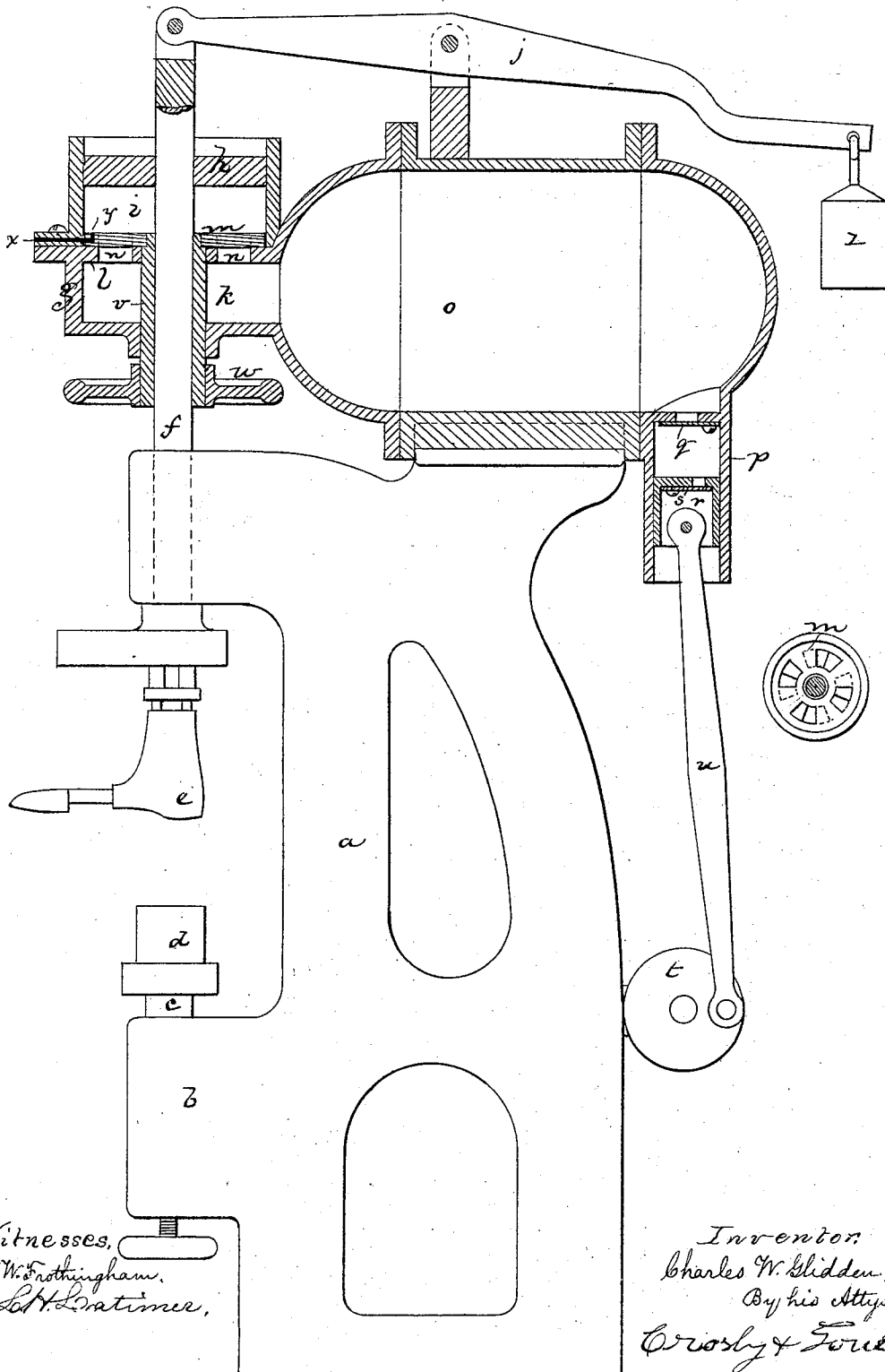


C. W. GLIDDEN.

Boot and Shoe Heeling Machines.

No. 136,233.

Patented Feb. 25, 1873.



Witnesses,
M^{rs}. W. Frothingham,
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By his Attys.
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UNITED STATES PATENT OFFICE.

CHARLES W. GLIDDEN, OF LYNN, MASSACHUSETTS.

IMPROVEMENT IN BOOT-AND-SHOE-HEELING MACHINES.

Specification forming part of Letters Patent No. 136,233, dated February 25, 1873.

To all whom it may concern:

Be it known that I, CHARLES W. GLIDDEN, of Lynn, in the county of Essex and State of Massachusetts, have invented an Improvement in Machines for Heeling Boots and Shoes, &c.; and I do hereby declare that the following, taken in connection with the drawing which accompanies and forms part of this specification, is a description of my invention sufficient to enable those skilled in the art to practice it.

The invention relates to a new method of operating the nail-driving or lift-compressing mechanism of heeling-machines; and consists, primarily, in the combination with a suitable rest or support, upon which the heel is supported, of a driver fixed to or forming part of the stem or rod of a piston working in a cylinder connected with an air-exhaust or vacuum-chamber, and a suitable valvular mechanism, by operating which the piston-chamber is connected with the vacuum-chamber (to cause the piston to be driven down) or with the atmosphere to permit the piston to rise, a suitable spring, weight, or other device being also preferably used to overbalance the weight of the piston and its attachments, and raise the driver when air is let into the cylinder.

The drawing represents, in side and sectional elevation, a machine embodying my invention.

a denotes a stand, having an arm, *b*, through which extends a vertical rod, *c*, bearing upon its top a rest or support, *d*, which may be made vertically adjustable. Over this rest is a last or driver, *e*, which is fixed to a rod, *f*, or forms part of or is fixedly connected with said rod. This rod passes through a cylinder, *g*, and bears a piston, *h*, which reciprocates vertically in the upper part of the cylinder. The cylinder is preferably made in two parts or chambers, *i k*, separated by a diaphragm, *l*, upon which, as a valve-seat, rests a valve, *m*, controlling valve-seat passages *n*, the piston playing in the chamber *i* above the valve, and the chamber *k* connecting with the chamber *i* at proper times by movement of the valve. The lower chamber opens from a vacuum-chamber, *o*, from which air is practically exhausted by a suitable air-exhausting pump. Such pump is preferably connected directly with the machine, and is so shown in the drawing. *p* de-

notes the pump-cylinder; *q*, the valve; *r*, the piston; and *s*, the piston-valve, the valve *q* opening as the piston descends and draws the air from the chamber *o*, and the valve *q* closing and the piston-valve *s* opening as the piston rises. The piston may be operated by a crank-wheel, *t*, connected to the piston by the link *u*. The valve *m* is arranged to move rotatively, and is fixed to the top of a sleeve, *v*, surrounding the rod *f*, at the bottom of which is a hand-wheel, *w*. By turning this wheel the valve may be moved in one direction to connect the passages *n* and valve-passages, or in the opposite direction to cut off connection between them, and by means of suitable air-passages (or passages *x y*) connection is made between the atmosphere and the chamber *i* beneath the piston *h*, when the connection between the chambers *i k* is cut off, the connection between the passages *x y* being cut off by the movement of the valve that connects the chambers *i k*.

To operate the machine, air is first exhausted from the chamber *o*, the valve *m* being closed. Then the shoe is placed on the last *e*, and the heel on the support *d*. The shoe and heel being in position, the wheel is turned and the valve *m* opened. The vacuum-chamber is thus connected with the piston-chamber *i*, the piston being at its highest position, held there by connection with a lever, *j*, and weight *z*, as shown in the drawing. The connection of the chambers *i k* causes the piston *h* to be driven down forcibly by the pressure of air upon the top of the piston, and the driver being forced down with the piston drives in the nails projecting from the heel, or compresses the heel-lifts placed beneath the driver upon the support; or acts to drive or compress any devices or material occupying the space between the driver and the support. When the driver has been thus actuated the wheel is turned back, the valve *m* closes and cuts off communication between the chambers *i k*, and the passages *x y* are brought into connection, letting air into the chamber *i* beneath the piston *h*. Pressure of air being then equal on both sides of the piston, the weight *z* will raise the piston and driver.

From the above description it will be seen that when the blow is struck, by the descent

of the driver, the air or other gaseous agent used as the motor affords an elastic cushion, so that the driver self-adapts its blow to the thickness of heel without any need of appliances for adjusting to heels of different thicknesses, the distance to which the driver shall descend being governed entirely by the resistance offered by the heel or object placed upon the rigid anvil or bed. A less rigid blow is likewise given than is attainable when an unvarying range of motion is imparted to the driver by positively measured movements of rigid mechanism; and this, in working upon

some classes of shoes, is an important desideratum.

I do not herein claim the details of mechanism shown.

I claim—

The combination, in a heeling-machine, of a driving mechanism and a piston actuated by air, steam, or equivalent force, for the purpose of an elastic blow.

C. W. GLIDDEN.

Witnesses:

FRANCIS GOULD,
M. W. FROTHINGHAM.