

No. 694,205.

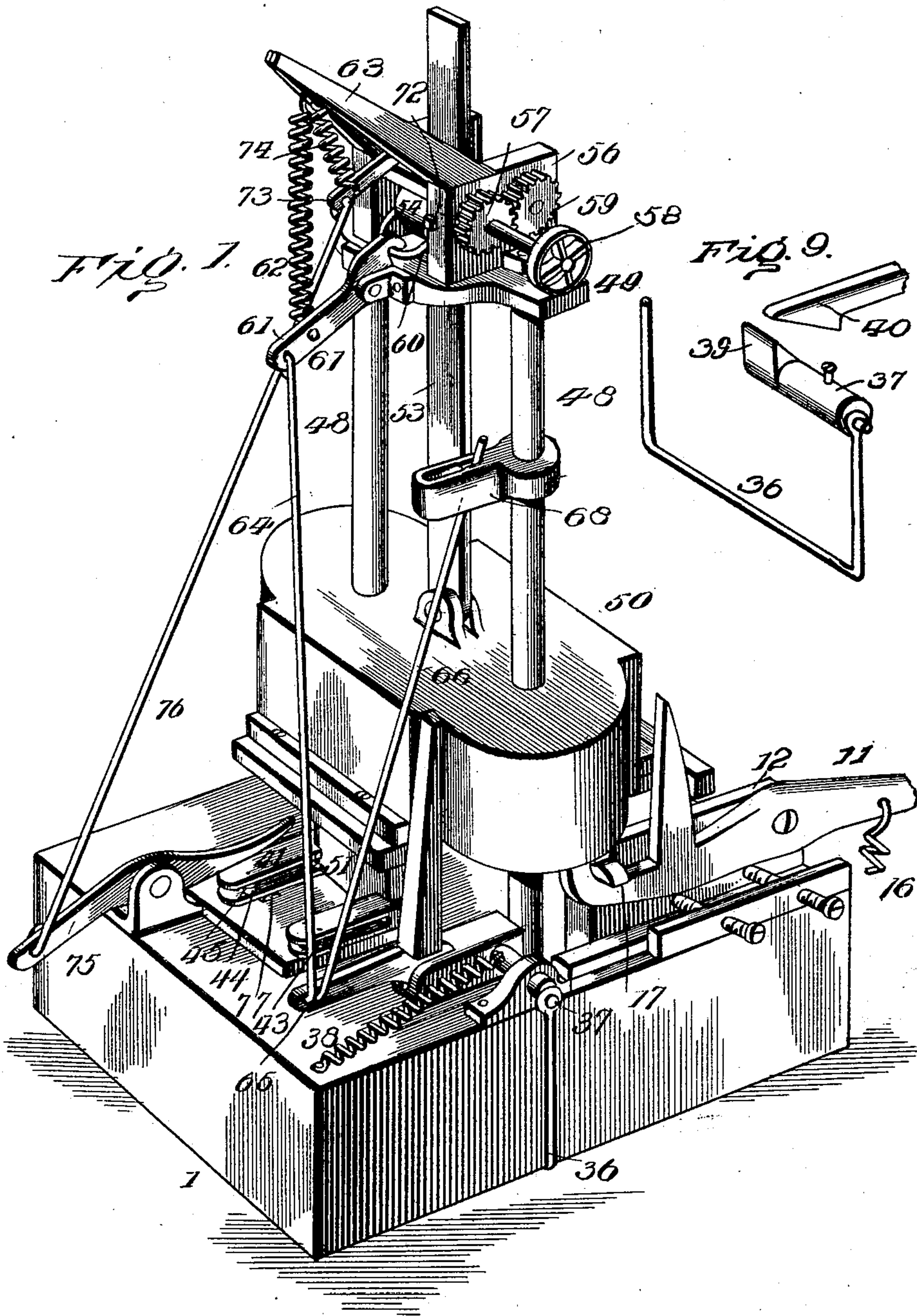
Patented Feb. 25, 1902.

O. W. SIEBENHAAR.
HORSESHOE MACHINE.

(Application filed Apr. 20, 1901.)

(No Model.)

4 Sheets—Sheet 1.



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(Application filed June 8, 1901.)

(No Model.)

2 Sheets—Sheet 2.

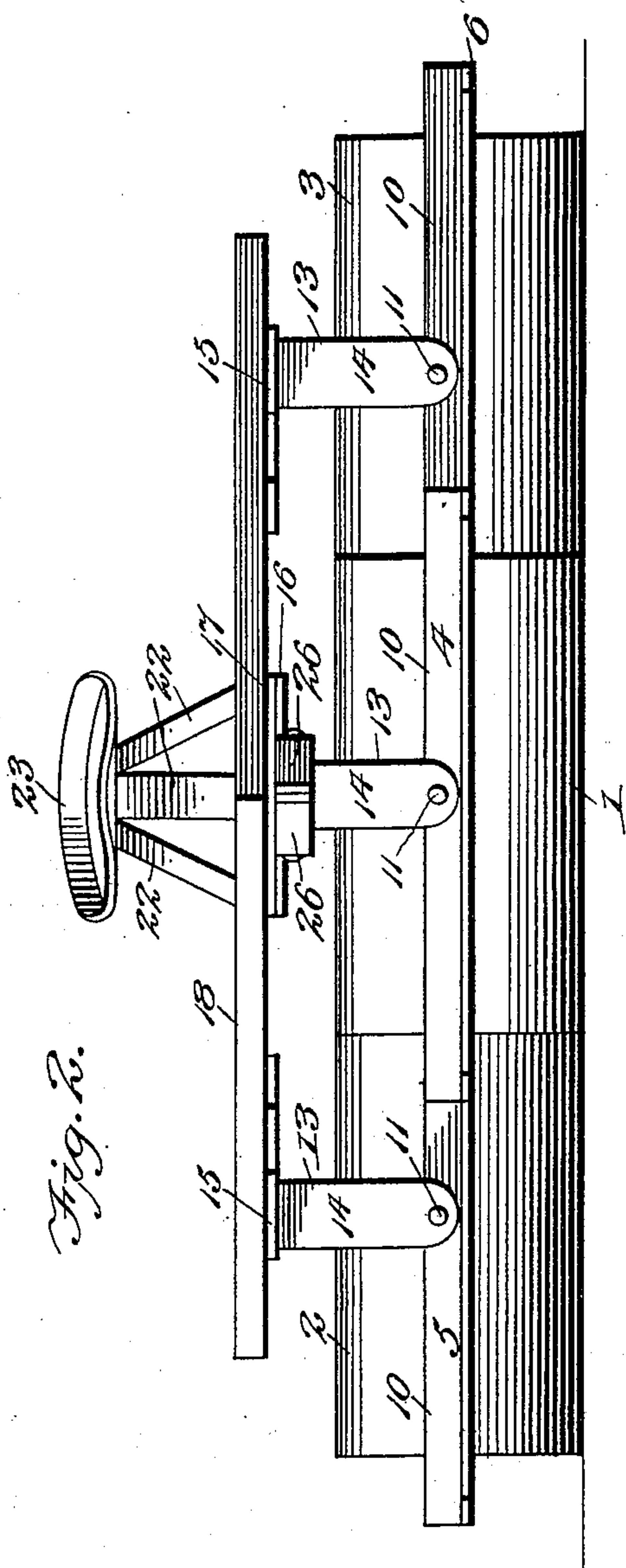
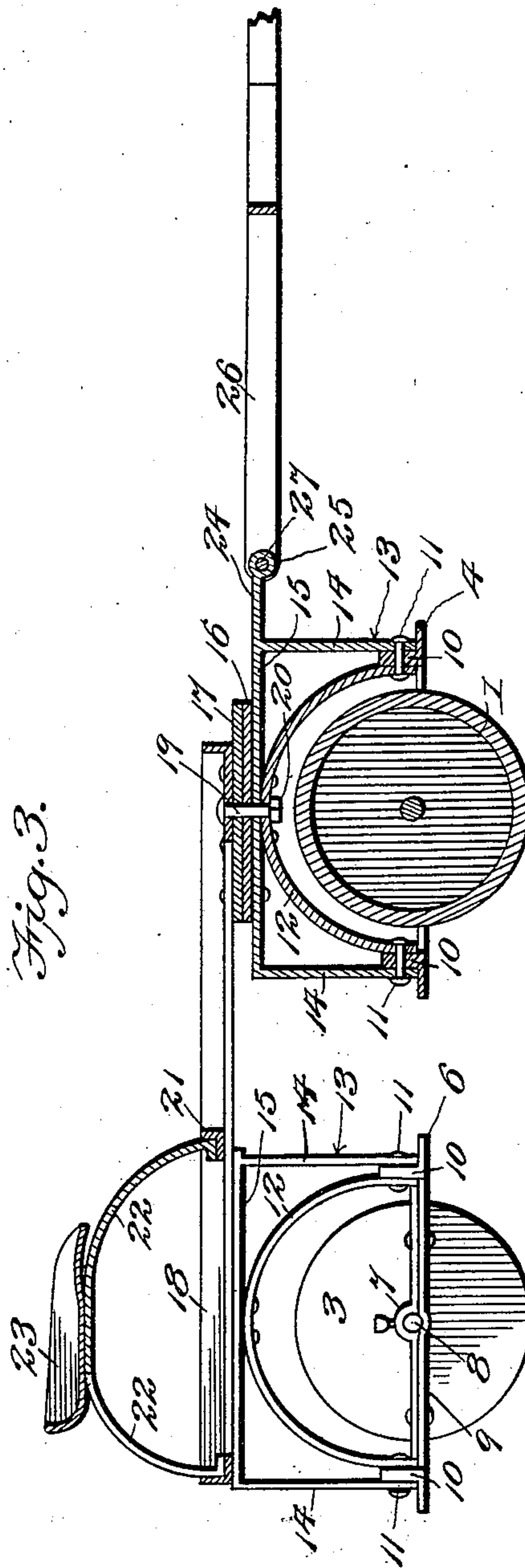


Fig. 3.



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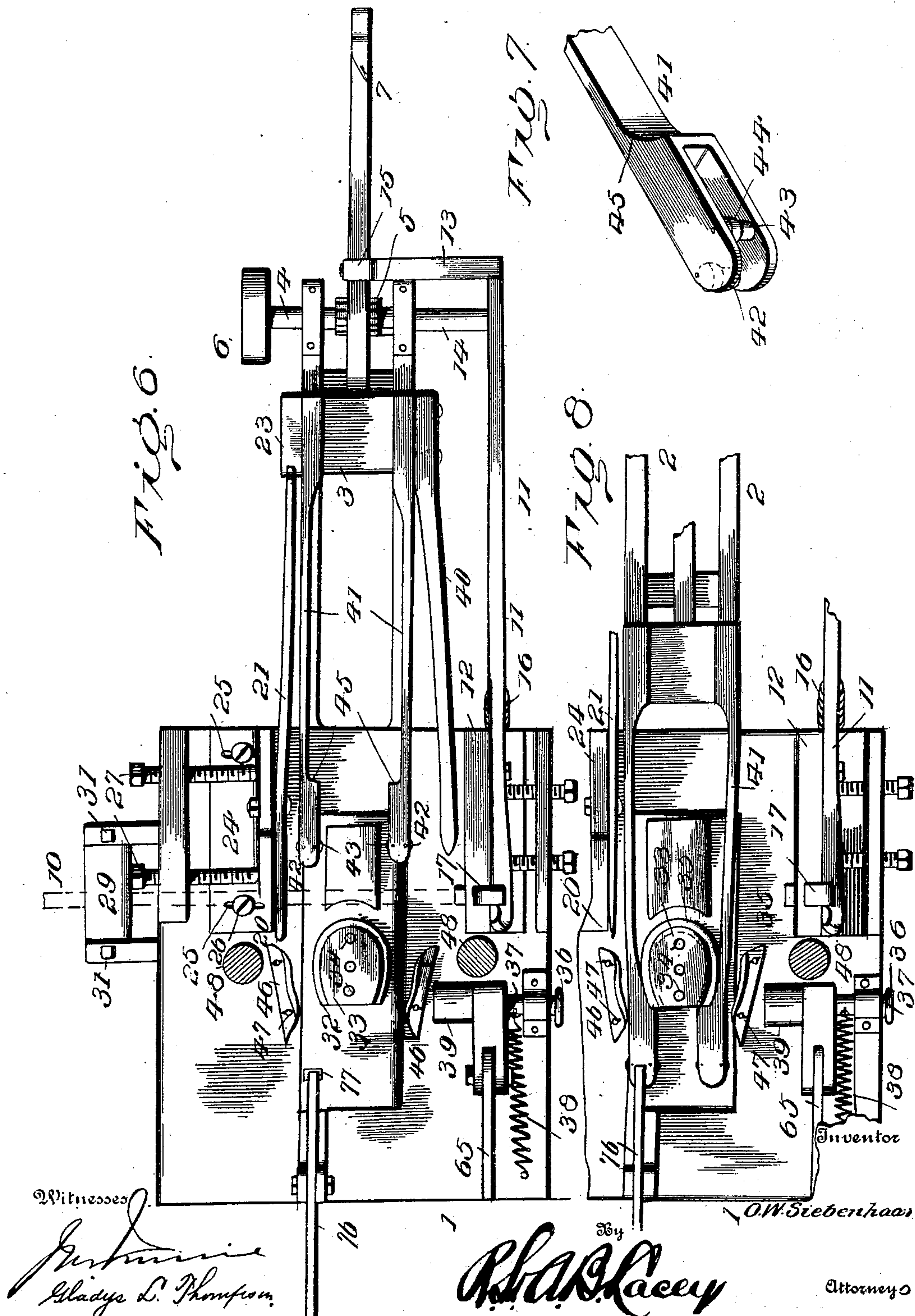
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4 Sheets—Sheet 3.



UNITED STATES PATENT OFFICE.

OTTO W. SIEBENHAAR, OF ROSENDALE, WISCONSIN, ASSIGNOR OF TWO-THIRDS TO EDWARD FALBE, OF PRINCETON, WISCONSIN, AND RODDY W. WYSE, OF MILWAUKEE, WISCONSIN.

HORSESHOE-MACHINE.

SPECIFICATION forming part of Letters Patent No. 694,205, dated February 25, 1902.

Application filed April 20, 1901. Serial No. 56,779. (No model.)

To all whom it may concern:

Be it known that I, OTTO W. SIEBENHAAR, a citizen of the United States, residing at Rosendale, in the county of Fond du Lac and State of Wisconsin, have invented certain new and useful Improvements in Horseshoe-Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention has relation to machines for forming horseshoes from bars of iron or steel, the purpose being the provision of a machine which is entirely automatic in its action after being once set and adjusted.

The machine comprises feeding mechanism for advancing the bar of metal, a trip released by the bar when properly positioned to throw the machine in gear, a cutter for severing the shoe-blank from the bar and holding the latter in check during the formation or shaping of the blank into the shoe, bending and pressing mechanisms, a hammer, a clutch for holding the hammer elevated and adapted to be tripped by the bending mechanism, hammer-elevating mechanism adapted to be thrown into and out of action by the hammer, and reversing mechanism thrown into action by the hammer for returning the parts to a normal or starting position.

For a full description of the invention and the merits thereof and also to acquire a knowledge of the details of construction of the means for effecting the result reference is to be had to the following description and drawings hereto attached.

While the essential and characteristic features of the invention are necessarily susceptible of modification, still the preferred embodiment of the invention is illustrated in the accompanying drawings, in which—

Figure 1 is a perspective view of a horseshoe-machine constructed in accordance with and embodying the essential features of the invention. Fig. 2 is a side elevation. Fig. 3 is an enlarged transverse section about on the line X X of Fig. 2, showing the relation of the parts when the hammer is in its lowest position. Fig. 4 is a detail perspective view

of the female die. Fig. 5 is a sectional detail about on the line Y Y of Fig. 2. Fig. 6 is a horizontal section at a point below the hammer. Fig. 7 is a detail perspective view of the inner end of a bending or shaping arm. Fig. 8 is a detail view showing the shouldered portion of the bending or shaping arms engaged with the shoe for removal thereof from the machine simultaneously with the return of the said arms to a starting position. Fig. 9 is a detail view of the means for effecting a vertical movement of the male die or former, so as to clear the shoe prior to its removal by means of the bending or shaping arms, said view also showing the laterally-adjustable support for the shipper-lever for starting and reversing the actuating mechanism. Fig. 10 is a central vertical longitudinal section of the complete machine. Fig. 11 is a horizontal section about on the line Z Z of Fig. 10, showing more clearly the hammer-elevating mechanism. Fig. 12 is a sectional detail of the stop and rod or bar for holding the hammer-elevating mechanism in gear during the ascent of the hammer. Fig. 13 is a detail perspective view of the instrumentalities for punching the nail-holes in the shoe after the formation of the latter. Fig. 14 is a top plan view of the combined holder and guide. Fig. 15 is a front view of the punch.

Corresponding and like parts are referred to in the following description and indicated in all the views of the drawings by the same reference characters.

The bed or base 1 may be cast or otherwise formed and is of a size to form a substantial foundation for the working parts and to withstand the pounding action of the hammer. Ways or guides 2 project from one end of the bed and may form a part thereof or be attached thereto in any substantial way, so as to form a firm support for the cross-head 3, mounted to reciprocate thereon. A transverse shaft 4 is mounted in suitable bearings at the outer end of the ways or guides 2 and is provided with a pinion or gear element 5, secured so as to rotate therewith. This shaft 4 is continuously driven in the same direction by means of a suitable motor and for this purpose is provided with a band-pulley 6 to re-

ceive the drive-belt. (Not shown.) A frame 7 has pivotal or loose connection with the cross-head 3, and its longitudinal bars are toothed upon their inner edges, as shown at 8 and 9, to alternately intermesh with the teeth of the pinion 5, whereby the cross-head 3 is caused to travel in reverse directions upon the ways or guides 2. The lowermost bar 9 has a plain portion at its inner end, and the upper bar 8 has a plain portion at its outer end, and these plain portions provide for rotation of the pinion 5 without imparting movement to the cross-head, which would otherwise result disastrously. When the cross-head 3 is at the limit of its outward movement, the teeth 8 stand clear of the teeth of the pinion 5, and the latter comes opposite the plain portion at the inner end of the teeth 9; but when the machine is tripped and started the outer end of the frame 7 lowers a sufficient distance to bring the teeth 8 into mesh with the teeth of the pinion 5, when the cross-head 3 and the parts carried thereby will be moved forward. During the forward movement of the cross-head the bar 10 from which the blanks are cut is severed, and the part thus cut from the bar is formed into the required shape of the horseshoe. When the cross-head 3 reaches the limit of its forward movement, the pinion 5 will enter and operate in the space formed at the outer end of the teeth 8. At the proper time the frame 7 will be elevated at its outer end, thereby bringing the teeth 9 in meshing relation with the teeth of the pinion 5, resulting in reversing the travel of the cross-head 3 and returning the parts to a starting position.

The shipper-lever 11, also designated as the "starting" and "reversing" lever, is fulcrumed to a bracket or upright 12, laterally adjustable upon the bed 1, and is provided at its outer end with horizontal arms 13 and 14, which embrace the upper and lower sides of the frame, and these arms are supplied with rollers 15 to minimize the frictional contact thereof with the adjacent bars or sides of the frame. This lever 11 controls the position of the frame 7 with reference to the pinion 5. A spring 16, normally under tension, exerts a downward pressure upon the outer end of the lever 11, and its force is held in restraint by means of a catch 17, pivoted in an opening of the bracket or standard 12 and engaging with the inner end of the lever 11. This catch 17 normally holds the inner end of the lever 11 depressed and the outer end thereof and the frame 7 elevated, as indicated most plainly in Fig. 2. This catch 17 is in transverse alinement with the bar 10 and feeding mechanism therefor, so as to be tripped by said bar 10 when fed into the machine, thereby releasing the lever 11, which under the influence of the spring 16 will gravitate at its outer end and permit the outer end of the frame 7 to lower, whereby the machine is started by an intermeshing of the teeth 8 with the teeth of the pinion 5. The inner end of the lever 11 extends across the path of the

hammer or a part thereof, so as to be struck thereby upon the descent of the hammer, whereby the inner end of the lever 11 is depressed and caught by the catch 17, so as to hold the outer end of the lever and the frame 7 elevated, with the teeth 9 in meshing relation with the teeth of the pinion 5. Vertical extensions 18 and 19 are provided at the inner end of the lever to be struck by a part of the hammer. The provision of the two extensions insures proper actuation of the lever 11, so as to be engaged by the catch 17, which is essential, as will be readily comprehended.

The cutting mechanism for severing the bar 10 into proper lengths for formation of the shoe is located at the opposite side of the bed 1 from the lever 11 and consists of a stationary blade 20 and a pivoted blade 21, whose arm is curved, as shown most clearly in Fig. 10, to form a cam 22 for cooperation with a corresponding cam 23, attached to and movable with the cross-head 3, whereby the cutting mechanism is actuated at the initial forward movement of the cross-head to sever the shoe-blank from the bar 10 prior to the operation of the bending, shaping, and forming mechanism. This cutting mechanism is laterally adjustable in a manner similar to the lever 11 in order to provide for lengthening and shortening of the shoe-blanks according to the required size of the shoes. The movable cutter 21 is pivoted to the part 24, provided with the stationary cutting edge 20. This part 24 is of bracket formation, and its base portion is provided with transverse slots 25 to receive crank-screws 26, by means of which the part 24 is held in an adjusted position. This part 24 is adjusted laterally by means of set-screws 27.

The means for feeding the bar 10 to the machine consists of rollers 28 and 29, which are caused to grip the bar 10 by a pressure sufficient to effect an advancement thereof, provided nothing obstructs the way. The upper roller 29 is mounted in movable bearings, which are pressed toward the bearings of the roller 28 by springs 30, one for each bearing, and a set-screw 31 for varying the tension of each of the springs. These rollers are continuously driven when the machine is in operation, and when the cutter 21 has severed a shoe-blank from the bar 10 it obstructs the further advance of said bar until the operating parts have returned to a normal position, when the cutter 21 will move away from the cutter 20 and clear the bar 10 and admit of its being fed into the machine a distance corresponding to the required length of the shoe-blank. During the operation of the bending, shaping, and forming mechanism the feed-rollers 28 and 29 slip upon the bar 10 without effecting any advance thereof, the feed of the bar 10 being prevented by the cutter 21 in the manner stated.

An anvil 32 is located upon the top side of the bed 1 and is secured thereto in any desired way and in general outline conforms to

the outer edge of the shoe. The former or male die 33 is placed upon the anvil 32, and its outer edge corresponds to the shape of the inner edge of the shoe. The heel portion of the former or male die 33 is of less width than the front portion to approximate the shape of the horseshoe, and the edges incline, whereby the top side of the shoe is of greater transverse extent than the lower side. Guide-pins 34 are let into the anvil and pass loosely through openings near opposite ends of the part 32 to hold it in place against the strain imposed thereon by bending of the shoe-blank therearound. This die or former 33 is vertically movable a distance to clear the shoe 35, so as to permit of its removal from the machine by means of the bending or shaping arms, which act in the capacity of ejectors or displacers. Suitable means may be provided for elevating the part 33 at the proper time, and, as shown, an approximately U-shaped rod or bar 36 is provided, and its inner member operates in a vertical opening in the bed or base 1 and through the anvil 32 and carries the former 33 at its upper end. The outer vertical member of the part 36 has eccentric connection with a rock-shaft 37, located at one side of the machine and mounted in suitable bearings attached thereto. A spring 38 is connected to a lug or part projecting from the shaft 37 and serves to hold the latter in a given position. A head 39 is provided at the inner end of the shaft 37 and extends in the path of an arm 40, attached to the cross-head 3 and having a hook at its inner end to engage with the head 39 and give the shaft 37 a one-quarter turn or thereabout to effect a lifting of the former or die 33 through the instrumentality of the part 36. This operation takes place at the beginning of the return movement of the cross-head 3 and prior to engagement of the shouldered portions of the shoe 35. This arm 40 moves with the cross-head 3 in its reciprocating movements, and its hooked end rides upon the head 39 when the cross-head 3 is about clearing its inward or forward movement, so as to engage with a part of the head 39 and effect a turning thereof upon the outward or return movement of the cross-head. This part 40 is preferably a spring-arm, although this construction is not essential, as it may be formed in any manner to admit of the attainment of the desired result.

The bending or shaping arms 41 extend about in parallel relation and are attached at their outer ends to the cross-head 3, so as to reciprocate therewith. The inner ends of the arms 41 are each provided with a pair of rollers 42 and 43, which project beyond opposite sides thereof to reduce the friction of the engaging parts to the smallest amount possible. The rollers 43 are located at the inner sides of the arms and are adapted to come in contact with the shoe-blank and roll thereon during the bending or shaping process. To pre-

vent vertical movement of the shoe-blank, the upper ends of the rollers 43 are flanged, as shown at 44, to overlap the said blank and hold it down upon the anvil. The inner ends of the arms 41 are susceptible of lateral movement, which is necessary to admit of their following the outline of the die or former 33 and to admit of their shouldered portions 45 engaging over the ends of the shoe 35, as shown in Fig. 8, so as to remove the same from the machine upon the outward movement of the cross-head 3. The parts 41 may be of any construction and attached to the cross-head 3 in any way to permit of the lateral movement of their inner ends, and, as shown, they are spring-bars sufficiently stout to withstand the strain and yet admit of their inner ends moving laterally. The shoulders 45 may be provided in any way and are located at the inner side and a short distance from the inner extremities of the arms and in practice are adapted to engage with the heel end of the shoe, so as to effect a removal thereof from the machine upon the outward travel of the cross-head 3, the shoe dropping from the bed either upon the floor or into a receptacle. Guides 46 are located at opposite sides of the former or die 33 and cooperate with the inner ends of the arms 41 to press them inward toward the edges of the part 33 and shape the shoe-blank thereto. The rollers 42 travel upon the inner vertical sides of the guides 46 as the arms 41 move forward. These guides are laterally adjustable and are secured to the bed in an adjusted position by means of fastenings 47, which may be bolts or machine-screws. It is to be understood that the machine is capable of forming horseshoes of different sizes and shape. Hence the adjustability of the parts 46, 24, and 12 and the interchangeability of the male and female dies and the guides 46, the latter being capable of substitution by others of different shape as well as being laterally adjustable.

Parallel uprights or standards 48 rise from the bed 1 and are connected at their upper ends by a cross-piece 49, which supports the hammer-elevating mechanism and the clutch or holding means therefor. These standards 48 also form guides for the hammer 50, which is free to move vertically thereon and to which is attached the female die 51 for cooperation with the anvil 32 and former 33. The die 51 has a rim or flange 52 of a size and form to snugly encompass the outer edge of the raised portion of the anvil 32, so as to confine the shoe 35 and prevent any escape of the metal upon the descent of the hammer, which completes the shaping or forming of the shoe and condenses the same. This rim 52 also serves in conjunction with the anvil 32 to remove any part of the shoe projecting beyond the edge of the anvil, thereby trimming the same prior to the operation of the hammer. For this purpose the rim 52 is sufficiently deep to clear the plane of the top side of the anvil 32 prior to contact of the hammer or face of the

die 51 with the shoe. The rim 52 is sufficiently thin to pass between the arms 41 and the bent bar or shoe 35. It must be remembered that the die 51 does not drop until the shoulders 45 of the arms 41 have passed beyond the heel end of the shoe, and at this time there is a space between the thin portion of the arms 41 and the shoe sufficient to receive the rim 52. Moreover, in practice the edge of the rim 52 may be beveled should it become necessary in order to avoid interference with the bending-arms. The hammer is provided with a stem 53, which passes between a pair of rollers 54 and 55, journaled in uprights 56 of the cross-piece 49. One of the rollers, as 54, is mounted in fixed bearings and is provided with a gear-wheel 57 and band-pulley 58, the latter receiving the power by means of which the roller 54 is continuously rotated when the machine is in operation. The other roller 55 is movable toward and from the roller 54, so as to grip or release the stem 53. A gear-wheel 59 is secured to a journal of the roller 55 and is adapted to mesh with the gear-wheel 57. The movement of the roller 55 toward and from the roller 54 is controlled by means presently to be described.

A bail or yoke 60 has its side members or legs constructed to receive the journals or shaft of the roller 55, and its closed end is engaged by a lever 61, fulcrumed to a bracket or part of the cross-piece 49. A spring 62 exerts an upward pull on the outer end of the lever 61, so as to hold the roller 55 away from the roller 54, as shown most clearly in Fig. 10. This spring 62 is connected at its lower end to the outer end of the lever 61 and at its upper end to a bracket-arm 63, projecting from the upper part of the standard 56. A rod 64 connects the outer end of the lever 61 with a trip-lever 65, located at one side of the machine and upon the bed 1, so as to be engaged by the hammer 50 or a trip 66, secured thereto. When the machine is in condition and set for operation, the outer end of the trip-lever 65 is elevated, and the outer end of the lever 61 is lifted by the spring 62, so as to hold the roller 55 away from the roller 54; but upon the descent of the hammer the lever 65 is depressed thereby through the part 66 and the outer end of the lever 61 is lowered against the tension of the spring 62, thereby drawing the roller 55 toward the roller 54 and gripping the stem 53 with a force to cause its ascent and the elevation of the hammer. The instant the hammer begins to rise the lever 65 is released and would rise and permit the lifting of the outer end of the lever 61 under the action of the spring 62 and the release of the stem 53 if it were not for the provision of means for holding the outer end of the lever 65 depressed and the rollers 54 and 55 close against opposite sides of the stem 53. This detent or restraining mechanism consists of a rod 66, attached at its lower end to the lever 65 and having a stop 67 at its upper end and a bracket-stop

68, adjustable upon the adjacent standard 48. The instant the lever 65 is depressed the stop 67 at the upper end of the rod 66 engages under a shoulder 69 of the part 68 and holds the said lever 65 depressed and the stem 53 clamped between the rollers 54 and 55 of the hammer-elevating mechanism. As the hammer reaches the limit of its upward movement it or a part thereof engages with the part 66, so as to disengage the stop 67 from the shoulder 69, thereby permitting the spring 62 to regain itself and return the parts 55, 61, and 65 to a normal position, whereby the hammer-elevating mechanism is thrown out of gear. At this juncture or stage of the operation the hammer is held elevated by a clutch or supporting means, presently to be described. The bracket-stop 68 is adjustable upon its supporting-standard 48, so as to regulate the lift and fall of the hammer, and its outer end is slotted to receive the upper end portion of the rod or bar 66, provided with the shoulder 69 for cooperation with the stop 67 in the manner stated. The stop 67 is likewise adjustable upon the part 66 for a similar reason.

The clutch or holding device 70 for securing the hammer when elevated consists of a piece pivoted at its outer end to the uprights 56 and adapted to grip the stem 53 between its inner end and the cross-piece 71 by a binding or wedging action. This clutch can be adjusted by set-screws 72 and is provided with a lever 73, attached to or forming a part thereof. A spring 74 connects the outer end of the lever 73 with the overhanging arm 63 and normally exerts an upward pull thereon, which tends to hold the inner end of the clutch in contact with the stem 53. The distance between the opposing parts of the elements 70 and 71 is a trifle less than the thickness of the stem 53. Hence the clutch inclines outward slightly at its inner end. Upon the upward movement of the stem 53 the inner end of the clutch rides thereon; but the instant the stem 53 tends downward the inner end of the clutch 70 follows and grips the stem between the parts 70 and 71, as will be readily understood. A trip-lever 75 is pivoted intermediate of its ends to the bed 1, and its outer end is connected by a rod or bar 76 with the lever 73. The inner end of the lever 75 extends in the path of one of the bending or shaping arms 41, so as to be engaged thereby and press upward, thereby effecting a downward pull upon the outer end of the lever 73, which releases the clutch 70 from the stem 53 and permits the hammer to fall. A roller 77 is located adjacent the inner end of the trip-lever 75 to support the end of the arm 41, tripping said lever by passing under the inner end thereof.

The shoe when acted upon by the hammer 50 is creased and indented, the indentations corresponding with the position of the nail-openings, and for this purpose the female die 51 is provided with ribs 78 to form the creases

and with pins 79 to start the nail-openings. Inasmuch as the openings when formed are inclined, so as to give the proper direction to the nails, the formation of said openings is effected by a subsequent operation, and for this purpose an anvil 80, guide 81, and punch 82 are provided. The punch consists of a head 83, provided with holders 84, to which the punches 85 are attached in any substantial manner. The holders 84 may be a part of or attached to the head 83 and are inclined inward toward their lower ends, so as to give the proper set or inclination to the punches 85, secured thereto. These punches 85 are of a length and construction to admit of their outward movement and inward spring action at their lower ends, which is essential in order to admit of the holes or nail-openings formed in the shoe extending at an angle. While the punches are adapted to yield and spring, they are nevertheless sufficiently stout to perform the work in any effective and thorough manner and to withstand the strain to which they are subjected when in operation.

The part 81 is a block and is operated by means of a lever 86, to which pressure may be applied to clamp the shoe to be punched between said anvil and the part 81. This conforms approximately to the space of the shoe and is formed in its opposite edges with vertical grooves or channels 87, which flare toward their upper ends, so as to receive the lower ends of the punches 85 and give proper direction thereto in the operation of the machine. The inner walls of the grooves or channels 87 curve vertically, so as to gradually press the lower ends of the punches 85 outward, whereby the lower ends are adapted to move inward by the spring action when clearing the guide or part 81 to give the desired inclination to the nail-openings as they are formed. However, it may be well to state that the faces of the anvil 32 and die 51 may have any form according to the pattern of shoe to be forged, and that the pins 79 may be of a length to punch the shoe, thereby completely forming a horseshoe in one operation. The ribs 78 and pins 79 may be formed with the die or fitted thereto in any substantial manner so as to be readily replaced in the event of becoming unserviceable either by breaking or wearing away.

In view of the foregoing detailed description of the construction, function, and operation of the several parts it is not deemed necessary to further describe the operation of the machine, which, it is believed, will be readily comprehended from the foregoing in connection with the detailed drawings hereto attached.

Having thus described the invention, what is claimed as new is—

1. In a horseshoe-machine, a former about which the shoe is shaped, a vertical stem attached to the former, and a rock-shaft having eccentric connection with the said stem for effecting vertical movement thereof and

a lifting of the former to clear the shoe, substantially as set forth.

2. In a horseshoe-machine, a former about which the shoe is shaped, an approximately U-shaped frame having one member adapted to effect a lifting of the said former, and a rock-shaft having eccentric connection with the other member of said frame for actuation thereof, substantially as set forth.

3. In a horseshoe-machine, an anvil, a former supported upon the anvil, and a die having a rim to snugly encompass the said anvil and adapted for cooperation therewith to remove any projecting metal of the horseshoe and to confine and prevent escape of said metal when subjected to pressure, substantially as set forth.

4. In a horseshoe-machine, an anvil, a die having a rim to snugly encompass the anvil, and a former supported upon the anvil and adapted to be lifted therefrom to clear the shoe and admit of its removal from the machine by a sliding movement, substantially as set forth.

5. In a horseshoe-machine, and in combination with the shaping mechanism including a former and reciprocating shaping elements for cooperation therewith, means for lifting the former to clear the shoe, and including a rock-shaft, and an actuator adapted to reciprocate with the aforesaid shaping elements and engage with the rock-shaft to effect an automatic operation of the former-lifting mechanism, substantially as set forth.

6. In a horseshoe-machine, and in combination with the shaping mechanism including a former and reciprocating elements, means for operating the former to lift it clear of the shoe and including a rock-shaft having an offstanding part, and an actuator connected for reciprocal movement with the traveling shaping elements and adapted to ride over and engage with the offstanding part of the rock-shaft to effect automatic operation of the former-lifting mechanism, substantially as set forth.

7. In a horseshoe-machine, and in combination with the shaping mechanism including a former, an approximately U-shaped frame having one member in contact with the said former, a rock-shaft having eccentric connection with the other member, a spring for holding and returning the rock-shaft to a normal position, a head applied to the rock-shaft, and a reciprocating actuator adapted to ride upon the head of the rock-shaft and to engage therewith to effect an automatic lifting of the former to clear the shoe when shaped, substantially as set forth.

8. In a horseshoe-forming machine, and in combination with the die around which the shoe is bended, reciprocating elements for bending the blank about the said die, a toothed driver rotated continuously in the same direction when the machine is in operation, a frame having oppositely-toothed portions to alternately mesh with the teeth of the said

driver to effect a positive reciprocation of the aforesaid shapers, and means for operating the said frame to throw its toothed portion into engagement with the driver, substantially as set forth.

5 9. In a horseshoe-machine, and in combination with a former, reciprocating arms for bending the blank around said former, a toothed driver, a frame having oppositely-
10 toothed portions for alternate engagement with the said driver, and a lever for starting and reversing the machine and having laterally-extending parts to engage with the said frame and effect a positive movement there-
15 of, substantially as set forth.

10. In a horseshoe-machine, and in combination with the shoe-forming mechanism, a trip device at one side of the machine for starting the same, a cutting mechanism at the op-
20 posite side of the machine, and means for adjusting the trip device and cutting mechanism laterally according to the size of the horseshoe for which the machine is adjusted, substantially as set forth.

25 11. In a horseshoe-machine, and in combination with the shoe-forming mechanism, actuating mechanism therefor, a lever for throwing the actuating mechanism into gear, and a catch or restraining device for holding the
30 said lever in a position with the actuating mechanism out of gear and adapted to be tripped by the bar when fed into the machine so as to release the said lever and permit throwing of the machine into gear, substan-
35 tially as set forth.

12. In a horseshoe-machine, shoe-forming mechanism including a hammer, actuating mechanism, and a lever for starting and reversing the machine and adapted to be tripped
40 by the bar when fed into the machine and adapted to be operated by the hammer for reversing the machine, whereby the parts after actuation are returned to a normal position, substantially as set forth.

45 13. In a horseshoe-machine, and in combination with the shoe-forming mechanism including a hammer, a lever for starting and reversing the machine, a catch for holding the lever in a predetermined position with the

machine out of gear and adapted to be tripped 50
by the bar when fed into the machine to admit of throwing the latter into gear, said lever adapted to be operated by the hammer for reversing the machine, substantially as set forth.

14. In a horseshoe-machine, shoe-forming 55
mechanism including a hammer, a lever for starting and reversing the machine, a catch or restraining device for said lever to hold the machine out of gear, and a laterally-ad-
60 justable support for the said lever and catch, substantially as set forth.

15. In a horseshoe-machine comprising a former, reciprocating shaping-arms for bending the horseshoe-blank about the former and having shouldered parts to effect a removal 65
of the shoe from the machine, lifting mechanism for the former, a reciprocating arm for actuating the said lifting mechanism, bar-feeding mechanism, a cutter for severing the bar and checking its feed, a lever for starting 70
and reversing the machine, a catch for said lever adapted to be tripped by the horseshoe-bar, a hammer, elevating mechanism for the hammer and adapted to be thrown into gear
75 by the hammer upon its descent, means for holding the said hammer-elevated mechanism in gear and adapted to be tripped upon the ascent of the hammer, a clutch for holding the hammer in suspension, and a trip for re-
80 leasing said clutch and adapted to be operated by one of the reciprocating shaping-arms, substantially as set forth.

16. In a horseshoe-machine, a die having a rim and formed with horseshoe and punching devices, substantially as described. 85

17. In a horseshoe-machine, an anvil, a die having creasing and punching devices, and having a rim to cooperate with the anvil to trim the horseshoe and confine the same during the forging, creasing and punching oper- 90
ation, substantially as set forth.

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

OTTO W. SIEBENHAAR. [L. S.]

Witnesses:

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GLADYS L. THOMPSON.