(No Model.) 2 Sheets—Sheet 1.

J. M. WATSON.

MACHINE FOR AND METHOD OF FORMING COUNTER STIFFENERS FOR BOOTS OR SHOES.

No. 364,788. Patented June 14, 1887.

Fig. 1.

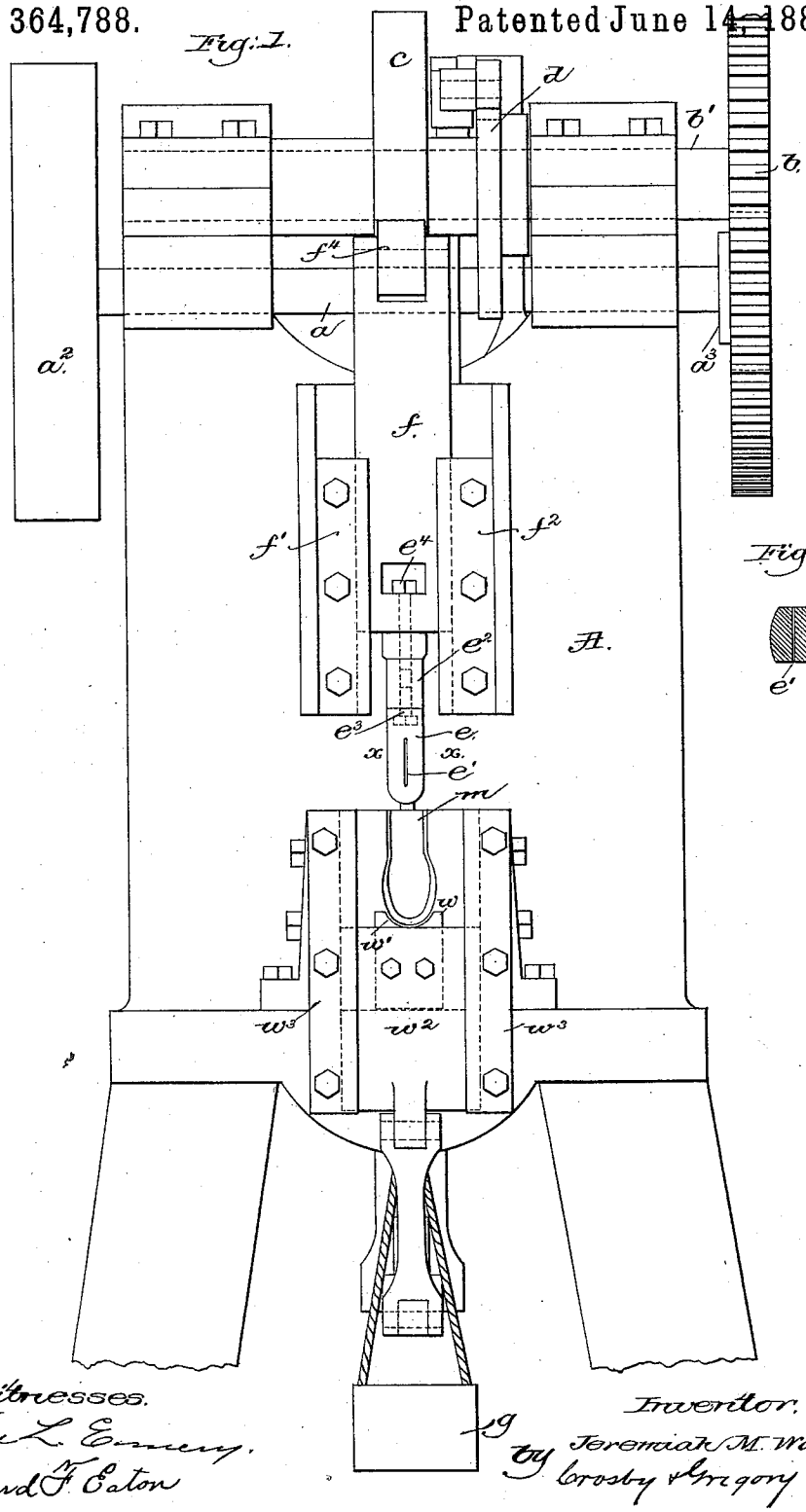
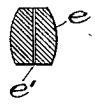


Fig. 3.



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(No Model.) 2 Sheets—Sheet 2.

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MACHINE FOR AND METHOD OF FORMING COUNTER STIFFENERS FOR BOOTS OR SHOES.

No. 364,788. Patented June 14, 1887.

Fig. 2.

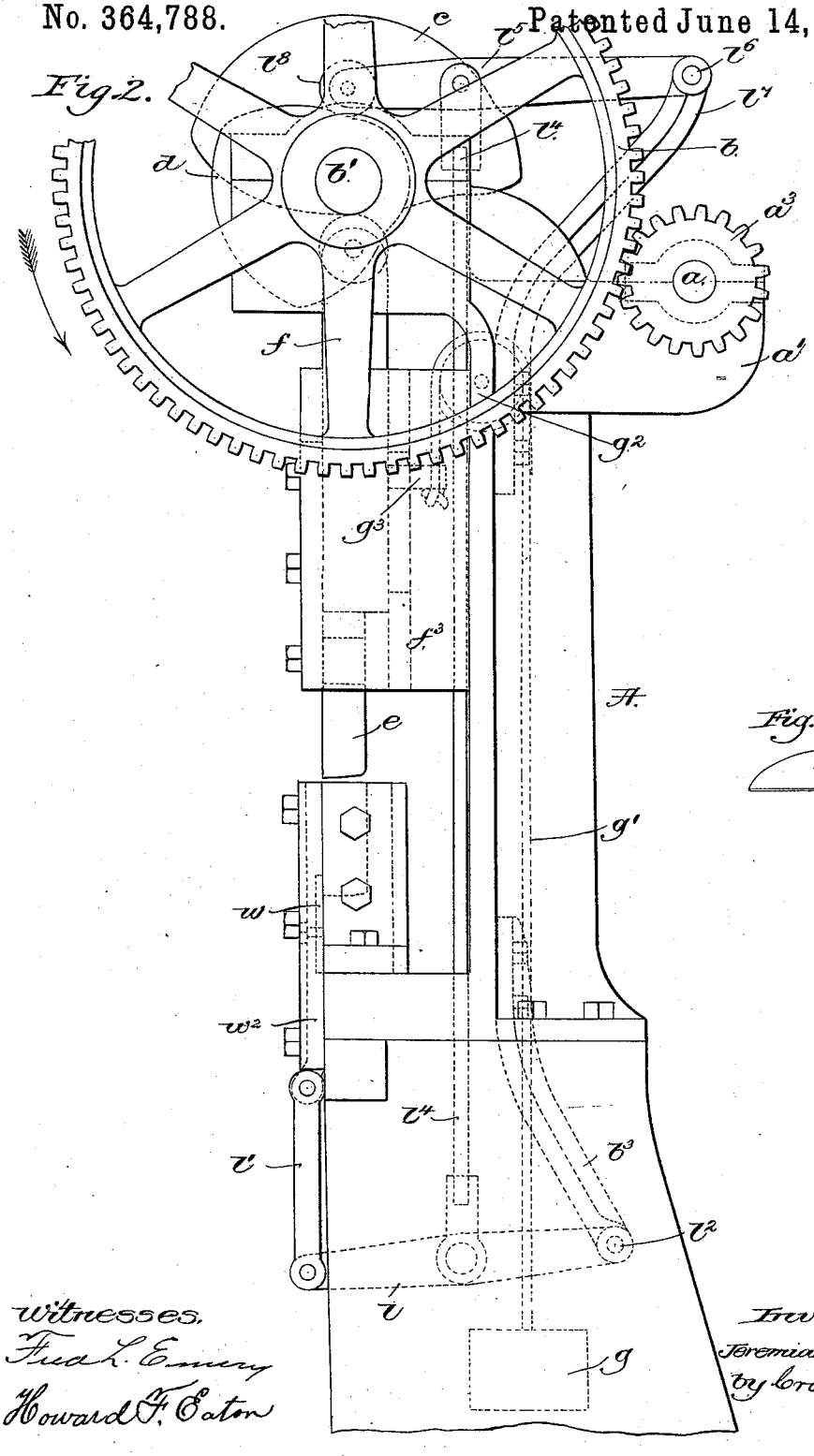


Fig. 4.

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UNITED STATES PATENT OFFICE.

JEREMIAH M. WATSON, OF SHARON, MASSACHUSETTS.

MACHINE FOR AND METHOD OF FORMING COUNTER-STIFFENERS FOR BOOTS OR SHOES.

SPECIFICATION forming part of Letters Patent No. 364,788, dated June 14, 1887.

Application filed October 19, 1886. Serial No. 216,622. (No model.)

To all whom it may concern:

Be it known that I, JEREMIAH M. WATSON, of Sharon, county of Norfolk, and State of Massachusetts, have invented an Improvement in Machines for a Method of Forming Counters and Similar Objects, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

This invention has for its object to construct a machine for molding counters and other small articles.

In accordance with this invention, a suitably-shaped matrix is employed, into which is driven by a plunger the leather, leather-board, or other usual blank to be formed into a counter, one side of the said matrix being open to allow the lower or straight edge of the blank to project therefrom a suitable distance to be acted upon by a wiper and overturned to form a rand-seat, or the said wiper being made to turn the projecting edge of the blank and form a sharp well-defined line between the body of the blank and rand-seat. The plunger is laterally expansible, and, as herein shown, it is made of india-rubber slitted for a short distance intermediate of its length in order that it may be so expanded. The plunger forces the flat blank of which the counter is to be formed down into the matrix and holds the same firmly while the wiper moves upward to form the rand-seat, and finally, while the wiper is in its elevated position, additional pressure is given to the plunger, which causes it to expand laterally, completely filling the matrix and molding or pressing the counter into true shape.

The machine is designed to be driven by power, and suitable mechanism is herein shown for that purpose.

Figure 1 in front elevation shows a machine for molding or forming counters embodying this invention; Fig. 2, a side elevation of Fig. 1; Fig. 3, a sectional detail of the laterally-expansible plunger, and Fig. 4 a perspective view of a completed counter.

The main frame-work A of the machine is of suitable construction to support the working parts.

The main shaft a, having its bearings in the arms a' projecting from the main frame-work, has secured to it at one end a drive-pulley, a^2, and at the opposite end a toothed gear, a^3, which meshes with a large toothed wheel, b, secured to the cam-shaft b', having its bearings in the top portion of the main frame-work. Two cams, c d, herein denominated the "plunger-operating cam" and the "wiper-operating cam," respectively, are secured upon the cam-shaft b'.

The plunger e, preferably made of rubber and having an intermediate slit, e', is secured to a block, e^2, by a bolt, e^3, (see dotted lines, Fig. 1,) said block e^2 being in turn secured to the lower end of the plunger-carrying rod f by a bolt, e^4.

The plunger-carrying rod f slides vertically in guideways, herein shown as formed by bolting plates f' f^2 to the front end of the projecting portion f^3 of the main frame-work.

The plunger-carrying rod f is preferably provided at its upper end with a friction-roller, f^4, which is acted upon by the cam c to force the rod f and its plunger e into the matrix m, the said friction-roller being normally held in elevated position by a weight, g, attached to the end of a cord, g', passed over a pulley, g^2, mounted upon a stud in the main frame-work, the opposite end of the cord g' being fastened to a stud or projection, g^3, (see dotted lines, Fig. 2,) secured to or cast integral with the rod f.

The matrix m, with which the plunger cooperates, is of suitable shape to give to the blank, which may be a piece of leather or other usual material, the shape which it is desired that the counter or other article to be formed or molded shall present.

The matrix m, when employed to form a counter, is open at one side, as shown in Fig. 1, so that the material of which the counter is formed may project from the matrix sufficiently to form, when turned over, a rand-seat.

The wiper w herein shown is composed of a flat piece of metal, which in its reciprocation bears against the open side of the matrix m. The upper operating end of the wiper w is cut out or curved, as at w', to conform in shape to the shape of the lower or heel extremity of the matrix, such being the shape of the counter midway its ends. As the wiper bearing against the matrix is moved upward it acts

to turn the projecting portion of the counter over against the plunger *e*, forming a rand-seat, substantially as shown in Fig. 4.

The wiper *w* is secured to a wiper-carrying block, w^2, moving in guideways, herein shown as formed by plates w^3, bolted to the main frame-work of the machine.

The wiper-carrying block w^2 is loosely connected with one end of a lever, *l*, (see dotted lines, Fig. 2,) by a connecting-link, *l'*, said lever *l* being pivoted at l^2 to the lower end of an arm, l^3, secured to the main frame-work of the machine. The lever *l* is moved on its pivot by a rod, l^4, extending upward to the top portion of the machine, said rod l^4 being loosely connected with a lever, l^5, pivoted at l^6 to an upwardly-extended arm, l^7, secured to the frame-work. The outer end of the lever l^5 carries a friction-roller, l^8, which normally bears upon the wiper-operating cam *c*, above referred to.

By the arrangement of levers herein shown it will be seen that as the cam *c* rotates the lever l^5 will be elevated, the latter in turn lifting the lever *l* and thereby raising the wiper *w*. When the wiper *w* reaches its most elevated position, its upper end lies substantially flush with the top of the matrix *m*, thus completely closing the side of the matrix. The blank of which the counter is made is placed upon and forced down into the upper end of the open-sided matrix by the plunger, and when firmly forced therein the plunger remains at rest for an interval of time to enable the wiper *w* to rise and overturn the projecting edge of the blank to form the rand-seat, and as the wiper has reached its most elevated position further pressure is given to the plunger *e*. Such final pressure of the lower end of the plunger bearing firmly against the blank in the lower end of the matrix *m* causes the plunger, composed of india-rubber or other equivalent yielding material, slitted as described, to expand laterally, so as to completely fill the matrix and firmly press the blank, causing it to assume the exact shape of the interior of the matrix and leave a very sharp and well-defined outline or edge between the body of the counter and the rand-seat. The plunger is then removed, and also the wiper *w*, to permit the completed counter to be removed.

It is obvious that instead of employing a yielding plunger, as herein described, a plunger made of solid or rigid material, in two parts joined together so as to expand laterally, might be employed; but a yielding plunger, such as *e*, is greatly preferred.

By employing a plunger so made as to be expanded laterally by downward-pressure, as herein described, very great lateral pressure may be obtained to give to any material a sharp and well-defined outline.

I am aware that a machine for shaping counters has had a plunger which entered a divided mold, and such plunger was provided upon each side with elastic strips to compensate for inequalities of stock, and such construction I do not herein claim.

I claim—

1. In a machine for molding counters, the matrix in which the article is molded, combined with a laterally-expansible plunger to enter the matrix and press the material to form the article, substantially as described.

2. The matrix in which the article is molded, combined with a laterally-expansible plunger, and means, substantially as set forth, for expanding the plunger laterally by downward pressure upon it, substantially as described.

3. In a machine for molding counters, a matrix open at one side, and a plunger to enter the matrix, combined with a wiper consisting of a flat piece of metal moving upon or against the open side of the matrix, substantially as described.

4. In a machine for molding counters, the open sided matrix, as described, a laterally-expansible plunger, and means for operating the plunger, combined with a wiper moving over or against the open side of the matrix, and means for operating the said wiper after the plunger has entered the matrix, substantially as described.

5. The method herein described of manufacturing heel-counters, which consists in forcing a blank into a matrix, subjecting the blank to pressure thereon by an expansible plunger, turning over one edge of the blank to form a rand-seat, and further expanding the plunger while the rand-seat is so held, to form a well-defined corner between the rand-seat and the body of the counter, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JEREMIAH M. WATSON.

Witnesses:
B. J. NOYES,
T. L. EMERY.