

United States Patent

[11] 3,563,410

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[54] **MEDICATION-DISPENSING DEVICE AND METHOD**
1 Claim, 3 Drawing Figs.

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133, 265, 277, 1; 221/92—94, 129—131;
53/(inquired)

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ABSTRACT: This invention relates to method and apparatus for dispensing medication in the form of pills or capsules for a number of patients in a ward or wing of a hospital or similar mass treatment institution. There is provided a machine that will release a desired number of pills or capsules of a given kind and dispense the pills into a medication cup. Adjustable selection apparatus is provided for determining and controlling the number of pills or capsules to be released from a given medication reservoir. Audible signals indicating the number of pills or capsules dispensed are simultaneously provided as a safety measure.

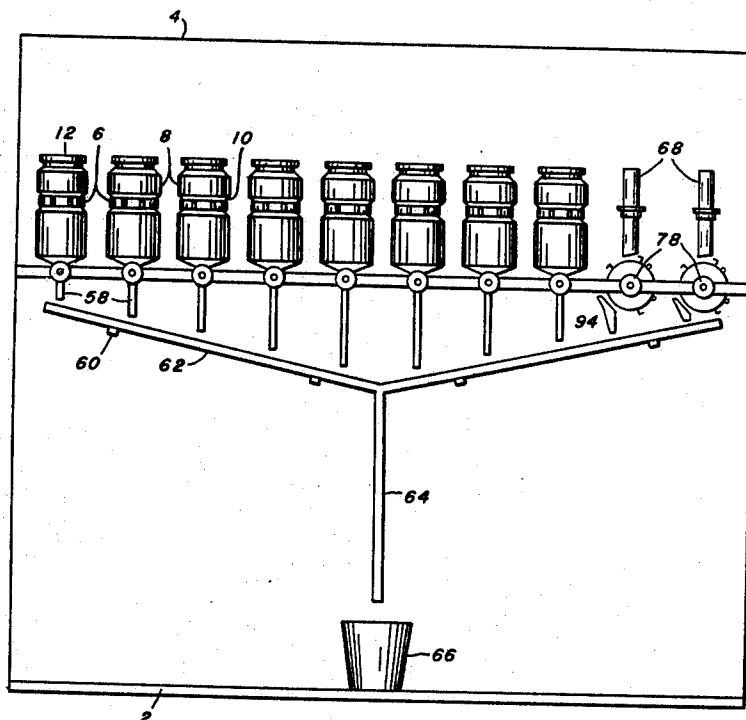
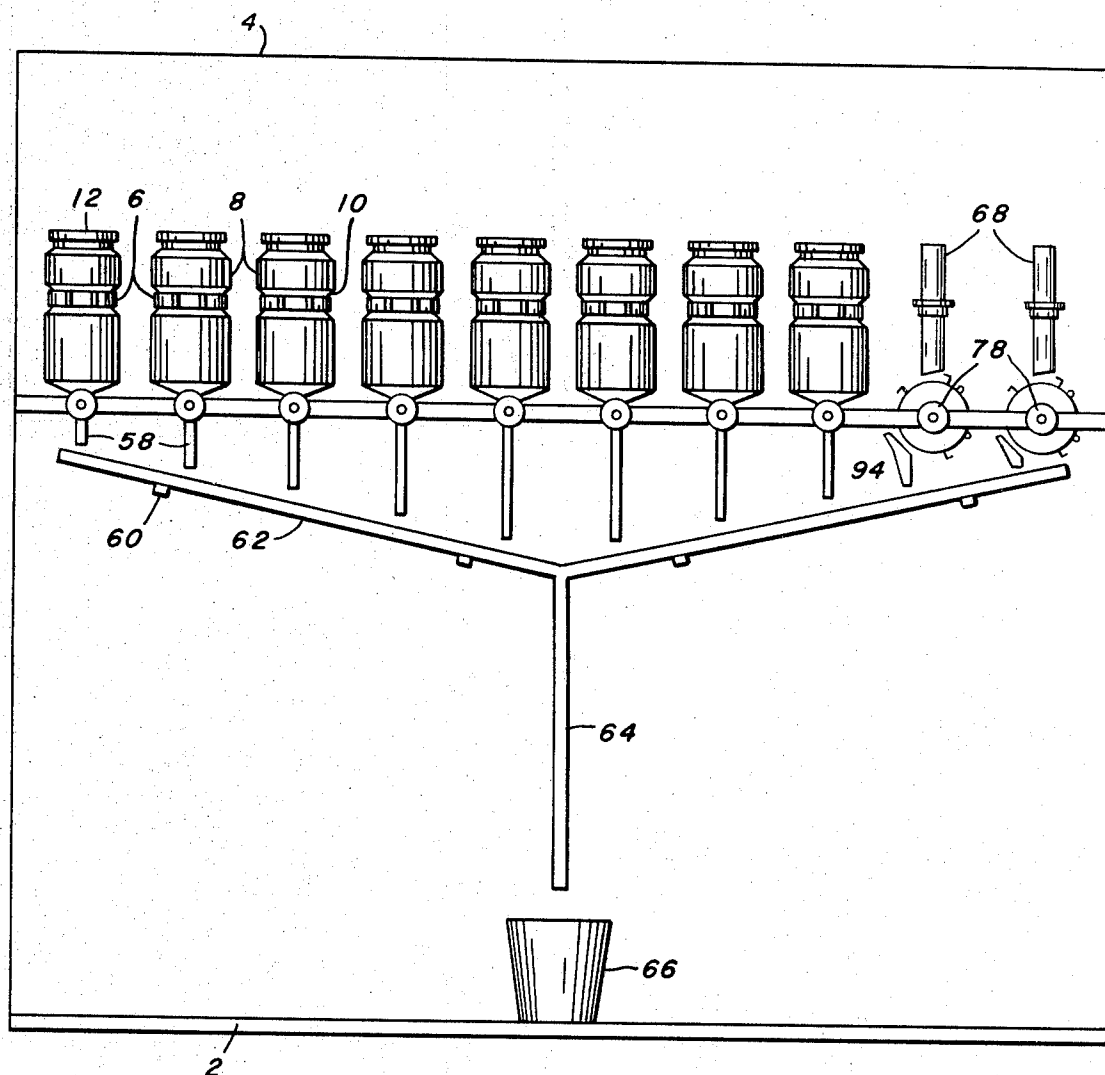


FIG. 1.



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FIG. 2.

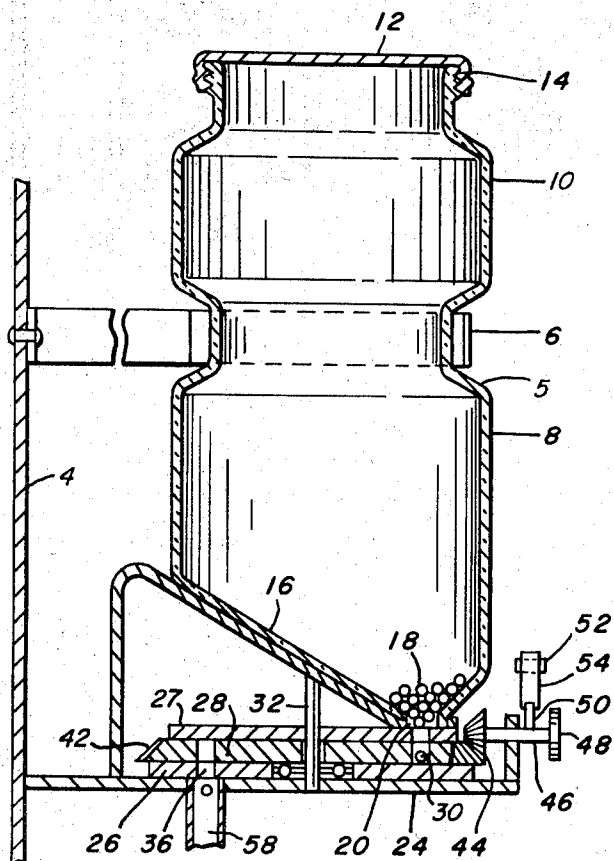
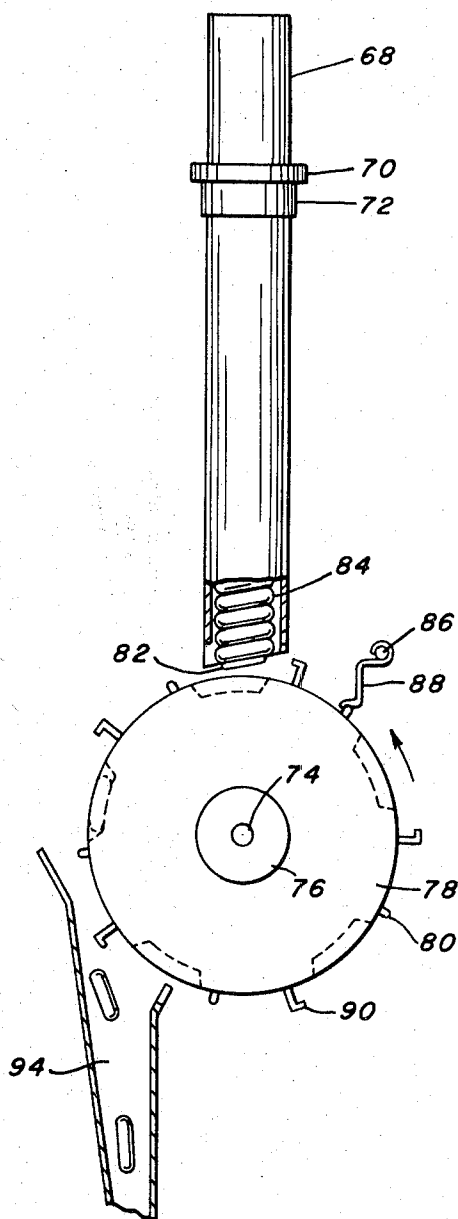


FIG. 3.



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MEDICATION-DISPENSING DEVICE AND METHOD

BACKGROUND OF THE INVENTION

1. Field of the Invention

This invention relates to apparatus for dispensing medication such as pills or capsules, and in another aspect it relates to a method of preparing a plurality of medication cups for a number of patients, for example, in a ward or wing of a hospital.

2. Description of the Prior Art

It is common in a hospital for a nurse to spend a considerable amount of time preparing medication cups for the patients. In accordance with the practice presently used, the pills or capsules are kept in large jars in one or more supply cabinets, and a nurse must frequently prepare prescribed dosages of pills and/or capsules of various kinds into individual cups for as many as 60 or 80 patients. The nurse has a supply of cups, a group of prescription cards indicating the respective dosages of individual patients, and a medication tray or cup holder. The tray resembles a tea caddy with individual sections for the medication cups and the above-mentioned cards. To eliminate the danger of mistake, a nurse does not simply take down a container of a certain drug and distribute from said container the appropriate dose into the various cups. Rather, each order is filled individually. The giving of medications is not the only demand on the time of the nurse and with the present shortage of nurses and the accordingly increased patient load that each nurse is expected to carry, the preparation of medications consumes a very large part of a nurse's time.

Devices are known for dispensing a given number of pills into a container. In the drug industry, there is the problem of providing for sale a large number of individual bottles of various sizes, each containing, for example, 1,000 aspirin tablets or 15 vitamin pills. In accordance with U.S. Pat. No. 988,082, for example, it is known to make a pill-counting and dispensing machine by means of which the pills are delivered from a reservoir into a counting plate which has a number of holes or openings corresponding to the number of pills to be delivered to the bottle or other container. It also has means for rotating the counter plate between a first position wherein the above-mentioned holes are provided with bottoms so as to receive the above-mentioned pills, to a second position wherein no bottom is provided, so that the individual pills are free to move into a chute and thence to the bottle. These machines have power-driven shafts and operate continuously, and every container receives the same number of pills of the same kind.

U.S. Pat. No. 2,111,529 shows another pill-counting machine of the rotating pocketed-disc type. This Pat. discloses replaceable counting plates so that different numbers of pills can be dispensed per rotation, but once again, the machine is set and then operated in a rapid and continuous manner to deliver the same number of pills of the same kind to each of a large number of containers.

SUMMARY OF THE INVENTION

In accordance with the invention there is provided apparatus comprising reservoir means for holding pluralities of pills of various kind, support means for said reservoir means, pocketed-disc type separating and dispensing means associated with each of said reservoir means for the purpose of separating and dispensing pills and/or capsules and being operated by means of a knob having associated therewith a clicker or other suitable means for giving an audible indication of the number of pills dispensed, and a chute means cooperating with said separating and dispensing means for leading the pills and/or capsules to a medication cup.

In yet another aspect, the invention relates to a method of filling medication cups for a plurality of patients using apparatus of the kind described above.

BRIEF DESCRIPTION OF THE DRAWINGS

A complete understanding of the invention may be had from the foregoing and following description thereof, taken together with the accompanying drawings, in which:

FIG. 1 is an elevational view, partly schematic, of apparatus in accordance with the invention;

FIG. 2 is a detail view, showing a part of the apparatus of FIG. 1; and

FIG. 3 is a second detail view, showing another part of the apparatus of FIG. 1.

BRIEF DESCRIPTION OF THE PREFERRED EMBODIMENTS

There is shown in FIGS. 1 and 2 a device comprising a base 2 and, at right angles thereto, a vertically-extending backing member 4. Secured to the backing member 4 and projecting outwardly therefrom is a plurality of support or clamp members 6 which encircle indented portions 5 (FIG. 2) provided in a plurality of pill reservoirs 8. Each of the pill reservoirs 8, as shown in FIG. 2, is provided with a threaded cap secured to the sides 10 of each reservoir 8 by means of screw threads 14. Each reservoir 8 is provided with a sloped portion 16 near its bottom mouth so as to urge pills 18 toward an opening 20 in the base of each reservoir 8.

Also secured to the backing member 4 by means of supports 24 is a plurality of plates or discs 26, one for each of the reservoirs 8. Between each plate 26 and a plate 27 beneath the reservoir 8 is a rotatable disc or plate 28 which has an opening or openings 30 adapted to register with an opening in the plate 27 beneath the opening 20 at the bottom of reservoir 8, or with an opening 36 in the plate 26. Around the periphery of each plate 28 is a bevel gear 42 which cooperates with a bevel gear 44 affixed to a shaft 46 and rotatable by means of a knob 48. Secured to the shaft 46 is a finger 50 which, when the shaft is rotated through a complete revolution, engages a clicker member 54 carried on rod 52. Rod 52 may be carried on any suitable support, not shown.

With the positions of the elements 26, 27 and 28 shown in FIG. 2, a pill will drop into the opening 30. Rotation of the knob 48 will then rotate the opening 30 into registry with the opening 36, whereupon the pill will drop downwardly through tube 58 into a chute 62 (FIG. 1) secured to the backing plate 4 by means of support members 60. There are two chutes shown in FIG. 1, each of which empties into a downcomer 64 leading to a common delivery point, at which there is situated a medication cup 66.

As best seen in FIG. 3, the invention further comprises means for dispensing capsules. Capsules cannot conveniently be dispensed with the same equipment used for pills, as the capsules have a gelatinous exterior casing that tends to become sticky whenever a capsule is exposed to moisture, such as the moisture of the air. To overcome this problem and provide for the convenient dispensing of capsules, there is used a tube 68 provided with a flange 70 which cooperates with a support member 72 secured to the backing member 4, the tube member 68 having an interior opening conforming to the dimensions of the capsule to be dispensed. Secured to the backing member 4 by suitable means is a shaft member 74 having thereon a knob 76 and a wheel 78 comprising a number of fingers 80. The tube 68 has leaf members 82 that extend downwardly therefrom so as to expose the ends of individual ones of the capsules 84. Secured to the backing member 4 is a rod 86, having wound around it a clicker member 88 composed of thin spring metal, the member 88 being adapted to engage projections 90 on the wheel 78.

Also secured to the backing member 4 is a chute member 94 for receiving a capsule, once that it is dispensed from the container 68.

It will be obvious to those skilled in the art how the above-described apparatus may be operated in such a manner as to make it possible to fill medication cups for a large number of patients, such as 40 or 80, in a small fraction of the time

presently required for such operation. In principle, the number of pill-dispensing reservoirs 8 or capsule-dispensing reservoirs 68 may be quite large to enable about 50 or even about 150 different kinds of medication to be dispensed from one machine. The turning of an appropriate knob 48 or 76 through an appropriate angle, dependent upon the number of pills or capsules to be dispensed, will cause the release of a pill or capsule to the medication cup 66 through the openings 36 and thence, by means of the chutes 62.

As a safeguard against error, activation of the clicker means 54 or 88 will cause at the time of release, an audible indication of the dispensing of a pill or capsule.

In accordance with the broader aspects of the invention, the medication cups may be provided near the machine with the use of a self-leveling device, such as is commonly used in cafeterias to provide plates or saucers. Thus, with a stack of patient medication cards before her, a nurse may speedily refer to a card, place a medication cup under the outlet of the machine, turn one or more knobs so as to release the medication desired, see that the pills or capsules are discharged into the medication cup, and place it in an appropriate location on the medication tray, along with the associated card. This will shorten very substantially the time required for the preparation of medication cups for a large number of patients.

If desired, the reservoirs 8 and 68, as well as the knobs 48 and 76, may be color-coded, e.g., white for aspirin, yellow for phenobarbital, gray for pyrobenzamine, etc.

Though this is not essential to the invention, it will in many instances prove desirable to provide the electrical or electronic means for directing a predetermined number of units of a preselected medication to the common delivery point. Those skilled in the art will perceive how this may be done; for example, a circuit provided with suitable stepping switches or the like may serve to turn a preselected knob or shaft through an angle corresponding to the number of units of medication to be dispensed, or there may be used a circuit comprising a

photocell to sense each pill or capsule dispensed, a counting circuit, a comparator, and means responsive to the comparator to terminate the medication-dispensing action when a preselected number of pills or capsules has been dispensed.

While I have shown and described herein a certain embodiment of my invention, I intend to cover as well any change or modification therein which may be made without departing from the spirit and scope thereof.

I claim:

1. A method for preparing a plurality of medication cups for a corresponding plurality of patients with the use of a medication-dispensing device having at least some containers for generally circular pill-type medications and other containers for generally tubular capsule-type medications, chute means associated with all of said containers and leading to a common point, first medication-dispensing means of one type for dispensing pill-type medications into said chute means where they fall by gravity to said common point, and second medication-dispensing means of another type for dispensing capsule-type medications into said chute means where they also fall by gravity to said common point, said method comprising:
 - positioning one of said cups at said common delivery point;
 - selectively operating some of said first and second medication-dispensing means to dispense both pill-type and capsule-type medications into said chute means where they both fall by gravity to said common point and into said one cup;
 - removing said one cup containing said medication of both the pill-type and capsule-type;
 - positioning another of said cups at said common delivery point; and
 - repeating the steps of actuating, removing, and positioning until each of said cups comprising said plurality of cups is provided with medications of preselected kinds and dosage.