

No. 631,035.

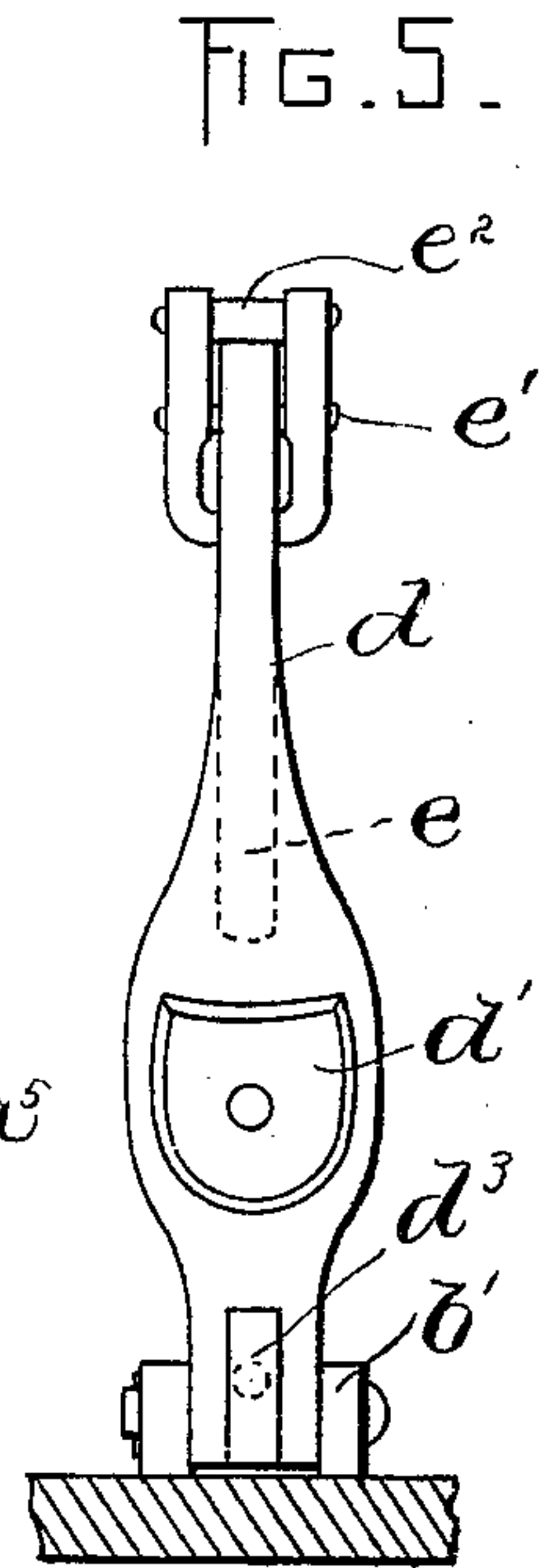
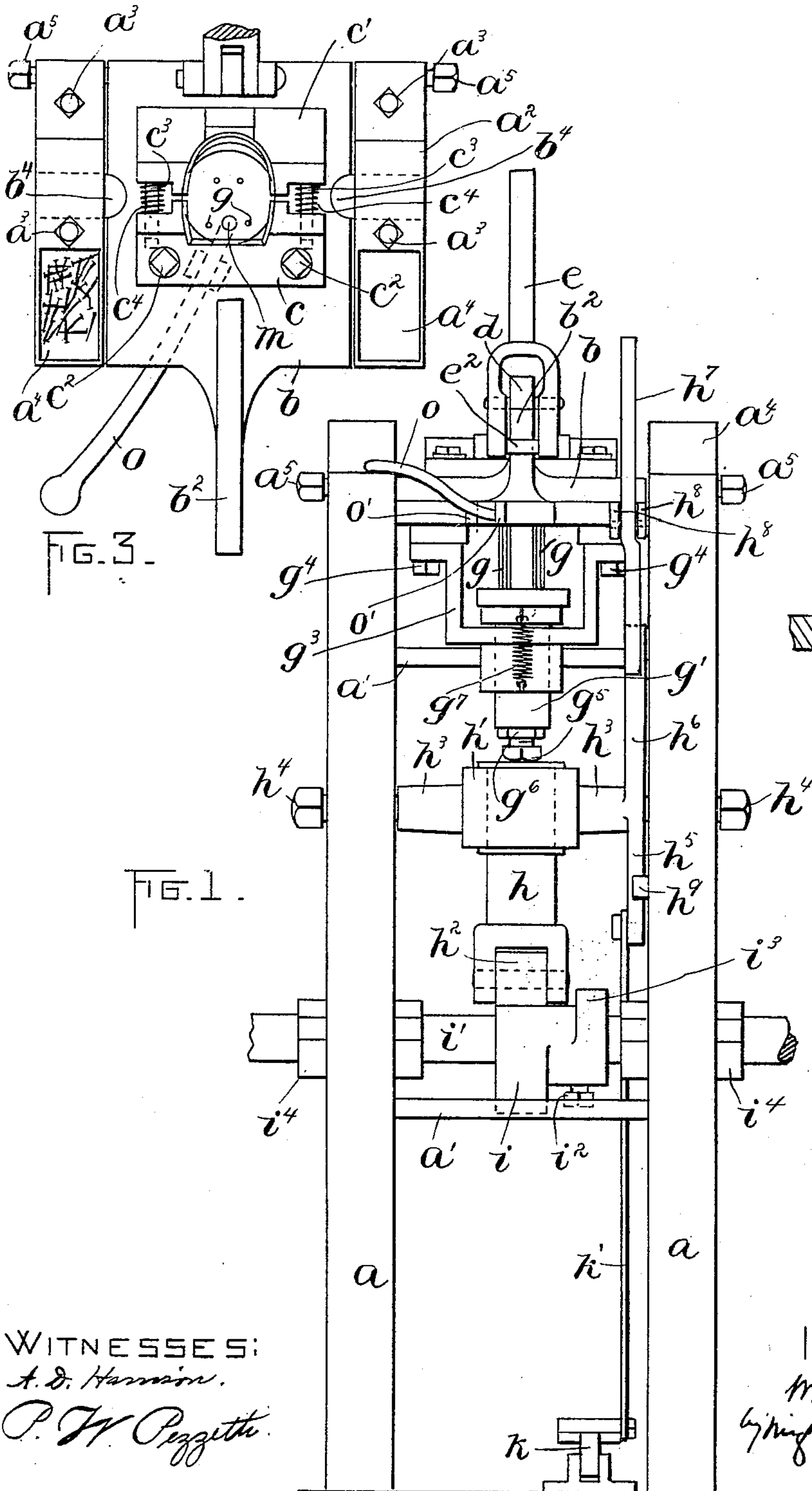
Patented Aug. 15, 1899.

W. P. BOSWORTH.
HEEL BUILDING MACHINE.

(Application filed June 7, 1898.)

(No Model.)

2 Sheets—Sheet 1.



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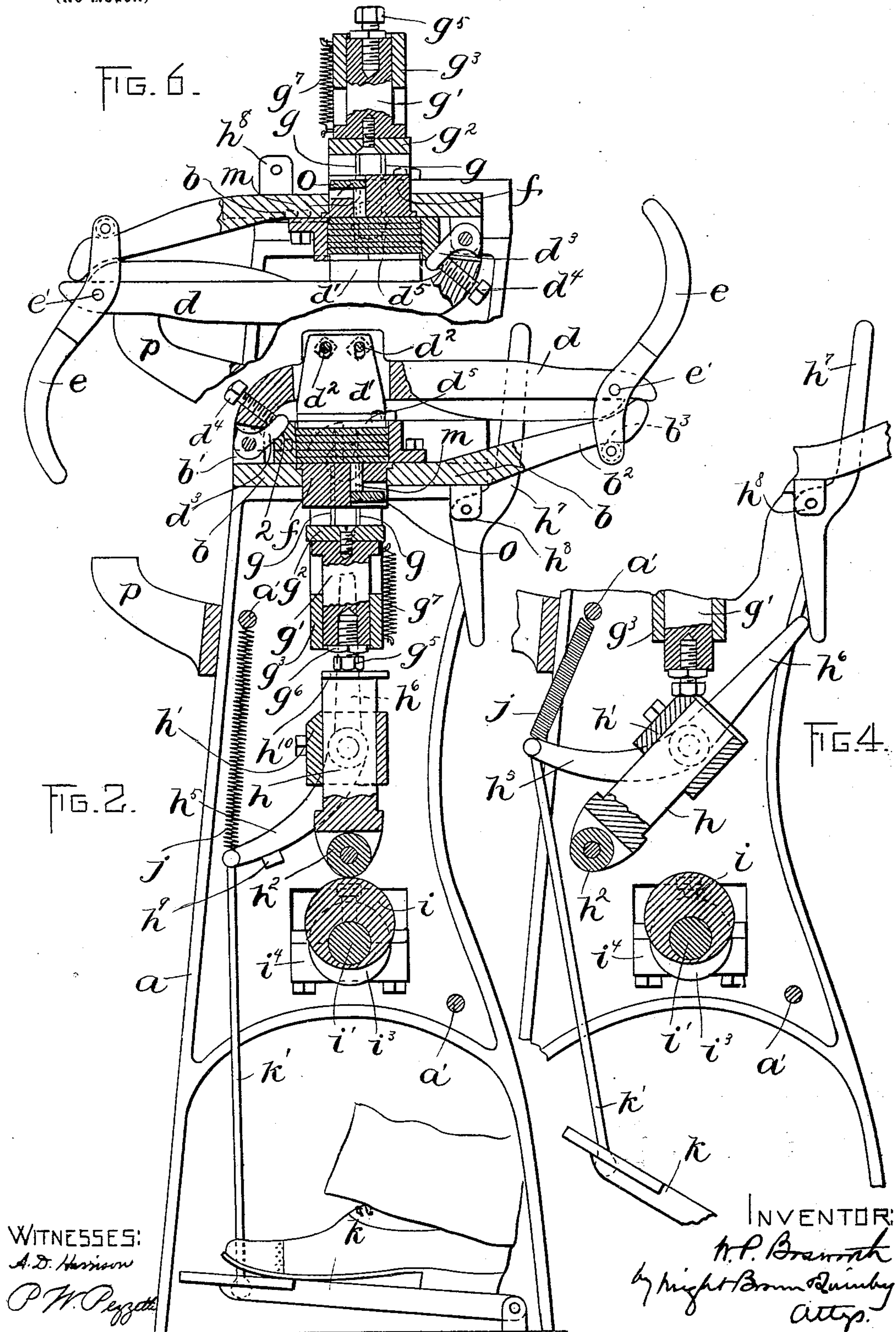
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2 Sheets—Sheet 2.



UNITED STATES PATENT OFFICE.

WENDELL P. BOSWORTH, OF BROCKTON, MASSACHUSETTS.

HEEL-BUILDING MACHINE.

SPECIFICATION forming part of Letters Patent No. 631,035, dated August 15, 1899.

Application filed June 7, 1898. Serial No. 682,816. (No model.)

To all whom it may concern:

Be it known that I, WENDELL P. BOSWORTH, of Brockton, in the county of Plymouth and State of Massachusetts, have invented certain
5 new and useful Improvements in Heel-Building Machines, of which the following is a specification.

This invention relates to heel-building machines, and has for its object to provide improvements in the construction and operation of machines of this class, as I shall hereinafter more fully set forth.

Certain classes of heels for boots and shoes to the manufacture of which this invention particularly relates are built up of lifts or layers cut from scrap-leather, most of the pieces being of a smaller size than the full width of the heel, so that two or more pieces of appropriate shape are required for each of
15 the lifts, usually with the exception of the top and bottom lifts. Heels of this character require a mold in which they may be assembled, and when the heel is built up to the required thickness it is nailed together.

My invention consists in those features of novelty in the construction and arrangement of heel-building machines which I shall now proceed to describe and then set forth in the claims hereto appended.

Of the accompanying drawings, forming a part of this specification, Figure 1 represents a front elevation of a heel-building machine constructed in accordance with my invention. Fig. 2 represents a median vertical section of the same. Fig. 3 represents a top plan view. Fig. 4 represents a detailed sectional view showing the driving parts in inactive position. Fig. 5 represents a detailed view of the presser and its arm. Fig. 6 represents a sectional view of the upper part of the machine, showing the parts in position for use with hand-power.

The same reference characters indicate the same parts in all the figures.

Referring to the drawings, *a* represents the frame of the machine, which is in two parts or halves connected by stays *a' a'*. At the upper end of the frame is mounted a bed-plate *b*, which supports the sectional mold
50 for assembling the heel. The said mold is formed, as here shown, in two sections or

halves *c c'*, the section *c* being secured to the bed-plate *b* by means of bolts *c² c²*, while the section *c'* is adapted to slide on the top of the bed-plate and is provided with guide-pins *c³ c³*, entering sockets in the section *c*. Springs
55 *c⁴ c⁴* are interposed between the two sections of the mold and normally act to force the rear section *c'* away from the forward section *c*.

d is a presser carrier or arm hinged between ears *b' b'* on the bed-plate and adapted to swing in a vertical plane. The arm *d* carries a presser or follower *d'*, which is secured to the arm by means of bolts *d² d²*, the presser being rendered adjustable by the regulation
60 of these bolts and adapted to be removed and replaced by a presser of different size or shape. The arm *d* carries at its rear end a pivotal dog *d³*, which is adapted to bear against an inclined face 2, formed on the rear section *c'*
65 of the mold, so that when the arm *d* is moved to bring the presser *d'* down into the mold the dog *d³* acts to force the rear section *c'* of the mold toward the front section *c*. A screw-bolt *d⁴* is provided for adjusting the position
70 of the dog *d³*.

The sides of the mold are shaped to closely conform to the required shape of the heel, and accordingly with heels having straight or nearly straight sides it is necessary to separate the parts of the mold somewhat in order to get the pieces of the heel in place. It will be understood that with certain shapes of heels, such as those intended for ladies' shoes, in which the sides of the heel are inclined or
80 tapering, it is not necessary to have the parts of the mold movable with respect to one another, the mold being in some instances made with the parts rigidly united.

e is a clamping-lever pivoted at *e'* to the end of the arm *d* and having a bifurcated lower end, between the forks of which is mounted a roller *e²*. The latter is adapted to engage the cam-formed end of a nose or lug *b²*, which projects from the front edge of the bed-plate *b*.
85 The said clamping-lever is for the purpose of exerting pressure upon the heel in the mold *c c'* and to hold the presser *d'* in place during the nailing operation, which will be presently described.

In order to operate the presser, which is shown in inoperative position in Fig. 5, with
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the upper or handle portion of the lever e lying back against the arm d' , the said handle portion is grasped by the operator and the arm d is swung downwardly to bring the presser d' against the heel contained in the mold, and the roller e^2 is brought into engagement with the end of the nose b^2 . The operator then exerts a forward pull on the lever e , and the action of the roll e^2 clamps the presser firmly against the heel.

The under side of the nose b^2 may be formed with a shallow notch b^3 , adapted to receive the roll e^2 and hold the clamping parts in a state of pressure.

The mechanism for applying nails to the heel is organized as follows:

f is a templet consisting of a cylindrical block fitting tightly in an aperture formed to receive it in the bed-plate b . The upper surface of the templet forms the bottom of the mold.

g g are a series or gang of driver-pins operating in holes in the templet f and mounted in a driver-carrier which consists of a plunger or rod g' and a plate g^2 , removably secured to the top of the plunger and carrying the driver-pins. The driver-carrier g' is mounted in a U-bracket g^3 , secured by bolts g^4 g^4 to the under side of the bed-plate b . When upward force is applied to the driver-carrier, the drivers ascend in the templet-holes and serve to drive the nails, which are previously placed in said holes with their points up, into and through the various layers of leather forming the heel in the mold. The points of the nails are clenched or turned over by striking against a hardened-steel plate d^5 , secured to the lower side of the presser d' .

g^7 is a spring secured to the driver-carrier g' and its bracket g^3 and operating to retract the driver after an upward stroke.

For the purpose of actuating the nail-driver I provide the following mechanism:

h is a plunger mounted to slide in a bracket h' and carrying at its lower end a roll h^2 . Below the latter, on a shaft i' , is mounted a cam i , which is secured to the shaft by means of a set-screw i^2 in its hub i^3 . The shaft i' is mounted to rotate in bearings i^4 i^4 on the frame a , and when power is applied to said shaft from a suitable source the cam i is rotated and operates to cause an up-and-down reciprocation of the plunger h and the driver-carrier g' with its gang of drivers. In order to throw the plunger h into and out of operative relation with the cam, its bracket h' is formed with trunnions h^3 h^3 , supported by adjustable pivot-bolts h^4 h^4 , and one of the trunnions is provided with an arm h^5 , which is connected to a retractile spring j and to a treadle-rod k' , operated by a treadle k . The normal position of the parts due to the action of the spring j is shown in Fig. 4, the bracket and plunger being inclined at an angle, so as to throw the lower end of the plunger carrying the roll h^2 away from the cam i . When the operator desires to actuate the driver

mechanism, he merely depresses the treadle k , and by so doing brings the plunger h into an upright position, as shown in Fig. 2, whereupon the cam i , which is in constant rotation, causes the reciprocation of the parts, as previously described.

In addition to the treadle mechanism for operating the plunger-bracket h' I have shown means for operating the latter by hand, including an upwardly-projecting arm h^6 , formed on one of the trunnions h^3 and adapted to be engaged by a hand-lever h^7 , pivoted between the ears h^8 h^8 , formed on the lower side of the bed-plate b . By depressing the upper end of this lever or handle h^7 the bracket and plunger are brought from their normal position (shown in Fig. 4) into an upright position, as shown in Fig. 1.

A lug h^9 , formed on one side of the frame a and adapted to engage the arm h^5 in its downward movement, forms a stop to limit the movement of the bracket h' . The plunger h is preferably provided at its upper end with a hardened-steel chafing-plate h^{10} , and the lower end of the driver-carrier g' is provided with a downwardly-projecting screw g^5 , whose head is adapted to rest on this plate when the plunger h is in an upright position. The screw g^5 may be adjusted to regulate the height to which the driver-pins g' may travel, and when adjusted is locked in position by means of a lock-nut g^6 .

m is a knockout pin occupying a vertical aperture in the templet f and resting on the inner end of a lever o , pivoted between ears o' o' on the bed-plate b . When the outer end of the lever is depressed, the knockout pin is raised and acts to displace the finished heel and permit the removal of the same.

In the machine as here shown I have also made provision for driving the nails by hand-power. For this purpose the bed-plate b is formed on its side edges with trunnions b^4 b^4 , which are held in bearings formed in the two side pieces of the frame a and in cap-blocks a^2 a^2 , secured to said side pieces by means of bolts a^3 a^3 . The front ends of the cap-pieces are, as here shown, formed with nail-boxes a^4 a^4 .

When the machine is operated by power, the bed-plate b is held from turning by means of clamping-bolts a^5 a^5 , extending through the sides of the frame a and engaging the sides of the bed-plate. When operating without power, these bolts are loosened, and the bed-plate b is then capable of turning on its trunnions. When operated by hand, the heel is assembled, as previously described, with the parts in the position shown in Fig. 1, and the presser is clamped in place by means of the clamping-lever e . The bed-plate and its attached parts are then reversed to bring them into the position shown in Fig. 6, the presser-arm d being brought to rest against a buffer p , secured to the rear side of the frame a , and then by striking the end of the driver-carrier g' with a mallet the nails are

driven into the heel. The bed-plate is then brought back to its former position and the heel removed.

I do not confine myself to the exact details of construction above set forth, as the same may be variously modified without departing from the spirit of my invention.

I claim—

1. A mold, a presser adapted to enter said mold, a vertically-swinging hinged arm carrying said presser, a relatively-fixed part, and a lever pivoted to the presser-arm, said lever having provisions on one side of its pivot for engaging said fixed part to clamp the presser-arm thereto, and having an elongated handle portion on the other side of said pivot, adapted to be grasped to move the presser-arm into and out of operative position and to operate the clamp.

2. An invertible support carrying a mold, a presser carried on said support and adapted to enter the mold, means for clamping said presser in operative position, a driver-carrier having a gang of drivers adapted to operate through the bottom of the mold, a guide for said driver-carrier mounted on the support, and a stop or rest for supporting the said support and the parts carried thereby in inverted position.

3. A heel-building machine comprising a mold, a presser adapted to enter the mold, a gang of drivers and a carrier therefor, a pivotal bracket carrying a plunger, adapted to engage the driver-carrier, a cam for operating said plunger to actuate the drivers, and means for moving the bracket to throw the plunger into and out of operative relation with the cam.

4. A heel-building machine comprising a driver-carrier, a shaft carrying a cam, a reciprocatory plunger adapted to effect connection between said cam and the driver-carrier, whereby the latter is reciprocated, a guide in which said plunger reciprocates, and means for moving said guide to carry the plunger into and out of operative position.

5. A heel-building machine comprising a driver-carrier, a shaft carrying a cam, a plunger adapted to effect connection between said cam and the carrier, whereby the latter is reciprocated, a pivotal bracket carrying said plunger, a spring connected with the bracket and normally holding the same with the plunger out of operative position, and means for moving the bracket to throw the plunger into operative position.

6. A heel-building machine comprising a

driver-carrier, a shaft carrying a cam, a plunger adapted to effect connection between said cam and the driver-carrier, whereby the latter is reciprocated, a pivotal bracket carrying said plunger, means normally holding the bracket with the plunger out of operative position, an arm on said bracket, and a treadle connected with said arm and adapted to move the bracket so as to throw the plunger into operative position.

7. A heel-building machine comprising a driver-carrier, a shaft carrying a cam, a plunger adapted to effect connection between said cam and the driver-carrier, whereby the latter is reciprocated, a pivotal bracket carrying said plunger, means normally holding the bracket with the plunger out of operative position, an arm on said bracket, and a handle lever disconnected from said arm but adapted to engage the same and move the bracket so as to throw the plunger into operative position.

8. A heel-building machine comprising a mold having relatively movable sections normally held apart, a swinging hinged presser-arm carrying a presser-block adapted to enter the mold, and a cam on said arm adapted to bear against the mold and close the same when the arm is swung in the direction of the mold.

9. A heel-building machine comprising a mold having relatively movable sections normally held apart, a swinging hinged presser-arm carrying a presser-block adapted to enter the mold, a cam on said arm adapted to bear against the mold and close the same when the arm is swung in the direction of the mold, and means for adjusting said cam.

10. A heel-building machine comprising a mold-bed, a mold having a fixed member attached to said bed, and a movable member adapted to slide on said bed, springs normally holding the movable member away from the fixed member, a vertically-swinging presser-arm hinged to the mold-bed adjacent to the movable mold member, and carrying a presser-block adapted to enter the mold, and a cam on said presser-arm adapted to engage the movable mold member and move it toward the fixed mold member when the presser-arm is swung downward toward the mold.

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

WENDELL P. BOSWORTH.

Witnesses:

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D. W. BEAL.