

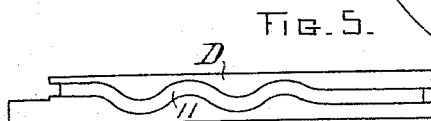
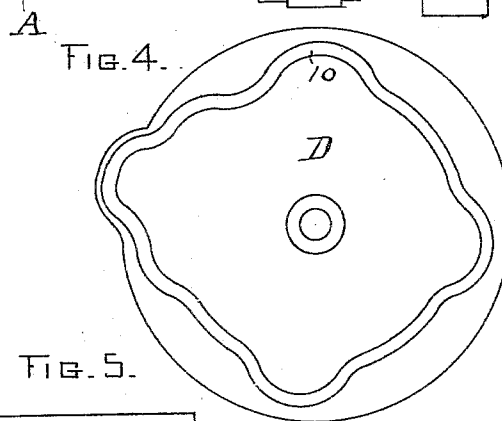
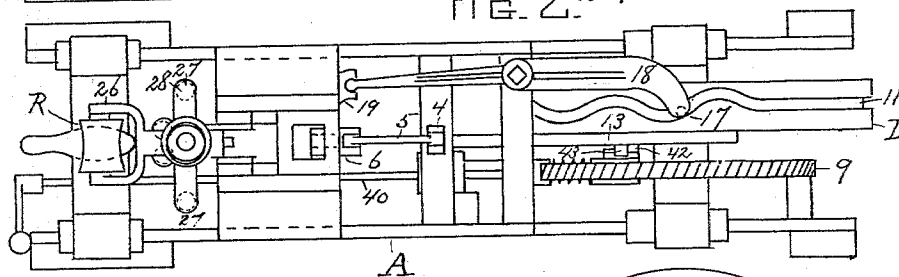
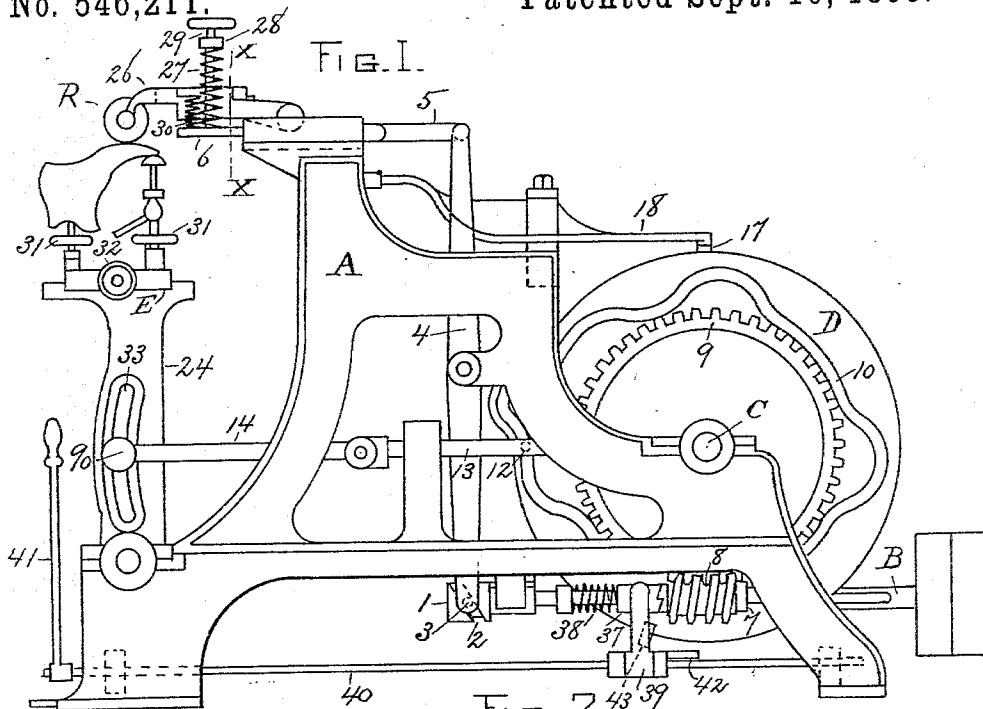
(No Model.)

3 Sheets—Sheet 1.

E. E. WINKLEY & B. PHILLIPS.
SOLE LEVELING MACHINE.

No. 546,211.

Patented Sept. 10, 1895.



WITNESSES.

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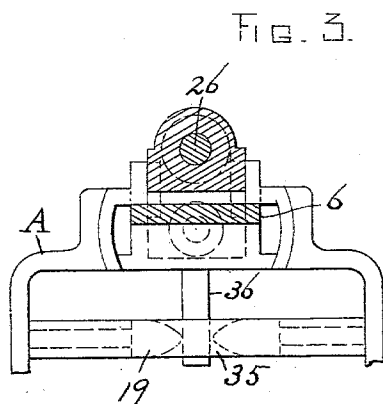
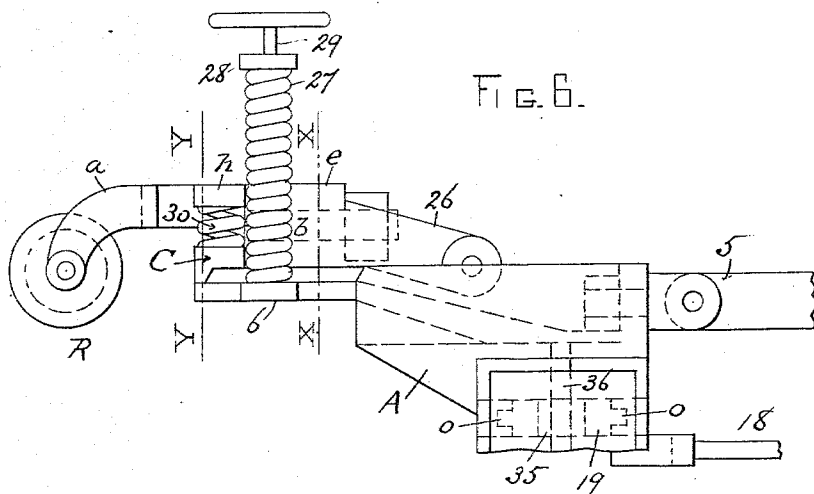
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3 Sheets—Sheet 2.

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(No Model.)

3 Sheets—Sheet 3.

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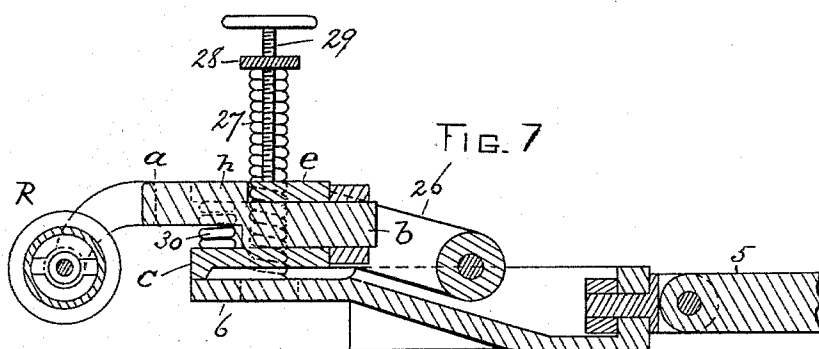
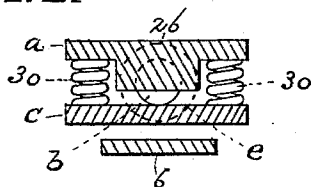


FIG. 8.



WITNESSES..

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UNITED STATES PATENT OFFICE.

ERASTUS E. WINKLEY AND BENJAMIN PHILLIPS, OF LYNN, ASSIGNORS TO
ELMER P. HOWE, OF BOSTON, MASSACHUSETTS.

SOLE-LEVELING MACHINE.

SPECIFICATION forming part of Letters Patent No. 546,211, dated September 10, 1895.

Original application filed March 8, 1893, Serial No. 465,176. Divided and this application filed April 16, 1894. Serial No. 507,760½. (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
5 county of Essex and Commonwealth of Massachusetts, have invented a new and useful Improvement in Sole-Leveling Machines, of which the following is a specification.

Our invention relates to improvements in
10 that class of sole-leveling machines by which the operation of leveling is performed by a vibrating leveling-roll applied under pressure to the sole of a shoe; and it consists of the method of mounting the roll and changing its
15 lateral inclination and of the devices and combination of devices hereinafter set forth and claimed, this application being a division of our pending application, filed March 8, 1893, Serial No. 465,176, for improvements
20 in leveling-machines, and embracing one of the alternate constructions shown and described but not specifically claimed therein.

The object of our invention is to increase the efficiency and capacity of this class of
25 leveling-machines.

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
30 of same. Fig. 3 is a sectional view on line X X, Fig. 1. Figs. 4 and 5 are respectively a face and reverse plan view of wheel forming part of said machine, showing face-cam and a portion of periphery-cam on same. Fig. 6
35 is a side view of roll-carrier and roll-carrier bed. Fig. 7 is a longitudinal section through same. Fig. 8 is a section on line Y Y, Fig. 6.

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

40 Referring to the drawings, R represents the leveling-roll, shown as concave, but the form of which may be varied. To the leveling-roll R we impart vibrating motion by the following mechanism: Mounted in frame A,
45 which is a frame suitable to support the working parts of the machine, is a shaft B, to which power may be applied by any convenient device. The shaft B carries a roll 1, in which is cut the cam-path 2. In the cam-path
50 2 runs the cam-roll 3, carried by the pivoted

lever 4, at or near its lower end, the lever 4 being intermediately pivoted to a suitable support on the frame A and pivoted at or near its upper end to a connecting-rod 5, which is pivotally connected with the roll-
55 carrier bed 6. The roll-carrier bed 6 is free to slide in suitable ways in the frame A, and upon it is mounted the roll-carrier 26, the outer end of which is forked and provided with bearings, in which is mounted the level-
60 ing-roll R.

Our method of mounting the roll R consists in providing the same with bearings which are vertically adjustable and laterally rocking and controlled in both of such move-
65 ments by suitably-placed springs.

As above stated, the bearings for roll R are placed at the outer end of the roll-carrier 26, and to render the same vertically adjustable the roll-carrier 26 is pivoted at or near its in-
70 ner end to the roll-carrier bed 6, leaving the outer end carrying the bearing of roll R free to be raised or lowered. The outer end of roll-carrier 26 extends beyond the carrier-bed 6 and is curved downward to bring roll R into
75 convenient position to operate, as hereinafter described. The roll-carrier 26 normally rests on the roll-carrier bed 6, and the upward movement of its outer end, carrying roll R, is controlled by the springs 27 27, mounted on the
80 bed 6, near its outer end, and connected by a cross-head 28, through which runs a threaded bolt 29, which bears against the roll-carrier 26, so that the same is raised against the tensions of springs 27 27, which may be regulated
85 by means of the bolt 29, which is provided with a suitable hand-wheel for the purpose.

The bearings of roll R are rendered laterally rocking by the following device: The roll-carrier 26 consists of two parts a and c, of
90 which the part a carries the roll R and the part c is pivoted to the bed 6. To the part a is secured a cylindrical tongue b, which extends through a sleeve e on the part c, in which it is free to rotate, but is prevented
95 from sliding by suitable stops. By such arrangement the part a is allowed a rocking movement, which is controlled by the springs 30 30, bearing upon the part c, and suitable
lugs h h, secured to the part a.

By the above-described method of mounting the roll we obtain and regulate pressure and render the roll capable of adjusting itself to the contour of either side or the middle of the bottom of the last, leaving for the mechanism hereinafter described the function of transferring it from one of such positions to the other.

The last-supporting jack is shown at E, but forms no essential feature of our invention. In the form shown in the drawings, Fig. 1, it is provided with standards for supporting the last, adjustable vertically by means of set-screws 31 31, and horizontal for different sizes of last by set-screw 32.

We find it convenient to oscillate the jack by the following-described mechanism; but we do not wish to limit our invention to such construction, and we would further say that by the term "oscillating" we wish to be understood as including a "to-and-fro" motion generally, whether along a rectilinear or curvilinear path.

The shaft B carries a sleeve 7, on which is cut a worm 8. The sleeve 7 is free to rotate about the shaft B, but is prevented by suitable stops from sliding on the same. By a clutch mechanism, hereinafter described, the sleeve 7 may be made to rotate with the shaft B. In the frame A, above and transversely to the shaft B, is mounted a shaft C, which carries keyed or otherwise rigidly secured thereto a worm-gear 9, which engages with the worm 8 on the shaft B. Upon the shaft C, also rigidly secured thereto, is a wheel D, having on its face the path-cam 10, the form and function of which will be hereinafter more fully set forth. In the path-cam 10 runs the cam-roll 12, carried by the rod 13, the rear end of which is forked and embraces the shaft C and the front end pivoted to the connecting-rod 14, which is also pivotally connected with the arm 24, its connection therewith being rendered vertically adjustable by the circular slot 33. At or near its front end the rod 13 is supported in bearings in standard 15. The arm 24 supports the jack E, which is suitably mounted thereon. The arm 24 is mounted upon suitable bearings in the frame A, upon which it is free to swing.

To render the roll R automatically laterally rocking further than by the method of mounting already described, we find the following to be a convenient mechanism: Upon the wheel D is the periphery path-cam 11, the particular form and function of which will be hereinafter more fully described, in which runs the cam-roll 17, carried at or near the rear end of the lever 18. The front end of the lever 18 is connected with the cross-head 19, which is mounted in suitable ways *o o* in the frame A, in which it is free to slide, the connection between the cross-head 19 and the lever 18 being arranged to allow play for swinging motion of lever 18. The lever 18 is intermediately pivoted on frame A. The cross-head 19 is provided with a slot 35, into

which extends the rigid arm 36, secured to and adapted to rock the roll-carrier bed 6. The sides of the slot 35 may be conveniently curved to allow play for the swinging motion of the arm 36.

The sides of the carrier-bed 6 are curved, and the ways *n n* in which it slides are also curved, and its connection *p* with rod 5 is swiveled or otherwise suitably arranged so that the carrier-bed may be vibrated without interfering with its rocking motion.

The clutch mechanism on shaft B is described as follows: A sleeve 37 is splined to shaft B and free to slide thereon. The sleeve 37 is notched to engage with notches on sleeve 7 and normally held in engagement therewith by a spring 38, bearing against a collar on said shaft B. In the sleeve 37 is an annular groove, in which runs a fork on the arm 39, which is free to rotate on rod 40, but prevented from sliding thereon by suitable collars. The rod 40 is free to rotate and slide in suitable bearings in frame A and is provided with an operating-lever 41. Upon the rod 40 is a rigid projection 42. On the wheel D is a dog 43, which upon revolution of wheel D comes in contact with the rigid projection 42, pushes out rod 40, and by arm 39 and its fork running in groove in sleeve 37 disengages sleeve 37 and 7. By rotating rod 40 projection 42 may be turned out of the way of the dog 43 and sleeve 37 thrown into engagement with sleeve 7 by spring 38. The rod 40 may be also drawn out at any time by lever 41 and sleeves 37 and 7 disengaged.

The machine may be adapted for different sizes of shoes by raising or lowering the rod 14 in the slot 33, a suitable device 90 being provided whereby the rod 14 may be secured in any desired position along the slot 33.

In regard to the form of path-cams 10 and 11, it is sufficient to say that they are so formed and timed with reference to each other that in co-operation with the bearings of roll R they present all essential parts of the sole to the roll in such manner that the same is shaped thereby to conform to the contour of the last under the same.

It is evident from the foregoing that the method of mounting the roll R hereinbefore described in constructions where cams 10 and 11 are used simplifies the form of such cams, and also that cams 10 and 11 may be so formed and timed with reference to each other and the jack E so mounted that such mounting of the roll will be unnecessary, and, further, that our method of mounting the roll R may be used in constructions where cams 10 and 11 are omitted and another device substituted for presenting the shoe to roll, all without varying the essential nature of our invention.

The operation of our machine is as follows: The machine being in adjustment to receive the size of shoe to be leveled and the power being applied thereto, the operator places a shoe upon the jack E and adjusts the same vertically, as hereinbefore described. The le-

ver 41 is then pushed out and the wheel D begins to revolve. The shoe is thereby carried under the vibrating roll R and moves to and fro, while the leveling-roll vibrates over the same under pressure of springs 27 27, varying its inclination and length of operation on the different parts until the wheel D has made a complete revolution, when the clutch mechanism is thrown out and the operation ceases, the shoe being then thrown out in convenient position for removal by the operator.

We do not consider our invention limited to mechanism herein shown and described; but

We claim as novel and desire to secure by Letters Patent—

1. In a sole leveling machine, the combination with a vibrating leveling roll and a shoe supporting jack, of connected mechanism operating automatically to change the relative lateral inclination and longitudinal position of the roll and jack, and means for adjusting said mechanism to regulate the extent of the change in the relative longitudinal position of the roll and jack effected thereby, substantially as described.

2. In a leveling machine the combination with the leveling roll and its vibrating mechanism of a laterally rocking vertically adjustable bearing for said roll, and suitably placed springs for controlling the lateral and vertical movement thereof, substantially as described.

3. In a sole leveling machine, the combination of a movable shoe supporting jack, a vibrating leveling roll mounted above and transversely thereto, connecting mechanisms timed with reference to each other operating automatically to change the relative inclination of the jack and roll, and impart a series of varying longitudinal oscillations to the jack

under the roll, and means for proportionately adjusting the length of said oscillations, substantially as described.

4. A sole leveling machine combining in its structure the following elements, to wit: a jack which rocks only in one direction, a pivoted roll-frame or holder, a reciprocating leveling roll mounted on the roll-frame or holder and tilted by the rocking motion thereof, a single power shaft, and independent mechanisms all driven by said power shaft and respectively in operative connection with the said jack, the reciprocating leveling roll, and the roll frame or holder, for automatically reciprocating the leveling roll and rocking the jack and roll frame or holder, substantially as described.

5. In a sole leveling machine, the combination of a leveling roll movable to and fro, a shoe supporting jack, mechanism separate from that for moving the roll to and fro and operating automatically to change the relative longitudinal position of the roll and jack, and separate connections to change the lateral inclination of said roll with respect to said jack, substantially as described.

6. In a sole leveling machine the combination with the leveling roll and its vibrating mechanism, of a laterally rocking vertically adjustable bearing for said roll, and suitably placed springs for controlling the lateral and vertical movement thereof, and a movable shoe supporting jack, and mechanism for automatically oscillating the jack under the roll substantially as described.

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Witnesses:

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