

W. H. McCONNELL.  
SHOE POLISHING MACHINE.

APPLICATION FILED JAN. 4, 1912. RENEWED OCT. 8, 1912.

1,061,307.

Patented May 13, 1913.

4 SHEETS—SHEET 1.

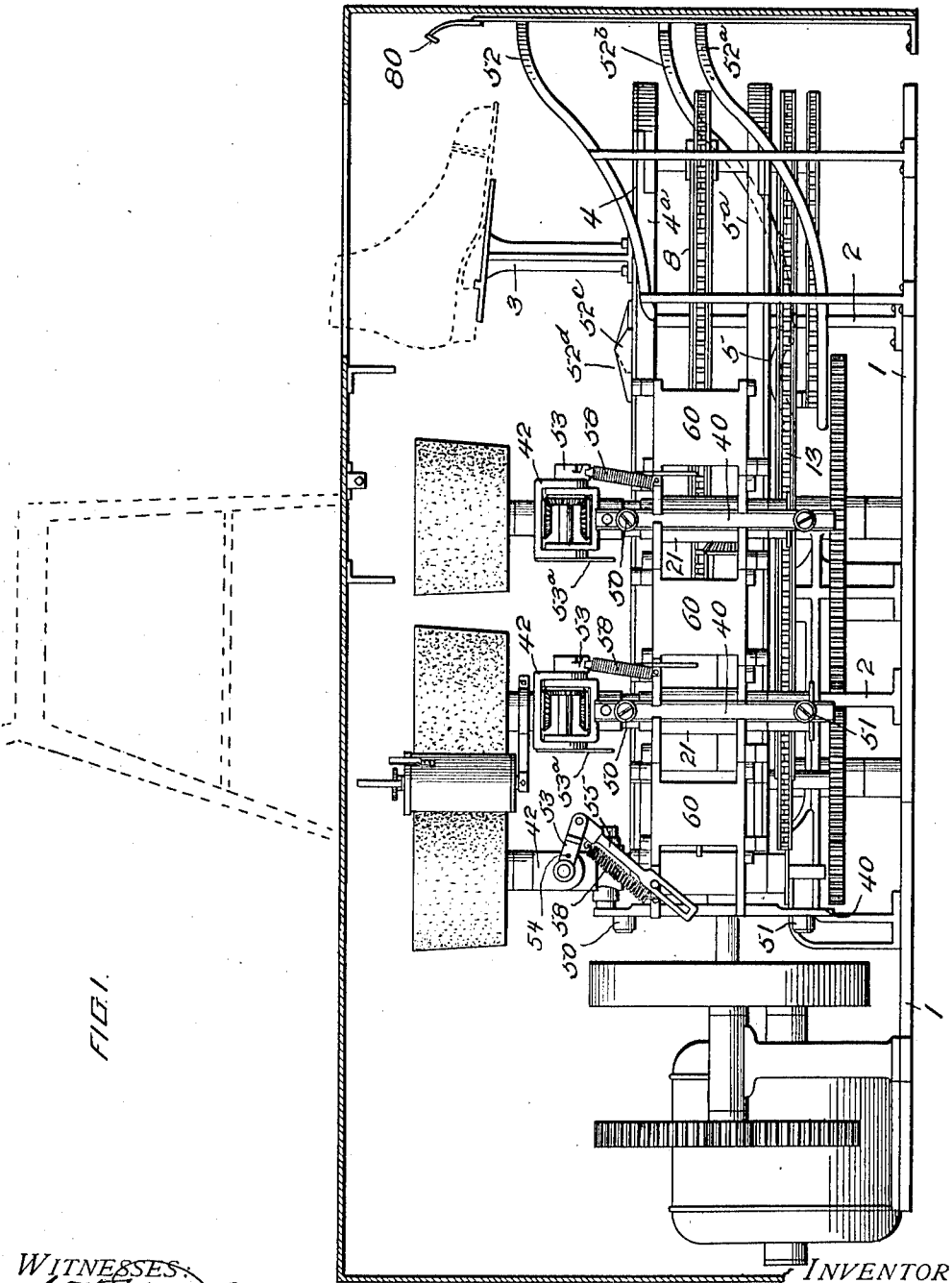


FIG. 1.

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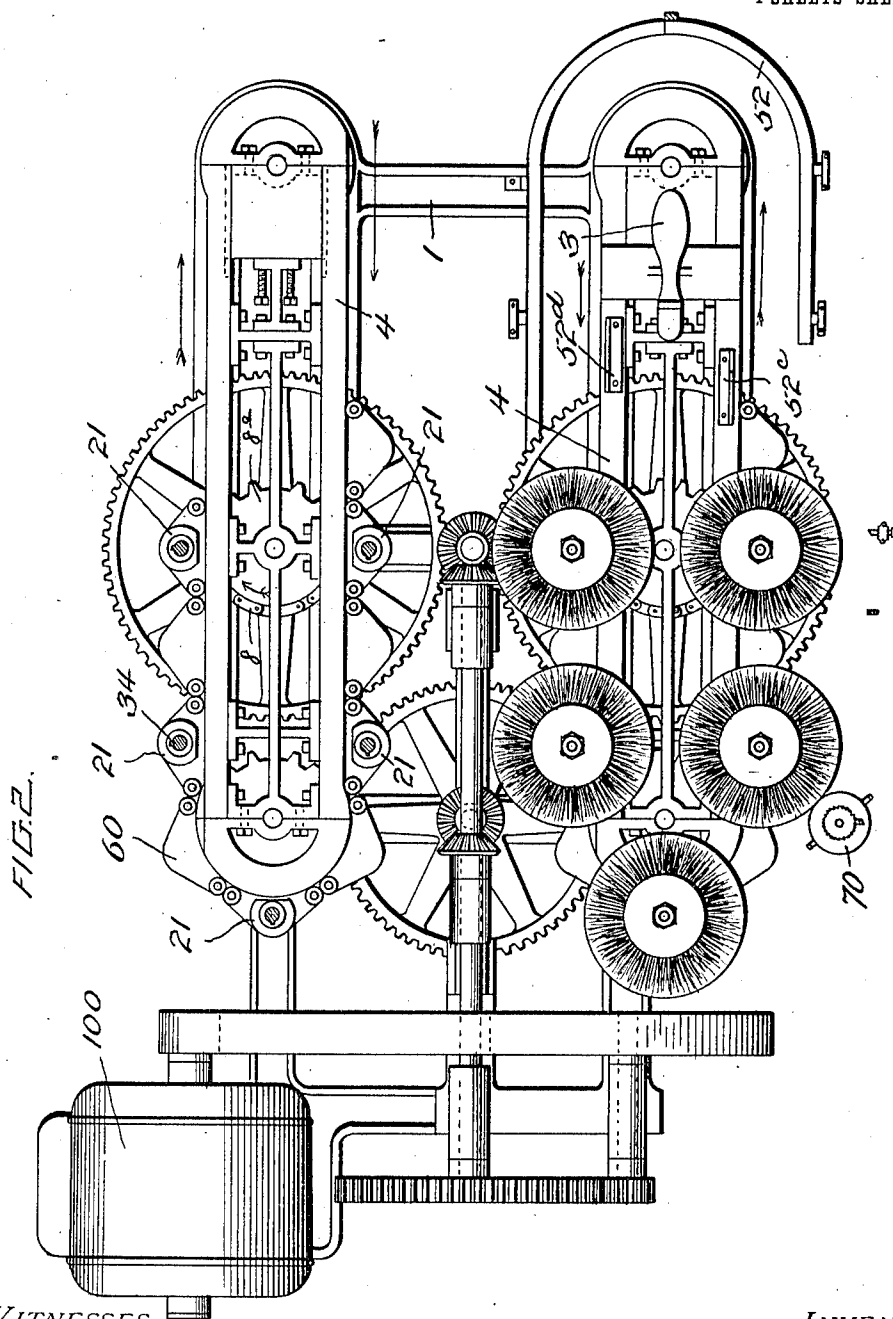
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4 SHEETS—SHEET 2.



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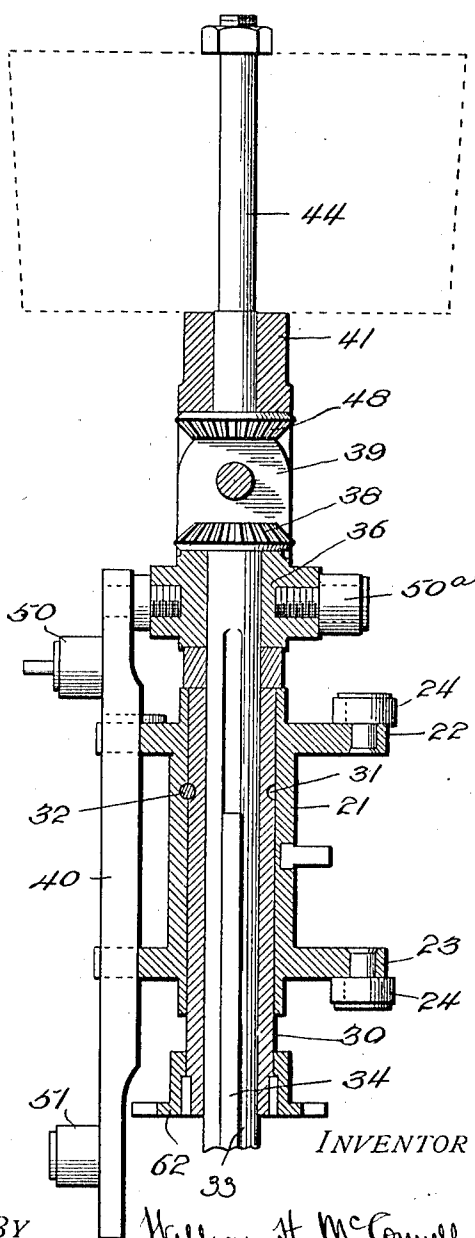
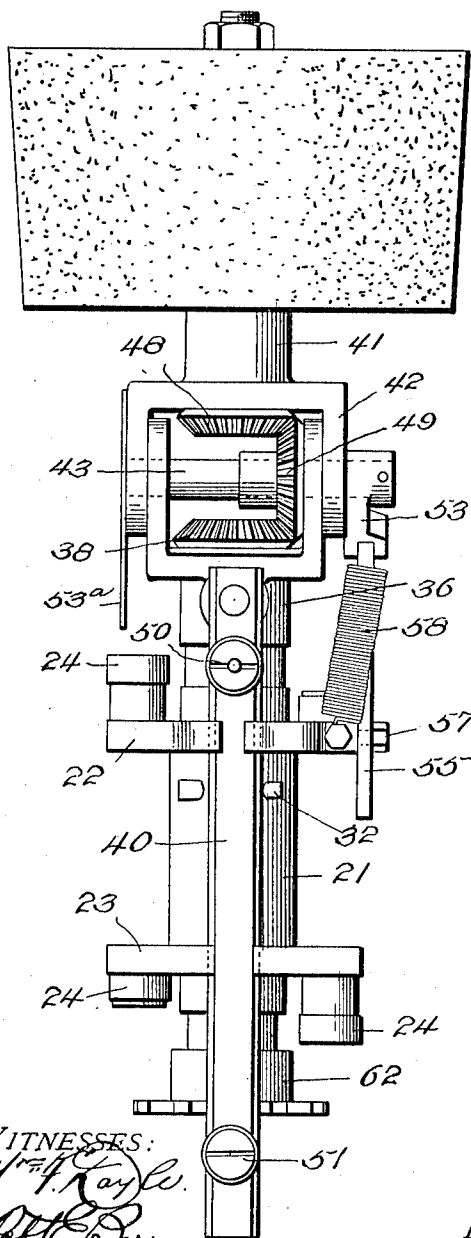
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4 SHEETS—SHEET 3.

FIG. 3.

FIG. 4.



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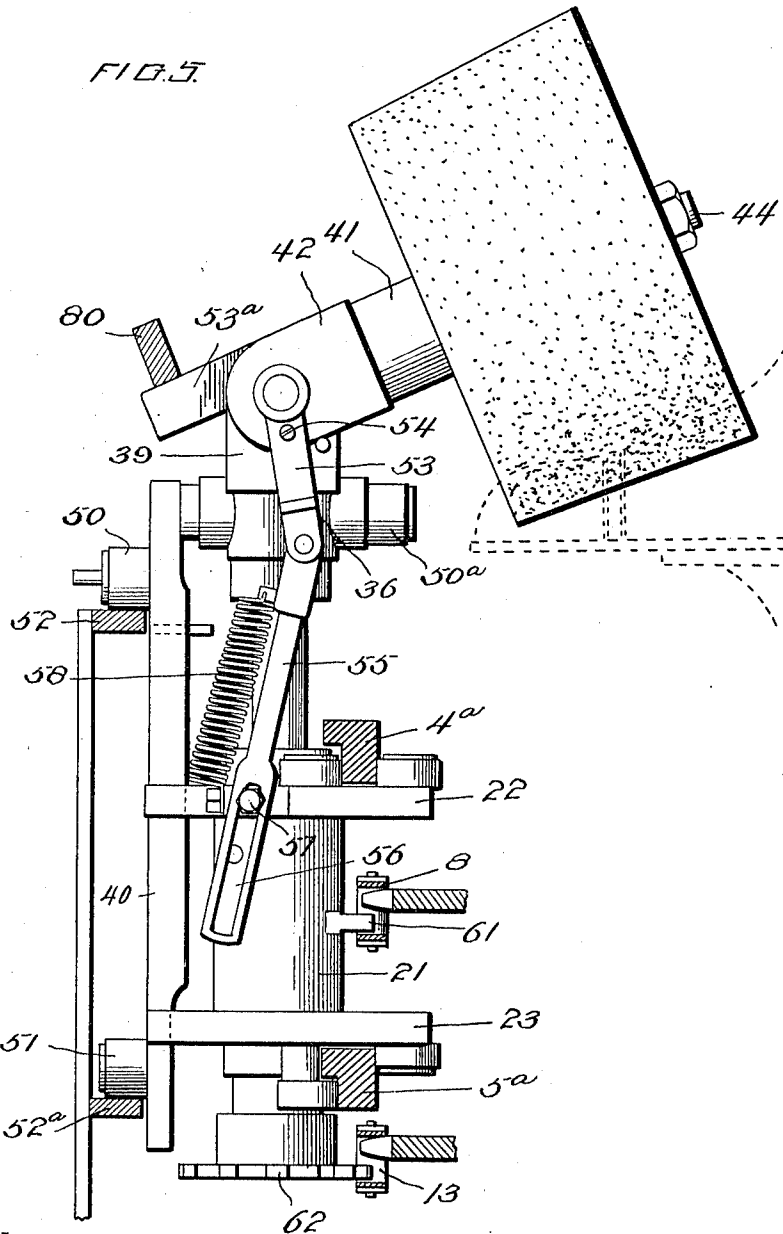
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4 SHEETS—SHEET 4.

FIG. 5.



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# UNITED STATES PATENT OFFICE.

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## SHOE-POLISHING MACHINE.

1,061,307.

Specification of Letters Patent.

Patented May 13, 1913.

Application filed January 4, 1912, Serial No. 669,387. Renewed October 8, 1912. Serial No. 724,676.

*To all whom it may concern:*

Be it known that I, WILLIAM H. McCONNELL, a citizen of the United States, residing at Richmond, in the county of Henrico and State of Virginia, have invented certain new and useful Improvements in Shoe-Polishing 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.

My invention consists in the novel features hereinafter pointed out reference being had to the accompanying drawings which illustrate one form in which I have contemplated embodying the invention and the said invention is fully disclosed in the following description and claims.

My present invention is an improvement in the class of shoe polishing machines such as that illustrated in my former application for Letters Patent of the United States, filed Dec. 13, 1909, Serial No. 532,834, renewed Sept. 15, 1911, Serial No. 649,561 and it relates particularly to the construction of the brush carrier and the means for raising and lowering the brushes and tilting them toward and from the shoe, and in the accompanying drawings I have shown my invention embodied in a machine identical with that disclosed in my former application except as to the features herein claimed, as will more clearly appear hereafter.

Referring to the said drawings, Figure 1 represents a side elevation of a shoe polishing machine of the kind described, having my present invention embodied therein, the exterior casing of the machine being shown in section, and the seat for the person using the machine and the position of one shoe to be polished, being represented in dotted lines. Fig. 2 is a top plan view of the apparatus with the casing removed, the foot rest on the left side of the machine being also removed, together with the brushes, the driving shafts for which are shown in section. Fig. 3 is an elevation of one of the complete brush carriages detached from the machine, with the brush carried thereby. Fig. 4 is a vertical sectional view of the same, the brush being removed and its position indicated by dotted lines. Fig. 5 is a

detail view representing one of the brush carriages as it appears when passing around the front end of the endless track, with the brush supporting device elevated and the brush carried thereby depressed into contact with the top of the toe of the shoe, the position of the shoe and shoe rest being indicated in dotted lines, and adjacent parts of the machine being indicated in section.

In the drawings 1 represents the base plate or bed, 2, 2 the parallel supporting frames carrying the moving parts, the mechanism associated with each frame being identical in construction and operation, so that a description of one will suffice for both. Each of the frames 2 is provided with an endless track for guiding the brush carriages during their travel around the adjacent shoe support 3 comprising in this instance an upper track rail extending downwardly from the upper track frame 4 and indicated at 4<sup>a</sup>, and a lower track rail extending upwardly from the lower track frame 5 and indicated at 5<sup>a</sup>.

8 is an endless chain passing around a front sprocket wheel 9 and driven from a sprocket wheel near the center of the machine, said chain being located between the upper and lower track frames and being adapted to propel one carriage at a time around the shoe support. (In Fig. 2 of the drawings, arrows indicate the direction of travel of the chain 8 and the carriages.)

13 is a sprocket chain supported and appropriately driven and located below the lower track frame and following the endless track throughout its entire extent. Upon the endless track rails 4<sup>a</sup> and 5<sup>a</sup> a plurality of brush carriages are placed, preferably five in number which are exactly the same in construction and operation except for certain auxiliary features which characterize the dauber brush carriage and which are not involved herein and so far as the present invention is concerned, a description of one of such carriages will suffice for all.

Each of the brush carriages, one of which is illustrated in detail in Figs. 3, 4 and 5, is provided with a bearing sleeve 21, provided with horizontally disposed upper and lower brackets or flanges 22 and 23 carrying guiding projections or rollers 24 which

engage the upper and lower track rails in any desired manner, for guiding the carriage around the shoe support. The particular construction of the track rail and the guiding rollers of the carriage engaging the same, form no part of my present invention.

Within the bearing sleeve 21 of the carriage frame, is a rotatable sleeve 30 which preferably extends below the end of the bearing sleeve and is held from vertical movement in any desired way, as by a pin 32 extending through a hole in the sleeve 21 and engaging an annular groove 31 in the rotating sleeve.

33 represents a vertically movable shaft extending through sleeve 30, connected to rotate therewith as by a key 34 and passing through at its upper end a head block 36 provided with arms 39, said shaft carrying a miter gear 38 at its upper end.

The parts thus far described are all preferably constructed substantially identical with the corresponding parts of the apparatus disclosed in my aforesaid prior application. The head block 36 is provided with means for maintaining it in a predetermined relation with the carriage frame while it is moved vertically with respect thereto and, in this instance, the head block is shown provided with a depending guide bar 40 passing through guiding recesses in the flanges 22 and 23 of the carriage frame and said guide bar carries lifting projections 50 and 51 in the form of friction rollers for engaging cam rails hereinafter described, to raise and lower the brushes while they are passing around the shoe support. Above the head block 36 is a pivoted brush carrier comprising a sleeve 41 having downwardly extending arms 42 forming a yoke which is pivotally connected to the arms 39 of the head block by a pivot rod or shaft 43. A brush shaft 44 extends through the sleeve 41 and is provided with a miter gear 48 meshing with an idle miter gear 49 on the pivot bolt 43, which in turn meshes with the miter gear 38. The head block is also provided with an auxiliary lifting stud 50<sup>a</sup> on the opposite side from the guide bar 40.

An important feature of my present invention is the means for tilting the brush carrier and brush at certain parts of the travel of the carriage, which consists in this instance of the following construction: The yoke 42 of the brush carrier is provided with an actuating arm 53 secured rigidly thereto. In this instance it is shown as having a part fitted on the pivot pin 43 and an eccentrically disposed screw 54 for fixing its relation to the brush carrier. The outer end of the arm 53 is pivotally connected to a link 55, the lower end of which is slotted as at 56, the slot engaging a fixed stud 57 secured to the flange 22 of the brush carriage. A spiral spring 58 is connected at one end

to the brush carriage and at the other end to the upper end of the link 55 (or it might be connected with the arm 53), thus maintaining the link 55 normally with the upper end of its slot in engagement with the stud 57. With this construction it will be apparent that whenever the head block is elevated more or less, the brush carrier will be tilted more or less inwardly, that is toward the shoe support, and at the same time in all positions of the brush whether vertical, inclined or substantially horizontal, the brush is maintained against the shoe in a yielding manner, that is to say that in any position to which the brush is moved by the elevation or depression of the head block, while it will be positively held in a definite position under ordinary circumstances, it may yet yield against the tension of the spring 58 and to the extent of the slot 56, thus making it impossible that a person's foot can be injured in any way by any of the brushes of the device, even though his foot should be improperly placed upon or accidentally slip from the foot rest while the machine is in operation.

Each carriage is provided with a tooth or lug 61 to engage the conveyer 8 as in my prior application, for propelling the carriage along the tracks and each carriage is provided with a sprocket wheel 62 secured to the rotating sleeve 30 and adapted to engage the sprocket chain 13 for driving the brushes, as in my former application.

52 and 52<sup>a</sup> represent inclined cam rails suitably supported adjacent to the front of the frame and extending around the same on both sides of the shoe support for the purpose of engaging the upper and lower lifting studs or rollers 50 and 51, as shown in Figs. 1 and 5, thus lifting the head block and brush carrier and simultaneously causing the brush carrier and brush to tilt proportionately to the amount which it is lifted. I prefer to employ two cam rails and two lifting studs, as shown, in order to lift the brush carrier without binding. I also prefer to provide a third cam rail 52<sup>b</sup> which is located preferably above and parallel to the cam rail 52<sup>a</sup> on the inner side of the frame where the carriage is intended to descend to its normal plane, said auxiliary cam rail engaging the upper side of the stud 51 to positively depress the brush carrier and insure its proper movement as it descends.

It is necessary in order to have the brush polish the rear portion of the heel of the shoe properly, that the brush should be tilted inward just before it reaches the heel, when passing along the outer side of the shoe and again just as it passes around the heel on the inner side. This deflection of the brush for this purpose might be accomplished by means of suitable raised portions in the cam rails 52 and 52<sup>a</sup> if desired,

but I have found it more convenient to locate on top of the frame of the machine on opposite sides of the rear portion of the shoe rest, a pair of special cams 52<sup>a</sup> and 52<sup>a</sup>, see Figs. 1 and 2, which are engaged by the inner lifting stud or roll 50<sup>a</sup> for the purpose of imparting a slight upward movement to the head block 36 and a corresponding inward deflection of the brush in order that the brush may pass around the heel portion of the shoe, both in approaching the shoe and in leaving the same, as will be readily understood.

In some instances, it may be desirable to provide an additional limitation to the downward tilting movement of the brush immediately in front of the shoe rest where the brush is rapidly revolving upon the toe portion of the shoe and in some cases might press unduly upon the sensitive toe portions of the foot of the wearer. For this purpose instead of modifying the elevation of the cam rails at their forward ends, I prefer to provide a stop rail 80 adjacent to the front of the frame in position to engage an arm 53<sup>a</sup> rigidly secured to the tilting brush carrier, said stop rail being so shaped and located that as the brush passes over the toe portion of the shoe, the stop rail 80 will engage the arm 53<sup>a</sup> as shown in Fig. 5, and maintain the brush very slightly above the position that it would otherwise occupy if the springs 58 were permitted to pull the rod 55 down to the full limit of the slot 56.

Any desired means may be employed for securing the successive operation or travel of the brushes around the shoe rest but I prefer to employ the same means which is disclosed in my previous application, which consists in locating a bumper or bumper frame 60 between each brush carriage and the one next adjacent. Each of these bumpers consists of a metal frame having means to engage the track rails and flanges for engaging and pushing the carriages along, communicating motion from one to another, but they carry no mechanism and perform no other function. It will be understood that the propelling chain 8 is of less extent than the endless track rails, leaving a dead portion at the rear of the track rails sufficient to accommodate all of the brush carriages and bumpers, except the carriage which is being propelled around the shoe rest and which pushes one of the bumpers before it. As the carriage in motion reaches the end of its travel under the influence of the chain 8, the bumper preceding it will strike the next carriage, pushing all the bumpers and carriages around the dead portions of the track rails and forcing the next carriage into such position that its lug 61 will engage the chain 8 and cause it to be moved in its turn. This operation is

the same as that described in my former application.

One of the brush carriages is provided with suitable means for applying blacking to the brush thereof which is termed the dauber brush. Such a device is illustrated at 70 and as there shown is the same device that is described for this purpose in my former application. As it has no bearing on my present application, it will not be particularly described herein.

The apparatus as a whole is driven from a suitable motor 100 by means of suitable gearing which as herein shown, is identical with that shown and described in my former application. This driving mechanism, however, has no bearing on my present invention and will not be particularly described or referred to herein.

What I claim and desire to secure by Letters Patent is:—

1. In a shoe polishing machine, the combination with a shoe support, a traveling brush carriage, rigid guiding means for said carriage extending around the shoe support, a vertically movable rotatable shaft mounted in said carriage, a brush carrier connected to a part carried by said shaft by a horizontal pivot, a brush carried by said brush carrier and operatively connected for rotation with said rotatable shaft and means for moving said rotatable shaft and brush carrier vertically, of a connection between said brush carrier and said carriage, whereby the vertical movement of said carrier will positively rock the same toward and from the shoe support.

2. In a shoe polishing machine, the combination with a shoe support, a traveling brush carriage, rigid guiding means for said carriage extending around the shoe support, a vertically movable rotatable shaft mounted in said carriage, a brush carrier connected to a part carried by said shaft by a horizontal pivot, a brush carried by said brush carrier and operatively connected for rotation with said rotatable shaft, and means for moving said rotatable shaft and brush carrier vertically, of a yielding connection between the brush carrier and said carriage, for positively rocking the brush carrier toward and from the shoe support when the said carrier is moved vertically, while permitting the brush carrier and brush to yield away from the shoe support at all positions to which it may be moved.

3. In a shoe polishing machine, the combination with a shoe support a traveling brush carriage, rigid guiding means for said carriage extending around the shoe support, a vertically movable rotatable shaft mounted in said carriage, a brush carrier connected to a part carried by said shaft by a horizontal pivot, a brush carried by said brush carrier and operatively connected for rotation

with said rotatable shaft and means for moving said rotatable shaft and brush carrier vertically, of a yielding connection between the brush carrier, and said carriage, and a rigid part connecting said brush carrier and said carriage and provided with a slotted connection with one of said parts.

4. In a shoe polishing machine, the combination with a shoe support, a traveling brush carriage, rigid guiding means for said carriage extending around the shoe support, a vertically movable rotatable shaft mounted in said carriage, a brush carrier connected to a part carried by said shaft, by a horizontal pivot, a brush carried by said brush carrier and operatively connected for rotation with said shaft and means for moving said rotatable shaft and brush carrier vertically, of an actuating arm connected with said brush carrier, a spring connecting said arm with the brush carriage, and a link connecting said arm with said carriage, said link having a slot therein and a stud secured to one of said parts and extending into said slot.

5. In a shoe polishing machine, the combination with a shoe support, a traveling brush carriage, rigid guiding means for said carriage extending around the shoe support, a vertically movable rotatable shaft mounted in said carriage, a brush carrier connected to a part carried by said shaft by a horizontal pivot, a brush carried by said brush carrier and operatively connected for rotation with said shaft, and means for moving said rotatable shaft and brush carrier vertically, of an actuating arm connected with said brush carrier, a link pivotally connected to said arm and having a longitudinal slot, a stud extending into said slot and connected with the brush carriage, and a spring connected at one end to the carriage and having its other end operatively connected with said arm for holding the link normally in position engaging said stud at one end of the slot.

6. In a shoe polishing machine, the combination with a shoe support, a traveling brush carriage, rigid guiding means for said carriage extending around the shoe support, a vertically movable rotatable shaft mounted in said carriage, a brush carrier connected to a part carried by said shaft, by a horizontal pivot, a brush carried by the brush carrier and operatively connected for rotation with said shaft, and means for moving said rotatable shaft and brush carrier vertically with respect to the carriage, connections between said carriage and the brush carrier for tilting the brush carrier toward the shoe support by the vertical movement of the brush carrier, said connections being provided with a yielding member, a cam engaging part connected with the brush carrier, and a stationary cam located in the

path of said cam engaging part for engaging the same and tilting the brush carrier away from the shoe support against the tension of said yielding member.

7. In a shoe polishing machine, the combination with a shoe support, a traveling brush carriage, a guiding track for said carriage, means for moving said carriage on said track, a vertically movable rotatable shaft carried by said carriage, and a pivoted brush carrier carried by said shaft, a brush carried by said brush carrier and operatively connected for rotation with the said rotatable shaft, connections between said brush carrier and said carriage for tilting the brush carrier by the vertical movement thereof, a vertical guide bar connected with a part carried by said rotatable shaft, and mounted in guides in said carriage, lifting projections on said guide bar in different horizontal planes, and parallel cam rails adjacent to said shoe support for simultaneously engaging said lifting projections to raise the brush carrier and said rotatable shaft.

8. In a shoe polishing machine, the combination with a shoe support, a traveling brush carriage, a guiding track for said carriage and means for moving said carriage on said track, a vertically movable, rotatable brush, a carrier for said brush, mounted on a horizontally disposed pivot, connections between the brush carrier and the carriage, for tilting the brush and carrier, when they are raised or lowered, a cam disposed adjacent to the toe portions of the shoe support, parts operatively connected with the brush carrier, for engaging said cam and raising the brush carrier and simultaneously tilting it over upon the toe portion of the shoe, an auxiliary cam adjacent to the heel portion of the shoe support, for engaging a part operatively connected with the brush carrier, to tilt the brush inwardly around the rear of the heel of the shoe support.

9. In a shoe polishing machine, the combination with a shoe support, a traveling brush carriage, a guiding track for said carriage, means for moving said carriage on said track, a vertically movable rotatable shaft carried by said carriage, and provided with a head block, a brush carrier pivoted to said head block, a brush carried by said brush carrier and operatively connected for rotation with the said rotatable shaft, connections between said brush carrier and said carriage for tilting the brush carrier by the vertical movement thereof, a vertical guide bar connected with said head block and mounted in guides in said carriage, lifting projections on said guide bar in different horizontal planes, and parallel cam rails adjacent to said shoe support for simultaneously engaging said lifting projections to

raise the brush carrier and said rotatable  
part, an auxiliary lifting projection located  
on said head block and auxiliary lifting  
cams adjacent to the heel portion of the shoe  
5 support for engaging said auxiliary lifting  
projection and raising the brush carrier and  
tilting the same to cause the brush to engage  
the rear portion of the heel of the shoe.

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

WILLIAM H. McCONNELL.

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

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