J. H. RIGBY.

SOLE LEVELING MACHINE.

APPLICATION FILED AUG. 17, 1908.

925,509.

Patented June 22, 1909.

3 SHEETS—SHEET 1.

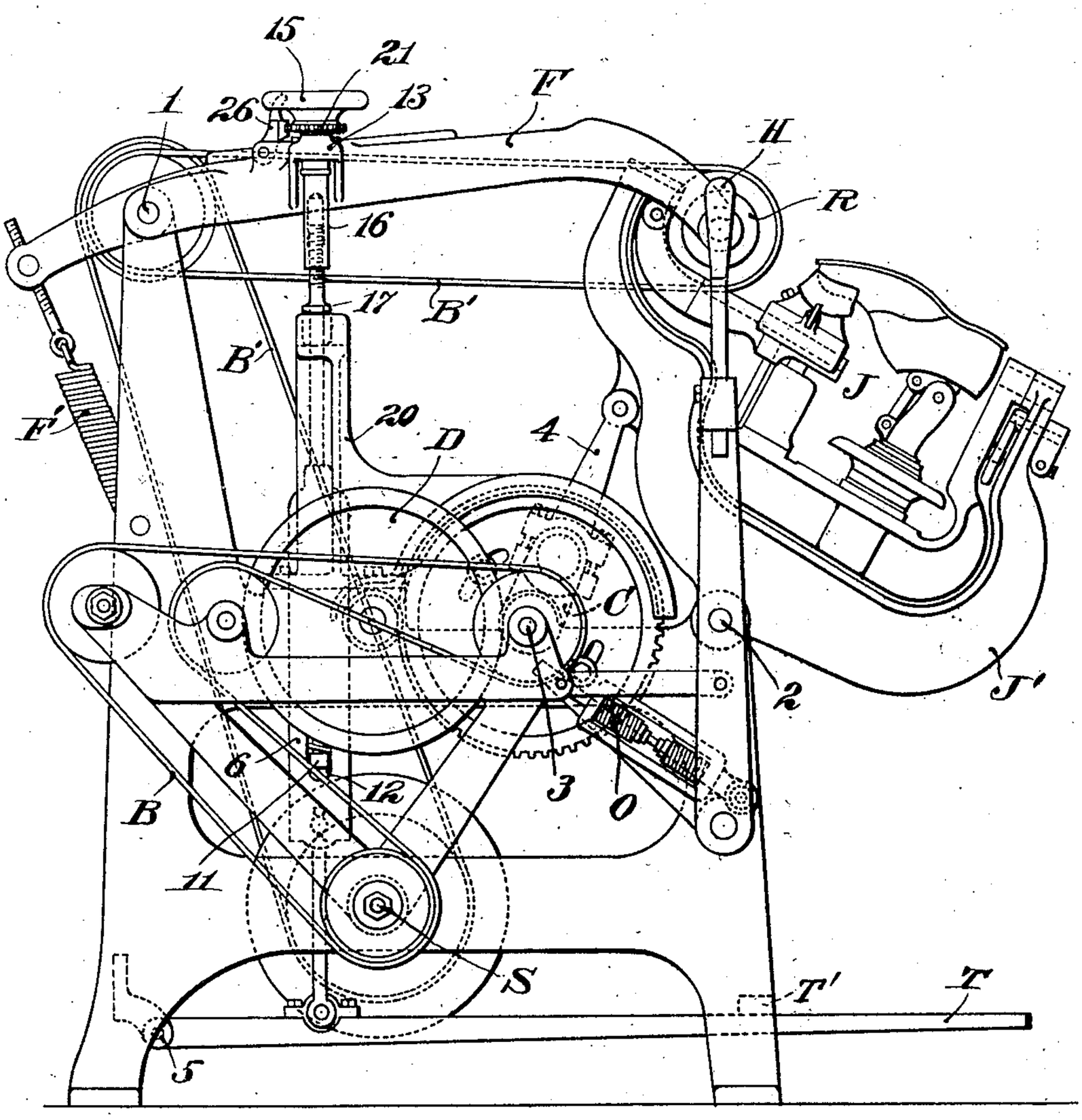

Fig. 1.

Witnesses

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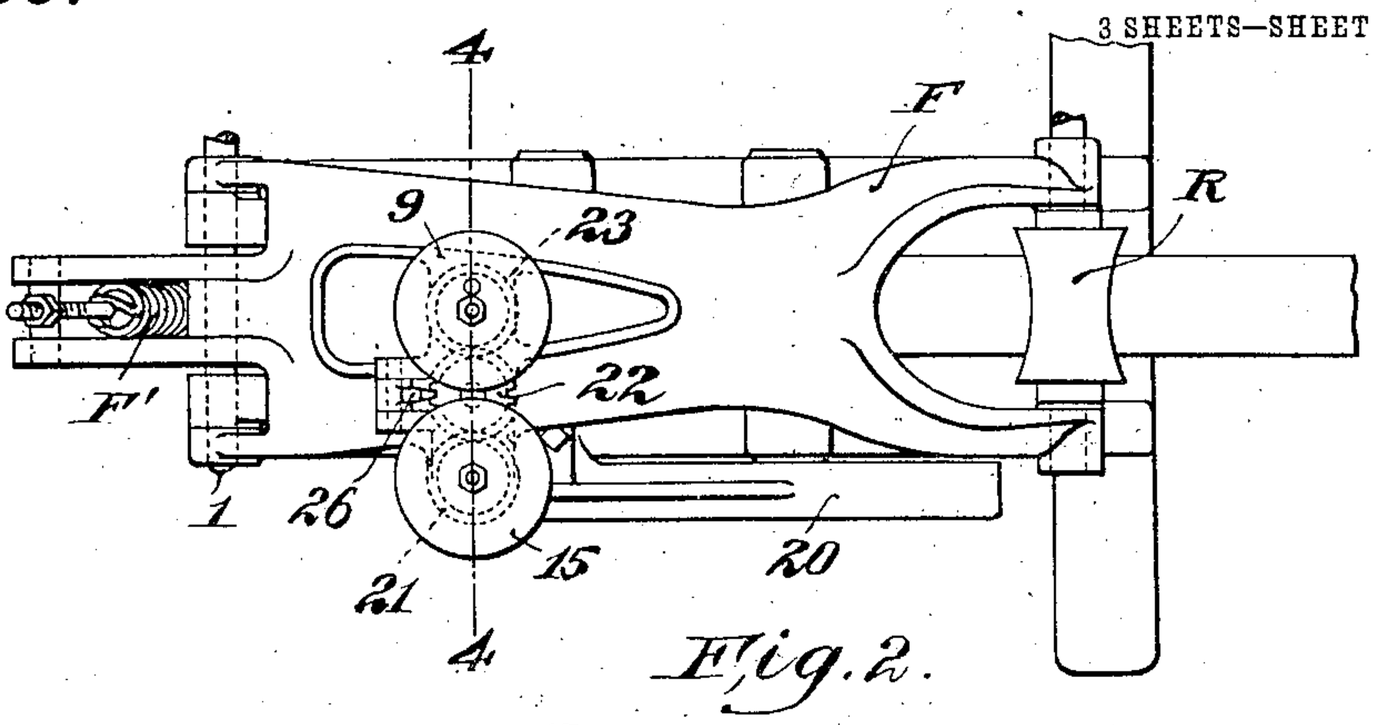

Fig. 2.

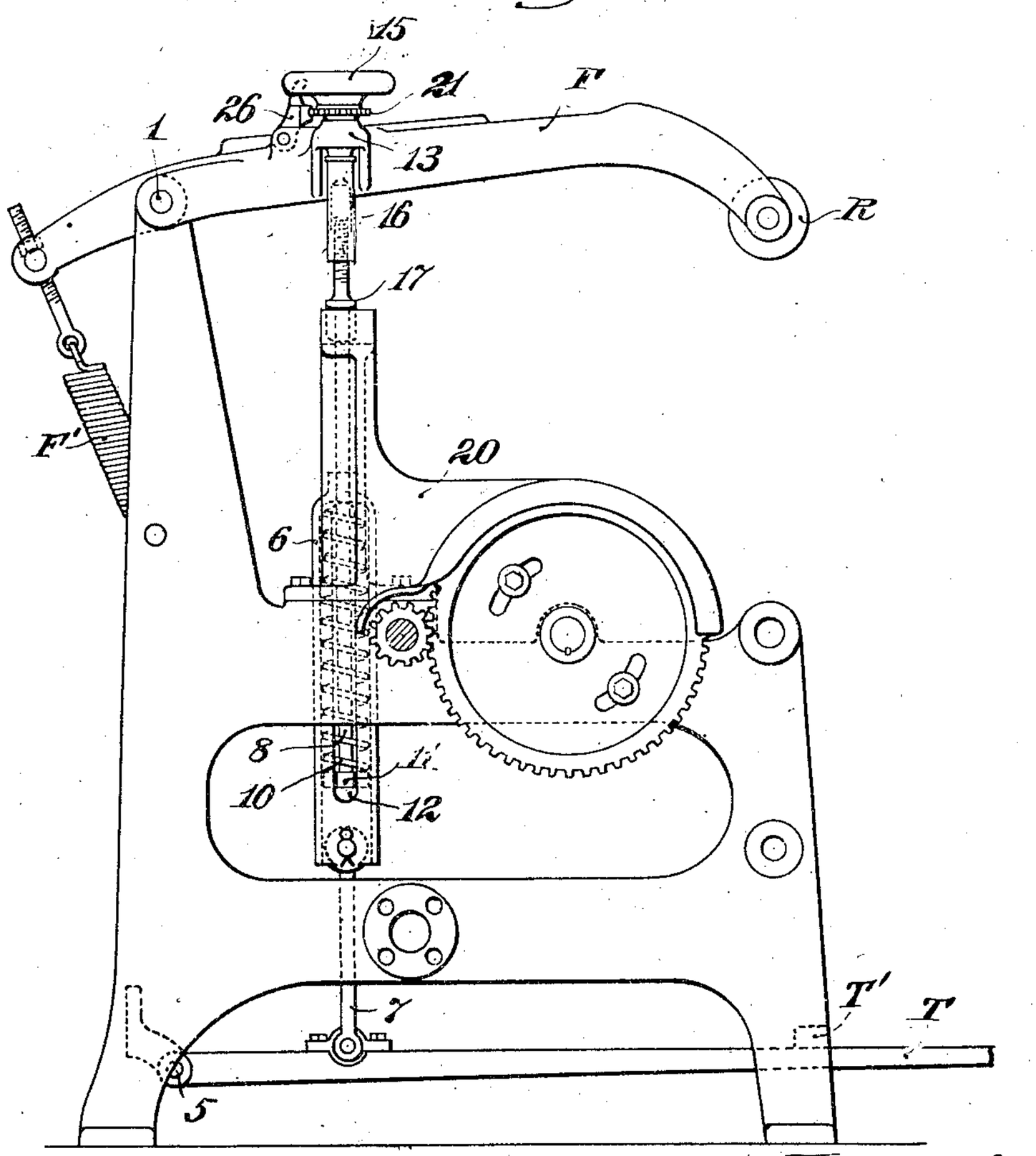

Fig. 3.

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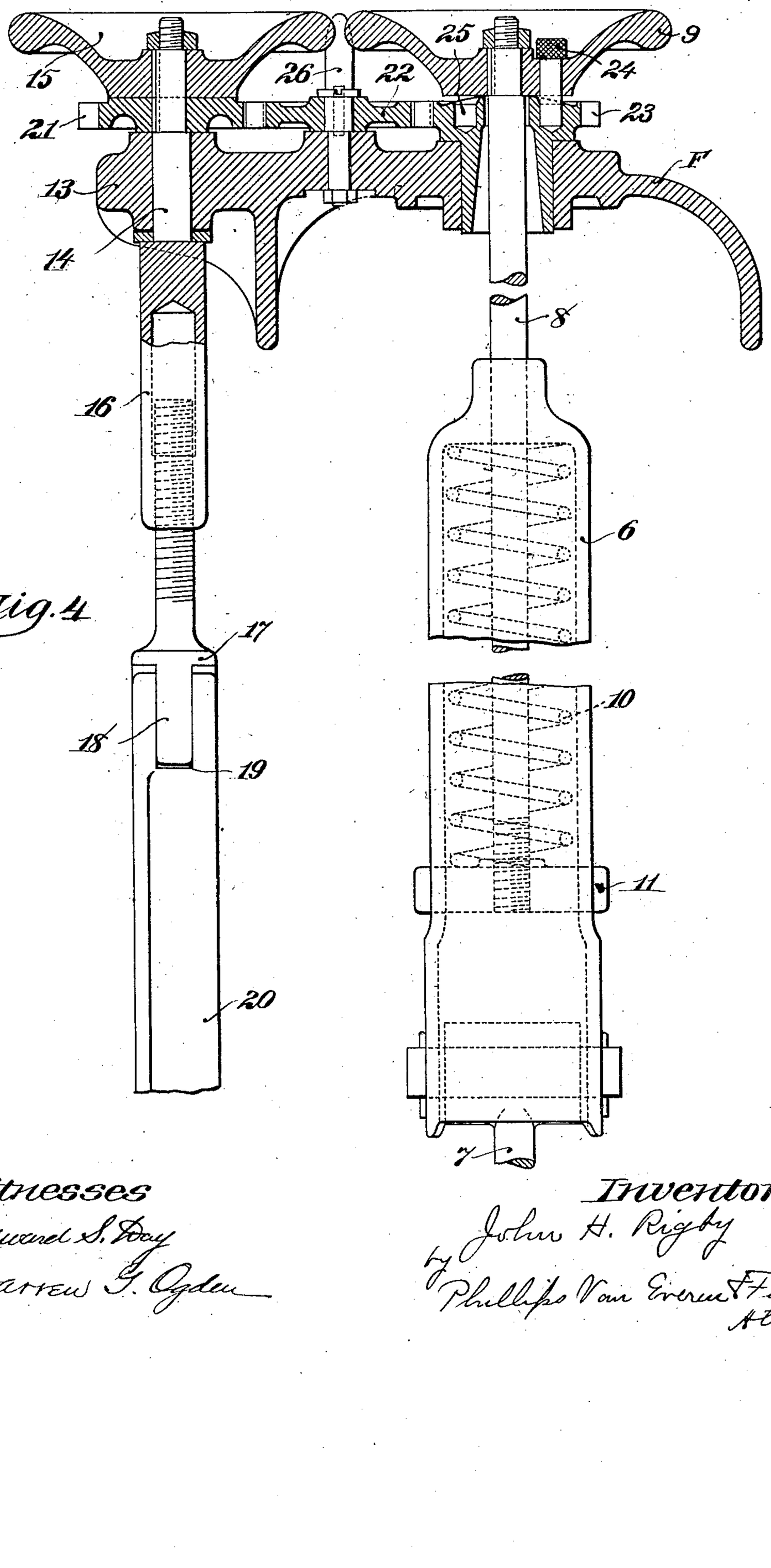

Fig. 4

Witnesses

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UNITED STATES PATENT OFFICE.

JOHN H. RIGBY, OF LYNN, MASSACHUSETTS, ASSIGNOR TO UNITED SHOE MACHINERY COMPANY, OF PATERSON, NEW JERSEY, A CORPORATION OF NEW JERSEY.

SOLE-LEVELING MACHINE.

No. 925,509. Specification of Letters Patent. Patented June 22, 1909.

Application filed August 17, 1908. Serial No. 448,836.

To all whom it may concern:

Be it known that I, JOHN H. RIGBY, 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.

This invention relates to sole leveling machines and more particularly to that class of sole leveling machines which comprise a sole leveling tool and a shoe supporting jack, relatively movable to change both the relative vertical and longitudinal positions of the leveling tool and jack. In this class of leveling machines the desired amount of pressure on the sole of the shoe is secured by means of a spring, the tension of which may be initially varied to suit the class of work being operated on, but which is maintained at a substantially constant tension for all shoes of the same class. The inward limit of vertical movement of the relatively movable parts is determined by a stop which may be adjusted to vary such limit, as may be required by a change in the class of shoe being operated on. As these machines have been constructed heretofore, a change in the position of the stop to vary the inward limit of movement of the relatively movable parts also varies the amount of pressure applied to the shoe. This is undesirable as the initial setting of the pressure mechanism regulates its amount so that the best results will be obtained from the pressure thus determined, and any variation in the amount of pressure will, therefore, result in poorer work. In the earlier machines this defect could be overcome by a separate readjustment of the pressure mechanism when the stop was adjusted, but frequently the operator failed to make such readjustment.

The principal object of this invention is to provide means for insuring a retention of the amount of pressure for which the pressure mechanism is initially set, no matter what the adjustment of the means for varying the inward limit of vertical movement of the relatively movable parts may be, thus avoiding the necessity of a separate readjustment of the pressure mechanism.

Another object of the invention is to provide a stop and a pressure mechanism for the purposes described, which may be adjusted either simultaneously or independently at the will of the operator.

With these objects in view, actuating means have been provided between the means for adjusting the stop and the means for adjusting the pressure mechanism by virtue of which an adjustment of one of these devices necessitates a simultaneous and proportionate adjustment of the other to suit the new conditions. The actuating means is detachably connected to the adjusting means for the pressure mechanism and detached when therefrom the amount of pressure to be applied to the shoe may be varied independently of any adjustment of the stop.

The invention is intended primarily for use in turned shoe work and has, therefore, been illustrated as applied to a machine provided with a longitudinally movable jack and a vertically movable leveling roll, such, for instance, as the sole leveling machine disclosed in the co-pending application of Andrew Eppler filed May 3, 1906, Serial No. 315,024, although it should be understood that, except as defined in the claims, the invention is not limited thereto but may be employed in other sole leveling machines provided with adjustable pressure means and means for varying the initial relative vertical position of the work and tool.

In addition to the features of the invention already referred to, the invention consists in certain devices, combinations and arrangements of parts hereinafter described and claimed, the advantages of which will be obvious to those skilled in the art.

The preferred embodiment of the invention is illustrated in the accompanying drawings in which—

Figure 1 is a side elevation of the machine, Fig. 2 is a plan of the parts shown in the upper portion of Fig. 1, Fig. 3 is a side elevation of the parts comprising the present improvement, and Fig. 4 is an enlarged detail on the line 4—4 of Fig. 2.

In the embodiment of the invention illustrated in the drawings, a leveling roll R is supported on the forward end of the frame F pivoted at 1 to the frame of the machine. The roll carrying frame F is counterbalanced by a spring F′ suitably connected to the

frame of the machine and the rear end of the frame F. The shoe to be operated on is supported upon any convenient form of jack indicated by J, which jack is sustained in a jack carrying frame J′ pivoted at 2 on the machine frame in a manner to provide a relative longitudinal movement between the shoe and the leveling roll. The jack frame is oscillated about the pivot 2 by means of a reversible friction driving mechanism, indicated at D, which, through suitable connections, oscillates a crank C carried by a shaft 3 and connected to the jack frame by means of a link 4. The reversible friction driving mechanism is operated through belting B engaging suitably arranged pulleys and driven from the driving shaft S journaled in the lower portion of the machine frame. This mechanism is controlled by means of a handle H. Suitably arranged belting B′ from the driving shaft S imparts a continuous rotation to the leveling roll. Automatic mechanism for preventing overthrow of the jack frame in case the operator does not move the handle H at the proper time is indicated at O.

All of the parts just described may be and preferably are substantially the same as similar parts fully illustrated and described in the co-pending application of Andrew Eppler, hereinbefore referred to.

The mechanism for providing the desired pressure between the leveling roll and the shoe and for maintaining the roll in contact with the shoe during the leveling operation is substantially similar to the mechanism used for this purpose in the co-pending application of Andrew Eppler, hereinbefore referred to, but it is essentially different in some respects as will hereinafter appear. The roll carrying frame F is connected to a treadle T pivoted at 5 in the lower part of the frame of the machine by means of a yielding link connection. This connection comprises a housing 6, connected at its lower end to the treadle by means of a link 7, and closed at its upper end except for an opening through which extends a rod 8 the upper end of which passes through an opening in the frame F. A hand wheel 9 is keyed to the upper end of this rod by means of which it may be rotated. A coil spring 10 surrounds the rod 8 within the housing, the closed upper end of the housing forming the upper end bearing for this spring and a block 11, passed through diametrically opposed vertically arranged slots 12 in the housing and threaded on the lower end of the rod, forming the lower end bearing for the spring. The spring 10 is normally under tension, which tension is determined by an adjustment of the block 11 by means of the hand wheel 9, and the treadle is thereby held in contact with the under side of a stop T′ at the front of the machine frame (see dotted lines in Figs. 1 and 2). The stop T′ serves to limit the upward movement of the treadle but permits a free downward movement thereof.

In performing the leveling operation, as the jack is oscillated back and forth beneath the rotating roll, the pressure on the shoe varies somewhat. Because of the fact that the treadle is held from upward movement by the stop T′, the tension of the pressure spring is increased as the roll is raised by the ball of the shoe passing under it but the spring expands again as the roll is lowered when it passes into the shank of the shoe. If it is desired to place more pressure on the shoe than is afforded by the tension of the pressure spring, as is frequently necessary at the shank of the shoe, the operator depresses the treadle during this part of the leveling operation, thus further increasing the tension on the spring 10 and the pressure applied to the shoe. It has been found in performing the leveling operation, that the various classes of work operated on require varying amounts of pressure from the roll R and, therefore, the tension of the pressure spring is initially set, by an adjustment of the block 11, to afford the required pressure for the particular class of work in hand.

A stop is usually provided to limit the downward movement of the leveling roll when disengaged from the shoe and the pressure mechanism is adjusted in accordance with this position of the roll so that the required pressure will be applied when the machine is set in operation. It will be obvious to those skilled in the art that when varying sizes or styles of shoes are jacked, their heights, relative to the lowermost preliminary position of the leveling roll as determined by the stop, will vary and, therefore, this position of the roll should be varied to suit each new location of the work. With the construction of the pressure mechanism heretofore described, a vertical movement of the roll carrying frame F to vary the limit of downward movement of the tool will alter the tension of the pressure spring 10 by changing the distance between the block 11 and the upper closed end of the housing 6, thus changing the amount of pressure that will be applied to the shoe. In order to maintain the same pressure on the shoe as had before been used, notwithstanding the variation in the initial vertical position of the roll, it was necessary, with the form of stop heretofore in use, to readjust the pressure mechanism by restoring the pressure spring to its initial tension. If the operator failed to so readjust the pressure mechanism, and a shoe higher than the shoe previously in the machine were being operated on, the increased pressure caused by a raising of the leveling roll to suit the new work might possibly be injurious to the shoe. If the new shoe were lower than the shoe previously in

the machine, a lowering of the leveling roll without a readjustment of the pressure mechanism would decrease the pressure and the shoe might not receive enough pressure to properly level it. This serious defect is overcome in the present invention by providing means for insuring a retention of the initial adjustment of the pressure mechanism, no matter for what limit of downward movement of the leveling roll may be set.

The roll carrying frame F is provided with a lug 13 at one side through which is passed a stem 14, having a hand wheel 15 keyed to it above the frame, and provided with an enlarged and tapped end 16 below the frame. This arrangement permits rotation of the stem 14 but prevents a lengthwise movement thereof. The shank of a stop 17 is threaded into the tapped end 16. The stop 17 is provided with a depending portion 18 which fits into a longitudinal slot 19 in the upper surface of a bracket 20 secured to the frame of the machine. This arrangement permits lengthwise movement of the stop device but prevents its rotation. Thus the stop 17 may be adjusted toward or from the bracket 20 by a rotation of the hand wheel 15. A pinion 21 is keyed to the stem 14 above the frame F and this pinion meshes with an idler pinion 22 rotatably mounted in the frame. The idler pinion in turn meshes with a pinion 23 having a collar journaled in the frame F and loosely surrounding the rod 8. Sufficient space between the rod and collar of the pinion is provided to permit play between these parts as the frame F is moved vertically about its pivot. The pinion 23 is secured in fixed relation to the hand wheel 9 by means of a removable pin 24 passed through a hole in the hand wheel and into one of a series of holes 25 in the upper face of the pinion. A latch 26 is fulcrumed on the frame F in a position to engage between the teeth of the idler pinion 22 thus locking all of said pinions against rotation and maintaining them in any adjusted position. With this construction a rotation of the hand wheel 15 to adjust the length of the stop device and thus vary the limit of downward movement of the leveling roll will also, when the latch 26 is removed from locking position and the pin 24 is resting in one of the holes 25 of the pinion 23, cause a rotation of the rod 8. If the limit of downward movement of the leveling roll is elevated, thus lengthening the yielding link connection, the rod 8 will be rotated in a direction to cause it to be simultaneously unscrewed from the block 11. If the limit of downward movement of the roll is lowered, thus shortening the yielding link connection, the rod 8 will be rotated in a direction to cause it to be simultaneously passed through the block 11. The pitch of the threads on the stop 17 and the rod 8 is the same and, therefore, for every increment of movement of the frame F there is a corresponding increment of movement of the rod 8, in one direction or the other, through the block 11. With this arrangement of adjusting mechanisms the block 11 is always maintained at a constant distance from the upper closed end of the housing 6 throughout all variations in the initial position of the leveling tool. This insures a constant tension on the spring 10 no matter what vertical position the frame F may preliminarily assume. Those skilled in the art will readily see that if the pressure mechanism is initially set for a particular class of work, its initial adjustment will be retained no matter in what vertical position the leveling roll may be placed in order to properly operate upon varying heights of shoes of any particular class. The actuating devices connecting the stop device and pressure mechanism constitute, therefore, automatically acting means for nullifying the effect on the pressure mechanism caused by an adjustment of the stop.

By removing the connecting pin 24, between the hand wheel 9 and the pinion 23, the pressure mechanism may be adjusted independently of the adjustment of the stop 17. This feature of the invention is utilized in initially determining the amount of pressure required for the particular class of work to be operated on.

In the following claims, all references to position or direction of movement of the elements are to be interpreted as terms of designation and not of limitation, as obviously it is the relative position or relative direction of movement which is alone of importance.

While the particulars of construction herein set forth are well suited to one form of the invention, it is not to be understood that these particulars are essential since they may be variously modified within the skill of the artisan without departing from the true scope of the actual invention as defined by the following claims.

What is claimed as new is:—

1. A sole leveling machine, having, in combination, a shoe supporting jack and a sole leveling tool relatively movable both vertically and longitudinally, pressure mechanism for forcing one of said parts toward the other to exert pressure on the sole of the shoe, a stop to determine the proper relative vertical position of said parts when the leveling tool is disengaged from the shoe, means for adjusting said stop to position the parts properly for different shoes, and means acting simultaneously to adjust the pressure mechanism to cause it to exert substantially the same pressure on the different shoes.

2. A sole leveling machine, having, in combination, a shoe supporting jack and a sole leveling tool relatively movable both

vertically and longitudinally, an adjustable stop to determine the inner limit of vertical movement of said parts when the tool is disengaged from the shoe to accommodate shoes of different heights, a yielding link, connected at one end to one of said parts and held at its other end from movement toward said part, to force said part toward the other during the leveling operation, and a single means to adjust the stop and simultaneously to adjust the link to secure substantially the same pressure on the shoe whatever its height may be.

3. A sole leveling machine, having, in combination, a sole leveling tool and a shoe supporting jack relatively movable longitudinally, a frame carrying the leveling tool movable toward and from the sole of the shoe, a stop for said frame to limit the downward movement of the tool when disengaged from the shoe, an extensible link connected at one end to said frame and held at its other end from upward movement, a spring in said link, means for tensioning said spring to exert pressure on the sole of the shoe during the leveling operation, means for adjusting the stop to position the tool properly for shoes of different heights, and means controlled by said stop adjusting means for insuring a substantially constant tension on said spring prior to the leveling operation for all heights of shoes.

4. A sole leveling machine, having, in combination, a sole leveling tool, a shoe supporting jack movable longitudinally beneath the tool, a frame carrying the tool movable toward and from the sole of the shoe, a stop for the tool carrying frame to determine the position of the tool with relation to the sole of the shoe when disengaged therefrom, a treadle, a yielding link connection between the treadle and the tool carrying frame for forcing the tool against the sole of the shoe, means for adjusting the stop to position the tool properly for different shoes, and means acting simultaneously to adjust the link connection to secure substantially the same pressure on the different shoes.

5. A sole leveling machine, having, in combination, a shoe supporting jack and a sole leveling tool relatively movable both vertically and longitudinally, means preliminarily to determine the inner limit of vertical movement of said parts when the tool is disengaged from the shoe, pressure mechanism for forcing one of said parts toward the other during the leveling operation constructed and arranged so that the amount of pressure to be applied to the shoe will be varied as the inner limit of vertical movement is varied, and automatically acting means for nullifying the effect on the pressure mechanism caused by an adjustment of the stop.

6. A sole leveling machine, having, in combination, a sole leveling tool and a shoe supporting jack relatively movable longitudinally, an adjustable stop device preliminarily to determine the proper vertical position of the tool relative to the shoe sole before it engages the sole, mechanism for applying pressure to the tool during the leveling operation constructed and arranged to have its strength varied by a variation in the vertical position of the tool, and means connecting said stop device and pressure mechanism acting to nullify the effect on the pressure mechanism caused by an adjustment of the stop.

7. A sole leveling machine, having, in combination, a sole leveling tool, a shoe supporting jack movable longitudinally beneath the tool, a frame carrying the tool movable toward and from the sole of the shoe, an adjustable and yielding link connected at one end to said frame and held at its other end from upward movement, to force the tool toward the shoe during the leveling operation, a stop also connected to said frame to determine the position of the tool relative to the sole of the shoe when disengaged therefrom, means for adjusting said stop to position the tool properly for different shoes, and operative connections between said stop and link whereby an adjustment of the stop effects a simultaneous adjustment of the link to exert substantially the same pressure on the different shoes.

8. A sole leveling machine, having, in combination, a shoe supporting jack and a sole leveling tool relatively movable both vertically and longitudinally, pressure mechanism for forcing one of said parts toward the other to exert pressure on the sole of the shoe, an adjustable stop preliminarily to determine the inner limit of vertical movement of said parts before engagement of the tool and shoe to accommodate shoes of different heights, means for simultaneously adjusting said stop and pressure mechanism to position the parts for shoes of different heights and to secure substantially the same pressure on the shoe whatever its height may be, and means permitting an independent adjustment of said stop and pressure mechanism.

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

JOHN H. RIGBY.

Witnesses:

FREDERICK L. EDMANDS.

JAMES R. HODDER.