Aug. 18, 1942. O. B. RUFUS 2,293,269

VALVE OPERATING MECHANISM

Filed Feb. 15, 1940 2 Sheets-Sheet 1

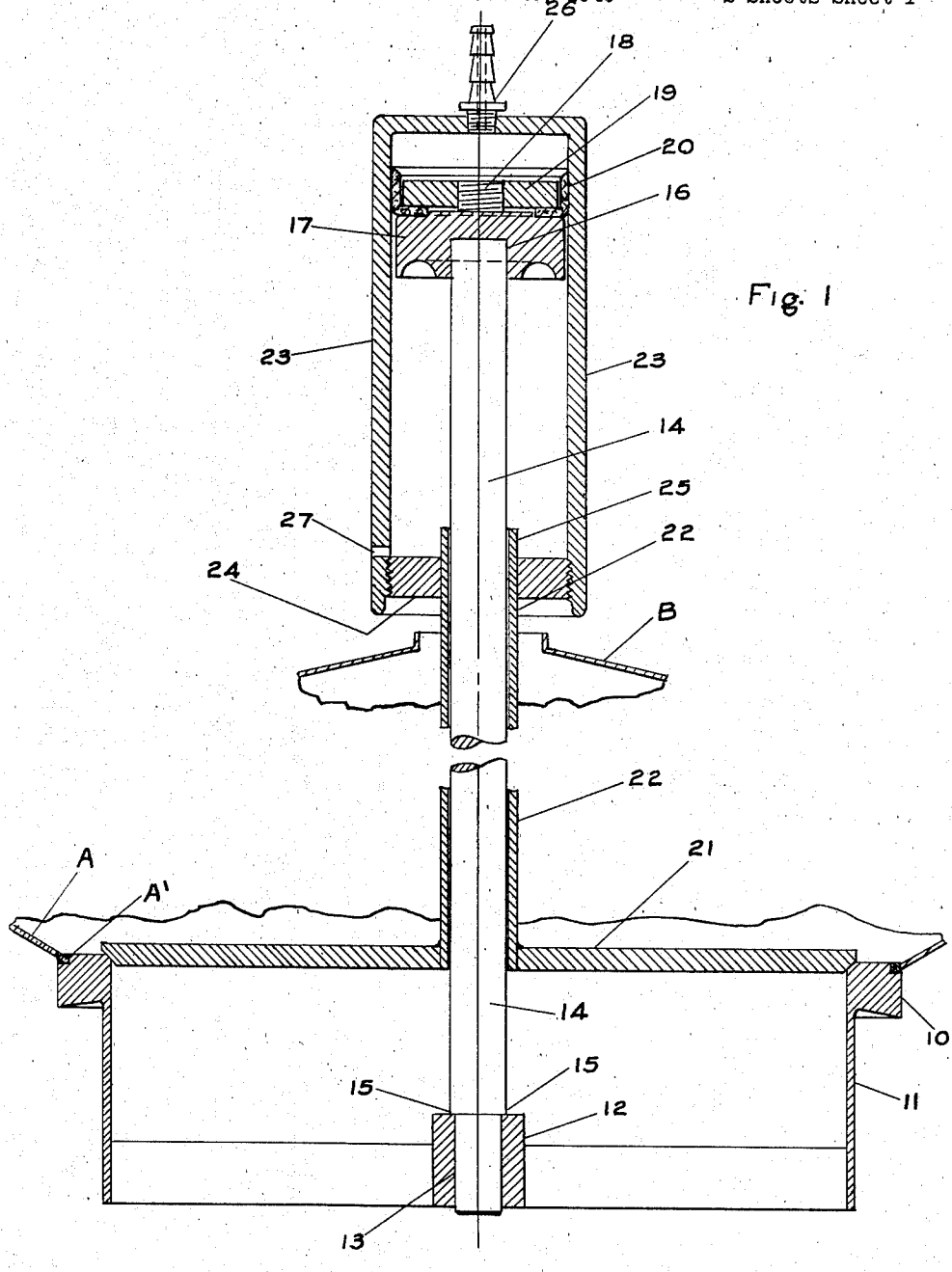


Fig. 1

INVENTOR- OTTO B. RUFUS

By Dawson, Rehm & Booth
attys

Aug. 18, 1942. O. B. RUFUS 2,293,269

VALVE OPERATING MECHANISM

Filed Feb. 15, 1940 2 Sheets-Sheet 2

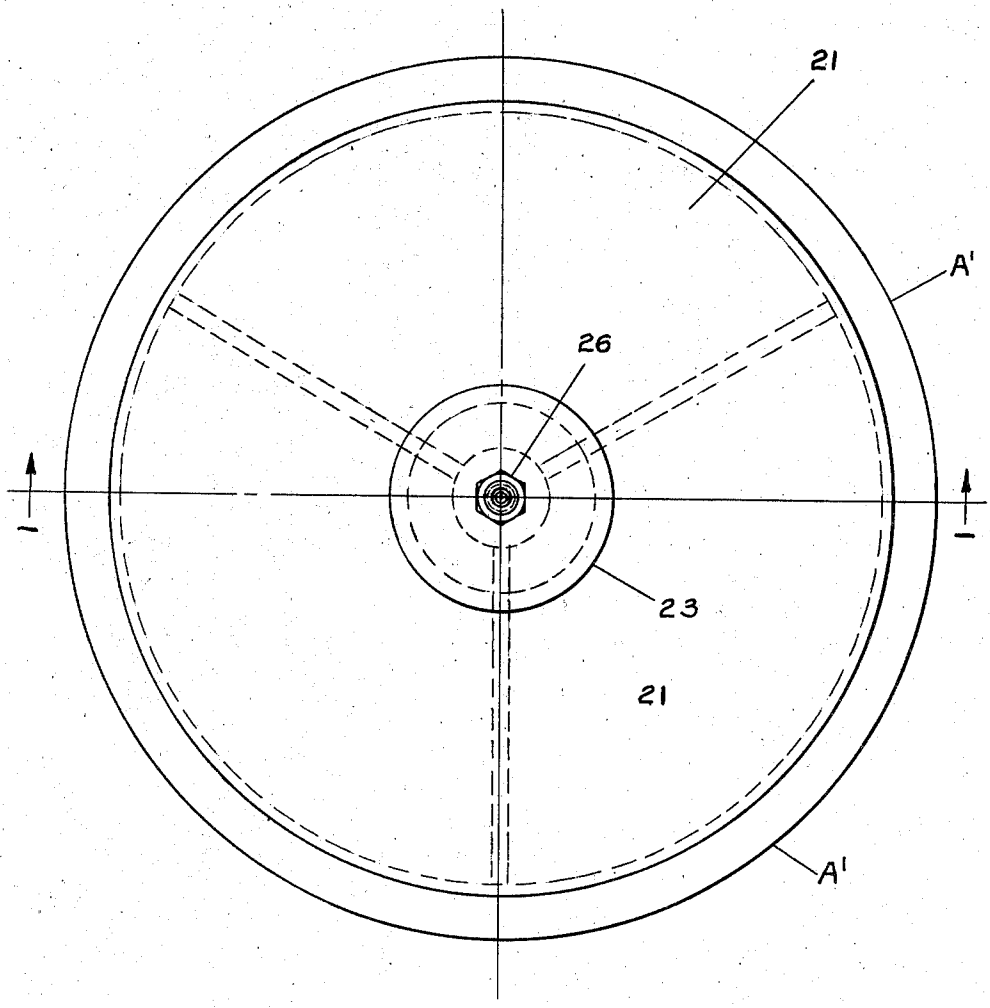


Fig. 2

INVENTOR OTTO B. RUFUS

By Dawson, Rehm & Booth
attys

Patented Aug. 18, 1942 2,293,269

UNITED STATES PATENT OFFICE

2,293,269

VALVE OPERATING MECHANISM

Otto B. Rufus, Chicago, Ill., assignor to The Lathrop-Paulson Company, Chicago, Ill., a corporation of Illinois

Application February 15, 1940, Serial No. 318,995

3 Claims. (Cl. 137—21)

This invention relates to valve operating mechanism. It is particularly useful in connection with milk weighing containers and other liquid containers.

An object of the invention is to provide extremely simple mechanism for operating the valve used in weigh cans and other liquid containers. A further object is to provide valve operating mechanism of few parts, which can be lifted apart for cleaning after operation. A further object is to provide valve operating mechanism which is effective in operating the valve, but which permits disassembly of the parts without manipulating bolts, nuts, and other like connections. Other objects and advantages will appear as the specification proceeds.

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

Figure 1 is a vertical sectional view of apparatus embodying my invention, the major portion of the receptacle and cover being broken away, the section of the view being taken as indicated at line 1 of Fig. 2; and Fig. 2, a top plan view.

The container A may be of any suitable construction. For example, a container such as shown in Lathrop U. S. Patent No. 2,100,142, which issued November 23, 1937, may be employed. The present invention, however, has nothing to do with the container per se and may be illustrated clearly with reference to the outlet with which the receptacle is equipped. The outlet is indicated generally by the letter A'. The receptacle may be equipped with the usual type of cover B, as partially illustrated in Fig. 1.

The outlet A', in the illustration given, consists of a metal ring 10 provided with a depending tubular skirt 11. A transverse beam 12 carried by the skirt portion 11 provides a support for the lower reduced portion 13 of the guide rod 14. The guide rod 14 is cut away near its lower end to provide a shoulder 15 resting upon the cross bar 12 and supporting the rod 14 fixedly thereon.

The upper end of the guide rod 14 is slidably received within a recess 16 in the head 17. The head 17 is equipped with a threaded extension 18 received within the threaded opening of the clamping member 19. A leather gasket or sealing member 20 is clamped between the members 17 and 19.

The valve 21 comprises a flat member received within the valve outlet A' to form a closure therefor. The valve 21 is provided centrally with a tubular stem 22 which receives the guide rod 14. A closed piston cylinder 23 is secured to and fixedly mounted upon the top portion of the hollow stem 22. In the illustration given, the lower closure 24 of the cylinder 23 receives the stem 22 and is welded or otherwise permanently secured thereto. A portion of the tube 22 extends beyond the closure plate 24 to provide a stop 25. The piston cylinder 23 may be formed in any suitable manner. In the illustration given, it consists of an inverted cup member having its lower open side equipped with threads to receive the closure 24. The upper end of the piston cylinder 23 is tapped to receive the fitting 26 to which a rubber hose or other conduit for compressed air, etc., may be attached. The lower end portion of the cylinder 23 is provided with a drain passage 27 for permitting liquid condensed within the chamber to escape and fall upon the cover B.

It will be noted that the head 17 is slidably received within the cylinder 23 and that it provides a sealed chamber between the head itself and the top of cylinder 23.

Operation

In the operation of the device, when compressed air or other operating fluid is passed through the fitting 26 into the chamber above head 17, downward movement of the head 17 is prevented because the guide rod 14 rests permanently upon the cross bar 12. The cylinder 23 is, however, free to move upon the fixed piston head 17. As a result, therefore, the cylinder 23 moves upwardly, carrying with it the hollow stem 22 and the valve 21. As the closure member 24 approaches the head 17, stop member 25 is brought against head 17 and is cushioned against the air between head 17 inside top portion of cylinder 23.

When the compressed air is released, the weight of the valve 21, the stem 22, and the cylinder casing 23 causes the valve to drop to closing position. It will be noted that in this operation also, there is a cushioning effect produced by the air trapped in the space between the top of the cylinder 23 and the head 17. While the air is free to escape through the fitting 26, the opening is small so that there is a building up of pressure as the cylinder 23 moves downwardly which cushions the last portion of movement of the valve 21, bringing it slowly against the outlet A'.

To clean the apparatus, the parts may be, for the greater extent, merely separated and cleaned. For example, the guide rod 14 may be lifted out of the socket provided in the cross bar 12 and then slid out of the hollow stem 22. The closure plate

24, which is fixed to the sleeve 22, may be unscrewed and the head 17 drops out of the cylinder 23. Thus, the parts are in separated condition and may be readily cleaned and, after cleaning, just as rapidly reassembled.

The new apparatus results in more effective means for operating the valve to and from closing position while employing less parts and while at the same time providing parts which may be separated in a modicum of time for cleaning. Since the cylinder rises and the valve opens simultaneously, the operator can readily see when the valve is open or closed as the cylinder is above the cover and in plain view.

While in the foregoing specification, I have set forth certain details for the purpose of illustrating the invention, it will be understood that such details may be modified widely by those skilled in the art without departing from the spirit of my invention.

I claim:

1. In combination with a receptacle equipped with an outlet opening and an inclined cover extending over said receptacle and provided with an aperture therein, a valve closing said opening, a guide rod supported by said receptacle in said opening, a hollow valve stem secured to said valve and receiving said rod, said stem extending through the aperture in said cover, a closed piston cylinder secured to said hollow stem, said cylinder being provided with a drain opening in the lower portion thereof extending over said inclined receptacle cover, a head carried by said rod and slidably received in said cylinder, said head providing a pressure chamber thereabove in said cylinder, and means for introducing fluid under pressure in the upper portion of said cylinder.

2. In combination with a receptacle equipped with an outlet opening and an inclined cover extending over said receptacle and provided with an aperture therein, a valve closing said opening, a guide rod supported by said receptacle in said opening, a hollow valve stem secured to said valve and receiving said rod, said stem extending through the aperture in said cover, a closed piston cylinder secured to said hollow stem, said cylinder being provided with a drain opening in the lower portion thereof extending over said inclined receptacle cover, the rod extending above the hollow stem, a head carried on the upper end of said rod and slidably received in said cylinder, said head providing a pressure chamber thereabove in said cylinder, and means for introducing fluid under pressure in the upper portion of said cylinder.

3. In combination with a receptacle equipped with an outlet opening and an inclined cover extending over said receptacle and provided with an aperture therein, a valve closing said opening, a guide rod supported by said receptacle in said opening, a hollow valve stem secured to said valve and receiving said rod, said stem extending through the aperture in said cover, a closed piston cylinder secured to said hollow stem, said cylinder being provided with a drain opening in the lower portion thereof extending over said inclined receptacle cover, the rod extending above the hollow stem, a head carried on the upper end of said rod and slidably received in said cylinder, said head providing a pressure chamber thereabove in said cylinder, and means for introducing fluid under pressure in the upper portion of said cylinder, the piston head being slidably mounted on the rod so that the valve, valve stem, head, and cylinder can be removed as a unit from the receptacle.

OTTO B. RUFUS.