Dec. 9, 1924. 1,518,873

H. PLUMMER

SHOE CLEANING AND POLISHING MACHINE

Filed March 9, 1922 4 Sheets-Sheet 1

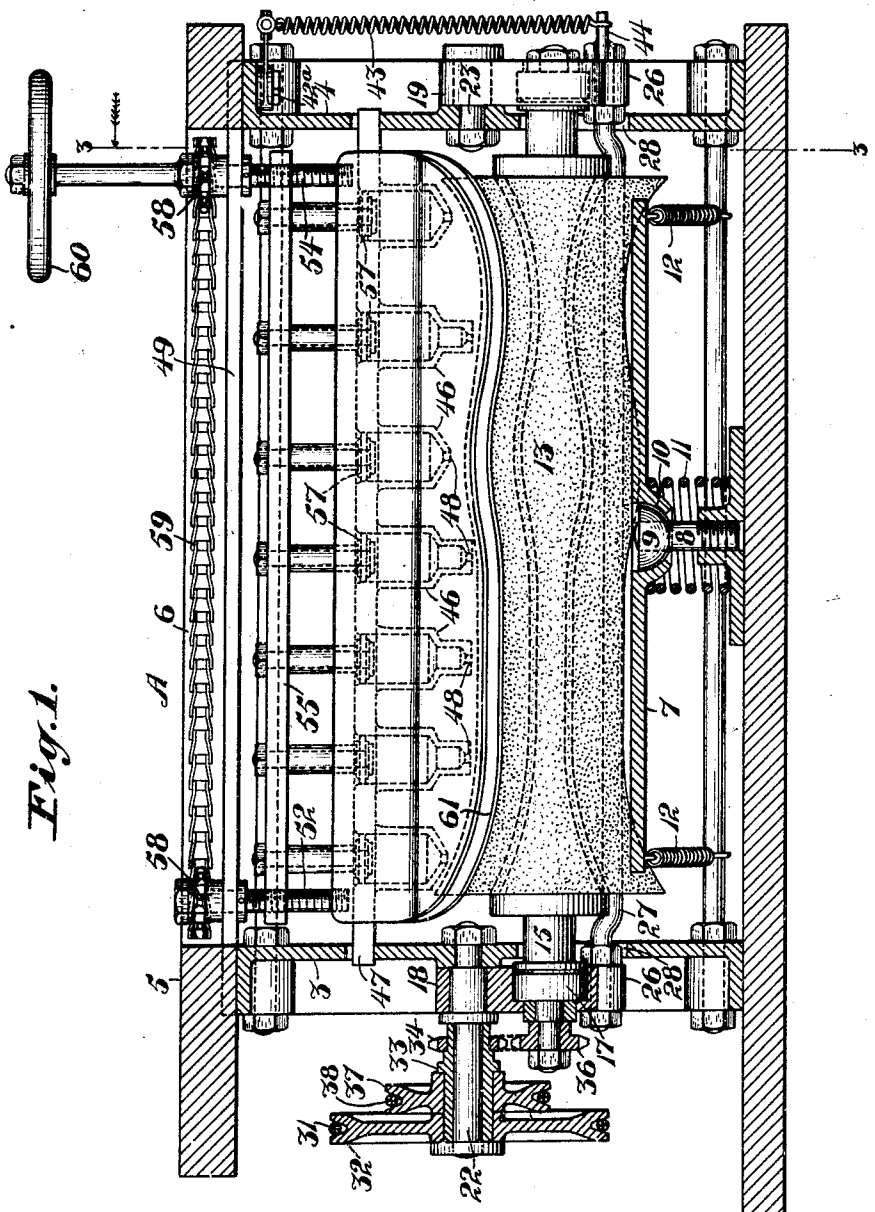


Fig. 1.

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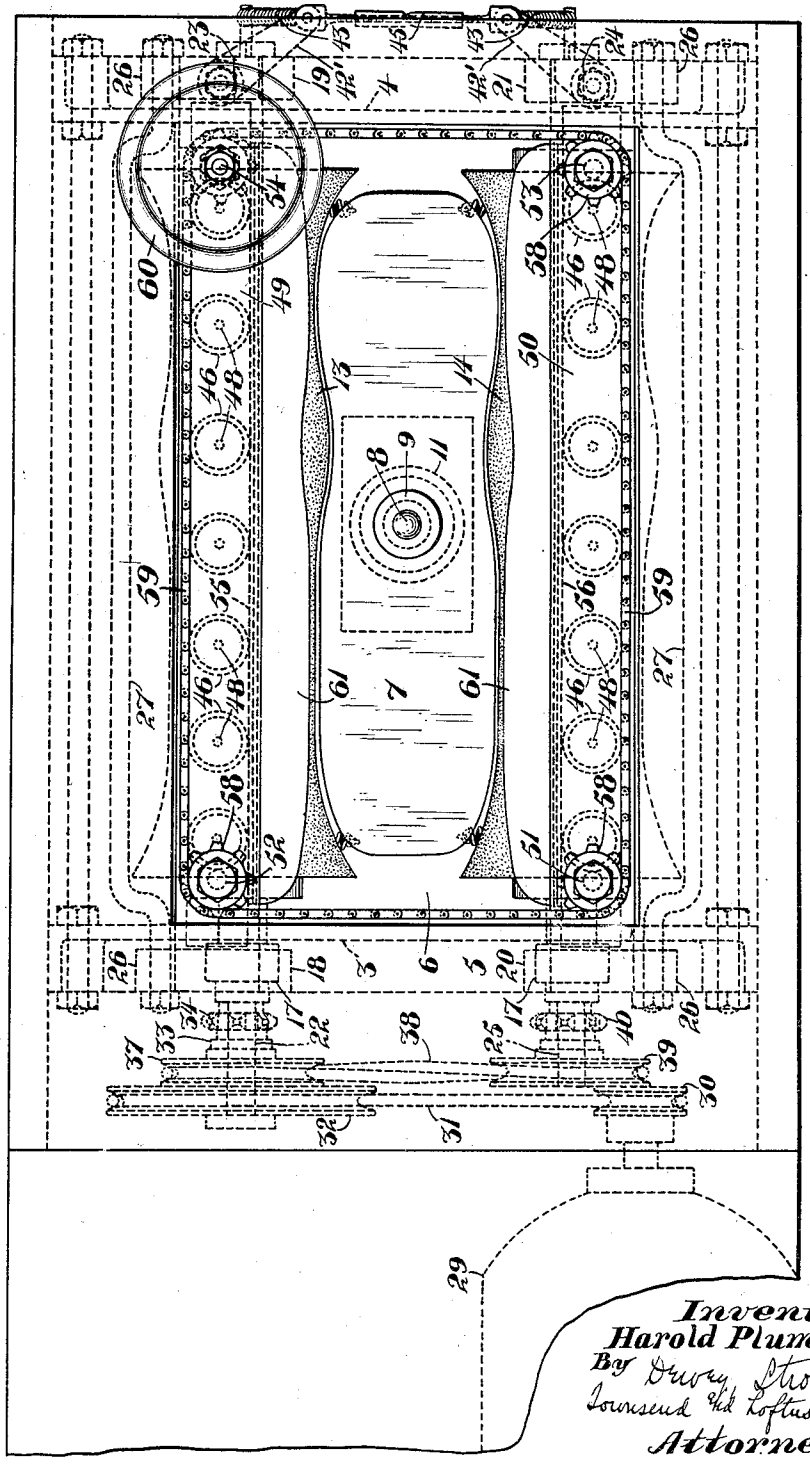


Fig. 2.

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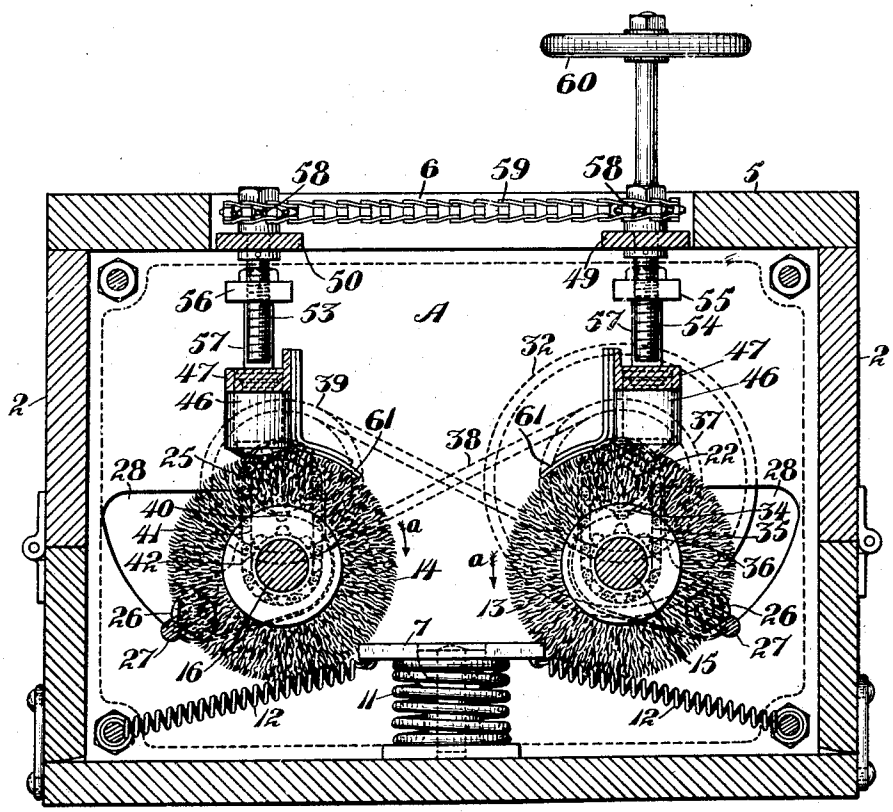
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Filed March 9, 1922 4 Sheets-Sheet 3

Fig. 3.



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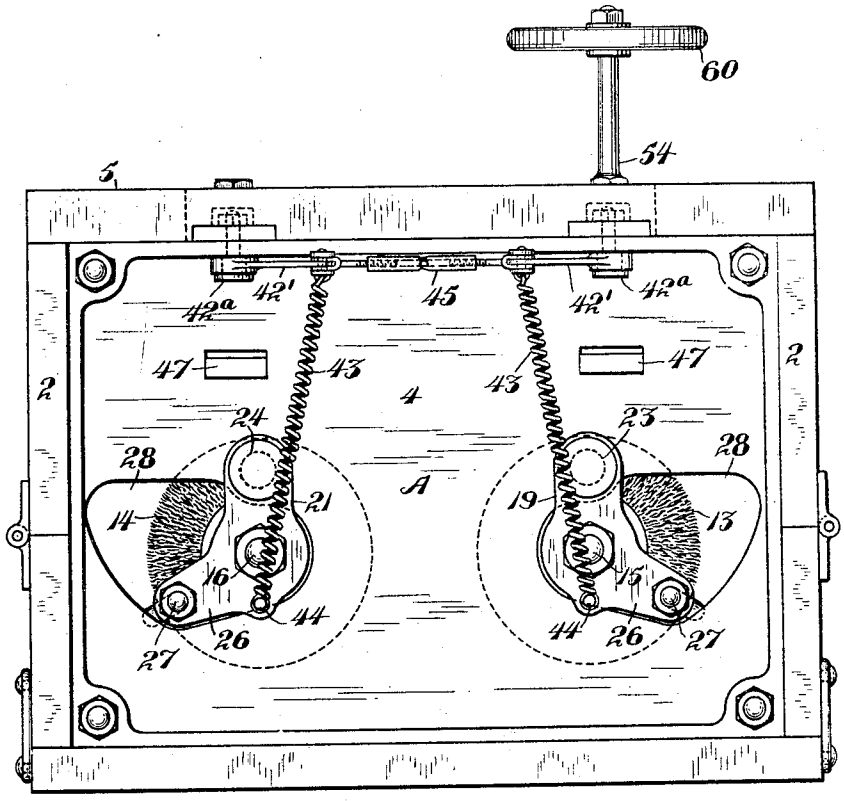
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SHOE CLEANING AND POLISHING MACHINE

Filed March 9, 1922 4 Sheets-Sheet 4

Fig. 4.



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UNITED STATES PATENT OFFICE.

HAROLD PLUMMER, OF OAKLAND, CALIFORNIA.

SHOE CLEANING AND POLISHING MACHINE.

Application filed March 9, 1922. Serial No. 542,244.

To all whom it may concern:

Be it known that I, HAROLD PLUMMER, a British subject, residing at Oakland, county of Alameda, and State of California, have invented new and useful Improvements in Shoe Cleaning and Polishing Machines, of which the following is a specification.

This invention relates to shoe cleaning and polishing machines.

It is the object of the present invention to provide a generally improved, simplified and efficient form of machine adapted to operate on footwear to thoroughly clean and polish the same.

The invention more specifically stated embodies a footrest, a pair of automatically adjustable and rotatable brushes mounted one on each side thereof, a housing enclosing the footrest and brushes, and means for delivering and uniformly distributing polish to the surface of the brushes during the operation thereof that they may apply the same to the footwear and complete the polishing operation.

One form which the invention may assume is exemplified in the following description and illustrated by way of example in the accompanying drawings, in which—

Fig. 1 is a view in longitudinal section through the assembled device.

Fig. 2 is a view in plan.

Fig. 3 is a view in transverse section taken on line 3—3 of Fig. 1.

Fig. 4 is an end elevation disclosing the mechanism for regulating the pressure of the brushes against the shoe.

Referring more particularly to the drawings, A indicates a cabinet of suitable design and construction and consists of sides 2, head members 3 and 4, and a top 5, the latter having an opening 6 formed therein, through which the footwear to be polished may be inserted.

Positioned in the cabinet directly below the opening 6 is a foot rest or foot plate 7. This foot rest is adapted to support the footwear to be cleaned and polished and is mounted for universal movement, that is it may be rocked sidewise or endwise from a central support. This support consists of a stud 8 terminating in a semi-spherical member 9; the latter being adapted to be received by a socket 10 formed centrally of the footrest. Disposed about the stud 8 and between the footrest and the bottom of the cabinet is an expansion spring 11. This spring with the aid of tension springs 12, normally maintains the footrest in a horizontal position and also maintains a perfect connection between the member 9 and the socket 10, but permits the rocking movement of the plate as described, when foot pressure is exerted thereon.

Mounted within the cabinet and arranged parallel to the foot rest is a pair of brushes 13 and 14. One of these brushes is mounted on each side of the foot rest and being formed with an irregular contour to conform somewhat to the shape of a shoe. The brushes 13 and 14 are mounted on shafts 15 and 16 which are provided with trunnions 17; the trunnions of the shaft 15 being journalled in hanger members 18 and 19; those of the shaft 14 being journalled in hangers 20 and 21. These hangers are mounted for swinging movement on stud shafts 22, 23, 24 and 25, and are formed with angular extensions 26. It is thus seen that the brush shafts are mounted for lateral swinging movement in relation to the foot rest. To insure that the pair of hangers supporting each brush will positively swing in unison, they are rigidly connected by a tie rod 27, that is to say, a tie rod 27 is provided for the pair of hangers of each brush, and extends between and is connected to the angular extensions 26 of the hangers. As illustrated, the rods are centrally offset to provide sufficient clearance for the brushes.

The brush shafts and the tie rods 27 extend through apertures 28 formed in the head members 3 and 4. These apertures limit the inward swinging movement of the brushes but permit them to be swung outwardly as desired.

The brushes are adapted to rotate at a suitable rate of speed and toward each other. In other words the brushes rotate in opposite directions as indicated by the arrows *a* in Fig. 3. For imparting rotation to the brushes a motor 29 is provided. This motor may be of any suitable design and is equipped with a pulley 30. This pulley is connected by a transmission belt 31 to a pulley 32. The latter is fixed on a sleeve 33 which is freely mounted on the stud shaft 22. Also fixed on the sleeve 33 is a sprocket gear 34, which is connected by a sprocket chain 35 to a second sprocket gear 36 secured on the brush shaft 15. As before stated the brushes are adapted to rotate in opposite

directions in unison. This is accomplished by the provision of a pulley 37 which is also secured on the sleeve 33 so that it will be driven by the pulley 32 when the latter is actuated by the motor. The pulley 37 is connected by a crossed belt 38 to a pulley 39 rotatably mounted on the stud shaft 25. The pulley 39 is adapted to rotate a sprocket gear 40 in unison therewith and consequently drive the brush shaft 16 through the medium of a sprocket chain 41 and a sprocket gear 42 fixed on the said shaft 16.

From the foregoing it can be readily understood that when the motor is in operation the brushes will be rotated in unison at equal speed and in opposite directions; it being also understood that swinging movement of the brushes will not interrupt nor impede the rotation of the brushes due to the fact that the sprocket gears from which the brush shafts are driven are mounted on the center about which the brushes swing.

It has been found in actual practice that the pressure with which the brushes bear against the footwear must be very light, and that it is desirable to provide means to adjust this pressure. This is accomplished by the provision of the levers 42', which are pivotally mounted on bolts 42a. Tension springs 43 are interposed between the free ends of these levers and the hangers, to which they connect as at 44. Interposed between the levers 42 is a turnbuckle 45 by which the levers may be swung inwardly to increase the tension of the springs, and increase the pressure of the brushes against the footwear, or outwardly to decrease the said pressure.

As before stated means are provided for evenly distributing paste polish to the surface of the brushes during the course of their operation that they may apply the same to the footwear being operated on to aid in polishing the same. The means mentioned consists of a plurality of paste containing cylinders 46, which are arranged in two sets, one set for each brush. These sets are mounted above the brushes with their lowermost ends in close relation thereto; the cylinders in each set being interconnected by a bar 47 to which they are secured. The bars 47 extend between the head members 3 and 4 and are removably fastened thereto.

As will be seen by referring to the drawings, the cylinders 46 are each provided with orifices 48 at their lowermost end to permit the discharge of paste.

Referring to Figs. 1 and 3, it will be seen that the head members 3 and 4 support longitudinal members 49 and 50. These members are secured to the head members and serve to support feed screws 51, 52, 53 and 54. These feed screws, as shown in Fig. 3, are collared on both sides of the members 49 and 50 in a manner to permit turning movement of the feed screws but prevent axial movement thereof. The feed screws are adapted to support plunger frames 55 and 56 and also to impart movement thereto as will be described. Rigidly mounted on the plunger frames is a plurality of plungers 57. These plungers agree in number and location with the cylinders within which they are adapted to extend. The feed screws are provided with sprockets 58 which are interconnected by a sprocket chain 59; the feed screw 54 being also provided with a handwheel 60, by which it may be rotated. It is thus seen that by imparting rotation to the handwheel all of the feed screws will be rotated in unison, and as they are secured from axial movement and threadedly engage the plunger frames, it is seen that upon their rotation the plunger frames will be raised or lowered in relation to the cylinders as the case may be. If the plungers are moved downwardly into the paste cylinders, paste will be discharged through the orifices of the cylinders on to the surface of the brushes. Supported adjacent the paste cylinders are resilient paste spreaders 61. These spreaders engage the surface of the brushes and serve to spread the paste delivered thereto by the cylinders evenly across the brush surface so that an even amount of paste polish may be delivered to all portions of the footwear engaged by the brushes.

In operation of the present invention, assuming that the cylinders are provided with paste and that the brushes are properly adjusted, the footwear to be cleaned and polished is inserted through the opening 6 in the cabinet, positioned between the brushes and on the footrest. The motor may then be started so as to rotate the brushes. The brushes rotating at a suitable speed engage the footwear and remove dust, dirt and the like therefrom. When the footwear is cleaned, the handwheel may be rotated sufficiently to apply a proper amount of paste to the brushes which in turn transfer it to the footwear. In actual practice it has been found that the friction between the rotating brushes and the shoe is sufficient to quickly dry the paste and effect a polish; it being understood that during the various operations, the foot may be manipulated on the footrest to bring all portions of the footwear into engagement with the brushes so that all parts may be equally cleaned and polished.

From the foregoing it is obvious that the device here disclosed, while simple in construction and operation, will serve to thoroughly clean and polish footwear.

While certain features of the present invention are more or less specifically illustrated, I wish it understood that various changes in form and proportion may be resorted to within the scope of the appended

claims, similarly that the materials and finish of the several parts employed may be such as the experience and judgment of the manufacturer may dictate or various uses may demand.

Having thus described my invention, what I claim and desire to secure by Letters Patent is—

1. A shoe polishing machine comprising a footrest upon which footwear to be polished may be positioned, a pair of rotatable brushes associated with the footrest and mounted for movement toward and away from the footrest, means for rotating said brushes, a plurality of stationary paste applying members mounted longitudinally of each brush, and a stationary flexible guard and paste spreading member extending substantially from end to end of each brush.

2. A shoe polishing machine comprising a cabinet, a footrest mounted therein, a pair of rotatable brushes associated with the footrest and arranged parallel thereto, means permitting lateral swinging of said brushes, means for rotating said brushes, a plurality of interconnected paste polish containing cylinders mounted adjacent the brushes, each having discharge orifice formed therein, a plurality of plungers adapted to enter said cylinders, said plungers being interconnected, manually controlled means for imparting movement to the plungers in unison to discharge paste from the cylinders to the brushes, and means for spreading said paste evenly over the surface of the brushes.

3. In combination with a footrest adapted to support and position footwear to be cleaned, of a pair of rotatable brushes associated with said footrest and arranged parallel thereto, means permitting swinging movement of the brushes toward and away from said footrest whereby they may engage and bear against the footwear on the footrest, and means whereby the pressure with which the brushes bear against the footwear may be regulated.

4. In a machine of the character described a paste applying mechanism, said mechanism comprising a stationary bar, a plurality of cylinders supported thereby, said cylinders having a discharge opening formed in their lower end, a second bar vertically adjustable, a plurality of plungers carried thereby, each aligning with a respective cylinder, and means for imparting vertical movement to said bar and the plungers carried thereby.

5. In a machine of the character described the combination with a rotating brush, of a a bar arranged adjacent the same and in parallelism therewith, a plurality of paste receiving cylinders carried by said bar, each cylinder having a discharge opening formed therein adjacent the surface of the brush, a plurality of plungers one for each cylinder, means for raising and lowering said plungers in unison, and means for distributing the paste discharged from the respective cylinders over the surface of the brush.

6. In a machine of the character described the combination with a rotating brush, of a bar arranged adjacent the same and in parallelism therewith, a plurality of paste receiving cylinders carried by said bar, each cylinder having a discharge opening formed therein adjacent the surface of the brush, a plurality of plungers one for each cylinder, a bar to which said plungers are attached, a nut on each end of the bar, a threaded rod extending through each nut, and means for turning said rods in unison to impart endwise movement to the bar and the plungers carried thereby.

7. In a machine of the character described the combination with a rotating brush, of a bar arranged adjacent the same and in parallelism therewith, a plurality of paste receiving cylinders carried by said bar, each cylinder having a discharge opening formed therein adjacent the surface of the brush, a plurality of plungers one for each cylinder, a bar to which said plungers are attached, a nut on each end of the bar, a threaded rod extending through each nut, means for turning said rods in unison to impart endwise movement to the bar and the plungers carried thereby, and a flexible member attached to the first named bar and partially covering the surface of the brush, said members serving to uniformly distribute the paste over the surface of the brush.

8. In combination with a foot-rest adapted to support and position footwear to be cleaned, a pair of rotatable brushes associated with said foot-rest and arranged parallel therewith, means permitting swinging movement of the brushes toward and away from said foot-rest whereby they may engage and bear against the footwear on the foot-rest, and means whereby the pressure with which the brushes bear against the footwear may be regulated, said means comprising pivoted bearing members between which the brushes are journalled, springs exerting an inward pull on said bearing members and brushes, and means for adjusting the tension of said springs.

9. A device of the character described comprising a foot-rest, a pair of rotatable brushes cooperating with the foot-rest and arranged one on each side thereof, a stationary frame enclosing the foot-rest and brushes, stud shafts arranged in pairs and secured to each end of the frame in substantial alignment with the brushes, bearing members pivotally mounted on the respective stud shafts and in which the brushes are journalled, said pivotally mounted bearing members permitting swinging movement of the brushes to and away from the foot-rest, and means for ex-

erting an inward pull on the bearings and the brushes so that they may engage and bear against footwear placed on the foot-rest.

10. A device of the character described comprising a foot-rest, a pair of rotatable brushes cooperating with the foot-rest and arranged one on each side thereof, a stationary frame enclosing the foot-rest and brushes, stud shafts arranged in pairs and secured to each end of the frame in substantial alignment with the brushes, bearing members pivotally mounted on the respective stud shafts and in which the brushes are journalled, said pivotally mounted bearing members permitting swinging movement of the brushes to and away from the foot-rest, means for exerting an inward pull on the bearings and the brushes so that they may engage and bear against footwear placed on the foot-rest, and means whereby the pressure with which the brushes bear against the footwear may be regulated.

11. A device of the character described comprising a foot-rest, a pair of rotatable brushes cooperating with the foot-rest and arranged one on each side thereof, a stationary frame enclosing the foot-rest and brushes, stud shafts arranged in pairs and secured to each end of the frame in substantial alignment with the brushes, bearing members pivotally mounted on the respective stud shafts and in which the brushes are journalled, said pivotally mounted bearing members permitting swinging movement of the brushes to and away from the foot-rest, tie-rods connecting each aligned pair of bearing members to cause the same to swing in unison, a shaft for each brush, a sprocket gear secured on each shaft, a sprocket gear journalled on each adjacent stud shaft, said first and last-named sprocket gears being arranged in pairs, chains connecting the respective pairs of sprocket gears, and means for driving said sprocket gears in unison and in opposite directions.

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