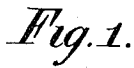


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2 SHEETS—SHEET 1.



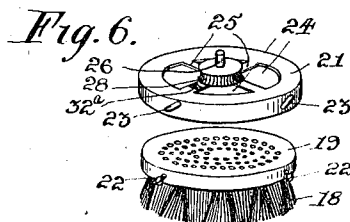
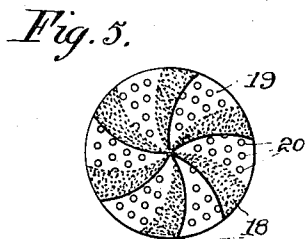
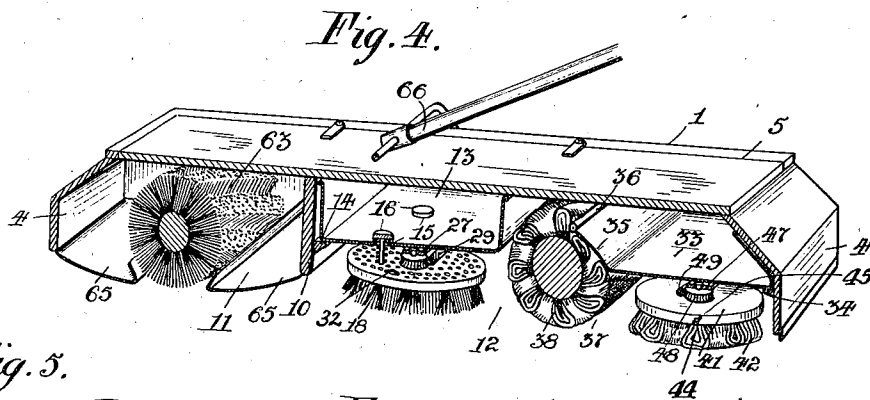
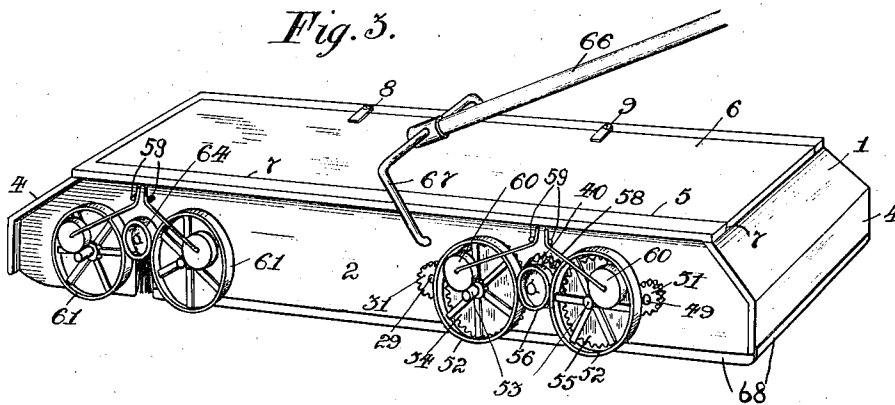
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FLOOR CLEANER.
APPLICATION FILED FEB. 8, 1909.

977,701.

Patented Dec. 6, 1910.

2 SHEETS—SHEET 2.



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UNITED STATES PATENT OFFICE.

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FLOOR-CLEANER.

977,701.

Specification of Letters Patent.

Patented Dec. 6, 1910.

Application filed February 8, 1909. Serial No. 476,610.

To all whom it may concern:

Be it known that I, KARL TORSTEN BROBERG, resident of 501st Mance street, of the city and district of Montreal, in the Province of Quebec, in the Dominion of Canada, a citizen of Finland, have invented certain new and useful Improvements in Floor-Cleaners; and I do hereby declare that the following is a full, clear, and exact description of the same.

The invention relates to improvements in floor cleaners, as described in the present specification and illustrated in the accompanying drawings that form part of the same.

The invention consists essentially of the novel arrangement and construction of parts whereby prepared water flows to the previously swept floor at intervals and is scrubbed thereover by rotatable scrubbers, and subsequently mopped up by mops rotating concurrently with the operations of said scrubbers.

The objects of the invention are to facilitate the cleaning of floors, particularly floors made of hardwood, to arrange a machine so that the floor will be swept, scrubbed and dried with the simple action of pushing a machine over the floor, and generally to devise a simple device which will be quite easy for the unskilled person to operate.

In the drawings, Figure 1 is a longitudinal sectional view of the machine, disclosing the various operating parts in consecutive arrangement. Fig. 2 is a sectional plan view of the machine through the line A—B in Fig. 1. Fig. 3 is a perspective view of the machine having the side plates removed to disclose the running gear. Fig. 4 is a sectional perspective view of the machine. Fig. 5 is a detail of a scrubber. Fig. 6 is a perspective detail showing a scrubber and an adjusting arrangement for raising and lowering said scrubber.

Like numerals of reference indicate corresponding parts in each figure.

1 is the casing here shown as much the same form as the ordinary carpet sweeper having the inner sides 2 and outer sides 3, the ends 4 and the open top 5, closed by the lid 6, said lid being held on one side in the under-cut portion 7 and the other side by the buttons 8 and 9.

10 is a partition extending across between the inner sides 2 slightly forward of the lon-

gitudinal center of the casing separating the dust chamber 11 at the front end of the casing from the rear chamber 12.

13 is a tank supported on the brackets 14 immediately to the rear of the partition 10 and having outlet openings 15 through which the suds or soapy water flows.

16 are spring-held valves having their stems 17 extending below the bottom of the tank 13, said valves finding suitable seats around the outlet openings 15 in their closed position. The particular construction of these valves as shown is not at all essential to the invention as the outlet openings may be closed and opened in any suitable manner and with any desirable form of valve.

18 are bristles extending from the center of the circular backs 19, said backs being perforated at 20, so that the water may flow through into the bristles. In Fig. 6, a modified construction of the brush is shown in which 21 are holders or caps mounted on the said backs 19 and secured thereto by the screws 22, the latter being inserted through the slots 23 so that said backs are adjustable in their holders and may be readily moved upwardly and downwardly therein, suitable openings 24 being made in each one of said caps.

25 are intersecting bars extending inwardly from the rims of the caps 21 to the center thereof and which define openings 24.

26 are shafts extending upwardly from the bars 25 at their intersection and secured in suitable bearings in the cross bar 27.

28 are worm wheels fixedly mounted on the shafts 26 immediately above the bars 25.

29 is a worm shaft journaled in the inner sides 2 and having the worms 30 coacting with the worm wheels 28.

31 is a pinion fixedly mounted on the shaft 29, at the end thereof projecting beyond one of the inner sides 2.

26^a are shafts projecting upwardly from the center of the brush backs 19 and secured in suitable bearings in the cross bar 27.

28^a are worm wheels fixedly mounted on the shafts 26^a immediately above the brush backs 19. Said worm wheels 28^a coact with the worm shaft 29 and the operation of the brushes is precisely the same as that already described as referring to the modified form of construction of the brush illustrated in Fig. 6.

32 and 32^a are lugs projecting upwardly

from the top sides of the brush backs 19 and the holders 21 respectively, said lugs contacting with the valve stems 17 on the rotation of the said brushes, thus opening the outlet openings 15 at intervals to permit the flow of water down to the brushes.

33 is a tank supported on the brackets 34 at the rear end of the casing 1 in the interior thereof, said tank 33 having the curved front side 35.

36 is a wringer of rubber or other-suitable material journaled at the top of said curved front side 35 or at an opening through said front side.

37 is a mop roller having suitable soft mopping material 38 secured therein and extending outwardly from the periphery thereof.

39 is a shaft journaled on the outer sides 1 and extending through slots in the inner sides 2, to the rear of the scrubbing brushes 18 and carrying the mop roller 37.

40 is a pinion fixedly mounted on one of the ends of the shaft 39 projecting through an inner side 2.

41 are circular mops operating horizontally in a similar manner to the scrubbing brushes 18 having the mop material 42 extending downwardly from the underside.

43 are holders or caps in which the circular mops 41 are held by the screws 44 inserted through the slots 45 in said caps 43.

46 are shafts extending upwardly from the caps 43 and suitably journaled in the cross bar 47.

48 are worm wheels mounted on the shafts 46 immediately above the caps 43.

49 is a shaft journaled in the inner sides 2 to the rear of the mop roller 37 and having the worms 50 coacting with the worm wheels 48.

51 is a pinion fixedly mounted at one end of the shaft 49 beyond an inner side 2.

It will now be seen that the scrubbing brushes and the two sets of drying cloths or mops are provided in this machine, and a means for wringing the first mop which gathers up all the free water, as the said mop turns against the wringer roller 36, said water being wrung out of said mop roller and running into the tank 33.

52 are the rear sets of wheels of the running gear of the machine turning with the axles 53.

54 is a gear wheel fixedly mounted on one of the axles 53, and 55 is a gear wheel mounted on the other of the axles 53.

56 is a rubber rimmed pinion fixedly mounted on the shaft 39 to the outside of the pinion 40 and contacting with wheels 52 on axles 53 respectively. The pinion 40 connects the gear wheels 54 and 55, as well as being the means of driving the mop roller 37. The gear wheel 55 drives the pinion 51 on the worm shaft 49.

57 is a rubber pinion connecting the other wheels 52 on the axles 53 at the other side of the machine, said pinion being mounted on the end of the mop roller shaft 39 extending beyond the inner side.

A suitable means is used for exerting a downward pressure on the axles 53, as is common in carpet sweeper construction, and the details of a certain form of carpet sweeper have been illustrated in which a spring 58 is suitably arranged on the pins 59, the rollers 60 on the end thereof contacting with the axles 53, the upper ends of the spring are curled, but as this has no direct connection with the present invention, other than the general form of the machine, further particulars will not be given in this description.

It will now be understood from the foregoing description that the rotation of the wheels 52 will set all the rotatable parts in motion, the scrubbers being operated from their worm shaft through the connection of said worm shaft with one of the gears mounted on an axle, while the mop roller 39 is operated from its connection with the said axle gears through the pinion mounted on its own shaft, and the circular mops therebehind are operated from their own worm gear shaft through the pinion mounted on said worm gear shaft coacting with a gear on an axle.

It may be that the toothed gear wheels shown and described herein may not be always necessary in light machines, as the friction of the rubber pinion will no doubt in some cases operate the scrubbers and driers.

61 are the forward set of wheels of the running gear fixedly mounted on the axles 62.

63 is the rotary broom extending through suitable slots in the inner side and journaled in the outer sides of the casing 1.

64 are rubber rimmed pinions mounted on the shaft of the rotary sweeper and contacting with the rubber rims of the set of wheels 61, therefore operatively connecting the said rotary sweeper and the wheels 61.

65 are the dust-pans into which the rotary broom throws the dust.

The construction of the sweeper portion of the machine may be much modified from that described herein, as any form of rotary sweeper that will fit in and operate in the casing may be used. The construction of the sweeper portion is described very generally and is not shown in detail in the drawings, reliance being placed on the illustrations in Figs. 1 and 3 and the almost universal knowledge of carpet sweepers for the understanding of this part of the machine.

66 is a handle extending from the fork 67, the fork being pivotally secured to the sides of the casing so that the said handle will

only extend in one direction. Further, the pivoting of this handle is slightly to the rear of the longitudinal center of the casing, so that pressure is relieved on the scrubbing portion of the machine in drawing the casing backwardly.

In the operation of this invention, the machine is taken by the handle and sufficient pressure brought to bear on the running gear to bring the several gear connections into action and consequently set the parts in motion. The dust is swept up by the sweeper and the rotary scrubbers immediately follow on the cleared floor, the bristles in the brushes being arranged so that the floor will be thoroughly scrubbed within the path swept by the rotary sweeper. The mop roller follows the brushes immediately and gathers up the dirty water or whatever fluid may be used, which water is wrung out by contact with the wringer roller 36, the water thus wrung out running into the rear tank. The floor is fairly dry after being mopped by the mop roller but the final rubbing is given by the circular mops immediately to the rear of the said mop roller. These are simply for the purpose of giving the final rub and drying up any excessive moisture on the floor. The operation of scrubbing being over, the rear tank is emptied out and if necessary the front tank replenished with suds or soapy water or any kind of fluid that is being used for cleaning purposes. The water falling through the outlets as explained, is well distributed from the centrifugal action of the scrubbing brushes and therefore all the brushes will be thoroughly wet and no part of the floor will escape their action. The mop roller is preferably a little wider than the total width of the brushes, to insure the removal of water left on the floor.

It may be here explained that the casing 1 and the running gear, that is to say, the wheels and axles, form the carriage of the machine, said carriage containing as described in detail hereinbefore a full complement of parts necessary to clean the floor thoroughly. In order to keep the water within the casing, while the machine is being operated, I use the rubber strips 68 secured to the bottom edge of the outer sides

of said casing which contact with the floor as the brushes and mops revolve.

The specific form of scrubber illustrated in Figs. 1, 2 and 4 is made up of simply a plain back holding the bristles, this back being perforated and having a central shaft projecting upwardly therefrom.

The preferable form of back has been described herein before and is illustrated in Fig. 6, though in the said Figs. 1, 2 and 4, the plainer form of brush is shown.

What I claim as my invention is:

In a floor cleaner, in combination, a casing, a chamber at the front end, a water tank located immediately to the rear of said chamber having a discharge orifice through the bottom thereof, a rotary scrubbing brush operating horizontally beneath said tank and having a plurality of perforations through the back thereof and a central stub shaft and a trip lug projecting upwardly therefrom, a cross bar forming a bearing for said shaft, a worm wheel mounted on said stub shaft, a worm shaft journaled in the sides of said casing and coacting with said worm wheel, a pinion mounted on said worm shaft outside the casing, running gear supporting said casing, a plurality of gear wheels connecting said running gear with said worm shaft pinion, a spring-held valve closing the aforesaid discharge orifice and operated by said trip lug, a rotary mop having its supporting shafts journaled in the sides of said casing, a pinion on the mop shaft connected with said gear wheels, and a horizontal wiping mop having a stub shaft projecting upwardly and centrally therefrom, a cross bar forming a bearing for said stub shaft from the wiper, a worm-wheel on said wiper shaft, a worm shaft journaled in the sides of said casing and coacting with said worm-wheel, and a pinion mounted on said wiper worm shaft and connected with said gear wheels.

Signed at the city and district of Montreal, in the Province of Quebec, in the Dominion of Canada, this 23rd day of January, 1909.

KARL TORSTEN BROBERG.

Witnesses:

G. H. TRESIDDER,
P. SHEE.