July 2, 1968 J. L. KAVANAU 3,390,860

FLUID DISPENSER

Filed Jan. 13, 1966

Fig. 1.

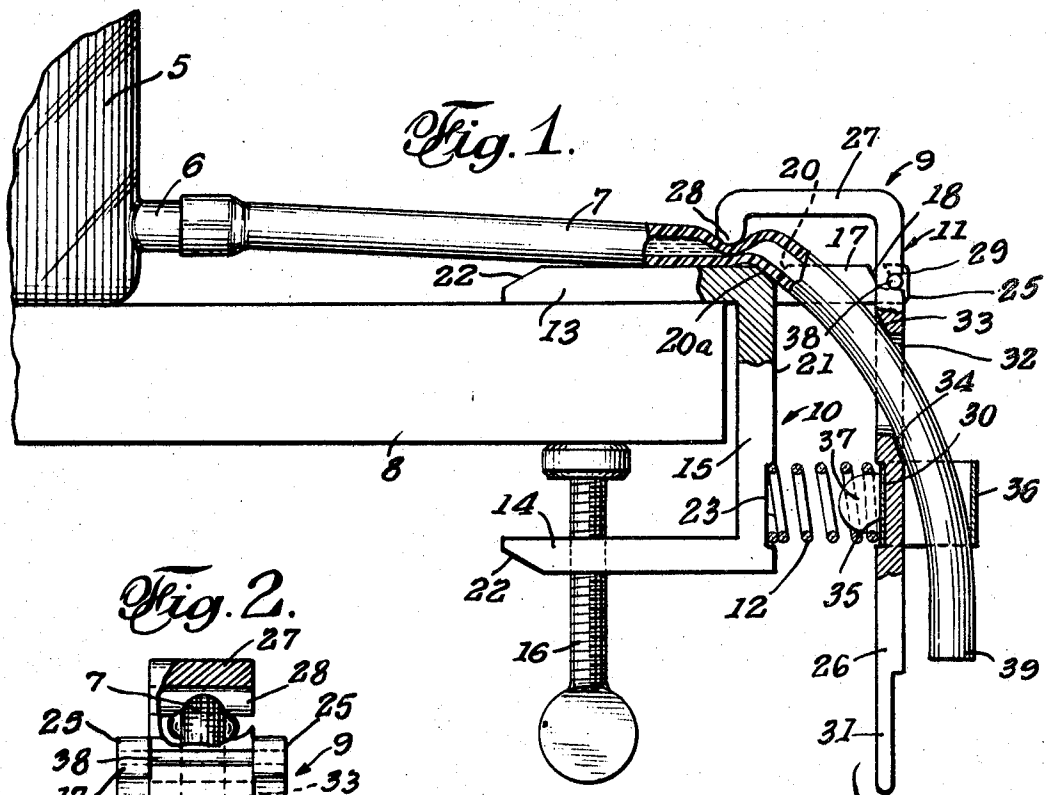


Fig. 2.

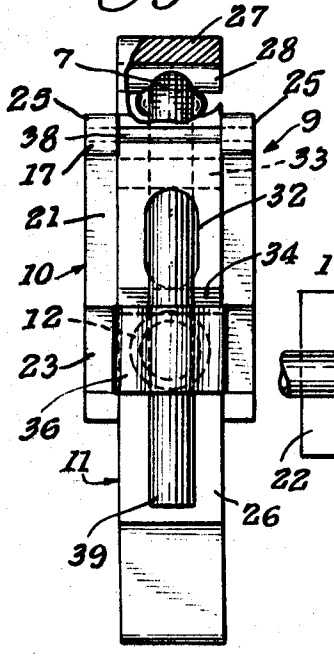


Fig. 3.

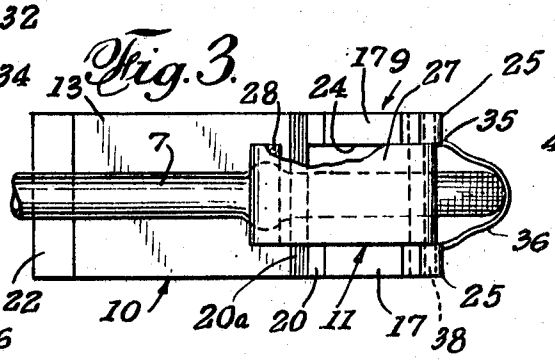
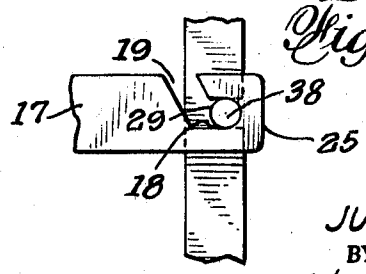


Fig. 4.



INVENTOR.
JULIAN LEE KAVANAU
BY
Hyman Jackman
ATTORNEY

United States Patent Office

3,390,860

Patented July 2, 1968

3,390,860

FLUID DISPENSER

Julian Lee Kavanau, Los Angeles, Calif., assignor to Biopex Inc., Los Angeles, Calif., a corporation of California

Filed Jan. 13, 1966, Ser. No. 520,469
4 Claims. (Cl. 251—9)

ABSTRACT OF THE DISCLOSURE

A fluid dispenser having a bracket for connection with a shelf supporting the bottle from which the fluid is dispensed through a tube, the bracket pivotally mounting a lever for pinching said tube, under bias of a spring, to stop flow therethrough, the lever being manually pivotally movable to tube-releasing position against the bias of said spring.

This invention relates to fluid dispensers, especially efficacious for dispensing various fluids in small amounts, as ounces, milliliters, drops, etc. The invention has more particular usefulness to students, technicians, nurses, pharmacists, research workers, and others in schools, hospitals, pharmacies, research and other laboratories.

An object of the present invention is to provide a simple, inexpensive and improved fluid dispenser of the character referred to that is operable to dispense fluid with a single finger operation and, upon release, automatically closing fluid flow.

Another object of the invention is to provide a dispenser, as characterized, that is mountable in fixed position, the mounting means, in part, having the function, also, of cooperating with a flow release lever to shut off fluid flow.

A further object of the invention is to provide a fluid dispenser that, because the user need only touch a flow release lever to obtain fluid flow, is safe for dispensing corrosive, poisonous and volatile liquids, the simple components being readily dissassembled without tools and as simply assembled, in the event that cleansing of said components is required to remove corrosive spillage for whatever reason.

The invention also has for its objects to provide a fluid dispenser comprising novel combinations and arrangements of parts, as will hereinafter become evident as the following description of the invention unfolds.

The above objects are realized in a fluid dispenser that controls flow of fluid from a source of supply, as a bottle disposed on a support, as a shelf, by pinching a discharge flow tube extending from such a bottle, said fluid dispenser combining a bracket unit adapted for clamping on said or another adjacent shelf, and an operating lever or arm that is normally biased by a spring to pinch said tube by pressing the same against said bracket unit, the lever being finger-operated against the bias of said spring to release the pinch on the tube, thereby opening the same for fluid flow therethrough. The operating lever is pivotally carried by the bracket unit and is releasable therefrom for disassembly. The dispensing tube is advantageously made of polyvinyl, neoprene or Buna-N rubber, or other such elastic materials, depending on the fluid to be passed therethrough. In addition to resistance to chemical attack by the flow and to cracking or abrasion, the elasticity of the flow tube should be such as to insure that when the pinch is released, the same readily opens to flow.

The following description of a preferred form of fluid dispenser has basis on the device shown in the enclosed drawing, which is shown by way of example. Like numerals in the several views designated similar parts. In the drawing:

FIG. 1 is a side elevational view, partly in section, of the presently preferred form of fluid dispenser.

FIG. 2 is a front elevational view, partly in section, of the dispenser shown in FIG. 1.

FIG. 3 is a top plan view thereof.

FIG. 4 is an enlarged detail view of a pivot that connects the two main components of the dispenser.

FIG. 1 shows a supply bottle **5** holding the fluid to be dispensed, the same being provided with an outlet tip **6**, a length of flexible tubing **7** extending from said tip. Such tubing is preferably formed of crack-resisting and highly resilient or elastic material, examples of which are polyvinyl, neoprene and Buna-N rubber. Heretofore, a variety of spring clamps, strung on said tube, siphon arrangements, and the like, have been used to control flow in said tube. The present fluid dispenser replaces such cumbersome and inconvenient two-handed control means with the advantages hereinbefore mentioned.

In practice, the bottle **5** is disposed on a shelf **8** or comparable support, the same serving also as the support for the fluid dispenser **9**.

According to the invention, the fluid dispenser comprises, generally, a mounting bracket **10**, an operating lever **11**, and a biasing spring **12** imposing a resilient force on said lever to bias the same to tube-pinching or -constricting position to close flow in tube **7** until the lever **11** is moved against the bias of the spring **12** to release the pinch and allow the tube to open to flow. The bracket **10** and lever **11** are advantageously formed as aluminum alloy extrusions so the same require but little machining to ready them for assembly with each other.

The bracket **10**, as extruded, is provided with a channel portion comprising two spaced flanges **13** and **14** integrally connected by a web **15**. This portion of the bracket is adapted to be engaged over the edge of shelf **8** with the flange secured against the top face of the shelf by a clamp screw **16** threadedly engaged with the flange **14**. Coplanar with the flange **13** and extending on the opposite side of said flange, the bracket is formed with an extruded flange **17** in the end of which a bayonet slot **18** having a top opening **19** is formed. Also formed in the bracket **10** by extrusion is a V-notch **20** which extends transversely of the coplanar flanges **13** and **17** in register with the outer face **21** of web **15**. The transverse end edges of flanges **13** and **14** may be provided with chamfers **22**. A transverse seat **23** in said face **21** is also formed by extrusion. The bracket **10** is cut from an extrusion, as above described, to a width suitable for the purpose.

The above-described bracket is completed by milling a slot **24** in the flange **17**, thereby dividing said flange into two transversely spaced arms **25** in the ends of which are the mentioned bayonet slots **18** above described.

The operating lever **11**, as shown, has a J-form with an elongated arm **26**, an end part **27** on one end of and at an angle to said arm, and a return-bent end **28**. Said lever, by extrusion, is formed with a half-round recess **29** in the outside face of the arm **26** adjacent the end part **27**, with a transverse seat **30** in the outside face of said arm approximately midway of its ends, and with an end **31** with a face set inward from the outer face of the arm **26**. The bent end **28** is preferably rounded over, as shown.

The above-described operating arm is substantially narrower than the bracket **10**, of a width to fit the slot **24**. Hence, the same will fit between the arms **25** of the bracket **10**. Said lever **11** is completed by a machined opening **32** through the arm **26** between the recess **29** and the seat **30**. At the upper end of said opening **32**, the inner face of the lever arm **26** is provided with an upwardly directed chamfer **33** and at the lower end of said opening, the outer face of said arm is provided with a downwardly directed chamfer **34**.

The above-described integrally formed operating arm **9** is provided with a sheet metal member **35** that fits the seat **30**, is formed with a loop **36** on the outside of the arm **26**, and with a tab **37** extending from the opposite side. A pivot pin **38** with trunnion ends is pressed tightly into the recess **29**.

The operating arm **9** is pivotally connected to the arm **25** of the mounting bracket **10** with the arm **26** thereof parallel to the web **15** of said bracket, by entering the trunnion ends of pin **38** into the bayonet slots **18** in the bracket arms **17**. The expansion coil spring **12** disposed between said arm **26** and web **15** and with its ends in the seats **23** and **30**, which are in opposed alignment, holds the bracket and arm in assembly with the arm end **28** directed toward the top face of the clamp flange **13**. The tab **37** centers said spring in said seats.

The tubing **7** extends from the outlet tip **6** of the bottle, passes between said bracket flange **13** and arm end **28**, over the angular face **20***a* of the notch **20**, at a downward and forward angle to pass through the opening **32** in the operating arm, the chamfers **33** and **34** providing smooth non-abrading surfaces where the tubing enters and leaves the opening, and finally through the loop **36** to extend downwardly to a greater or lesser distance as desired. The inherent tendency of the tubing to straighten except where confined causes its end **39** to space itself from the end **31** of the operating lever.

It will be seen that the bias of spring **12** causes the arm end **28** to press and flatten the tube against the bracket flange **13**, closing the same to flow, as can be seen in FIG. 1. Any suitable receiving container **40** may be held by the thumb and one or two fingers, while a third finger, preferably the forefinger, on the upper end of the container **40** presses rearwardly against the arm part **31**. The resultant tilting of the operating arm, against the spring bias, releases the tubing where the same is pinched to institute flow from the end **39** of the tubing. The container **40** may be graduated so the amount of the flow can be measured. Flow in small increments, such as drops, may be had by controlling the lever movement by the finger that operates it.

Upon release of the lever **11**, the tubing is again pinched by automatic pressure of the spring **12**.

While I have illustrated and disclosed what I now contemplate to be the best mode of carrying out my invention, the construction is, of course, subject to modification without departing from the spirit and scope of my invention. Therefore, I do not wish to restrict myself to the particular form of construction illustrated and described, but desire to avail myself of all modifications that may fall within the scope of the appended claims.

What I claim and desire to be secured by Letters Patent is:

1. A fluid dispenser comprising:

(a) a mounting bracket provided with an upper horizontal flange,

(b) a pair of transversely spaced horizontal arms fixedly extending forwardly from said flange,

(c) an operating lever disposed between said arms with an end thereof directed toward and above said bracket flange,

(d) a horizontal pivot on which said lever is swingably mounted,

(e) a flexible flow tube connected to a source of liquid and extending between said bracket flange and said lever end and terminating in a dispensing end, and

(f) a spring between said bracket and lever to bias the latter to press said lever end in a direction to pinch the tube against said bracket flange to flatten and close the tube to flow,

(g) the pivot between the fixed bracket arms and the operating lever comprising trunnions extending laterally from the edges of the operating arm, and bayonet slots in the fixed arms, open at one end for insertion of the trunnions therein, and into which said trunnions are fitted.

2. A fluid dispenser according to claim **1** in which the lever has an operating end that is provided with an outer loop, the dispensing end of said tube extending through said loop and being confined thereby to a disposition in front of the latter end of the lever.

3. A fluid dispenser according to claim **1** in which the operating lever has an opening therein through which the dispensing end of the tube extends, and a loop on said lever through which the latter end of the tube extends and which confines said tube end to a disposition in front of the latter end of the lever.

4. A fluid dispenser according to claim **1** in which the bracket and operating lever are formed as lengths of aluminum alloy extrusions.

References Cited

UNITED STATES PATENTS

989,503	4/1911	Hildebrand	251—9 XR
2,772,695	12/1956	Harrison	251—368 XR
2,808,185	10/1957	Norris et al.	251—9 XR
3,195,788	7/1965	Wilson	251—9 XR

FOREIGN PATENTS

170,330	7/1951	Austria.
626,257	3/1936	Germany.

WILLIAM F. O'DEA, *Primary Examiner.*

R. GERARD, *Assistant Examiner.*