

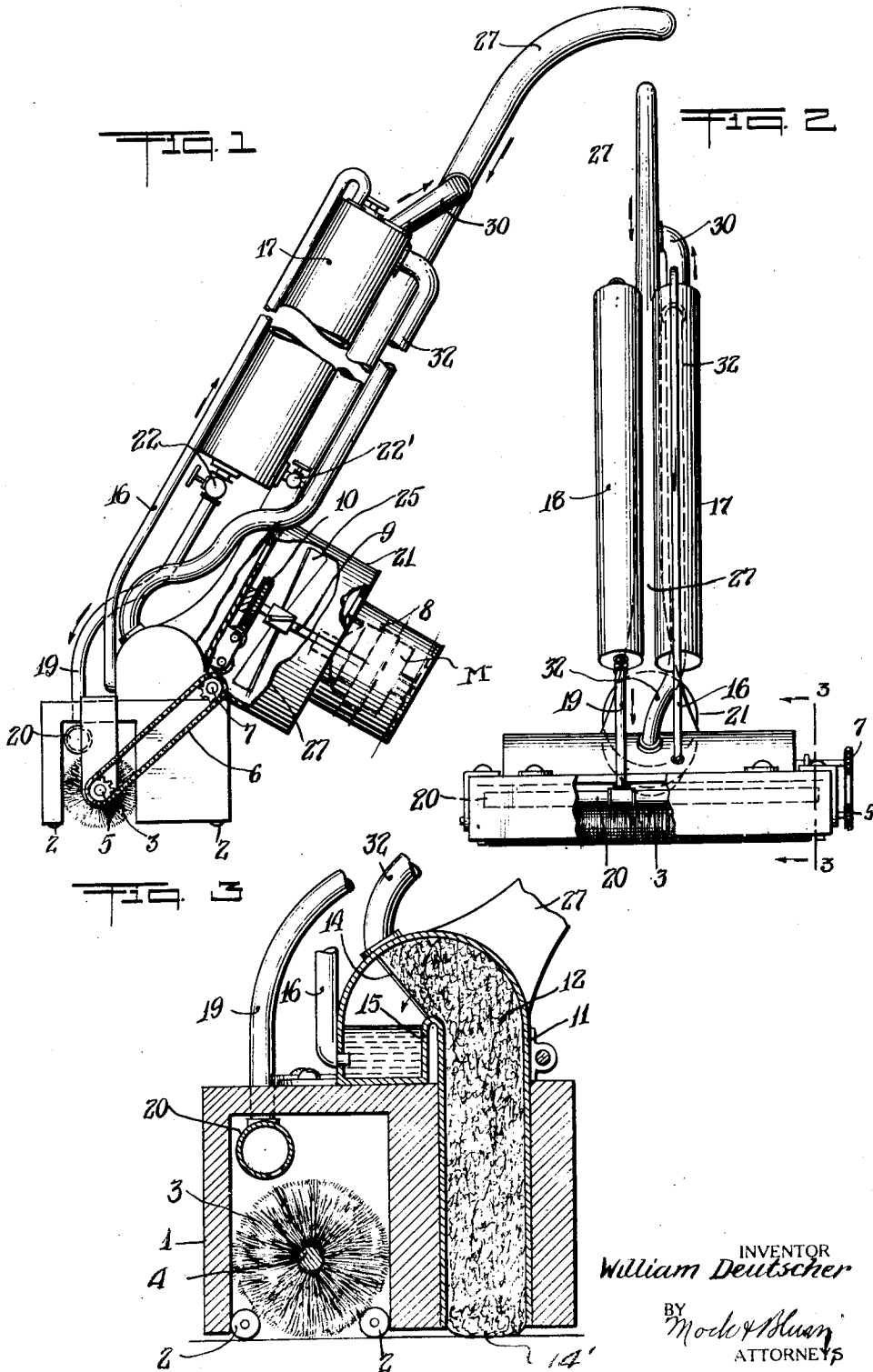
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FLOOR CLEANER

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FLOOR CLEANER.

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My invention relates to a new and improved floor cleaner, although my invention is not limited to this specific use.

One of the objects of my invention is to devise a cleansing device whereby the surface to be cleaned is scrubbed with soap water or any other suitable cleansing fluid and it is then rapidly freed from the cleansing fluid so that it is left in the dry condition or in practically the dry condition.

Another object of my invention is to devise an apparatus for this purpose which will be simple, compact and reliable in operation.

Another object of my invention is to devise an apparatus of this character which shall be especially adapted for removing the film of moisture which tends to remain on every wet surface.

Other objects of my invention will be set forth in the following description and drawings which illustrate a preferred embodiment thereof, it being understood that the above general statement of the objects of my invention is intended to generally explain the same and not to limit it in any manner.

Fig. 1 is a side elevation, part of the device being shown as broken away in order to clearly illustrate the same.

Fig. 2 is a front elevation.

Fig. 3 is a section on the line 3—3 of Fig. 2.

The bottom part of the device comprises a casing 1 open at the bottom and provided with wheels 2 by means of which the carriage may be readily moved upon the floor in any suitable direction. The wheels 2 may be turned in any suitable direction so that the device can be moved in any desired direction. The casing referred to by the reference numeral 1 includes the material which forms the passage 11 and the trap 15, the last two parts being further described in the specification.

The casing 1 is provided with a brush 3 mounted upon a suitable shaft 4. As shown in Fig. 1, the shaft 4 is provided with a sprocket 5 and this is connected by means of a chain 6 to a sprocket 7 which is suitably actuated by means of an electric motor M mounted in the casing 8. The shaft 9 of this electric motor is provided with a sprocket 10 which is suitably connected to the intermediate sprocket 7 by any suitable intermediate gears, as diagrammatically shown in Fig. 1.

The casing 1 is provided with a suction passage 11 and this is preferably behind the brush 3 when the device is pushed along the

floor. The suction passage 11 is provided with a mass of absorbent material 12. This suction passage or opening 11 is curved to provide the trap 15. This absorbent material 12 can be made of cotton or any suitable absorbent material or fabric of any kind. A screen 14 is provided to keep the absorbent material in position and a similar screen 14' may be provided, if desired, at the bottom of the suction passage 11.

In the operation of the device it is intended that the suction passage 11 should either rub lightly upon the floor which is being washed or should be at a very short distance above the floor. However, I prefer that the absorbent material 12 should directly contact with the floor which is being cleaned, and for this purpose the absorbent material 12 may consist of a long wick, the top of which is connected in any suitable manner to the screen 14 while the bottom of this long wick rubs along the floor which is being washed, so that the capillary action of the absorbent material positively takes up the water on the floor.

Experience has shown that a mere suction nozzle without the absorbent wick 12 is of low efficiency in removing the last trace of moisture on a floor. The water which is forced through the wick 12 by means of the suction device to be later explained collects in a pool in the trap 15 and it is taken out of this trap 15 through the pipe 16 to the tank 17 which serves to hold the waste or dirty water. Since the suction passage 11 is enclosed, all the air entering the same must pass upwardly through the bottom part of the wick 12, so that the water absorbed by wick 12 is positively raised by suction.

As shown in Fig. 1, the pipe 16 communicates with the top of the tank 17. The tank 17 can be provided at the bottom thereof with any suitable outlet valve 22' for draining off the waste water.

A tank 18 is provided for holding a supply of clean water which can be mixed with soap or any other suitable cleanser. The tank 18 is connected by means of the pipe 19 with a perforated pipe 20 which is located above the brush 3, so that the brush is sprinkled with soap water or the like for its entire length. The pipe 19 is provided with a valve 22 by means of which the supply of clean water can be shut off at any desired time.

A motor casing 8 is adjacent a fan casing 21 and this is provided with a fan or blow-

er 25 by means of which the air is forced out through the fan casing 21, at the right-hand side of the apparatus, as is shown in Fig. 1. The fan casing 21 has an inlet which is connected with the pipe 27 at a point adjacent the shaft 9. The inner and outer ends of the pipe 27 are closed and the inner end of the pipe 27 is connected to the casing 1, as shown in Fig. 3.

10 The pipe 27 has an opening adjacent the shaft 9 by means of which is communicates with the fan casing 21 so that when the blower 25 is operated, air is forced out of the pipe 27. This is indicated by the arrows in Fig. 1. The top of the waste water tank 17 is connected to the pipe 27 by means of an upper passage 30. Hence, when air is forced out of the pipe 27, air is also forced out of the top of the waste water tank 17 and this produces enough suction in the pipe 16 to drain the water out of the trap 15 and to cause the water to pass into the waste tank 17.

Similarly, pipe 32 has an open bottom and is connected to the casing 1 adjacent the absorbent material 12 and the top of the pipe 32 also communicates with the top of the waste water tank 17 so that a suction is simultaneously created in the pipe 32 and this forces air up through the absorbent material 12 to raise the water absorbed thereby. Some of this water will fall into the trap 15 to be drawn up in the pipe 16.

Hence, when the motor is operated and the device is moved forward upon the floor to be cleaned, the floor is subjected to a vigorous scrubbing action because of the rapid revolution of the brush 3 to which soap water is supplied, and the moisture is rapidly removed because of the suction combined with the absorbent material 12, so that the waste or dirty water is accumulated in the tank 17. The capillary action of the finely divided material 12 is not sufficient to raise the water therein with sufficient rapidity for the purposes of a practical machine. However, the construction above mentioned produces a sufficient suction over the entire cross-section of the finely divided material and particularly at the edges of the mass of finely divided material. This causes the water to be drawn up in a series of finely divided streams over substantially the entire exposed area of a mass of absorbent material. On the contrary if the suction were concentrated upon a relatively small area of the mass of finely divided material, the raising of the moisture would be correspondingly limited so that the device could not operate with sufficient rapidity.

60 The cross-sections of the pipes 16 and 32 are such with relation to this cross-section of pipe handle 27, that the lowering of pressure in pipe handle 27 produces the desired result.

65 If desired, the device could be employed

with the brush 3 removed, so that it could be operated to dry any wet surface. While the device is operating, little or no water will collect in trap 15, because the suction through the wide pipe 32 moves most of the water up through said pipe 32. When the operation of the device is interrupted, any water in the pipe 32 will flow back and collect in the trap 15.

I have shown a preferred embodiment of my invention, but it is clear that numerous changes and omissions could be made without departing from its spirit.

I claim:—

1. In a cleaning device, the combination of 80 a movable casing having a vertical passage therein through which liquid can be drawn, a suction pipe having an inlet end communicating with the said passage, means adapted to lower the air pressure in the said suction pipe, 85 said casing underneath the inlet end of the said suction pipe being provided with a trap for liquid, whereby when the operation of the said means is stopped, any liquid draining back from the said suction pipe is collected in the said trap, and a second suction pipe connected to the lower portion of said trap whereby it is adapted to drain the liquid collected therein, the first mentioned suction pipe and the second suction pipe being connected to the same suction means. 95

2. In a cleaning device, the combination of a movable casing having a vertical passage therein through which liquid can be drawn, a suction pipe having an inlet end communicating with the said passage, means adapted to lower the air pressure in said suction pipe, the said casing underneath the inlet end of the said suction pipe being provided with a trap for liquid, whereby when the operation of the said means is stopped, any liquid draining back from the said suction pipe is collected in the said trap, and means adapted to withdraw any liquid accumulated in the said trap, said passage having a mass of absorbent material therein. 100 105 110

3. In a cleaning device, the combination of a movable casing having a passage extending vertically therethrough, a tank for waste water connected to said casing, a hollow main pipe having both ends thereof closed and extending upwardly from the said casing, the lower end of the said hollow main pipe being connected to the casing and being movable therewith, exhaust means connected to the said hollow main pipe and adapted to exhaust the air therefrom, a pipe connecting said hollow main pipe to the said tank so that when the air pressure in the said hollow main pipe is reduced, the air pressure in the said tank will also be reduced, and a second pipe having one end thereof communicating with the said passage and having the other end communicating with the said tank, whereby when the air pressure in the said tank is lowered, the 115 120 125 130

air pressure in the said passage will also be lowered.

4. In a cleaning device, the combination of
5 of a movable casing having a passage extending vertically therethrough, a tank for waste
water connected to said casing, a hollow main
pipe having both ends thereof closed and extending upwardly from the said casing, the
lower end of the said hollow main pipe being
10 connected to the casing and being movable therewith, exhaust means connected to the
said hollow main pipe and adapted to exhaust the air therefrom, a pipe connecting
said hollow main pipe to the said tank so that
15 when the air pressure in the said hollow main pipe is reduced, the air pressure in the said
tank will also be reduced, and a second pipe having one end thereof communicating with
the said passage and having the other end
20 communicating with the said tank, whereby when the air pressure in the said tank is
lowered, the air pressure in the said passage will also be lowered, the said casing being
provided with a trap for liquid located under-
25 neath the mouth of the first mentioned pipe,

and a third pipe connecting the said trap to the tank.

5. A washing and drying device comprising a casing having an upwardly extending
recess, a revoluble brush located in said recess, means connected to said casing and
adapted to supply a cleansing liquid to said
brush, means adapted to actuate said brush,
a hollow pipe handle closed at its ends and
connected to said casing, exhaust means
35 adapted to lower the air pressure in said pipe handle and actuated by the same means which
actuate said brush, said exhaust means communicating with said pipe handle intermediate the ends thereof, said casing having
an upwardly extending inlet passage for liquid; the wall of said inlet passage forming
40 part of said casing, said inlet passage having a liquid trap formed therein, a tank connected to said casing, a pipe connecting the
top portion of said tank to said pipe handle,
and separate pipes connecting the top portion
45 of said tank to said passage and said trap.

In testimony whereof I affix my signature.

WILLIAM DEUTSCHER.