No. 686,382. Patented Nov. 12, 1901.

D. C. BECK.

HEEL COMPRESSING MACHINE.

(Application filed Jan. 30, 1899. Renewed Mar. 14, 1901.)

(No Model.) 2 Sheets—Sheet 1.

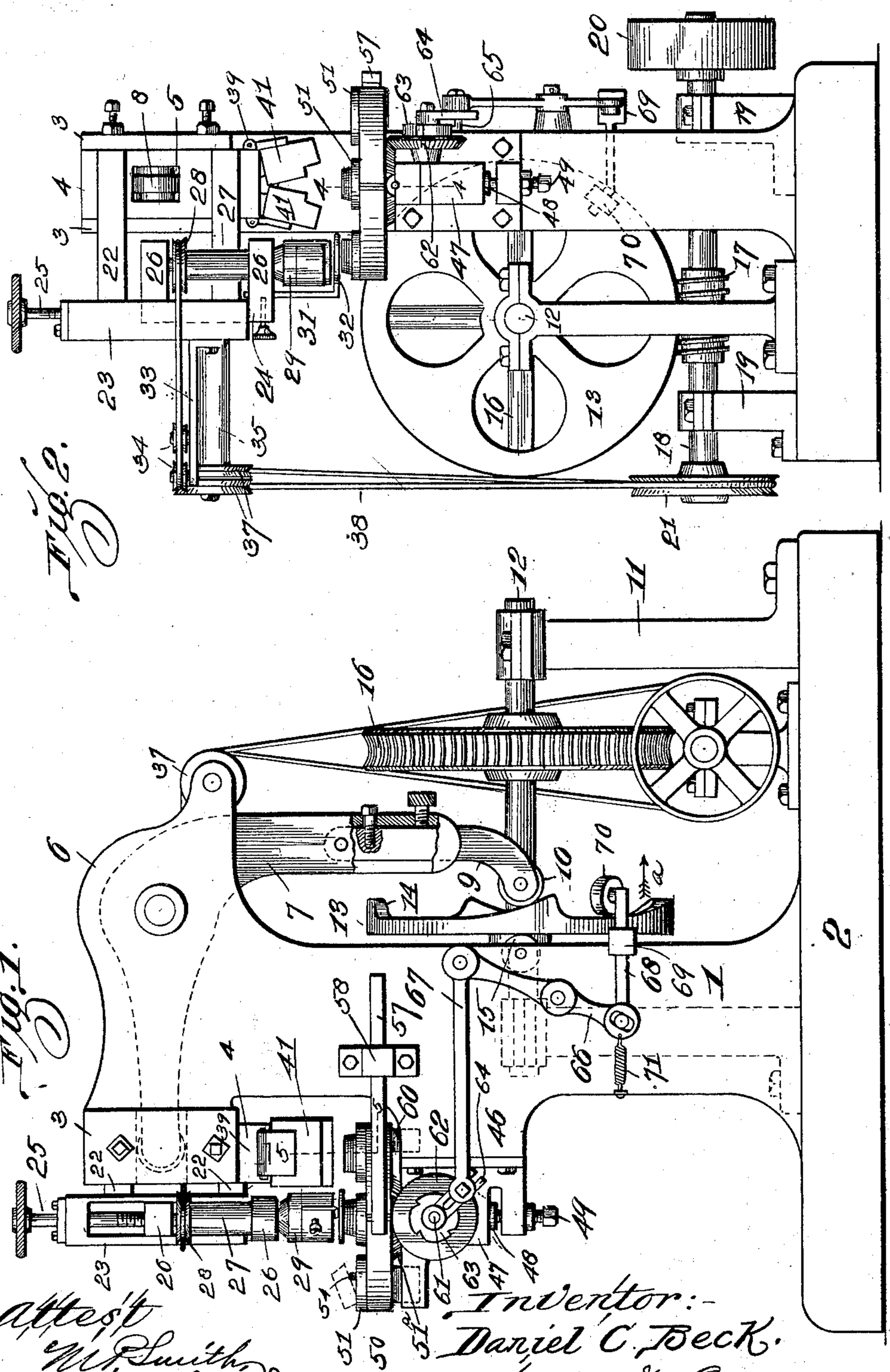


Fig. 2.

Fig. 1.

Witnesses:
W. P. Smith,
A. J. McCauley.

Inventor:-
Daniel C. Beck.
By Higdon & Longan Atty's.

No. 686,382. Patented Nov. 12, 1901.

D. C. BECK.

HEEL COMPRESSING MACHINE.

(Application filed Jan. 30, 1899. Renewed Mar. 14, 1901.)

(No Model.) 2 Sheets—Sheet 2.

Fig. 3.

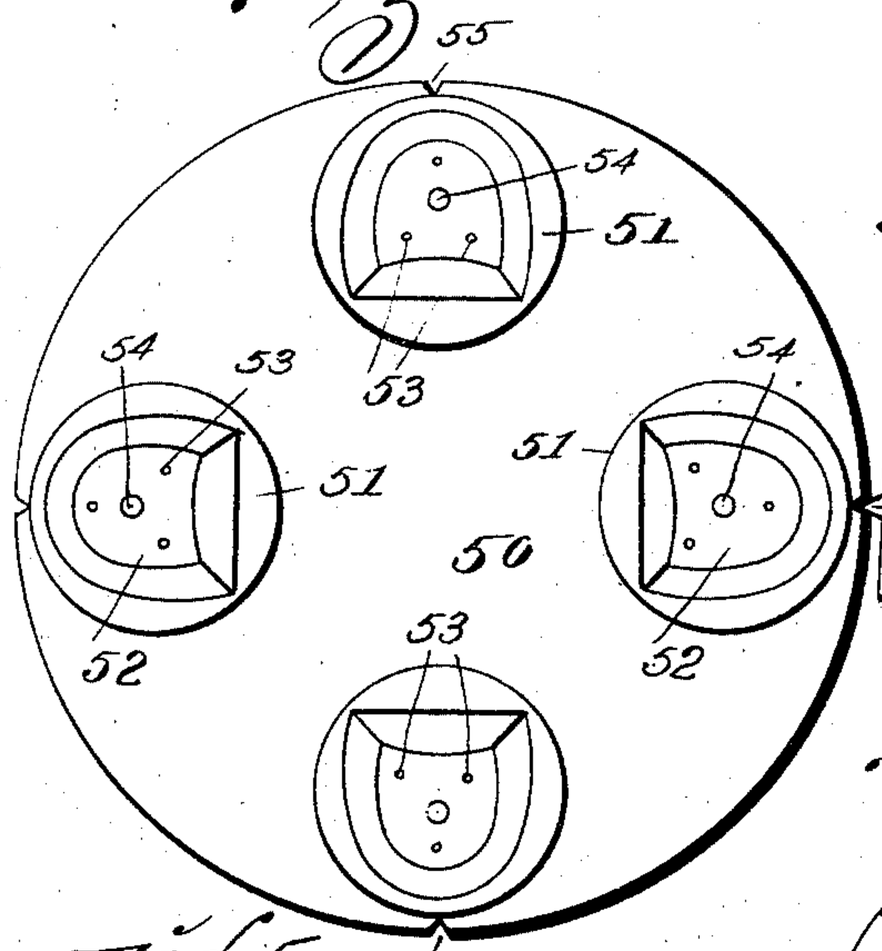


Fig. 4.

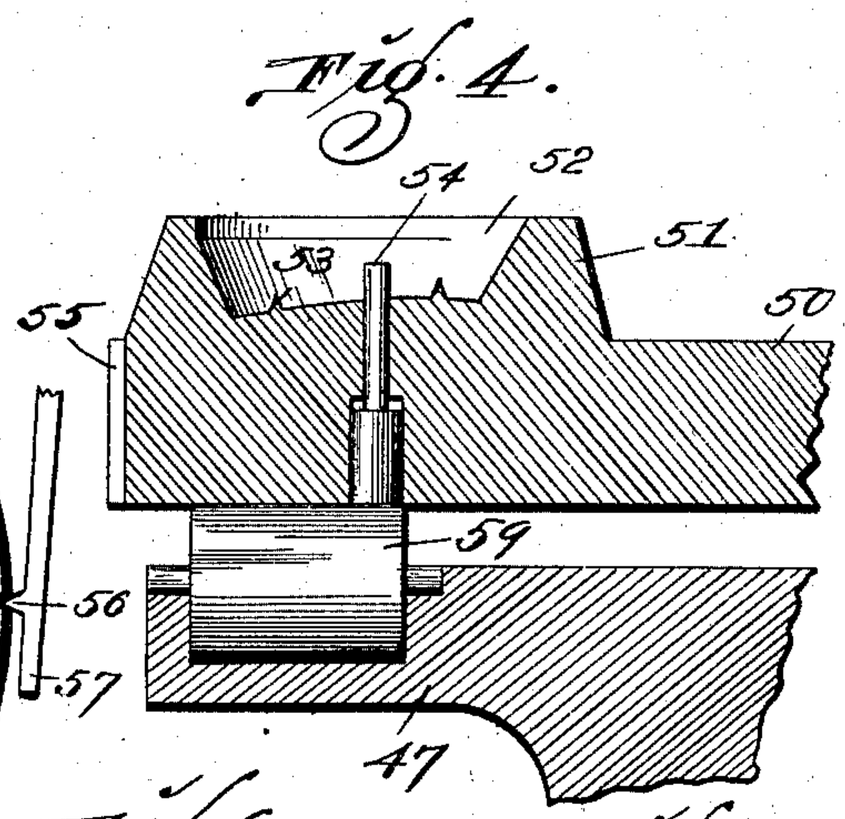


Fig. 5.

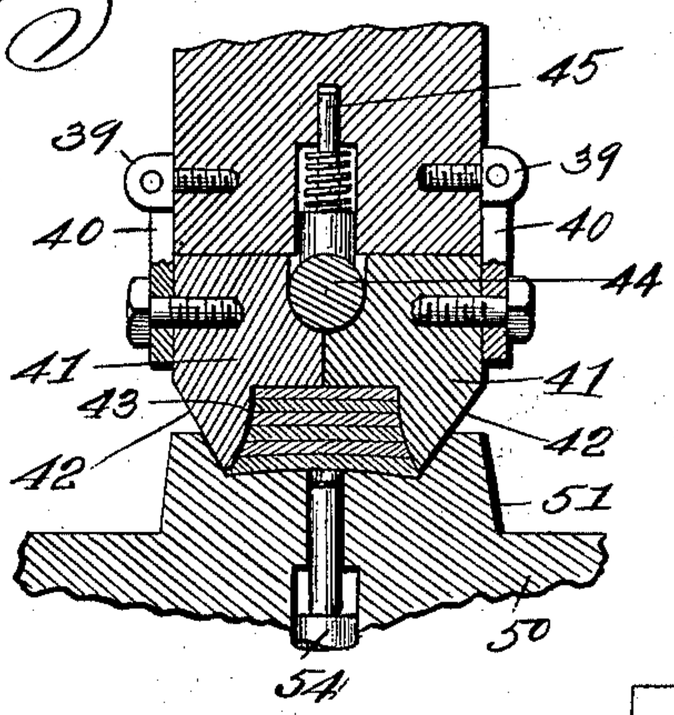


Fig. 6.

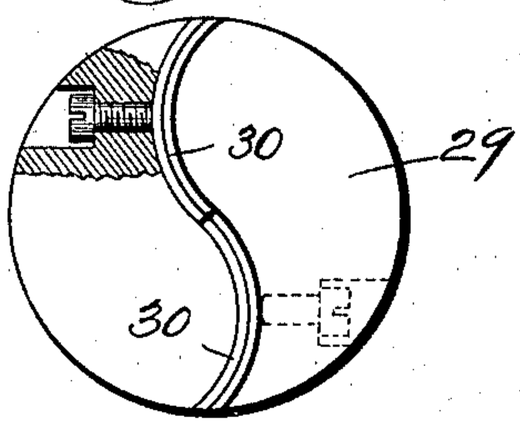


Fig. 7.

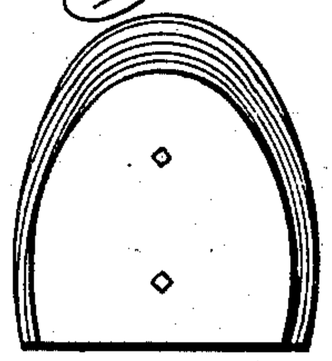
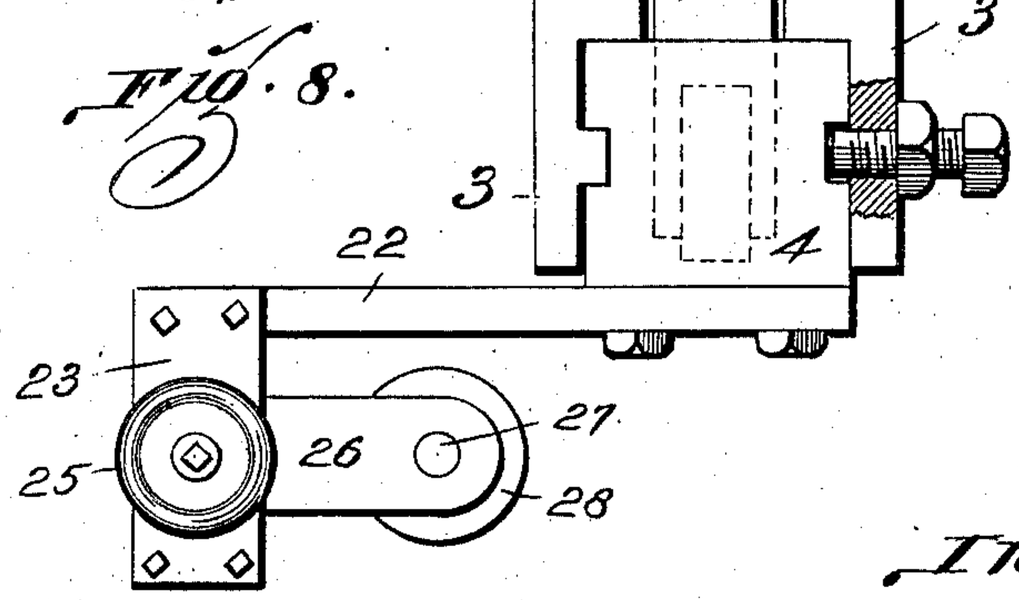


Fig. 8.



Inventor:
Daniel C. Beck.
By Higdon & Longan
Atty's.

Attest.
M. P. Smith
A. J. McCauley.

UNITED STATES PATENT OFFICE.

DANIEL CHARLES BECK, OF ST. LOUIS, MISSOURI, ASSIGNOR OF ONE-HALF TO HENRY LLEWELLIN, OF ST. LOUIS, MISSOURI.

HEEL-COMPRESSING MACHINE.

SPECIFICATION forming part of Letters Patent No. 686,382, dated November 12, 1901.

Application filed January 30, 1899. Renewed March 14, 1901. Serial No. 51,220. (No model.)

To all whom it may concern:

Be it known that I, DANIEL CHARLES BECK, of the city of St. Louis, State of Missouri, have invented certain new and useful Improvements in Heel-Compressing Machines, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part hereof.

My invention relates to heel-compressing machines; and it consists of the novel construction, combination, and arrangement of parts hereinafter described and claimed.

Figure 1 is a side elevation of my improved heel-compressing machine. Fig. 2 is a front view thereof. Fig. 3 is a plan view of a rotating disk that carries the female portions of the dies. Fig. 4 is an enlarged detail sectional view taken approximately on the line 4 4 of Fig. 2. Fig. 5 is an enlarged vertical sectional view taken approximately on the line 5 5 of Fig. 1. Fig. 6 is a view of the under side of the cutter-head made use of in carrying out my invention. Fig. 7 is a plan view of a heel, the same having been compressed in my improved machine. Fig. 8 is a plan view of the upper forward end of the machine and showing the vertically-operating carriage which carries the male die and the cutter-head.

In the construction of my machine a suitable hollow standard 1 projects upwardly from a base 2, and integral with and projecting laterally from the front side of the upper end of said standard 1 is a pair of vertically-arranged ears 3, in which is mounted for vertical movement a block 4. Passing longitudinally through the center of this block 4 is an aperture 5.

The rear side of the upper end of the standard 1 is provided with a projection 6, in which is fulcrumed a bell-crank 7, the horizontal portion thereof extending through the upper end of the standard 1 and into the aperture 5 in the block 4. The forward end of this horizontal arm is provided with an antifriction-roller 8, which bears against the top and bottom walls of said aperture 5. The lower end of the vertical arm of this bell-crank 7 is bifurcated, and pivotally held in said bifurcated lower end is an arm 9, the lower end of which carries an antifriction-roller 10. A set-screw passes through an aperture formed through the rear wall of the lower end of the bell-crank 7 and into the upper end of the arm 9, and a second set-screw passes through the rear wall of the lower end of the bell-crank 7 and bears against the rear side of the arm 9. By means of these set-screws the arm 9 is adjusted backwardly and forwardly.

Located upon the base 2 and to one side of the standard 1 is a pair of alined standards 11, the upper ends of which are provided with bearings in which is rotatably arranged a longitudinal shaft 12, and upon said shaft immediately to the rear of the standard 1 is fixed a disk 13, upon the rear face of the edge of which disk is arranged at equal distances apart the eccentric lugs 14. The path of travel of the edge of this disk 13 is in alinement with the center of the standard 1, and during the rotation of said disk the roller 10 rides upon the edge of the face of said disk and upon the eccentric lugs 14. An antifriction-roller 15 is journaled in the standard 1 and bears against the rear side of the disk 13 immediately opposite the point against which the roller 10 bears.

Fixed upon the shaft 12 a short distance to the rear of the disk 13 is a worm-wheel 16, the same being driven by a worm 17, that is carried upon the shaft 18, which shaft is journaled in suitable bearings 19, that are fixed to the base 2. This shaft 18 is the power-shaft, and on one end thereof is fixed a belt-wheel 20 and upon the opposite end is fixed a grooved pulley 21.

Fixed to the front face of the vertically-moving block 4 is a pair of rearwardly-projecting bars 22, on the front of the outer ends of which is fixed a vertically-arranged slotted block 23. Arranged for vertical movement in said slotted block 23 is a bar 24, the same being vertically adjustable in the slotted block 23 by means of a hand-screw 25, that passes upwardly through the top of the slotted block 23. Integral with the ends of the bar 24 are laterally-projecting arms 26, in the outer ends of which is held for rotation a vertically-arranged shaft 27, the upper end of which is provided with a grooved pulley 28. The lower end of this shaft 27 carries a circular cutter-head 29, in which is removably

located a pair of downwardly-projecting curved knives 30. Adjustably located in the lower one of the arms 26 is a vertical rod 31, with the lower end of which is formed integral a loop 32, that extends laterally to a position immediately beneath the cutter-head 29.

Fixed to and extending outwardly from the side of the lower end of the block 23 is an arm 33, upon the outer end of which is arranged for rotation a pair of grooved pulleys 34, the same being in horizontal alinement with the pulley 28. Extending laterally from the rear side of the projection 6 is an arm 35, upon the outer end of which is rotatably arranged a pair of grooved pulleys 37, the same being in vertical alinement with the grooved pulley 21. A belt 38 passes around the grooved pulley 21, from thence to and over the pulleys 37, from thence forwardly around the pulleys 34, and finally around the pulley 28. Thus rotary motion is transmitted from the power-shaft 18 to the cutter-head 29.

Arranged upon opposite sides of the lower end of the block 4 is a pair of lugs 39, to which are hinged plates 40, the lower ends of which carry the mating blocks 41, that form the male portion of the die of my improved machine. These blocks 41 are provided on their opposite sides with the inclined faces 42, and the inside of each of said blocks is recessed, as indicated by 43, the combined recesses being of the form required to give to the heel that is compressed. The upper meeting corners of the blocks 41 are recessed to receive a head 44, which is carried by a spring-actuated stem 45, that extends upwardly into the block 4, the spring around this stem being an expansive coil-spring and acting to throw the blocks 41 outwardly when the block 4 is raised.

Projecting forwardly from the center of the standard 1 is an extension 46, to which is bolted a bearing 47. In said bearing is rotatably arranged a vertical shaft 48, the same being vertically adjustable by means of the screw 49, passing through the lower end of the bearing 47. Formed on or fixed to the upper end of the shaft 41 is a disk 50, there being a beveled gear 51^a formed integral with the under side of said disk 50. The top side of this disk 50 is provided with four circular lugs 51, in which are formed recesses 52 to receive the heels to be compressed, and which recessed lugs form the female members of the die made use of in my improved machine. A plurality of points 53 extend upwardly within the recessed lugs 51, and passing upwardly through the center of said lugs are the discharge pins or plungers 54. Formed in the edge of the disk 50 immediately opposite the recessed lugs 51 are the notches 55, into which notches engages the point 56 of the spring-bar 57, that is held in a block 58, located upon the side of the standard 1. By means of this spring-bar and lug the disk 50 is held in proper position when the male portion of the die is moving downwardly to compress the heel carried in the female portion of the die.

Rotatably arranged in the top of the outer end of the block 47 is a roller 59, against which the discharge pins or plungers 54 strike during their travel around with the disk 50. Rotatably arranged in the upper end of the extension 46 is an antifriction-roller 60, upon which the outer edge of the disk 50 rides; but the discharge pins or plungers 54 do not strike and ride over said roller during their travel with the disk 50.

Rotatably arranged in the bearing 47 is a laterally-projecting shaft 61, upon which is fixed a beveled gear-wheel 62, the same meshing with the beveled gear-wheel 51^a, carried by the under side of the disk 50. Formed integral with the rear side of this gear-wheel 62 is a ratchet-wheel 63, the same being provided with four notches, and loosely arranged upon the shaft 61, adjacent this ratchet 63, is an arm 64, which carries a spring-actuated pawl 65, the same engaging in the notches of the ratchet-wheel 63. Fulcrumed upon the side of the standard 1 is an arm 66, to the upper end of which is pivotally connected a horizontally-arranged connecting-rod 67, the outer end of said rod being adjustably held to the arm 64. The lower end of the arm 66 is pivotally connected to a rectangularly-bent bar 68, the same sliding horizontally through a lug 69, projecting laterally from the standard 1, and the free end of this rectangularly-bent bar 68 carries an antifriction-roller 70, which rides directly upon the edge of the face of the disk 13 and upon the eccentric lugs integral therewith. A retractile coil-spring 71 is secured to the lower end of the fulcrumed arm 66 and is for the purpose of returning said arm to its original position after it has been moved.

The operation is as follows: When power is applied to the shaft 18, the worm 17 thereon will impart rotary movement to the worm-wheel 16 and shaft 12. Consequently the disk 13, which carries the eccentric lugs 14, will rotate. Rotary movement is also imparted to the shaft 27, carrying the cutter-head 29, by means of the belt 38, running over the various pulleys. As the disk 13 rotates the eccentric lugs 14 will successively pass beneath the roller 70 and the rectangularly-bent arm 68, which carries said roller, will be moved rearwardly in the direction indicated by the arrow *a*, Fig. 1. This movement draws the lower end of the arm 66 rearwardly and throws the upper end thereof forwardly, and consequently the connecting-rod 67 will be moved forwardly and the arm 64, carrying the spring-actuated pawl 65, will be swung approximately one-quarter of a revolution upon the shaft 61, and said spring-actuated pawl 65 will engage in one of the notches in the ratchet-wheel 63 and said ratchet-wheel and the beveled gear-wheel 62 will be moved one-quarter of a turn. The beveled gear-wheel 62, meshing with the gear-wheel 51, will necessarily move said gear-wheel 51 a quarter of a turn, and the disk 50, carried by said gear-

wheel 51, will move a corresponding distance. The single tooth 56, carried by the bar 57, will engage in one of the notches 55 in the disk 50, and said disk will be held in position, with one of the female dies immediately beneath the pair of blocks 41 and another one of the female dies immediately beneath the cutter-head 29. The retractile coil-spring 71 causes the connecting-rod 67, arm 66, and rectangularly-bent bar 68 to return to their normal positions after passing over one of the lugs. The operator of the machine places the heels to be compressed successively in the open female dies as they are brought around by the continued rotation of the disk 50 and are successively carried beneath the male portion of the die and then to a point beneath the cutter-head. The lugs 14 after riding beneath the antifriction-wheel 70 pass beneath the antifriction-wheel 10 and the lower end of the bell-crank 7 is moved outwardly, and consequently the outer end of the horizontal arm of said bell-crank carrying the block 5 is moved downwardly. Said block 5 moves downwardly between the ears 3, and necessarily all of the mechanism carried by said block moves downwardly at the same time. The inclined faces 42 of the blocks 41 strike against the inclined faces of the recesses in the female die 51, and as a result thereof the blocks 41 move toward each other as they move downwardly to compress the heel carried by the female die. At the same time the male die enters the female die to compress the heel, the loop 32, carried by the rod 31, passes over the compressed heel that is carried in the female die immediately beneath the cutter-head, and as said cutter-head moves downwardly to its lowermost limit of movement any portion of the compressed heel that is too high will be cut away and removed by the knives 30, and thus all of the heels will be of the same contour and of the same thickness. When the lug 14 passes from beneath the roller 10, the bell-crank 7 will reassume its normal position and the male die and the cutter-head will be elevated. During the time said cutter-head and male die are elevated the operation of rotating the disk 50 a quarter of a turn takes place and the heel just compressed is brought into a position beneath the cutter-head, and the compressed heel that was so operated upon by the knives of the cutter-head will be discharged from its position in the female die owing to the elevation of the pin or plunger 54 by the roller 59, as shown in Fig. 4. The points 53 assist in holding the heel in position within the female die while said heel is being compressed and while it is being engaged by the knives of the cutter-head. The cutter-head is adjusted vertically by manipulating the hand-wheel 35 and the elevation of the disk 50 is adjusted by manipulating the screw 49.

A heel-compressing machine of my improved construction possesses superior advantages in point of simplicity, durability, and general efficiency, requires the attention of but a single operator, will compress a large number of heels in a given time, and all of said heels will be of the same contour and thickness after having passed through the machine.

The heels are of course stacked by means of wooden pegs, so that the cutters may readily trim them without being injured during the operation, and in Fig. 7 the wooden-pin openings are shown.

I claim—

1. A combined heel-compressing and heel-trimming machine, comprising in a unitary structure, a frame, mechanism constructed to receive and compress a series of heels to a uniform density, an adjustable trimming mechanism mounted adjacent to said compressing mechanism for trimming all of said heels to an equal height, and means for simultaneously actuating the said trimming and compressing mechanisms, substantially as specified.

2. In a heel-compressing machine, a rotatable disk, a plurality of female dies carried by said disk, means for rotating said disk, a male die moving vertically to successively engage the wood-pegged heels carried by the female dies as said heels are brought into position beneath said male die, and a rotatably-arranged cutter-head arranged to engage the tops of the said wood-pegged heels after the same have been compressed and trim the series of heels to a uniform height, substantially as specified.

3. In a heel-compressing machine, a rotatable disk, a plurality of female dies carried by said disk, means for rotating said disk, a male die moving vertically to successively engage the wood-pegged heels carried by the female dies as said heels are brought into position beneath said male die, a rotating cutter-head arranged to engage the tops of the said wood-pegged heels and thereby trim a series of heels to uniform height after the same have been compressed, and means for simultaneously imparting vertical movement to said male die and cutter-head, substantially as specified.

4. In a heel-compressing machine, a rotatable disk, a plurality of female dies carried by said disk, means for rotating said disk, a male die moving vertically to successively engage the wood-pegged heels carried by the female dies as said heels are brought into position beneath said male die, a rotatably-arranged cutter-head arranged to engage the tops of the said wood-pegged heels and thereby trim them all to uniform height after the same have been compressed, means for simultaneously imparting a vertical movement to both male die and cutter-head, and means for automatically discharging the heels from the female dies after they have passed beneath the male die and the cutter-head, substantially as specified.

5. In a heel-machine, the combination with

a male-die carrier, of the hinges 39, 40, the mating blocks 41, 41 carried by the said hinges and recessed at 43 in the shape of a heel, a head 44 adapted to contact with each of said blocks to separate same, and the spring-actuated stem 45 extending upwardly from said head, substantially as specified.

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

DANIEL CHARLES BECK.

Witnesses:
EDWARD E. LONGAN,
ALBERT J. MCCAULEY.