(No Model.) 3 Sheets—Sheet 1.

H. A. HENDERSON.

MACHINE FOR TURNING OR CUTTING HEELS.

No. 583,648. Patented June 1, 1897.

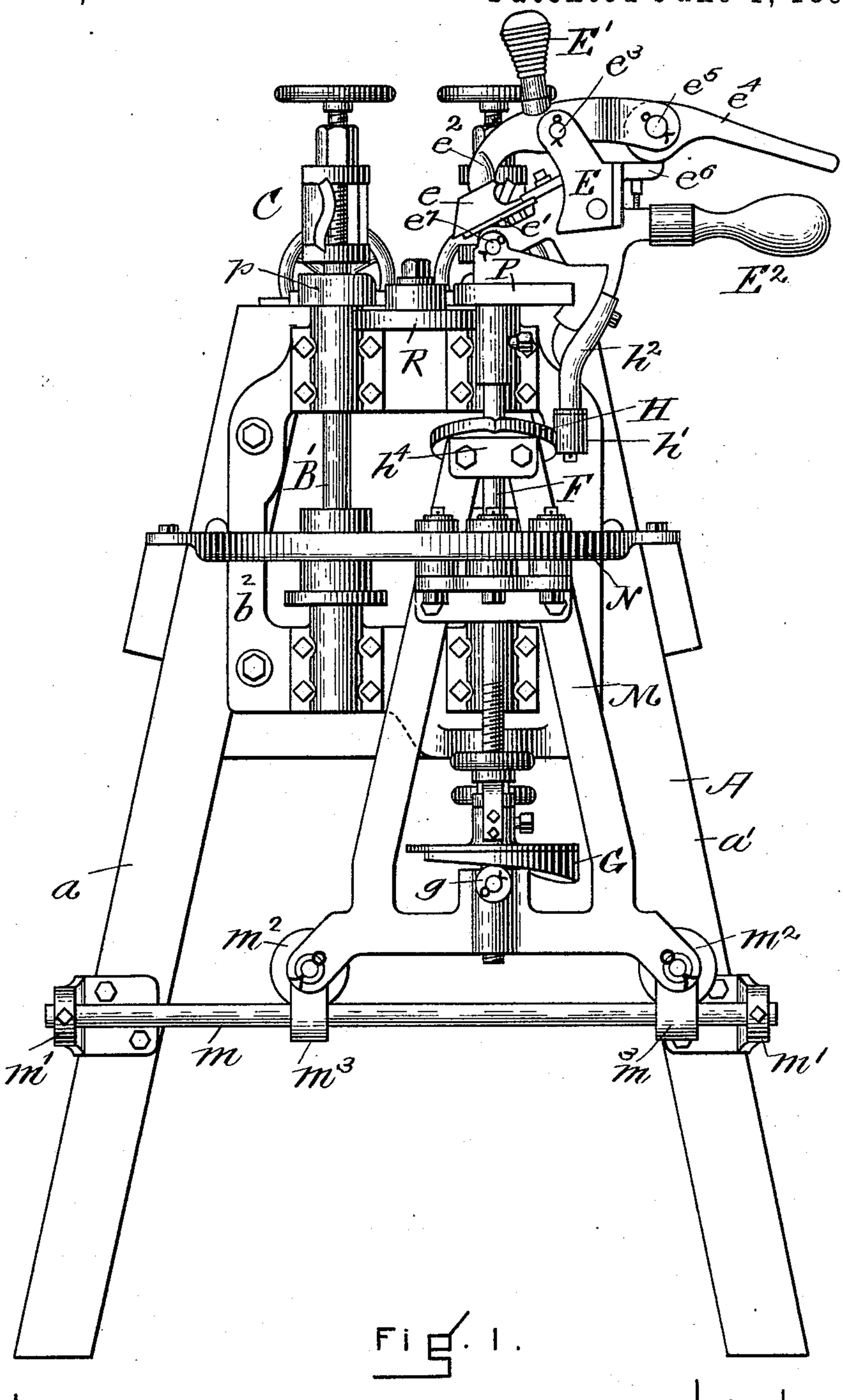

Fig. 1.

WITNESSES

J. M. Dolan

E. L. Sherman.

INVENTOR

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Clarke & Raymond

(No Model.) 3 Sheets—Sheet 2.

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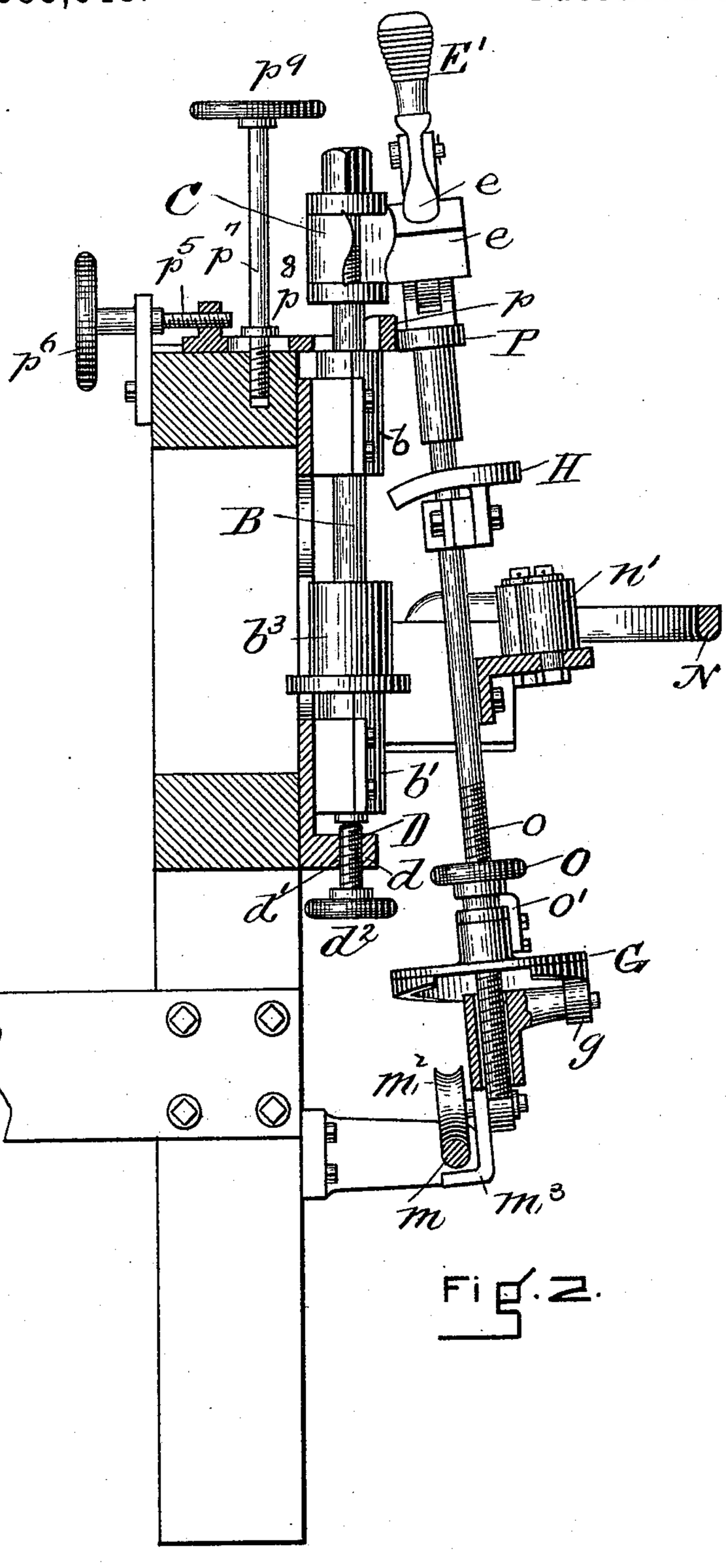

Fig. 2.

WITNESSES.

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(No Model.) 3 Sheets—Sheet 3.

H. A. HENDERSON.

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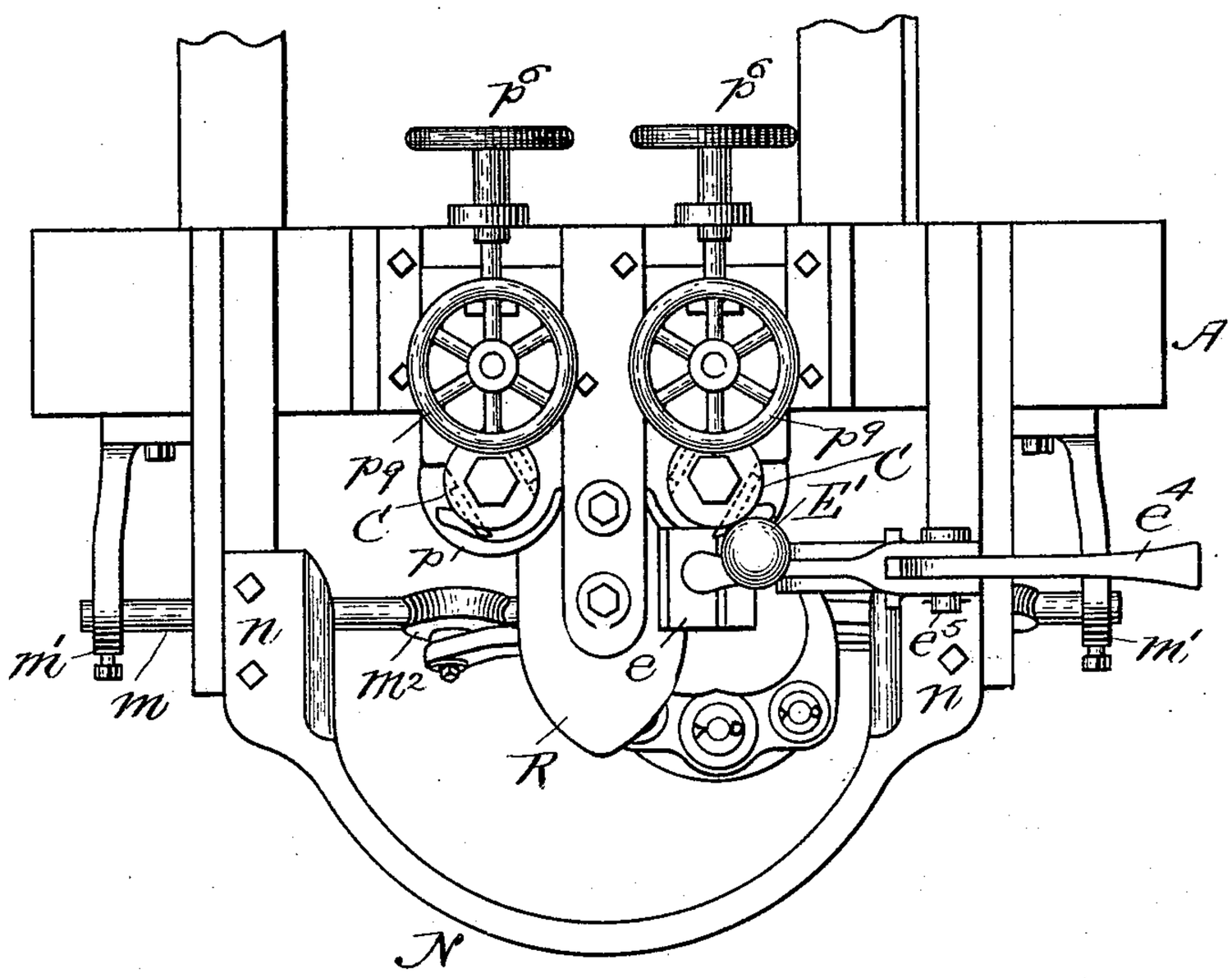

Fig. 3.

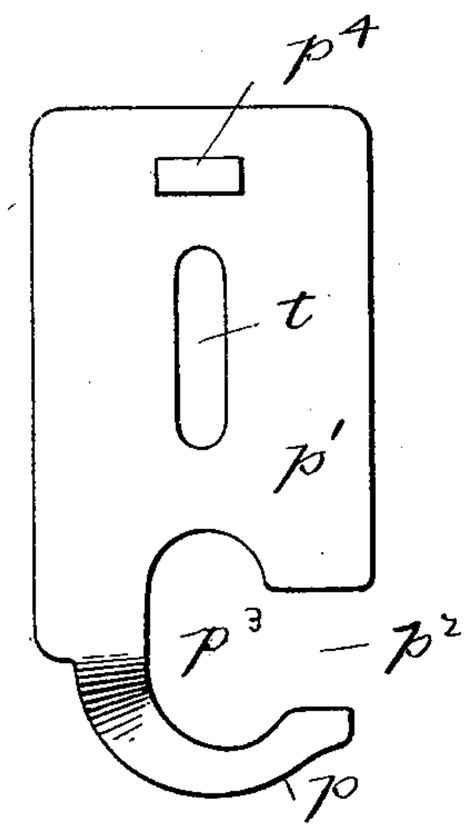

Fig. 4.

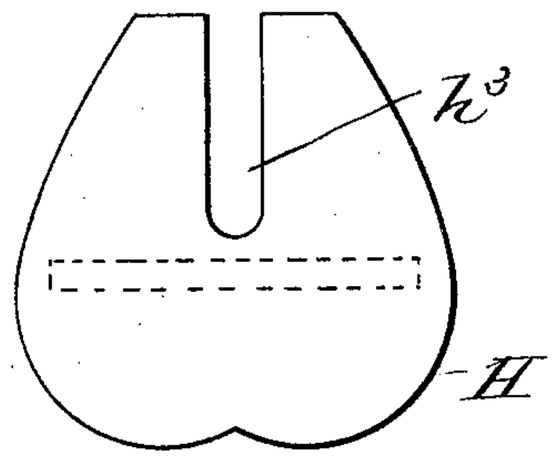

Fig. 5

WITNESSES
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UNITED STATES PATENT OFFICE.

HENRY A. HENDERSON, OF LYNN, MASSACHUSETTS, ASSIGNOR TO THE ROSS HEEL COMPANY, OF EASTON, MASSACHUSETTS, AND SACO, MAINE.

MACHINE FOR TURNING OR CUTTING HEELS.

SPECIFICATION forming part of Letters Patent No. 583,648, dated June 1, 1897.

Application filed March 12, 1894. Serial No. 503,251. (No model.)

To all whom it may concern:

Be it known that I, HENRY A. HENDERSON, a citizen of the United States, residing at Lynn, in the county of Essex and State of Massachusetts, have invented a new and useful Improvement in Machines for Turning or Cutting Heels, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part of this specification, in explaining its nature.

The invention is especially adapted to the shaping or molding of wood heels from a wood blank or form, and it is an improvement upon the invention described in the Patent No. 220,920, dated October 28, 1879, granted H. C. Paine and myself. It has to do principally with the mechanism for transferring the jack or heel-blank holder from one cutter to the other, whereby that action may be more expeditiously done than in the said patented device. It relates to other features of construction and organization, some of them growing out of this difference in structure and others relating to adjustments not found in the patented device.

In a machine adapted for the molding or turning of wood heels it is practically essential that there be two rotary cutters and that one half of the molding or turning of the heel be done by one cutter and the remaining half by the other cutter, in order that each cutter may cut with the grain of wood, as it has been found that by cutting against the grain of the wood there is great liability of imperfect work from the splitting of the wood and the rank cut which the cutter is liable to make. Therefore in the present invention I employ two rotary cutters, but instead of locating them between the pivoted crane or arm carrying a jack or heel-holder at its outer end I have placed them closely together and employ a transferring device which dispenses with the use of the said crane or arm.

In the drawings, Figure 1 is a view in front elevation of my improved machine. Fig. 2 is a view, partly in vertical section and partly in elevation, representing means for adjusting one of the cutter-shafts and the cutter vertically, and also means for horizontally adjusting the gage used therewith, also representing the heel-holder and its sliding carriage and intermediate parts when the holder is in the relation to the cutter represented in plan in Fig. 3. Fig. 3 is a plan view of the machine. Figs. 4 and 5 are views of a gage and pattern, respectively, to which reference will hereinafter be made.

The frame A of the machine may be of wood or of metal, and it preferably has the inclined legs or sides a a' to form a relatively wide firm base and a narrow top. It supports upon its front side by suitable boxes b b' the shafts B B', each of which carries at its upper end a rotary cutter C.

The boxes b b' are preferably formed in a metal plate b^2, which is bolted to the frame A. (See Figs. 1 and 2.) Each of the shafts B B' has a pulley b^3, about which its operating-belt (not shown) runs, and one or both shafts with its or their cutters may be vertically adjustable by means of the adjusting-screw D, upon the upper end of which the shaft rests, and which is turned in the threaded hole d of a lug d', extending outward from the plate b^2 by the wheel d^2. (See Fig. 2.)

The heel-blank e is presented to the cutters C by the heel-holder E. This heel-holder has an inclined bed e', upon which the seat end of the blank rests, and a clamping-jaw e^2, which closes upon the tread end of the blank and forces it against the bed.

The jaw e^2 is pivoted at e^3 and is closed and opened by the cam-lever e^4, which is pivoted at e^5, the cam bearing upon the lug e^6. The pivoted jaw-piece also has the vertical handle E', and the heel-holder also has the horizontal handle E^2, by means of which the holder is manipulated or turned in relation to the cutter by the operator.

The holder is pivoted at e^7 to ears projecting upward from a plate attached to the upper end of a shaft or long pivot F. The heel-holder has in relation to each cutter during the cutting operation a vertical movement and a forward tilting motion upon the center e^7. These movements are obtained by the following means: The vertical movement by the cam G, which is attached to the lower end of the shaft or pivot F and bears upon the sta-

tionary cam-roll g, (see Figs. 1 and 2,) and the tilting motion by the stationary cam or pattern H, which is carried at the upper end of the sliding frame or carriage M, against the edge of which a cam-roll h' at the lower end of the arm h^2, depending from the holder E, bears, the turning of the holder and its pivot or shaft causing the roll h' to ride around the edge of the cam H. It will be understood that the cam H is a double cam, in that it has two operating-surfaces, one of which is brought into operation while the holder is in operative relation with one of the cutters and the other of which is brought into operation while the holder is in operative relation with the other cutter, the two cam-sections being exact counterparts, but reversely arranged. The cam H is made removable from the sliding carriage in order that others of different configurations may be substituted. To enable this to be quickly done, it is provided with the long recess h^3, which receives the shaft or pivot F, and a downwardly-extending ear h^4, having bolt-holes through which bolts fastening it to the top of the sliding carriage pass. (See Fig. 1.) By removing the bolts the cam becomes detachable, and another may be substituted.

The sliding frame M supports the pivot or shaft F and the heel-blank holder and the cams for controlling the movements of the holder. Its office is to provide means for the presentation and withdrawal of the heel-holder and blank to each cutter and to transfer the heel-holder and blank and the cams governing the movement of the heel-holder from operative relation with one cutter to operative relation with the other. This sliding frame is mounted upon a horizontal track m, which is preferably a metal tube or round bar supported at each end by brackets m', bolted to the frame A, (see Fig. 1,) and antifriction-rolls m^2 preferably form the connection between them, and to prevent derailment angle-pieces m^3, (see Figs. 1 and 2,) attached to the sliding carriage, extend under the track. This construction provides means for the quick movement of the sliding frame and holder both laterally, or from cutter to cutter, and outwardly, or away from either cutter. The extent of the outward movement of the sliding frame is limited by the stationary curved rail N, (see Fig. 3,) which is bolted at each end n to the frame A, and the sliding frame M carries antifriction-rolls n' to bear against the inner surface of the rail when the frame and holder have been moved outwardly from the cutters and while the transfer from one to the other is being made.

The blank-holder pivot or shaft F is vertically adjusted by the nut O, which turns upon the threaded lower end o of the pivot and is connected with the hub of the cam G by means of a connecting yoke-piece o', fastened to the hub of the cam and entering a groove in the edge of the nut O. It will be understood that the cam G is secured to the pivot or shaft by a feather which, while it prevents it from turning upon the shaft, does not prevent it from being moved vertically thereon by the nut.

At the upper end of the pivot or shaft there is a gage P, which bears against the gage p, (see Fig. 2,) the gage serving to determine the size of the heel-seat. This gage is an adjustable and removable one. It is preferably formed, as represented in Fig. 4, at the end of the plate p', the gage extending from the plate in the shape of a horn and having an opening p^2 at one side which extends into the enlarged recess p^3. This permits the gage to be passed by the shaft in placing and removing it and makes it unnecessary to remove the cutter from the shaft, as would be necessary if the hole or opening p^2 were not provided. The plate p' also has the slot t and the lug p^4, in which is a threaded hole to receive the adjusting-screw p^5, (see Fig. 2,) the adjusting-screw being stationarily supported by the frame and being operated by the wheel p^6 and the plate being held down to the frame by the screw p^7, having the collar p^8 and band-wheel p^9, the screw passing through the slot t and the collar bearing upon the top of the plate.

To adjust the gage, the screw p^7 is loosened and the adjusting-screw p^5 turned until the gage has been properly located, when the screw p^7 is turned back and the plate clamped in its new position. To remove the gage, it is simply necessary to unscrew the clamping-screw p^7 and adjusting-screw p^5, when the plate may be swung out of position and another one substituted. There extends forward from between the cutters a guard-plate R. (See Figs. 1 and 3.) This plate is preferably cast with the plate b^2, and its object is to cause the holder to take a curved path as it is being transferred by the sliding carriage M from one cutter to the other in order that the holder may be removed from the cutter sufficiently to prevent accident from contact therewith. Only one of the two shafts B B′ needs to be provided with the vertical adjustment above specified, the object of such adjustment being to secure a perfect alinement of the two cutters in relation to each other.

The operation of the machine is as follows: The wood blank is placed upon the bed e' with its breast against a breast-gage and the jaw e^2 closed upon it, and the cams and gages having been properly adjusted the operator, by means of the handles E′ E², moves the holder toward one of the cutters and until the gage is brought into contact with the gage p, the said contact being upon the side of the gage P, so that the side of the blank is first brought into contact with the cutter, and from that position the holder with the blank is turned about a third of a revolution. This molds or turns one-half the side of the heel-blank, and the holder is then moved by drawing it forward from the cutter and sliding the

frame M until it is brought opposite the other cutter, when it is moved toward it, the other side of the gage P then being brought into contact with the gage of that cutter and the holder moved in a direction the reverse of that first given in molding the first half of the heel-blank. This completes the molding or turning operation of the heel, and the holder is then returned to its original position, the completed heel removed from it, and another blank substituted.

Having thus fully described my invention, I claim and desire to secure by Letters Patent of the United States—

1. In a machine of the character specified, the combination of two rotary cutters having a close relation to each other, a tipping and rotary heel-blank holder, a sliding, hinged carriage, upon which the heel-blank holder is mounted and which has a traversing movement bodily and a movement toward and from each cutter and a rail or support for said carriage, and with which it has a sliding and pivotal or hinged connection, as and for the purposes described.

2. In a machine of the character specified, the combination of the rotary cutters, the tipping and rotary heel-holder mounted upon a sliding carriage, the said carriage having a sliding movement bodily, and a tipping movement, and devices carried by said carriage for governing the movements of the holder in relation to the cutters and a rail or support for said carriage, as and for the purposes described.

3. In a machine of the character specified, the combination of the rotary cutters placed relatively closely together, gages *p*, the heel-holder E mounted upon the sliding carriage M substantially as specified, the gage P and the hinged sliding carriage M carrying the holder-controlling cams G, H, as and for the purposes described.

4. In a machine of the character specified, the combination of the rotary cutters C, the hinged sliding carriage M mounted upon the track *m* substantially as specified, the pivot or shaft F supported by said sliding carriage, its cam G, the cam-roll *g* carried by said carriage, and coacting with the cam G; the cam H supported by said carriage, the heel-holder E pivoted to the upper end of said shaft or pivot and having a cam-roll to act with said cam H, and the guard R, as and for the purposes described.

5. The combination in a machine of the character specified, of the cutters C, the heel-holder E, its hinged laterally-sliding carriage M, the carriage and heel-holder having the movements specified, a rail or support upon which said carriage is mounted to slide horizontally, and which also serves as a pivot or hinge, and the guide-rail N, as and for the purposes described.

6. The combination in a machine of the character specified, of the cutters C, the laterally-traveling carriage M, the heel-holder mounted thereon, said carriage and holder having the movements specified, a rail or support upon which said carriage is mounted to slide horizontally, and which also serves as a pivot or hinge, the guide-rail N, and the anti-friction-rolls supported by the carriage to bear against the guide-rail, as and for the purposes described.

7. The combination in a machine of the character specified, of the carriage M supporting the heel-holder, its rolls m^2, the cross-bar *m*, and the angle-pieces m^3 and the heel-holder E, as and for the purposes described.

8. The combination in a machine of the character specified of the traveling carriage M adapted to have an inward and outward swinging movement imparted to it upon the center *m*, the shaft or rod F carried thereby, and having at its upper end a heel-holder, and at its lower end a threaded section *o*, the cam G upon said shaft and connected with the threaded section thereof by a nut *o'* which turns upon said threaded section, all as and for the purposes described.

9. In a machine of the character specified, the movable gage-plate *p'*, having the elongated hole p^3, and mouth p^2, as and for the purposes described.

10. In a machine of the character specified, the gage-plate *p'* having the elongated hole p^3 and nut p^4 with the adjusting-screw p^5 and clamp p^7, as and for the purposes described.

11. The combination in a machine of the character specified of the heel-holder, its carriage, the heel-holder-actuating devices and the carriage rail or support, the two rotary cutters C placed closely together, the vertical shaft B upon which one of the rotary cutters is carried, the stationary lug or bracket *d'* having a threaded hole *d* and the adjusting-screw D screwing in said hole *d*, the upper end of such screw acting as a support or rest for said shaft, as and for the purposes described.

12. In a machine of the character specified, the pattern-cam H carried by the sliding carriage and having the two operative surfaces and an intermediate notch for receiving and holding the cam-pin at the end of the turning movement of the heel-holder, in combination with the said sliding carriage as and for the purposes described.

HENRY A. HENDERSON.

In presence of—
F. F. RAYMOND, 2d,
JOHN O. DEAN.