

W. W. KARRO.
VACUUM CLEANER FOR SHOES.
APPLICATION FILED OCT. 3, 1919.

1,361,068.

Patented Dec. 7, 1920.

2 SHEETS—SHEET 1.

Fig. 1.

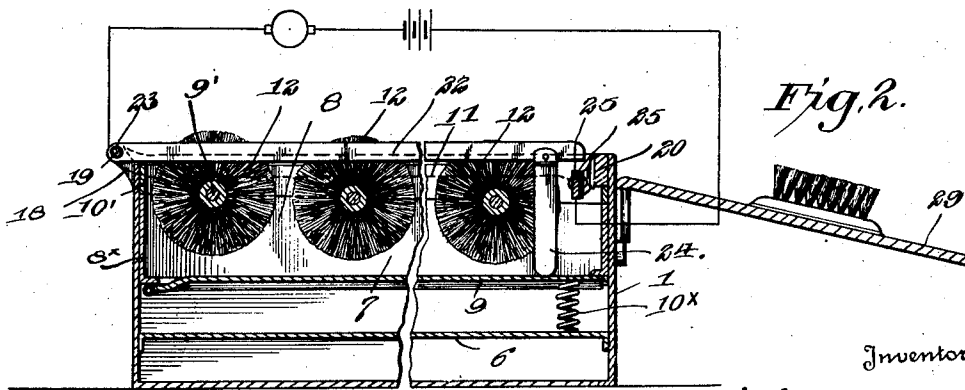
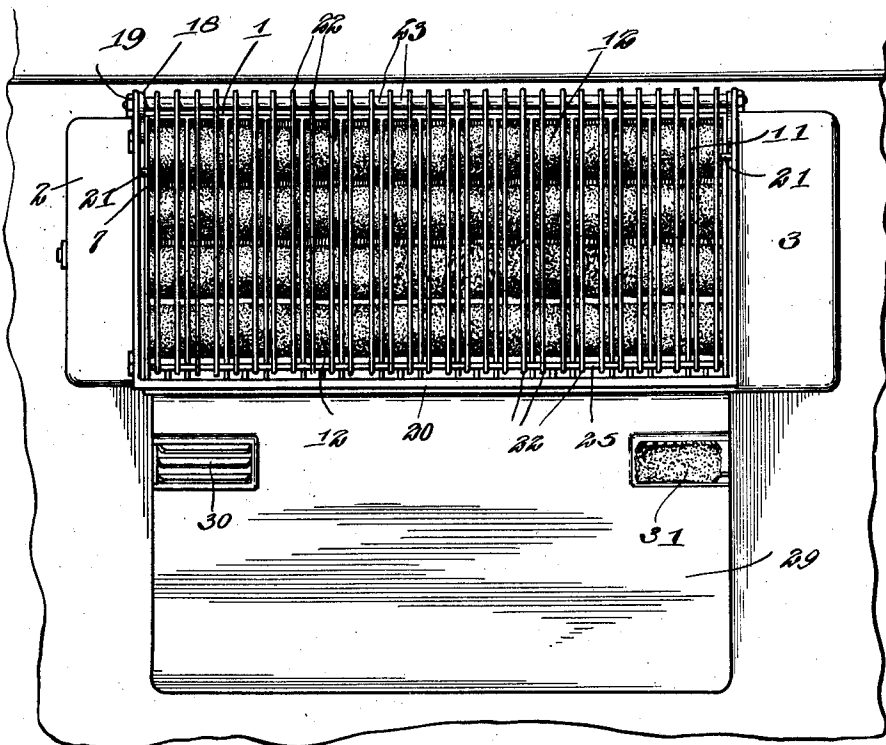


Fig. 2.

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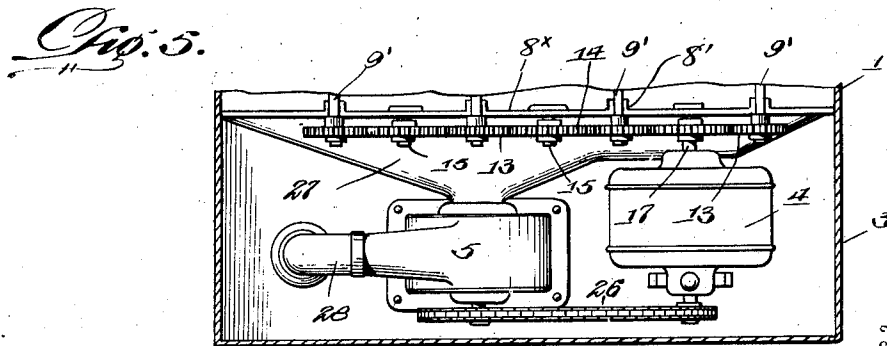
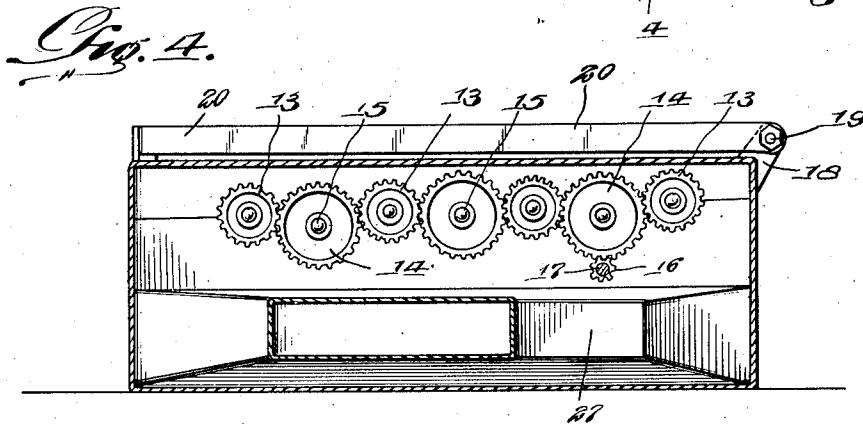
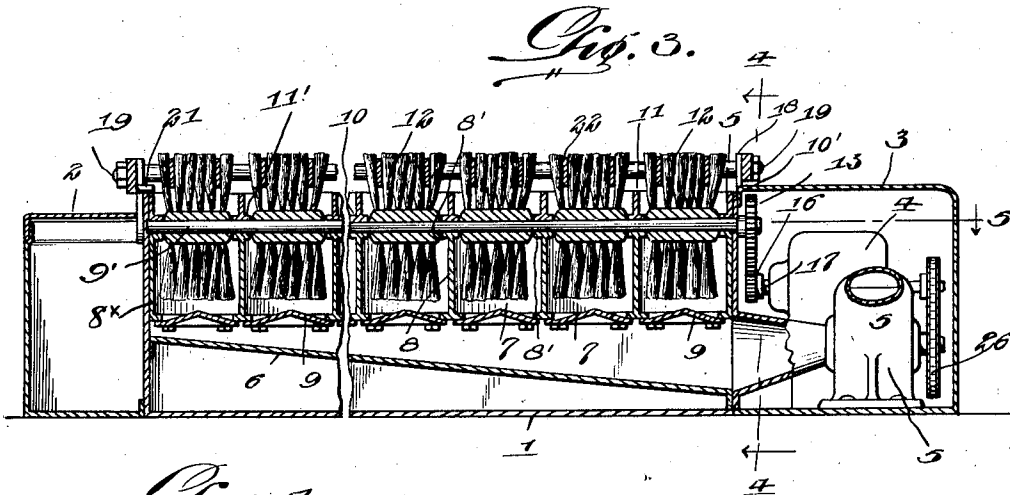
Attorney

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2 SHEETS—SHEET 2.



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UNITED STATES PATENT OFFICE.

WILLIAM W. KARRO, OF GREAT NECK, NEW YORK.

VACUUM-CLEANER FOR SHOES.

1,361,068.

Specification of Letters Patent.

Patented Dec. 7, 1920.

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To all whom it may concern:

Be it known that I, WILLIAM W. KARRO, a citizen of the United States, residing at Great Neck, L. I., in the county of Nassau and State of New York, have invented new and useful Improvements in Vacuum-Cleaners for Shoes, of which the following is a specification.

This invention relates to shoe cleansing devices and the principal object of the invention is to provide the device with a number of brushes with means for automatically actuating the brushes as soon as the foot comes in contact therewith.

Another object of the invention is to provide suction means cooperating with the brushes with means for drawing the suction means into action as soon as the brushes begin to operate.

A further object of the invention is to divide the device into a series of sections, each section having brushing means and means for placing the sections in communication with the suction means only when the said brush is in operation.

The invention also consists in certain other features of construction and in the combination and arrangement of the several parts, to be hereinafter fully described, illustrated in the accompanying drawings and specifically pointed out in the appended claims.

In describing my invention in detail, reference will be had to the accompanying drawings wherein like characters denote like or corresponding parts throughout the several views, and in which:—

Figure 1 is a plan view of the invention and showing the same applied to a step.

Fig. 2 is a cross section of the device.

Fig. 3 is a longitudinal section.

Fig. 4 is a section on line 4—4 of Fig. 3.

Fig. 5 is a section on line 5—5 of Fig. 3.

In these views 1 indicates a housing which has its top opened and at one end is provided with an extension 2 forming a tool box and at the other end an extension 3 for containing the electric motor 4 and the vacuum pump 5. These extensions are provided with covers. The housing is provided with an inclined false bottom 6 which slopes downwardly toward the extension 3.

The upper part of the housing is divided into a plurality of chambers 7 by the cross partitions 8 and the bottoms of these chambers are closed by the hinged bottoms 9 which are of peaked-shape as shown. These

bottoms are held in closed position by the springs 10* which bear upon the false bottom 6.

The partitions 8 carry half bearings 8' at the upper edges for receiving the longitudinally extending shafts 9' and a frame 10 formed of the side and end members 10' and the cross partitions 11, arranged within the housing above the partitions 8 with the partitions 11 carrying the half bearings 11' for the shafts. The partitions 11 are in alignment with the partitions 8 and form extensions thereof. If desired I may connect the partitions 8 with the side and end members 8* to form a lower frame similar to the upper frame. By placing the shafts in the half bearings in the lower frame and then inserting the upper frame it will be seen that said shafts are held in place.

The shafts 9' carry the cylindrical brushes 12 and the brushes on each shaft are located in separate chambers as shown.

The shafts extend into the extension 3 and these extended ends are provided with the gears 13 which mesh with the idle gears 14, these idle gears being carried by the stub shafts 15. One of these idle gears is engaged by the pinion 16 mounted on the shaft 17 of the motor 4.

At the rear of the housing, at each end thereof, brackets 18 are arranged which support a rod 19. The extremities of a yoke member 20 are journaled on the rod. The ends of the yoke member are located outside of the ends of the housing but the front strip of said member is adapted to lie across the upper edge of the inner wall of the front of the housing. The end pieces of said yoke member are provided with inwardly extending projections 21 which engage the upper edge of the upper frame 10 to hold the same in place. Grate bars 22 have their rear ends journaled on said rod 19 and said bars are spaced apart by means of the sleeves 23 threaded on said rod. These grate bars extend across the top of the housing and are arranged in pairs, each pair extending across the top of one of the chambers. The front ends of these bars are spaced from the front of the housing so that they can have limited movement within said housing. Each bar at its front end is pivotally connected with the post 24 which has its lower end rounded and resting upon the front end of the bottom 9. In this way when the grate bars are lowered the post pressing upon the bottom will swing

the same open against the action of the spring 10.

The front strip of the yoke member carries a contact strip 25 which is insulated therefrom and is arranged under the front ends of the grate bars so that when said grate bars are lowered they will strike said contact strip and thus complete the circuit to the motor as shown diagrammatically in Fig. 2. When the yoke member is swung upwardly the contact strip striking the ends of the grate bars will lift all of said bars and thus afford access to the brushes and the interior of the housing. When the yoke and grate bars are in raised position the upper frame 10 may be lifted so as to permit the removal of the brushes. Of course, before the yoke member is lifted the current is turned off.

The pump 5 is connected with the motor by means of the chain 26 so that said pump will be actuated by the motor. The inlet of the suction pump is connected by the fan-shaped conduit 27 with the space between the false bottom 6 and the hinged bottoms 9 of the chamber. A conduit 28 connects the outlet of the pump with the dust receiver which may be located in the basement of the dwelling or wherever desired. If desired one of the walls of the extension 3 may be provided with an opening covered with doors so that the pump may exhaust through this opening.

It will thus be seen that when a person steps on the grate bars they will be lowered so that their ends will strike the contact piece 25 and thus close the circuit to the motor. The motor will then cause the brushes to rotate and thus the shoes will be cleansed. At the same time the motor will cause the vacuum pump to begin to operate so that a vacuum is created in the space below the hinged bottom. When the grate bars are lowered the posts 24 will cause the bottoms 9 to open so that the chambers below the feet of the person standing on the device will be in communication with the vacuum pump and the suction will carry down the dust and dirt from the shoes through the chambers.

It will be seen that only those chambers directly under the foot of the user will be in communication with the vacuum pump so that the full effect of the vacuum will take place in said chambers as the other chambers are closed. Thus it will not be necessary to have a very large pump as would be the case if all the chambers were open to the pump.

The brushes are automatically set in motion by the person stepping on the device so that no effort on his part is necessary as is the case with a mat or similar device.

It will of course, be understood that I may make the device of any desired size.

I prefer to place an inclined plate 29 in front of the housing with its upper end connected with said housing so as to facilitate a person stepping on the brushes. This plate may be provided with scrapers 30 and with a brush 31 which may be slidably connected with the plate. In this way these parts may be removed for cleansing purposes or for substitution of new parts.

I prefer to place the device on one of the steps leading to the door. Of course it will be understood that the device may be placed at any point desired.

It is thought from the foregoing description that the advantages and novel features of my invention will be readily apparent.

I desire it to be understood that I may make changes in the construction and in the combination and arrangement of the several parts, provided that such changes fall within the scope of the appended claims.

What I claim is:—

1. A device of the class described comprising a housing, partitions therein dividing the same into a plurality of chambers, brushes located in said chambers, a motor for operating said brushes, movable grate bars carried by the housing, means for actuating the motor when said bars are stepped upon, vacuum means connected with the motor and means for automatically connecting said vacuum means with the chambers whose grate bars have been depressed.

2. A device of the class described comprising a housing, partitions therein dividing the same into a plurality of chambers, brushes located in said chambers, a motor for operating said brushes, grate bars movably carried by the housing and extending across said chambers, means actuated by the grate bars for causing the motor to operate, hinged bottoms for the chambers, spring means for normally holding the bottoms closed, vacuum means operated by the motor and connected with the housing below said bottoms and a projection on each grate bar engaging the bottom for opening the same when the grate bar is depressed.

3. A device of the class described comprising a housing, brushes mounted therein, a motor for operating said brushes, grate bars hinged at one side of the housing and extending across the housing and said brushes, a yoke member also hinged at one side of the housing, a contact bar carried by said yoke member and extending across the housing below the free ends of the grate bars and adapted to be engaged by said grate bars when the same are lowered to complete the circuit to the motor.

4. A device of the class described comprising a housing, a lower frame therein, a plurality of lower partitions carried by said frame and dividing the housing into a plurality of chambers, an upper frame, a

plurality of partitions in said upper frame
in alinement with the lower partitions, bear-
ings carried by the meeting edges of the
partitions, brushes on shafts mounted in
5 said bearings, a motor for operating said
shafts, a yoke member, a contact bar carried
thereby, hinged grate bars extending across
the housing and the brushes and having

their free ends spaced above the contact bar
so that when said yoke member is raised 10
the grate bars will be raised with it, and
means for connecting said contact bar with
the circuit of the motor.

In testimony whereof I affix my signature.

WILLIAM W. KARRO.