June 9, 1959 L. M. BRUNS 2,890,043

RADIATOR LIFT

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Fig-1

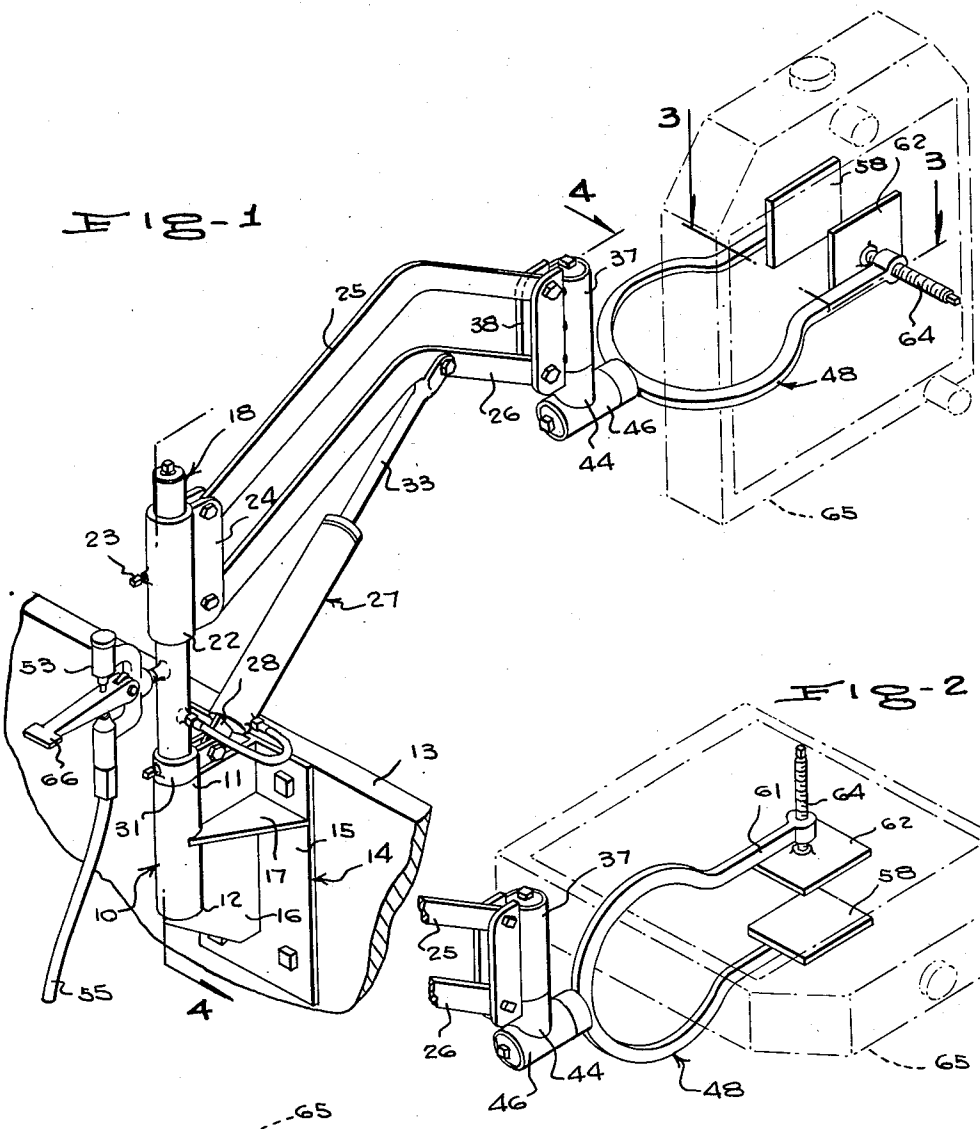
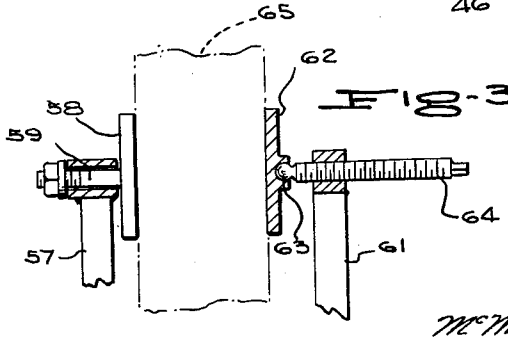


Fig-2

Fig-3



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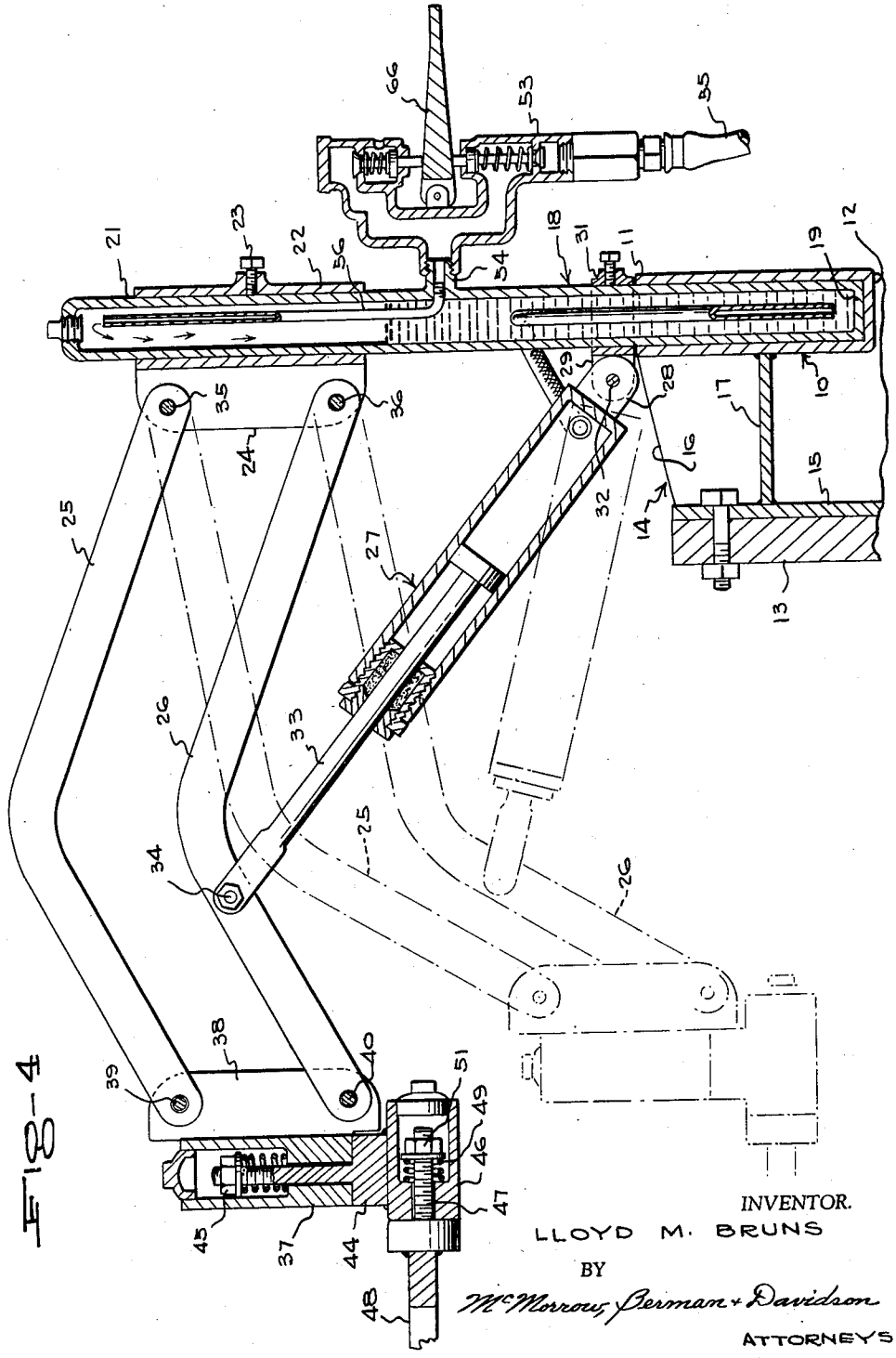


Fig. 4

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RADIATOR LIFT

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2 Claims. (Cl. 269—145)

The present invention relates to lifts for automotive radiators.

An object of the present invention is to provide a radiator lift which is simple in structure, one sturdy in construction, easy to fabricate and assemble, and one which is highly effective in action.

Another object of the present invention is to provide a radiator lift which has universal movement about its support so that a radiator may be positioned in any position at any height desired above the support or below the support, and may be held within a tank of testing fluid, one which operates hydraulically and has its own reservoir for the storage of a charge of hydraulic fluid, and one which permits the user thereof to work upon a heavy and bulky radiator in complete safety.

These and other objects and advantages of the present invention will be fully apparent from the following description when taken in connection with the annexed drawings, in which:

Figure 1 is a perspective view of the radiator lift according to the present invention showing it installed upon a portion of a wall of a tank and showing in dotted lines a radiator supported thereon,

Figure 2 is a perspective fragmentary view showing the positioning of the radiator of Figure 1, in dotted lines, in a horizontal position,

Figure 3 is a fragmentary view in section taken on the line 3—3 of Figure 1 and on an enlarged scale,

Figure 4 is a sectional view on an enlarged scale taken on the line 4—4 of Figure 1 and showing in dotted lines the movement downwardly of the support arms.

Referring in greater detail to the drawings in which like numerals indicate like parts throughout the several views, the radiator lift of the present invention comprises an upright cylinder 10 having its upper end 11 open and its lower end 12 closed. The cylinder 10 is supported upon the exterior side of a tank 13 by means of a bracket 14 consisting in a vertically disposed plate 15 bolted to the tank wall and to which is fixed a perpendicularly arranged web 16 and reinforcing horizontally disposed web members 17, one on each side of the web 16, although only one is shown in Figure 1.

A tubular hollow support member 18 having both ends closed is rotatably supported within the cylinder 10 with its lower end 19 resting upon the closed lower end 12 of the cylinder 10. An upper portion 21 of the support member 18 extends above the upper end 11 of the cylinder 10 and carries a sleeve 22 which is adjustable upwardly and downwardly on the support member 18 and may be locked in place by the set screw 23.

A pair of vertically extending spaced plates project from one side of the sleeve 22, as indicated by the reference numeral 24, and between them are secured the adjacent ends of the arms 25 and 26 which are arranged in superimposed spaced relation and extend in a horizontal direction away from the sleeve 22.

Means is provided for effecting the movement of the

arms 25 and 26 from their horizontal position to a position either upwardly or downwardly of the horizontal position and consists in a hydraulic cylinder assembly 27 having a lug on one end received between bosses 29 which project from a collar 31 surrounding the support member 18 adjacent the upper end 11 of the cylinder 10.

An actuating arm 33 projects from the open end of the hydraulic cylinder assembly 27 and has its upper end pivotally connected to the lower arm 26 by means of a pivot pin 34. Other pivot pins 35 and 36 pivotally connect the inner ends of the arms 25 and 26, respectively, to the plates 24 for effecting the movement from the full line position shown in Figure 4 to the dotted line position. A vertically disposed sleeve 37 is positioned adjacent the free ends of the arms 25 and 26 and is pivotally connected thereto by means of a pair of spaced plates 38, one on each side of the free ends of the arms 25 and 26, and having apertures through which extend the pivot pins 39 and 40 respectively.

The sleeve 37 is provided with a bore 41 having two diameters to provide a shoulder 42 against which rests the lower end of an upright spring 43 through which extends the threaded shank portion of a connector 44. A nut and washer assembly 45 on the shank portion of the connector 44 secures the connector 44 to the sleeve 37 for rotation about the shank portion as a vertically disposed axis.

The connector 44 includes a cylindrical portion 46 disposed horizontally and having a bore of two diameters therethrough for receiving the threaded shank portion 47 of a generally U-shaped clamping element 48.

A spring 49 surrounds the threaded shank portion 47 of the clamping element 48 within the bore in the portion 46 of the connector 44 and a nut and bolt assembly 51 on the threaded shank portion 47 retains the shank portion 47 within the portion 46 of the connector 44 for rotational movement about a horizontal axis.

Means is provided for operating the hydraulic cylinder assembly 27 and consists in a quantity of hydraulic fluid held within the hollow support member 18 and a flexible conduit connecting the lower end of the hydraulic cylinder assembly 27 with the interior of the support member 18 adjacent to and spaced from the closed lower end 19, the conduit being indicated by the reference numeral 52. A combination inlet and exhaust valve assembly 53 is positioned adjacent the side of the support member 18 opposite to the hydraulic cylinder assembly 27 and is carried by a nipple 54 which projects from the support member 18 intermediate the ends thereof. A flexible conduit 55 connected to a source of air under pressure admits air to the inlet section of the valve assembly 53 and permits the introduction of compressed air to the space within the support member 18 above the top of the hydraulic fluid, there being provided an upwardly extending conduit 56 for air extending within the support member 18, as shown in Figure 4.

Referring to Figures 1 to 3 inclusive, it will be seen that the legs of the clamping element 48 are provided with apertures at their free ends. One leg 57 of the element 48 carries a square plate 58 detachably secured thereto by means of a nut and bolt assembly 59 projecting from the rearward side of the plate 58. The other leg 61 of the element 48 adjustably supports another plate 62 by means of a ball and socket formation 63, the ball being on the end of a threaded bolt 64 and received in the socket on the rearward side of the plate 62.

In use, the radiator lift of the present invention may be used, as shown in Figures 1 to 3 inclusive, to support a radiator 65 in any position desired for working upon it, and in conjunction with the tank 13, the radiator 65 may be immersed in cleaning and testing solutions by the

raising and lowering of the arms 25 and 26 hydraulically. The combination inlet and exhaust valve assembly 53 is conventional in construction and is commonly in use with hydraulic lift apparatus, such as vehicle hoists, and the like. Air may be introduced into the interior of the support member 18 by means of the lever 66 and may be exhausted therefrom, the lever being in one direction to open the intake valve and moving in the other direction to open the exhaust valve.

What is claimed is:

1. A radiator lift comprising an upright cylinder having its upper end open and its lower end closed and adapted to be supported on the side of a tank, a tubular hollow support member having both ends closed rotatably supported within said cylinder with its lower end resting upon the closed end of said cylinder and having an upper portion extending above the upper end of said cylinder, a sleeve carried by the upper portion of said member, a pair of horizontally disposed arms arranged in superimposed spaced relation positioned on one side of said sleeve and having their one ends connected to said sleeve for swinging movement from a horizontal position to a position either upwardly or downwardly of the horizontal position, means for effecting the movements of said arms together, said means embodying a hydraulic cylinder assembly pivotally connected by one end to said support member and having an actuating arm extending from the other end operatively connected to the lower one of said arms inwardly of the other end of the latter, a vertically disposed second sleeve carried by the other ends of said arms, a shoulder within said second sleeve, a connector dependingly carried by said second sleeve for swinging movement about said second sleeve as an axis and having means on its upper end abuttingly engaging said shoulder, and a horizontally disposed clamping element for embracingly supporting the radiator extending from said connector and connected thereto for tilting movement about a horizontal axis.

2. A radiator lift comprising an upright cylinder having its upper end open and its lower end closed and adapted to be supported on the side of a tank, a tubular hollow support member having both ends closed rotatably supported in said cylinder with its lower end resting upon the closed end of said cylinder and having an upper portion extending above the upper end of said cylinder, the interior of said support member constituting a reservoir for a charge of hydraulic fluid, a sleeve carried by the upper portion of said member, a pair of horizontally disposed arms arranged in superimposed spaced relation positioned on one side of said sleeve and having their one ends connected to said sleeve for swinging movement from the horizontal position to a position either upwardly or downwardly of the horizontal position, a hydraulic cylinder assembly pivotally connected by one end to said support member and having an actuating arm extending from the other end operatively connected to the lower one of said arms inwardly of the other end of the latter for effecting the movement of said arms from the horizontal position to positions either upwardly or downwardly of the horizontal position, conduit means connecting the interior of said support member with the interior of said one end of said hydraulic cylinder assembly, and a horizontally disposed clamping element for embracingly supporting a radiator extending from said second sleeve and connected thereto for tilting movement about a horizontal axis.

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