Feb. 10, 1953 H. B. FECHTER 2,627,746

RADIATOR TESTING TANK, INCLUDING HYDRAULIC LIFT SYSTEM

Filed March 19, 1948

3 Sheets-Sheet 1

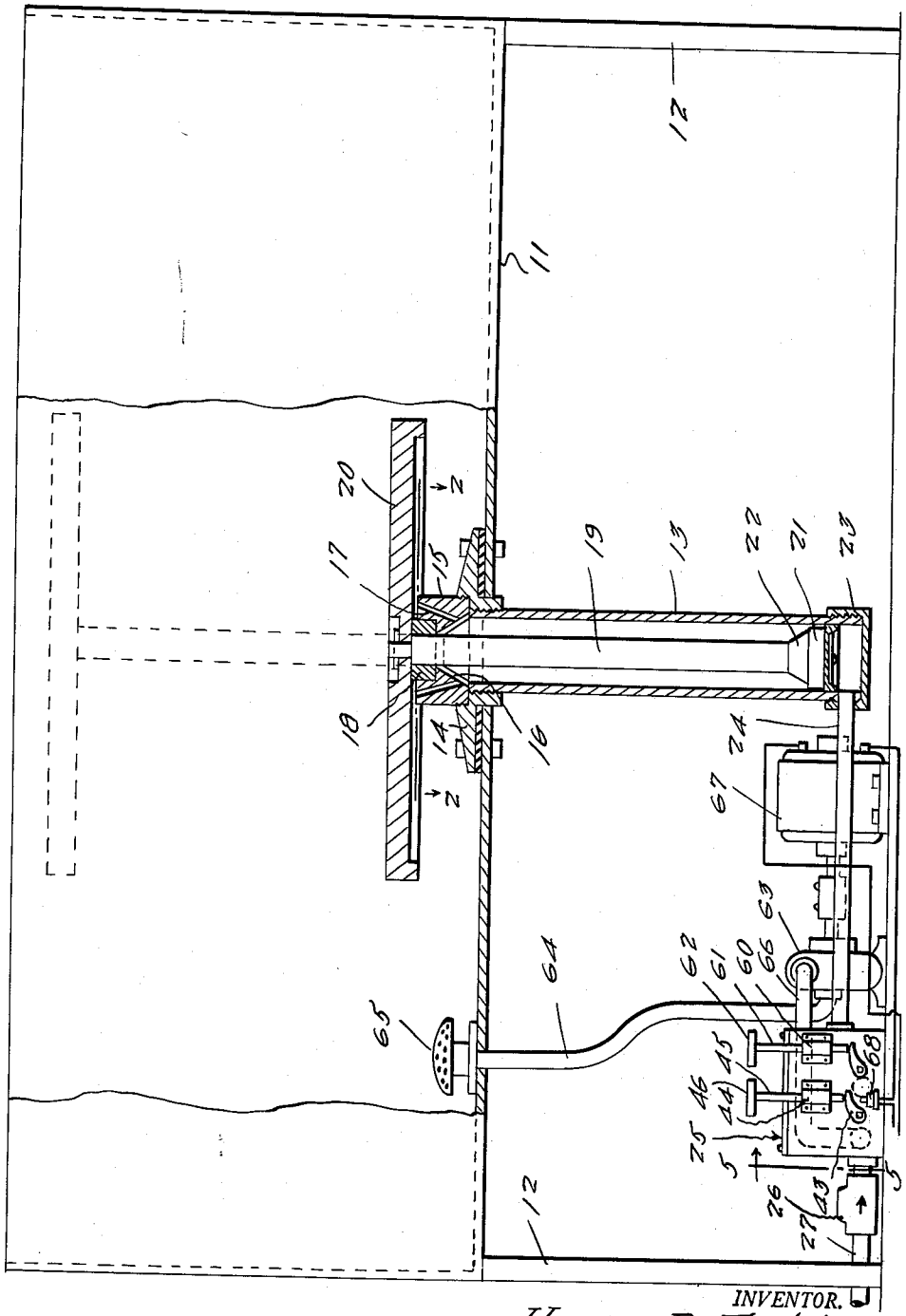


Fig. 1.

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Filed March 19, 1948 3 Sheets-Sheet 2

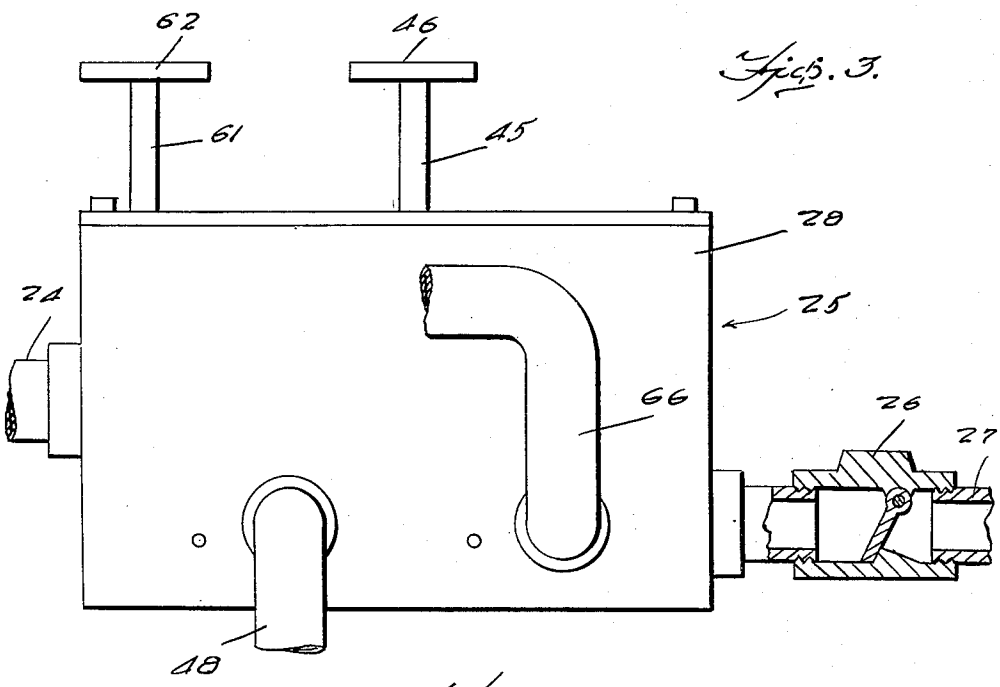
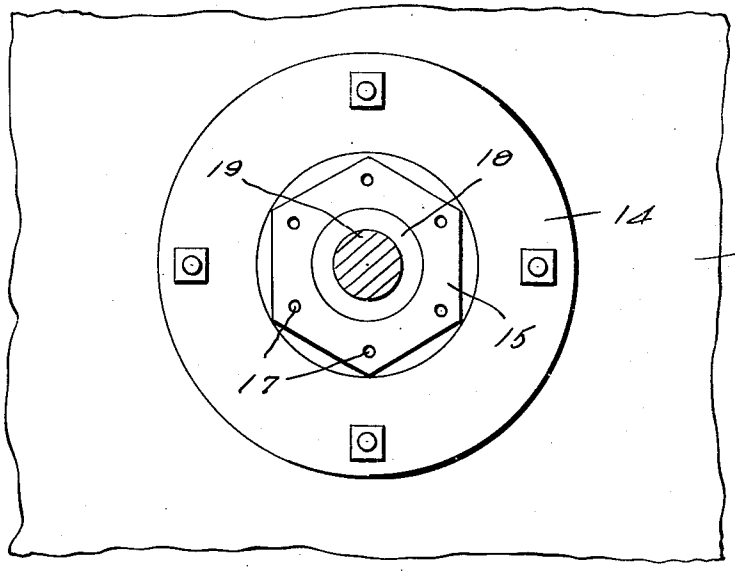


Fig. 3.

Fig. 2.



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Fig. 4.

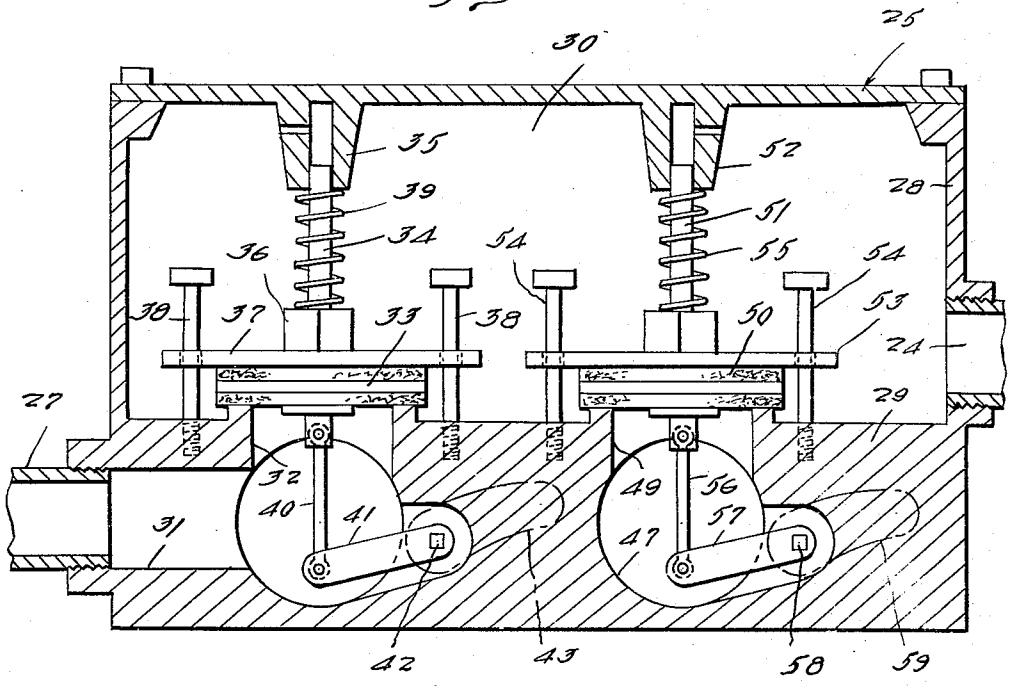


Fig. 5.

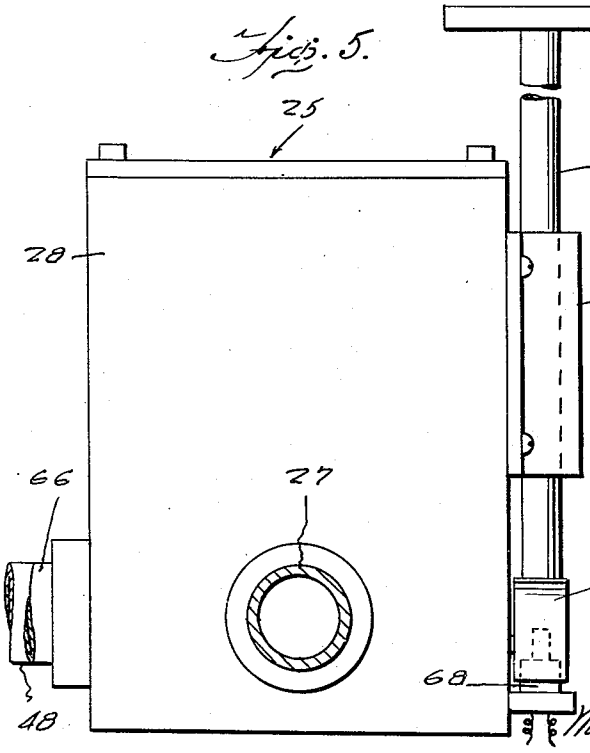
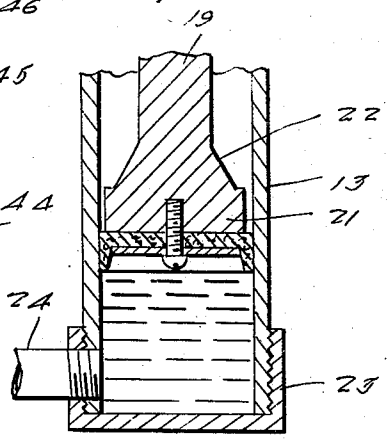


Fig. 6.



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RADIATOR TESTING TANK, INCLUDING HYDRAULIC LIFT SYSTEM

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1 Claim. (Cl. 73—51)

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This invention relates to a device for testing radiators such as those employed in motor vehicles, and more particularly to means for lifting the radiator out of its testing bath or lowering it into said bath.

A main object of the invention is to provide a novel and improved radiator leak-testing device which is simple in construction, easy to operate and wherein, manual labor is reduced to a minimum.

A further object of the invention is to provide an improved hydraulic lift mechanism for radiator testing devices wherein the radiator under test may be supported without damage thereto, wherein said radiator may be freely rotated to a desired position, and wherein city water pressure may be utilized for raising the radiator out of the testing bath, or if said water pressure is insufficient, additional power means may be employed for this purpose.

Further objects and advantages of the invention will become apparent from the following description and claim, and from the accompanying drawings, wherein:

Figure 1 is an elevational view, partly in cross-section, of a radiator testing bath incorporating improved lift means in accordance with the present invention.

Figure 2 is an enlarged cross-sectional view taken on line 2—2 of Figure 1.

Figure 3 is an enlarged fragmentary side elevational view, partly in cross-section of the foot pedal-operated control unit employed in the radiator lift means of Figure 1.

Figure 4 in an enlarged vertical longitudinal cross-sectional view taken through the control unit of Figure 3.

Figure 5 is an enlarged cross-sectional view taken on line 5—5 of Figure 1.

Figure 6 is an enlarged cross-sectional detail view taken vertically through the lower portion of the lift cylinder employed in the mechanism of Figure 1.

Referring to the drawings, 11 designates a radiator testing tank which is provided with supporting legs 12. Connected to the bottom wall of tank 11 is a depending vertical cylinder 13, which is threaded into a flanged bushing 14 secured to said bottom wall. Threadedly secured to said bushing 14 is an additional bushing 15 formed with a conical internal face 16 and with upwardly and outwardly inclined passages 17 connecting said face 16 with the top of bushing 15. Bushing 15 is provided with a replaceable inner bushing element 18 secured in the upper portion of the bushing 15.

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Designated at 19 is a piston rod which passes slidably through bushing element 18 and has secured to its top end the radiator supporting turntable 20. Piston rod 19 is provided at its lower end with a piston 21 which is formed with a conical neck portion 22 adapted to nest within conical face 16 when the piston 21 is elevated to its uppermost position in the cylinder 13. The lower end of cylinder 13 is provided with a cap 23 to which is connected the conduit 24.

Conduit 24 is connected through a control valve unit, designated generally at 25, and a check valve 26, to the city water supply conduit 27.

Valve unit 25 comprises a housing 28 having a relatively thick bottom wall 29 and defining an internal cavity 30. Wall 29 is formed with an intake passage 31 connected to the water supply conduit 27 and having an inner port 32 normally closed by a valve disc member 33. Disc member 33 is carried on a vertical rod 34 whose top end portion is slidably received in a depending guide boss 35 carried by the top wall of housing 28. Secured to valve disc member 33 by a nut 36 threaded on rod 34 is a plate member 37 formed with diametrically opposed apertures through which pass vertical guide bolts 38, 38 threadedly secured to wall 29. A coiled spring 39 encircles the upper portion of rod 34 and bears between the boss 35 and nut 36, biasing valve disc 33 downwardly to closed position over port 32. The bottom end of rod 34 projects below the valve disc and connected thereto by a link 40 is the end of an arm 41 rigidly secured to a transverse shaft 42 rotatably mounted in bottom wall 29. Shaft 42 is provided with an external arm 43. Slidably supported in a sleeve bracket 44 secured to the wall of housing 28 in overlying relation to arm 43 is a vertical rod 45 provided at its top end with a pedal pad 46. When rod 45 is depressed by downward pressure applied to pad 46, shaft 42 is rotated clockwise, as viewed in Figure 4, and valve disc 33 is elevated to open position.

Bottom wall 29 is formed with a second passage 47 connected to a discharge conduit 48 leading to suitable sump or sewer. Passage 47 terminates in a port 49 normally covered by a valve disc member 50. Valve disc 50 is secured to a vertical rod 51 whose top end is slidable in a depending guide boss 52 carried by the top wall of housing 28. Secured on valve disc 50 is a plate member 53 formed with diametrically opposed apertures through which pass vertical guide bolts 54, 54 threadedly secured to wall 29. A coiled spring 55 encircles the upper portion of rod 51 and bears between boss 52 and the securing nut for plate member

53, biasing valve disc 50 to closed position over the port 49. The lower end of rod 51 is connected by a link 56 to the end of an arm 57 secured to a transverse shaft 58 which is rotatably mounted in wall 29. Shaft 58 is provided with an external arm 59, similar to arm 43. Slidably supported in a sleeve bracket 60 secured to the wall of housing 28 in overlying relation to arm 59 is a vertical rod 61 provided at its top end with a pedal pad 62. When rod 61 is depressed by downward pressure on pad 62, shaft 58 is rotated clockwise, as viewed in Figure 4, and valve disc 50 is elevated to open position.

It is thus apparent that by depressing pedal 46, valve disc 33 will be opened allowing city water to enter space 39 and to flow into cylinder 13 through conduit 24. The water pressure raises piston 21, elevating the turntable 20. Water in the upper portion of cylinder 13 is forced out of the cylinder into tank 11 through the passages 17. The upward movement of the turntable 20 continues until neck portion 22 seats in conical face 16. When disc 33 is closed due to the release of pedal 46, the water in cylinder 13 prevents downward movement of piston 21 thereby maintaining the turntable 20 in elevated position. When it is desired to allow turntable 20 to descent, pedal 62 is depressed, opening valve disc 50. Water may then flow from cylinder 13 through conduit 26 into space 39 and through port 40 and passage 47 into the discharge conduit 48, allowing piston 21 to move downwardly under the load of the turntable 20 until the turntable comes to rest on the bushing 18, as shown in Figure 1.

The pressure of the city water supply may at times be insufficient to elevate the turntable 20, as when a very heavy radiator is placed on said turntable. To provide additional pressure, a pump 63 is employed, the pump having an intake conduit 64 extending through the bottom wall of tank 11 and provided with a suitable intake screen 65. The discharge conduit 66 of said pump is connected to housing 28 at passage 31. Designated at 67 is an electric motor whose shaft is coupled to the shaft of pump 63. The energizing circuit for motor 67 includes a push button switch 68 located beneath arm 43 and arranged so that when arm 43 approaches its limiting downward position of rotation, as determined by the permissive upward movement of rod 34 in boss 35, the switch 68 will be closed, causing the motor 67 to be energized. Pump 63 then draws water from tank 11 through conduit 64 and pumps it into space 39 through conduit 63 at an elevated pressure sufficient to raise the piston 21 even under very heavy loads on turntable 20. Check valve 26 prevents back flow of water under the pressure of pump 63 into the supply main. When the pump 63 is not required, pedal 46 is depressed only enough to open valve disc 33. When the additional pressure available from pump 63 is required, pedal 46 is depressed to its lower most position, causing the motor 67 to be energized.

The table 20 is preferably rotatably secured to the top end of piston rod 19 so that said table may be rotated while in elevated position, thereby facilitating the inspection and repair of a radiator mounted thereon.

While a specific embodiment of a radiator lift mechanism has been disclosed in the foregoing description, it will be understood that various modifications within the spirit of the invention may occur to those skilled in the art. Therefore it is intended that no limitations be placed on the invention except as defined by the scope of the appended claim.

What is claimed is:

In a radiator testing apparatus, a tank for the reception of water, a vertically disposed cylinder having one end closed and having the other end projecting through the bottom of said tank, a closure having one face arranged in closing relation with respect to the open end of said cylinder, there being a conical bore in said one face of said closure, a turn-table supported on the other face of said closure, a piston rod disposed within said cylinder and having one end extending through said closure and fixedly secured to said turn-table, a piston supported on the other end of said piston rod and mounted for sliding movement toward and away from said closure, inlet means extending through the closed end of said cylinder for introducing fluid under pressure against one face of said piston for urging the latter toward said closure, the other face of said piston being provided with a conical flange receivable within said conical bore, and there being at least one passage-way extending through said closure having one end in communication with the interior of said cylinder and having the other end in communication with said tank for introducing said fluid against said one face of said piston when said conical flange is received within said conical bore, a pump having an inlet and an outlet, a motor for said pump, a conduit connecting said inlet with the interior of the tank, conduit means connecting said pump outlet with the inlet means for said cylinder, a valve in said last named means, and means for opening said valve and for simultaneously starting said pump motor, whereby to raise the turntable.

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