2 Sheets—Sheet 1.

H. J. BATCHELDER.

MACHINES FOR MAKING HORSESHOES.

No. 180,448. Patented Aug. 1, 1876.

Fig. 1.

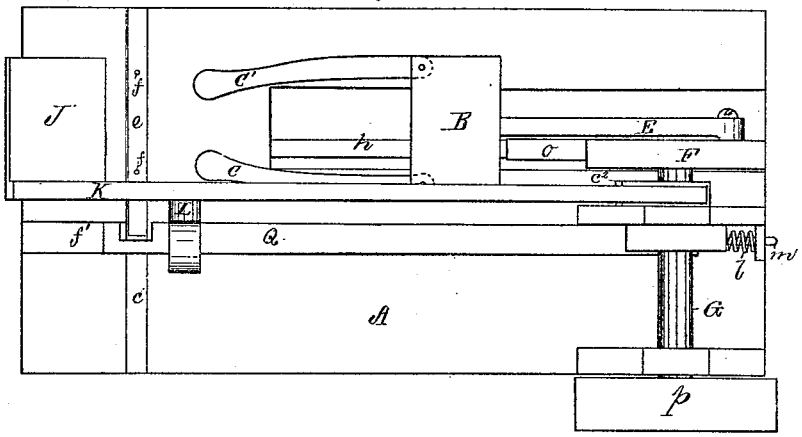


Fig. 2.

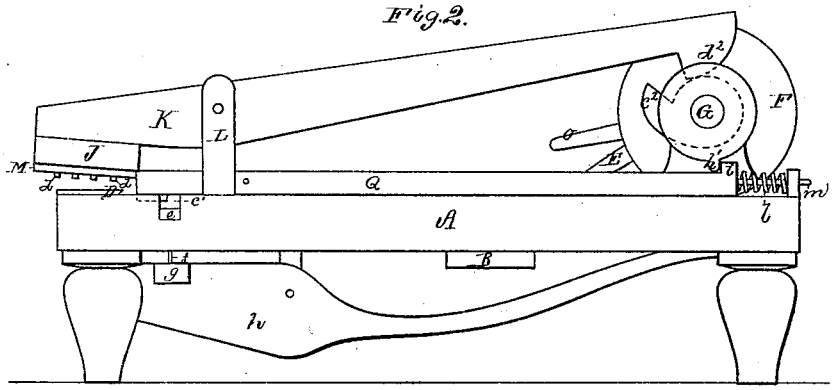
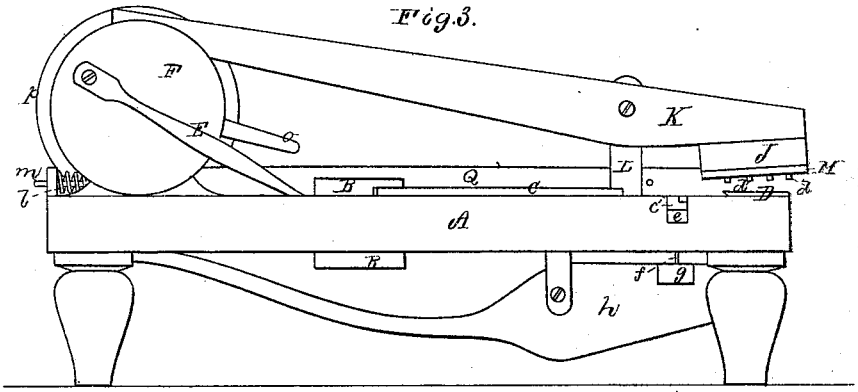


Fig. 3.



Witnesses.

Geo. Gray

F. L. Hale.

Hazen J Batchelder

by his attorney

F. P. Hale

2 Sheets—Sheet 2.

H. J. BATCHELDER.

MACHINES FOR MAKING HORSESHOES.

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Fig. 4.

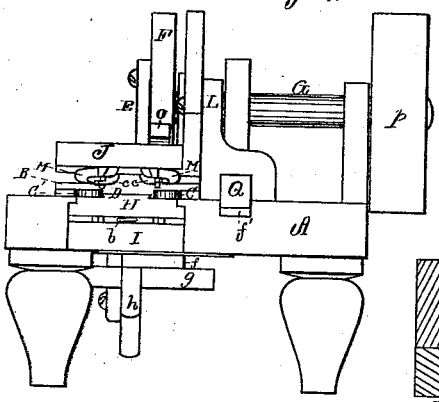


Fig. 9.

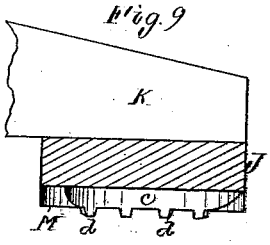


Fig. 10.

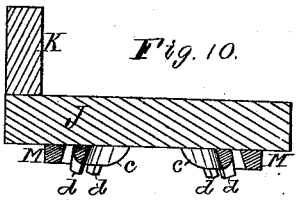


Fig. 6.

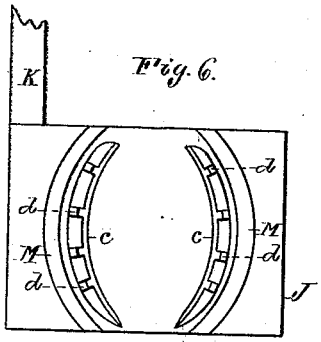


Fig. 7.

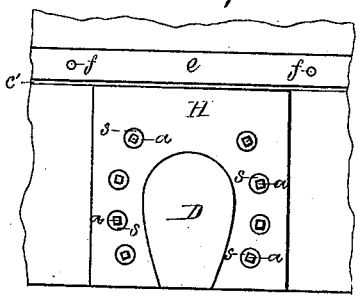


Fig. 5.

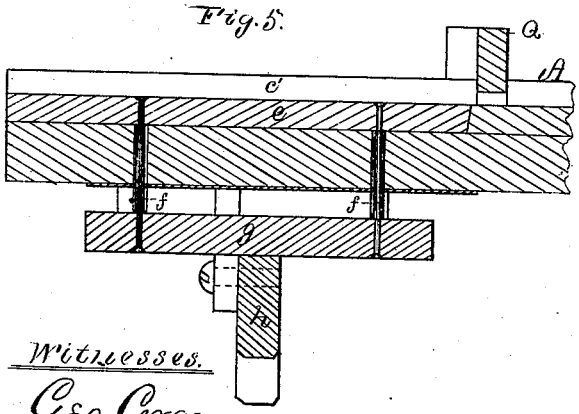
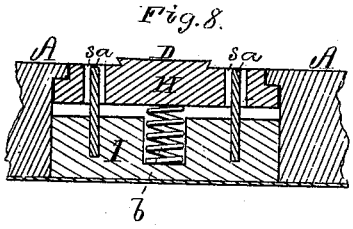


Fig. 8.



Witnesses.

Geo. Gray

F. le Hale

Hazen J. Batchelder.

by his attorney

F. P. Hale

UNITED STATES PATENT OFFICE.

HAZEN J. BATCHELDER, OF FITCHBURG, ASSIGNOR TO THEODORE S. VERY AND HARVEY K. FLAGLER, OF BOSTON, MASSACHUSETTS.

IMPROVEMENT IN MACHINES FOR MAKING HORSESHOES.

Specification forming part of Letters Patent No. **180,448**, dated August 1, 1876; application filed March 20, 1876.

To all whom it may concern:

Be it known that I, HAZEN J. BATCHELDER, of Fitchburg, in the county of Worcester and State of Massachusetts, have invented certain new and useful Improvements in Horseshoe-Machines; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to which it pertains to make and use the same, reference being had to the accompanying drawing, and to the letters of reference marked thereon, which form a part of this specification.

In the said drawing, Figure 1 is a top view; Fig. 2, a side elevation, (the driving-pulley in this figure being removed in order to show the parts behind it.) Fig. 3 is an opposite side elevation, and Fig. 4 a front-end elevation, of a machine embodying my improvements. Fig. 5 is a transverse and vertical section taken through the blank-raising bar. Fig. 6 is an under-side view of the creaser-carrier, showing the combined creasing and upper punching-dies, and the "hemmers." Fig. 7 is a top view of that part of the machine carrying the anvil or block, to which the former is attached, and showing the lower set of punches, which project up through the same when the anvil is forced downward. Fig. 8. is a transverse section of the same. Figs. 9 and 10 are sections of Fig. 6 taken at right angles.

My present invention may be said to be an improvement upon that for which Letters Patent were granted to me and Theodore S. Very on December 21, 1875; the object of my present invention being to render sundry operations in the formation of the shoe more effective and expeditious than by the said patented machine; and my invention consists in the peculiar construction, combination, and arrangement of the parts whereby the results are attained, as hereinafter described and claimed.

In the drawing, A denotes the table or bed for supporting the main operating parts. B is a cross-head, affixed to the table, so as to be capable of sliding longitudinally thereon. C C′ are the bending jaws or levers, having their rear ends pivoted to the cross-head B, their free ends being so shaped and guided as to cause them, when impelled forward, to bend the shoe-blank around the former or die D. E is a pitman, which connects the cross-head with a wheel, F, disposed on one end of the driving-shaft G, which is arranged and supported in standards at the rear end of the machine, such shaft carrying, on its opposite end, a drum or pulley, *p*, to which rotary motion may be imparted by any suitable motor, such motion causing reciprocating rectilinear movements to the cross-head and consequently to the bending jaws or levers C C′.

The former D is mounted upon an anvil or block, H, which is disposed within a recess in the bed A, such anvil having a series of vertical holes, *s s*, into which a series of semi-punches, *a a*, extend, the latter being inserted in a block, I, disposed within the bed, and below the former-carrier or anvil D.

This anvil is so applied to the bed as to be movable vertically therein, and thereby allow the punches *a a* to project through the anvil the desired distance when the latter is depressed, a spring, *b*, disposed between the anvil and the block I, serving to restore the anvil to its normal position, or flush with the top surface of the bed A.

The former is made, by preference, beveling around its entire edge, such bevel extending from the lower face upward, as shown in Fig. 4, the object of such formation being to widen the shoe on its lower or inner surface.

J is the creaser-carrier, which is secured to the outer end of a lever, K, which extends longitudinally over the bed A, and is pivoted to a standard, L, extending up from the bed. Affixed to the lower face of the carrier are the dies *c c*, for creasing the shoe, and forming the larger ends of the nail-holes.

These combined creasing and punching dies are of a curved segmental shape. The edge of each creaser has a series of punches, *d d*, projecting somewhat below the plane of the cutting or creasing edge, the same being

for making the upper portions of the nail-holes deeper than the crease itself.

Disposed on the creaser-carrier, and at a short distance from the outer side of each creaser, and concentric, or nearly so, therewith, is what I term a "hemmer," M, the object of such being to form and preserve the outside of the shoe smooth; or, in other words, to shape and prevent its bulging out at the parts where the nail-holes are formed.

The mechanism for imparting the downward movements to the creaser and its adjuncts consists of a cam, c^2, arranged on the driving-shaft, and another cam, d^2, formed on the outer end of the lever K, the gravitating force of the longer arm of the lever serving to elevate the creasers after the cams have ceased their action, the object of this combination or arrangement or cams being to impart an instantaneous downward movement to the creasers and their adjuncts, so as to cause them to remain in contact with the hot iron the minimum length of time.

Near the front end of the bed or table, and extending transversely across the same, I form a rectangular groove or channel, c^1, of a width and depth sufficient to admit the bar of iron or metal to form the horseshoe-blank, the object of this channel being to allow a bar of iron to be introduced into the machine at any time, without interfering with the movements of the machine, and thus expedite the formation of the shoes. Within this channel is disposed a bar, *e*, capable of being moved vertically. Such bar is supported on pins *f f*, which extend down and rest upon a bar, *g*, supported on and near one end of a curved lever, *h*, which extends longitudinally of the bed, and is pivoted, near one end, to an arm extending down from the under face of the bed.

The mechanism for raising the bar *e* (the normal position of which is on a plane with the stationary part of the bottom of the bar-receiving groove) is a cam, *o*, disposed on the periphery of the wheel F, impinging against the rear end of the said lever, the action of the cam being so timed with respect to the cutting-off mechanism as to raise the blank to the plane of the top of the table, after it is severed, and present it to the action of the shaping-jaws, the gravitating force of the longer arm of such lever serving to restore the bar to its normal or first position.

The mechanism for cutting off the blank and reducing the ends or parts to constitute the heel portions of the shoe, is to be the same as that described in the said patent of December 21, 1875, and, therefore, need not be described in detail.

Q is the bar, to the front end of which the said cutting-off mechanism is to be attached, the said bar reciprocating through the standard L. *f'* is a groove, formed in the front end of the bed, and at a right angle to the bar-receiving groove c^1, before mentioned, the object of the groove *f'* being to allow the movable shear free reciprocation in a plane below the top surface of the bed.

The mechanism for reciprocating the movable cutter or shear consists of the cam *h'*, disposed on the driving-shaft, acting against a lug or ear, *i*, arranged at the rear end of the lever Q, a spring, *l*, coiled around a rod, *m*, arranged as shown in Fig. 1, serving to restore the lever to its normal position after the cam has ceased its action.

Having described the construction of my improved machine, its operation is as follows: If we suppose the parts to be in the position as shown in Figs. 1 and 2, the bar of metal to form the horseshoe-blank, having been duly heated, is to be introduced into the guide-channel c^1 until it abuts against a gage, so adjusted as to give the required length to the blank to be cut. By rotating the driving-shaft the bar will be severed from edge to edge, and the ends reduced, as in my aforesaid patented machine. After the blank has been severed the movable portion of the bottom of the channel c^1, or the bar *e*, is elevated by the action of the cam *o*, (on the tail of lever *h*,) so as to be flush with the top of the table, carrying the severed blank with it, and presenting it to the action of the forming-jaws C C', (the movements of which are duly timed with respect to the elevating-bar *e*,) which move forward the blank and bend the same around the former D. This having been effected, a further rotation of the driving-shaft forces down the front end of the lever K, and brings into action the creasing and punching mechanism, as well as the hemmers, which creases the shoe, punches the nail-holes, and gives the desired form to the shoe, the action of the two operating-cams c^2 and d^2 serving to give an instantaneous downward movement to the combined creasing and punching dies, and the hemmers, the spring disposed under the former carrier serving to raise the latter, with the shoe, from contact with the lower set of punches, while the gravitating force of the longer arm of the lever K will raise the carrier and its adjuncts from the shoe, when it may be readily removed from the machine.

What I claim as my invention is—

1. In a machine for making horseshoes, the recess c^1 in the bed of the machine, extended in both directions from the cutter, along and through which to feed the bar to the cutter, and thence to the bending-levers, but at a lower plane, and the device for elevating the blank out of the recess and into the plane of the benders, all operating substantially as described.

2. The combination, with the recess c^1, formed in the bed, as described, of the movable cutter or shear, arranged to reciprocate in a recess or groove, *f*, (made in the said bed at a right angle to the recess c^1, so as

to enable the cutter to sever the bar from edge to edge,) and the device for raising the blank after severance out of the recess c^1, and into the plane of the benders, all operating substantially as set forth.

3. The combination of the anvil H, carrying the former D, and provided with the series of holes *s s*, and the block I, provided with the series of punches *a a*, with the creasing and punching dies *c c*, and the hemmers M M, substantially as add for the purpose set forth.

In testimony that I claim the foregoing as my own invention I affix my signature in presence of two witnesses.

HAZEN J. BATCHELDER.

Witnesses:
F. P. HALE,
F. C. HALE.