(No Model.)

3 Sheets—Sheet 1.

L. P. PELL.

HEEL STIFFENER MACHINE.

No. 423,271. Patented Mar. 11, 1890.

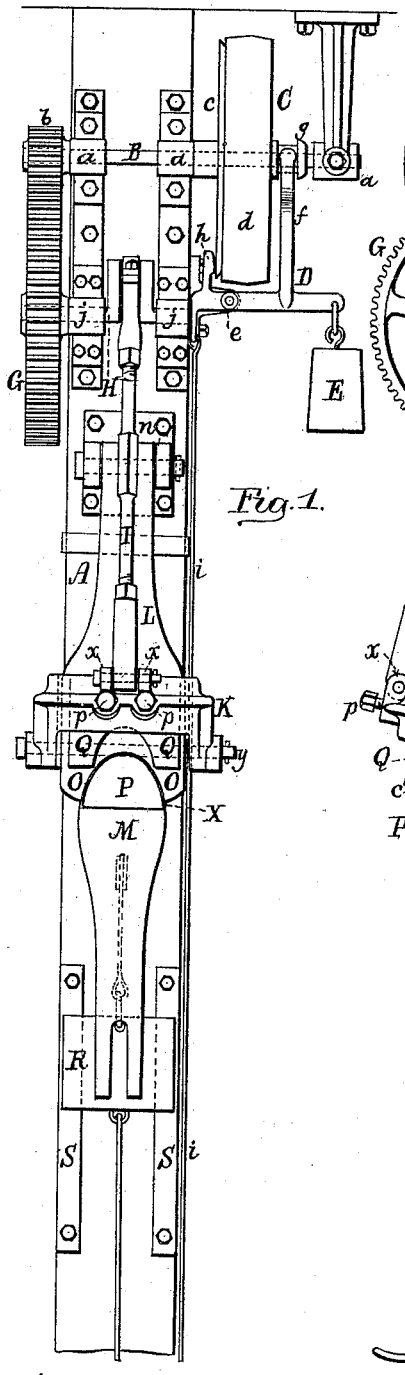

Fig. 1.

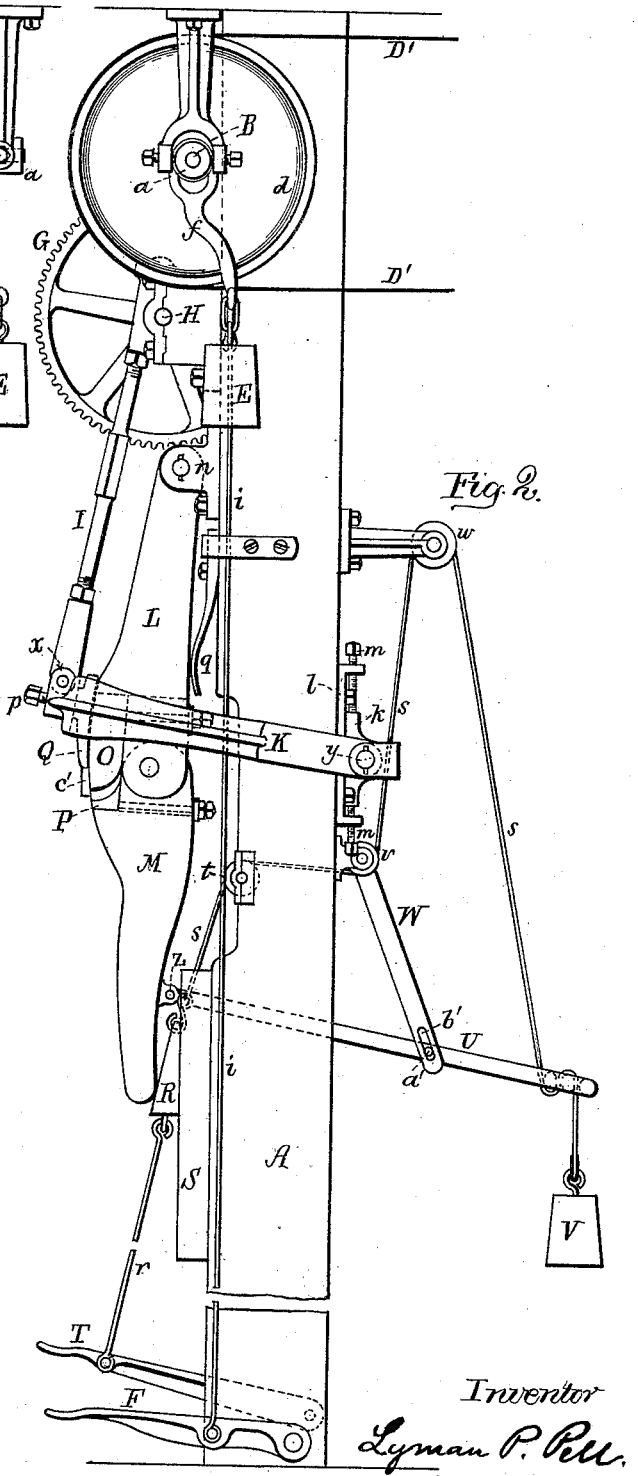

Fig. 2.

Witnesses
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by S. N. Piper, atty

(No Model.) 3 Sheets—Sheet 2.

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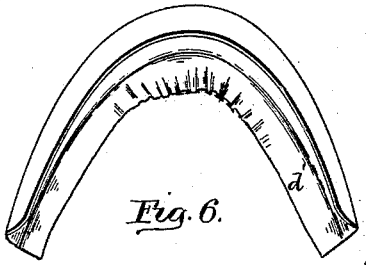

Fig. 6.

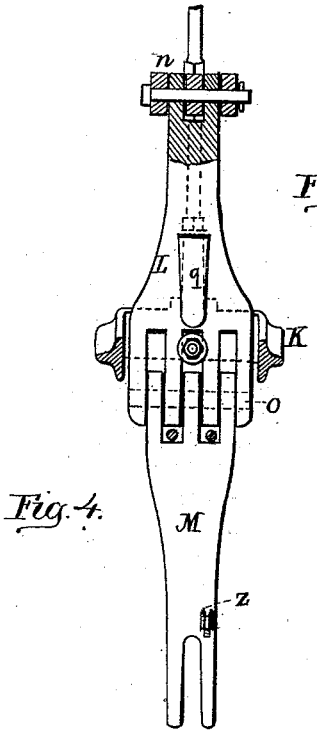

Fig. 4.

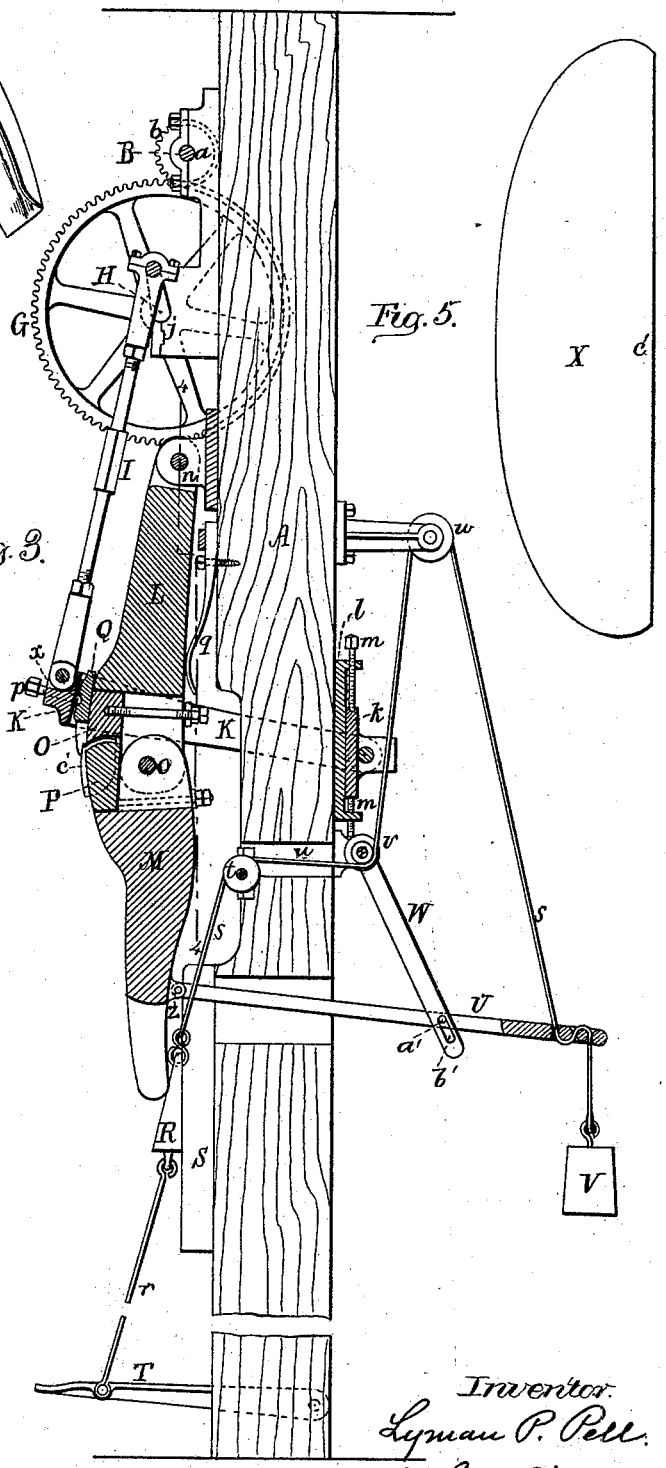

Fig. 3.

Fig. 5.

Witnesses
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(No Model.)

3 Sheets—Sheet 3.

L. P. PELL.

HEEL STIFFENER MACHINE.

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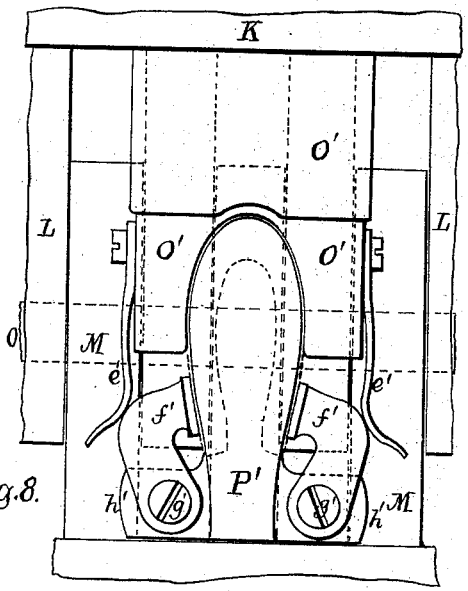


Fig. 8.

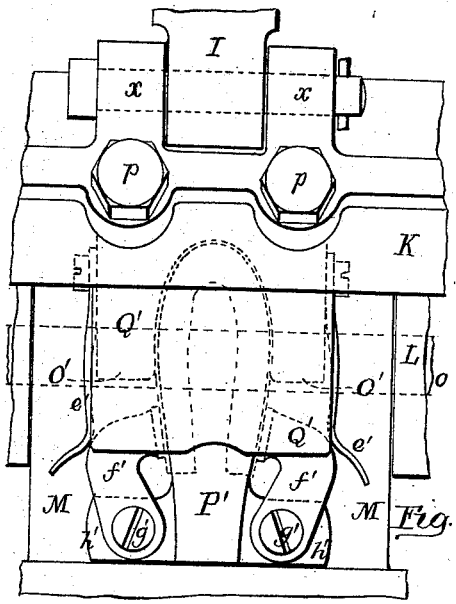


Fig. 9.

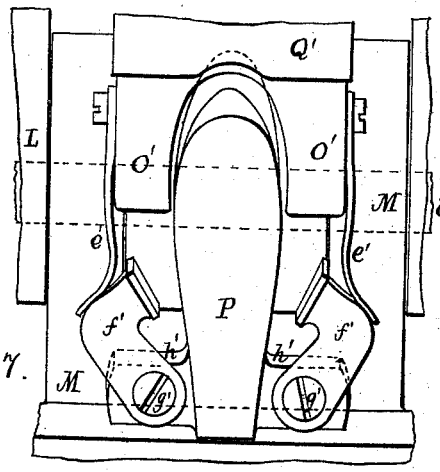


Fig. 7.

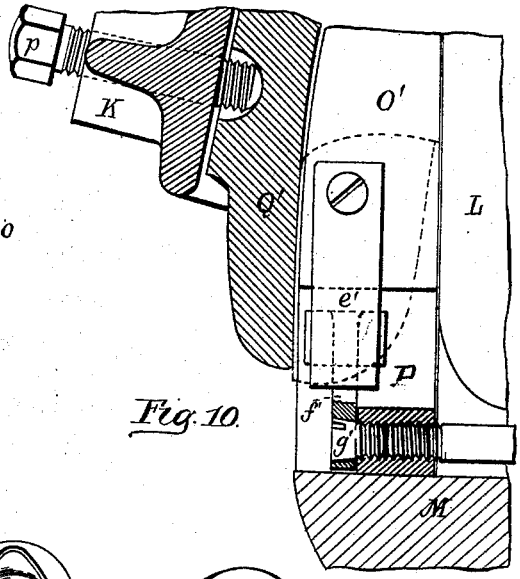
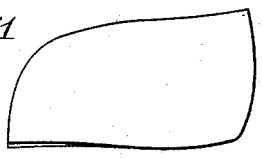


Fig. 10.

Fig. 11



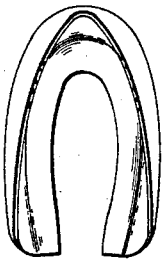


Fig. 12.

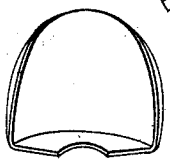


Fig. 13.

Witnesses.
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by S. N. Piper, atty.

UNITED STATES PATENT OFFICE.

LYMAN P. PELL, OF WOBURN, MASSACHUSETTS, ASSIGNOR TO GEORGE A. SIMONDS & CO., OF SAME PLACE.

HEEL-STIFFENER MACHINE.

SPECIFICATION forming part of Letters Patent No. 423,271, dated March 11, 1890.

Application filed July 18, 1889. Serial No. 317,864. (No model.)

To all whom it may concern:

Be it known that I, LYMAN P. PELL, a citizen of the United States, residing at Woburn, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Heel-Stiffener-Shaping Machines; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

Figure 1 is a front elevation, Fig. 2 a side elevation, and Fig. 3 a vertical and median section, of a machine of my invention for molding heel-stiffeners for boots or shoes. Fig. 4 is a back view of the jointed arms, showing in cross-section the yoke, it being taken on line 4 4 of Fig. 3. Fig. 5 is a face view of the stiffener before it is applied to the machine. Fig. 6 is a view of said stiffener after being subjected to the action of the first set of dies, or those shown in Figs. 1, 2, and 3. Fig. 7 is a front view of the second set of dies and adjacent parts of the jointed arms, showing said dies as open or in position to receive a stiffener after it has been acted upon by the first set of dies or has been shaped to the extent shown in Fig. 6. Fig. 8 is a front view of said dies, showing them as closed against a stiffener, the latter being represented in dotted lines, the flanging-plate Q′ in both the latter figures being shown in its highest position. Fig. 9 is a front view, and Fig. 10 a sectional elevation, of said dies as closed against a stiffener, the flanging-plate Q′, which forms the flange of the stiffener, being shown as nearly in its lowest position. Fig. 11 is a side view, Fig. 12 a top view, and Fig. 13 a front view, of a completed stiffener, or as it appears after being acted upon by the second set of dies.

The nature of my invention is defined in the claims hereinafter presented.

In molding heel-stiffeners in accordance with my invention two sets of dies are used to complete the operation, and said stiffeners are first partially shaped by being subjected to the action of the first set of dies in a machine, and after a quantity or number of them have been passed through this stage of the process said first set of dies are removed from the machine and the second set of dies are substituted, and the stiffeners which have passed through the first stage of the process are next subjected to the action of the second set of dies, which completes the operation of shaping them.

In the drawings, A denotes a standard for supporting the operative parts of the machine.

B is a shaft supported in suitable bearings *a a a*, said shaft having fixed to it a pinion *b* and also a wheel *c*, the latter, together with the loose pulley *d*, forming a friction-clutch C. The said pulley *d* is revolved on its shaft by a belt D′ from a driving-shaft, (not shown in the drawings,) and is moved lengthwise thereon by a lever D, fulcrumed at *e* to a bracket fixed to the standard. The upwardly-extending arm *f* of said lever is forked, the prongs of which enter a groove in the hub *g* of said loose pulley, and the outer arm of said lever D has applied to it a weight E to move or unclutch the pulley *d* from the wheel *c*, and also as soon as they are unclutched to bear an arm *h* against said wheel *c* to stop its revolution. The shorter arm of said lever D is connected by a rod *i* to a treadle F, by depressing which the pulley *d* is clutched to the wheel *c* when desired.

Engaging with the pinion *b* is a gear G, fixed to a crank shaft H, sustained in bearings *j*, secured to the standard. A connecting-rod I pivoted to the crank of the shaft H, is jointed at its lower end to ears *x x*, forming part of a yoke K. The said connecting-rod is provided with means for lengthening it or shortening it, as shown, and the said yoke is pivoted at its rear ends to a bearing *k*, movable vertically on a plate *l*, fixed to the standard, and provided with screws *m m* for raising or lowering the said bearing *k*, as may be desired.

Depending from a bracket *n*, fixed to the standard, is an arm L, to which is jointed at O another arm M, as shown. These arms are recessed in front to receive shaping-dies O or O′, P or P′, the former or female die being secured to the arm L, and the latter or male die to the arm M by bolts and nuts, as shown.

The front face of said dies is curved to the arc of a circle whose center is in the axis of the yoke; but the axis of said yoke can be varied by the screws *m m*, to cause the front face of the dies to be eccentric to said axis, if it is desired to increase the pressure of the dies against the stiffener in order to mold it to the shape of said dies, there being arranged to slide against said curved portion of the dies a notched flanging-plate Q or Q′, connected to the yoke by screws P, screwed through the yoke and into sockets in said plate. A spring *q*, fixed to the standard, bears against and forces the lower end of the arm L in a direction away from the standard when the faces of the dies are relieved from the pressure of the flanging-plate, and admits of the removal of the molded stiffener from between the dies and of the introduction of another one between them.

The arm M, near its lower end, rests against and is moved on its pivot by a wedge R, which bears against ways S, secured to the standard. The said wedge is connected at its lower end by a rod *r* to a treadle T, by which it is depressed, so that the arm M can swing on its pivot and carry the male die away from the female die.

Attached to the upper end of the wedge R is a line *s*, which passes upward over a sheave *t*, through a passage *u* in the frame or standard, under a sheave *v*, upward over another sheave *w*, and downward, upward, and again downward through an arm U, and has attached to it a weight V. The said arm U is pivoted to an ear *z*, projecting from the arm M, and has a pin *a′*, which moves in a slot *b′* in an arm W, pivoted to the standard. On depressing the treadle T, and the consequent upward swing of the arm U when the said pin *a′* brings up against the top of the slot *b′* in the arm W, said arm W will swing rearward and draw the lower end of the arm M also rearward and carry the die O or O′ away from the die P or P′, thus overcoming any inclination of the dies to stick to the stiffener after the same is molded by them.

The operation of the hereinbefore-described mechanism is as follows: The operator sits in front of the machine and in a convenient position to operate with his left foot the treadle T and with his right foot the treadle F. On depressing the treadle T the arms L and M will swing on their pivot and move the dies apart, as hereinbefore described, and as shown in Fig. 3. He then seizes a stiffener-blank X, and bending it sufficiently introduces it into the opening between the dies O and P, the straight edge *c′* of the stiffener being allowed to project a proper distance beyond the outer curved face of the dies to form the flange, as shown in Figs. 2 and 3. Next he removes his foot from the treadle T, and the weight V, descending, draws the wedge R upward, which moves the lower end of the arm M outward and causes the die P to bear the stiffener against the die O and firmly hold it in position. The operator next depresses the treadle F, which clutches the pulley *d* to the wheel *c*, puts the shafts B and H in movement, and through the crank of the latter shaft and the connecting-rod I swings the yoke K on its pivot and carries the notched plate Q down against the projecting part of the stiffener and crimps and molds it so as to form the flange *d′*, after which the yoke swings upward and carries the plate Q out of contact with the flange of the stiffener. During the upward swing of the yoke the operator removes his foot from the treadle F at the proper time to allow the weight E to turn the lever D on its fulcrum, unclutch the pulley *d* from the wheel *c*, and bear the brake-arm *h* against the said wheel *c* and stop its movement at the time that the wrist of the crank is in its highest position.

This completes the part of the operation of shaping a heel-stiffener by the dies O and P and the flanging-plate Q, the stiffener being compressed between said dies during the descent of the flanging-plate against their curved faces to such an extent that it will retain the shape of said dies after its removal from between them, essentially as represented in Fig. 6.

After a quantity or number of stiffeners have been partially shaped, as hereinbefore described, and it is desired to complete them, the dies O and P and plate Q are removed from the machine and the dies O′ and P′ and the plate Q′ are substituted for them respectively.

Fig. 7 represents said dies O′ and P′ as open to their widest extent to receive a stiffener, and on introducing a stiffener partially shaped, as shown in Fig. 6, between them the ends of said stiffener are bent toward each other sufficiently to enter the body of it into the space between the dies, and so that the flange *d′* will bear against the face of the die P′. Next the operator removes his foot from the treadle T, which allows the wedge R to rise and move the arm M as in the first instance and cause the dies to grip the stiffener. At the same time the springs *e′* of the female die O′, fixed thereto and projecting below its lower end, as shown, will move the grippers *f′*, pivoted to ears *h′*, projecting from the male die P′, and force the end portions of the said stiffener against the die P′, as shown in Fig. 8. The remaining portion of the operation of subjecting the stiffener to further pressure between the dies is but a repetition of that described in the first part of the operation of shaping a stiffener and needs no further explanation. When the plate Q′ is returned to its higher position by depressing the treadle T, the dies will open apart, the grippers *f′* will swing away from the die P′ into the position shown in Fig. 7, and the completed stiffener (shown in Fig. 12) is removed from them, and another partially-shaped stiffener introduced between the dies, as before.

It will be observed that the male die and the arm M, to which it is fixed adjust themselves to the thickness of the stiffener between the dies, the wedge R being drawn to a higher point between the ways S and the lower end of the arm M when the stiffener is a thin one than when it is a thicker one.

Having described my invention, what I claim is—

1. In a machine for molding heel-stiffeners, the recessed die-supporting arms L M, jointed to each other, the former pivoted to and sustained by a bearing from the standard, the notched flanging and crimping plate, the yoke pivoted to an adjustable bearing supported by the standard, the screws *p*, connecting the said plates to the yoke, and the spring *q*, in combination with the female and male dies fixed to the said arms, the rod I, adjustable lengthwise and connecting the yoke to the crank-shaft, the said crank-shaft and the shaft B connected so as to revolve together, the friction-clutch C, the clutch-operative lever D, fulcrumed to the standard and provided with the brake-arm *h* and weight E, the rod *i*, and treadle F, for operating said lever, the wedge R, and the mechanism for elevating and depressing it, all being arranged, supported, and to operate substantially as set forth and represented.

2. In a machine for molding heel-stiffeners, the combination of the die-supporting arms L M, jointed to each other, and the flanging-plate with the male and female dies secured to said arms, said plate arranged with the dies and to operate therewith to mold the stiffener, essentially as shown and set forth.

3. In a machine for molding heel-stiffeners, the combination of the yoke, the flanging-plate connected thereto, and the die-supporting arms jointed to each other, with the molding-dies secured to the said arms, the yoke supported by and adapted to swing on the pivot of an adjustable bearing which, with the arms L M, is supported by the frame or standard, essentially as represented and explained.

4. In a machine for molding heel-stiffeners, the combination of the die-supporting arms jointed to each other and supported from a frame or standard, the spring *q*, and the flanging-plate with the male and female dies secured in said arms, said flanging-plate connected to mechanism adapted to reciprocate it against the face of the dies and at the same time to move the said arms in a direction to cause the dies to mold the stiffener, the said plate turning the flange of said stiffener, as set forth.

5. In a machine for molding heel-stiffeners, the combination of the die-supporting arms L M, jointed to each other and depending from a frame or standard, the spring or yielding bearing *q*, and the adjustable bearing R for said arms, the yoke K, pivoted to an adjustable bearing, and the flanging-plate connected to said yoke, with the molding-dies secured to said arms, said yoke being connected to mechanism for imparting to it and the plate a vibratory movement, whereby the dies are operated to mold the stiffener, said plate turning the flange thereof as explained.

6. The combination, with the frame or standard, of the jointed arms L M, sustained thereby, the spring *q*, and adjustable bearing or wedge R, arranged with said arms and standard, essentially as shown, the arm U, pivoted to arm M, the arm W, connected to arm U and to the frame, the weight V, and the line connecting the arm U to wedge R, said weight and line causing the wedge to move the arm M on its pivot and force the dies against the stiffener-blank the moment the foot is removed from the treadle T, and after the molding of the stiffener on depression of the wedge said arm M is turned by the arms U and W, so as to force the dies apart to release the said stiffener, as explained.

7. In a machine for molding heel-stiffeners, the combination of the arms L M, jointed to each other in their contiguous ends, with the molding-dies secured in the jointed ends of said arms, the latter being supported and operated essentially as explained.

8. In a machine for molding heel-stiffeners, the arms L M, recessed in their contiguous ends to receive the molding-dies, and pivoted to each other in said ends, one of said arms being jointed at its outer end to the frame, and the outer end of the fellow-arm being free, as represented.

In testimony whereof I affix my signature in presence of two witnesses.

LYMAN P. PELL.

Witnesses:
S. N. PIPER,
WM. H. PRESTON.