June 2, 1964 R. H. HAYNES 3,135,220

PORTABLE SELF-PRIMING FLOOR DRAINER PUMP ASSEMBLY

Filed Nov. 20, 1962 3 Sheets-Sheet 1

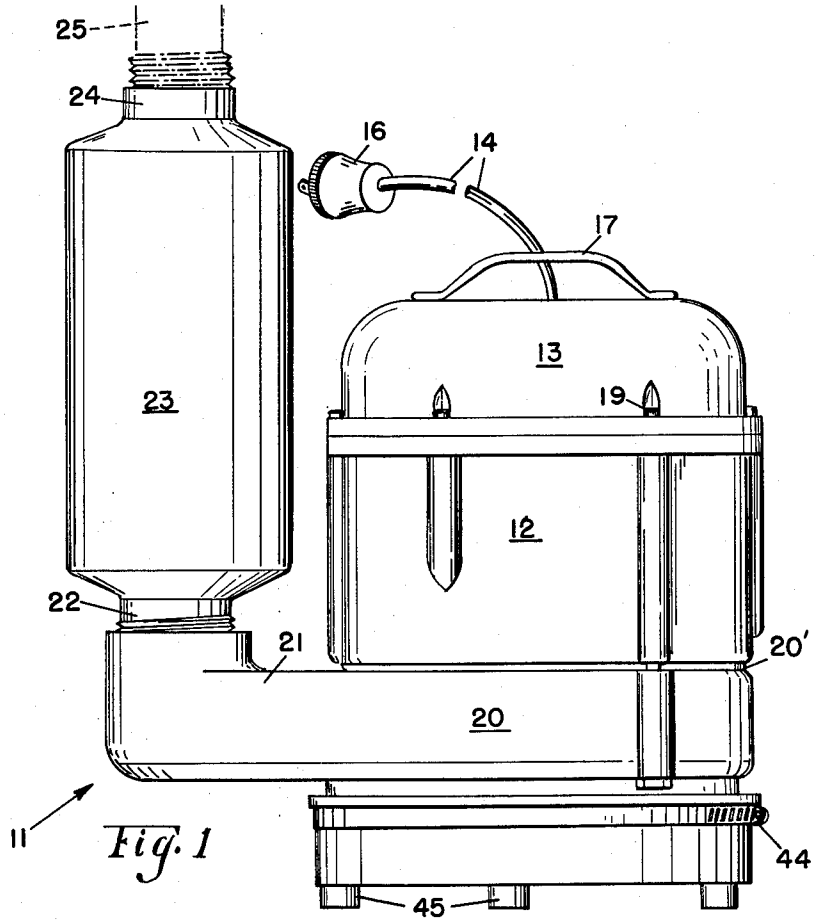

Fig. 1

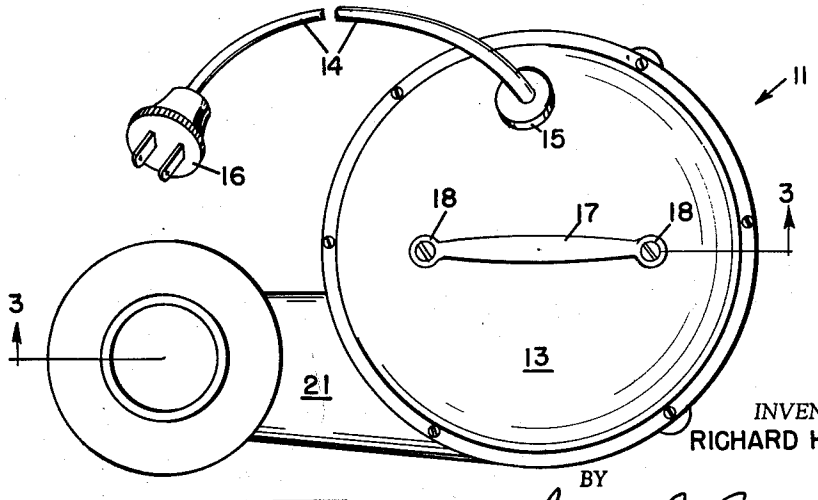

Fig. 2

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Filed Nov. 20, 1962 3 Sheets-Sheet 2

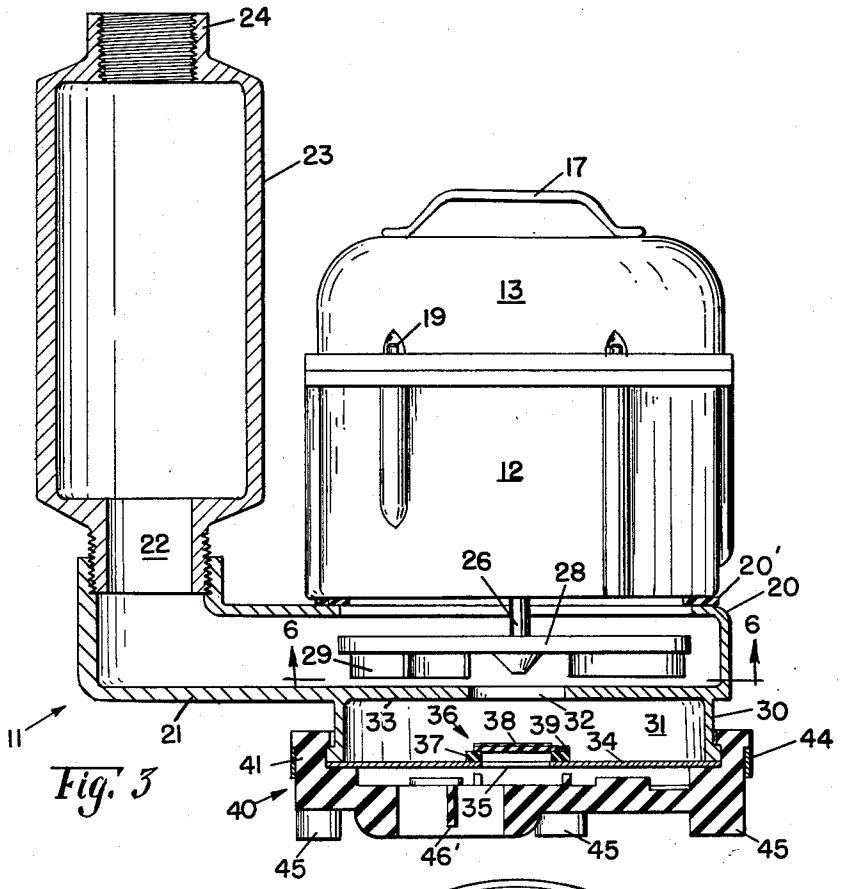

Fig. 3

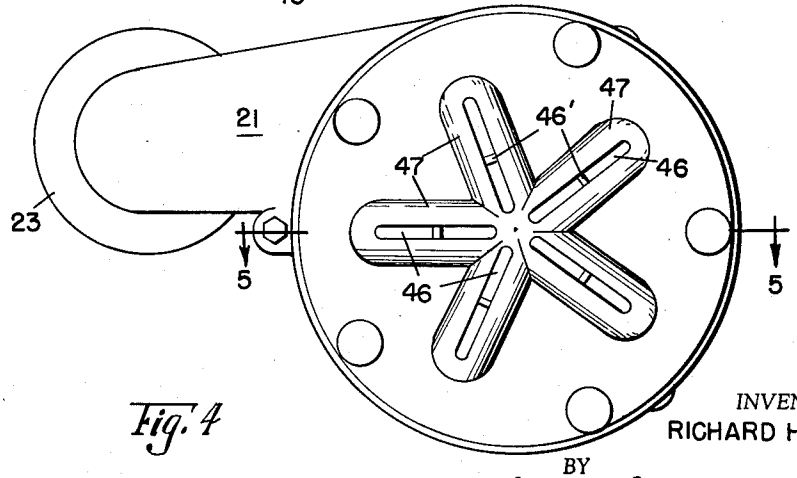

Fig. 4

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PORTABLE SELF-PRIMING FLOOR DRAINER PUMP ASSEMBLY

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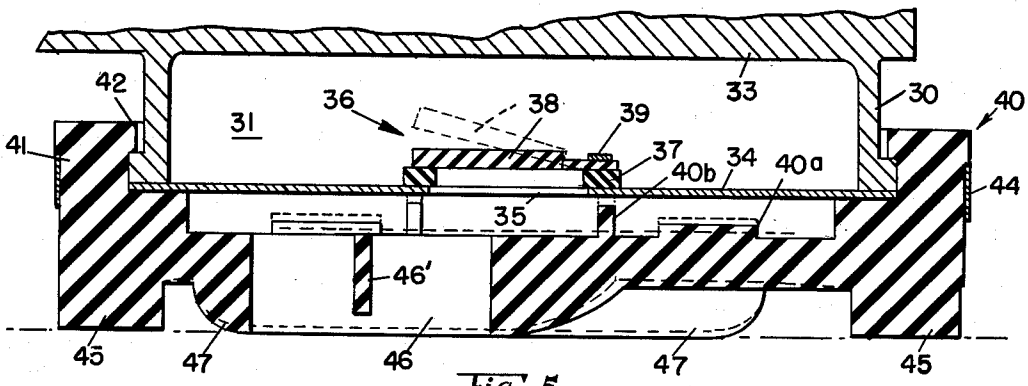

Fig. 5

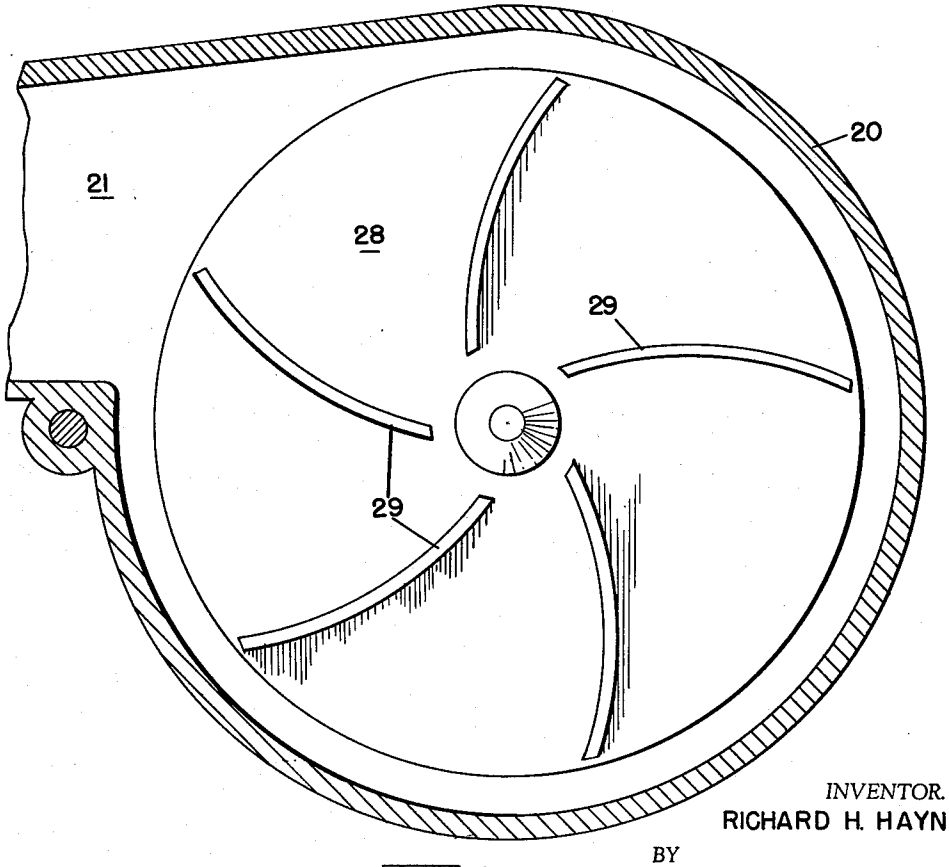

Fig. 6

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3,135,220

PORTABLE SELF-PRIMING FLOOR DRAINER PUMP ASSEMBLY

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2 Claims. (Cl. 103—218)

This invention relates to a portable self-priming floor drainer pump assembly and this application is a continuation-in-part of applicant's copending application Serial No. 123,404, filed July 10, 1961, and bearing the same title.

Generally there is provided as a compact lightweight portable unit, an electric motor, a centrifugal pump driven by the motor, a shallow pan-shaped base molded of rubber or other resilient material and having radially disposed medially slotted trough-shaped intake protuberances on its lower surface, a reservoir in the outlet adapted to hold a priming charge of water, and a check valve for preventing loss of the priming charge during idle periods.

It is an object of this invention to provide a portable self-priming floor drainer pump assembly that is simple, rugged and inexpensive yet highly effective and efficient in use.

It is another object of the invention to provide such a device, the supporting base of which incorporates the advantages of applicant's prior patent, No. 2,816,664, granted December 17, 1957, for "Floor Drainer," and improvements thereon.

It is a further object of the invention to provide a device of the character set forth having a deaerating tank connecting the pump to the discharge conduit and adapted to store a priming charge for the pump chamber.

It is yet another object of the invention to provide a floor drainer of the type disclosed in wihch the intake ports are automatically maintained at optimal spacing from a floor surface through flexibility of the base and changes in suction due to air intake as the water level approaches zero.

Other and further objects of the invention will become apparent from a reading of the following specification taken in conjunction with the drawings, in which:

FIGURE 1 is a side elevational view of a preferred embodiment of the invention,

FIGURE 2 is a plan view of the device of FIGURE 1,

FIGURE 3 is an elevational view similar to FIGURE 1 and partly in section on line 3—3 of FIGURE 2,

FIGURE 4 is a bottom plan view of the pump assembly of FIGURE 1,

FIGURE 5 is an enlarged fragmentary sectional elevational view of the base structure of FIGURE 3, and

FIGURE 6 is a bottom plan view of the pump impeller and chamber in section on line 6—6 of FIGURE 3.

With reference now to the drawings, the numeral 11 generally designates the floor drainer as a unit. The unit 11 comprises a conventional motor (not shown) having a watertight housing 12 including a dome-shaped cover 13. A rubber covered power supply cable 14 passes through an aperture in the cover 13 through a watertight sealing grommet 15. The free end of the cable 14 carries a conventional connector plug 16.

The cover 13 has a carrying handle 17 attached centrally thereof by screws 18. The cover 13 is watertightly removably attached to the cylindrical housing 12 by screws 19.

The housing 12 is fixed to the flat top of a horizontally disposed coaxial centrifugal pump chamber member 20 having an integral laterally and tangentially extending discharge chamber 21. The discharge chamber

21 has an internally threaded aperture in its upper wall adapted to receive an externally threaded integral nipple 22 at the lower end of a tank or reservoir 23 of a size to hold sufficient water for priming the pump chamber. The cross sectional area of the priming tank 23 is sufficient to reduce the velocity of water flowing upwardly therethrough enough to permit any air sucked into the pump during the terminal phase of the draining operation to bubble up through the priming chamber, thus deaerating and maintaining the priming charge at adequate volume for subsequent priming of the drainer pump.

An integral coupling nipple 24 at the upper end of the priming tank 23 receives a standard hose coupler on the end of a flexible discharge hose 25 (FIG. 1).

The motor in the housing 12 has its drive shaft 26 extending downwardly through an aperture in the bottom wall of the housing wall and into the pump chamber of the member 20. A conventional watertight sealing or packing gland (not shown) is fitted in said aperture around said shaft.

The lower end of the shaft 26 is fixed to the disc portion of a circular impeller 28 the lower face of which has cast thereon a series of radially disposed impeller blades 29.

From the floor of the pump chamber member 20 there depends a short cylindrical flange 30 defining a valve chamber 31. The valve chamber 31 is concentric to the pump chamber and communicates therewith through a coaxial opening 32 in the wall 33 between said chambers.

The bottom wall of the valve chamber 31 is defined by a metallic disc 34 having an intake opening 35 centrally thereof. The opening 35 is covered by a flap-type valve generally designated 36. The valve 36 comprises a square washer-like element 37 of tough rubber or other somewhat resilient material cemented and/or otherwise fixed to the upper surface of the disc 34 to surround the opening 35. A valve closure flap 38 of similar material is hingedly attached by a thin and flexible edge thereof to one side of the element 37 as by a clamping strip 39 riveted or otherwise fastened thereto. The flap 38 normally is held in the valve closing position shown in FIG. 5 by solid lines but automatically opens under very low pressure to permit water to flow upwardly through the valve 36 during pumping. The valve 36 quickly closes when the pump is turned off to maintain the tank 23 and the chambers 20 and 31 serially connected thereto filled with priming water.

The floor drainer is supported on a base member 40 molded of tough rubber or equivalent material. The base member 40 is of shallow pan shape and its upstanding integral rim 41 has an inwardly directed flange 42 which snaps over an outturned flange 43 on the rim of the cylindrical wall 30. A constrictable band-type clamp 44 of known construction embraces the rim 41 to sealingly interconnect the parts 30, 34 and 40.

A plurality of integral cushioning and supporting feet 45 underlies the periphery of the base member 40, spacing it approximately a half inch from a floor surface so that water may flow thereunder and into slots 46 in the bottoms of radially disposed intake ribs 47 molded on the lower surface of the base member. The intake ribs 47 and their slots 46 terminate substantially in the plane of the floor surface being drained so that substantially all of the water covering the floor will be sucked thereinto, an important feature of the present invention.

The flexibility of the base member 40 causes the central portion thereof to be fixed upwardly, as shown in phantom in FIG. 5, by the suction of the pump while only water is entering the intake slots, thus preventing blocking thereof by contact with the floor surface. How-

ever, as the water level approaches the floor surface air will also enter the intake slots. This automatically reduces the suction of the centrifugal pump and allows the base member to flex back toward its floor-hugging shape in FIG. 3 for more complete drainage than could be obtained without this novel construction of the base member.

While but one form of the invention has been shown and described herein, it will be readily apparent to those skilled in the art that many minor modifications may be made without departing from the spirt of the invention or the scope of the appended claims.

What is claimed is:

1. In a portable floor drainer assembly including a pump chamber and a relatively rigid disc forming the bottom of said chamber and having an intake valve therein, the provision of a base member of relatively flexible material attached to the lower portion of said drainer immediately below and in vertically spaced relation to said disc, said disc and said base forming a collecting chamber therebetween, a series of downwardly extending protuberances formed in said base member and each having a slot in its lower extremity, said collecting chamber being in communication with said slots and said intake valve, and a plurality of circumferentially spaced supporting feet dependent from said base, whereby when the water level approaches floor surface, air will enter said slots reducing the suction of the pump to allow the base member to flex to normal floor contacting position, while when water alone is entering said slots, said base member will be flexed upwardly allowing a greater amount of water therethrough.

2. In a portable floor drainer assembly including a pump chamber and a relatively rigid disc forming the bottom of said chamber and having an intake valve therein, the provision of a base member of relatively flexible material attached to the lower portion of said drainer immediately below and in vertically spaced relation to said disc, said disc and said base forming a collecting chamber therebetween, a series of downwardly extending protuberances formed in said base member and each having a slot in its lower extremity, said collecting chamber being in communication with said slots and said intake valve, and support means for said base, whereby when the water level approaches floor surface, air will enter said slots reducing the suction of the pump to allow the base member to flex to normal floor contacting position, while when water alone is entering said slots, said base member will be flexed upwardly allowing a greater amount of water therethrough, said last-named means comprising a series of circumferentially spaced feet formed in the peripheral portion of said base and having their bottoms normally in substantially the same plane as the lower extremities of said protuberances.

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