Dec. 2, 1930. T. E. D. BILDE 1,783,773

SURFACE TREATING MACHINE

Filed Aug. 21, 1929

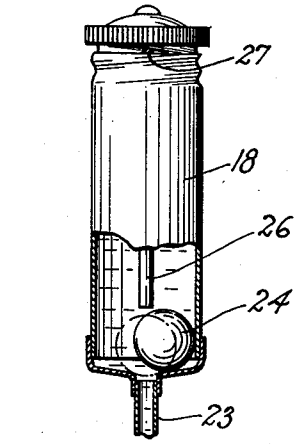


Fig. 2.

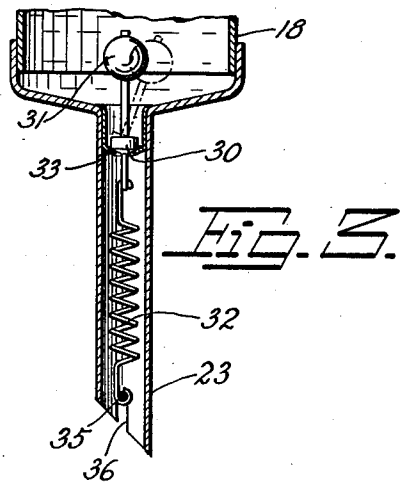


Fig. 3.

Fig. 1.

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Patented Dec. 2, 1930

1,783,773

UNITED STATES PATENT OFFICE

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SURFACE-TREATING MACHINE

Application filed August 21, 1929, Serial No. 387,372, and in Sweden August 18, 1928.

My invention relates to machines for treating surfaces and more particularly relates to electrically operated floor treating devices, generally known as floor polishers.

One object of my invention is to provide means attached to or in combination with or forming part of a surface treating machine or supplying a surface treating fluid during operation. Still further objects are; to provide a surface treating machine having automatic means for supplying surface treating fluid to the surface to be treated; to provide a convenient arrangement of floor polisher or the like comprising means readily operable to supply fluid to the surface to be treated in variable quantity at will; to provide an arrangement automatically supplying surface treating fluid to a device of the character described which supplies fluid during operation but which shuts off the supply of fluid during idle periods; to provide means, in combination with the above described arrangements, for holding the fluid supply means in closed position.

According to the invention, wax for the waxing of floors is supplied to the floor adjacent the floor treating device due to erratic movements of the floor treating device. I prefer to use a member which has a lag of motion with respect to movement of the floor treating machine in general.

Further objects and the nature of the invention will become apparent from a consideration of the following description taken in conjunction with the accompanying drawing showing several structures embodying the invention, which drawing is a part of this specification and of which:

Fig. 1 is a side view partly in section of an electrically driven floor polisher embodying the invention;

Fig. 2 is a view partly in section of a portion of the apparatus shown in Fig. 1, the parts having a different relation; and

Fig. 3 is another form of structure applicable to the arrangement shown in Fig. 1 to embody the invention in different form.

Reference character 10 designates a floor surface on which rests the floor polisher indicated generally at 20. The floor polisher comprises a casing. The casing includes an upper portion 11 enclosing an electric motor and a lower portion 12 of greater width enclosing rotatable floor treating mechanism adapted to be rotated by the electric motor within casing portion 11. One or more rotary surface contact members may be used. The machine shown in Fig. 1 comprises a plurality of surface contact members 13 each comprising a disc carrier 14 and discs 15 replaceably carried by carriers 14. The disc 15 is shown as a brush disc. The discs are replaceable in order to substitute other forms of discs such as polishing discs. A belt 16 passes around carriers 14 and is caused to move by the electric motor to rotate the carriers and the surface contact disc members. The surface contact members are rotatably supported from a frame member 17.

Mounted on casing member 12 in front of casing portion 11 is a container 18 having a cover 19 which screws into the top of the container. The container has a tapered bottom 21 and a centrally disposed outlet opening 22. Connected to the outlet opening 22 is a fluid supply pipe 23 which passes downwardly through casing 12 and through the central portion of contact member 13 and its support. Within container 18 and resting on the bottom part thereof over the outlet opening 22 is a ball 24. This ball, if free to move within container 19 tends to go to the lowest point of the container and, due to the incline of the bottom of the container, tends to close outlet opening 22 and thereby close communication between pipe 23 and the interior of container 18. Ball 24 is preferably made of metal such as steel or bronze.

Secured to cover 19 is a stem 26 which projects downwardly within container 18 and is of such length that by screwing cover 19 into the container, member 26 can be made to contact the top of ball 24 as shown in Fig. 1. This secures ball 24 over the outlet leading from the container. A hole 27 is provided in the side of the cover. This hole acts as a vent to permit air to enter the upper part of the container when the cover is unscrewed sufficiently to give communication of air through hole 27. Container 18 con-

tains fluid wax or other floor treating fluid.

Connected to the casing of the floor treating machine is a handle 28 which is pivoted at 29.

In operation of the surface treating machine described, container 18 is filled to the desired extent with the floor treating fluid such as wax. If container 18 contains such fluid before starting the machine, cover 19 should be screwed down so that ball 24 is secured tightly over the lower outlet of container 18. Just before or just after turning on the current for rotating the electric motor and setting the surface contact members in rotation, cover 19 is unscrewed so that vent 27 comes above the upper edge of the cylinder part of container 18 and so that ball 24 is free to move. Ball 24, being free to move, and having an appreciable mass, lags behind the rest of the machine in operation. That is, the inertia of ball 24 must be overcome by erratic movement of the floor polisher by hand. The inertia of ball 24 must be such that for a given movement of the floor treating machine, the ball will move within the liquid in container 18, and that the discharge opening of the container is closed by the ball during normal operation of the floor treating machine that is, neither the normal movement of the machine over the floor nor the vibration of the driving motor may cause the ball to open the discharge pipe. It will be seen that the ball regulates the flow of floor treating fluid through pipe 23 and that this regulation of flow is caused at will by irregular movement of the floor treating machine. By varying the rate of movement of the machine, the supply of fluid can be regulated. Thus the flow of fluid through pipe 23 can be regulated at will by the operator guiding the machine. If more floor treating fluid is desired, the machine is given a faster acceleration of movement.

Fig. 2 shows ball 24 displaced to one side as by a quick movement of the floor treating machine forwards by the operator. This completely uncovers the opening. As soon as the machine stops or its velocity of movement becomes constant, ball 24 moves back due to gravitation, to the central position shown by the dotted line in Fig. 2.

The lower end of pipe 23 is cut slantwise in order to drip the wax or fluid from the lowest point. In waxing floors, the flow through pipe 23 is not great. The machine may be designed and operated to give a very slight flow and to give great variations of rate of flow of the floor treating fluid.

After the floor has been waxed, the brush discs 15 can be exchanged for polishing discs and cover 19 can be screwed down to seat ball 24 against the bottom of the container to completely prevent further flow of fluid. Thus, during the polishing operation, no fluid will flow through pipe 23. The arrangement is such that the container 18 and pipe 23 can be withdrawn from the floor treating machine proper and put aside during the polishing operation.

In the arrangement shown in Fig. 3 a valve 30 attached to a ball or weight 31 and held by a spring 32 takes the place of the ball 24. A valve seat member 33 is provided in pipe 23 or the lower part of container 18 against which the valve 30 seats. The spring 32 is held by a pin 35 set in slots 36 in the lower end of pipe 23. The dotted lines in Fig. 3 show how the weight 31 is moved due to the lag and inertia. This accomplishes the same result as the arrangement shown in Fig. 1. The arrangement shown in Fig. 3 can replace the corresponding arrangement shown in Fig. 1. With the arrangement shown in Fig. 3, when the speed of movement of the floor treating machine is constant or during an idle period, valve 30 seats and prevents flow of fluid through pipe 23.

While I have described but two forms of apparatus for carrying out the invention, it will be understood that the invention may be carried out in numerous other ways. While I have shown my improved liquid supply member applied to a floor polisher of the type disclosed in application Serial No. 286,663, filed June 19th, 1928, it will be understood that it may be applied to other types of surface treating machines.

Having thus described my invention, what I claim is:

1. A machine for treating floors comprising a casing, one or more rotary surface contact members within said casing, means to rotate said members and means mounted on said casing for feeding fluid to the floor comprising a container having a fluid outlet and means closing said outlet during idle periods comprising a member having an appreciable mass sufficent to prevent opening of said outlet due to vibration and normal movement of the machine while being movable to uncover said outlet on abnormal movement of the machine such as to provide an inertia greater than that provided by vibration or normal movement of the machine.

2. A machine for treating floors comprising a casing, one or more rotary surface contact members within said casing, means to rotate said members and means mounted on said casing for feeding fluid to the floor comprising a container having a fluid outlet and a member closing said outlet due to gravitation during idle periods and having an appreciable mass sufficient to prevent opening of said outlet due to vibration and normal movement of the machine while being movable to uncover said outlet on abnormal movement of the machine such as to provide an inertia greater than that provided by vibration or normal movement of the machine.

3. A machine for treating floors comprising a casing, one or more rotary surface contact members within said casing, means to rotate said members and means mounted on said casing for feeding fluid to the floor comprising a container having a fiuid outlet and a member having an appreciable mass sufficient to prevent opening of said outlet due to vibration and normal movement of the machine while being movable to uncover said outlet on abnormal movement of the machine such as to provide an inertia greater than that provided by vibration or normal movement of the machine and means for securing said member in closed position.

4. A machine for treating floors comprising a casing, one or more rotary surface contact members within said casing, means to rotate said members and means mounted on said casing for feeding fluid to the floor comprising a container having a fluid outlet and a ball arranged in said container having freedom of movement and having an appreciable mass sufficient to prevent opening of said outlet due to vibration and normal movement of the machine while being movable to uncover said outlet on abnormal movement of the machine such as to provide an intertia greater than that provided by vibration or normal movement of the machine.

5. A machine for treating floors comprising a casing, one or more rotary surface contact members within said casing, means to rotate said members and means mounted on said casing for feeding fluid to the floor comprising a container having a cover and an outlet and a member within said container having an appreciable mass sufficient to prevent opening of said outlet due to vibration and normal movement of the machine while being movable to uncover said outlet on abnormal movement of the machine such as to provide an inertia greater than that provided by vibration or normal movement of the machine and means attached to said cover for securing said member in closed position.

6. A machine for treating surfaces comprising one or more surface contact members having movement under manual guidance, means to supply fluid to the surface and means having an appreciable mass sufficient to prevent supplying of fluid to the surface due to vibration and normal movement of the machine and to lag behind the major portion of the machine to vary the supply fluid to the surface on abnormal movement of the machine such as to provide an inertia greater than that provided by vibration or normal movement of the machine.

7. A machine for treating floors comprising surface contact members, means to rotate said members and means to supply fluid to the surface to be treated comprising a container having a fluid outlet and means having an appreciable mass sufficient to prevent supplying of fluid to the surface due to vibration and normal movement of the machine and to lag with respect to the major portion of the machine to supply fluid on abnormal movement of the machine such as to provide an inertia greater than that provided by vibration or normal movement of the machine.

8. A machine for treating floors comprising a casing, one or more rotary surface contact members within said casing, means to rotate said members and means mounted on said casing for feeding fluid to the floor comprising a container having a fluid outlet and an air inlet and a member having an appreciable mass sufficient to prevent opening of said outlet due to vibration and normal movement of the machine while being movable to uncover said outlet on abnormal movement of the machine such as to provide an inertia greater than that produced by vibration and normal movement of the machine and means for securing said member in closed position and for maintaining said air inlet closed.

9. A machine for treating floors comprising a casing, one or more rotary surface contact members within said casing, means to rotate said members and means mounted on said casing for feeding fluid to the floor comprising a container having a cover and an air inlet and an outlet, a member within said container having an appreciable mass sufficient to prevent opening of said outlet due to vibration and normal movement of the machine while being movable to uncover said outlet on abnormal movement of the machine such as to provide an inertia greater than that provided by vibration and normal movement of the machine, said cover being movable to close said air inlet and means attached to said cover for securing said member in closed position when said cover is in position closing said air inlet.

10. A machine for treating floors comprising a casing, one or more rotary surface contact members within said casing, means to rotate said members and means mounted on said casing for feeding fluid to the floor comprising a container having a fluid outlet and means closing said outlet during idle periods comprising a mass and affording an appreciable resistance to opening of the outlet sufficient to prevent opening of said outlet due to vibration and normal movement of the machine while being movable to uncover said outlet on abnormal movement of the machine such as to provide an inertia of the mass greater than that provided by vibration or normal movement of the machine.

11. A machine for treating floors comprising a casing, one or more rotary surface contact members within said casing, means to rotate said members and means mounted on

said casing for feeding fluid to the floor comprising a container having a fluid outlet and means closing said outlet during idle periods comprising a mass and a spring and affording an appreciable resistance to opening of the outlet sufficient to prevent opening of said outlet due to vibration and normal movement of the machine while being movable to uncover said outlet on abnormal movement of the machine such as to provide an inertia of the mass greater than that provided by vibration or normal movement of the machine.

In testimony whereof I hereunto affix my signature.

TORD ERIK DANIEL BILDE.