No. 692,401. Patented Feb. 4, 1902.

E. E. WINKLEY.

SOLE LEVELING MACHINE.

(Application filed Oct. 22, 1900. Renewed May 24, 1901.)

(No Model.) 4 Sheets—Sheet 1.

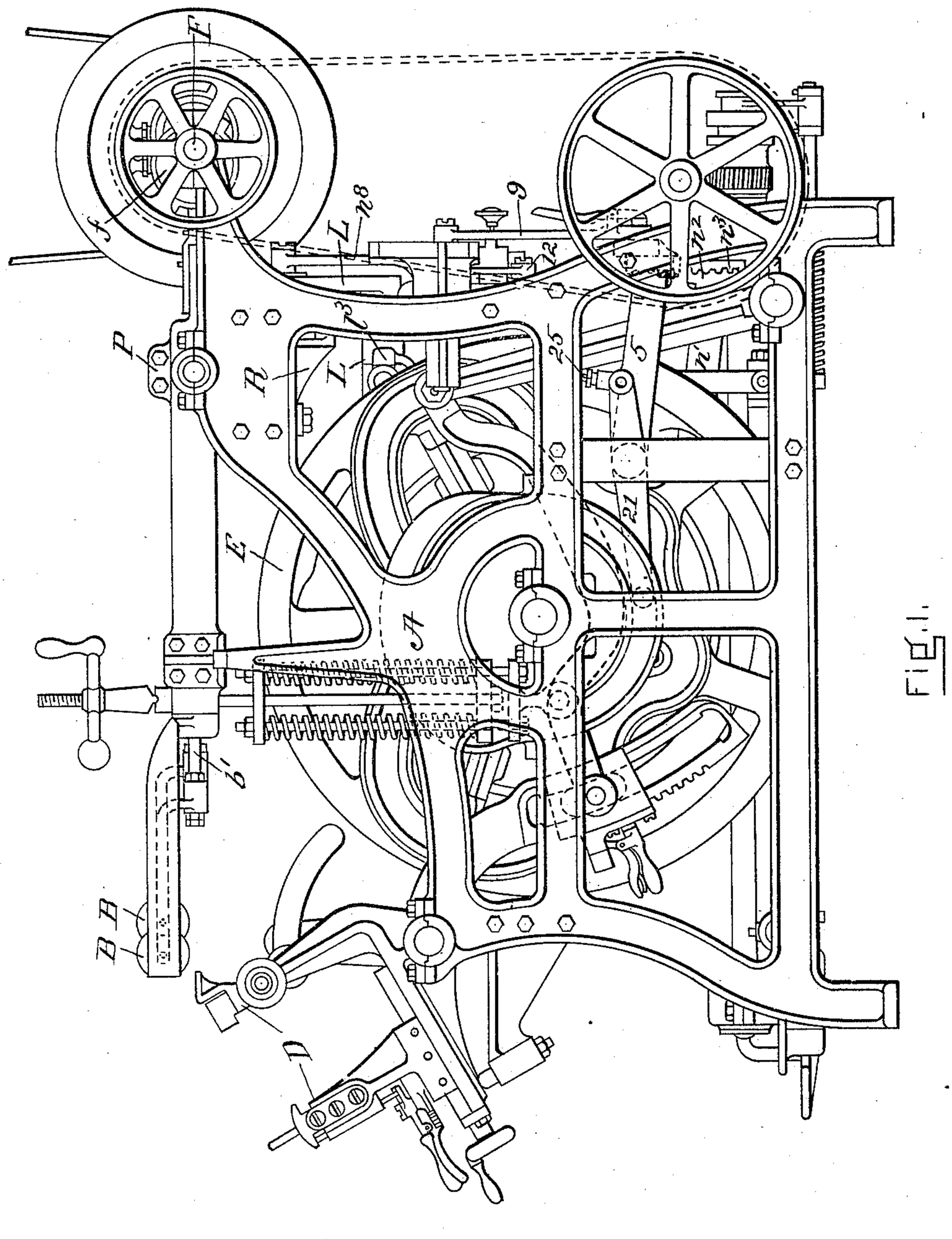

FIG. 1.

WITNESSES

Fred A. Fish

Horace Van Everen

INVENTOR

Erastus E. Winkley

by his Attorney

Benjamin Phillips

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(No Model.) 4 Sheets—Sheet 2.

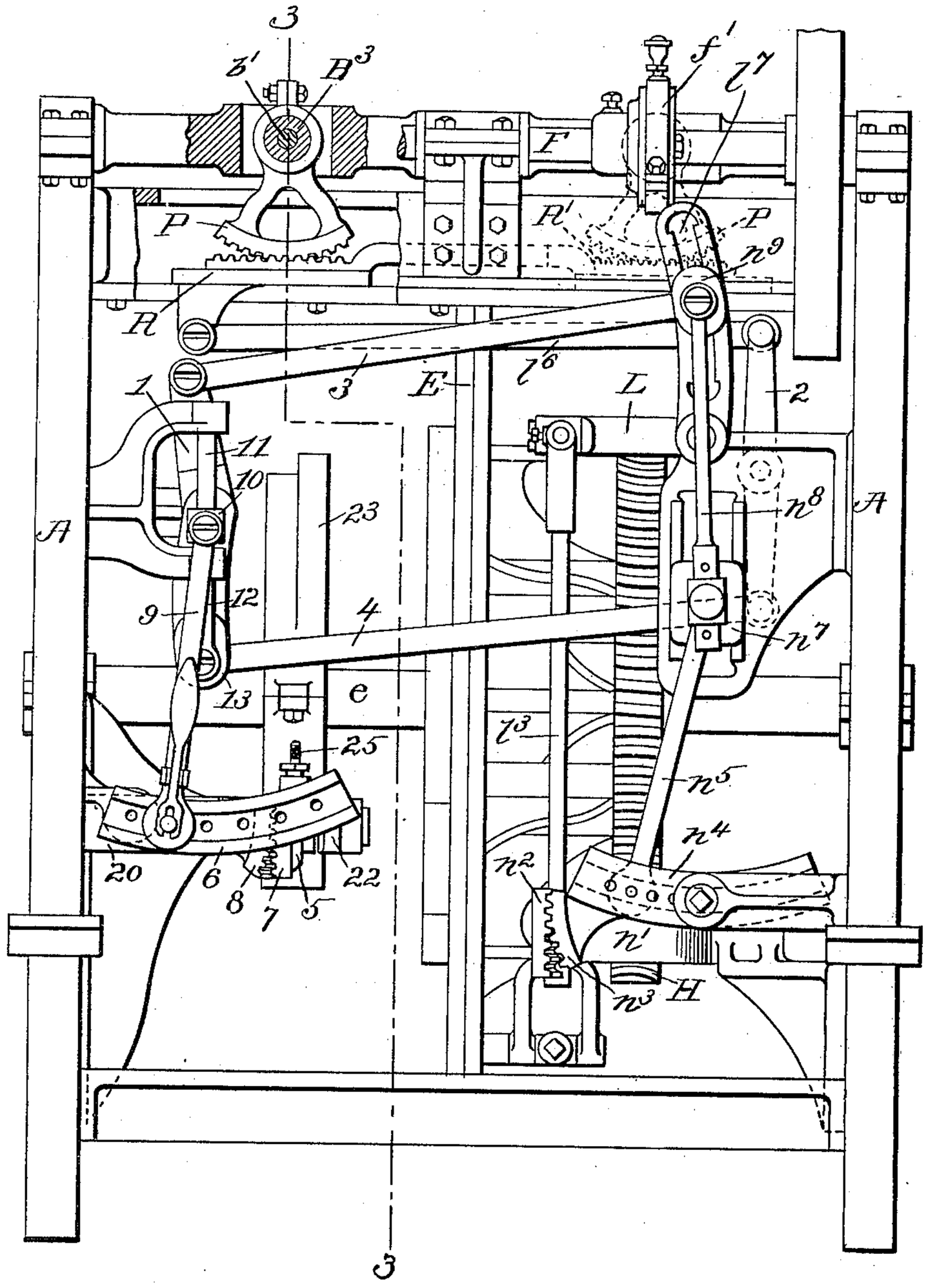

Fig. 2.

WITNESSES.
Fred O. Fish
Horace Van Everen

INVENTOR.
Erastus E. Winkley
by his Attorney
Benjamin Phillips

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E. E. WINKLEY.

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(No Model.) 4 Sheets—Sheet 3.

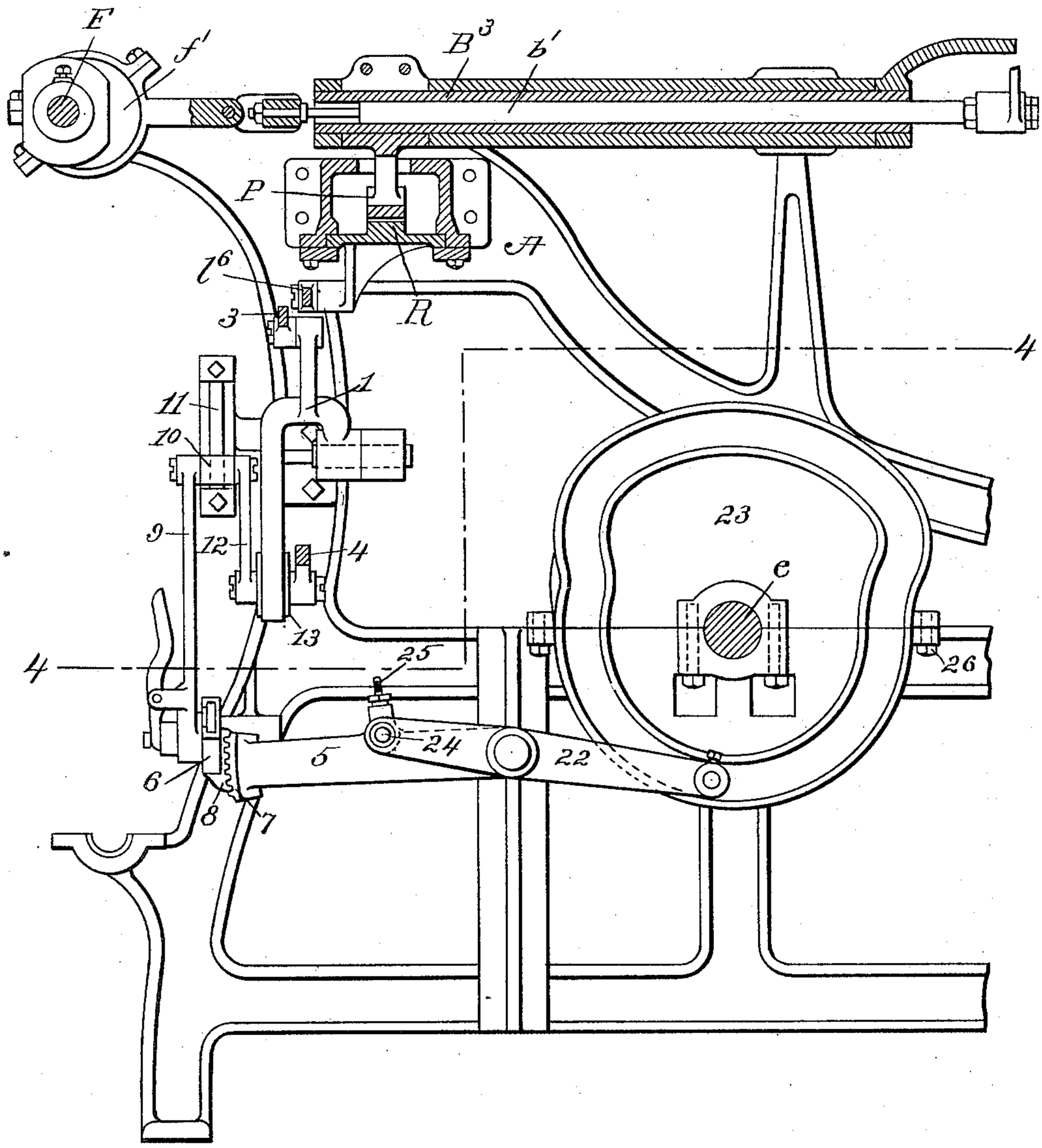

Fig. 3.

WITNESSES
Fred C. Fish
Horace Van Everen

INVENTOR
Erastus E. Winkley
by his Attorney
Benjamin Phillips

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E. E. WINKLEY.

SOLE LEVELING MACHINE.

(Application filed Oct. 22, 1900. Renewed May 24, 1901.)

(No Model.) 4 Sheets—Sheet 4.

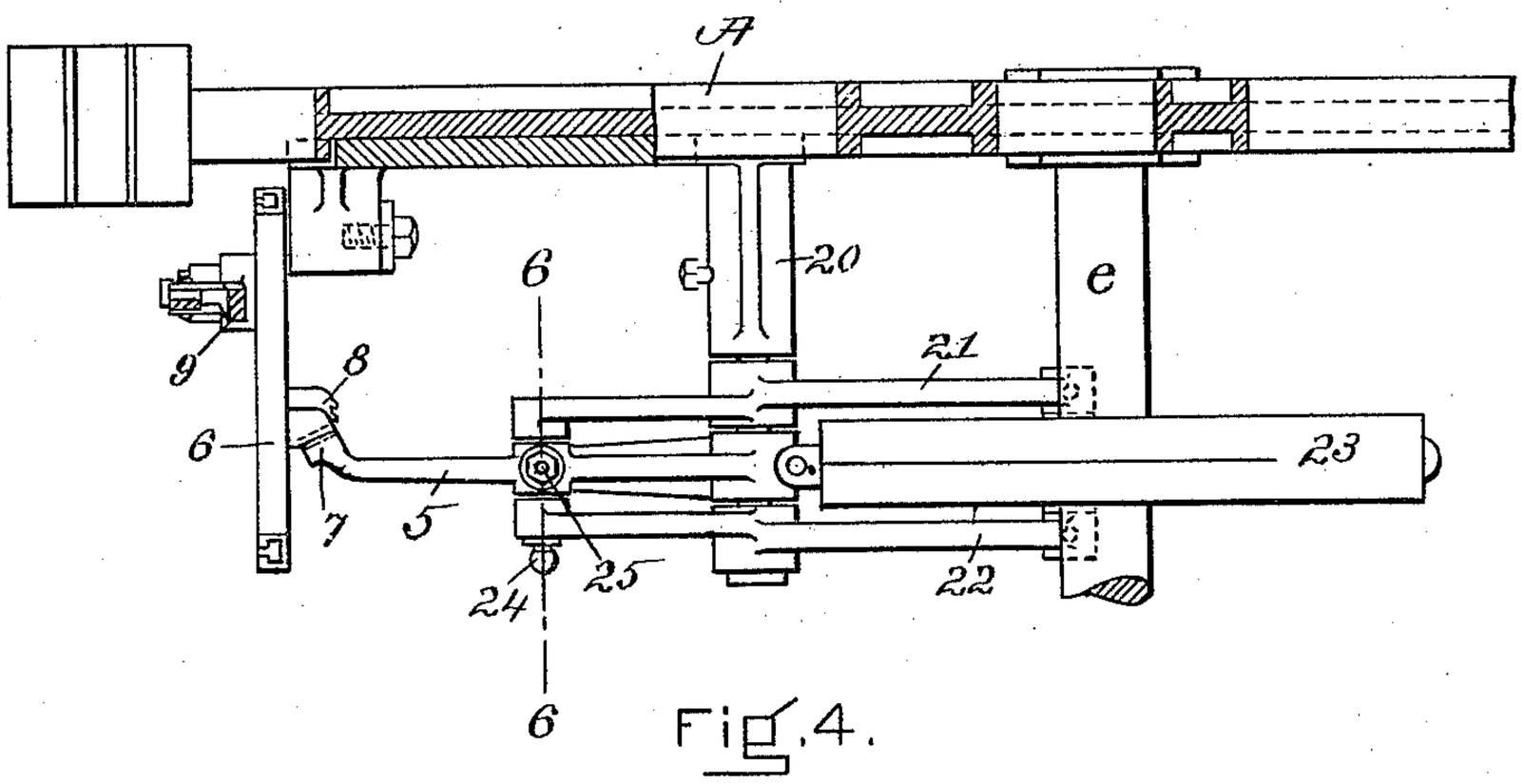

Fig. 4.

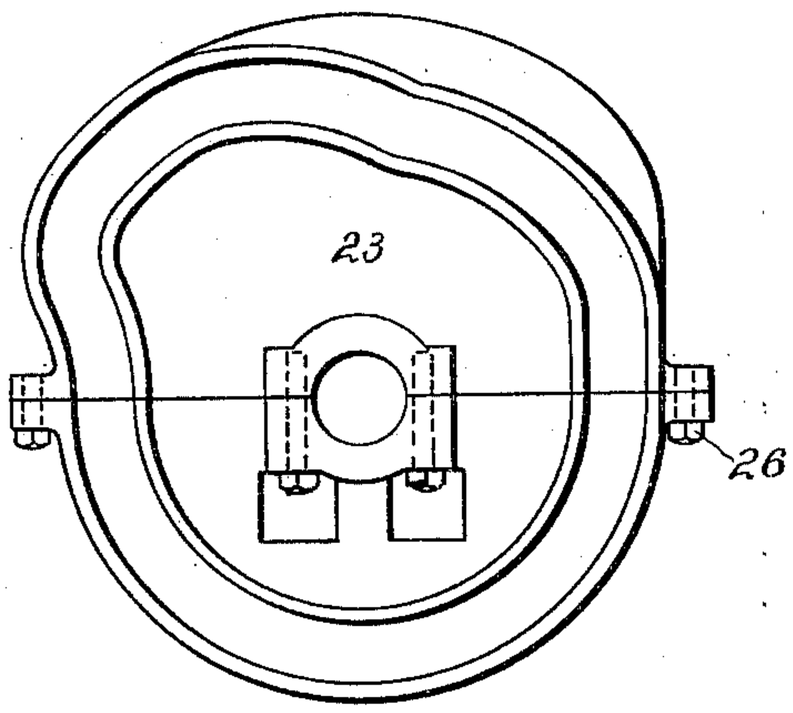

Fig. 5.

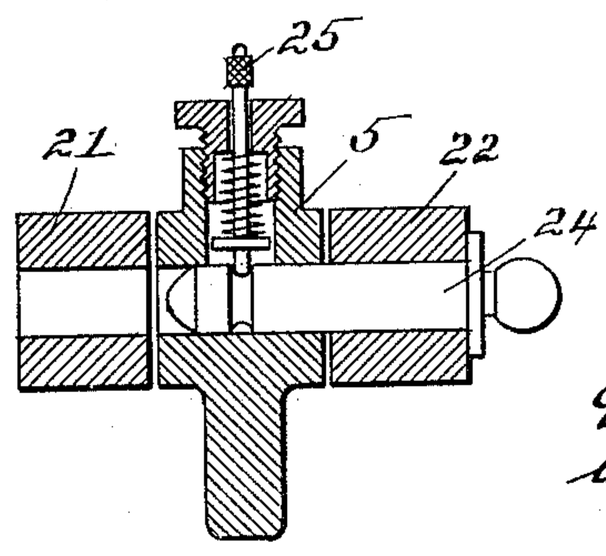

Fig. 6.

WITNESSES
Fred O. Fish.
Horace Van Everen

INVENTOR
Erastus E. Winkley
by his Attorney
Benjamin Phillips

UNITED STATES PATENT OFFICE.

ERASTUS E. WINKLEY, OF LYNN, MASSACHUSETTS, ASSIGNOR TO GOODYEAR SHOE MACHINERY COMPANY, OF PORTLAND, MAINE, A CORPORATION OF MAINE.

SOLE-LEVELING MACHINE.

SPECIFICATION forming part of Letters Patent No. 692,401, dated February 4, 1902.

Application filed October 22, 1900. Renewed May 24, 1901. Serial No. 61,805. (No model.)

To all whom it may concern:

Be it known that I, ERASTUS E. WINKLEY, a citizen of the United States, residing at Lynn, in the county of Essex and State of Massachusetts, have invented certain new and useful Improvements in Sole-Leveling 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.

The present invention relates to sole-leveling machines, and more particularly to that class of such machines, automatic in their action, in which the leveling operation is performed by a vibrating roll applied under pressure to the sole of a shoe supported upon an associated jack.

The present invention is intended as an improvement upon the type of machine disclosed in my prior Letters Patent, No. 541,988, dated July 2, 1895, and No. 555,548, dated March 3, 1896, and more particularly as an improvement upon the machine disclosed in the pending application of George H. Gifford for a sole-leveling machine, Serial No. 22,295, dated July 2, 1900. In the machines of the patents referred to mechanism is provided for relatively actuating the roll and jack to level the sole of a shoe placed upon the jack and an automatically-actuated adjusting device for said mechanism, whereby the action of said mechanism is varied during the sole-leveling operation, and in the machine of the application referred to two automatically-actuated adjusting devices for said mechanism are provided. Owing to the variation in the shape and curvature of the soles of different styles and sizes of shoes, a sole-leveling machine of the type disclosed in said patents and application to be commercially successful must be capable of adjustment to vary the action of the roll at different points on the work. The machines of the patents above referred to and especially the machine of the application above referred to are provided with such means of adjustment adapting the machines for operation upon many different styles of work.

The object of my invention is to increase the range of adjustment of such machines without adding to the complexity of the mechanism for actuating the roll and jack; and with this object in view it consists in providing two or more independent mechanisms for automatically actuating the adjusting device of the roll or jack actuating mechanism and means for connecting said device to either of said mechanisms.

In the drawings accompanying this application I have illustrated my invention as applied to the machine disclosed in the pending application above referred to, the independent mechanisms being associated with the second adjusting device for varying the action of the mechanism for relatively actuating the roll and jack. It is to be understood, however, that my invention, considered in its broadest aspects, contemplates the associating of the independent mechanisms with any adjusting device for varying the action of the roll or jack actuating mechanism and is not limited to its application to the machine disclosed in said prior application nor to the machines disclosed in the patents above referred to, but may be applied to any machine capable of performing the same or similar functions.

In the specific embodiment of my invention hereinafter described I provide two cams for actuating the lever of the second adjusting device disclosed in said pending application, one of said cams acting to move the adjusting device to vary the action of the roll-tipping mechanism while the roll is on the outer edge of the fore part of the shoe and the other acting to move the adjusting device to vary the action of the roll-tipping mechanism while the roll is on the outer edge of the fore part and also while it is on the outer edge of the shank portion of the shoe, as will be more fully set forth in the detail description of the invention.

In the accompanying drawings, Figure 1 is a view in side elevation of the machine disclosed in said pending application, Serial No. 22,295, with my present invention applied thereto. Fig. 2 is a view in end elevation, portions of the driving mechanism being omitted and a portion of the frame being broken away to show the connections to one of the roll-carriers. Fig. 3 is a partial sectional view on the line 3 3, Fig. 2. Fig. 4 is a sectional plan view of the mechanism shown in Fig. 3

on the line 4 4 of said figure. Fig. 5 is a view in side elevation of one of the operating-cams; and Fig. 6 is a detail sectional view on the line 6 6 of Fig. 4, showing a locking device, to be hereinafter described.

Referring to the drawings in which like characters indicate like parts, A indicates the frame of the machine; B B, the leveling-rolls; D, one of the supporting-jacks; *e*, the cam-shaft, and E the cam-disk provided with cam-grooves for actuating the mechanism for oscillating the jacks and the mechanism for tipping the roll-carriers, the parts being the same in construction and mode of operation as those designated by similar reference characters in Patent No. 555,548 and in the application above referred to.

The means for supporting the roll-carriers, comprising the sleeve B^3, the segmental gears P P, the racks R R′ for actuating the roll-carriers to vary the inclination of the rolls B B, and the mechanism for reciprocating the rolls comprising the shaft F, eccentric f', and connections to the rods b', to which the roll-carrier yokes are attached, are also the same as in the patent and application referred to.

The mechanism for reciprocating the racks R R′ comprises the bell-crank L, with its actuating mechanism, including the rod l^3. The upper arm of the bell-crank is connected to the rack R by means of levers 1 and 2 and connecting-links 3, 4, and l^6, the link 3 connecting the upper arm of the bell-crank to the upper end of the lever 1, the link 4 connecting the lower end of the lever 1 to the lower end of the lever 2 and the link l^6 connecting the upper end of the lever 2 to the rack R. The movements of the lever L are thus transmitted to the rack R through the levers 1 and 2, and the extent of the movements imparted to the rack depends upon the relative length of the various lever-arms and the distance from the pivots of the levers of the link connections. For varying the action of this mechanism on the roll-carriers, two adjusting devices are provided, one being arranged to change the point of connection between the link 3 and the upper arm of the bell-crank L and the other to change the point of connection between the link 4 and the lower end of the lever 1. The first of said adjusting devices consists of the block n^9, to which the end of the link 3 is pivoted, mounted to slide in a slot l^7 in the upper arm of the bell-crank lever L. The block n^9 is connected, by means of rod n^8, cross-head n^7, and rod n^5, to the pivoted lever n^4, connected by segmental gears n^3 n^2 to the lever n', actuated by a cam-groove in the large worm-gear H, secured to the shaft *e*. The second of said adjusting devices consists of the block 13, to which one end of the link 4 is attached, mounted to slide in a slot in the lower end of the lever 1 and connected by a link 12 to the block 10, mounted to slide on a guide-rod 11 and connected by means of a rod 9 to a pivoted lever 6, the lever 6 being connected to a lever 5 by means of segmental gears 7 and 8. The levers n^4 and 6 are provided with segmental slots, in which the lower ends of the rods n^5 and 9 are adjustably secured, the adjustable connection between the rods and levers being the same as the adjustable connection between the rod n^5 and the lever n^4 of Patent No. 555,548, above referred to, and clearly illustrated in Fig. 5 of said patent.

The mechanism so far described is the same in all particulars as that disclosed in the pending application above referred to.

The mechanism which comprises the embodiment of my present invention will now be described.

The lever 5 is pivotally mounted upon a stud 20, secured to the frame of the machine, and for actuating this lever I provide two mechanisms, either of which may be connected to the lever.

Referring to Fig. 4, 21 and 22 designate two levers pivotally mounted on the stud 20 at each side of the lever 5, one end of each lever engaging a cam-groove in opposite sides of a disk 23, secured to the shaft *e*, the other ends being adapted to be secured to the lever 5.

For securing the ends of the levers 21 and 22 to the lever 5, a pin 24 is provided, said pin passing through a hole in the end of one of the levers 21 and 22 and entering the hole in the lever 5. A spring-pressed pin 25, mounted in the lever 5, and arranged to engage a groove in the inner end of the pin 24, serves to lock the pin in position. By means of the pin 24 either lever 21 or 22 may be connected to the lever 5. For convenience of construction the disk 23 is made in two parts secured together by screw-bolts 26, as shown in Fig. 5. The cam-grooves in the disk 23 are of different shapes, as will be seen in Figs. 3 and 5, which figures show opposite sides of the disk, and consequently the adjusting device comprising the block 13 will be differently actuated, according as one or the other of the levers 21 and 22 is connected to the lever 5.

The operation of the mechanism above described is as follows: As the shaft *e* rotates the bell-crank lever L is actuated from the cam-groove in the disk E and intermediate connections, as in the patent hereinbefore referred to, and the movement of the lever L is transmitted to the roll-carriers through the levers 1 and 2, connecting-links 3, 4, and l^6, racks R R′, and segmental gears P P. The movements of the bell-crank L are determined by the shape of the cam-groove in the disk E, and if the rods n^5 and 9 are connected to the levers n^4 and 6 in a line with the pivots of the levers the blocks n^9 and 13 will not be moved in the slots in the lever 1 and bell-crank L during the revolution of the shaft *e*, and the movements of the roll-carriers will be determined in direction and extent by the movements of the bell-crank. The block n^9 can be adjusted in the slot in the upper arm of the bell-crank by means of the adjustable connection between the lower end of the rod n^8 and

the cross-head n^7, and if the position of the block is changed by means of such adjustment it will be evident that a corresponding change will be produced in all the movements imparted to the roll-carrier by the bell-crank. If now the end of the rod n^5 be adjusted in the slot in the lever n^4 to one side of the pivot of the lever, the block n^9 will be moved in the slot in the bell-crank during the revolution of the shaft *e* and the effect of the initial adjustment of the block n^9 modified for certain movements of the bell-crank. It will thus be seen that the block n^9 can be adjusted manually to change the inclination of the roll at certain points in the work without producing a corresponding change at other points. The extent of the modification produced in the movements of the rolls by the mechanism for moving the block n^9 depends on the adjustment of the connection between the rod n^5 and lever n^4. A change in this adjustment produces a corresponding change in all the movements of the rolls, due to the modifying effect produced by moving the block n^9 in the slot in the bell-crank during the operation of the machine. If now the end of the rod 9 be adjusted in the slot in the lever 6 to one side of the pivot of the lever, the block 13 will be moved in the slot in the lever 1 during the revolution of the shaft *e*, and thereby the effect of either the initial adjustment of the block n^9 or the adjustment of the rod n^5 in the slot in the lever n^4 modified or the effect of both of these adjustments modified, depending on the times during the revolution of the shaft *e* at which the block 13 is actuated. The action of the mechanism for tipping the roll-carriers is thus varied by either of the mechanisms for actuating the adjusting devices, and the action of one of the adjusting devices is varied by the other. By giving the cams the proper shape the inclination of the roll at one part of the work may be due to the action of the bell-crank L alone, at another part to the combined action of the bell-crank and adjustable block n^9, at another part to the combined action of the bell-crank and adjustable block 13, and at still another part to the combined action of the bell-crank and both adjustable blocks. In the machine disclosed in said pending application the cams are so shaped that the roll is given the necessary movements to level the sole of a shoe having a rounded shank and a flat fore part provided with a wide outside or extension edge, the inclination of the roll while on the shank portion being due to the action of the bell-crank, while on the inner edge of the fore part to the combined action of the bell-crank and one of the adjusting devices, and while on the outer edge of the fore part to the combined action of the bell-crank and both adjusting devices.

In many shoes both the fore part and the shank are provided with an extension edge, and to prevent the rolling down of this edge at the shank without unduly complicating the machine it was found necessary to alter the shape of some of the cams and preferably of the cam for actuating the block 13. By providing two cams forming a permanent part of the machine and means for connecting either cam to the block 13, the machine is adapted for operation upon both styles of work above referred to without changing any of the cams. When the machine is to be adjusted for operation upon one style of shoe, the levers 5 and 22 are secured together by the pin 24, and when it is to be adjusted for operation upon the other style the pin 24 is withdrawn and inserted in the holes in the levers 5 and 21 to secure these levers together.

Having thus described my invention, I claim as new and desire to secure by Letters Patent of the United States—

1. A sole-leveling machine, having, in combination, a leveling-roll, a shoe-supporting jack, mechanism for relatively actuating the roll and jack to level the sole of a shoe placed upon the jack, an adjusting device connected with said mechanism, two independent mechanisms for automatically actuating said device and means for connecting said device to either of said mechanisms, substantially as described.

2. A sole-leveling machine, having, in combination, a leveling-roll, and a shoe-supporting jack, mechanism for changing the relative lateral inclination of the roll and jack, an adjusting device connected with said mechanism, a plurality of independent mechanisms for automatically actuating said device and means for connecting said device to any one of said mechanisms, substantially as described.

3. A sole-leveling machine, having, in combination, a leveling-roll, a shoe-supporting jack, mechanism for changing the relative lateral inclination of the roll and jack, two adjusting devices connected with said mechanism, one of said devices acting to vary the operation of the other and the other acting to vary the operation of said mechanism, a plurality of independent mechanisms for automatically actuating the former of said devices, and means for connecting it to any one of said mechanisms, substantially as described.

4. A sole-leveling machine, having, in combination, a leveling-roll, a shoe-supporting jack, mechanism for relatively actuating the roll and jack to level the sole of a shoe placed upon the jack, an adjusting device connected with said mechanism, two or more cams for independently actuating the adjusting device and means for connecting said device to any one of said cams, substantially as described.

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

ERASTUS E. WINKLEY.

Witnesses:
ALFRED H. HILDRETH,
FRED O. FISH.