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LIQUID DISPENSING MEANS

2,125,537

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2 Sheets-Sheet 1

Fig. 1.

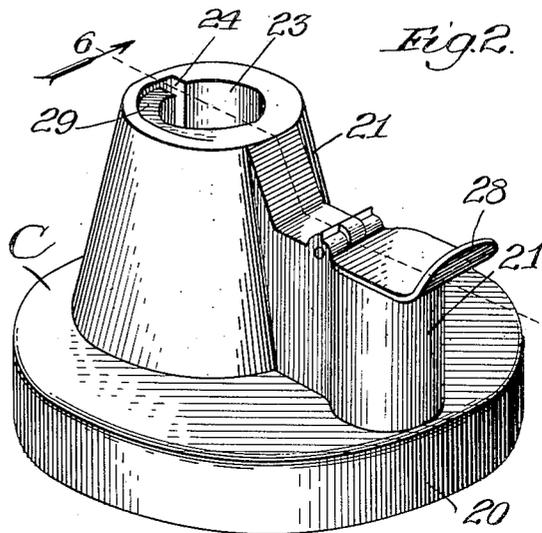
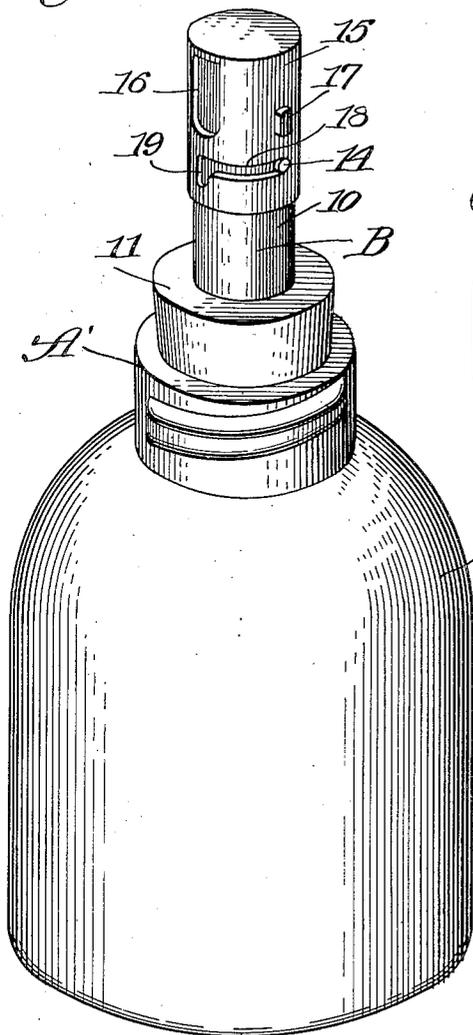


Fig. 3.

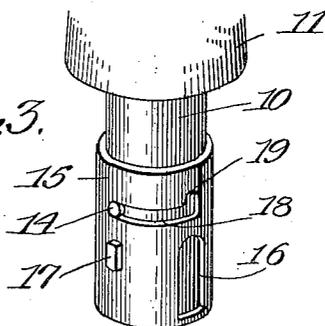


Fig. 4.

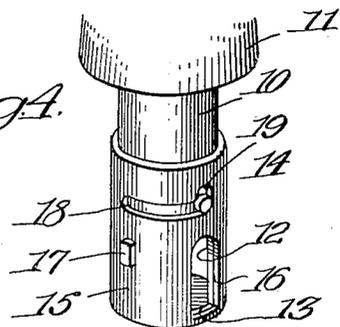
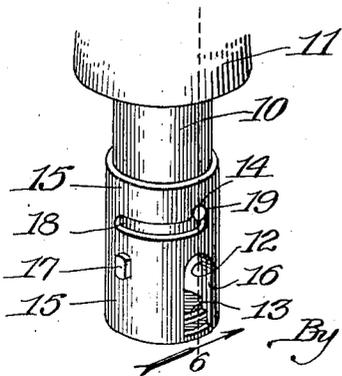


Fig. 5.



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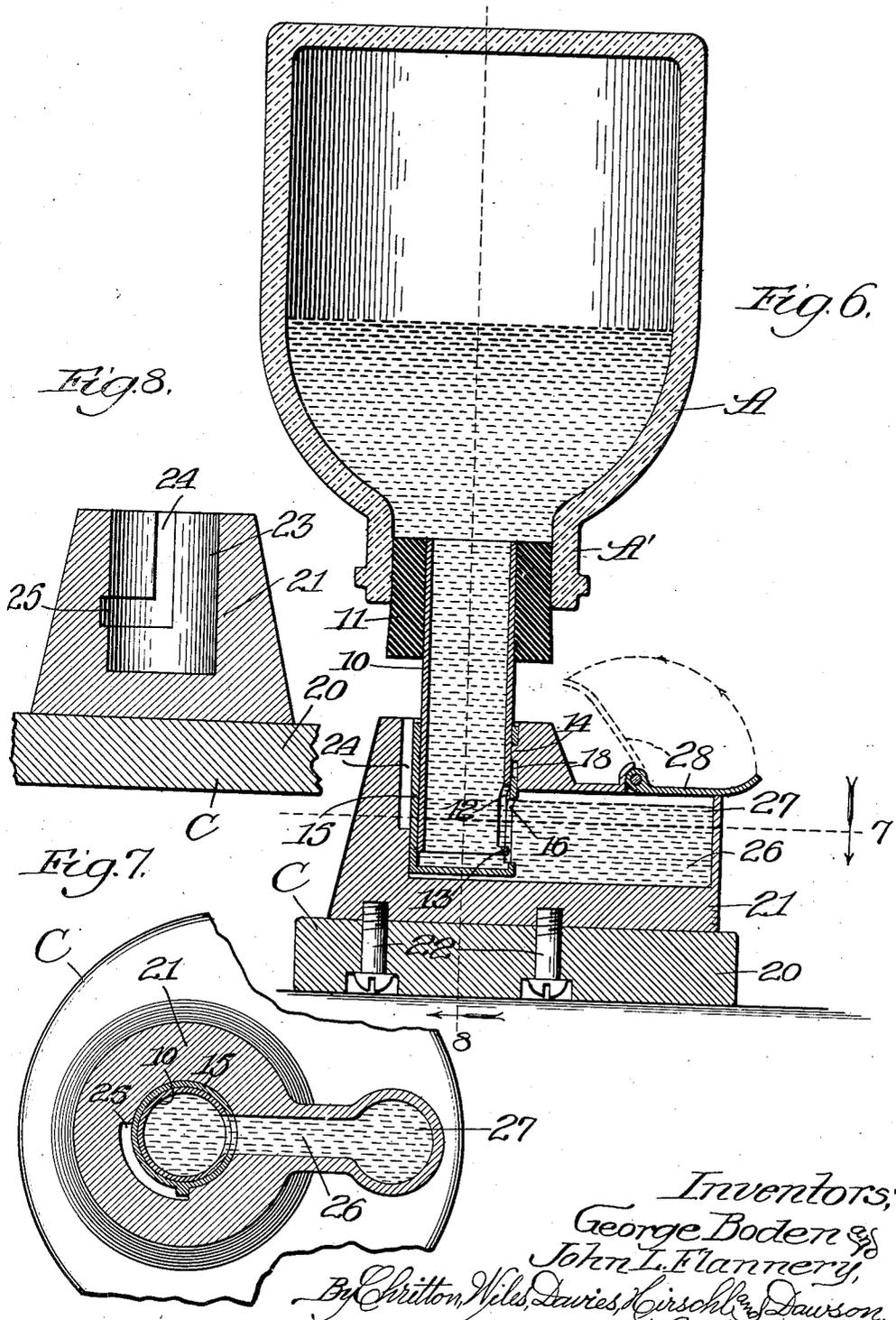
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# UNITED STATES PATENT OFFICE

2,125,537

## LIQUID DISPENSING MEANS

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10 Claims. (Cl. 120—59)

This invention relates to fluid dispensing means and is particularly useful in dispensing of liquid, such as ink. The invention, however, may be applied to other uses.

5 An object of the invention is to provide means for dispensing ink from a container in such a manner as to make the ink readily accessible for filling fountain pens, ordinary pens, etc. A further object is to provide a base support equipped with a channel in which pens may be readily filled, the base support being equipped with means for receiving ink from an inverted bottle or liquid container so as to continuously keep said channel full as long as ink remains in the container. A further object is to equip an ink bottle or container with a valved conduit which may be inverted and inserted within an ink well dispenser, the ink well dispenser being equipped with means for operating the valve to permit the ink to flow into the well and into an accessible channel communicating therewith. A still further object is to provide means for supporting a liquid container in inverted position, together with means for causing liquid to flow from said container into an accessible channel, the liquid within said channel being maintained automatically at a predetermined depth. Other specific objects and advantages will appear as the specification proceeds.

30 The invention is illustrated, in a preferred embodiment, by the accompanying drawings, in which—

Figure 1 is a perspective view of an ink bottle equipped with a valved outlet conduit or pipe; Fig. 2, a perspective view of an ink well support adapted to receive said conduit; Fig. 3, a broken perspective view of said outlet conduit, the same being shown in inverted position and the valve being shown in closed position; Fig. 4, a view similar to Fig. 3, the valve being shown in open position; Fig. 5, a view similar to Fig. 3 but showing the valve in open position and the inner pipe in raised position; Fig. 6, a broken vertical sectional view, the section being taken as indicated by line 6 in Figs. 2 and 5; Fig. 7, a broken transverse sectional view, the section being taken as indicated at line 7 of Fig. 6; and Fig. 8, a broken vertical sectional view of the ink well support with the conduit removed, the section being taken as indicated at line 8 of Fig. 6.

In the illustration given, A designates an ink container or bottle; B, a valved conduit; and C, an ink well support.

55 The ink container or bottle may be of any suit-

able construction. It is shown equipped, as in usual practice, with a neck A'.

The outlet conduit B may be also of any suitable construction and material. In the illustration given, the inner pipe member 10 is equipped at one end with a slightly tapered rubber plug 11 which provides a ready connection and good seal between the pipe 10 and the bottle neck A'. The inner pipe 10 is open at both ends. It is provided near its outlet end with a discharge slot 12, preferably of the size and shape shown in the drawings. The slot 12 does not quite reach the bottom of the pipe, but a small band 13 separates the slot from the extreme end of the pipe. As shown more clearly in Figs. 3, 4 and 5, the inner pipe 10 is provided with a pin 14.

The valve sleeve 15 is closed at its outer end and telescopically receives pipe 10. As shown more clearly in Figs. 4 and 5, the sleeve 15 is provided with an outlet slot 16 which is the same in size and shape and coincides with slot 12 of pipe 10. The sleeve is provided with a guide stud 17. It is also provided with a slot 18 adapted to receive the pin 16 of the inner pipe 10. It will be observed that at one end, the slot 18 is provided with an upwardly extending communicating slot 19 which permits the inner pipe 10 to be raised when the pin is aligned with the slot 19.

The base or ink well support may be of any suitable construction or material. In the illustration given, we have shown a circular base 20 which may be formed of onyx, marble, metal, composition products, and other suitable materials. In the illustration given, the base 20 is secured to a metal well member 21 by means of screws 22.

The well member 21 is provided with a vertical well 23 having therein a guide vertical slot 24 communicating with a lower horizontal slot 25. The slots 24 and 25 are adapted to receive the stud 17 carried by the valve sleeve 15.

Communicating with the vertical well 23 is a horizontal channel 26. At its outer end, the channel may be, if desired, enlarged to form a convenient pool recess 27 in which the ends of fountain pens, etc. may be dipped. A hinged cover 28 is preferably employed for closing this portion of the channel.

As shown more clearly in Fig. 2, I prefer to equip the top portion of the well member 21 with a curved guideway 29 which gradually deepens and meets the vertical slot 24, thus serving as a guide means for bringing the stud 17 into engagement with vertical slot 24.

In the operation of the device, the usual cork 55

for the ink bottle A is removed and in its place, the rubber plug 11 is pressed into tight engagement with the neck A'. The valve 15 is rotated to the closed position shown in Figs. 1 and 3. The container now is inverted and the valve sleeve 15 inserted into the well 23 of the well member 21. Further rotation of the container A causes the stud 17 to follow the inclined guide groove 29 until it reaches the vertical slot 24, at which point the stud drops to the end of the vertical slot. Further rotation of the container A causes the stud 17 to follow the horizontal slot 25 in the well member 21. However, when the stud 17 reaches the end of the horizontal slot 25, the sleeve 15 is held against further rotation, and when the container A is rotated further, the pin 14 travels in slot 18 and at the same time the outlet port 12 of the pipe 10 is brought into alignment with the outlet port 16 of sleeve member 15. When the two ports are aligned, as shown in Fig. 4, the pin 14 prevents further movement which would tend to misalign them. The connection between the contents of the container A and the channel 26 is now open and liquid may flow into the channel. We find, however, that for certain flow, it is important to have the vertical slot 19 communicating with horizontal slot 18 of valve sleeve 15 to permit the inner pipe 10 to be raised, this raising operation serving to bring the liquid to the position in the channel indicated by dotted lines in Fig. 6. From this point on, the liquid will maintain constantly the level indicated, until the entire contents of the container have been exhausted. After all of the liquid has been removed from container A, the conduit member B may be removed with container A by reversing the steps heretofore described and, after removal, the resilient plug 11 may be secured to another container. It will be noted that in the removal of the conduit B, the inner pipe 10 is turned so that pin 14 moves to the position shown in Fig. 3 and the valve sleeve 15 covers the opening 12 of the inner sleeve, thus effectively closing the conduit. Thus, any liquid which might happen to be within the conduit is prevented from spilling upon the removal of the container.

With this arrangement, one container may be removed while still partially filled and another container substituted therefor without danger of spilling the contents during the removal operation, since the groove and stud arrangement will not permit removal until after the valve has been closed.

The reduced pressure, which is less than atmospheric, within the container and produced by the lowering of the liquid level therein, permits the liquid level within the container to remain at a much higher position than the level of the liquid in the dispensing conduit, the atmospheric pressure upon the liquid in the conduit being much greater than the pressure upon the surface of the liquid in the container.

The mechanism is extremely simple and operates automatically when once brought to position shown in Fig. 6. The device is rendered foolproof by preventing removal with the valve partially open.

While in the foregoing description, we have set forth the device as adapted particularly for the dispensing of ink, it will be understood that it is readily applicable to other uses. It will further be obvious that the device may be changed considerably from the illustrated struc-

ture shown without departing from the spirit of our invention.

The foregoing detailed description has been given for clearness of understanding only, and no unnecessary limitations should be understood therefrom, but the appended claims should be construed as broadly as permissible, in view of the prior art.

We claim:

1. In a device of the character set forth, a base equipped with a vertical well and a horizontal channel communicating with said vertical well, a liquid receptacle provided with an outlet pipe, said outlet pipe being provided near its lower end with a discharge slot and a rotary sleeve adapted to close said slot and provided with a slot adapted to be brought into alignment with the first-mentioned slot to permit discharge of liquid from said pipe, and cooperating means carried by said sleeve and said base member for locking said sleeve against movement to permit opening and closing of said discharge slot when said container is rotated.

2. In a device of the character set forth, a base equipped with a vertical well and a horizontal channel communicating with said vertical well, a liquid receptacle provided with an outlet pipe, said outlet pipe being provided near its lower end with a discharge slot and a rotary sleeve adapted to close said slot and provided with a slot adapted to be brought into alignment with the first-mentioned slot to permit discharge of liquid from said pipe, and cooperating means carried by said sleeve and said base member for locking said sleeve against movement to permit opening and closing of said discharge slot when said container is rotated, said means comprising grooves in said base member and a guide stud carried by said valve sleeve.

3. In a device of the character set forth, a base member provided with a vertical well and a horizontal channel communicating therewith, said base member being provided about said well with a vertical groove communicating at its lower end with a horizontal groove extending partially about said well, a container equipped with an outlet pipe, the outlet pipe having near its lower end a discharge slot, and a rotary sleeve member equipped with a stud adapted to engage said vertical and horizontal grooves and equipped also with a discharge slot adapted to be aligned with the discharge slot of said pipe to permit the flow of liquid from said pipe into said channel.

4. In a device of the character set forth, a base member provided with a vertical well and a horizontal channel communicating therewith, said base member being provided about said well with a vertical groove communicating at its lower end with a horizontal groove extending partially about said well, a container equipped with an outlet pipe, the outlet pipe having near its lower end a discharge slot, and a rotary sleeve member equipped with a stud adapted to engage said vertical and horizontal grooves and equipped also with a discharge slot adapted to be aligned with the discharge slot of said pipe to permit the flow of liquid from said pipe into said channel, said rotary sleeve and said discharge outlet pipe being provided with cooperating slot and pin means permitting the pipe to be raised vertically with respect to said rotary sleeve for a limited distance.

5. In a device of the character set forth, a base member equipped with a vertical well and a horizontal channel communicating with said well,

5 a liquid container equipped with a discharge conduit, said conduit being provided near its lower end with a discharge slot adapted to be brought into alignment with said channel, and cooperating cam and stud means on said conduit and base member for aligning the discharge slot of said conduit with said channel.

10 6. In combination, a liquid container provided with a discharge pipe having a discharge opening near its lower end, said pipe being provided with a guide pin, a rotary sleeve telescopically receiving said pipe and provided with a horizontal slot receiving said pin, said sleeve being provided with a discharge port adapted to be brought into alignment with the port of said pipe, a base member equipped with a vertical well adapted to receive said rotary sleeve provided also with a horizontal channel communicating with said well, and means carried by said base member and said sleeve for checking rotation of said sleeve, said pin carried by said pipe permitting further rotation of said pipe through the length of said slot to bring the port of said sleeve and said pipe into alignment to permit the discharge of liquid into said channel.

25 7. In combination, a liquid container provided with a discharge pipe having a discharge opening near its lower end, said pipe being provided with a guide pin, a rotary sleeve telescopically receiving said pipe and provided with a horizontal slot receiving said pin, said sleeve being provided with a discharge port adapted to be brought into alignment with the port of said pipe, a base member equipped with a vertical well adapted to receive said rotary sleeve provided also with a horizontal channel communicating with said well, and means carried by said base member and said sleeve for checking rotation of said sleeve, said pin carried by said pipe permitting further rotation of said pipe through the length of said slot to bring the port of said sleeve and said pipe into alignment to permit the discharge of liquid into said channel, said slot permitting said pin when moved to valve-open position to be moved vertically with respect to said sleeve.

45 8. In combination, a liquid container equipped with a discharge neck, a resilient plug within said

neck, a discharge pipe slot within said plug and equipped near its lower end with a discharge slot, a rotary sleeve member provided with a slot adapted to be brought into alignment with the slot of said pipe, a base member provided with a vertical well adapted to receive said rotary sleeve and with a horizontal channel communicating with said well, cooperating means carried by said rotary sleeve and said base member for holding said sleeve up against rotation when the slot thereof is aligned with said horizontal channel, and cooperating means carried by said pipe and said rotary sleeve for stopping rotation of said pipe when the discharge slot of said pipe is aligned with the discharge slot of said rotary sleeve.

9. In a device of the character set forth, a base equipped with a vertical well and an angularly disposed channel communicating with said vertical well, a liquid receptacle provided with an outlet pipe, said outlet pipe being provided near its lower end with a discharge slot and a rotary sleeve adapted to close said slot and provided with a slot adapted to be brought into alignment with the first mentioned slot to permit discharge of liquid from said pipe, and cooperating means carried by said sleeve and said base member for locking said sleeve against movement to permit opening and closing of said discharge slot when said container is rotated.

10. In a device of the character set forth, a base member provided with a vertical well and an angularly related channel communicating therewith, said base member being provided about said well with a vertical groove communicating at its lower end with a substantially horizontal groove extending partially about said well, a container equipped with an outlet pipe, the outlet pipe having near its lower end a discharge slot, and a rotary sleeve member equipped with a stud adapted to engage said vertical and horizontal grooves and equipped also with a discharge slot adapted to be aligned with the discharge slot of said pipe to permit the flow of liquid from said pipe into said channel.

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