

BENJAMIN F. FISK.  
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Witnesses:

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