M. D. PHELAN.

HEEL COMPRESSOR.

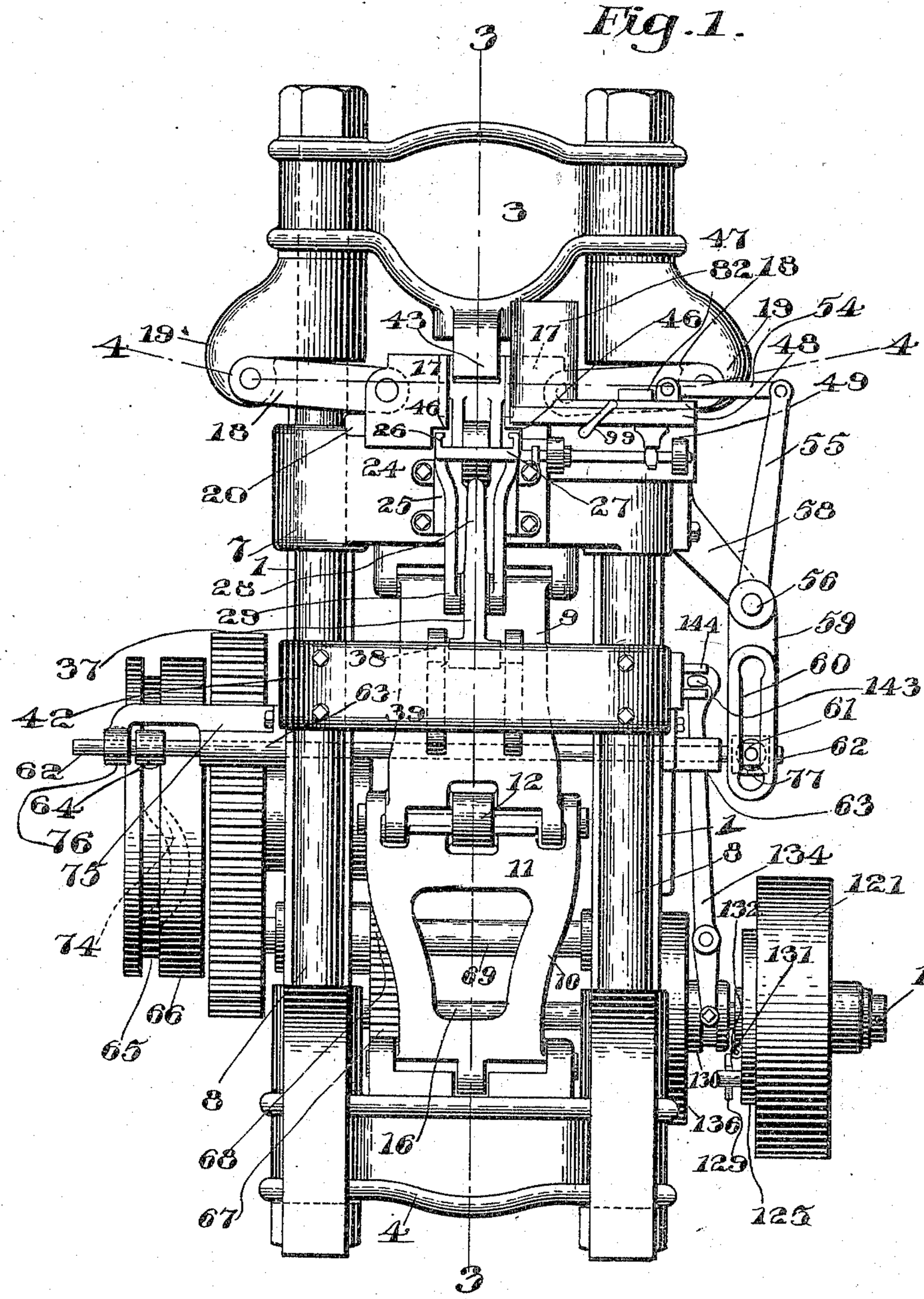
APPLICATION FILED JUNE 2, 1906.

958,001.

Patented May 17, 1910.

6 SHEETS—SHEET 1.

Fig. 1.



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Robert H. Kammler.

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6 SHEETS—SHEET 2.

Fig. 2.

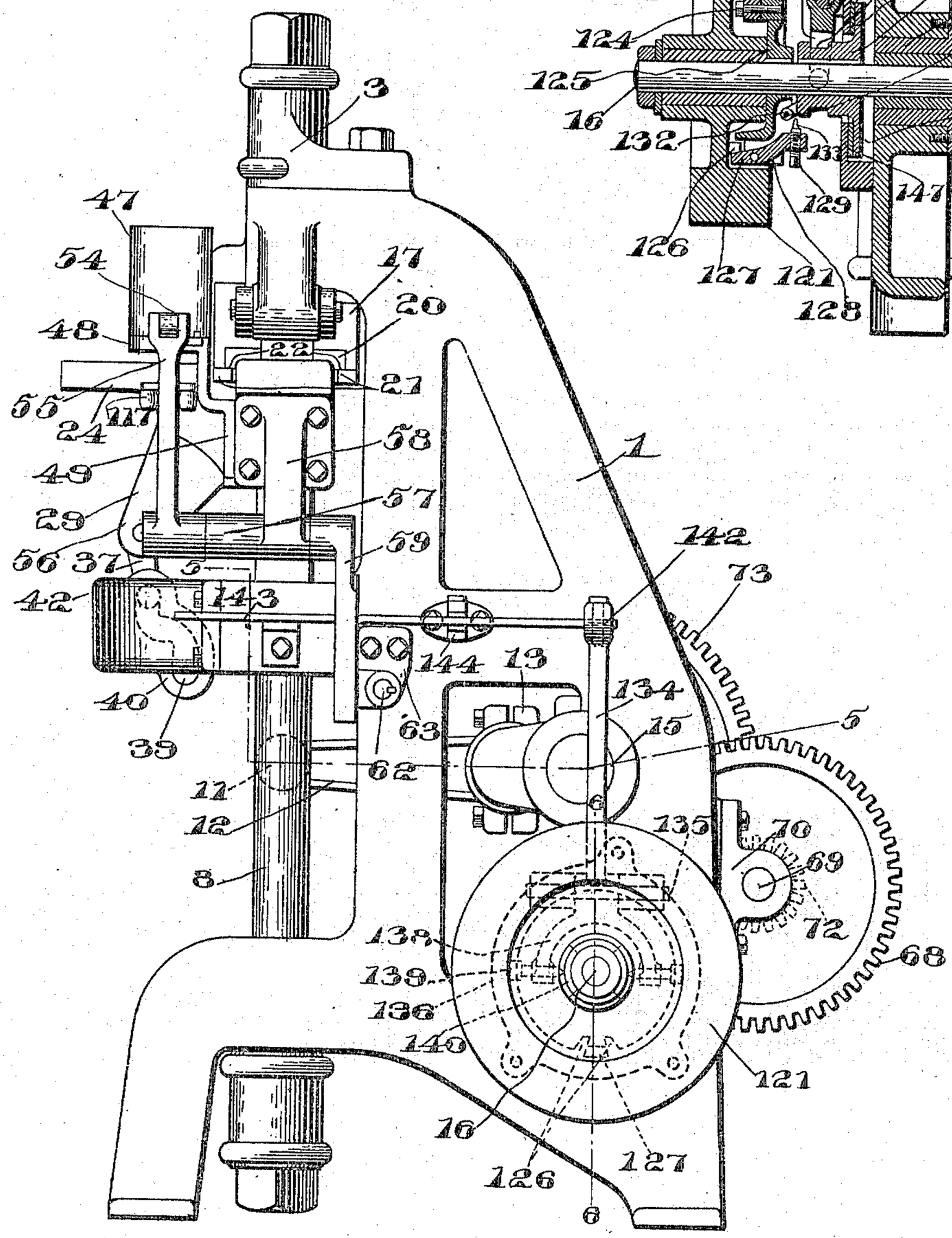
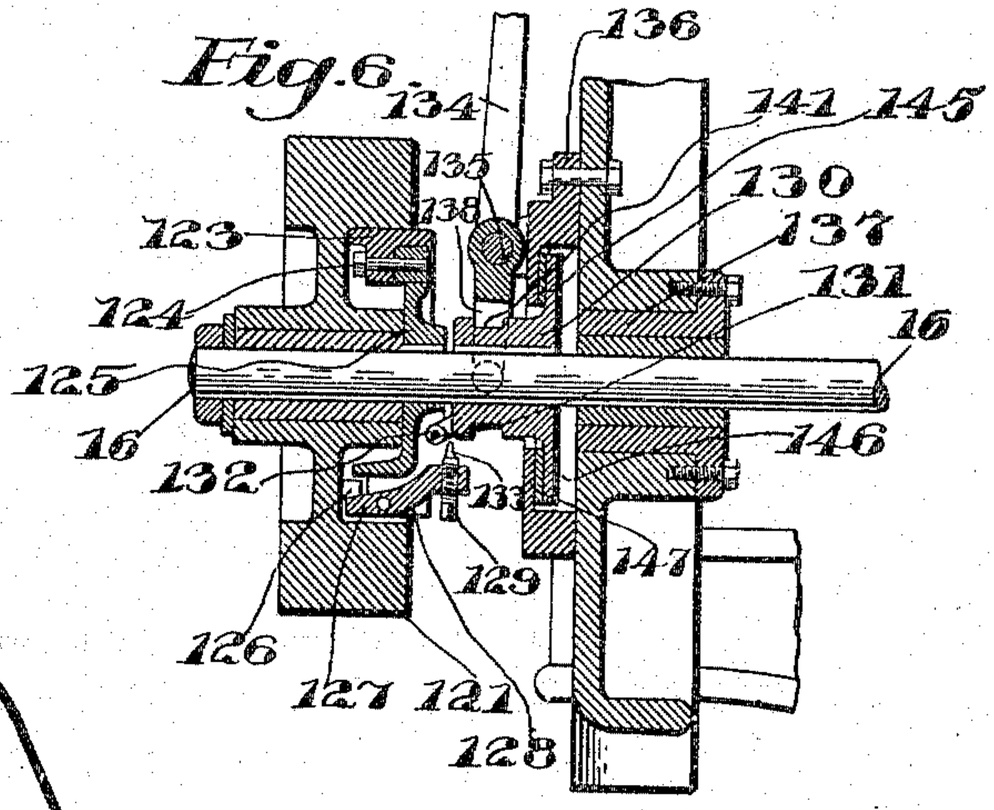


Fig. 6.



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6 SHEETS—SHEET 3.

Fig. 16.

Fig. 7.

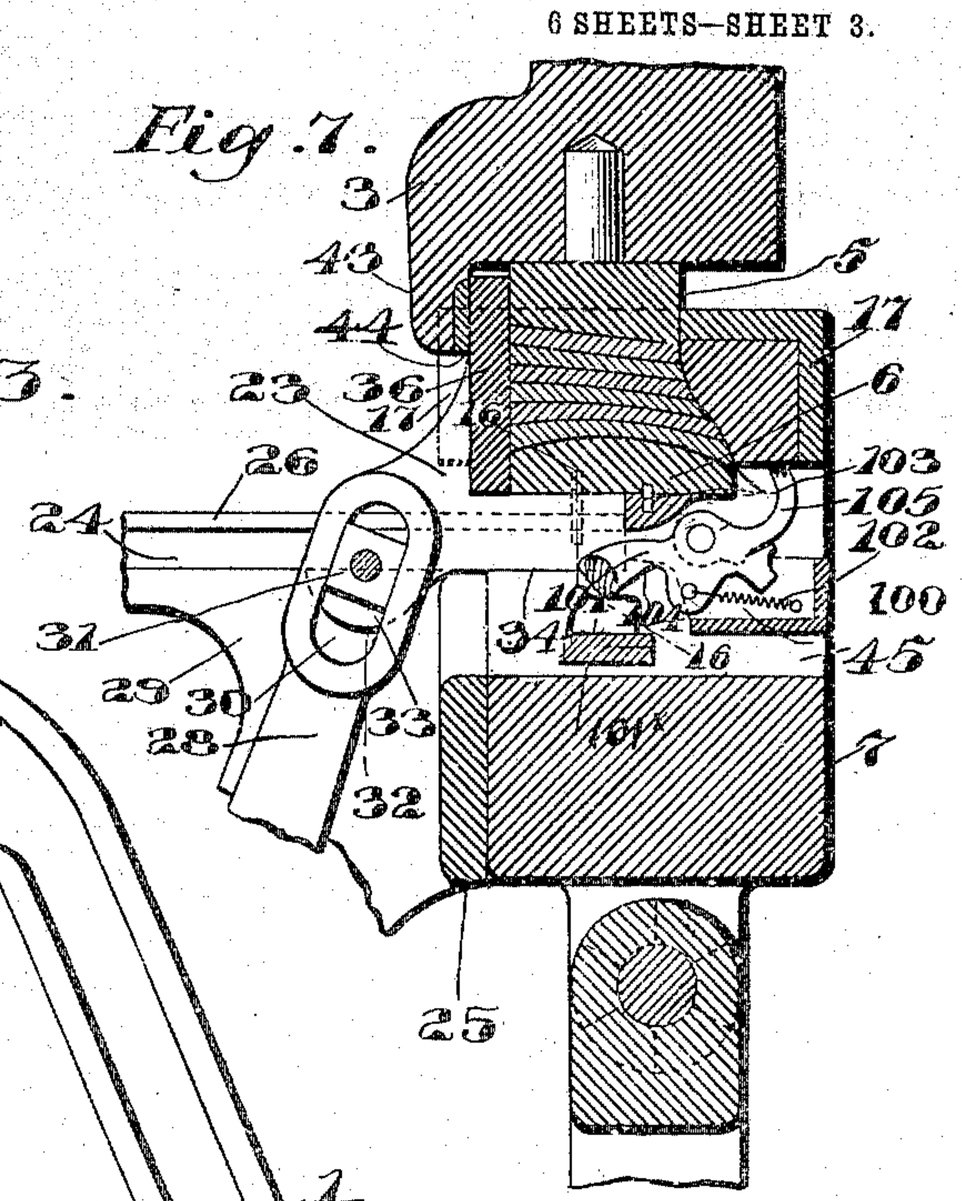
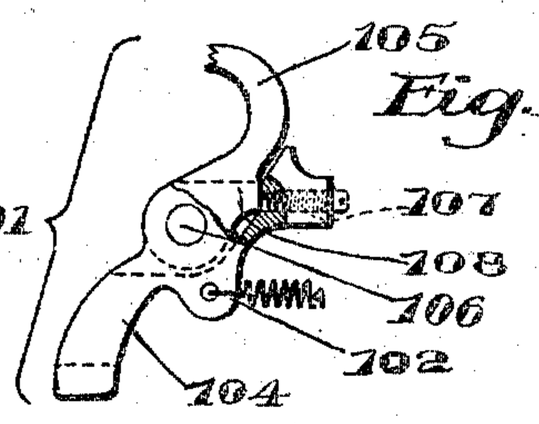


Fig. 3.

Fig. 16.



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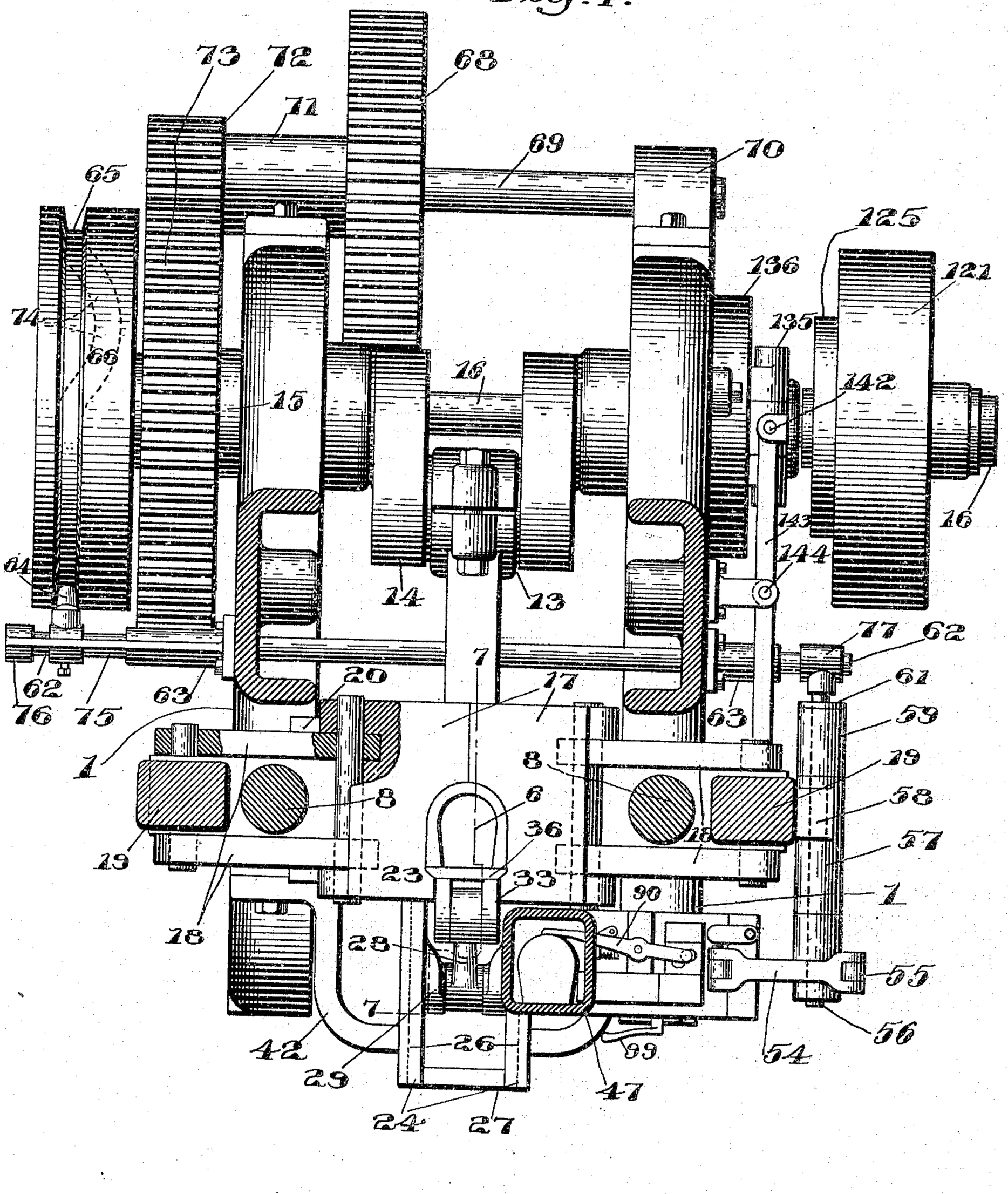
6 SHEETS—SHEET 4.

Fig. 4.



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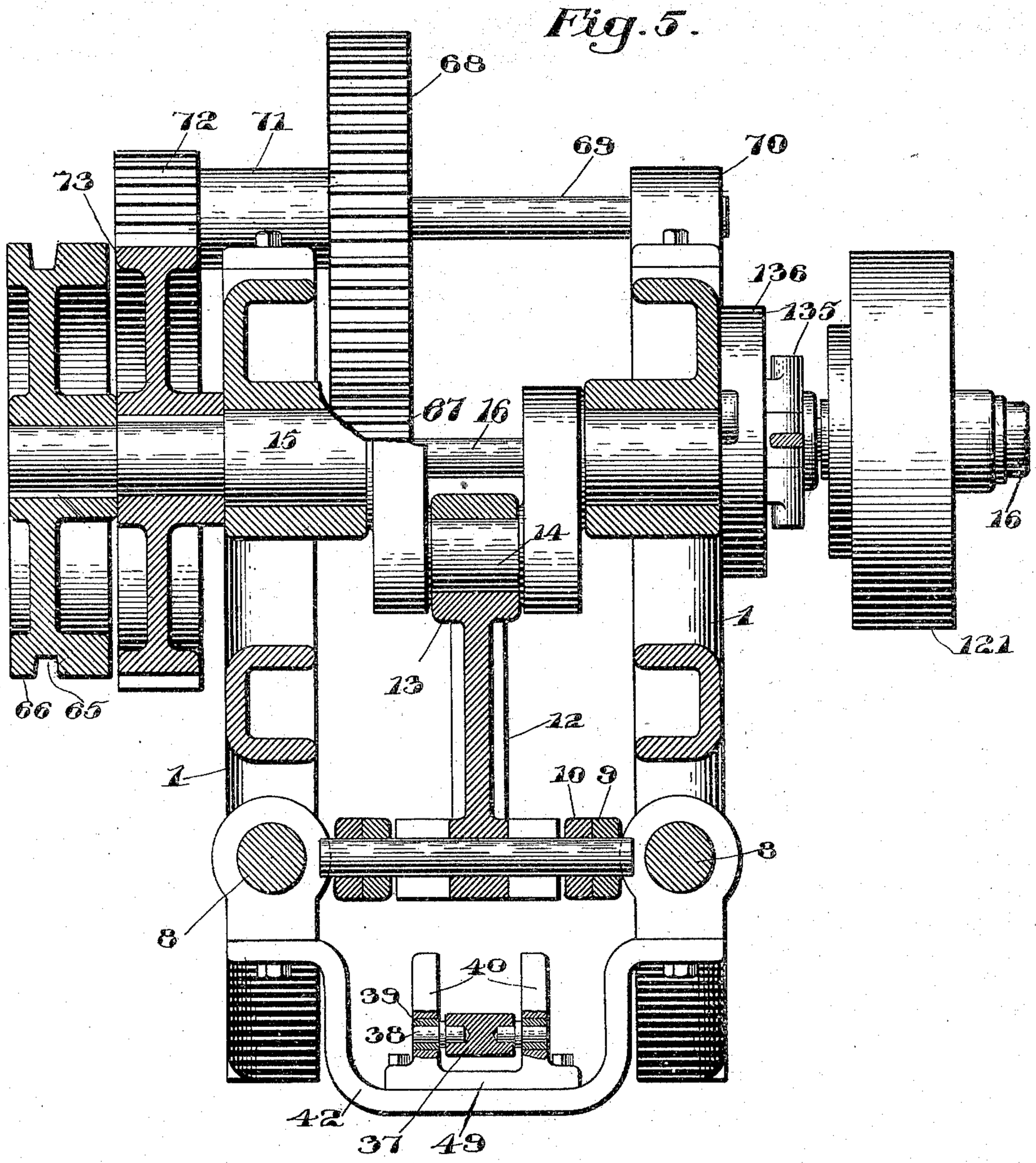
6 SHEETS—SHEET 5.

Fig. 5.



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6 SHEETS—SHEET 6.

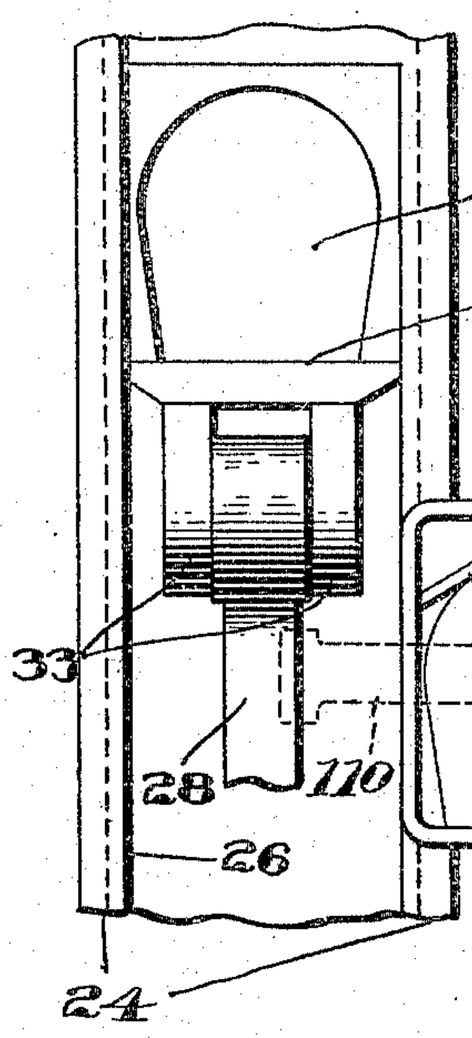


Fig. 8.

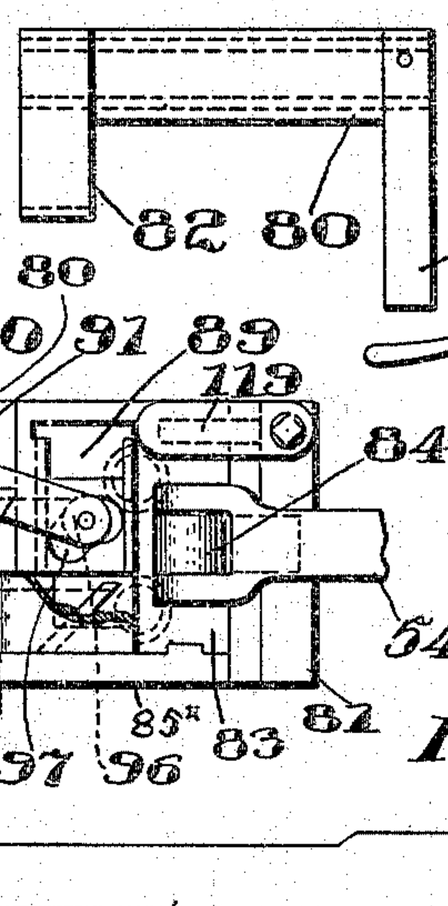


Fig. 12.

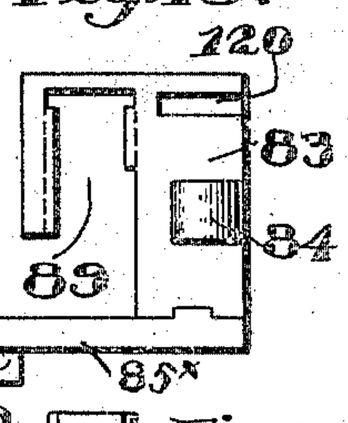
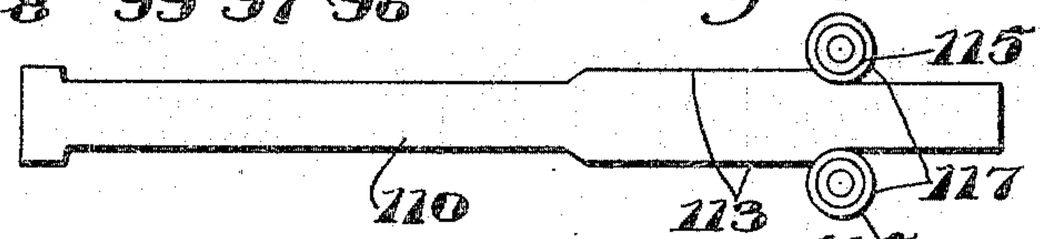


Fig. 13.

Fig. 14

Fig. 17.



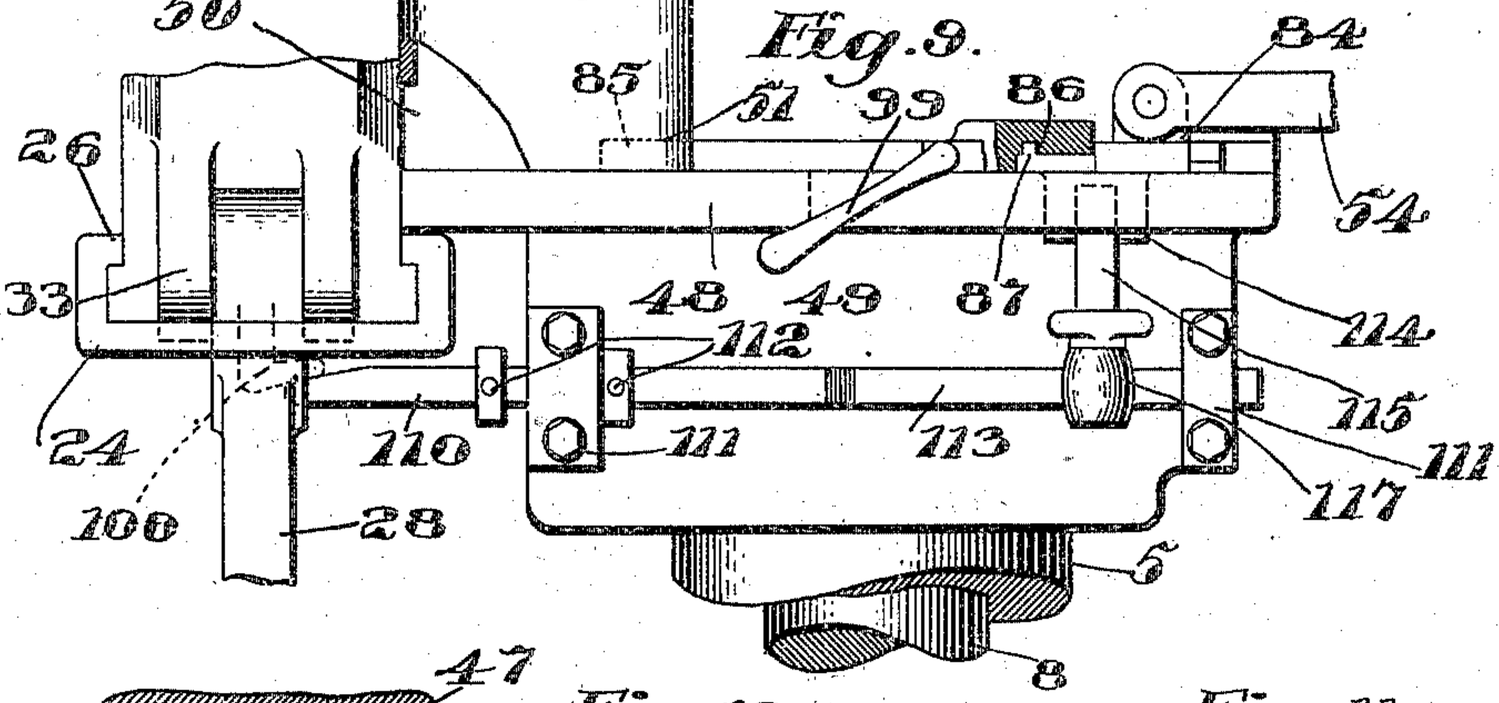


Fig. 9.

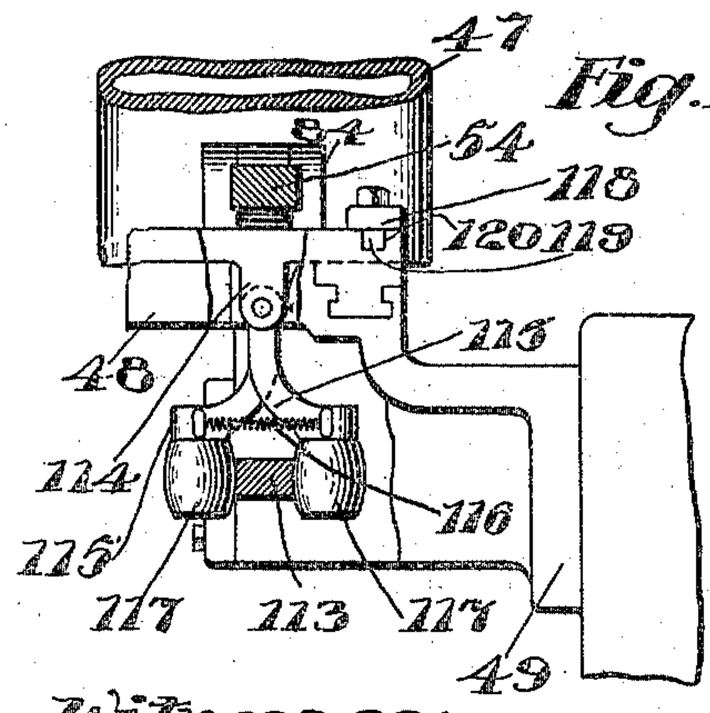


Fig. 10.

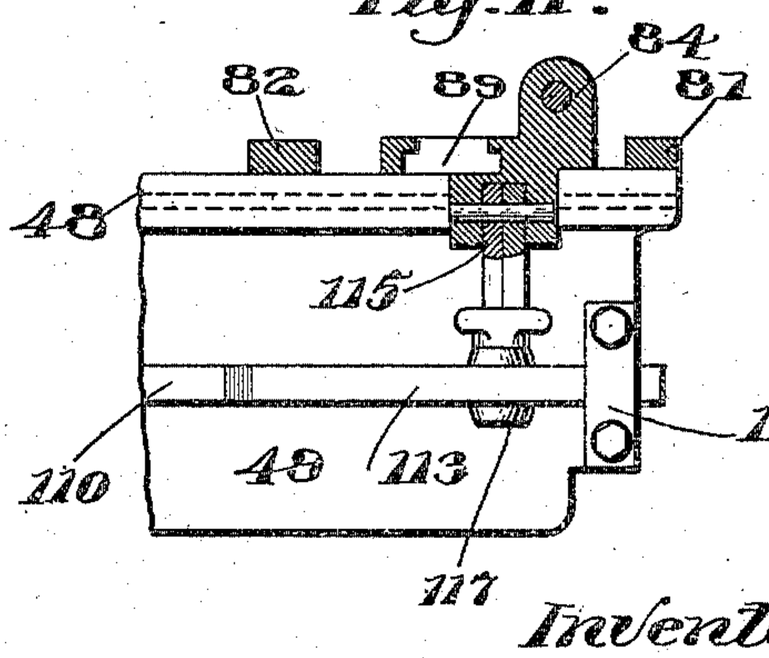


Fig. 11.

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UNITED STATES PATENT OFFICE.

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HEEL-COMPRESSOR.

958,001. Specification of Letters Patent. **Patented May 17, 1910.**

Application filed June 2, 1906. Serial No. 319,898.

To all whom it may concern:

Be it known that I, MERTON D. PHELAN, a citizen of the United States, residing at Boston, in the county of Suffolk and State of Massachusetts, have invented an Improvement in Heel-Compressors, of which the following description, in connection with the accompanying drawings, is a specification, like numerals on the drawings representing like parts.

My invention relates to heel compressors for compressing or shaping heel blanks to desired form, for use in the manufacture of boots and shoes.

My invention relates more particularly to machines employing a carrier for presenting the heel blanks in operative position between the parts of the shaping and compressing die for shaping them into a heel of desired form and size. In machines of this type, as heretofore constructed, the concaver plate forming one of the parts of the die, is usually uppermost, mounted fixedly in the stationary head of the machine, the blank being carried into position and compressed against said concaver plate by the tread plate moving below it; side shaping dies coöperating to produce the desired form at the sides of the heel.

In the present invention it has been found desirable to place the tread plate in fixed position in the stationary head and below it to form the support for the heel blank as it is placed in position between the compressing members of the shaping die. By this arrangement the heel may be more securely retained upon the carrier than when the smaller tread plate is relied upon for a heel support.

My invention also contemplates the use of a blank holding device for retaining the heel blank in position during the movements of the carrier and feeding mechanism to hold a blank while moving it into position upon the carrier and to release it when so placed. My invention, however, will be best understood and appreciated by reference to the following description, when taken in connection with the accompanying drawings of a machine embodying one form of my invention and selected for purposes of illustration, its scope being more particularly pointed out in the appended claims.

Referring to the drawings,—Figure 1 is a front elevation of a machine selected for purposes of illustration; Fig. 2 is an elevation of the right end thereof; Fig. 3, a vertical section taken on the line 3—3, Fig. 1; Figs. 4 and 5 are horizontal sections taken respectively on the lines 4—4, Fig. 1, and 5—5, Fig. 2. Fig. 6, a vertical section taken from the rear on the line 6—6, Fig. 2, to illustrate the details of the clutch and brake mechanism; Fig. 7, a vertical sectional detail taken through the shaping dies on the line 7—7, Fig. 4; Fig. 8, a plan view of the blank hopper, blank feeding device, and operating devices therefor; Figs. 9 and 10, elevations respectively of the front and right ends thereof; Fig. 11, a detail of view shown in Fig. 9; Figs. 12 to 14 are details of the blank feeding mechanism showing the parts thereof separated and to which reference will subsequently be made; Fig. 15, a detail showing the carrier blank holding device detached; Fig. 16 is a sectional view of carrier and holder blank therefor on line 16—16, Fig. 7; and Fig. 17, a view of the holder operating bar, detached.

In the embodiment of my invention herein illustrated (see Figs. 1 to 3), the operative parts of the machine are supported by a suitable frame having vertical sides, 1, resting upon feet 2, and rigidly connected at their upper ends by the stationary cross head, 3, and at the lower end by the stationary girt, 4. This cross head, 3, is recessed at its under side (see Fig. 3) to receive the stem of a stationary tread plate, 5. The opposed concaver plate, 6, is mounted upon a cross head, 7, arranged to slide vertically toward and from said tread plate, 5, upon suitable guides, here shown as heavy tie rods, 8 (Fig. 1), connecting said cross head, 3, and girt, 4. The said cross head, 7, is reciprocated vertically by means of toggle links or levers, 9 and 10 (Figs. 1, 3, and 5), the lower link, 10, being pivotally connected at its lower end with the lower stationary cross head or girt, 4, and the upper link, 9, at its upper end, with the vertically movable cross head, 7. The adjacent ends of these toggle links or levers are respectively provided with vertical ears, drilled to receive a horizontal pivot bolt, 11, to which is connected a horizontal link, 12 (Figs. 3 and 5), the inner or opposite end of which is pivotally connected by means of a usual split

bearing, 13, to a double crank, 14, formed upon a countershaft, 15. This shaft is journaled in suitable bearings (Figs. 4 and 5) of said side frames, 1, and is connected to and driven by a drive shaft, 16. Said drive shaft is also suitably journaled in said frames and is rotated when desired through suitable clutch mechanism to be described. The side dies, 17 (Fig. 4), are also mounted upon the rising and falling head, 7, and are caused to move transversely toward and from each other at each reciprocation of said cross head by toggle links, 18, jointed thereto and the head blocks, 19, surrounding the tie rods immediately below the stationary head, 3. As the movable cross head rises, to cause the concaver plate to approach the tread plate, the side dies by the same movement will be caused to approach each other, so that the die as a whole is simultaneously contracted upon and from all sides. The top of the vertically slidable cross head, 7, is provided with a horizontal bearing plate, 20 (Figs. 1 and 2), upon which said side dies or molds, 17, are arranged to slide and the bottom of each of these dies is provided with clamping or face plates, 21 (Fig. 2) which at their inner edges fit into and slide in a horizontal rabbet or groove, 22, in the front and back bottom edges of said bearing plate, 20, said plates acting to hold and guide the side dies upon said cross head.

For moving the concaver plate, 6, into and out of compressing position, a carrier, 23, is provided. This carrier is slidably mounted on horizontal bearing arms or ways, 24 (Figs. 3 and 7), projecting from a bracket, 25, which is secured to the front of the movable cross head, 7. These ways are each provided at its upper edge with inwardly extended flanges, 26 (Figs. 7, 9, and 16), fitting into the rabbeted sides of said concaver plate carrier, 23, and guiding the latter into and out of compressing position. These arms, 24, are united at their front ends by a cross bar 27, (Figs. 1, 3, and 4), and between said arms plays the upper arm of a bell crank, 28 (Figs. 3 and 7), which is pivoted at its elbow to depending arms or ears, 29 (Figs. 2, 3, and 4), of said bracket, 25. At its upper end this vertical arm has a longitudinal slot, 30, to receive a slide block, 31, pivotally mounted by a horizontal pin, 32, between two depending ears, 33 (Fig. 7), formed at the front of the concaver plate carrier, 23. Said carrier, 23 (see Fig. 7), is provided with a horizontal seat, 34, for the concaver plate, 6, which also has suitably placed dowels, 35 (Fig. 16), that enter corresponding holes in the concaver plate and retain the latter in proper position. Immediately in front of this concaver plate, said carrier is provided with a vertical wall, 36 (Fig. 7), constituting a breast plate to act upon and shape the breast of a heel. The blanks are placed upon the concaver plate on the carrier when the latter is outward at the point of the incline and for moving said carrier, 23, and its said concaver plate, into and out of impressing position relative to the top plate and side dies, the lower and short arm, 37, of said bell crank, 28, is provided with oppositely projecting rollers or other studs, 38 (Figs. 1, 3, and 5), which, in the present instance, run in angular cam paths or grooves, 39, formed in the vertical flanges, 40, of a bracket, 41, secured to a cross girt, 42, connecting the side frames of the machine. Said cam paths being stationary the vertical sliding movements of said cross head, 7, by the action of the toggle links, 9 and 10, causes said rollers, 38, acting in said grooves, 39, to oscillate the upper end of said bell crank, 28, to cause said carrier, 23, to be slid inward and outward simultaneously with the vertical movements of said cross head. To aid in sliding the concaver plate carrier into compressing position, the front walls of the dies are inclined or beveled to engage coöperating or inclined faces at the sides of the breast plate 36. By this arrangement the carrier is not only forced into compressing position by the compressing movement of the side dies, but interlocks therewith and is directed vertically in its final vertical movement. As the concaver plate rises toward the tread plate above it, the breast plate, 36, passes behind and engages a lug or finger, 43, depending from the upper head, 3. This finger is provided with a wear plate, 44, and acts to guide the carrier and concaver plate into and retain them in compressing position and ease the strain from the bell crank and its connections during the final compressing movement of and between the upper and lower dies. By this final movement the heel blank is compressed on all sides to conform to the desired heel pattern. After molding, the downward slide of said cross head, 7, causes the carrier rolls, 38, to slide the carrier forward with the molded heel.

To permit the concaver plate and its carrier to be slid inwardly into compressing position, the movable cross head and its bearing plate, 20, are recessed from front to back as at 45, (Fig. 7), and the inner and front lower edges of the side dies, 17, are also rabbeted as at 46, (see Fig. 1), to clear the said carrier and its supporting arms.

The heel blanks may be placed by hand upon the concaver plate, 6, behind the breast plate, 36, when the carrier is in the outermost or front position or if desired, and preferably, they may be fed automatically into position thereon. I have here shown one form of automatic mechanism for this purpose, comprising the slidable blocks, 80, 83 (Fig. 8), and their connections; described in detail later, and the blank holder or ob-

long box, 47 (Figs. 1, 4, 8, 9, and 10), in which the blanks are stacked, constituting one form of hopper and which is vertically arranged at the inner end of a horizontal table, 48, extending forwardly from a bracket, 49, secured to and at the front of the movable cross head. The walls of this hopper are provided with suitable bottom openings, 50, 51, permitting the lower blank of the stack to be fed outwardly therefrom by any suitable feeding device. To prevent irregular piling of the blanks in said hopper the latter is provided in the present instance, with a V shaped vertical centering trough, 52, adjustably mounted at the back of the hopper by an adjusting screw, 53, and adapted to bear upon the backs of and to center the blanks and center the same in the hopper, thereby causing their breasts to bear upon the front wall of the hopper. The feeding block, 80, which feeds the blanks from this hopper is slidably mounted on said table, 48, and is reciprocated through a link, 54 (Figs. 1, 2, 4 and 8), which is connected with a vertical arm, 55, of a horizontal rock shaft, 56 (Figs. 1 and 4), at the right side of the machine. This rock shaft is journaled in suitable bearings, 57, of brackets, 58, secured to or formed upon the movable cross head. A depending vertical arm, 59, at the rear of said rock shaft, 56, has a longitudinal slot, 60, to receive a block, 61, pivotally mounted on one end of a horizontal slide rod, 62, mounted in bearings, 63, in the frame. This slide rod extends across the front of the machine and at its opposite end has a roller or stud, 64 (Figs. 1 and 4), that travels in the groove, 65, of a cam, 66, fast on said counter shaft, 15. Said counter shaft, 15, is connected by gearing with said drive shaft, 16, which has a pinion, 67, in mesh with a gear wheel, 68, which is fast upon a countershaft, 69, mounted at the rear of the machine in frame bracket bearings, 70 and 71. Outside said bearings, 71 (Figs. 4 and 5), said shaft, 69, is provided with a pinion, 72, in mesh with a gear wheel, 73, splined upon said counter shaft, 15 (Fig. 5), to rotate the latter to operate the toggles and the mechanism connected therewith upon rotation of said drive shaft. At its left end, said counter shaft, 15, is extended to receive said cam, 66, shown as splined or keyed thereto, the circular or peripheral groove or cam path, 65, therein being deflected or curved obliquely inwardly at one portion, 74, of its path and acting to reciprocate said roller or other stud, 64 (Figs. 1 and 4), that runs therein and the horizontal reciprocatory shaft to which it is attached. The reciprocations of this shaft oscillate said rock shaft, 56, through the slidable connection of said block, 61, and arm, 59. It will be apparent that as the rock shaft is oscillated its upper arm, 55, will slide said feeding device in and out to produce the desired motion of the feeding device. The left bearing, 63 (Fig. 1), for said reciprocatory shaft, 62, has an outwardly extended horizontal arm, 75 (Figs. 1 and 4) overhanging said shaft and provided at its end with a guide bearing, 76, for said shaft. The opposite or right end of said shaft, 62, is provided with a collar, 77 (Fig. 4), upon which said slide block, 61, is pivotally mounted. As herein shown (see Figs. 8–10, 12–14) the feeding device of which brief mention has been made comprises the block or plate 80, arranged to slide on said table, 48, said plate having at its ends two cross flanges or lugs, 81 and 82 (Fig. 12). Between said flanges and at its side said slide, block or plate is cut away and in said cut away portion and seated upon and to slide on said table between said flanges is a slide block, 83, shown separately in Fig. 13 and in place in Fig. 8. Said block, 83, is provided with a vertical ear or lug, 84 (Figs. 8 to 11), by which it is pivotally connected with the link, 54, referred to, and is moved thereby to cause it to slide from right to left and vice versa on said table, 48, and prior to the limit of its movement in each direction it contacts with and moves through the balance of its movement, the feed plate, 80, referred to.

The block 83 is recessed transversely at 89, and in said transverse recess is contained the slide 88, having at its top the diagonal lug or tongue 87 which is engaged with a complemental recess 86 on the under raised end portion of the push bar 85, it being understood that the other end of the push bar 85 is to engage the lower heel in the stack and push it onto the concaver plate 6. The block 83 has a forwardly extending arm 85^{x}, Figs. 8 and 13, carrying a clamp screw 99 which engages with the edge portion of the push bar 85, the construction being such that upon unclamping the screw 99 the push bar may be adjusted to the right for larger heels and to the left for smaller heels, such movement or adjustment of the push bar 85 causing the slide 88 to be moved transversely in the slot 89 of the block 83 in one direction or the other by reason of the inclined slot and tongue connection 86 and 87. To coöperate with this push bar, 85, for feeding the blank upon said carrier, a blank clamping device is provided, mounted upon and movable with said feed plate, 80. This device (see Fig. 8) comprises a lever, 90 (Fig. 8) pivotally mounted on a vertical pin, 91, extending from said flange, 82, of said feed plate, 80. The leading arm of this lever is jointed, the parts being pivotally connected at 92, to swing only rearwardly, each part adjacent said pivot being provided with forwardly extending pins, 93, connected by a coil spring, 94, acting to normally hold the parts

alined, but permitting the clamping arm to yieldingly engage heel blanks even though of slightly variable length. The rear or opposite arm, 95 (Fig. 8) of this lever carries a roller, 96, running in an oblique slot, 97, which is formed in the block, 88, so that, when said block is moved transversely, as described by adjustment of the push bar, 85, the tongue and groove connection between said block and bar will cause the feeding end of the clamp lever, 90, to be moved toward the front to simultaneously adjust it automatically to the shorter length of the smaller heel blanks to which said push bar, 85, is adjusted. Conversely as said push bar is withdrawn to accommodate a wider heel, said clamping lever will be moved inward to accommodate the greater length of such heel. Thus a single adjustment of the push bar, 85, accomplishes adjustment not only for the widths but also for corresponding variations in the lengths of heel blanks. The feed slide actuator, 54, being connected to the block, 83, which has a sliding or lost motion on and relative to the feed slide before receiving the latter, it follows that when said actuator is moved to the left (Fig. 8), to push a heel blank from the hopper to the carrier, the initial movement of the block, 83, before it contacts with and to move said feed slide, will cause the inclined slot, 97, to act upon the clamp lever and turn the same inward to clamp the heel blank, just before the lost motion is taken up, so that by the time the feed slide itself commences to move, the heel blank is clamped firmly against displacement during its travel with and in advance of said feed slide. After having delivered its heel blank into position over and upon the concaver plate of the carrier, reverse movement of the slide actuator and its block causes the latter to move to the opposite limit of movement on said slide, thus causing said slot, 97, to move the clamp lever to free the heel blank and leave it upon the concaver plate. Immediately after thus freeing the blank, said block contacts with said feed slide and the two therefore move back together to receive a new blank from the hopper.

To provide means for clamping the heel blank in position on the concaver plate and to prevent its accidental displacement during its travel into the machine and between the dies, I have provided an automatically operating clamping device that seizes the blank at or just prior to the commencement of in-feeding movement and releases the same as the concaver plate moves the heel to position between the dies and before the dies close to compress the blank. This clamping device is best shown in Figs. 7 and 15. It comprises a block, 100, mounted to slide with the carrier and in extensions of the carrier guide ways (see Fig. 16) and provided with the pivotally mounted clamping lever, 101 (Fig. 15), normally drawn by a spring, 102, into position with its upwardly curved end in engagement with and to clamp a heel blank in position on the concaver plate of the carrier, 23. To insure correct position of the clamping lever for all the various sizes of heels, the concaver plates, of which there must be one for each size of heel, are respectively provided at their under side with dowel holes for the reception of a dowel pin, 103 (Figs. 7 and 16) rising from said block. No concaver plate can be seated in position on its carrier until and unless the dowel pin, 103, enters the hole therefor provided in said plate, consequently it is immaterial what the size of the concaver plate may be as it is certain that the clamping lever will be correctly positioned relative to the back edge, 36, thereof. While it is desirable that during its travel into the machine the heel blank be clamped firmly under the full tension of the spring, 102, it is also desirable, when the carrier with its compressed heel reaches its first position, that the compressed heel be still held tightly in position even though the principal tension of the spring, 102, be removed by contact of the lower end 104 of the clamping lever with the stop 101×. This is because I have found that the compressed heel may be ejected and the new blank fed into position on the carrier with greater certainty if a slight tension is constantly maintained through the clamping lever upon the heel and heel blank. For this purpose, the said clamping lever is not made as a single integral lever, but as a two part lever, Fig. 15, its two parts, 104 and 105, being joined together at and about the lever pivot or pin, 106 (see Figs. 7 and 15.) A spring, 107, holds these lever parts yieldingly in position in one direction while stops, 108, render said parts rigid when said lever is moved or swung in the opposite direction, which is the direction of action of the spring, 102. Thus it is clear that the spring, 102, moves said lever as a unit to permit full and sufficient clamping action to hold the blank in position during traverse of the carrier, but that, when the carrier reaches the end of the outward movement to the front of the reces, the end, 104, of the lever may be moved to free the part, 105, of the tension of the spring, 102, leaving the clamping end, 105, under the light action only of the spring, 107, and, conversely, on movement of the concaver to the right, the end 104 of the clamping member contacting with a suitable stop 101× swings the clamping member clear of the heel to permit the dies to close. For lessening the clamping action of this lever to permit a shaped heel to be ejected and a new blank to be inserted in its place said lever (see Fig. 9) has a horizontal projecting lug, 109, adapt-

ed when the carrier is in blank receiving position to be engaged by an inclined end of a horizontal bar, 110 (Figs. 8 and 17), slidably mounted in bearings, 111, on the stationary bracket, 49. This bar is provided with collars, 112 (Fig. 9), on each side of the inner bracket, to limit its motion in either direction and intermediate its ends (see Fig. 8) said bar is also provided with laterally extended cam surfaces, 113. To move this bar longitudinally the feed block, 83, has a depending lug, 114 (Figs. 9, 10 and 11) upon which vertical roller bearing arms, 115, are pivotally mounted, one on each side of said bar; a coil spring, 116, connecting said arms for holding the rollers, 117, carried by said arms, in frictional engagement with the opposite sides of said bar. The table is provided with a longitudinal slot (Fig. 10), to permit said lug and its arms to reciprocate therein with the movement of said feed block, 83. As the feed plate moves to the left (Fig. 9) to feed a new blank to the carrier, the rollers by their frictional grip on the bar, 110, and behind the cam surface thereon, slide said bar along to cause the leading end of said bar to pass under the end, 109, of the clamping lever and lift said end to remove the action of the spring, 102, from the acting or clamping end thereof, leaving the latter pressing against the heel with a light pressure only, a pressure that does not prevent the heel being pushed off to make room for the new blank as the latter is fed into position, until the outer stop, 112 (Fig. 9), contacts with the inner adjacent bearing, 111, when further movement of said bar being prevented the rollers, 117, ride over and along cams, 113, until just prior to reaching the end of their travel, they pass down at the opposite ends of the cams. Upon return of the slide to its starting position at the right (Fig. 9), these same rollers will operate reversely, first to push the bar back to release the clamping lever to clamp the heel, and thus when said bar has reached the limit of its movement in the return direction, said rollers ride up over said cams and travel thereon until they drop therefrom beyond the cam in the position in which they started. As herein shown (Fig. 10), the outer end of the plate, 80, has a flange, 81, on which is a guide, 118, having a depending lug, 119, (see dotted lines Fig. 8), to enter a longitudinal groove, 120, on said block, to confine the motions of the latter to a longitudinal direction.

For starting and stopping the machine suitable clutch and brake mechanisms are provided comprising, in the present instance, a drive pulley or wheel, 121, loosely mounted on said drive shaft, 16 (Figs. 2, 4, and 6), and having an annular groove in its side face, (Fig. 6), to receive a split ring or spring friction band, 123, mounted intermediate its ends as by a bolt, 124, upon a shaft collar 125. Said pulley is rotated constantly by being belted to a suitable power shaft. The collar, 125, is splined or otherwise slidably secured to said drive shaft, 16, said friction band constituting a clutch member and being adapted to be expanded and frictionally engage the inner surface of said pulley to rotate therewith and thus rotate said drive shaft and operate the mechanism connected therewith. As the clutch is released or said band contracted out of engagement with said pulley, the drive shaft ceases to rotate. Opposite to said bolt, 124, (referring to Fig. 2) and between its free ends, the said band receives a wedge shaped end, 127, (see dotted lines Fig. 2), of an actuating lever, 128, which is pivotally mounted upon said collar, 125, the opposite arm of said lever being provided with a vertical adjusting screw, 129. The depression of this screw elevates the wedge shaped end of the lever, spreading apart the ends, 126, of said spring friction band, to expand the latter and cause said frictional engagement, with the inner face of said pulley wheel, 121, which being constantly rotated from a convenient source of power will then rotate said band, the collar and the shaft to which the latter is slidably connected. By movement of said lever in the opposite direction, said ends, 126, are permitted to approach the band, 123, contracting from and out of engagement with said wheel, 121, to arrest the shaft. To throw outward said adjusting screw, 129, to operate the clutch, the drive shaft has a lever operated collar 130, shown as splined thereon (Fig. 6), which is provided with an ear or lug, 131, upon which a friction roller, 132, is mounted in juxtaposition to the tapered end, 133, of said screw, the inward slide of said collar, 130, causing said roller to throw outward or swing downward said screw, 129, to operate the clutch. This collar, 130, in the present instance, is reciprocated by means of a vertical lever, 134, pivoted at 135 (Fig. 5) on a flanged ring, 136, secured to the side of the machine and concentric with the outer drive shaft bearing, 137 (Fig. 6). The collar engaging end of this lever has a yoke, the arms, 138, of which embrace said collar, 130, and each of which is provided with a horizontal adjusting screw, 139, supporting a bearing yoke, 140 (Fig. 2) received in a circumferential or peripheral groove, 141, of said collar, 130, causing the latter to move with the yoke. To swing this lever, to slide the collar of said shaft to operate the clutch as just described, its upper end (Figs. 2 and 4) is pivotally connected at 142 with the inner end of a horizontal shipper lever, 143, which, in its turn, is pivotally mounted at 144 to the

side of the frame. To positively stop the rotation of the drive shaft and the operation of the machine when released by the clutch, said collar, 130, is provided with a circular brake flange, 145 (Fig. 6) entering an annular recess, 146, formed by the flange, 147, of said ring, 136, and in position frictionally to engage the inner face of the latter as said clutch is released. In causing the clutch to slide in the opposite direction the brake flange slides away from the said flange 147, permitting free rotation thereof.

In operation, the hopper being filled with blanks the operator starts the machine by swinging the shipper lever to the right (Fig. 1), sliding the clutch collar in the same direction to release the brake and actuate the clutch as described, thereby causing the rotation of the drive shaft, countershafts and the gears connected therewith and the feed cam, 66. This cam is timed to cause its feed lever, 55, to move to the left, (Fig. 1), first to grip a heel blank and then as described to feed the said blank to the left into position on the concaver plate, the in fed blank knocking off or displacing the previously compressed heel resting upon said concaver plate. During this movement said clamping lever, 105, yields before the advancing blank and retains the latter when the feed slide leaves it. As said slide bar returns in the opposite direction said lever, 105, is put under full tension of the spring, 102, to clamp the blank firmly against said breast plate, 36, in the manner described. Immediately following the feeding of a new blank into position on the concaver plate the carrier is moved inward carrying the heel blank into compressing position beneath the tread plate, 5, and between the side dies, 17, the latter closing upon the side of the heel simultaneously with the rising of the movable head, 7, to compress the heel from top to bottom. During the inward swing of the carrier, the clamping end of the blank holding lever is automatically depressed out of the way of said side dies by the stop which engages the lower end of the clamping lever, so that the blank is entirely inclosed and compressed by the compressing members of the die. After the blank has been compressed, descent of the cross head, 7, in the continued operation of the machine, separates the side dies, permitting the holder automatically to again clamp the heel and preventing its displacement as the carrier is slid outward to present the compressed heel in the path of the next in-fed blank. As the new blank is fed into position, the compressed heel is knocked off of the carrier and clamping lever yielding to permit its escape and again yielding to permit entrance of the new blank.

When employing this feeding device the machine when once started, is entirely automatic in its operation requiring no labor or attention on the part of the operative until it is desired to stop it or to replenish the hopper with blanks.

Having described one embodiment of my invention, and without limiting myself to details of construction what I claim and desire to secure by Letters Patent is:—

1. An organized machine of the class described comprising in combination a movable cross head provided with means for supporting a reciprocatory carrier, dies or compressing members for shaping heel blanks, a heel blank carrier slidably mounted on said supporting means having a flange constituting a breast plate, a concaver plate secured to said carrier to lie in a plane at an angle to said plate, a fixed cross head for a tread plate having a lug or finger disposed to be engaged by the breast plate as the heel is being compressed, means for feeding blanks upon the concaver plate of said carrier, means connected with said carrier for holding the blank in compressing position against said breast plate, and means governed by said feeding mechanism for operating said holding means to facilitate insertion or removal of blanks between it and said breast plate.

2. An organized machine of the type described comprising in combination a series of dies or compressing members, a carrier provided with means for holding heel blanks in compressing position thereon, and means for feeding blanks thereto, clamping means constructed and arranged for holding a blank to place it in compressing position upon said carrier and to yield and finally release the heel blank as the carrier is moved to heel compressing position.

3. In a machine of the type described, a blank feeding device comprising a pair of members, one mounted upon the other and arranged to permit of relative motion therebetween, and a blank clamping device upon one of said relatively movable members and connected with the other movable member to cause said device to automatically clamp a blank when one of said members is moved in one direction and to release it when moved in the opposite direction.

4. In a machine of the type described a blank carrier having a removable blank holder, a blank feeding device provided with one or more rollers and a slide member provided with cam portions constructed and arranged to be engaged by said rollers to actuate said blank holder to permit insertion or removal of a blank upon or from said carrier by the respective infeeding motion of said feeding device in one direction and its retraction by a movement of the latter in the opposite direction.

5. In a machine of the type described a blank carrier having a movable yieldingly

mounted holder, a blank feeding device provided with one or more rollers, and means operated by said rollers to actuate said holder to facilitate insertion or removal of a blank on said carrier substantially as shown and described.

6. A machine of the type described comprising a series of members for compressing heel blanks, one of said members constructed and arranged for movement toward and from the other and provided with an integral breast plate and concaver plate, a blank holder and means connecting the blank holder and concaver plate constructed and arranged to correctly position the two with relation to each other, substantially as shown and described.

7. A machine of the type described comprising a series of members for compressing heel blanks, one having an integral breast plate and concaver plate support, a concaver plate removably secured thereto and a removable blank holder therefor and means for securing the blank holder in definite position to the back of said concaver plate, substantially as shown and described.

8. In a machine of the type described, the combination of a carrier, a holder having a clamping action to hold blanks in position relative to said carrier, and blank feeding means constructed and arranged to relieve the clamping action of said holder when feeding blanks to the carrier.

9. A machine of the type described comprising a blank carrier and a feeding device therefor, means for clamping a heel blank upon said carrier and upon said feeding means, and means to transfer the clamping action from one to the other in placing a heel blank by said feeding means upon said carrier.

In testimony whereof, I have signed my name to this specification in the presence of two subscribing witnesses.

MERTON D. PHELAN.

Witnesses:

WILBURT D. JONES,

SIDNEY F. SMITH.