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DISPENSING MACHINE WITH PROTECTIVE ATMOSPHERE

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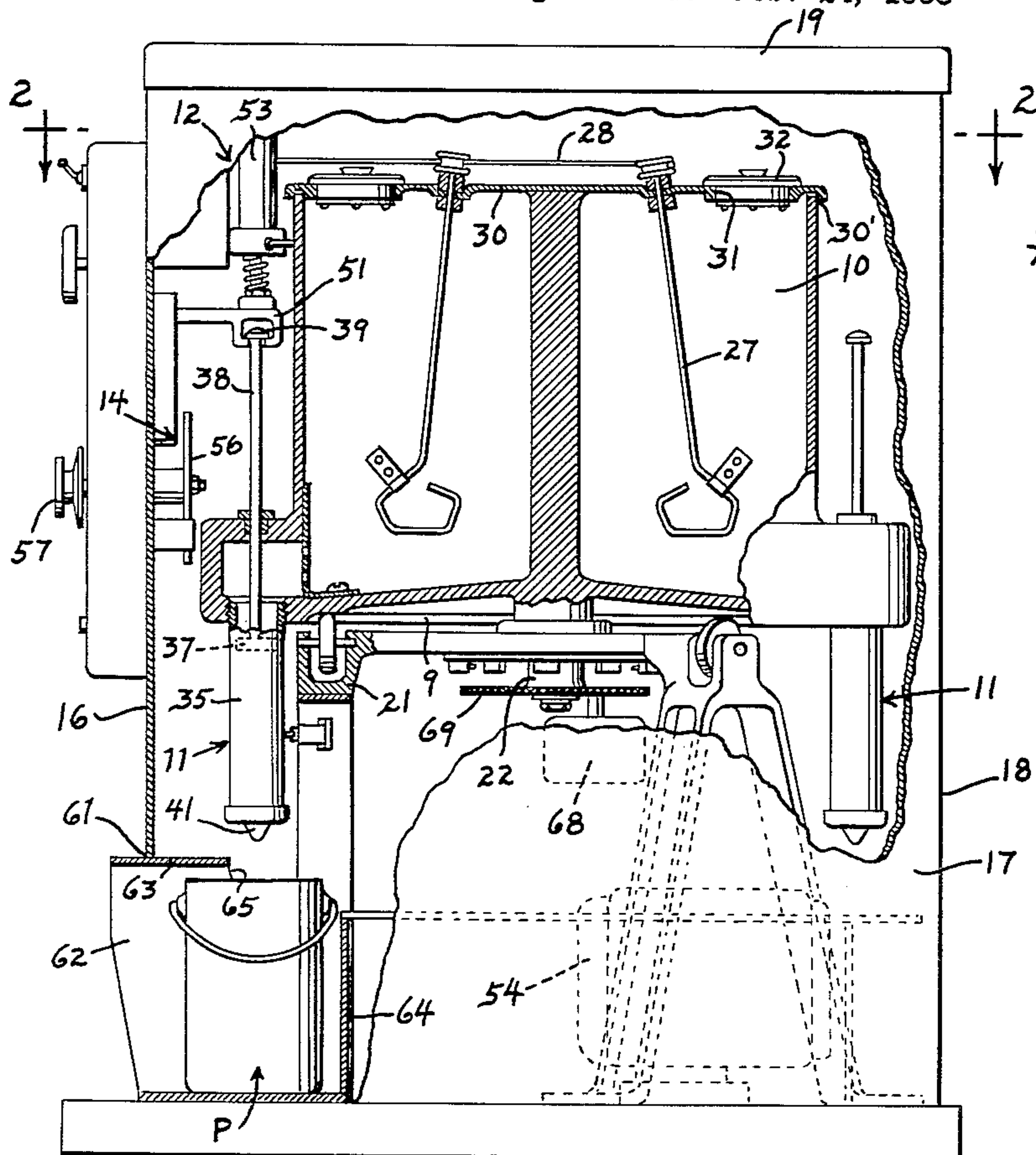


Fig. 1

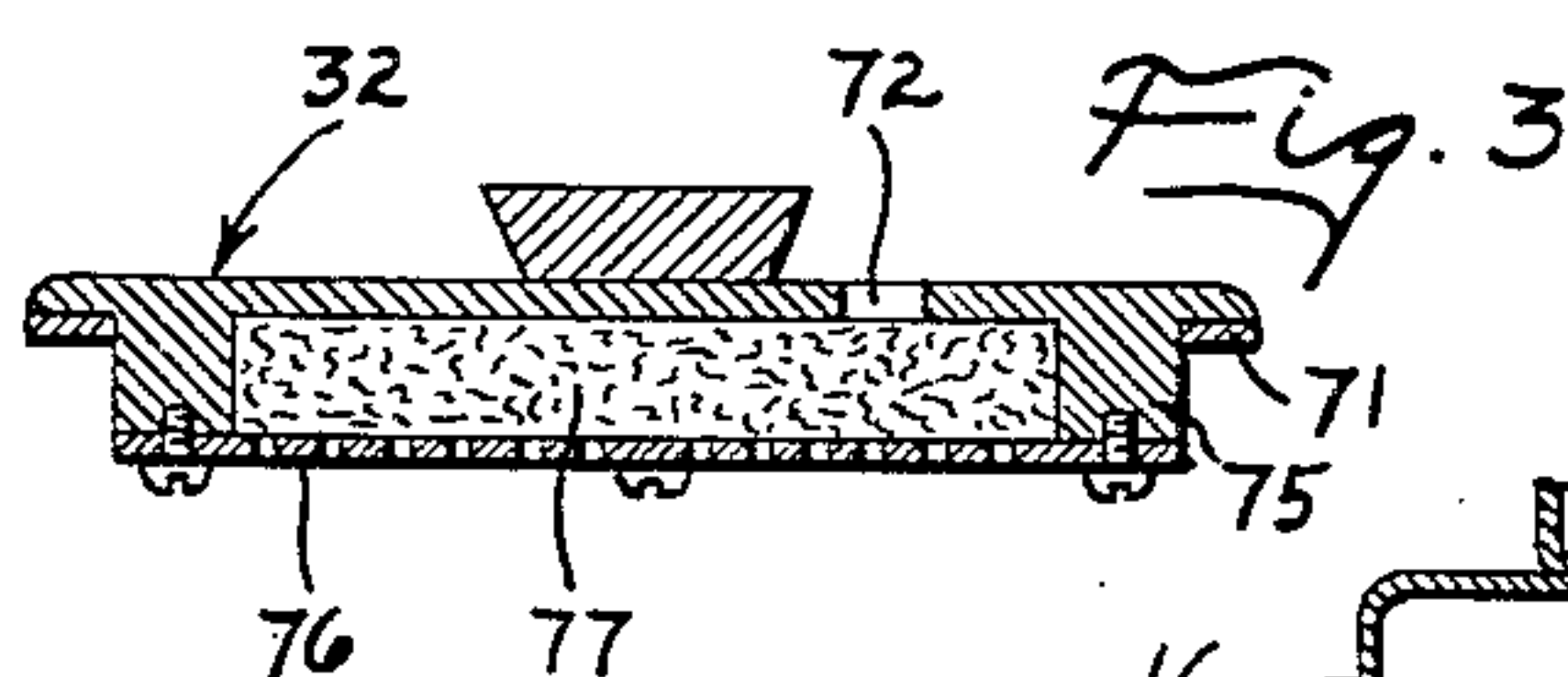


Fig. 3

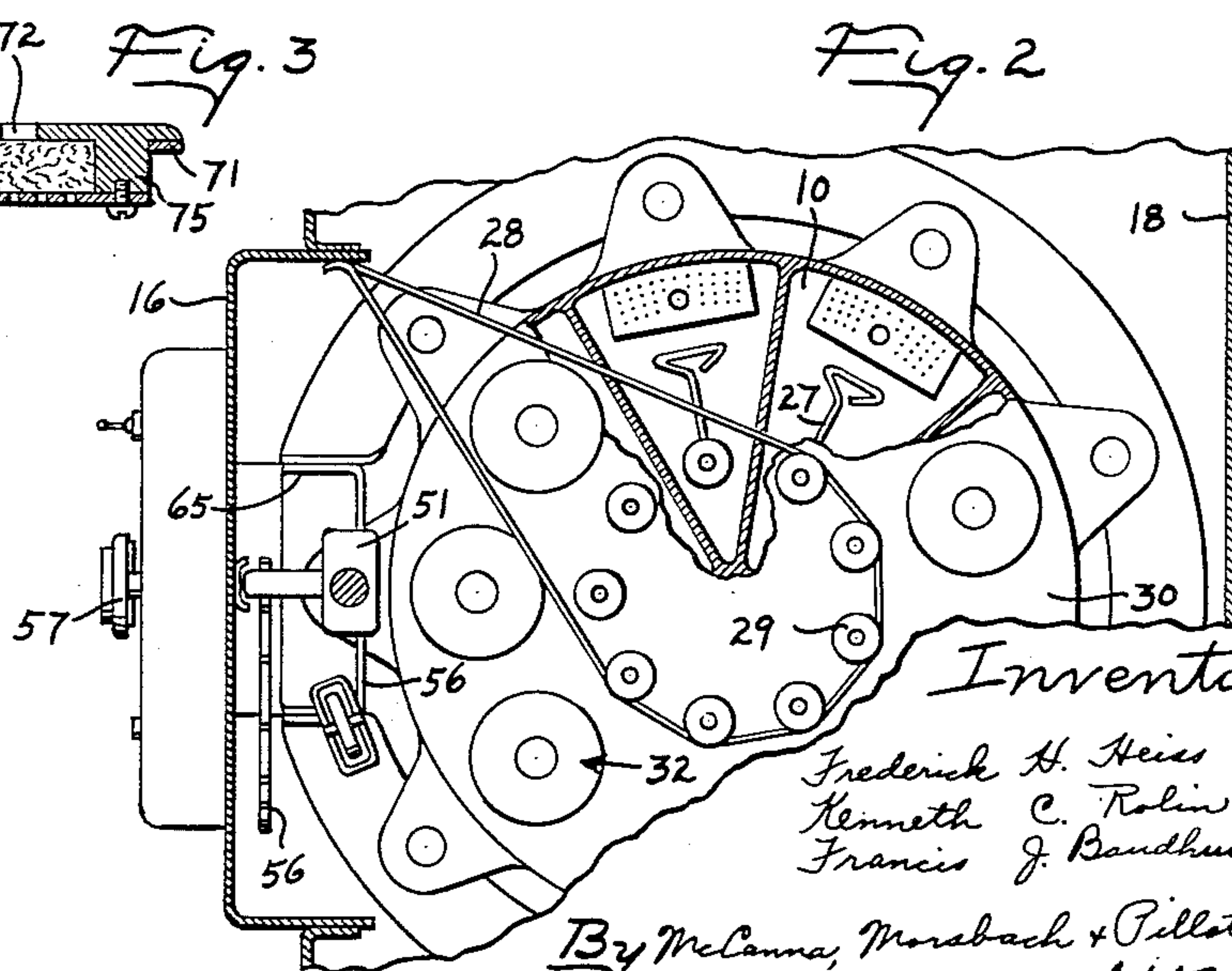


Fig. 2

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DISPENSING MACHINE WITH PROTECTIVE ATMOSPHERE

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Original application Feb. 24, 1958, Ser. No. 717,017, now Patent No. 3,066,830, dated Dec. 4, 1962. Divided and this application Oct. 30, 1961, Ser. No. 148,408
3 Claims. (Cl. 222—135)

This invention relates to machines for dispensing paints, paint colorants and the like, and particularly to a machine having apparatus for preserving the paint colorant prior to dispensing of the same.

In the mixing of coloring of paints, it is preferable to employ paints or paint colorants, hereinafter generally referred to as paint colorants, which are of the so-called "drying-type" so that the colorants do not adversely affect the characteristics of the base paints when the colorants are added to the base paint. Such drying-type colorants generally include a coloring pigment, a suitable drying-type oil and a thinner to produce the desired flow characteristics of the colorant. These drying-type colorants, however, tend to evaporate and harden when exposed to air. This not only changes the coloring value of the colorants, but may also produce skinning and hardening of the colorant which would impair proper dispensing of the same.

An important object of this invention is to provide a machine for dispensing drying-type colorants and the like which has an improved arrangement for preventing evaporation and hardening of the drying-type colorants prior to the dispensing of the same.

A more particular object of this invention is to provide a dispensing machine of the type wherein the paint colorant is intermittently withdrawn and dispensed from a storage reservoir, and which machine has means for maintaining a substantially constant pressure on the paint colorant in the several reservoirs for accurate control of the quantity of colorant dispensed, and means for maintaining a protective atmosphere in the reservoirs to prevent evaporation and hardening of the paint colorants with a consequent change in the coloring value thereof.

Still another object of this invention is to provide a paint colorant dispensing machine of the type described and in which the means for maintaining a protective atmosphere in the reservoirs can be easily cleaned and replenished.

These, together with various ancillary objects and advantages of this invention will be more readily appreciated as the same becomes better understood by reference to the following detailed description when taken in connection with the accompanying drawings wherein:

FIGURE 1 is a side view of the dispensing machine and with parts broken away and shown in section to illustrate details of construction;

FIG. 2 is a fragmentary horizontal sectional view through the dispensing machine, taken on the plane 2—2 of FIGURE 1; and

FIG. 3 is a vertical sectional view through one of the covers for the paint colorant reservoirs.

The present application is a division of the copending application of Frederick H. Heiss, Kenneth C. Rolin, and

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Francis J. Baudhuin for "Dispensing Machine," Serial No. 717,017, filed February 24, 1958, now Patent No. 3,066,830.

As disclosed more fully in the aforementioned application, the dispensing mechanism generally includes a carrier 9 mounted for rotation about its axis and having a plurality of annularly spaced receptacles or reservoirs 10 for receiving and storing a plurality of different paint colorant materials. A plurality of dispensing devices 11 are provided, one for each receptacle, and which dispensing devices are operable to dispense measured quantities of paint colors from the respective receptacle. In the embodiment illustrated, the dispensing devices 11 are arranged to be operated by a common operator 12 which is mounted at one side of the carrier and positioned so as to operate in a selected one of the dispensing devices which is aligned therewith. A selectively adjustable mechanism 14 is provided for adjusting the stroke of the operator 12 to thereby selectively vary the quantity of paint colorant dispensed.

As best shown in FIGS. 1 and 2, the machine includes a case having a rigid front wall 16, spaced side walls 17 and a rear wall 18 to define an enclosure for the dispensing mechanism. A top panel 19 is removably mounted on the front, side and rear walls of the case. A support frame 21 is provided for rotatably supporting the carrier and includes a central hub for supporting an axially extending spindle 22 on the carrier. A plurality of annularly spaced rollers 24 are mounted on the frame and engage the underside of the carrier to support the same. The paint receptacles 10 may be of any suitable construction which provides separate enclosed reservoirs for the paint colorants, and the receptacles are advantageously arranged in an annular bank. In the embodiment shown, the receptacles are formed as separate compartments in a canister. A top 30 is sealed to the canister by a seal ring 30' and the top has a plurality of filler openings 31 therein, one for each of the compartments in the canister, to enable replenishing of the material in the canister without requiring removal of the top 30. Removable covers 32 are provided for covering each of the openings 31 to thereby completely enclose the compartments in the canister. Agitators 27 are advantageously provided in each of the receptacles and, as shown, are rotated by means of a stationary belt 28 which engages pulleys 29 on the upper ends of the agitators.

The dispensing devices 11 may be of any construction suitable for dispensing liquid quantities of paint colorants from the respective receptacle and, as best shown in FIG. 1, include a cylinder 35 which communicates at one end with a respective receptacle 10. A piston 37 is slidably disposed in each cylinder and has a rod 38 extending upwardly therefrom. The upper end of the rod terminates in a head 39. A valve (not shown) is provided on each piston 37, which valve is arranged to close when the piston is extended for dispensing material from the cylinder and to open when the piston is retracted to permit material from the respective receptacle to flow therepast into the cylinder below the piston. The cylinders have a dispensing nozzle 41 at their lower end, which nozzle has a discharge opening therein for discharging the material from the measuring cylinder.

The common operator 12 is more fully disclosed and claimed in the aforementioned copending application, and reference is made to that application for a more com-

plete description of the construction and operation of the same. In general, the operator includes a jaw 51 which is disposed in the path of movement of the heads 39 on the piston rods 38, and is shaped to permit the heads to pass therethrough as the carrier is rotated. The operator is of the fluid operated type and includes a cylinder 53 having a piston therein connected to the jaw 51. Fluid is supplied to the operator cylinder 53 from a motor and pump assembly 54 under the control of suitable valves (not shown), and the stop mechanism 14 is arranged to selectively adjust the stroke of the jaw. The stop mechanism includes a cam plate 56 disposed in the path of movement of the jaw 51, and which cam plate is rotatable by means of a knob 57 to provide an adjustable stop for selectively changing the stroke of the jaw.

The case for the dispensing mechanism has an access opening 61 in the front wall thereof below the lower end of the dispensing devices 11, and a shield including opposed side walls 62, a top wall 63 and a rear wall 64, is disposed around the opening 61 and extends into the case to a position below the dispensing devices to define a dispensing station. An opening is provided in the top wall 63 and side walls 62 of the shield to permit dispensing of paint colorant from the dispensing devices 11 into a can P disposed at the dispensing station. The carrier 9 is rotatable to enable positioning of any selected one of the dispensing devices 11 at the dispensing station, and may be rotated by hand or by power operated mechanism such as the motor 68 which is drivingly connected to the carrier through gearings 69.

Since the colorant is intermittently withdrawn from the receptacles, it is necessary to vent the receptacles to the atmosphere to prevent the formation of a vacuum therein. For reasons set forth hereinafter, the removable covers 32 are sealed to the top 30 of the respective receptacles by seal rings 71 and vent openings 72 are provided in each of the covers to admit air into the respective reservoir or receptacle.

The colorants to be dispensed from the machine are preferably in a readily flowable liquid form and, in order that the colorants not adversely affect the drying characteristics of the base paint, when the colorants are added thereto, the colorants are preferably of the so called "drying-type" colorants. Such colorants, in general include the coloring pigment, a suitable drying-type oil such as linseed, maleic oil and a thinner such as mineral spirits to produce the desired flow characteristics. Such drying-type colorants, however, tend to evaporate and also to "skin-over" when exposed to air. This changes the composition of the colorant and increases the quantity of pigment per unit volume and hence the coloring value of the colorants.

Thus, in order to permit accurate and repetitive reproduction of preselected colors, it is necessary not only to accurately control the quantity of colorant dispensed, but also to control the composition of the colorant to maintain a uniform coloring value per unit volume. For this purpose, provision is made for maintaining an atmosphere above the colorant in each reservoir to prevent drying of the oils in the colorant and evaporation of the thinner used therein. This is conveniently effected by the provision of a receptacle at the underside of the cover and overlying the vent opening 72 therein for receiving an absorbent material 77 impregnated with a mixture for maintaining a protective atmosphere in the compartments. This mixture includes an anti-oxidant, for example buteryl doxime, methyl ethyl ketoxime, iso amyl phenol, guaiacol, etc. to prevent drying of the oils in the colorant, and a thinner such as mineral spirits for maintaining a saturated atmosphere in the canister compartment and thus prevent evaporation of the thinner in the colorants. As best shown in FIG. 3, the receptacle is conveniently formed at the underside of the cover by a flange 75 and a perforated grid 76 such as attached to the flange. As is apparent, the impregnated pad 77 overlies the vent open-

ing 72 in the cover so that any air which enters the compartments must pass through the pad and be treated thereby. In addition, it is to be noted that the open area of the grid 76 is large as compared to the vent opening, so that the mixture can readily evaporate from the pad into the respective compartment in the canister to maintain a proper atmosphere therein. This particular arrangement also facilitates cleaning and replenishing of the anti-oxidant mixture in the pads 77, since it is only necessary to remove the covers 32 and immerse the entire cover and pad in a vessel containing the anti-oxidant.

From the foregoing it is thought that the construction and operation of the device will be readily understood. As the paint colorant is intermittently withdrawn from the respective reservoir by the dispensing device 11, air enters through the vent opening 72 into the reservoir to replace the dispensed colorant. Since the entering air must pass through the pad 77 containing the anti-oxidant mixture, the air is treated before it enters the reservoir and does not contaminate the atmosphere therein. Moreover, since the pad is in relatively open communication with the reservoir through the grid 76, while it has relatively restricted communication with the atmosphere through a vent opening 72, the pad will operate to maintain a substantially saturated atmosphere in the reservoir while minimizing loss of the anti-oxidant material to the surrounding atmosphere. Since the protective atmosphere prevents evaporation and oxidation of the colorant vehicle, the coloring value of the fluid colorant does not change, even when stored for prolonged periods in the reservoirs and, moreover, skinning or hardening of the color is prevented.

We claim:

1. An apparatus for dispensing liquid paint colorants including a coloring pigment, a drying-type oil and a thinner to provide a readily flowable liquid, said apparatus comprising a plurality of liquid paint reservoirs each having a filler opening adjacent the upper end thereof, a cover removably attached to each reservoir to overlie the filler opening therein, means communicating with each of the reservoirs for intermittently withdrawing paint colorant therefrom and for dispensing measured quantities of colorants, said covers having a vent opening therein to maintain the pressure in the reservoirs at substantially atmospheric pressure, a plurality of absorbent pads each impregnated with a mixture of anti-oxidant and a thinner, and means on each cover supporting one of the pads in overlying relation to said vent opening and in free communication with the reservoir for maintaining a protective atmosphere therein.

2. A machine for dispensing liquid paint colorants including a coloring pigment and a drying-type vehicle comprising, a carrier mounted for rotation about an upright axis and defining a plurality of separate enclosed receptacles for receiving different paint colorants, means individual to each compartment for intermittently withdrawing colorant therefrom and for dispensing measured quantities of the colorant, said compartments having means for venting the same to atmosphere to maintain a substantially uniform pressure therein, and means individual to each compartment overlying said vent means for maintaining an anti-skinning atmosphere in the compartments to prevent drying of the colorant vehicle and to maintain a substantially uniform composition so that like measured quantities will have a uniform coloring value.

3. A machine for dispensing liquid paint colorants of the type comprising a coloring pigment and a vehicle including a drying-type oil and a thinner, said machine comprising a carrier mounted for rotation about a generally upright axis and having means defining a plurality of separate colorant receptacles each having a top wall, said receptacles each having a filler opening adjacent the upper end and a cover removably mounted in the filler opening, means individual to each of said compartments

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for intermittently withdrawing colorant therefrom and for dispensing measured quantities of colorant, said covers each having a vent opening therein to maintain a substantially uniform pressure in the respective compartment, a plurality of pads each impregnated with a mixture of an anti-oxidant and a thinner, and means mounting the pads on the covers for removal therewith and in overlying relation to the vent openings and in free communication

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with the respective receptacle for maintaining a protective atmosphere therein.

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