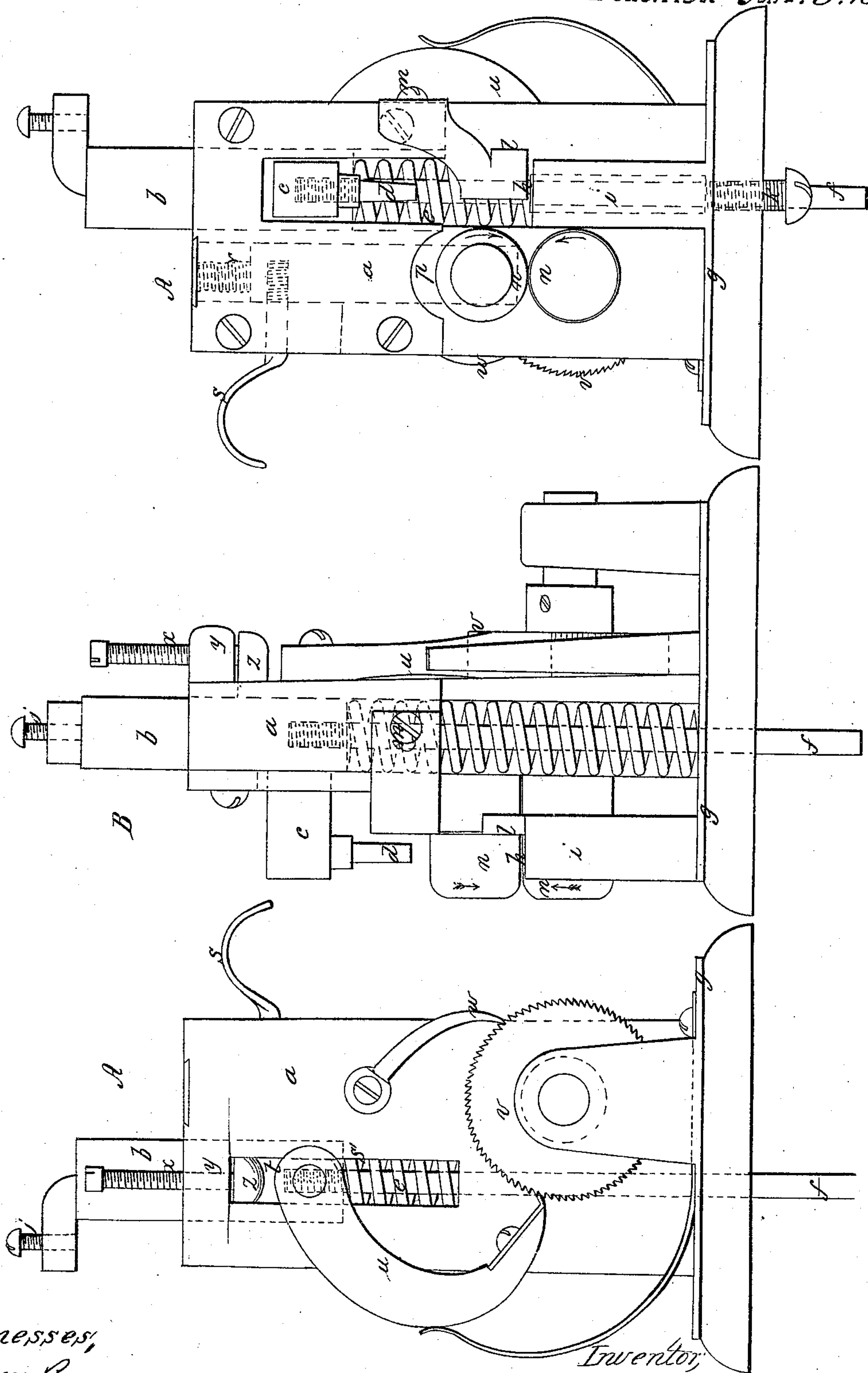


C. H. Helms,

Leather Cutter.

No. 85,061.

Patented Jan. 5. 1869.



*Witnesses,
 W. H. Brown
 M. W. Frothingham*

*Inventor,
 C. H. Helms
 by his Atty
 C. W. H. & Co.*

United States Patent Office.

CHARLES H. HELMS, OF POUGHKEEPSIE, NEW YORK.

Letters Patent No. 85,661, dated January 5, 1869.

IMPROVEMENT IN PUNCHING BOOTS, AND OTHER LEATHER STOCK

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, CHARLES H. HELMS, of Poughkeepsie, in the county of Dutchess, and State of New York, have invented an Improvement in Punching Boot, Shoe, and other Leather-Work; and I do hereby declare that the following, taken in connection with the drawings which accompany and form part of this specification, is a description of my invention sufficient to enable those skilled in the art to practise it.

The invention relates to the construction of punches or punching-machines designed particularly for use in punching holes in leather stock, for reception of eye-lets, the object being to furnish a machine simple in construction, and effective in automatically feeding the stock, and punching through it a series of holes equidistant from the edge; and

The invention consists, primarily, in combining with a vertically-reciprocating punch, a pair of feed-rolls, to which intermittent rotative movement is imparted by the reciprocations of the punch-stock or bar.

The drawings represent a machine embodying my invention.

A shows the machine in front elevation.

B is a side view of the same.

C is a rear view of it.

a denotes a standard or head, in which slides a vertically-reciprocating bar, *b*, a projection, *c*, of which carries the punch *d*, the bar or carrier *b* being carried up by a stout spring, *e*, and being drawn down by a suitable treadle, connected to a rod, *f*, fastened to the carrier, the machine being fixed to a bench or table by suitable fastenings, running through a base-plate, *g*.

h denotes the bed-piece, upon which, and the top of a post, *i*, the leather to be punched rests, the bed-piece being inserted in the post *i*, and adjusted in height by a screw, *k*, the top of the bed being filed down as it is worn by the punch.

At the back of the post is a gauge and guide-wall, *l*, against which the edge of the stock rests, to gauge the distance of the holes from the edge of the stock, this guide-piece being adjusted in distance from the centre of the punch-bed by an adjusting-screw and slot, *m*.

On one side of the post *i* is a pair of feed-rolls, *n*, the lower one of which is preferably surfaced with rubber or other elastic material, and rotates on a stationary shaft or pin, while the upper one is hung on a shaft or pin projecting from a slide-bar, *p*, which slides up in the head *a*, and is pressed down to bring the roll against the lower roll, (or against the stock, between the two rolls,) by a spring, *r*, and having a suitable handle, *s*, projecting through a slot in the head, and enabling the rolls to be separated, for introduction of the stock between them.

The line of contact of the rolls is in a horizontal plane with the bed-piece *h*, and the end of the stock laid upon the bed, being introduced between the rolls, their rotation in the direction of the arrow will feed the stock.

To make this feed automatic, that is to say, to ef-

fect the feed by the movement of the punch, and to rotate the feed-rolls intermittently, to cause them to feed the stock while the punch is rising, and to leave the stock stationary upon the bed when the punch is descending, a mechanism is employed as follows:

Projecting from the rear of the punch-stock, through a slot, *s'*, is a stud, *t*, to which is hung a pawl, *u*, the tooth of which is pressed against and engages with the teeth of a ratchet-wheel, *v*, fixed upon the shaft which carries the lower feed-roll.

The tooth of the pawl is made hooking in form, and hooks into a tooth of the ratchet-wheel, and moves the wheel rotatively, as the pawl rises with the punch-bar or stock, the wheel being held stationary, when the pawl descends, by a detaining-pawl, *w*, the pawl slipping over the ratchet-teeth in such descent.

The extent of rotative movement of the ratchet-wheel, and the corresponding lateral movement of the stock, are determined and graduated, by means of an adjusting-screw, *x*, passing through an ear, *y*, projecting from the standard, a stud, *z*, projecting from the punch-stock, striking this screw as the punch rises.

As the extent of upward movement of the feed-pawl, and consequent extent of movement of the ratchet, depend upon the extent of movement of the punch-bar, it will be readily seen that by turning the screw up or down, the feed may be graduated to any distance at which it is desirable to punch the holes apart.

To regulate the extent of downward movement of the punch, so that its end shall just pass through the stock, or to the top of the bed *h*, an adjusting-screw, *j*, passes through an ear upon the top of the punch-bar, the end of this screw being set so that it shall strike the top of the head *a*, when the punch, in descending, reaches the bed *h*.

It will thus be seen that the whole machine is very simple, strong, compact, and enduring, with such provision for adjustments as shall adapt it to all variations required in punching boot and shoe-stock, and leather-work in general.

I claim, in combination with a vertically-reciprocating punch, feed-rolls, intermittently rotated (to cause the stock to progress for the successive actions of the punch) by a pawl attached to the punch-bar, and operating upon a ratchet-wheel placed upon or connected with the shaft of one of the feed-rolls.

Also, in combination with the reciprocating punch-bar, and the ratchet and pawl, the provision for adjustment of the extent of upward movement of the bar, to graduate the feed, substantially as described.

Also, in combination with the reciprocating punch-bar and the stationary punch-bed, the provision for adjustment of the extent of downward movement of the punch, to cause the punch to work just through the stock, substantially as described.

CHARLES H. HELMS.

Witnesses:

FRANCIS GOULD,
EZRA P. GOULD.