H. A. BALLARD.

TREADLE MECHANISM FOR BED LASTING MACHINES.

APPLICATION FILED DEC. 16, 1914.

1,178,615.

Patented Apr. 11, 1916.

4 SHEETS—SHEET 1.

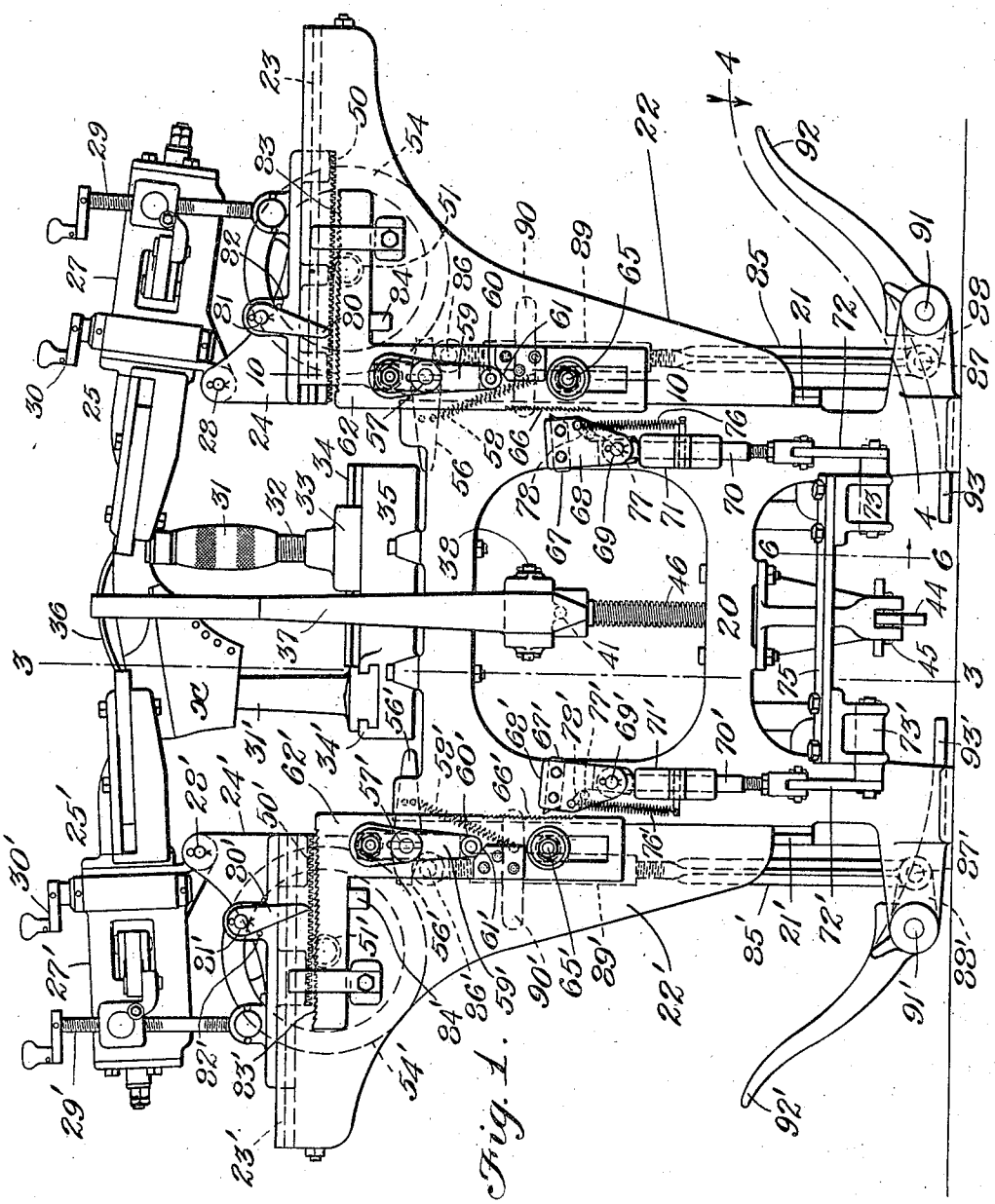


Fig. 1.

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4 SHEETS—SHEET 2.

Fig. 2.

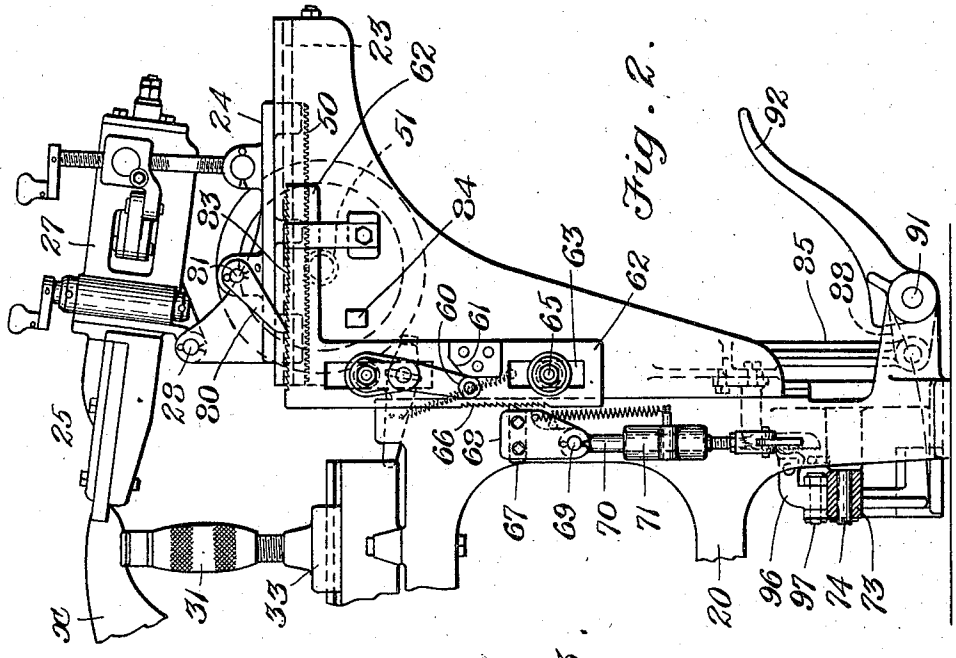


Fig. 3.

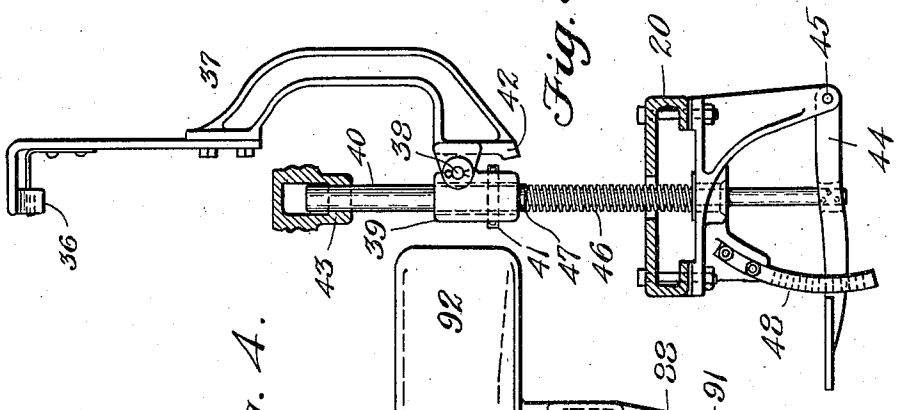
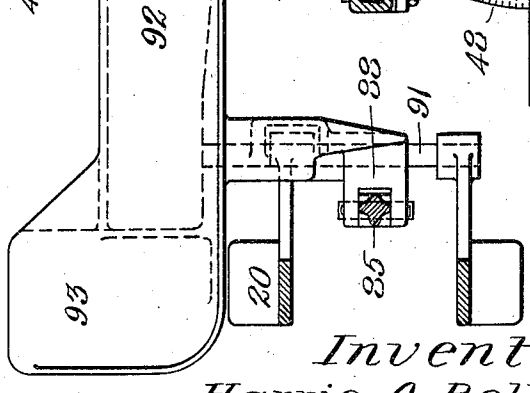


Fig. 4.



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4 SHEETS—SHEET 3.

Fig. 5.

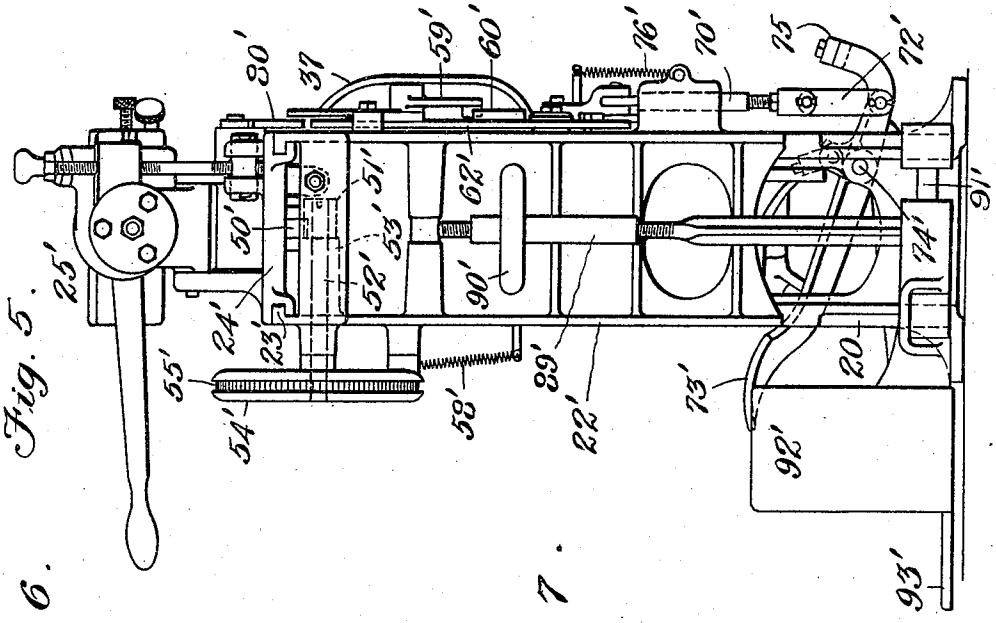


Fig. 6.

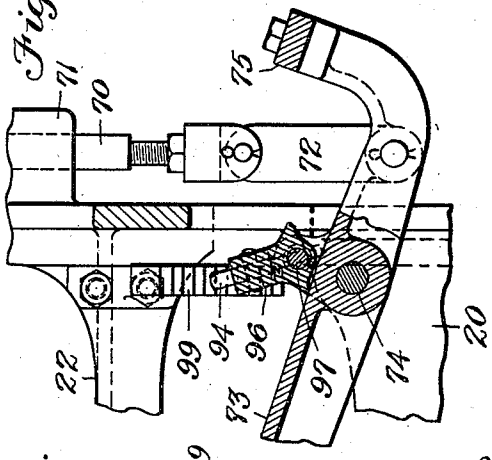


Fig. 7.

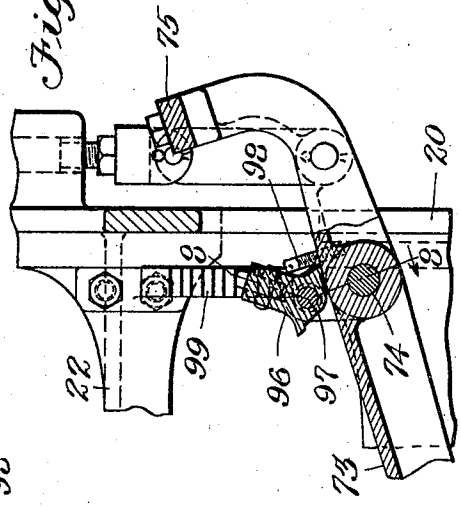


Fig. 8.

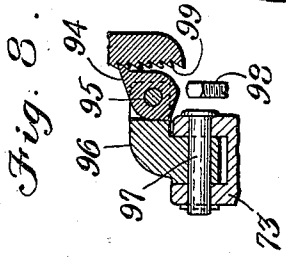
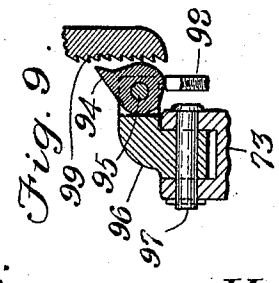


Fig. 9.



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4 SHEETS—SHEET 4.

Fig. 11.

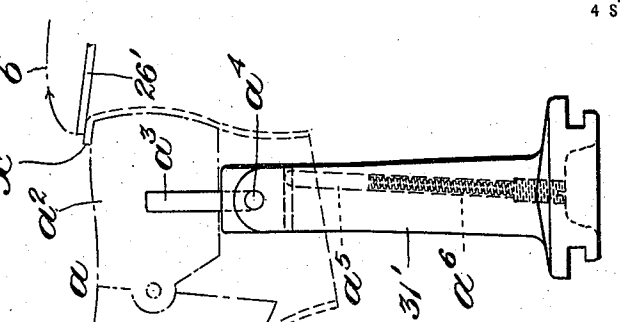


Fig. 12

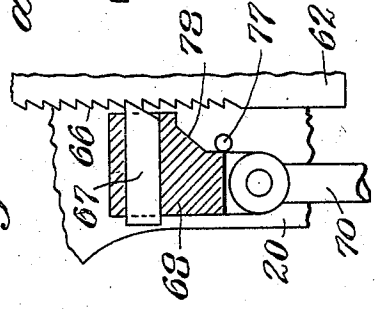
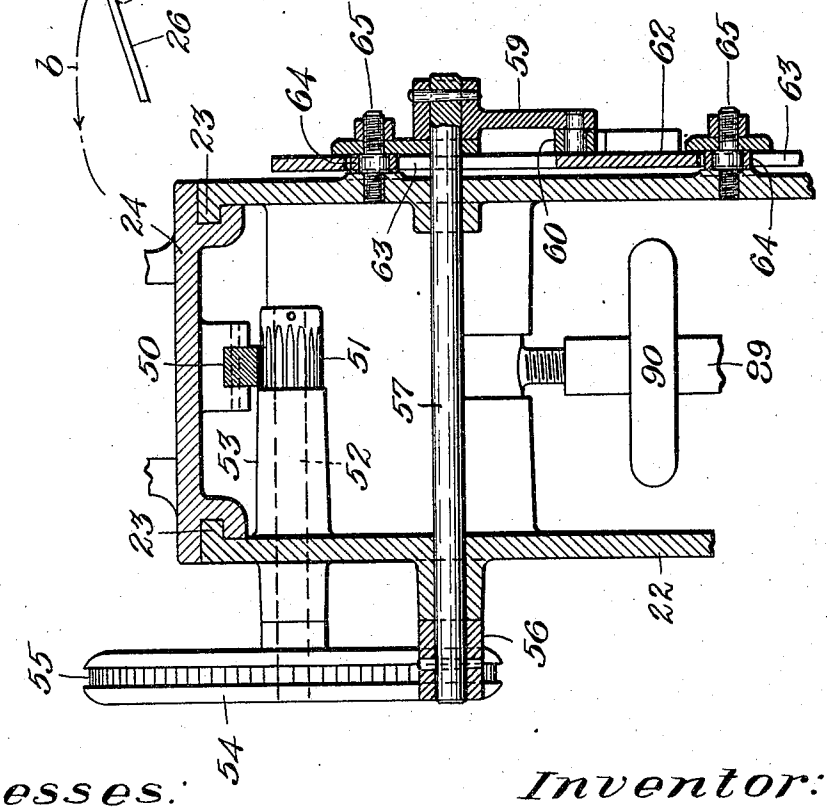


Fig. 10.



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UNITED STATES PATENT OFFICE.

HARRIE A. BALLARD, OF BOSTON, MASSACHUSETTS, ASSIGNOR TO THE BOYLSTON MANUFACTURING COMPANY, OF BOSTON, MASSACHUSETTS, A CORPORATION OF NEW JERSEY.

TREADLE MECHANISM FOR BED-LASTING MACHINES.

1,178,615. Specification of Letters Patent. Patented Apr. 11, 1916.

Application filed December 16, 1914. Serial No. 877,581.

To all whom it may concern:

Be it known that I, HARRIE A. BALLARD, a citizen of the United States, and resident of Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Treadle Mechanisms for Bed-Lasting Machines, (Case A,) of which the following is a specification.

In my copending application, Serial No. 198,420, filed March 16, 1904, there is shown and described a bed lasting machine and treadle mechanism whereby the operator by depressing the treadle causes a sequence of movements in the following order: (1) unlocking movement of a locking device by which the wiper's carriage is locked in working position; (2) a movement of the lasted shoe away from the wipers to relieve pressure subsisting between the wipers and the pulled-over portions; (3) retractory movement of the carriage and wipers mounted thereon. The pressure-relieving movement in said application is opposed by a spring which acts upon the jack to furnish the necessary degree of pressure between the pulled-over portions of the upper and wipers in order to set or crease the pulled-over portions. The said spring in order to properly perform its function must be very stiff, and the degree of power required to effect the pressure-relieving movement as between the wipers and the work must be of a corresponding degree. The results of such arrangement, as shown by the work, are satisfactory; but so much effort on the part of the operator is required to relieve the pressure that I have devised improved mechanism for accomplishing substantially the same results and in substantially the same manner with less effort on the part of the operator, my improved machine being capable of more rapid operation in consequence of the ease with which it operates.

In order to point out the chief distinctions between the arrangement of mechanism in my present improved machine and that in the machine as shown and described in said copending application, I will give a brief analysis of some of the characteristic features of both machines, referring to the machine shown in said copending application as "the first machine" and to the machine of the present application as "the present machine".

In the first machine, the heel jack and toe jack were both movable vertically and independently of each other, and each was held upwardly by its own spring. In the present machine the heel jack and toe jack have no vertical movement. In the first machine the wipers had no vertical movement excepting such vertical movement as might be incidental to adjusting them relatively to their respective carriages. In the present machine the wipers have vertical movement other than and independent of such vertical movement as may be incidental to adjusting them relatively to their carriages. In the first machine the wiper carriages had no vertical movement at all. In the present machine such carriages do have vertical movement. In the first machine the pressure of the wipers upon the pulled-over portions was due entirely to the jack springs hereinbefore mentioned, but in the present machine the pressure of the wipers upon the pulled-over portions is due primarily to gravity of the wiper mechanisms and their carriages and the movable supports upon which the carriages are arranged; and such pressure as may be due to gravity may be amplified as desired by downward pressure on the treadle. Here is where the present machine embodies an arrangement of mechanism which enables the operator to apply pressure to the pulled-over portions to meet the requirements of each individual shoe, the first machine being incapable of varying the pressure of the wipers upon the pulled-over portions excepting such variations as might be caused by varying the compression of the jack springs. In this respect, therefore, the present machine may be used with greater facility.

My present machine has other improvements which are hereinafter described in detail.

Of the accompanying drawings: Figure 1 represents a rear elevation of a bed-lasting machine having treadle mechanism embodying the present invention. In this figure the wiper mechanisms are in working position and their carriages are locked against retractory movement. Fig. 2 represents a

rear elevation, partly in section, of the toe end of the machine, the toe-wiper mechanism being in an intermediate position as when undergoing retractory movement. Fig. 3 is an elevation (frame in section) of the work-clamping device, the point of view being indicated by line 3—3 of Fig. 1. Fig. 4 represents a plan view, partly in section, of the treadle mechanism within the range of line 4—4 of Fig. 1. Fig. 5 represents an elevation of the heel end of the machine. Fig. 6 represents a vertical section, on a larger scale, of the structure within the range of line 6—6 of Fig. 1. The position of the parts is the same as that in Figs. 1 and 5. Fig. 7 represents a vertical section similar to Fig. 6 but showing the parts in another position, the treadle according to Fig. 7 being depressed, whereas according to Fig. 6 such treadle is in its initial or raised position. Fig. 8 represents a section through the structure intersected by line 8—8 of Fig. 7. Fig. 9 represents a similar section through the same structure, showing the parts in a position corresponding to that of Fig. 6. Fig. 10 represents a vertical section from front to rear through the structure intersected by line 10—10 of Fig. 1. Fig. 11 represents a front elevation of the heel jack, the last and shoe being indicated by broken lines and the heel-and toe-wipers being represented conventionally in overlapping position upon the pulled-over portions of the upper, broken lines and arrows indicating the general character of the paths of movement traversed by the wipers when the latter are retracted.

The same reference characters indicate the same parts wherever they occur.

The main frame of the machine is indicated at 20. It is provided with vertical guides 21 at one end and similar vertical guides 21′ at the other end, said guides coacting respectively with vertically movable supports 22 and 22′. These supports are in the form of brackets, and they are formed with horizontal guides 23 and 23′ respectively. A horizontally movable carriage 24 is arranged to slide in guides 23, and a similar carriage 24′ is arranged to slide in guides 23′. These carriages carry the toe-wiping mechanism and heel-wiping mechanism respectively. The toe-wiping mechanism is indicated as a whole at 25, and the heel-wiping mechanism is indicated at 25′.

The wiping mechanisms may be of any suitable structure and arrangement. The toe and heel-wipers are represented respectively at 26 and 26′ in Fig. 11, such representation being sufficient for the purposes of this application. Referring again to Fig. 1, the main frame or base of the toe-wiping mechanism is indicated at 27, and that of the heel-wiping mechanism at 27′. These frames are arranged upon pivots 28, 28′ carried respectively by the carriages 24, 24′, each wiper mechanism being capable of tilting about its respective pivot for the purpose of adjusting the wipers relatively to the longitudinal plane of the toe and heel of the shoe. For the purpose of effecting such adjustment the toe-wiping mechanism is provided with an adjusting screw 29, and the heel-wiping mechanism is provided with an adjusting screw 29′, said screws having suitable swivel connections with their respective carriages and wiper frames. Said frames are also provided with adjusting devices 30, 30′ whereby the wipers may be tilted laterally according to the lateral plane of the toe and heel of the shoe. No additional disclosure of the last-mentioned adjusting means will be necessary for the purposes of the present application.

A shoe is indicated at x, and a last is indicated at a in Fig. 11. The forepart of the last is indicated at a', and the heel-part at a^2. A toe jack is indicated at 31, and a heel jack is indicated at 31′. The toe jack is in the form of a sleeve nut and is arranged upon a screw 32 which extends upwardly from a pedestal 33. The pedestal is arranged to slide on guides 34 formed upon the base 35. The base is affixed to the main frame 20, and the guides 34 extend in lines substantially parallel to the longitudinal median line of the shoe. The heel jack 31′ is arranged to slide on guides 34′ formed upon the base 35, the guides 34′ extending transversely with relation to the guides 34. Referring to Fig. 11, a last pin a^3 is mounted upon a pivot pin a^4 at the upper end of the heel jack, said pin extending transversely of the longitudinal vertical plane of the shoe, so that the last in rocking about the axis of the pin a^4 will raise or lower the toe. A spring follower a^5 arranged in a socket in the heel jack and backed by a compression spring a^6 acts upon the last pin a^3 to keep the toe of the shoe pressed downwardly upon the toe jack.

The combination of jacks as described enables a right or left shoe to be supported so that the longitudinal median lines of its toe-part and heel-part may be alined with the longitudinal median lines of the respective wiping mechanisms. The toe jack may be set at any desired positions along its guides 34 according to the length of the shoe, and the heel jack is adjustable transversely, the shoe being capable of tilting movement relatively to the heel jack independently of the adjustments of the jacks themselves. The height of the toe jack may be varied by screwing the same up or down on the post 32.

A work clamp is indicated at 36. This clamp is in the form of a leaf spring, and its ends are arranged to bear upon the insole of the shoe over the two jacks. The inter-

mediate portion of the clamp is affixed to an overhanging portion of a carrier 37. The carrier is arranged upon a pivot member 38 which is carried by a sleeve 39. This sleeve is arranged loosely upon a vertical rod 40 and is connectd to said rod by a pivot member 41. The axis of 41 is transverse to the axis of 38. In order to provide a universal connection between 37 and 40, and in order to enable the sleeve 39 to tilt upon the pivot member 41, the hole in 39 through which 40 extends is of a greater diameter than 40. The range of tilting movement of 39 relatively to 40, though limited, enables the clamp 36 to tilt longitudinally according to the form of the bottom of the last. The weight of the carrier 37 is mostly behind the pivot 38, and causes the clamp to tip automatically to the rear and beyond the shoe when lifted from the shoe, so that the shoe may be readily detached and another shoe attached. The portion 42 of the arm 37 is arranged to abut against the sleeve 39 to limit the rearward swinging of the clamp. The upper end of rod 40 is arranged to slide in a stationary guide 43, and the lower end thereof is pivotally connected to a treadle lever 44 whose fulcrum is indicated at 45. A compression spring 46 is arranged to bear against a shoulder 47 of the rod to raise the same, and the treadle 44 is arranged to depress the rod against the force of the spring. A toothed sector 48 is arranged to coact with the treadle to hold the same depressed, the treadle being sufficiently loose upon its fulcrum 45 to permit a slight lateral movement of the treadle whereby it may be engaged with and disengaged from the sector.

A toothed rack 50 is affixed to the carriage 24, and a toothed rack 50′ is affixed to the carriage 24′ These racks are enmeshed respectively with pinions 51, 51′. These pinions are affixed to shafts 52, 52′ (Figs. 5 and 10), said shafts being mounted in bearings 53, 53′ in the vertically movable supports 22, 22′. These shafts are provided respectively with hand wheels 54, 54′ whereby the end-wiping mechanisms may be moved independently of each other to working position. The hand wheels have ratchets 55, 55′, which are engaged by retaining pawls 56, 56′, said pawls being arranged to permit rotative movement of the hand wheels in one direction to move the wiping mechanisms to working position, and to prevent retractory movement of the wiping mechanisms excepting when they (pawls) are disengaged, as hereinafter described, from the ratchet wheels.

The pawls are affixed respectively to rock-shafts 57, 57′, and are normally held against the ratchet wheels by tension springs 58, 58′. Affixed to the rear ends of the rock-shafts are arms 59, 59′. Rolls 60, 60′ at the free ends of said arms are arranged to coact with cams 61, 61′, said cams being affixed to vertically movable slides 62, 62′ in such manner that when said slides rise, the cams actuate the arms 59, 59′ to disengage the pawls from their respective ratchet wheels.

The slides 62, 62′ in addition to retracting the locking pawls as just explained, serve the additional purpose of transmitting motion from a treadle, hereinafter described, to the carriages 24, 24′ to retract said carriages from working position. The said slides are carried respectively by the supports 22, 22′, but are movable relatively to said supports. The mounting of the two slides is similar, and it will be sufficient to describe one of them, such mounting being shown in section by Fig. 10. The slide is formed with slots 63 which are occupied by bushings 64. These bushings are mounted upon screw-studs 65. Slide 62 is provided with a vertical series of teeth 66, and slide 62′ is provided with a similar series of teeth 66′. Lifting dogs 67, 67′ are arranged to coact respectively with the two sets of teeth. These dogs are mounted in tilting holders 68, 68′, said holders being arranged upon pivots 69, 69′ carried by lifting rods 70, 70′. Said rods are arranged to slide vertically in guides 71, 71′ on the main frame 20. Links 72, 72′ connect the lower ends of the rods with treadles 73, 73′. The fulcra of said treadles are in line with each other and are indicated at 74 (Figs. 2, 6 and 7) and 74′ (Fig. 5). The rear ends of treadles 73, 73′ are connected by a tie-bar 75 whereby said treadles are rigidly united and are, to all intents and purposes, a single actuator, although their forward ends are separated and the operator may depress either one, according to which is more convenient, with the same result.

The lifting dogs 67, 67′ are moved into engagement with their respective teeth by tension springs 76, 76′, but are retracted, when they descend, by stationary pins 77. 77′, the holders 68 being provided with cam surfaces 78, 78′ arranged to engage said pins for the purpose stated.

From the foregoing description it may be seen that depressing the forward end of treadle 73 or 73′ will lift both of the rods 70, 70′, disengage the holders 68, 68′ from pins 77, 77′, lift slides 62, 62′, and retract locking pawls 56, 56′ from their respective ratchet wheels. I will now describe the mechanism by which this same upward movement of the slides 62, 62′ effects retractory movement of the wiper carriages 24, 24′ from working position.

A dog 80 is arranged upon a pivot stud 81 carried by carriage 24, and a similar dog 80′ is similarly arranged upon a pivot stud 81′ carried by carriage 24′. These dogs

normally hang in the positions shown by Fig. 1, the carriages being provided with stop pins 82, 82′ arranged to prevent the lower ends of the dogs from swinging to a vertical line intersecting the axes of the supporting pivots. In other words, the stop pins keep the lower ends of the dogs away from the vertical center of the pivots, the angular position of the dogs being capable of variation within certain limits, as will be understood after further description. The vertically movable slide 62 has in its upper edge a horizontal series of teeth 83, and the slide 62′ has a similar series of teeth 83′. The lower ends of the dogs are pointed and adapted to enter the notches between the teeth of their respective slides. When the slides are in their normal position, as shown by Fig. 1, the teeth just described are a sufficient distance below the dogs to clear the latter so that the dogs may move freely when the wiper carriages are moved through the agency of the hand wheels 54, 54′. As shown by Fig. 1, the slides 62, 62′ are resting upon supporting abutments 84, 84′, said abutments being formed upon or affixed to the supports 22, 22′.

Assuming that it is desired to retract the end-wiping mechanisms horizontally from the working position as shown by Fig. 1, the operator depresses one of the treadles 73, 73′, and the first part of such movement results in retracting the locking pawls 56, 56′ from locking position as hereinbefore explained. The upward movement of the slides 62, 62′ necessary to cause such movement of the locking pawls takes up the clearance between the teeth 83, 83′ and the dogs 80, 80′; and continued upward movement of the slides is transmitted by the dogs to the carriages 24, 24′, which are lifted bodily enough to clear the wipers from the pulled-over portions x' of the shoe (Fig. 11). Upward movement of the carriages 24, 24′ is transmitted to the supports 22, 22′ through the tongue-and-groove guides 23, 23′ which connect the carriages with their respective supports. The lower ends of the dogs 80, 80′ being "off center" as hereinbefore explained, the angular relation of the dogs with respect to the direction of the force of gravity, although initially slight, is not sufficient to sustain the weight of the supports 22, 22′ and the loads imposed thereupon; and accordingly the initially slight horizontal thrust, due to the initial angular position of the dogs, overcomes the inertia of the carriages 24, 24′, and the carriages thereupon move outwardly, that is, away from each other; and as they do so, the angular positions of the dogs 80, 80′ grow more pronounced, increasing the horizontal thrust and decreasing the vertical thrust, so that the supports 22 and 22′ settle down to their initial positions almost immediately, and continued upward movement of the slides 62, 62′ causes only further horizontal movement of the carriages.

Referring to Fig. 11, broken line b represents the path traversed by the toe-wiping mechanism undergoing retractory movement and broken line b' represents the path traversed by the heel-wiping mechanism. The first part of such movement in each case is upward, the rise being due to the inertia of the horizontally movable carriage and mechanism carried thereby. The highest point in each curve corresponds to that stage when such inertia has been overcome and the carriage is moving horizontally at a rate sufficient to neutralize the upward tendency, all such parts as are subject to settling by gravity doing so after the high point has been reached, and the remainder of the retractory movement being compounded with descending movement of the carriages and their supports.

Under some conditions, as when the machine is not in use, the weight of the supports 22, 22 is sustained by links 85, 85′. The upper ends of said links are connected with the supports by pivot studs 86, 86′, and the lower ends are connected by pivot studs 87, 87′ to arms or levers 88, 88′. These links are made up of a plurality of pieces including turnbuckles 89, 89′ whereby the normal or initial positions of the supports as to vertical movement may be varied by adjustment. The turnbuckles are provided with hand wheels 90, 90′. The levers 88, 88′ are affixed to rockshafts 91, 91′ mounted in suitable bearings in main frame 20. (See Fig. 4.) Treadles are provided for operating the levers 88, 88′,—the treadle for 88, as shown by Fig. 4, being formed integrally with said lever. The treadle for 88 has a foot-engaging portion 92 arranged at one side of the center, and a foot-engaging portion 93 arranged at the opposite side of the center. In like manner the treadle for 88′ is provided with a foot-engaging portion 92′ at one side of the center, and with a foot-engaging portion 93′ at the opposite side of the center. When the portions 92, 92′ are depressed, the wiper mechanisms are raised, as when moving the wipers into engagement with the work, the turnbuckles 89 being preferably adjusted so as to set the under surfaces of the wipers slightly below the positions which they would occupy when bearing upon the pulled-over portions of the upper. The operator, therefore, in moving the wipers to the work, depresses the portions 92, 92′ as may be necessary in order to carry the wipers over the pulled-over portions. It follows, therefore, that when the wipers overlap the pulled-over portions as shown by Fig. 11, the entire weight of the wiper mechanisms, their carriages, and

the supports 22, 22′ is sustained by the pulled-over portions. If in the judgment of the operator the pressure due to the force of gravity is not sufficient, as for example when operating upon leather which is relatively thick and stiff, he may supplement such pressure by stepping upon the portions 93, 93′ of the treadles. When such supplemental pressure is discontinued the initial pressure due to gravity remains, and it is this pressure which is subsequently relieved automatically by upward movement of the carriages 24, 24′ when the lifting dogs 67, 67′ act as hereinbefore explained. As shown by Figs. 1, 2 and 5, in which the wipers are resting upon the pulled-over portions of the upper, the foot-engaging portions 93, 93′ are above and out of contact with the floor or surface upon which the machine is resting, the clearance under the foot-engaging portions affording sufficient downward movement to effect the supplemental pressure hereinbefore referred to. The clearance under the foot-engaging portions is not enough, however, to enable the treadles and connected parts to be strained to the breaking point.

Referring again to Fig. 11, although the pressure-relieving movement of the wipers may be caused by inertia of the wiping mechanisms and their carriages opposing horizontal movement, as hereinbefore explained, such inertia may not be sufficient when the treadles 73, 73′ are depressed too slowly; and, in order to guard against failure of such movement, I have provided mechanism which will act positively to cause the desired upward movement of the wipers. The mechanism for this purpose is shown by Figs. 2, 6, 7, 8 and 9, in which said mechanism is applied to the toe-end of the machine. Such mechanism is duplicated for the heel-end of the machine, but for the present purpose it will be sufficient to refer only to the one mechanism as shown by Figs. 6 to 9.

Fig. 6 shows treadle 73 and the other parts in their normal position, as when the wipers are resting upon the pulled-over portions of the upper. A lifting dog 94 is arranged upon a pivot 95. This pivot is carried by a tilting member 96 which in turn is arranged upon a pivot 97 carried by the treadle lever 73. The member 96 may rock relatively to the treadle lever, and the dog 94 may rock relatively to the member 96. The pivot 97 is so arranged in relation to the fulcrum 74 of the lever as to cross the vertical center of said fulcrum when the treadle is depressed, the first part (substantially half, as shown) of the downward movement of the treadle causes upward movement of pivot 97 and a corresponding upward movement of dog 94. When the treadle 73 is in its initial position, as shown by Fig. 6, the dog 94 rests upon a stop 98 (Fig. 9) affixed to the main frame 20 of the machine. Said stop as shown is in the form of a setscrew and is adjustable. The dog 94 is so formed as to be tilted automatically by the force of gravity toward a series of teeth 99 when the dog is lifted away from the stop 98. The teeth 99 are affixed to the support 22. It is apparent, therefore, that during substantially one-half of the entire downward movement of the treadle 73 the lifting dog 94 will rise and will engage the tooth which is next above it. The teeth are sufficiently close to each other to insure a substantial upward movement of the support 22 between the time when the dog 94 reaches tooth-engaging position and the time when the pivot 97 reaches the vertical center of the fulcrum 74. The support 22, carriage 24, and wiping mechanism thereon, are thereby raised positively should the downward movement of the treadle be too slow to utilize horizontal inertia of the carriage and wiping mechanism for the purpose explained. The lifting dog 94 does not take the place of the lifting dog 67 but is used in conjunction with the latter, dog 94 positively raising the support 22 while dog 67 is positively raising the slide 62. There is one thing to be borne in mind in connection with this combination of lifting dogs, and that is that after the pivot 97 has passed the vertical center of the fulcrum 74 the lifting dog 94 descends, permitting a corresponding descent of the support 22; but the lifting dog 67 continues to rise until the treadle has reached its lowest position. From this it follows that the horizontal retractory movement of the wipers will occur after the vertical pressure-relieving movement has been effected by the lifting dog 94. The return movement of the dog 94, which occurs when the operator takes his foot from the treadle 73, is of no consequence; but it may be well, nevertheless, to describe what happens at that time. The weight of the parts attached to the treadles 73, 73′ behind the fulcra 74, 74′ is sufficient to automatically raise the forward ends of the treadles when the latter are released after being depressed. During the return movement of the treadles to the position shown by Fig. 6, the slide 62 descends and the pivot 97 is carried to the rear across the vertical center of the fulcrum 74 and causes upward movement of the support 22, carriage 24 and wiper mechanism coextensively with the pressure-relieving movement previously effected. The lifting dog 94 in returning to its initial position encounters the stop 98 and is thereby automatically disengaged from the series of teeth 99, thereby leaving the support 22 free to be manipulated by the double treadle 92, 93. It should also be borne in mind that as the holder 68 of the

lifting dog 67 returns to its initial position its cam surface 78 rides upon the stationary pin 77 to retract 67 from the series of teeth 66. Simultaneously with such retraction of the dog 67 the cam 61 releases the arm 59, and the locking pawl 56 is thereupon set against the ratchet wheel 55 in consequence of the action of spring 58.

I claim:

1. In a machine of the character described, end-wiping means, work-supporting means, and treadle mechanism arranged to move said end-wiping means so as to lift and retract the work-engaging element thereof from the work.

2. In a machine of the character described, end-wiping means, work-supporting means, and treadle mechanism arranged to lift said end-wiping means out of contact with the work and to retract said means while so lifted.

3. In a machine of the character described, end-wiping means, work-supporting means, and treadle mechanism arranged to lift said end-wiping means substantially vertically from the work, and to retract said end-wiping means.

4. In a machine of the character described, a carriage capable of horizontal movement and vertical movement independently of each other, end-wiping means arranged thereon, work-supporting means, a treadle, and mechanism arranged to be operated by said treadle to lift said carriage to retract the work-engaging element of said end-wiping means from the work, and to retract said carriage horizontally from the work.

5. In a machine of the character described, a horizontally movable carriage, a vertically movable support therefor, end-wiping means arranged on said carriage, work-supporting means, and treadle mechanism arranged to lift said support and to move said carriage relatively thereto to retract said wiping means from the work.

6. In a machine of the character described, a vertically movable support, a carriage arranged thereon to move horizontally, end-wiping means arranged on said carriage, work-supporting means, and treadle mechanism arranged to lift said support and retract said carriage horizontally from the work.

7. In a machine of the character described, a vertically movable support, a horizontally movable support, one of said supports being arranged upon and movable relatively to the other, end-wiping mechanism arranged upon said one of said supports, and treadle mechanism arranged to lift said vertically movable support and to retract said horizontally movable support from the work.

8. In a machine of the character described, end-wiping means arranged to be movable up and down and horizontally, a treadle, and mechanism operable by said treadle to lift said means from the work and retract said means horizontally.

9. In a machine of the character described, end-wiping means, a treadle, and mechanism arranged to lift said means from the work and to retract said means in consequence of downward movement of the foot-engaging portion of said treadle.

10. In a machine of the character described, end-wiping mechanisms arranged to act respectively upon the toe-end and heel-end of a shoe, said mechanisms being movable up and down and toward and from each other, and treadle mechanism arranged to lift both end-wiping mechanisms from the work and retract them away from each other.

11. In a machine of the character described, end-wiping mechanisms arranged to act respectively upon the toe-end and heel-end of a shoe, horizontally movable carriages for said mechanisms, vertically movable means for supporting said carriages, and treadle mechanism arranged to lift said supporting means and retract said carriages horizontally in opposite directions from the work.

12. In a machine of the character described, end-wiping mechanism arranged to be movable up and down and horizontally away from the work, treadle mechanism arranged to lift said end-wiping mechanism and retract the same horizontally from the work, and means arranged to automatically disconnect said treadle mechanism from said end-wiping mechanism to enable said end-wiping mechanism to be moved up and down independently of said treadle mechanism.

13. In a machine of the character described, end-wiping mechanism arranged to be movable up and down and horizontally away from the work, treadle mechanism arranged to lift said end-wiping mechanism and retract the same horizontally from the work, means arranged to automatically disconnect said treadle mechanism from said end-wiping mechanism to enable said end-wiping mechanism to be moved up and down independently of said treadle mechanism, and treadle mechanism arranged to lift said end-wiping mechanism without moving the same horizontally.

14. In a machine of the character described, work-supporting means, a support arranged to be movable up and down, treadle mechanism arranged to lift said support, a carriage arranged upon said support and movable relatively thereto toward and from the work, end-wiping mechanism arranged upon said carriage, and treadle mechanism arranged to move said carriage relatively to said support.

15. In a machine of the character described, work-supporting means, a support

arranged to be movable up and down, treadle mechanism arranged to lift said support, a carriage arranged upon said support and movable relatively thereto toward and from the work, end-wiping mechanism arranged upon said carriage, and treadle mechanism arranged to lift said support and move said carriage with relation to said support.

16. In a machine of the character described, work-supporting means, two supports arranged to be movable up and down independently of each other, carriages arranged upon said supports and movable relatively to said supports toward and from the work, end-wiping mechanisms arranged respectively upon said carriages, two treadle mechanisms arranged to move said supports respectively, and a third treadle mechanism common to both said supports and arranged to lift said supports and retract said carriages from the work.

17. In a machine of the character described, work-supporting means, two supports arranged to be movable up and down independently of each other, carriages arranged upon said supports and movable relatively to said supports toward and from the work, end-wiping mechanisms arranged respectively upon said carriages, two treadle mechanisms arranged to exert downward stress upon said supports respectively, and a third treadle mechanism common to both said supports arranged to lift said supports and retract said carriages from the work.

18. In a machine of the character described, shoe-supporting means, two end-wiping mechanisms arranged to be movable independently of each other up and down and horizontally toward and from the work, two independently operable treadle mechanisms arranged to exert downward stress upon said end-wiping mechanisms respectively, and a third treadle mechanism common to both end-wiping mechanisms and arranged to lift the latter and retract them in opposite directions from the work.

19. In a machine of the character described, shoe-supporting means, two end-wiping mechanisms arranged to be movable independently of each other up and down and horizontally toward and from the work, two independently operable treadle mechanisms arranged to lift said end-wiping mechanisms respectively, and a third treadle mechanism common to both end-wiping mechanisms and arranged to lift the latter and retract them in opposite directions from the work.

20. In a machine of the character described, work-supporting means, end-wiping mechanism, a support arranged to be movable up and down, a carriage arranged on said support to be movable horizontally toward and from the work, said end-wiping mechanism being arranged on said carriage, treadle mechanism including a lifting member, a treadle and connections arranged to transmit lifting movement from said treadle to said lifting member, and means arranged on said carriage to coact with said lifting member to lift said carriage and retract the latter in consequence of lifting movement of said lifting member.

21. In a machine of the character described, work-supporting means, end-wiping mechanism, a support arranged to be movable up and down, a carriage arranged on said support to be movable horizontally toward and from the work, and treadle mechanism including means arranged to act directly upon said support to lift the same and means arranged to act upon said carriage to retract the same horizontally.

22. In a machine of the character described, work-supporting means, end-wiping mechanism, a carriage therefor, a support for said carriage, said carriage being arranged to be movable horizontally toward and from the work and said support being movable up and down, means arranged to lock said carriage against retractory movement, and treadle mechanism arranged to lift said support and act upon said locking means to unlock said carriage.

23. In a machine of the character described, work-supporting means, end-wiping mechanism, a horizontally movable support, a support movable up and down, one of said supports being arranged upon and movable relatively to the other, said end-wiping mechanism being arranged upon said one of said supports, means arranged to lock said horizontally movable support against retractory movement, and treadle mechanism arranged to lift said support which is movable up and down and to actuate said locking means to unlock said horizontally movable support.

24. In a machine of the character described, work-supporting means, end-wiping mechanism, a carriage supporting said end-wiping mechanism, said carriage being arranged to be movable up and down and movable horizontally toward and from the work, means arranged to lock said carriage against horizontal movement from the work, and treadle mechanism arranged to lift said carriage and to actuate said locking means to unlock said carriage and retract said carriage horizontally.

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

HARRIE A. BALLARD.

Witnesses:
M. E. CAPEN,
CHAS. C. DODGE.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."