

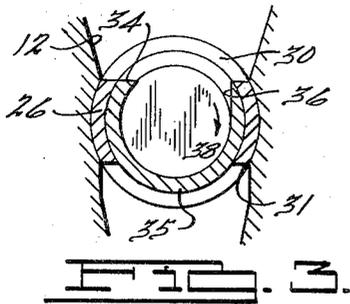
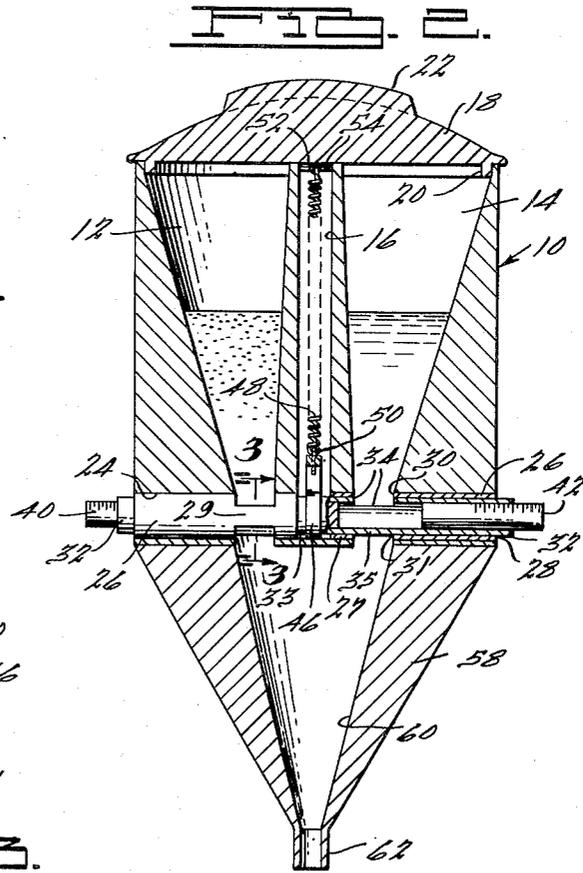
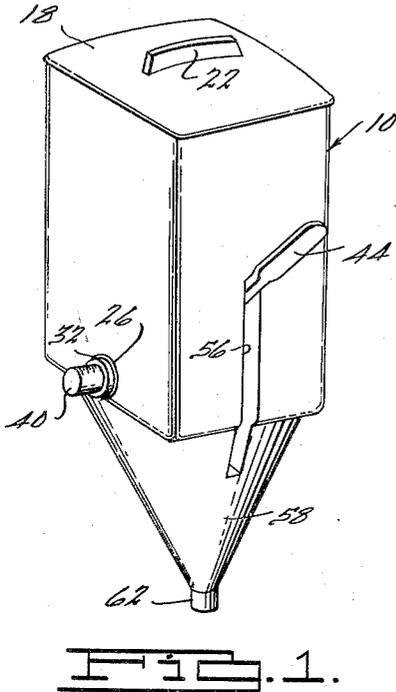
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MIXING DISPENSER

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MIXING DISPENSER

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The present invention relates generally to dispensers and, more particularly, to an improved dispenser capable of mixing and dispensing a predetermined quantity of substances, such as dental alloys, mercury, and the like, for use in dental work, and for other purposes.

An important object of the invention is to provide a mixing and metering device including the provision of a hopper having a plurality of storage chambers therein, with each of said chambers having an opening at the top thereof for loading, and a discharge port at the bottom for unloading. The walls of the storage chambers taper downwardly and inwardly to form a substantially square discharge port. A cylindrical discharge valve is horizontally rotatably disposed below the discharge port and is operative to receive a metered quantity of substance from each of the storage chambers and deposit it in a discharge funnel or chute. The cylindrical discharge valve is hollow at each end and is provided with a graduated cylinder adjustably mounted in each of said hollow ends whereby, the quantity of substance withdrawn from each chamber may be varied as desired.

Another object of the present invention is to provide a dispenser especially adapted for dental use which has a measuring valve of a variable capacity so that it will, for each operation, measure any desired quantity of substances, as for example, an alloy and mercury, and mix the substances for ready use thereof.

Other objects, features and advantages of the present invention will become apparent from the following detailed description taken in conjunction with the accompanying drawing, in which:

Figure 1 is a perspective view of a dispenser made in accordance with the principles of the invention;

Figure 2 is a vertical cross-sectional view of the dispenser illustrated in Figure 1, showing the discharge valve partly in section; and

Figure 3 is a vertical cross-sectional view of the structure illustrated in Figure 2, taken along the line 3-3 thereof.

Referring now to the drawing and, particularly, to Figures 1 and 2, the reference numeral 10 designates the hopper of a dispenser made in accordance with the principles of the present invention. The outer shape of the hopper 10 is shown as being substantially square in cross-section but, it will be understood that any other suitable shape could be used for the hopper, as for example, it could be circular in cross-section.

As is best seen in Figure 2, the hopper 10 is provided with a pair of spaced storage chambers 12 and 14 which are open at the top and bottom ends thereof. The walls of the storage chamber 12 and 14 taper downwardly and inwardly to form a substantially square discharge port. The hopper 10 is provided with a chamber 16 which is disposed so as to divide the hopper in two portions and to provide a working space for another part of the dispenser as described hereinafter.

The open top end of the hopper 10 is provided with a cover 18 having a downwardly extending portion 20

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adapted to be seated snugly within the upper end of the hopper. The cover 18 may be provided with a suitable handle portion as designated by the numeral 22.

A transverse bore 24 is provided in the lower end of the hopper 10. The transverse bore 24 carries therein a pair of spaced sleeve bearings 26 the outer ends thereof being designated by the number 28. The sleeve bearings 26 have an inner end 27 connected to the outer part thereof by means of a pair of spaced longitudinal members 29 so as to form an upper opening 30 and a lower opening 31 communicating with the storage chambers and to a discharge funnel, respectively.

A discharge valve 32 is rotatably mounted in the sleeve bearings 26 and is provided with a solid center portion and hollow end portions. As is best seen in Figures 2 and 3, the hollow end portions are provided with an upwardly facing opening 34 which is disposed below the discharge opening of one of the storage chambers 12 and is in communication therewith. When the discharge valve 32 is rotated clockwise, as shown by the arrow 38, the lower side 35 will be pivoted upwardly and the opening 34 will face downwardly so as to discharge any substance it has therein which it received from the chamber 12. The openings 34 may be provided with vertical edges as 36 to permit easier emptying thereof.

The capacity of the hollow end portions, of the discharge valve 32, may be adjusted and varied as desired by means of the graduated cylinders 40 and 42 which may be calibrated as desired. The graduated cylinders 40 and 42 may be slidably or threadably mounted in the hollow end portions as desired. It will be understood however, that the cylinder 42, for the mercury storage chamber, assuming that is the substance therein, must be fitted in the discharge valve within close limits of tolerance, so as to prevent any leakage of the mercury.

A handle 44 is fixedly secured to the center portion of the discharge valve 32 as designated by the numeral 46. The handle 44 is biased upwardly to a non-operative position by means of a spring 48, the lower end of which is secured to the handle as at 50 and the upper end being fixed within the chamber 16 as at 52 on a cross member 54. As is best seen in Figure 1, the handle 44 extends forwardly from the chamber 16 and through a slot 56 in the side of the hopper 10.

As is best seen in Figure 2, a funnel or discharge chute 58 is provided on the lower end of the hopper and suitably secured thereto. The funnel 58 is arranged to receive the discharged substances from the discharge valve 32 and permit them to be mixed in the funnel interior 60 and then to be discharged to a suitable receiving container through the spout 62.

In operation, the chambers 12 and 14 would have therein substances which it is desired to mix in certain proportions, as for example, an alloy and mercury. The desired proportions would first be carefully set by adjusting the graduated cylinders 40 and 42 accordingly. This action permits the hollow end portions to be filled by gravity with their respective substances and to the desired amounts. A suitable container is then put under the spout 62 and the handle 44 is depressed downwardly, thereby turning the discharge valve 32 in a clockwise direction as shown by the arrow 38 in Figure 3. The substance in each of the hollow valve end portions will be discharged into the funnel interior 60 and the handle is then released and it will be returned to the upper operative position by the spring 48.

While it will be apparent that the preferred embodiment of the invention herein disclosed is well calculated to fulfill the objects above stated, it will be appreciated that the invention is susceptible to modification, variation and change without departing from the proper scope or fair meaning of the subjoined claims. Also, it is to

be understood that the phraseology and terminology employed herein is for the purpose of description and not limitation.

Having described the invention, what is claimed as new is:

1. Apparatus of the character described comprising, a hopper, a pair of compartments in said hopper, each of said compartments having an opening for loading a substance therein and a discharge opening on the lower end thereof for discharging the substance therefrom, a cylindrical discharge valve rotatably mounted in said hopper, said valve having a hollow portion on each end thereof, an opening in each of said hollow end portions extending outwardly and upwardly and being disposed adjacent the discharge opening of one of said compartments, a graduated cylinder adjustably mounted in each of the hollow valve end portions, a mixing funnel fixedly attached to the lower end of the hopper, a handle on said valve, a spring means operative to bias said handle to an upwardly disposed loading position, whereby when said handle is rotated downwardly said valve will be rotated to move the openings in the discharge valve to a substantially downwardly disposed position to discharge the substance from each hollow valve end portion into the mixing funnel and, when the handle is released, the spring means will return the handle and discharge valve to the loading position.

2. The invention as set forth in claim 1 wherein, said spring means and handle are operatively mounted within a vertically disposed compartment between said pair of compartments for holding a substance for discharge therefrom.

3. The invention as set forth in claim 2 wherein, said

discharge valve is operatively mounted in a cylindrical bearing member having openings leading into the substance holding compartments and into the discharge funnel.

4. In a device of the class described, the combination of a hopper having a pair of vertically disposed compartments therein, a vertical spaceway between said compartments, said compartments having inlets and a cover enclosing said inlets, each of said compartments having an outlet, said hopper having a transverse aperture therethrough disposed near the outlet of each of said compartments and being in communication therewith, a discharge valve rotatably mounted in said transverse aperture, a variable size chamber in said valve in each end thereof and being in communication with one of said compartments, a handle fixed to said valve at substantially the center part thereof, a spring means having the upper end thereof attached to the upper part of said hopper and the lower end thereof attached to the lower part of said handle, said spring means and handle being disposed in said vertical spaceway, a mixing funnel attached to the lower end of said hopper, whereby, when said handle is rotated downwardly the valve will be rotated so as to empty said chambers into said funnel and said spring means will return said handle to its starting position.

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