(No Model.)

E. E. WINKLEY & B. PHILLIPS.

SOLE LEVELING MACHINE.

No. 558,888. Patented Apr. 21, 1896.

Fig. 2.

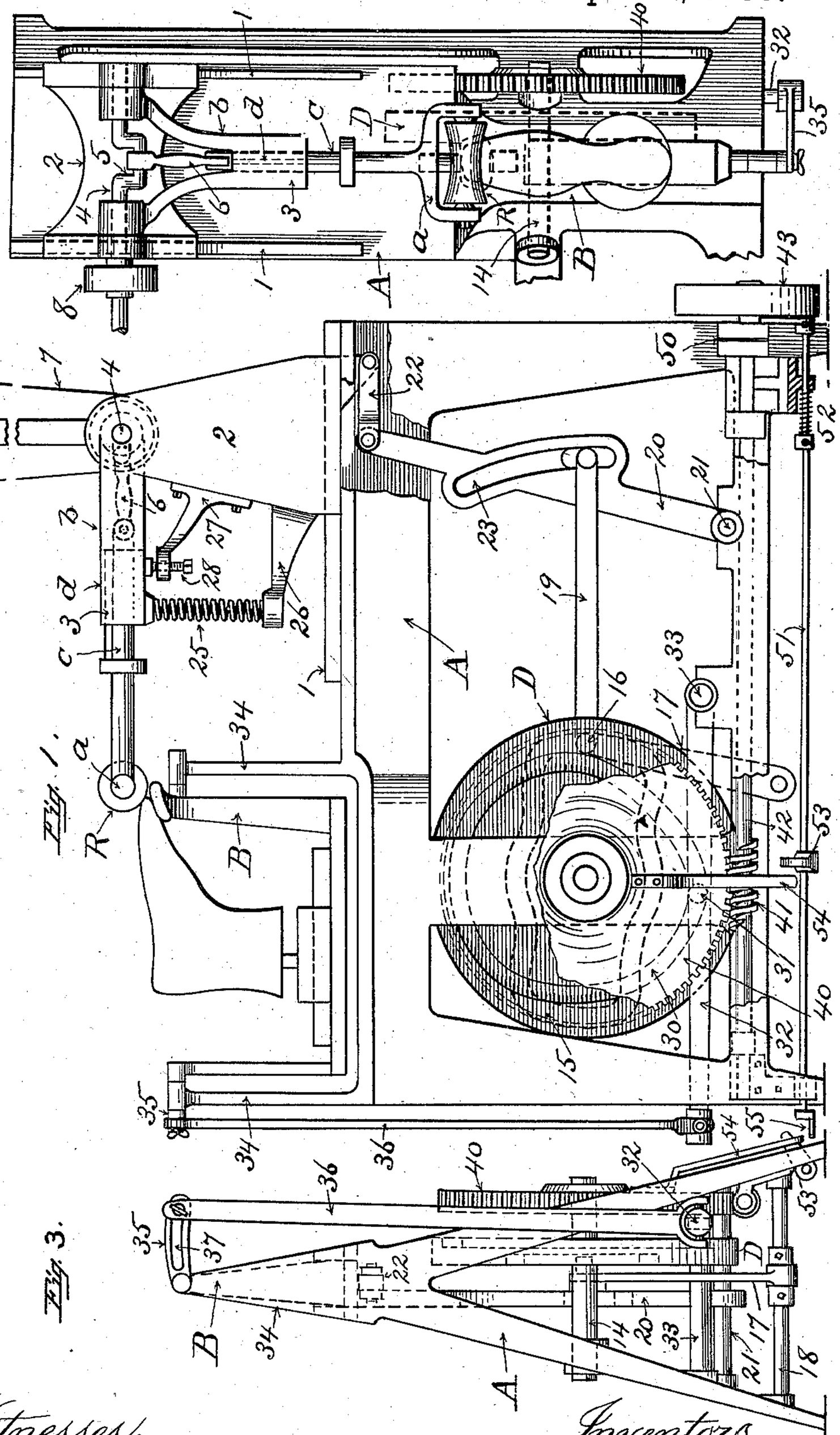

Fig. 1.

Fig. 3.

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UNITED STATES PATENT OFFICE.

ERASTUS E. WINKLEY AND BENJAMIN PHILLIPS, OF LYNN, MASSACHUSETTS, ASSIGNORS TO THE GOODYEAR SHOE MACHINERY COMPANY, OF BOSTON, MASSACHUSETTS.

SOLE-LEVELING MACHINE.

SPECIFICATION forming part of Letters Patent No. 558,888, dated April 21, 1896.

Application filed November 26, 1894. Serial No. 529,925. (No model.)

To all whom it may concern:

Be it known that we, ERASTUS E. WINKLEY and BENJAMIN PHILLIPS, citizens of the United States, and residents of Lynn, in the county of Essex and Commonwealth of Massachusetts, have invented a new and useful Improvement in Sole-Leveling Machines, of which the following, taken in connection with the accompanying drawings, is a specification.

Our invention relates to improvements in that class of leveling-machines by which the operation of leveling is performed by a leveling-roll applied under pressure to the sole of the shoe; and it consists of a vibrating leveling-roll, a shoe-supporting jack, and connected mechanisms operating automatically to oscillate the vibrating roll over the jack and change the relative lateral inclination of the roll and jack.

Our invention further consists of the devices and combination of devices hereinafter set forth and claimed.

Our present application embraces a construction indicated, but not described in detail or specifically claimed, in Letters Patent of the United States No. 540,222, issued to us May 28, 1895, for the same subject of invention.

The object of our invention is to produce a machine of the above class whereby the operation of leveling a shoe may be performed without manual interference of the operator after the shoe is in position to be acted upon by the roll.

Our invention is illustrated by the drawings herewith submitted, in which—

Figure 1 is a side view of a machine embodying our invention. Fig. 2 is a plan view. Fig. 3 is an end view.

Similar letters and figures of reference refer to similar parts throughout the several views.

Refering to the drawings, R represents the leveling-roll, shown as concave, but the form of which may be varied. As shown in the drawings, the roll R has a motion of vibration and also a traversing motion, which carries the vibrating roll over the jack longitudinally to bring the several parts of the sole upon which the roll R operates in contact therewith.

B represents the shoe-supporting jack, which may be of any convenient form, such form being no part of our present invention. It may, however, conveniently consist of a heel-rest provided with the usual spindle and a toe-support with the usual form of toe-rest. The heel-rest may be conveniently arranged to move along the jack to or from the toe-support to render the jack adjustable for shoes of varying lengths.

As shown in the drawings, the jack B has a single motion—to wit, a laterally rocking or oscillating motion; but we consider that our present invention, in view of other applications heretofore filed by us and now pending, embraces a reverse construction in which the roll R is rocked laterally, as shown in said applications, in which case it is to be noted that the jack B is stationary, having no motion either longitudinal or lateral.

To vibrate the roll R and oscillate the same (while vibrating) longitudinally over the jack, we find it convenient to provide the following mechanism.

Mounted upon suitable ways 1 1 on the frame A, which is a frame suitable to support the working parts of the machine, is a movable roll-carrier bed 2, free to reciprocate along the ways 1 1 toward and away from the jack B. In suitable bearings in the roll-carrier bed 2 is mounted a roll-carrier 3, free to tip in said bearings. The roll-carrier 3 may conveniently consist of the fork *a*, in which the roll R is mounted in suitable bearings, and the rear portion *b*, which is mounted in the bed 2.

The fork *a* is secured to a rod *c*, which extends through a sleeve *d* or other suitable bearings on the rear portion *b*, by which it is guided and held in position and in which it is free to reciprocate longitudinally. To prevent rotation of rod *c* in the bearing *d* the rod *c* may be polygonal in section or provided with a feather or series of feathers engaging with feather-ways in the sleeve *d*.

Mounted and free to rotate in suitable bearings in the roll-carrier bed 2 is a shaft 4,

on which is an eccentric or crank 5, which is connected by a suitable pivoted connecting-rod 6 with the rod *c*. The shaft 4 may be conveniently driven by a belt 7 on the pulley 8, and the arrangement is such that the rotation of the shaft reciprocates the rod *c* and vibrates the fork *a* and the roll R mounted therein. Provision is made for the tipping motion of the roll-carrier 3 by mounting the shaft 4 on the roll-carrier bed 2 with its axis of rotation coincident with the tipping-axis of the roll-carrier, and provision is made for the reciprocation of the roll-carrier bed 2, as hereinafter described, by connecting the belt 7 with a swinging pulley 9, which allows such reciprocation without undue change in the tension of belt 7. As shown in the drawings, the pulley 9 is supported laterally by an arm 10, mounted on the power-shaft 11 and free to turn thereon, and vertically by an arm 12, mounted and free to turn on the shaft 4. The arms 10 and 12 are pivotally connected by the trunnion 13, which supports the pulley 9. The same result may, however, be accomplished by several other well-known devices.

The roll-carrier bed 2 is reciprocated along the ways 1 1 by the following mechanism: Mounted and free to rotate in suitable bearings in the frame A is a shaft 14, which carries rigidly secured thereto and rotating therewith a wheel D. In the wheel D is formed the cam-path 15, in which works a cam-roll 16, carried by a swinging lever 17, which is conveniently mounted upon a shaft 18, having suitable bearings in frame A. The swinging lever 17 is connected by the connecting-rod 19 with the swinging lever 20, conveniently mounted upon the shaft 21, having suitable bearings in frame A. The swinging lever 20 is connected by the link 22 with the roll-carrier bed 2, the arrangement being such that the rotation of the wheel D effects an oscillation of the lever 17, and, by means of the connecting-rod 19, of the lever 20, which, by the link 22, imparts a reciprocating motion to the roll-carrier bed 2 along the ways 1 1. The lever 20 is provided with a circular adjustment-way 23, along which the connecting-rod 19 may be moved to vary the length of the oscillation of lever 20, as above described, and consequently the distance over which the roll-carrier bed is reciprocated. Pressure is secured upon the roll-carrier 3 by a suitably-placed spring or series of springs 25, preferably secured to the roll-carrier, and a bracket 26 on the roll-carrier bed 2. The downward action of the spring 25 is limited by a bracket 27, also conveniently secured to bed 2 and bearing against roll-carrier 3. As shown in the drawings, the roll-carrier 3 rests upon a threaded bolt 28, provided with suitable threaded bearings in the bracket 27, which renders the limit of the downward motion of the roll-carrier 3 adjustable.

To secure the laterally rocking motion of the jack hereinbefore suggested we have provided the following as a simple and convenient device: On the opposite face of wheel D is formed a second cam-path 30, in which works the cam-roll 31, carried by a swinging lever 32, suitably mounted in the frame A, (conveniently upon a shaft 33, having suitable bearings in frame A.) The jack B is provided with suitable trunnions having bearings in the uprights or standards 34 34 on the frame A, in which they are free to rock, the arrangement being such that the jack B is free to rock laterally thereon and is supported thereby in the frame A.

To one of the trunnions supporting jack B is rigidly secured an arm or lever 35, which is connected by the connecting-rod 36 with the swinging lever 32, the arrangement being such that the rotation of the wheel D oscillates the lever 32, and by means of the connecting-rod 36 and lever 35 laterally rocks the jack B. The arm 35 is provided with a circular adjustment-way 37, along which rod 36 may be moved to adjust the lengths of the lateral rock or oscillations of the jack. The cam-paths 15 and 30 are so formed and timed with reference to each other that the lateral rocking motion of the jack and the traversing or oscillating movement of the roll coöperate with each other to present the several parts of the sole (requiring to be leveled) to the vibrating roll in the proper position to receive its operation.

The wheel D may be conveniently rotated by means of a worm-gear 40, keyed or otherwise rigidly secured to the shaft 14. The gear 40 is driven by a worm 41, carried by the shaft 42, mounted and free to rotate in suitable bearings in the frame A.

The shaft 42 may be driven by a belt on the pulley 43.

The form and arrangement of the cam-paths 15 and 30 are such that the operation of leveling a shoe is performed during a single revolution of the wheel D. This arrangement is not essential and may be varied to require more or less than a single revolution.

A stop mechanism is provided and arranged to stop the revolution of the wheel D when the operation of leveling is completed. As several common forms of mechanism of this nature can be readily adapted to secure the above-suggested result, we do not consider a detail description thereof necessary herein. The form shown in the drawings consists of a clutch 50 of any suitable form, which when in engagement rotates shaft 42 with pulley 43, but when open allows the pulley 43 to rotate independently of shaft 42. In frame A is mounted a rod 51, free to slide and also to rotate in suitable bearings. The rod 51 is connected with clutch 50, and a suitably-placed spring 52 acts to push the rod forward (toward front of machine) and keep the clutch in engagement. The rod 51 carries a shoulder 53 in the path of a dog 54 on the gear 40, and

when the gear 40 has made a revolution the dog 54 strikes the shoulder 53 and, moving back rod 51, opens clutch 50.

To start the machine the operator presses down on the treadle 55 carried by rod 51, and thereby rotates the rod 51, turning the shoulder 53 out of the path of dog 54, when the clutch 50 is closed by spring 52. When released, the treadle 55 is returned to its original position and shoulder 53 again brought in path of dog 54 by a suitably-placed spring (not shown) attached to the treadle.

To use our improved leveler the operator places a shoe upon the jack, adjusts the several mechanisms according to the size and shape desired to be given to the bottom of the sole, presses down upon the treadle to start the machine, and (power being applied) the operation of leveling is performed and the machine stops for the removal of finished work without further interference on the part of the operator.

We do not consider our invention limited to the form and arrangement of mechanisms herein shown and described; but

We claim, broadly, and desire to secure by Letters Patent—

1. In a sole-leveling machine the combination of a shoe-supporting jack, a vibrating leveling-roll capable of a longitudinally-traversing movement with reference to the jack, and connected mechanisms operating automatically to change the relative lateral inclination of the roll and jack and impart to the roll a longitudinally-traversing movement with reference to the jack substantially as described.

2. In a sole-leveling machine the combination of a shoe-supporting jack capable of being rocked laterally, a vibrating leveling-roll capable of a longitudinally-traversing movement with reference to the jack, and connected mechanisms operating automatically to laterally rock the jack and impart to the roll a longitudinally-traversing movement with reference to the jack, substantially as described.

3. In a sole-leveling machine the combination of a longitudinally-reciprocating roll-carrier bed, a roll-carrier on said bed, a vibrating leveling-roll mounted in the roll-carrier, a shoe-supporting jack, and connected mechanisms operating automatically to reciprocate the roll-carrier bed and to change the relative lateral inclination of the roll and jack, substantially as described.

4. In a sole-leveling machine the combination of a longitudinally-reciprocating roll-carrier bed, a roll-carrier on said bed, a vibrating leveling-roll mounted in the roll-carrier, a shoe-supporting jack capable of a laterally-rocking movement, and connected mechanisms operating automatically to reciprocate the roll-carrier bed and rock the jack, substantially as described.

Witness our hands, in the presence of two attesting witnesses, this 24th day of November, 1894.

ERASTUS E. WINKLEY.
BENJAMIN PHILLIPS.

Witnesses:
GEO. H. GIFFORD,
A. E. WHYTE.