(No Model.) 5 Sheets—Sheet 1.

G. BRESSE.

HEEL MACHINE.

No. 388,255. Patented Aug. 21, 1888.

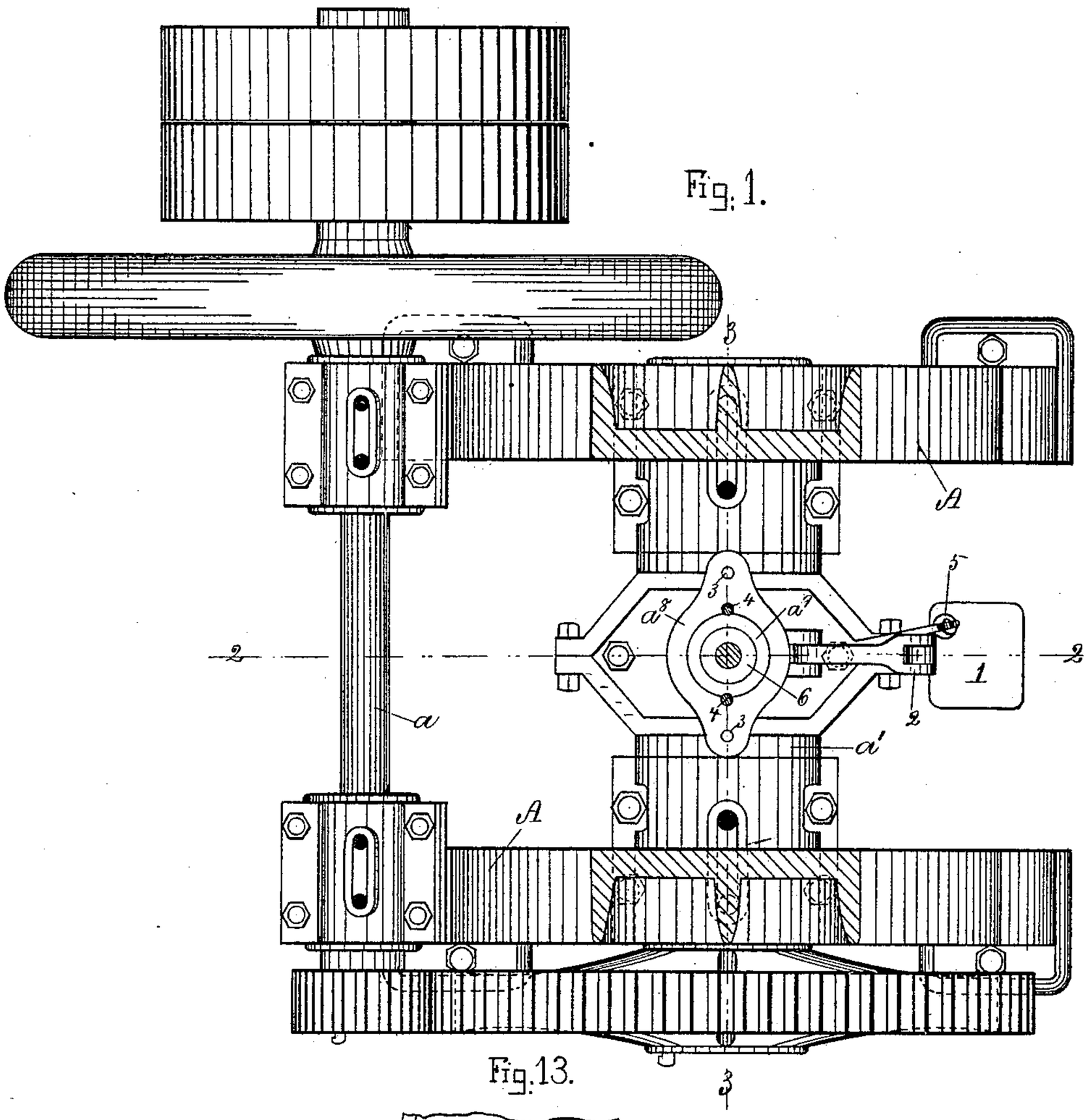
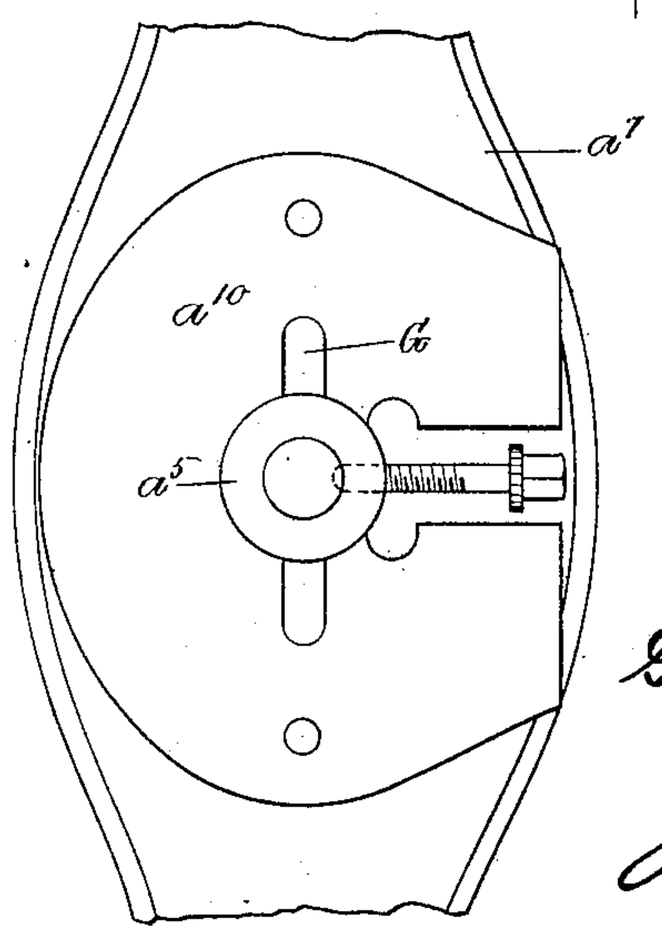


Fig. 1.

Fig. 13.



Witnesses.
Edward S. Beach.
John R. Snow.

Inventor.
Guillaume Bresse.
by his attorney,
J. L. Maynadier.

N. PETERS, Photo-Lithographer, Washington, D. C.

(No Model.) 5 Sheets—Sheet 2.

G. BRESSE.

HEEL MACHINE.

No. 388,255. Patented Aug. 21, 1888.

Fig. 16.

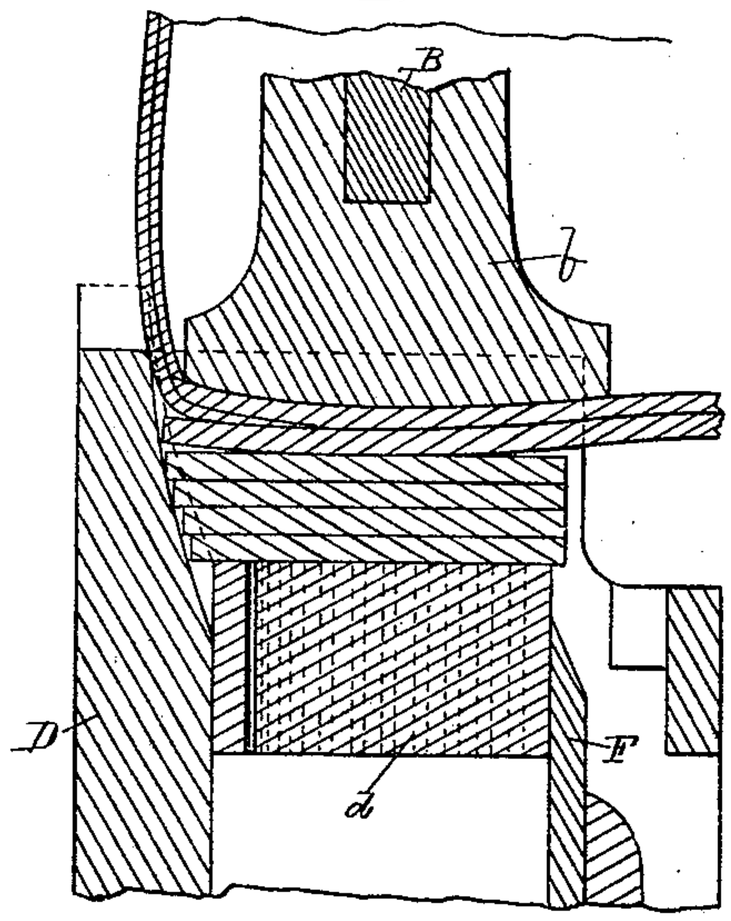
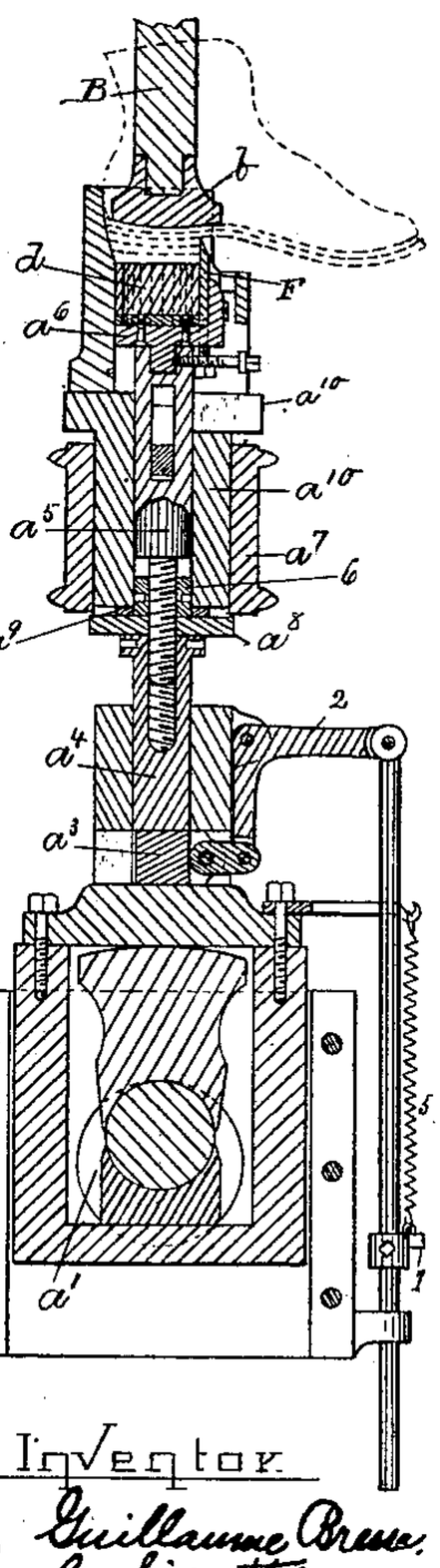


Fig. 2.

Fig. 15.



Witnesses.
Edwin S. Beach.
John R. Brown.

Inventor.
Guillaume Bresse.
by his attorney,
J. L. Norris.

N. PETERS. Photo-Lithographer, Washington, D. C.

(No Model.) 5 Sheets—Sheet 3.

G. BRESSE.

HEEL MACHINE.

No. 388,255. Patented Aug. 21, 1888.

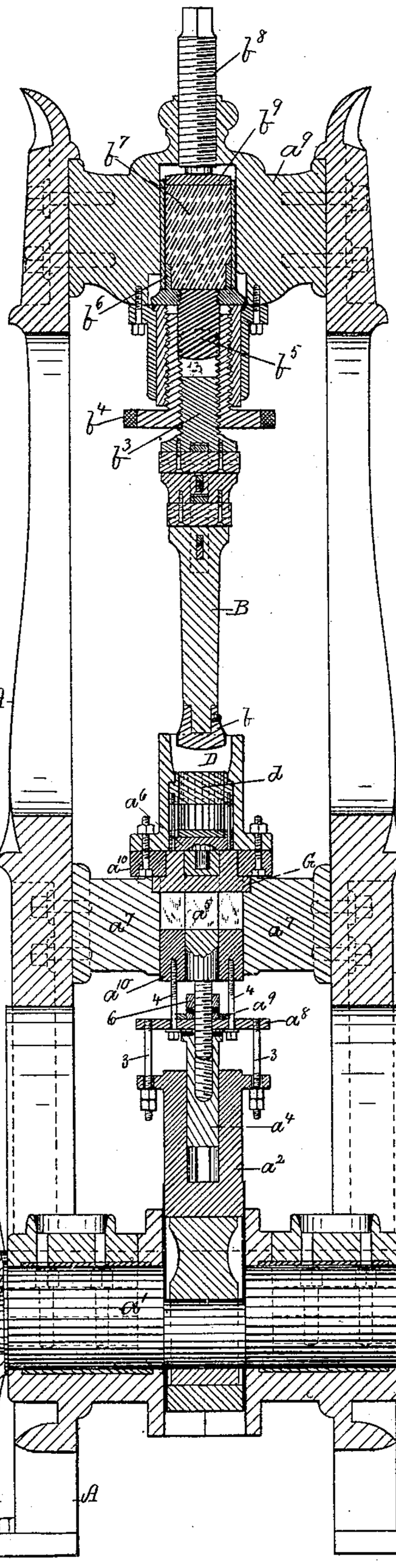


Fig. 3.

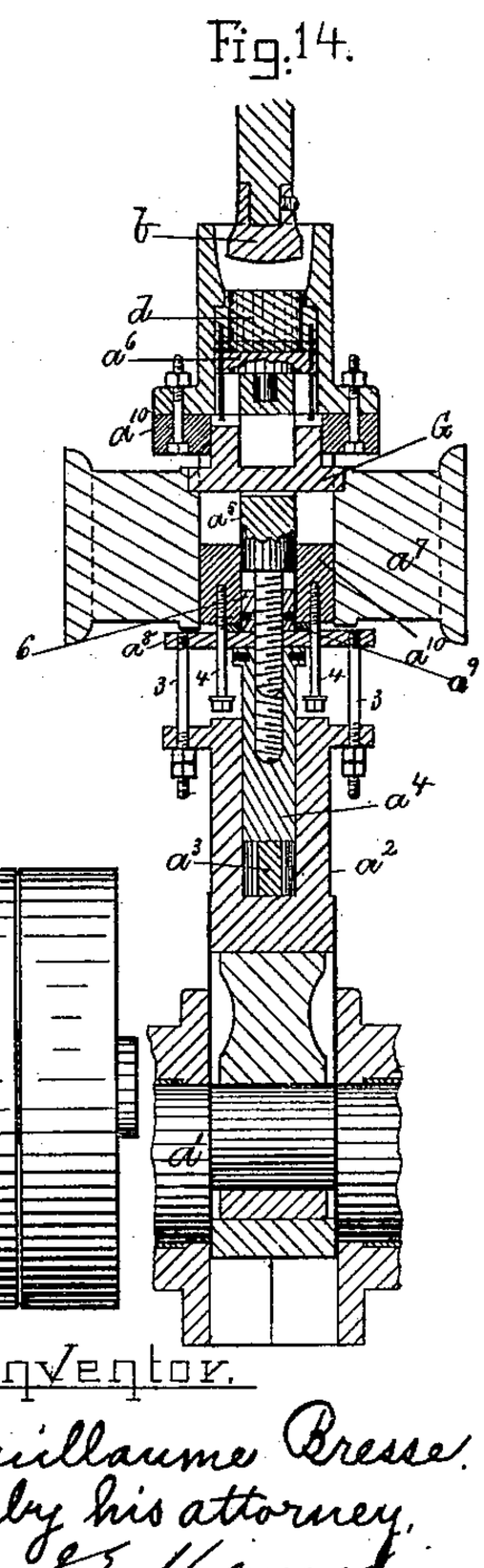


Fig. 14.

Witnesses.
Edward S. Benedict
John R. Snow, Jr.

Inventor.
Guillaume Bresse.
by his attorney,
J. E. Maynadier

N. PETERS, Photo-Lithographer, Washington, D. C.

(No Model.) 5 Sheets—Sheet 4.

G. BRESSE.

HEEL MACHINE.

No. 388,255. Patented Aug. 21, 1888.

Fig. 4.

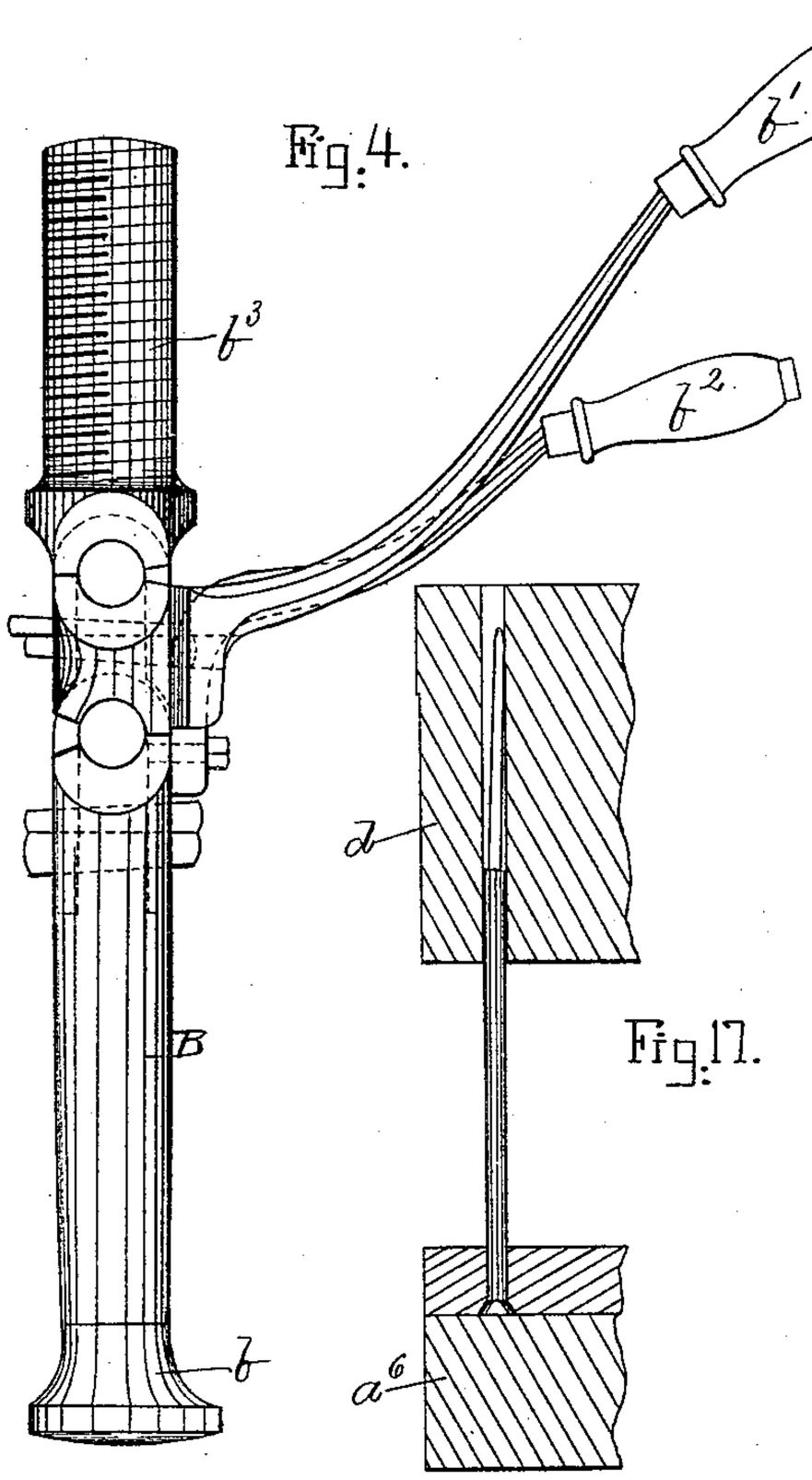


Fig. 17.

Fig. 5.

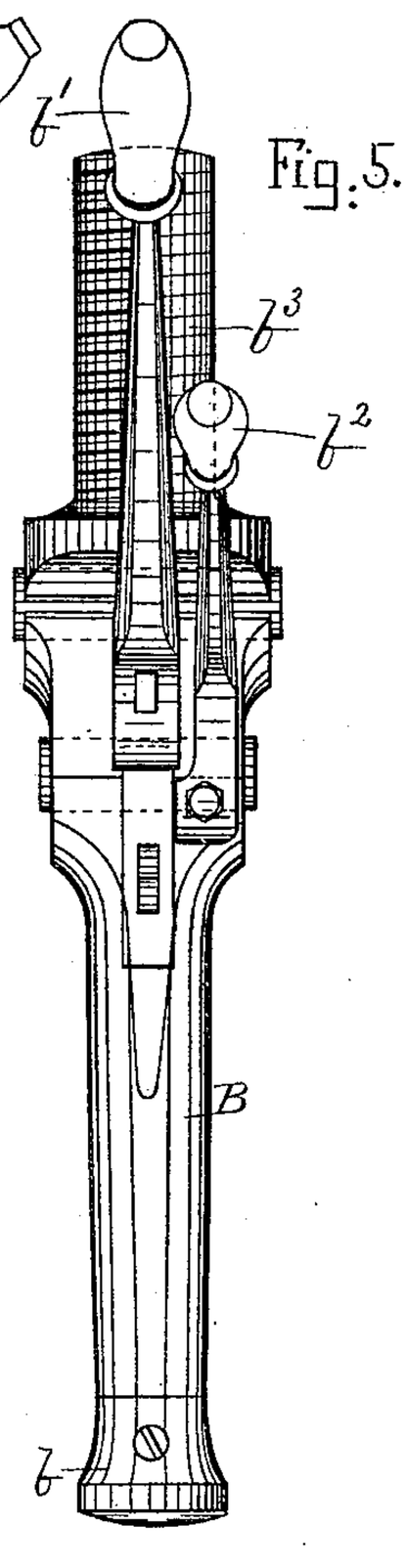
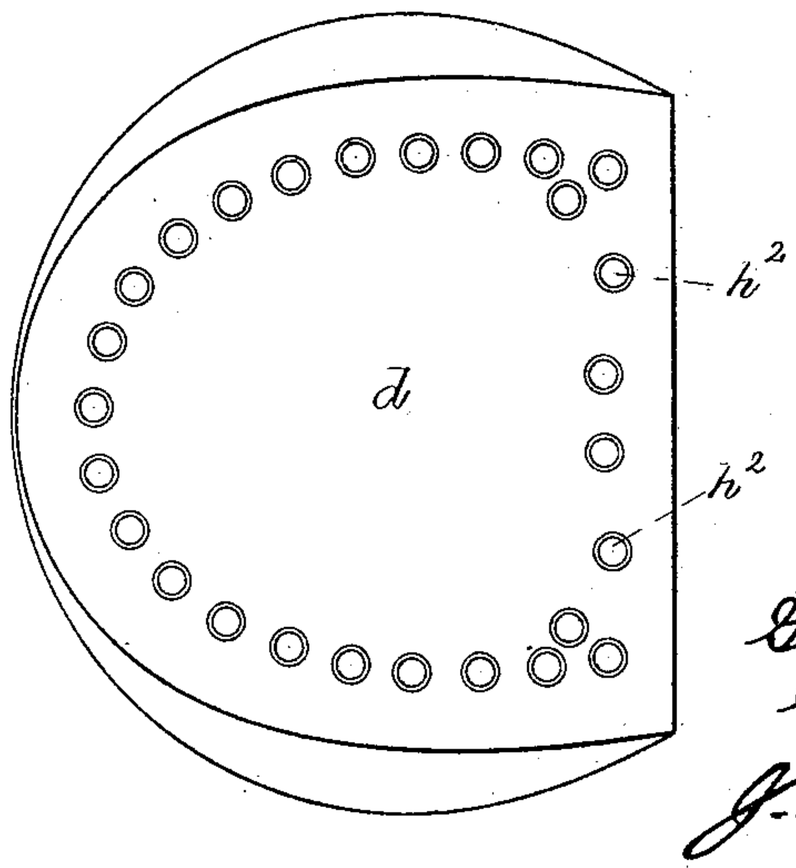


Fig. 6.



Witnesses.

Edward F. Beale.

John R. Snow.

Inventor

Guillaume Bresse.

by his attorney,

J. E. Maynadier.

N. PETERS. Photo-Lithographer, Washington, D. C.

(No Model.) 5 Sheets—Sheet 5.

G. BRESSE.

HEEL MACHINE.

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Fig. 7.

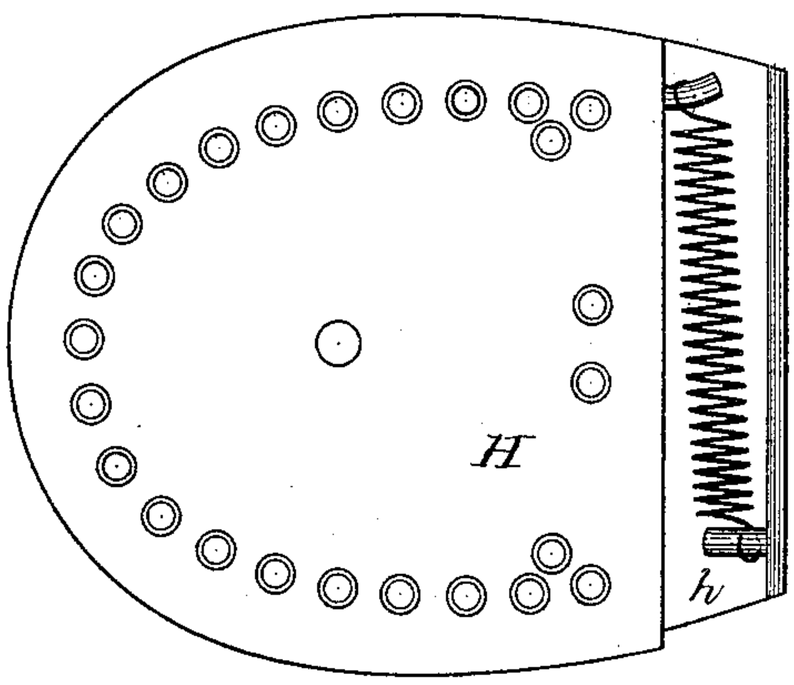

Fig. 8.

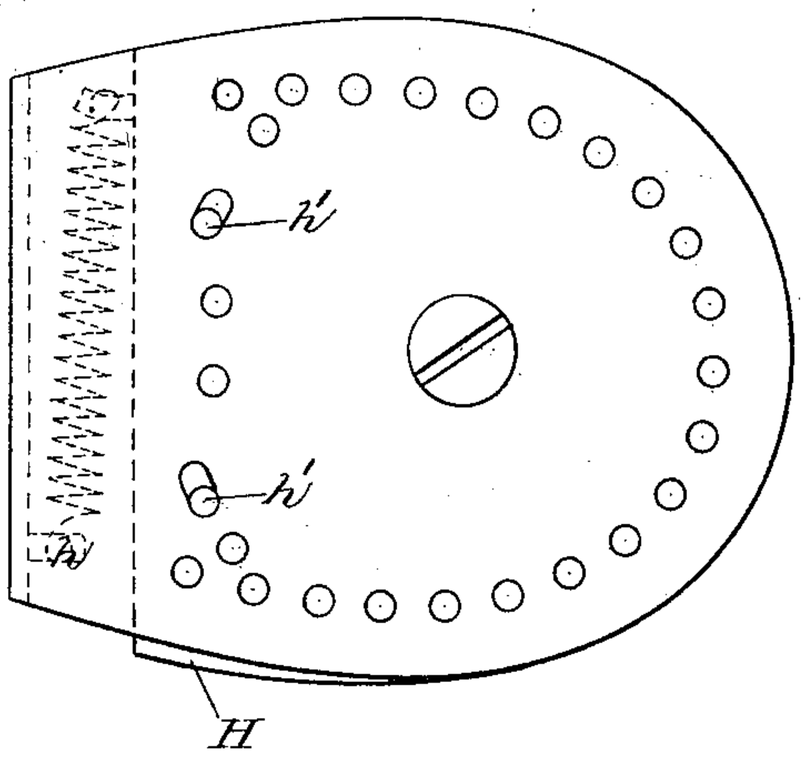

Fig. 9.

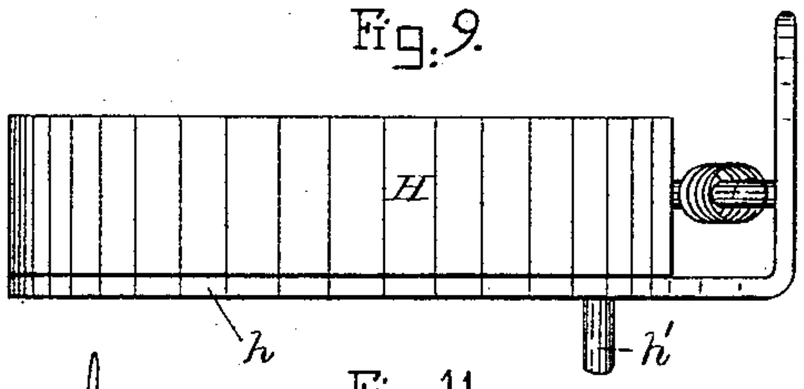

Fig. 10.

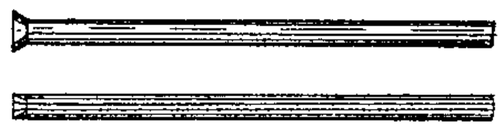

Fig. 11.

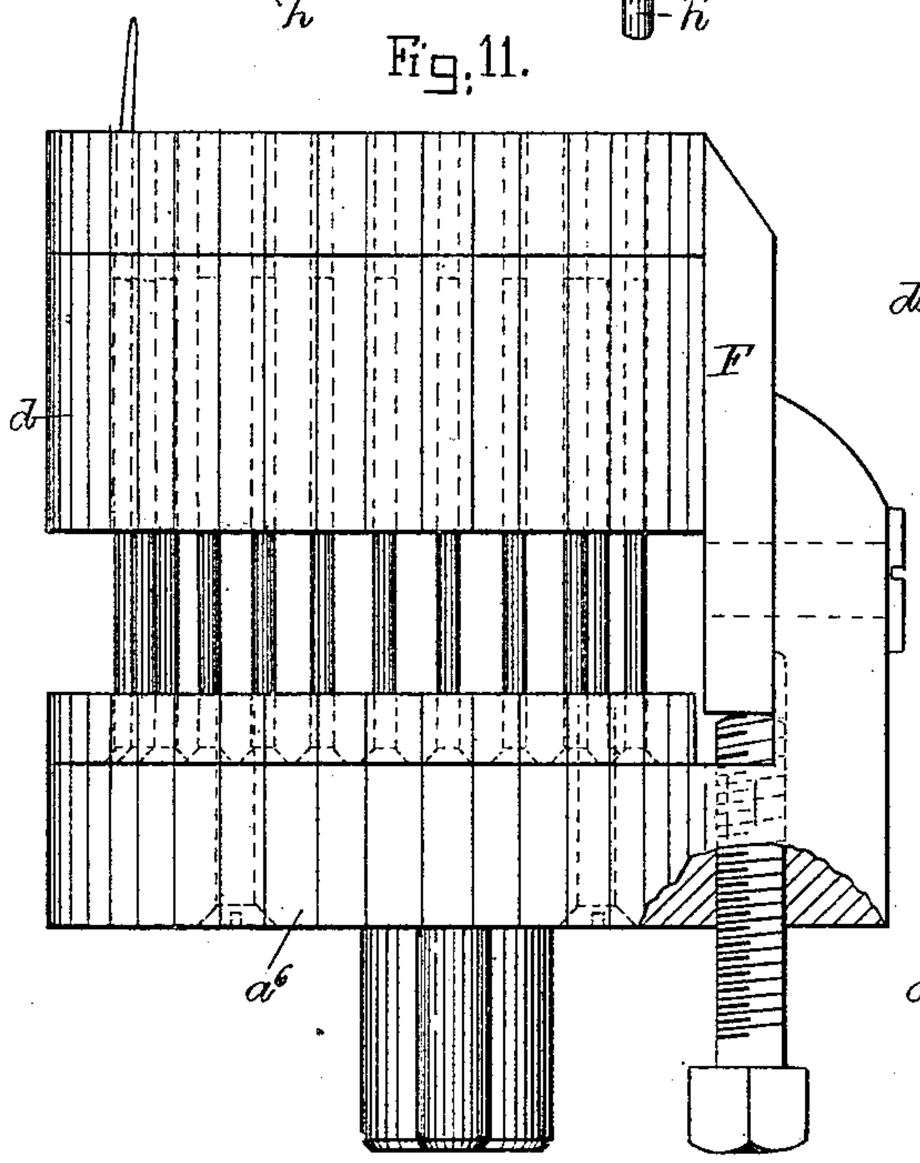

Fig. 12.

Witnesses.
Edward S. Beach.
John R. Snow.

Inventor.
Guillaume Bresse.
by his attorney.
J. L. Maynadier.

N. PETERS, Photo-Lithographer, Washington, D. C.

UNITED STATES PATENT OFFICE.

GUILLAUME BRESSE, OF QUEBEC, QUEBEC, CANADA.

HEEL-MACHINE.

SPECIFICATION forming part of Letters Patent No. 388,255, dated August 21, 1888.

Application filed December 29, 1887. Serial No. 259,277. (No model.)

To all whom it may concern:

Be it known that I, GUILLAUME BRESSE, of the city of Quebec, in the Province of Quebec, Canada, have invented an Improved Heel-Machine, of which the following is a specification, reference being had to the accompanying drawings, in which—

Figure 1 is a sectional plan, the section being on line 1 1 of Fig. 2. Fig. 2 is a sectional elevation on line 2 2 of Fig. 1. Fig. 3 is a sectional elevation on line 3 3 of Fig. 1. Figs. 4 and 5 are two elevations illustrating the double-hinged arm. Fig. 6 is a plan view of the heel-block *d*, showing the holes to receive the nails, and also the two extra holes to receive the guide-pins of the nail-feeder, which is illustrated in Figs. 7, 8, and 9. Fig. 10 shows one of the drivers. Figs. 11 and 12 are two elevations of the heel-block, the driver, the breasting-knife, and the drivers. Fig. 13 is a plan of the sleeve-plunger and of the upper plunger which works in it, showing also the spline upon which the two rods fast to the heel-block rest, and the set-screw by which the driver-plate is connected to the upper plunger. Figs. 14 and 15 are details illustrating the position of some of the parts at the end of the upward stroke. Fig. 16 is a sectional diagram enlarged, the full lines indicating the relation of the heel-block and mold before the heel is compressed and the dotted lines after the heel is compressed. Fig. 17 is a sectional view showing the heel-block with a driver (from the driver-block) adapted to tip the nail in position to drive the nail which rests in a perforation in the block.

My invention is an improvement on that patented by my patent, No. 327,652, dated October 6, 1885.

The frame A supports the driving-shaft *a*. The driving-shaft *a* is geared to the main shaft *a'*. This shaft *a'* moves the block a^2 up and down once for each revolution of the main shaft *a'*. The motion of the main shaft *a'* and block a^2 imparts motion to other parts of the machine only when the block a^3 is thrown forward between the block a^2 and plunger a^4, as will be clear without further description. The first part of the upward motion of the plunger a^4 forces a gang of drivers against a set of nails and causes the nails to penetrate the heel, and also causes the breasting-knife to breast the heel, and the latter part of the upward motion of the plunger a^4 powerfully compresses the heel, which is held above by the double-jointed arm B, below by the heel-block *d*, at the back and sides by the mold D, and at the breast by the breasting-knife F. The plunger a^4 is adjustably connected with a plunger, a^5, and to the upper end of the plunger a^5 is secured the plate a^6, upon which the ends of the drivers rest. This plate a^6 also carries the breasting-knife F.

The heel-block *d* is supported by two legs (shown in Fig. 3) upon a spline, G. This spline rests upon cross-piece a^7 of the frame. The heel is placed in the mold D and upon the heel-block *d*, and the shoe is then put in place if the heel is to be attached to the shoe. The double-jointed arm B is then swung into place and its toggle-joint straightened, so as to clamp the heel firmly between the shoe *b* of the double-jointed arm B and the heel-block *d*.

It will be clear from Figs. 4 and 5 and from Fig. 2 that by means of the handles *b'* and b^2 the arm B can be swung into place, as heretofore; but by means of the toggle-joint in the double-jointed arm B the heel can be compressed and very firmly held between the shoe *b* and the heel-block *d*. This extra joint in the arm B is an important feature of my invention, as by means of it I am enabled to secure a heel much more perfectly than heretofore. After the heel has thus been secured in the vise *b d*, the block a^3 is thrown into place, (by means of the treadle 1 and lever 2,) so that when block a^2 rises it carries with it the plungers a^4 a^5, and the upward motion of plunger a^5 carries with it the driver-plate a^6, and the breasting-knife F for the driver-plate a^6 is held to the top of the plunger a^5 by means of a tang and set-screw, as shown in Fig. 2. The nails rest in perforations in the heel-block *d*, (see Figs. 6 and 17,) and the drivers extend up from the driver-plate a^6 through the perforations in the heel-block *d*. The plungers a^5 and a^4 are so adjusted that the ends of the drivers drive the nails flush with the lower surface of the heel at the same moment that the edge of the breasting-knife comes flush with the sole or completely breasts the heel. In case the nails are desired to project slightly from the lower face of the heel the drivers are made shorter. The purpose of this is to cause the

heads of the nails to project sufficiently from the face of the heel to allow the top lift to be spanked on. When the driver-plate a^6 has risen almost far enough to drive the nails and breast the heel, the cross-piece a^8 and its collar a^9 come in contact with the sleeve-plunger a^{10}, and as the mold D is secured to the upper end of this sleeve plunger a^{10} that mold D is forced upward by the rise of the plunger a^{10}, and during the rest of the stroke (a little over one-fourth of an inch in most cases) the plunger a^4 a^5, sleeve-plunger a^{10}, mold D, driver-plate a^6, and breasting-knife F rise together, compressing the heel powerfully not only from top to bottom, but also around the back, sides, and breast. The plungers a^4 a^5 are so adjusted in position that the upper surface of the driver-plate a^6 comes in contact with the under surface of the heel-block (see Figs. 14 and 15) just before the plunger a^5 reaches its highest point, and consequently the heel-block d is forced up slightly with the mold D and driver-plate a^6, giving the final compression to the heel. The heel-block d having remained stationary during part of the upward movement of sleeve-plunger a^{10} and mold D, the heel-block d will be slightly lower in the mold D at the end of the upward stroke of the mold D than is shown in Figs. 2 and 3. Its relation with the mold D at the extreme upper stroke of the plungers a^4 a^5 and sleeve-plunger a^{10} is clearly shown in Figs. 14, 15, and 16, which illustrate the relation of the heel-block d and its spline G with the mold D and sleeve-plunger a^{10} when the sleeve-plunger and mold are at the upper end of their stroke. The block a^2 then descends and carries down with it the plungers a^4 a^5, which are connected to the block a^2 by means of cross-piece a^8 and rods 3, the first part of the downward motion of plungers a^4 a^5 carrying the driver-plate a^6 and breasting-knife F down, and the latter part of the downward motion of the block a^2 and plungers a^4 a^5 pulling down the plunger-sleeve a^{10} and mold D by means of the rods 4 4; but as the legs of the heel-block d are connected by the spline G, which rests upon the cross-piece a^7 of the frame, the mold D travels down farther than the heel-block d, thus freeing the heel from the mold D and leaving it between the shoe b and the heel-block d. The double-jointed arm B is then swung out of the way on the other, so that the heel, or the shoe with the heel attached, is readily removed and a new one inserted, ready for the next operation like that just explained.

It will be seen that where a spring, 5, is used to control the block a^3, as shown in Fig. 2, the block will be withdrawn by the spring 5 as soon as the block a^2 begins its downward motion. In order to adjust the plunger a^5, I make it with a screw-stem, which screws into the plunger a^4, and use a check-nut, 6, which not only prevents accidental motion of the plunger a^5 with relation to the plunger a^4, but also serves to hold the cross-piece a^8 fast to the plungers a^4 a^5, thereby enabling cross-piece a^8 to be used to connect the plungers a^4 a^5 with the block a^2 and also with the sleeve-plunger a^{10}.

The double-jointed arm B has its upper end, b^3, formed with a screw-thread, which enters an adjusting-screw, b^4. The screw end b^3 of the arm B is prevented from moving on its axis by the spline b^5, which is fast to the box b^6. This box b^6 can move slightly in the cross-piece a^9 of the frame, but has within it a rubber or other spring, b^7, the tension of which can be adjusted by the screw b^8 and follower b^9. In practice the tension of spring b^7 will be so great that the arm B and its connections will be held down upon the heel with the requisite force.

Figs. 7, 8, and 9 illustrate a nail-carrier for feeding the nails to the heel-block. The nail-holes in this carrier H are filled with nails, being retained in place by the slide h. Then the pins h' are inserted in the holes h^2 in the upper surface of the heel-block d of Fig. 6, and the slide h is moved on its axis until the holes through it coincide with the holes in the carrier H, and the nails fall from the carrier H, heads down, into the heel-block d. After the heel-block has thus been supplied with nails, the heel is put and clamped firmly in place, and the operation is as above described. In order to give each nail a slight slant toward the middle of the heel, the drivers are slanted on their upper ends, as illustrated in Figs. 10, 11, and 17, and these slanted ends cause each nail to slant slightly toward the middle of the heel. (See Fig. 17.) The heads of the drivers are so formed that when clamped in place on driver-plate a^6 the upper surface of each driver will slant properly. The nail-holes in the heel-block d are also drilled on a slight slant—that is, converging slightly toward the middle of the heel, when the heels are concave; but for ordinary heels slanting the acting ends of the drivers will be sufficient to insure the proper insertion of the nails without previous pricking.

In my patent, No. 327,652, above referred to, the mold, driver-plate, and breast-knife were actuated by a single plunger; and the manufacture of my present invention consists in making the mold independent of the driver-plate, whereby I am enabled to greatly reduce the stroke of the mold and also to use the mold as a means of correctly placing the heel--two matters of prime importance, as will be clear to all skilled in this art.

While the breast-knife may be attached to the mold, as in my former patent, it is much better to attach it to the driver-plate, as in my present machine, as thereby the stroke of the mold may be made less than the stroke of the breast-knife; and while the main feature of my present invention consists in the combination of the mold and driver-plate, so that the stroke of the former is only a part of the stroke of the latter, and while this feature may be embodied in a machine in which the breast-knife is fast to the mold, as in my

former patent, yet to obtain all the advantages of this feature of my invention the breast-knife should move with the driver-plate instead of being fast to the mold, as in my former patent.

I am aware of the patents of Bigelow, No. 108,677, of 1870, Couburn, No. 230,242, of 1880, and Straffin, No. 214,533, of 1879, and disclaim all that is shown in them.

What I claim as my invention is—

1. In a heeling-machine, the double-jointed arm B, composed of the parts b^3 and the swinging part carrying the shoe b, connected by a link and two pins, in combination with heel-block D, the handle b' being fast to the link and the handle b^2 being fast to the swinging part of the arm, substantially as and for the purpose specified.

2. In a heeling-machine, mold D and driver-plate a^6, and mechanism, substantially such as described, for moving driver-plate a^6 within mold D for a certain part of the stroke of the driver-plate a^6 and moving mold D and driver-plate a^6 together during the latter part of the stroke of the driver-plate a^6, the mold, driver-plate, and actuating mechanism being combined and operating substantially as described.

3. In a heeling-machine, mold D, heel-block d, driver-plate a^6, and breasting-knife F, the breasting-knife being fast to the driver-plate a^6, in combination with plungers a^5 and a^{10} and actuating mechanism, substantially such as described, by which plunger a^5 is moved independently of plunger a^{10} during the first part of the stroke of plunger a^5, but these plungers are moved together during the latter part of the stroke, all substantially as and for the purpose specified.

4. In combination, heel-block d, mold D, driver-plate a^6, and especial mechanism for combining them, consisting of spline G and plungers a^5 a^{10}, all substantially as described.

5. The improved heeling-machine above described, consisting of the heel-clamp b d, mold D, driver-plate a^6, and breast-knife F, with actuating mechanism, substantially such as described, to impart the differential motion to the driver-plate a^6 and mold D.

6. In a heeling-machine, the stationary spline G, supporting the heel-block d, the plunger a^5, supporting the driver-plate a^6, and the plunger a^{10}, supporting the mold D, in combination with plunger a^4, block a^2, and block a^3, all substantially as described.

GUILLAUME BRESSE.

Witnesses:
H. LAPOINTE,
L. JACQUES.