Aug. 15, 1967 L. KNESTELE 3,335,448

DEVICE FOR FLOOR-TREATMENT

Filed Aug. 18, 1964 2 Sheets-Sheet 1

Fig. 1

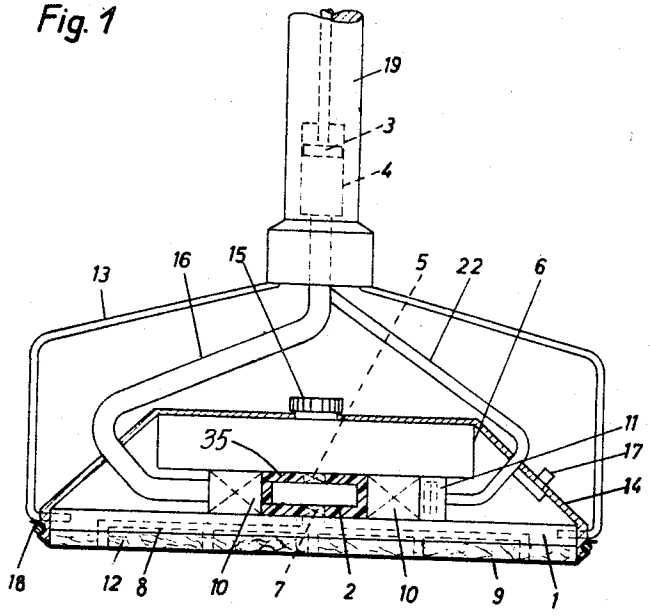
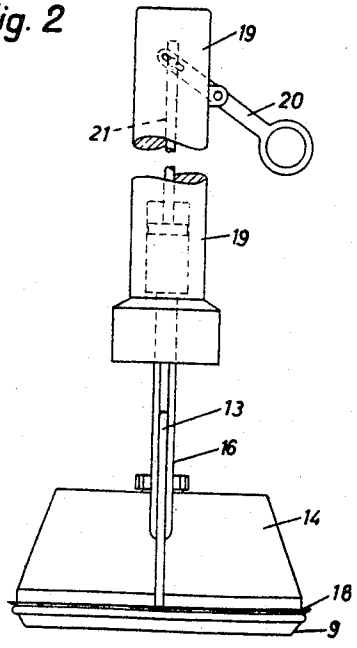


Fig. 2



Inventor
Leopold Knestele
By Richard Lund
Agt

Aug. 15, 1967 L. KNESTELE 3,335,448

DEVICE FOR FLOOR-TREATMENT

Filed Aug. 18, 1964 2 Sheets-Sheet 2

Fig. 3

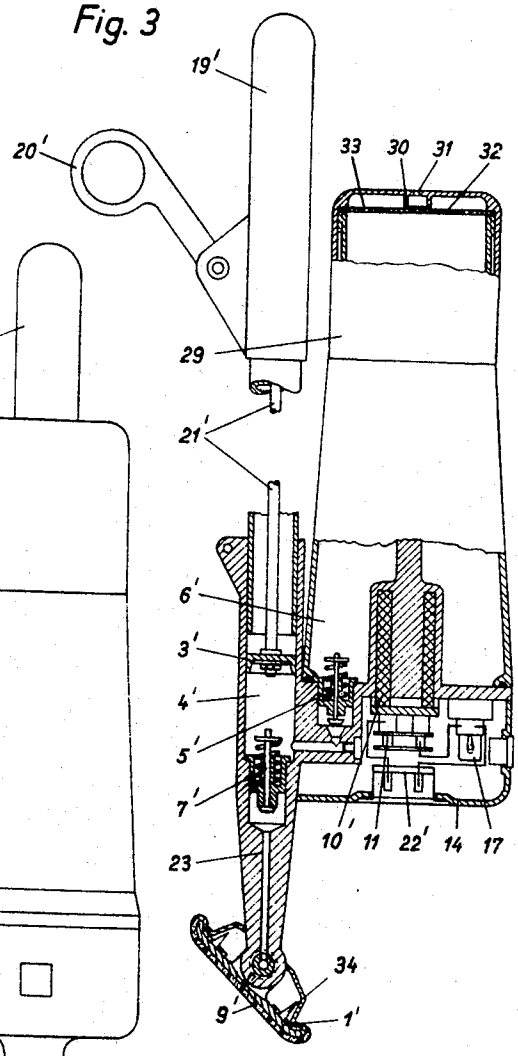


Fig. 4

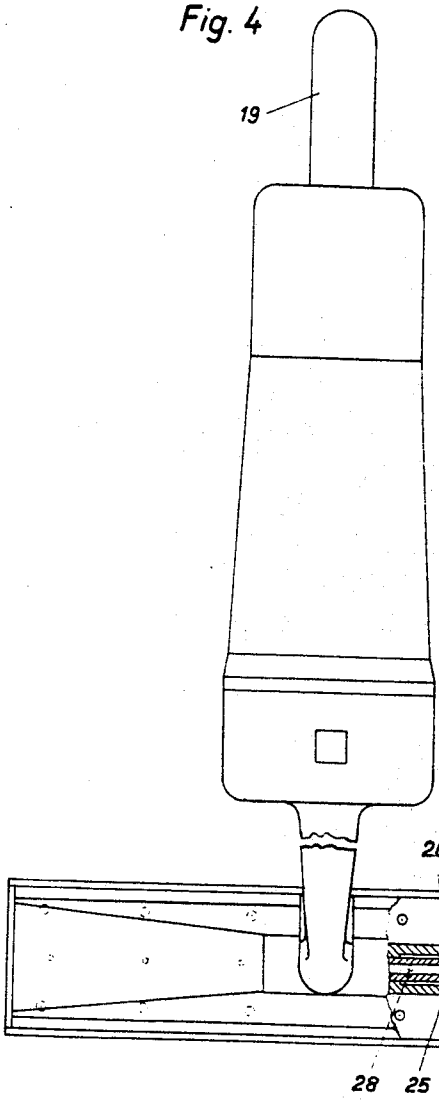
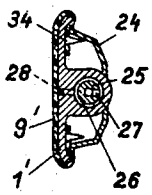


Fig. 5



Inventor
Leopold Knestele
By Richard Lund
Agt

United States Patent Office 3,335,448 Patented Aug. 15, 1967

3,335,448

DEVICE FOR FLOOR-TREATMENT

Leopold Knestele, Memminger Strasse 52, Leutkirch, Germany

Filed Aug. 18, 1964, Ser. No. 390,442
Claims priority, application Germany, Aug. 19, 1963, K 50,565
4 Claims. (Cl. 15—504)

The present invention relates to a device for the treatment of floors and floor coverings. It relates more particularly to a polishing device which has, among other elements, a polishing plate and a handle, and which serves to apply polishing wax or paste or other polishing materials to a floor or floor covering and to convert such materials when applied into a shining covering skin.

Up to now such substances have been applied to floors or floor coverings in a more or less pasty or liquid form or have been sprayed on and then spread by rubbing. Apart from the fact that the prior methods carried out in two operations require a great expenditure of time, the substance is generally nonuniformly distributed and thus the gloss of the polished surface of the floor or the floor covering is different at different spots.

The present invention has the purpose of eliminating these drawbacks.

The device for the treatment of floors according to the invention is characterized by the fact that its polishing plate is backed by an absorbing soft layer which receives the floor treatment substance by means of a pump with coordinated supply-tank provided in the device through a distributing outlet conduit in a metered manner.

My device performs in a single operation both the application of the floor treatment substance to the floor or floor covering and the spreading of the substance applied by rubbing in order to form a thin skin. The polishing mass is fed to the surface of the floor in a metered and finely distributed liquid form by wiping and is then spread by rubbing. No evaporation of liquid components of the treating substance and of solvent of the substances takes place before the treatment substance is spread by rubbing on the floor. Instead, the components evaporating otherwise on the floor are absorbed by an absorbent soft layer on the polishing plate which also picks up dirt from the floor. Liquid components evaporate thereafter from this soft layer, leaving the dirt behind in said soft layer. The coating obtained on the floor is uniformly thin. Thus the device according to the invention performs economically as far as the consumption of the floor-treating material is concerned, and produces an excellent dirt-free coating which has a long duration.

According to the invention a heating device is provided to heat a supply-tank for the floor treatment substance and the pump. The floor treatment device of the invention allows to use also viscous or pasty floor treatment substances. Such polishing substances or polishing waxes can easily be liquified within the device and can be kept in a well-flowing state till they leave the device. They are heated only indirectly, so that their composition can be kept reliably unmodified till they leave the device.

According to another aspect of the invention the supply-tank and at least a portion of the conduit means for the treatment substance and at least a portion of the pump form a unitary member of good heat conducting properties whereby the outlet portion of the conduit means has small dimensions in a casing with thick walls. In this manner a liquified substance may be kept practically at the same temperature determined by a heating arrangement, for instance, electric heating, until it leaves the device.

In a device provided with electrical heating, a thermostat and a pilot lamp may be provided. This has not only

the advantage that overheating or boiling of the polishing substance within the device is avoided, but also the further advantage that the floor treatment can be performed without current supply. The components of the heating device made of material of good heat conducting properties constitute a unitary member and partially or completely a one-piece structure and are capable of accumulating so much heat that the electrically heated device after having been switched off by the thermostat keeps a liquified polishing substance for a long time liquid so that it may be readily pumped.

As the absorbent soft layer an interchangeable rag of porous plastic material is preferably used. Such rags which may be used, e.g. in a thickness of about 3 to 5 mm., are elastic and particularly well suited to absorb in a continuous reciprocal manner liquid substances and to pass them onto the floor. The supply of floor-treating material to the rag is carried out by metered pumping.

It is suitable to provide in the device a piston pump and to arrange its piston rod in the work handle of the device in such a manner that the operating lever of the piston rod protrudes laterally at the upper end of the handle.

In the drawing two embodiments of the device according to the invention are shown by way of example.

FIG. 1 is a device for floor treatment in sectional front-view, the handle being partly broken away,

FIG. 2 shows the same device in a lateral view,

FIG. 3 shows another embodiment of the invention in a lateral view, and partly in central section,

FIG. 4 shows the device according to FIG. 3 partly in plan view and partly in front view.

FIG. 5 shows a section along the line V—V of FIG. 4.

According to the FIGURES 1 and 2 a plate **35** has an internal passage or chamber **2**, which is connected by means of a flexible tube **16** with the casing of a piston pump **4**. The pump piston **3** is arranged in the handle **19** of the device with its piston rod **21** in such a manner that by means of an operating lever **20** fastened on the extremity of the handle **19** of the device the pump piston may be moved up and down in its cylinder. By means of an inlet valve **5** responding to the pump suction, the chamber **2** is connected with a supply tank **6**, the filling tube of which is provided with a closure **15** and passes through a casing **14** mounted on the base plate **1** and shown in section. By means of an outlet valve **7** responding to the pump pressure the chamber **2** is connected with a distributing tubing **8**, which is arranged in the base plate **1** as a channel system. There is provided e.g. a longitudinal channel within the plate **1**, which has in its center a feeding branch and distributed along its length five nozzle-type outlet branch channels. The diameter of these channels amounts to about 4 mm. To the lower side of the plate **1** a felt layer or felt plate **12** is glued and has holes at the orifices of the distributing tubing **8**. Over the felt plate **12** there is provided a thin foam material rag **9** which is held on the casing **14** by means of a clamping yoke **18**. A pivotable bow **13** engaging the casing and preferably also the base plate **1** is the holder for the handle **19** of the device. On the plate **1** there is an electric heating device **10** consisting of several heating cartridges arranged for heating the chamber **2** and the metallic base plate **1** with its distributing tubing. A thermostat **11** connected to the heating device is likewise mounted on the base plate **1**, while a pilot lamp **17** on the electric conductor **22** which supplies current to the heating device **10** and passes through the handle **19** is fastened on the casing **14**. The thermostat regulates the temperature of the heating device **10** in such a manner that the polishing material is maintained in a liquid state, but is never heated to its boiling point.

If by means of the operating lever **20** the piston **3** is moved in its cylinder in a direction away from the chamber **2**, molten polishing wax flows through the suction valve **5** into the chamber **2**. During the opposite movement of the piston **3** towards the chamber **2** polishing wax is pressed from the chamber **2** through the conduit **8** into the porous or absorbent foam material rag **9**. Thus the porous rag **9** which serves as polishing cloth receives the polishing wax in a suitably metered dose.

In the embodiment shown in FIGURES 3 to 5 the supply-tank **6'**, the pump **4'** and its outlet conduit **23** form a unitary structure of heat conducting material such as an aluminum casting receiving the electric heating device **10'**, the pump valves **5'** and **7'** and the pump piston **3'** which is illustrated during its suction stroke. This piece of heat conducting material has a handle **19** within which the piston rod **21** with its laterally extending operating lever **20** is mounted. At the lower extremity of the outlet conduit **23** there is hingedly fastened the bottom plate **1'** whose outer surface is covered with the sponge-type rag **9'** and which consists of plastic material in order to delay a cooling-down of the lower part of the heated casing as far as possible. The outlet conduit **23** leads into a transverse tube **25** on which the plate **1'** is carried. The plate **1'** forms with the transverse tube **25** annular spaces **26** to which the transverse tube **25** has a passage **27** and the plate **1'** outlet openings **28**.

The supply-tank **6'** is provided with a tightly fitting cap **29** which has an inwardly directed tube nipple **30** with a bottom opening **31**. A diaphragm **32** engaging the nipple **30** and dividing the cavity of the cap into two spaces has openings **33** offset from the nipple **30**. Thus the pressure variation in the supply tank **6'** is compensated during pumping and a tight closure is obtained if the device is brought into a horizontal position while not being used.

A cover **24** envelops the top of the plate **1'** and holds the rag **9** on the pins **34**.

The marginal parts of the rag **9** are secured by holding pins **34** on the upper side of the plate **1'**. A socket **22'** on the casing **14** represents the electrical power supply, not otherwise shown in detail.

What is claimed is:

1. A device for floor treatment comprising, in combination:

(a) an elongated handle member;

(b) a plate member secured to a longitudinal end portion of said handle member and formed with a plurality of spaced openings therein;

(c) a tank mounted on said device and adapted to hold a body of fusible floor treating material;

(d) a reciprocating pump for drawing an accurately measured amount of floor-treating material contained in said tank into said pump during one stroke of the pump movement, and for discharging an accurately measured amount of said material from said pump through said openings during the other stroke of said pump;

(e) conduit means connecting said pump to said tank and to said openings, and said tank to said opening; and

(f) heating means in close thermal contact with said tank and at least a portion of said conduit means for keeping the same at a temperature at which said material is fluid, said portion of said conduit means connecting said tank to said openings.

2. A device for floor treatment comprising, in combination:

(a) an elongated handle member;

(b) a plate member secured to a longitudinal end portion of said handle member and formed with a plurality of spaced openings therein;

(c) a tank mounted on said handle member and adapted to hold a body of fusible floor treating material;

(d) a reciprocating pump for drawing an accurately measured amount of floor-treating material contained in said tank into said pump during one stroke of the pump movement, and for discharging an accurately measured amount of said material from said pump through said openings during the other stroke of said pump;

(e) conduit means connecting said pump to said tank and to said openings, and said tank to said openings;

(f) heating means in close thermal contact with said tank, said pump, and at least a portion of said conduit means for keeping same at a temperature at which said material is fluid, at least portions of said tank, of said pump, and of said conduit means jointly constituting a unitary structure of good heat-conducting properties; and

(g) hinge means connecting said plate member to said handle member, a portion of said conduit means being integral with said hinge means.

3. A device as set forth in claim **2**, wherein said reciprocating pump includes a casing, a piston reciprocable in said casing, a suction valve interposed between said casing and said tank, and a pressure responsive outlet valve interposed between said casing and said openings.

4. A device as set forth in claim **3**, wherein said plate member is of a material having a thermal conductivity substantially smaller than the thermal conductivity of said heat conducting material.

References Cited

UNITED STATES PATENTS

1,394,662	10/1921	Blonquist	15—504
1,806,004	5/1931	Tavender.	
1,969,036	8/1934	Reibel	15—504
2,053,282	9/1936	Gewalt	15—553 X
2,764,774	10/1956	Belsky et al.	15—228
2,770,828	11/1956	Ellman	15—547
3,074,100	1/1963	Sherbonoy	15—505 X
3,181,196	5/1965	Knightly	15—549 X

CHARLES A. WILLMUTH, *Primary Examiner.*

S. E. BECK, E. L. ROBERTS, *Assistant Examiners.*