

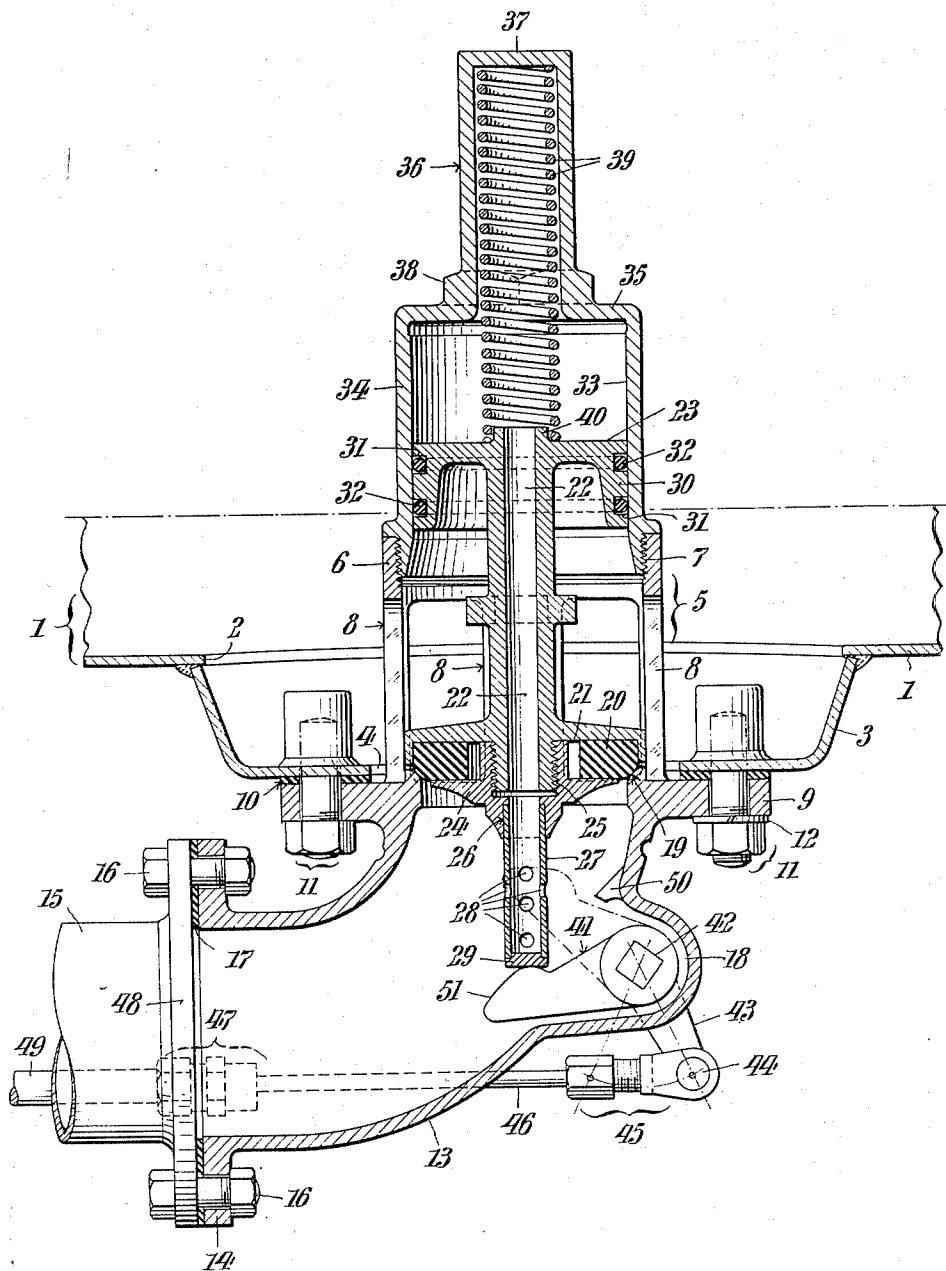
Aug. 1, 1950

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2,516,996

BALANCED VALVE

Filed June 21, 1945



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UNITED STATES PATENT OFFICE

2,516,996

BALANCED VALVE

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Application June 21, 1945, Serial No. 600,791

2 Claims. (Cl. 251—132)

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This invention generally relates to valves of the emergency type while it has reference, more particularly, to the species known as balanced valves; that is to say valves that normally remain closed in opposition to liquid pressure, for example, but which can be operated with a minimum of effort against a comparatively light seat-holding influence.

More specifically the instant improvements are, preferably, directed to an emergency valve of the general form disclosed in my prior Patent #1,980,063, dated November 6, 1934, while the primary object is the provision of means whereby such a valve can be operated from below, or exterior of the tank or container to which said valve is conveniently applied.

Another object is to provide a valve of the species indicated, in the preceding paragraph, which embodies structural refinements and features whereby the same is simplified, rendered more sensitive in use, and which can be easily removed when desirable or expedient.

Subsidiary objects, with ancillary advantages, will hereinafter be referred to or become apparent from the following detailed disclosure of one practical embodiment of this invention as illustrated by the accompanying drawing; while the features of novelty on which patent protection is desired are more particularly pointed out in the concluding claims.

The drawing is a mainly vertical section through a bottom control balanced valve embodying this invention, and designed preferably, for use in tank vehicles for the transport and delivery of gasoline, and other liquid commodities.

A fragmentary bottom portion of a vehicle tank is comprehensively designated by the reference character 1, the same being provided with an aperture 2 communicating into a concentrically related drain pocket 3 which has a central opening 4 for passage therethrough of the main body portion 5 of the improved balanced valve. This body portion 5, it will be observed, embodies a hollow cylindrical part 6 having its upper end interiorly screw-threaded at 7, and therebelow a series of circumferentially spaced lateral openings 8 for joint communication into the tank 1 and pocket 3. Below the openings 8 the body portion 6 embodies a surrounding flange 9 whereby it is connected to the drain pocket 3, with intermediate securing devices 11 and lock-washers 12, in an obvious manner. Underneath, and preferably integral with the flange 9 is an elbow 13 having a flange 14 for connection thereto of a flow-

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conduit 15, as by means of bolts 16 and a gasket 17. It is also to be remarked the elbow 13 is provided with an outset pocket 18, the purpose whereof will be later on fully set forth.

Cooperating with a seat 19 in the lower part of the valve body-portion 6 is a non-metallic annulus 20, preferably seated in a cupped closure 21 forming part of the hollow axial stem 22 of a piston device 23; said annulus being clamped in position by means of a disc-nut 24 engaged on the screw-threaded end 25 of the stem 22. It is also to be observed that the disc-nut 24 is preferably provided with a concentric bore 26 in which is frictionally engaged the open end of a tube 27 provided with circumferentially spaced, and relatively staggered, holes 28 for a purpose hereinafter set forth, while the lower end of the tube is closed in by an abutment plug 29.

The skirt portion 30 of the piston device 23 is, conveniently, provided with spaced rectangular-section grooves 31 for reception of preferably round-section non-metallic packing rings 32; said ring-section being of a diameter in excess of the width of the associated groove 31 so as to positively ensure sealing-coaction with the bore 33 of the cylindrical closure or bonnet 34 that threadedly engages with the valve body portion 7, as clearly shown in the drawing. The opposite or upper extremity 34, of the bonnet 34, is formed with an axial tubular extension 36 having its upper end 37 closed in and the lower portion polygonally enlarged at 38 for application of an appropriate tool to effect coupling together, or separation, of the parts 5 and 34, in an obvious manner. A comparatively light spiral spring 39 is housed in tubular extension 36 intermediate the upper end 37 thereof and a centering embossment 40 on the confronting face of the piston device 23; while it is to be particularly noted that the holes 28 through the wall of the tube 27 serve to equalize the fluid pressure above and below the piston device 23, in view of the lower end of said tube being closed in by the abutment plug 29.

For manually operating the valve, use is made of a cam-lever 41 fixed on the squared end of a suitable shaft 42 transversely journaled through one wall of the valve body outset pocket 18; said shaft 42 having on its outer end an actuator-lever 43 with the free end coupled at 44 to a clevis assembly 45, in turn movable by a rod 46 slidable through a stop-gland 47, appropriately mounted to the flange 48 of the flow conduit 15, for example. It is to be noted that movement of the cam-lever 41 is restricted in one direction by the larger diameter part 49 of the rod 46 abut-

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ting the confronting or left-hand end of the gland 47; and in the reverse direction by a stop projection 50 provided for the purpose in the elbow 13, as readily understood on an examination of the drawing. To facilitate easy cooperation of the cam-lever 41 with the abutment plug 29 at the lower end of the tube 27, said lever is provided with a compositely-curved wiper-section 51.

From the foregoing it will be readily understood that by this invention applicant has provided a simple and compact, balanced-valve operable from the bottom, or exteriorly below the tank 1 or other container to which it may be attached; while it eliminates the heretofore need for conducting control means and other mechanism over the top of said tank or container. In addition by providing the piston 23 with the grooves and round section packing-rings 32 much unnecessary means for clamping cup leathers, as previously employed, is dispensed with.

Having thus described my invention, I claim:

1. In an emergency valve of the balanced type including a closure member and super-spaced piston with a disc-nut clamping a non-metallic valve annulus to said closure member, the combination of a tube dependently carried by the disc-nut; said tube having an abutment element at its lower end and a plurality of spaced holes

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above the abutment element; direct-acting mechanism including a lever arm having a compositely-curved wiper section cooperative with said abutment element; and an opposingly related movement limiting stop within the valve whereby the valve is operable, from below, with a minimum of physical effort.

2. The invention of claim 1 wherein the dependent tube is frictionally engaged in a concentric socket-bore in the disc-nut; wherein the abutment element at the outer or free end of said tube is a fitted plug; and wherein the holes in said tube are circumferentially spaced and relatively staggered, for the purpose specified.

JAMES A. JENSEN.

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