

J. W. MOORE.
MACHINE FOR PRINTING ON RUBBER FOOTWEAR.
APPLICATION FILED AUG. 27, 1909.

962,515.

Patented June 28, 1910.

2 SHEETS—SHEET 1.

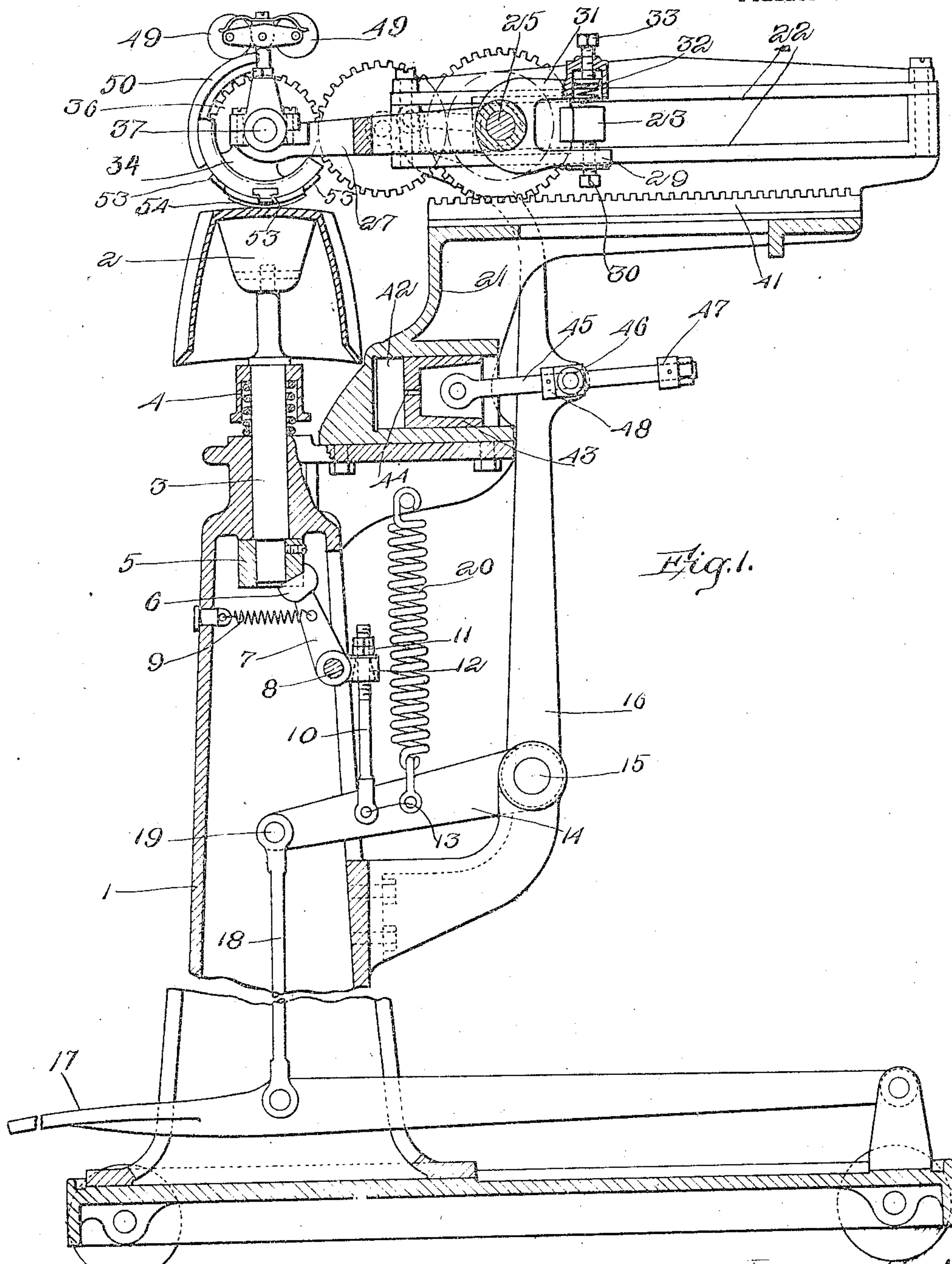


Fig. 1.

Witnesses:
M. J. Spalding.
Wm. J. Pike.

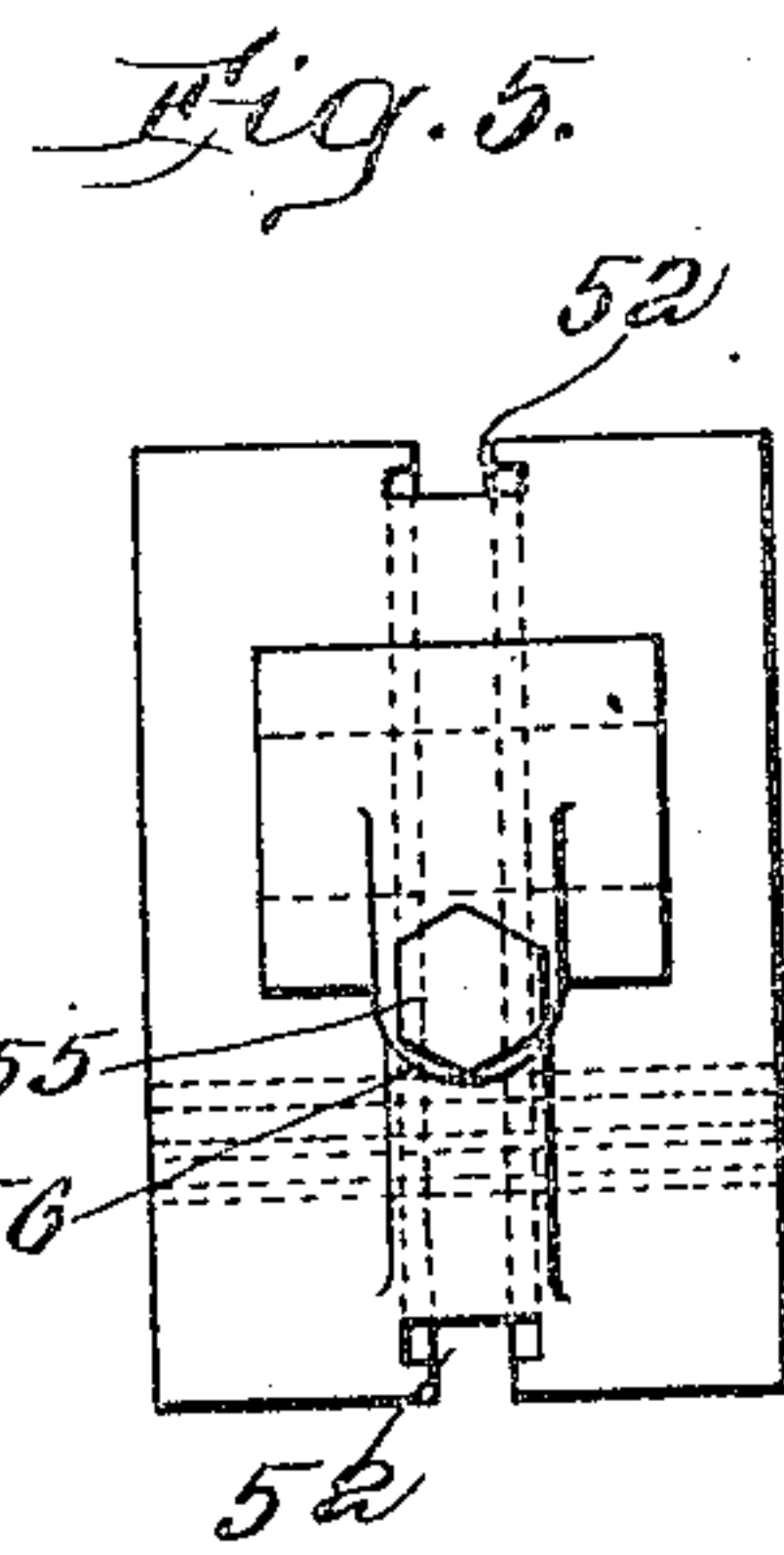
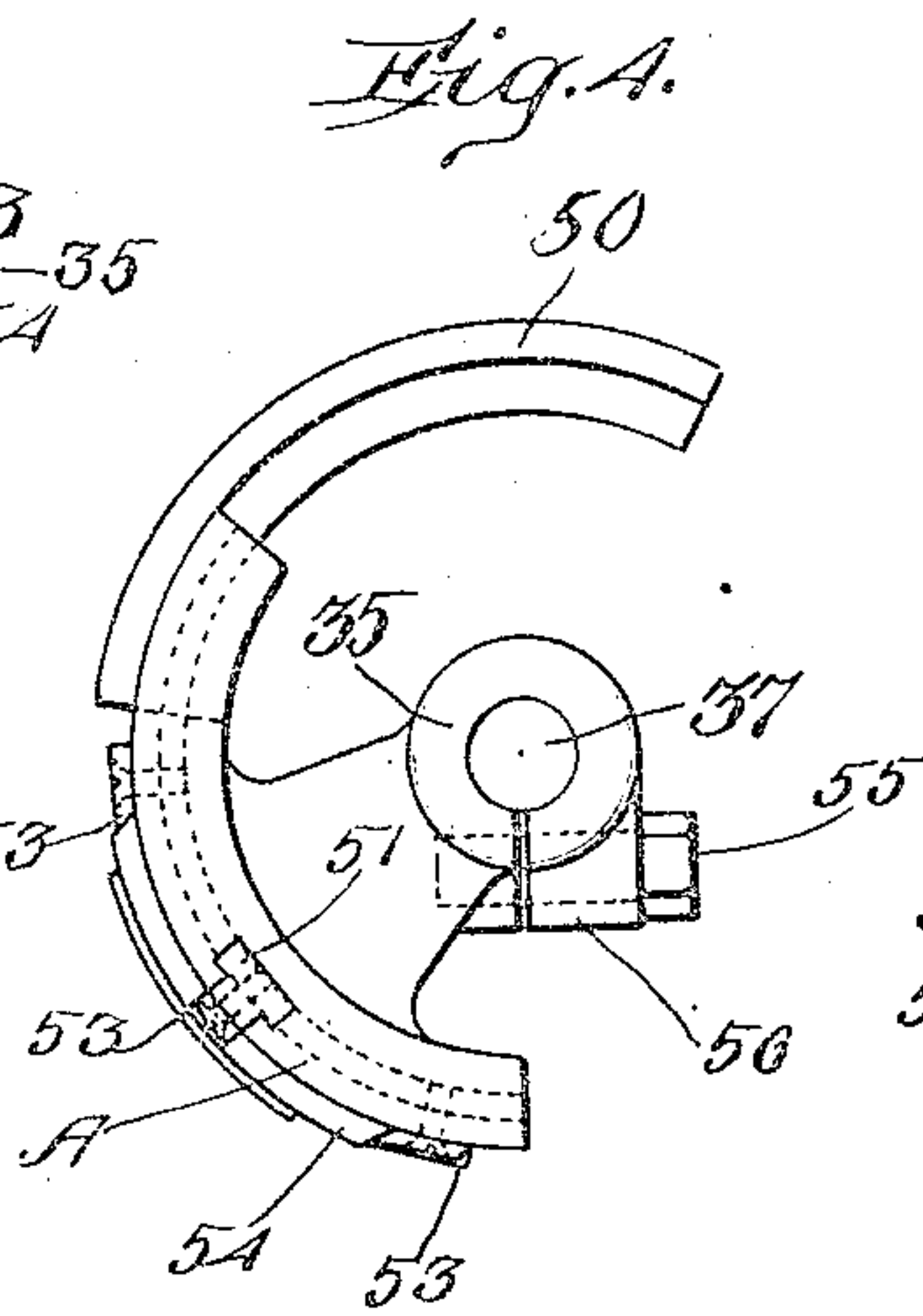
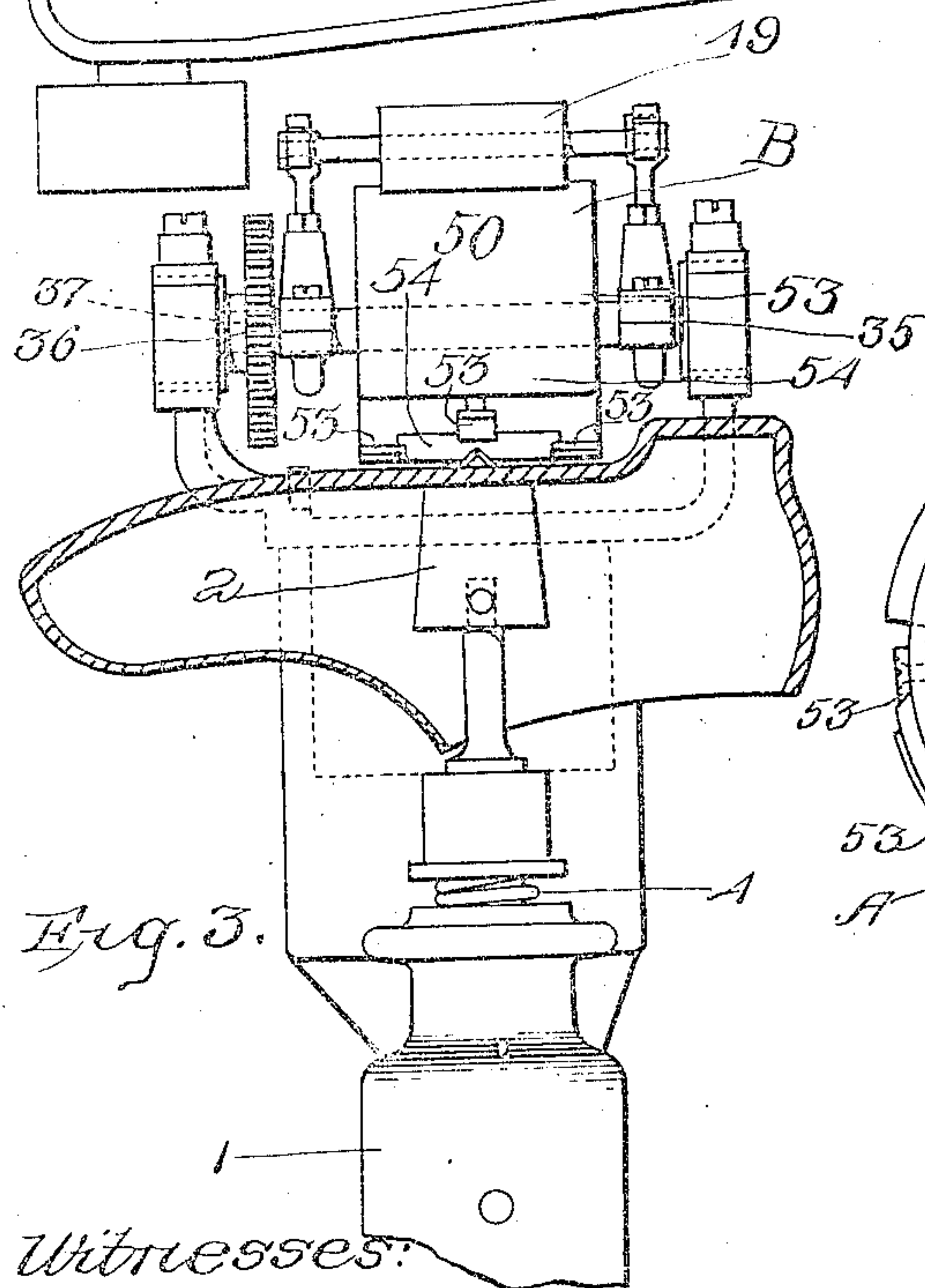
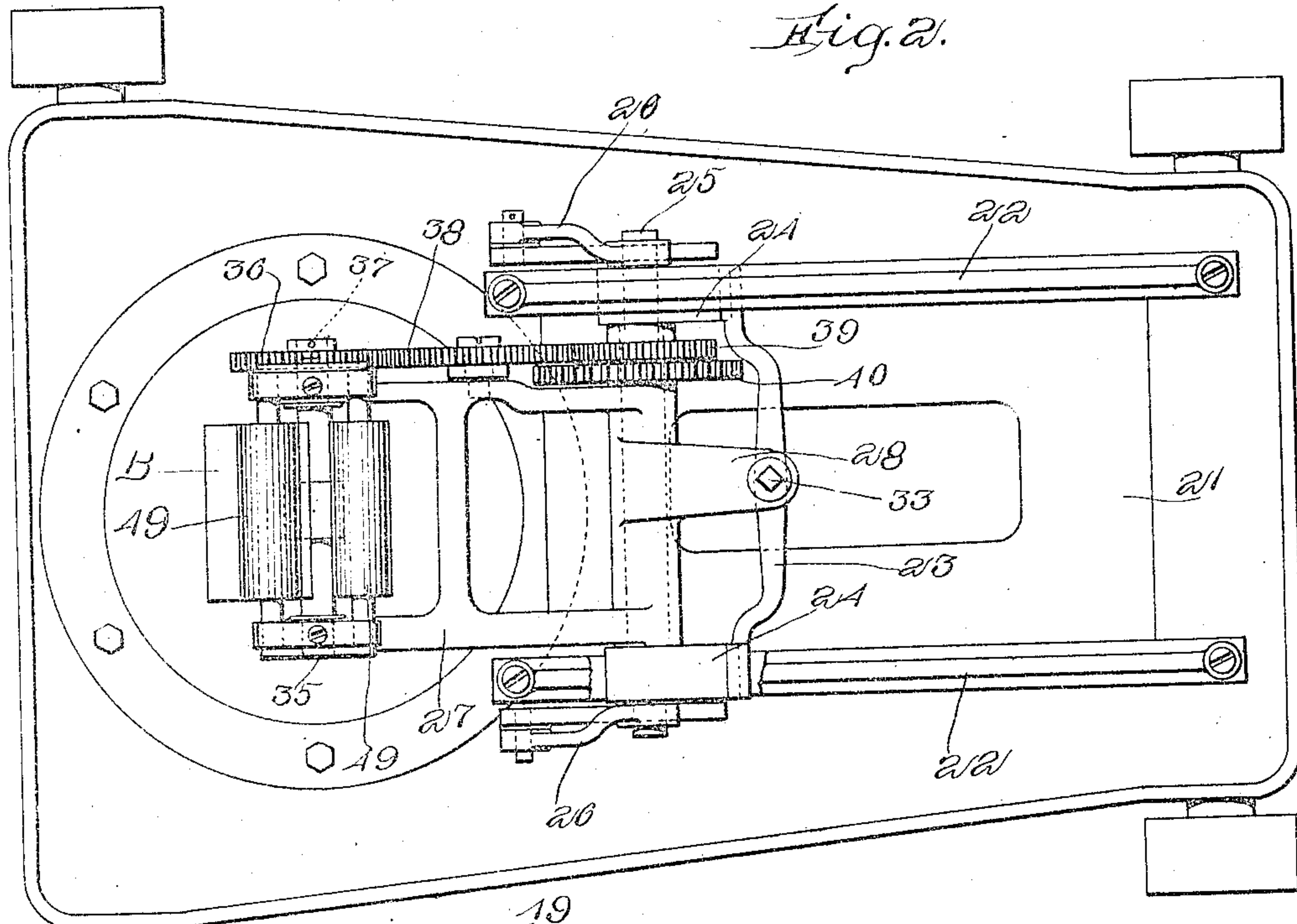
Inventor:
Joseph W. Moore
by Geo. S. Maxwell
Att'y.

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Inventor:
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UNITED STATES PATENT OFFICE.

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MACHINE FOR PRINTING ON RUBBER FOOTWEAR.

962,515.

Specification of Letters Patent. Patented June 28, 1910.

Application filed August 27, 1909. Serial No. 514,904.

To all whom it may concern:

Be it known that I, JOSEPH W. MOORE, a citizen of the United States, residing at Newton Highlands, in the county of Middlesex and State of Massachusetts, have invented an Improvement in Machines for Printing on Rubber Footwear, of which the following description, in connection with the accompanying drawings, is a specification, like numerals on the drawings representing like parts.

In connection with rubbers, over-shoes, rubber boots, etc., it is desirable to print, usually in red or white ink, the name of the maker or jobber and the trade name or trademark of the particular goods, often together with other emblems, marks or matter, but the nature of the article on which the printing is to be done and its varying shape, and the fact that the printing is often required on the soles, shank, sides, boot legs or other place, has rendered it exceedingly difficult to do this printing heretofore.

Accordingly my present invention is a printing machine specially adapted for this particular work, and comprises in connection with means for supporting the rubber, a printing device capable of applying approximately uniform printing pressure to the work while moving over the work in one direction, and cooperating means for restoring said device by movement away from the work.

My invention includes various other important features such as a self-inking arrangement, provision for permitting relative yielding movement between the work and the printing device for different thicknesses of material, provision for insuring a surface speed of the printing device equal to its forward movement, provision for quick placing and removal of the work, etc.

In the drawings, in which I have shown a preferred embodiment of my invention: Figure 1 is a central vertical sectional view thereof viewing the machine sidewise; Fig. 2 is a top plan view of the machine; Fig. 3 is a transverse vertical section taken approximately through the center of the printing device when in printing position; and Figs. 4 and 5 show portions of the printing mechanism in edge view and plan respectively.

On a suitable pedestal 1, is mounted a

work-supporting block 2 at the upper end of a spindle 3 vertically movable in the top of said pedestal and held normally under tendency to move upward by a spring 4, being limited in its upward movement by a collar 5 on said spindle and locked when in its raised position, by the engagement therewith of the shouldered upper end 6 of a dog 7 pivoted at 8 on said pedestal and normally pulled forward by a spring 9 and released by a link 10 adjustably secured at 11 to a rear extension 12 of said dog, said link being pivoted at 13 to one arm 14 of a bell-crank lever pivoted at 15 whose other arm 16 actuates the printing mechanism.

As herein shown, my machine is operated by a treadle 17 and link 18 pivoted at 19 to the forward end of said bell-crank, movement in opposition to said treadle being communicated to the various parts by a spring 20. To the upper end of the pedestal a bracket 21 is bolted provided at its top with opposite horizontal guides or slideways 22 in which reciprocates a frame 23 having block-like ends 24 fitted to slide in said ways 22. Transversely journaled in the front ends of said block-like ends 24 is a shaft 25 to whose projecting ends the upper end of the arm 16 of the bell-crank is loosely connected by links 26. Loosely mounted on said shaft 25 is a carrier 27 provided with a rear bifurcated extension or yoke 28 which embraces the frame 23, the lower arm 29 of said yoke having an adjustable stud 30 for limiting the downward movement of the printing head or member and the upper arm 31 of said yoke being recessed to retain a spring 32 held adjustably by an adjusting bolt 33 for giving the rod printing pressure and yet permitting the printing head to yield upwardly for varying thicknesses of work. A special head 34 is pivoted at 35 to oscillate in the projecting end of the carrier 27, being positively driven by a gear 36 fast on its shaft 37 driving an idler pinion 38 pivoted on one side of the carrier and meshing with a gear 39 fast on a driving pinion 40 on the shaft 25. I have shown the pinion 40 as actuated by a stationary rack 41 projecting upwardly from the top of the bracket 21, said rack and pinion and gears being so proportioned with relation to the printing device that when the operator depresses the treadle and thereby moves the printing head

and its carrier forward and hence simultaneously operates the train of gears, the printing head is given a surface speed of rotation equal to its forward movement, whereby proper printing results are secured on the work supported on the workrest 2. In the bracket 21 I have provided a cylindrical recess or pot 42 in which is mounted a piston or dash 43 having a small air vent 44 and provided at its rear side with a loosely pivoted rod 45 passing through a rocking shaft or bar 46 on the bell-crank and having separated stops 47, 48. This operates to stop the printing mechanism at the limit of its forward and backward movement with a yielding cushion-like effect which is advantageous to the proper rapid running of the machine. Above the printing head I mount two ink distributing rolls 49, and at the rear side of the printing device I secure an inking plate 50 having its peripheral ink-carrying surface in the same cylinder plane with the printing head, so that as the latter rotates on its backward movement the inking plate 50 first meets the distributing rolls 49, thereby supplying them with the ink which is distributed to the printing device as the latter moves back and forth beneath said rolls in its backward and forward movement. The printing head is provided with transverse and longitudinal grooves 51, 52, for holding clamping devices 53 to clamp the electroplate or other printing member 54 in place in usual manner, see Figs. 4 and 5, and said printing head is preferably made adjustable on its shaft by a bolt 55 and split collar 56.

In use, it will be evident that my printing machine is capable of handling the work with great rapidity, the printing head and its operating mechanism being at the rear away from the work, the operator placing a rubber on the work-rest, holding the rubber at its toe and heel so as to be able to shift the same into exactly the right position for receiving the impression. He naturally holds the rubber with considerable downward pressure in order to maintain the same steady on the workrest, and as the printing device comes forward under the influence of the treadle and does the printing, the dog 7 is suddenly tripped from its work-rest supporting position by the blow of the rod 10 on the rearwardly projecting tail piece 12 of said dog at the end of the forward printing movement, with the result that the downward steadying pressure which the workman has exerted almost insensibly upon the rubber instantly depresses the work out of the way of the printing device. Simultaneously therewith the operator releases his foot from the treadle and the spring 20 restores the printing mechanism to its backward position, the operator removing the printed rubber from its sup-

porting post, which movement permits the latter to return to normal raised position where it is locked automatically by the dog 7. The operator puts another rubber in place and depresses the treadle, thereby printing the second rubber. This process is repeated with great rapidity. Each time that the treadle is depressed, the arm 16 of the treadle lever mechanism pulls forward on the frame 23 guided in the ways 22, the pinion 40 being simultaneously rotated by the stationary rack 41 and thereby operating through the gears 39, 38, 36 to rotate the printing device 34, first in engagement with the inking rolls and then, when the printing device and its carrier have been carried out to the work, in printing engagement with said work. As said printing device has the same surface speed of rotation as its forward movement, it has no tendency to slide on the work but has simply the required vertical printing pressure thereon. If the work is thick the printing device and its carrier yield upwardly by reason of the spring 32, and if a lot of rubbers or the like, having an unusually thin shank, are to be printed, the set screw 30 is turned down to gage the printing head to the thin work. The printing mechanism moves forward until stopped yieldingly by the stop 48 and dash pot and then, upon the removal or raising of the operator's foot, instantly moves back until stopped yieldingly by the stop 47 and said dash pot. It has been my aim to construct a small, preferably portable, quick acting apparatus, capable of receiving and delivering the required copious amount of red ink or the like onto the somewhat irregular surface of rubbers, having supporting means facilitating the quick placing and removal of the rubbers without interfering with or being interfered by the printing device and its operating mechanism. The support 2 is preferably small so that the operator may bend the rubber more or less if required in order to obtain a good impression from the printing device, and the latter is made as small as possible and given an overhanging printing position, so as readily to permit the printing of the trademark, monogram, or other impression on the shank close to the heel, or on the curved surface of the sole, or the relatively smoother surface of the boot leg, or in fact on any part of the rubber, shoe, boot, or whatever article the machine is being used in connection with.

As already intimated, my invention is capable of a considerable variation from the preferred constructional details herein set forth, as will be more evident from the appended claims.

Having described my invention, what I claim as new and desire to secure by Letters Patent is—

1. In a printing machine of the kind de-

scribed, an overhanging printing mechanism, manually controlled means for moving said printing mechanism freely forward into printing position and quickly backward, a work support having a free space entirely around its upper end permitting said work support to project in position to enter within an article of footwear to support the same in position to receive an impress from said printing mechanism, means holding said work support stationary during the printing, and means for thereafter releasing the work support.

2. In a printing machine of the kind described, an overhanging printing mechanism, manually controlled means for moving said printing mechanism freely forward into printing position and quickly backward, a work support yieldingly projected upward into position to hold an article to be printed, and means to lock said work support stationary during the moment of printing, said printing mechanism including a swinging carrier and adjustable yielding means for supporting said carrier to permit the printing mechanism to yield for varying thicknesses of work.

3. In a printing machine of the kind described, upper and lower slideways arranged in opposite pairs, a transverse frame mounted to slide in said ways, a carrier pivotally mounted in said frame, yielding means between said carrier and frame normally holding said carrier in a predetermined overhanging position but permitting the carrier to yield with reference to said frame, a printing head pivoted in the extreme forward overhanging end of said carrier, operating mechanism to rotate said head, actuated by the forward and backward movement of said frame in said ways, and a supporting block and a vertically yielding spindle therefor located to position the work beneath the printing head when the latter is moved to its forward position.

4. In a printing machine of the kind described, a slide frame, horizontal ways for said frame to slide upon, a horizontal carrier pivoted at its rear end in said frame, a printing head mounted to rotate in the front end of said horizontal carrier, means actuated by the back-and-forth movement of said carrier and slide frame for rotating said head, a manually operated bell crank lever pivoted at the lower part of the machine and connected to said slide frame for actuating the latter, and work supporting means to hold the work in position to be printed by said printing head when in forward position.

5. In a printing machine of the kind described, a slide frame, horizontal ways for said frame to slide upon, a horizontal carrier pivoted at its rear end in said frame, a printing head mounted to rotate in the front end of said horizontal carrier, means actu-

ated by the back-and-forth movement of said carrier and slide frame for rotating said head, a manually operated bell crank lever pivoted at the lower part of the machine and connected to said slide frame for actuating the latter, a dash pot and its piston, a rod pivoted to said piston and slidably pivoted in the adjacent arm of said bell crank, separated stops on said rod to be engaged by said arm to limit the forward and backward movement of said printing head, and work supporting means to hold the work in position to be printed by said printing head when in forward position.

6. A printing mechanism, means for moving said mechanism forward over the work to print the latter and backward into position entirely out of the way of the work, a block-like work-rest movably supported to receive a piece of work in position to be held on said rest at the opposite ends thereof by the hands of the operator while it is being printed, means holding the work-rest stationary during the printing, and means actuated by the forward movement of the printing mechanism to release said work-rest, thereby permitting the work rest to be moved away from the printing mechanism by the said engagement of the work by the operator.

7. A printing mechanism, means for moving said mechanism forward over the work to print the latter, a block-like work-rest movably supported to receive a piece of work in position to be held on said rest at the opposite ends thereof by the hands of the operator while it is being printed means holding the work-rest stationary during the printing, means actuated by the forward movement of the printing mechanism to release said work-rest, thereby permitting the work-rest to be moved away from the printing mechanism by the said engagement of the work by the operator, means for restoring the printing mechanism to its backward inoperative position, and spring means for instantly restoring said work-rest to raised position.

8. In a printing machine of the kind described, printing means movable into and out of printing position with relation to the work, a movable work support for supporting an article of foot-wear in position to be printed when held downward thereon by the operator, and means for holding said work support stationary during the printing and suddenly releasing the work support at the end of the printing, thereby causing downward holding pressure of the operator on the work to move the work support and work suddenly away from the printing mechanism.

9. In a printing machine of the kind described, printing means movable into and out of printing position with relation to the work,

a movable work support for supporting an article of foot-wear in position to be printed when held downward thereon by the operator, spring means normally holding said work support yieldingly upward, and means for locking said work support stationary during the printing and suddenly releasing the work support at the end of the printing, thereby causing the downward holding pressure of the operator on the work to move the work support and work suddenly away from the printing mechanism.

10. In a printing machine of the kind described, printing means movable into and out of printing position with relation to the work, a movable work support for supporting an article of foot-wear in position to be printed when held downward thereon by the operator, spring means normally upholding

said work support, actuating mechanism for accomplishing said movement of the printing means, and holding means normally holding said work support stationary during the printing and actuated by said actuating mechanism at the end of the movement of the printing mechanism into printing position to release said work support, thereby causing the downward holding pressure of the operator on the work to move the work support and work suddenly away from the printing mechanism.

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

JOSEPH W. MOORE.

Witnesses:

CHARLES D. MOORE,

HENRY W. A. JOHNSON.