

No. 724,700.

PATENTED APR. 7, 1903.

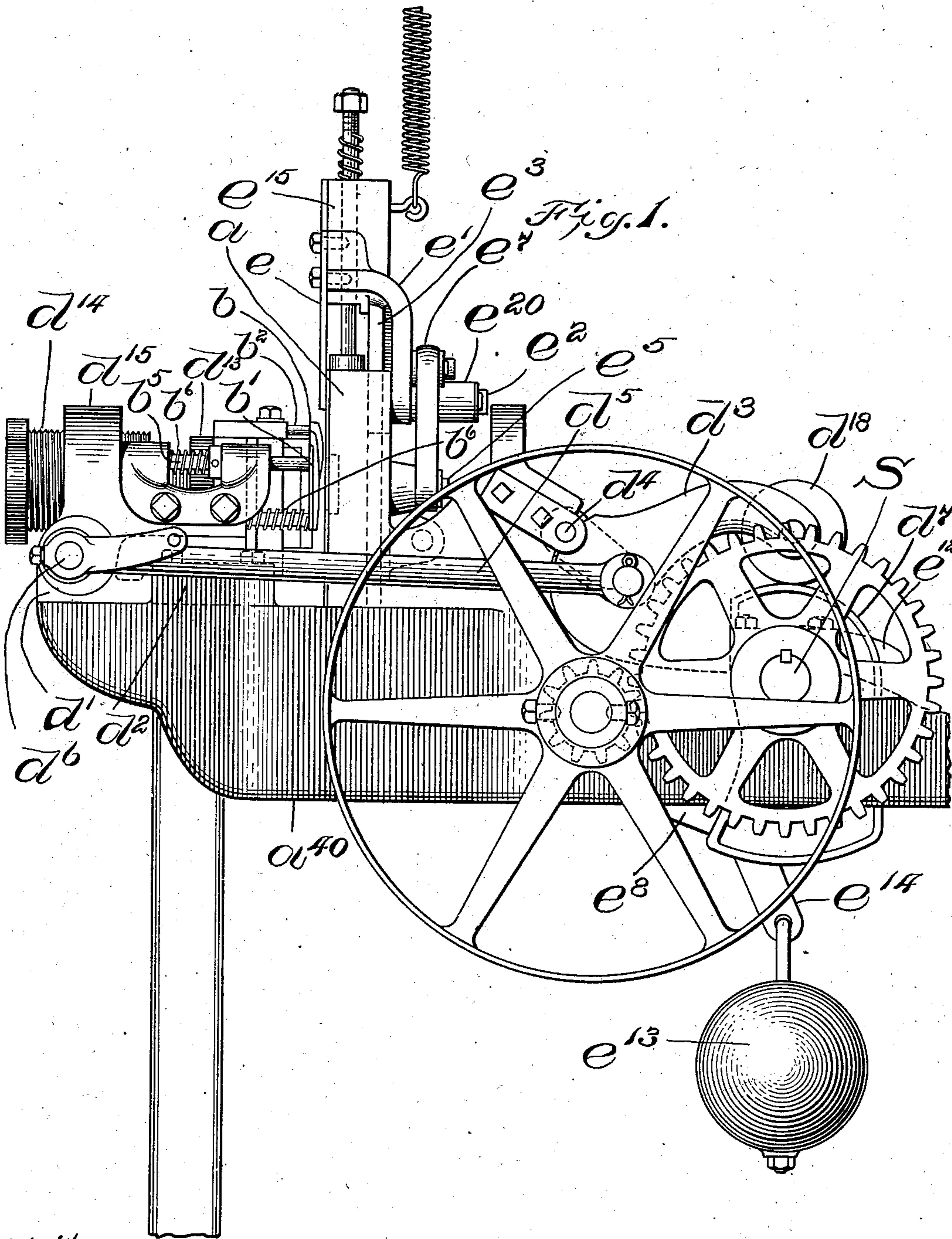
A. C. HEATH.

MACHINE FOR MAKING HEEL RANDS.

APPLICATION FILED DEC. 31, 1902.

NO MODEL.

4 SHEETS—SHEET 1.



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H. L. Robbins -
Geo. Hall

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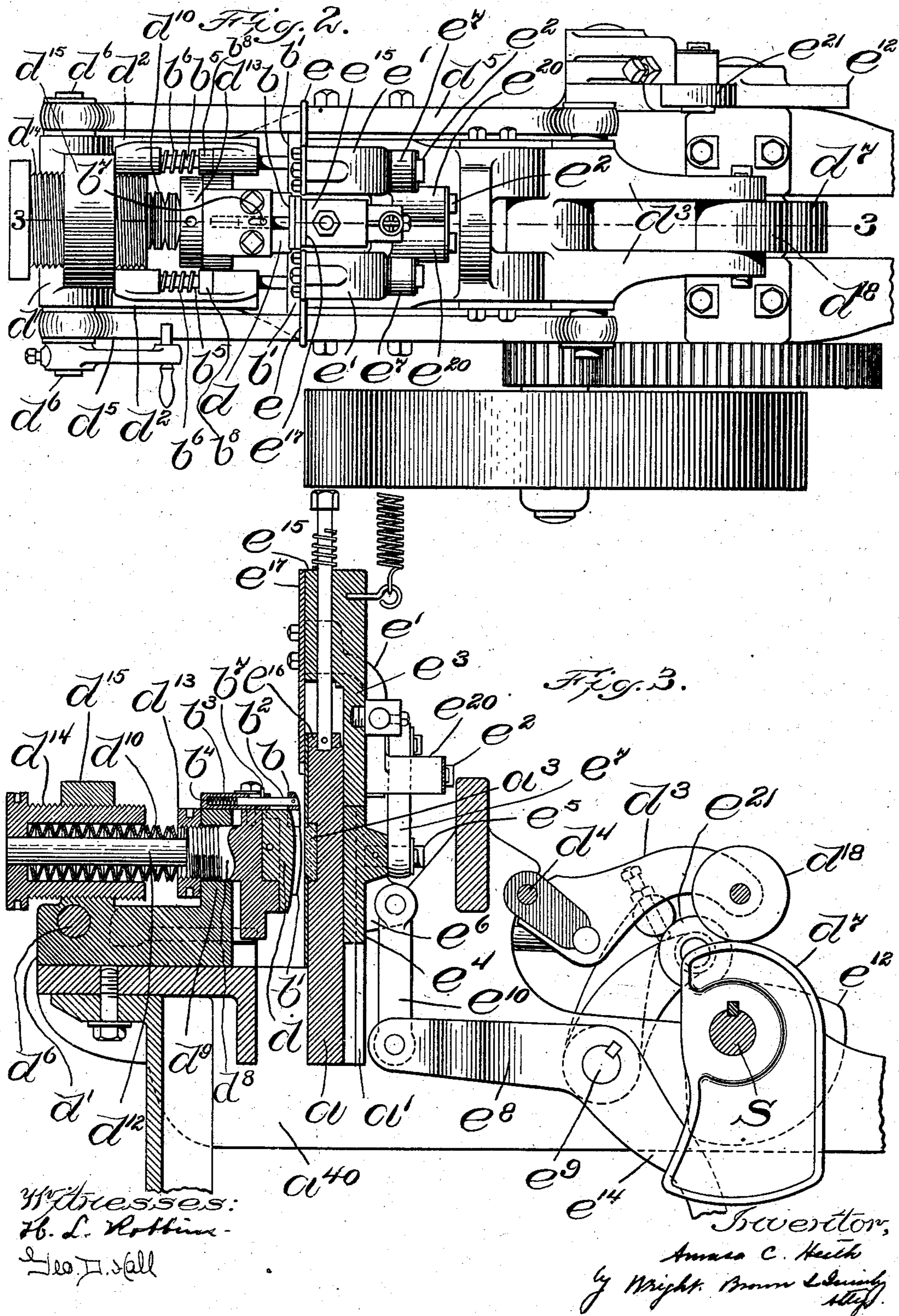
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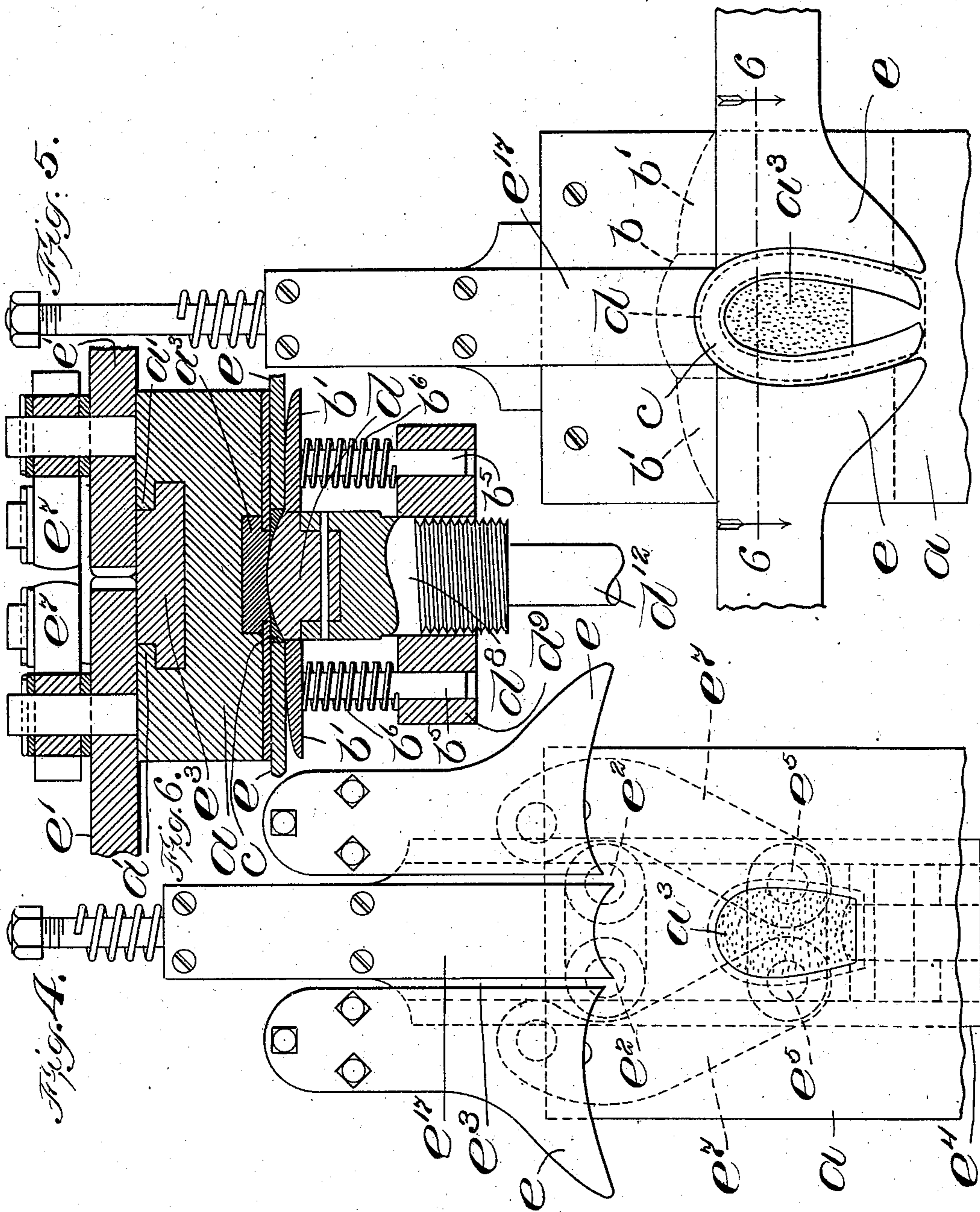
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Witnesses:
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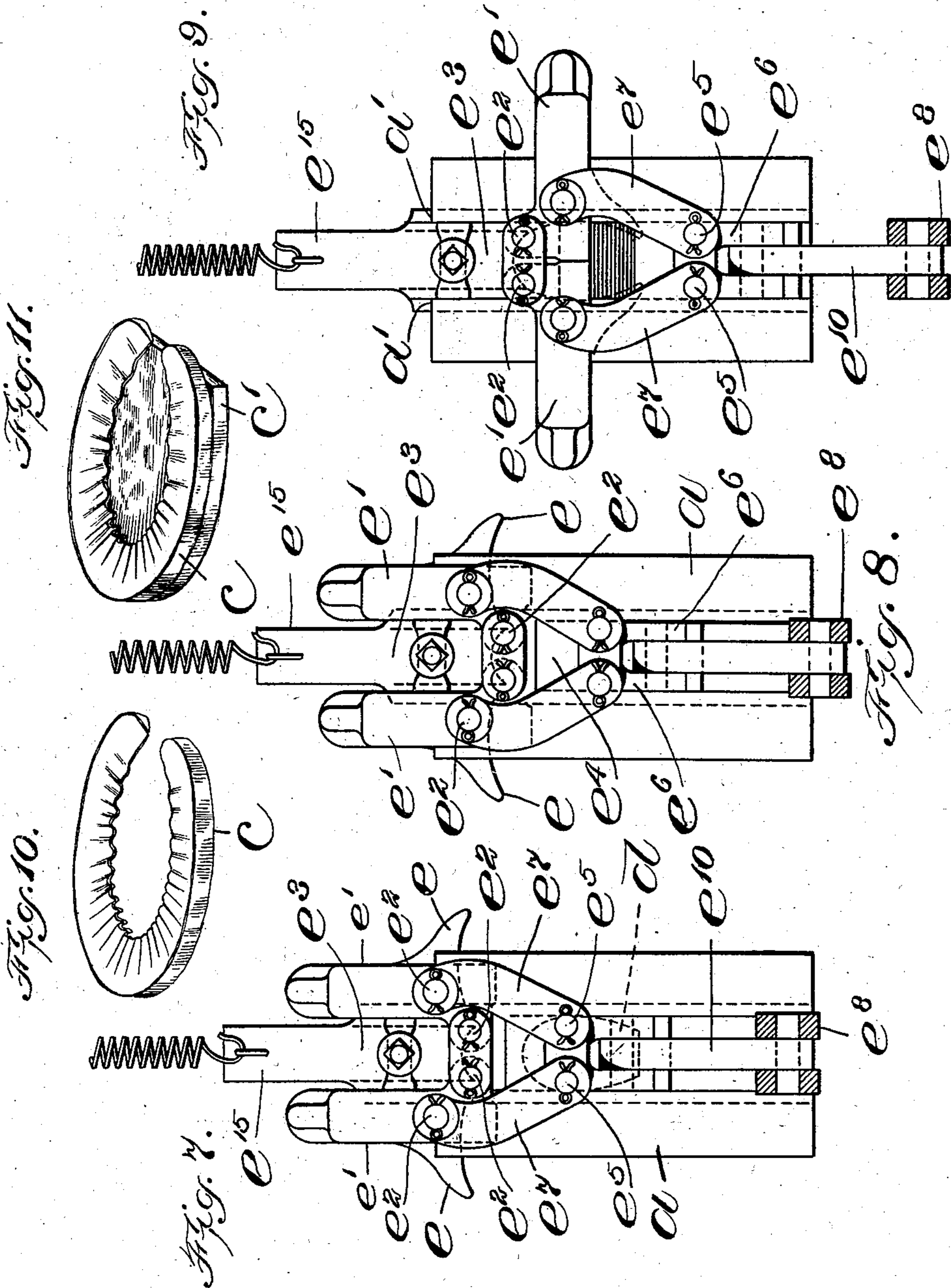
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UNITED STATES PATENT OFFICE.

AMASA C. HEATH, OF SOUTH EASTON, MASSACHUSETTS, ASSIGNOR OF ONE-HALF TO FRANCIS E. SHAW, OF BROCKTON, MASSACHUSETTS.

MACHINE FOR MAKING HEEL-RANDS.

SPECIFICATION forming part of Letters Patent No. 724,700, dated April 7, 1903.

Application filed December 31, 1902. Serial No. 137,244. (No model.)

To all whom it may concern:

Be it known that I, AMASA C. HEATH, of South Easton, in the county of Bristol and State of Massachusetts, have invented certain new and useful Improvements in Machines for Making Heel-Rands, of which the following is a specification.

This invention relates to machines for bending a heel-rand strip into heel shape and pressing and compacting the bent strip to make its shape permanent and give it the desired uniformity of cross-section throughout its entire length; and it consists in certain improvements hereinafter described and claimed on a machine of this character set forth in Letters Patent of the United States No. 587,283, dated July 27, 1897.

Of the accompanying drawings, forming a part of this specification, Figure 1 represents a side elevation of a rand-machine embodying my improvements. Fig. 2 represents a plan view of the same. Fig. 3 represents a section on line 3 3 of Fig. 2. Fig. 4 represents a front elevation of the blank guiding and pressing head and the blank-bending formers. Fig. 5 represents a view similar to Fig. 4, showing the position of the formers after their bending movement. Fig. 6 represents a section on line 6 6 of Fig. 5. Fig. 7 represents a side elevation of the portion of the machine shown in Figs. 4 and 5, the formers being in the position shown in Fig. 4. Figs. 8 and 9 represent views similar to Fig. 7, showing the positions of the formers at different stages of the operation. Fig. 10 represents a perspective view of a completed rand. Fig. 11 represents a perspective view of a rand attached to a heel-lift.

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

In the drawings, *a* represents a head, which is a stout metal plate affixed to a supporting-frame *a*⁴⁰ and having a flat surface at one side.

b b' b' represent sections collectively forming a presser-foot. Said sections are movable toward and from the head *a*, means being employed for normally pressing the presser-foot

sections toward the head and permitting them to yield therefrom. The presser-foot sections cooperate with the head *a* in supporting a rand-blank *c*, interposed between said sections and head, while the formers, hereinafter described, are bending the blank into heel shape, the yielding pressure of the sections toward the head causing said head and sections to grasp the blank and hold it at any point to which it may be moved by the formers, so that the blank is caused to conform closely to the contour of the inner edges of the formers, as will be presently explained.

d represents a heel-shaped follower, which is mounted upon a slide *d'*, Fig. 2, movable in guides *d*² on the supporting-frame *a*⁴⁰, and is provided with operating mechanism whereby it is moved toward and from the head *a*, said operating mechanism having provisions for holding the follower *d* stationary at different points, first, when the follower is separated from the head *a* to afford room between the head and follower for the bending of the blank and the formation of corrugations on its inner edge, the corrugations being the result of the bending of the blank, and, secondly, when the follower has been moved up to the head *a* to flatten out the corrugations of the blank and complete the rand, the said mechanism being also adapted to move the follower backwardly a sufficient distance to permit the completed rand to drop from between the head and the follower.

The mechanism for giving the follower the described movements comprises a lever *d*³, mounted to oscillate on a fixed stud *d*⁴, rods *d*⁵, connecting the levers *d*³ with the ends of a stud *d*⁶, projecting from opposite sides of the follower-supporting slide *d'*, and a cam *d*⁷, affixed to the driving-shaft and formed to first move the follower from its extreme rearward position partly, but not entirely, to its pressing position and to then move the follower to its pressing position. The fulcrum *d*⁴ of the lever *d*³ is so arranged that the entire weight of the lever is exerted to hold a trundle-roll *d*¹⁸ on the lever in contact with the cam *d*⁷, so that when the cam permits the le-

ver to swing downwardly the weight of the lever acts to retract the follower.

The presser-foot section b is affixed to a shank b^2 , which is adapted to slide in a guide b^3 , affixed to the slide d' , and is normally pressed forward with the section b by a spring b^4 . The sections b' b' are provided with shanks b^5 , movable in guides on the slide d' and pressed forward by springs b^6 .
 10 The form of the sections b b' b' in side elevation is shown by dotted lines in Fig. 5, from which it will be seen that the three sections collectively form a presser-foot which extends over the top and along the sides of the
 15 follower d , their inner edges conforming to the curvature of the follower. The independence of said sections and the means for pressing them yieldingly toward the head a enables the sections to bear closely against
 20 all portions of a rand-blank inserted between the sections and the head a .

The presser-foot sections are retracted with the follower by the contact of projections on the shanks of the sections with suitable parts
 25 moving with the follower. For instance, the shank b^2 has a stud b^7 , which abuts against one end of a slot in the guide b^3 , while the shank b^5 has a collar b^8 , which abuts against the guide for said shank. The springs b^3 and
 30 b^6 press the presser-foot sections forward when the follower is retracted, as shown in Figs. 1 and 3, so that the sections project slightly in advance of the acting face of the follower, the sections yielding when they come in con-
 35 tact with the rand-blank c .

e e represent a pair of formers which I term "secondary" formers to distinguish them from the primary former, hereinafter described. Said secondary formers are movable upon the flat face of the head a and have curved inner edges, which collectively correspond to the outline of the side portions of the follower d and are adapted to bend a
 40 rand-blank c into heel form, as indicated in Fig. 5. The formers e e are affixed to carriers e' e' , which are formed upon hubs or sleeves e^{20} e^{20} , mounted to oscillate upon studs e^2 e^2 , which are affixed to a primary slide e^3 . Said slide is movable between guides a' a' ,
 50 formed on the head a . Said primary slide has an offset portion e^{15} projecting over the upper end of the head a , said upper end constituting a stop e^{16} , against which the lower end of the portion e^{15} abuts, said stop limiting the downward movement of the primary
 55 slide. To the offset portion or projection e^{15} is affixed an intermediate or primary former e^{17} , which is located between the secondary formers e e and has a curved lower end arranged to bear on the central portion of the
 60 rand-blank, as shown in Fig. 5, when the slide e^3 is depressed, said intermediate former cooperating with the head a and the central presser-foot section b in partially bending and
 65 holding the central portion of the rand-blank

before the end portions of the blank are bent by the secondary formers.

e^4 represents a secondary slide which is located below the primary slide and moved between the guides a' and is provided with studs e^5 e^5 , to which are pivotally connected two
 70 links or connecting-rods e^7 e^7 , the upper ends of which are pivotally connected to the former-carriers e' e' . The secondary slide e^4 is reciprocated in the guides a' by a mechanism hereinafter described, and during the first part of
 75 its downward movement from the position shown in Figs. 4 and 7 it imparts a like movement to the primary slide e^3 through the links e^7 until the projection e^{15} strikes the head a ,
 80 when the movement of the primary slide is arrested. This movement of the primary slide depresses the former-carriers e' without swinging them on their pivots, thus carrying the formers from the position shown in Figs.
 85 4 and 7 to that shown in Fig. 8 and causing the primary former e^{17} to bear on the central portion of the blank c and bringing the secondary formers into close proximity to the
 90 end portions of the blank, the central portion of the blank being forced by the primary former downwardly between the presser-foot section b and the head a . The downward movement of the secondary slide continues
 95 and is caused, through the links e^7 e^7 , to swing the former-carriers and the secondary formers downwardly, as shown in Figs. 5 and 9, the secondary formers being thus caused to complete the bending of the blank into heel
 100 form and to force its end portions between the side sections b' of the presser-foot and the head a . The pressure to which the blank is subjected between the presser-foot sections and the head sufficiently retards the move-
 105 ment of the blank to cause it to conform accurately to the shape of the curved edges of the primary and secondary formers. The mechanism here shown for reciprocating the secondary slide e^4 is a lever e^8 , pivotally connected to the supporting-frame at e^9 , a cam
 110 e^{12} on the driving-shaft s , and a weight e^{13} , suspended from an arm e^{14} , fixed to the lever e^8 , said lever having a trundle-roll e^{21} on one of its arms arranged to bear upon the cam
 115 e^{12} . The other arm of the lever e^8 is connected by a link e^{10} with an ear e^6 , formed on the secondary slide e^4 . The lever e^8 is oscillated vertically by the conjoint action of the cam and weight and imparts a vertical reciprocating motion through the link i to the second-
 120 ary slide e^4 .

The operation is as follows: Assuming the follower d to be at rest in the position shown in Fig. 3, a rand-blank c , which is tapering
 125 in cross-section, its outer edge being comparatively thick, while its inner edge is very thin, is placed below the formers and between the central presser-foot section b and the head, the blank being held in this position by
 130 frictional contact with the said section and

head. The secondary slide e^4 is then depressed and depresses the primary slide e^3 through the links e^7 until the downward movement of the primary slide is arrested by the stop e^{16} , this movement causing the formers to descend to the position shown in Fig. 8 before the secondary formers swing downwardly, thus forcing the central portion of the blank to its proper position between the head and follower. The continued downward movement of the secondary slide causes the secondary formers to swing downwardly, as shown in Figs. 5 and 9, and thus complete the bending of the blank into heel form. The bending operation corrugates the inner edge of the blank, the space between the head and the follower being sufficiently wide to permit the free and regular formation of the corrugations. The follower next advances against the head a and flattens the corrugations, thus making the bent form of the blank permanent and finishing the rand, the acting face of the follower being beveled to give the desired bevel to the upper surface of the rand. The follower is then retracted, carrying with it the presser-foot, the follower and foot being thus removed from the head sufficiently to permit the completed rand to drop through an opening in the supporting-frame.

To permit an independent yielding movement of the follower d when it is acting on the rand and thus compensate for variations in the thickness of different rands, I provide the follower with a shank d^8 , Fig. 3, which is adapted to move endwise in a guide d^9 , formed on the slide d' . Said shank is backed by a relatively stiff spring, preferably composed of a series of cupped resilient washers d^{10} , surrounding a rod d^{12} , affixed to and extending rearwardly from the shank d^8 , said spring being interposed between a nut d^{13} , engaged with the shank, and an adjustable abutment d^{14} , engaged with an ear d^{15} , formed on the slide d' . The nut d^{13} limits the forward movement of the follower by the spring d^{10} , and the adjustable abutment d^{14} enables the pressure of the spring to be varied. The adjustable abutment d^{14} and stop-nut d^{13} enable the forward movement of the follower to be arrested at any desired distance from the head a , so that the machine can readily be adjusted to permit a heel-lift c' , Fig. 11, to be placed against the head a in position to have the bent blank or rand pressed against it by the follower, one side of the blank or the outer surface of the lift, or both, having been previously coated with cement to cause the adhesion of the rand to the lift.

The head a is preferably provided with a block a^3 of yielding elastic material, such as vulcanized rubber, said block being inserted in a recess formed for its reception in the head. The elastic block a^3 is formed and arranged to sustain the pressure of the crown

or extreme outward bulge of the acting face of the presser d and act as an auxiliary to the spring d^{10} in preventing such injury to any of the parts as might result if the block a^3 were not provided.

I claim—

1. A rand-making machine comprising a head, a sectional presser-foot yieldingly pressed toward the head, a primary former adapted to cooperate with the central part of the presser-foot and head in bending the central portion of a rand-blank, secondary formers at opposite sides of the primary former adapted to cooperate with the side portions of the presser-foot and head in bending the end portions of the blank, and a follower adapted to act on the bent blank held by the said formers and presser-foot.

2. A rand-making machine comprising a head, a sectional presser-foot composed of a central section and two side sections, means for pressing each section yieldingly toward the head and for permitting each to yield independently, formers adapted to cooperate with the presser-foot sections in bending a blank, and a follower adapted to act on the bent blank held by the said formers and presser-foot sections.

3. A rand-making machine comprising a head, a sectional presser-foot composed of a central section and two side sections, means for pressing each section yieldingly toward the head and for permitting each to yield independently, a primary former adapted to cooperate with the central presser-foot section and the head in bending the central portion of a rand-blank, secondary formers at opposite sides of the primary former adapted to cooperate with the side presser-foot sections and the head in bending the end portions of the blank, and a follower adapted to act on the bent blank held by the said formers and presser-foot sections.

4. A rand-making machine comprising a head, means for bending a rand-blank into heel form, means for holding the bent blank against the face of the head, a reciprocating slide movable toward and from the head, a follower carried by said slide and adapted to cooperate with the latter in pressing the bent blank, and means for adjusting the follower relatively to the slide to cause the stoppage of the follower at any desired distance from the head.

5. A rand-making machine comprising a head, means for bending a rand-blank into heel form, means for holding the bent blank against the face of the head, a reciprocating slide movable toward and from the head, means for holding the bent blank against the face of the head, a follower carried by said slide and adapted to cooperate with the latter in pressing the bent blank, the former being movable independently of the slide, and

means for yieldingly supporting the former to permit it to adapt itself to the thickness of the blank.

6. A rand-making machine comprising a
5 head having a pressing and guiding face, means for bending a rand-blank into heel form, means for holding the bent blank against the face of the head, said head having an elastic block or section, and a blank-
10 pressing follower movable toward and from

the head and having a convex acting face, the crown of which coincides with said elastic block.

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

AMASA C. HEATH.

Witnesses:

HORACE BROWN,
A. D. HARRISON.