

June 7, 1955

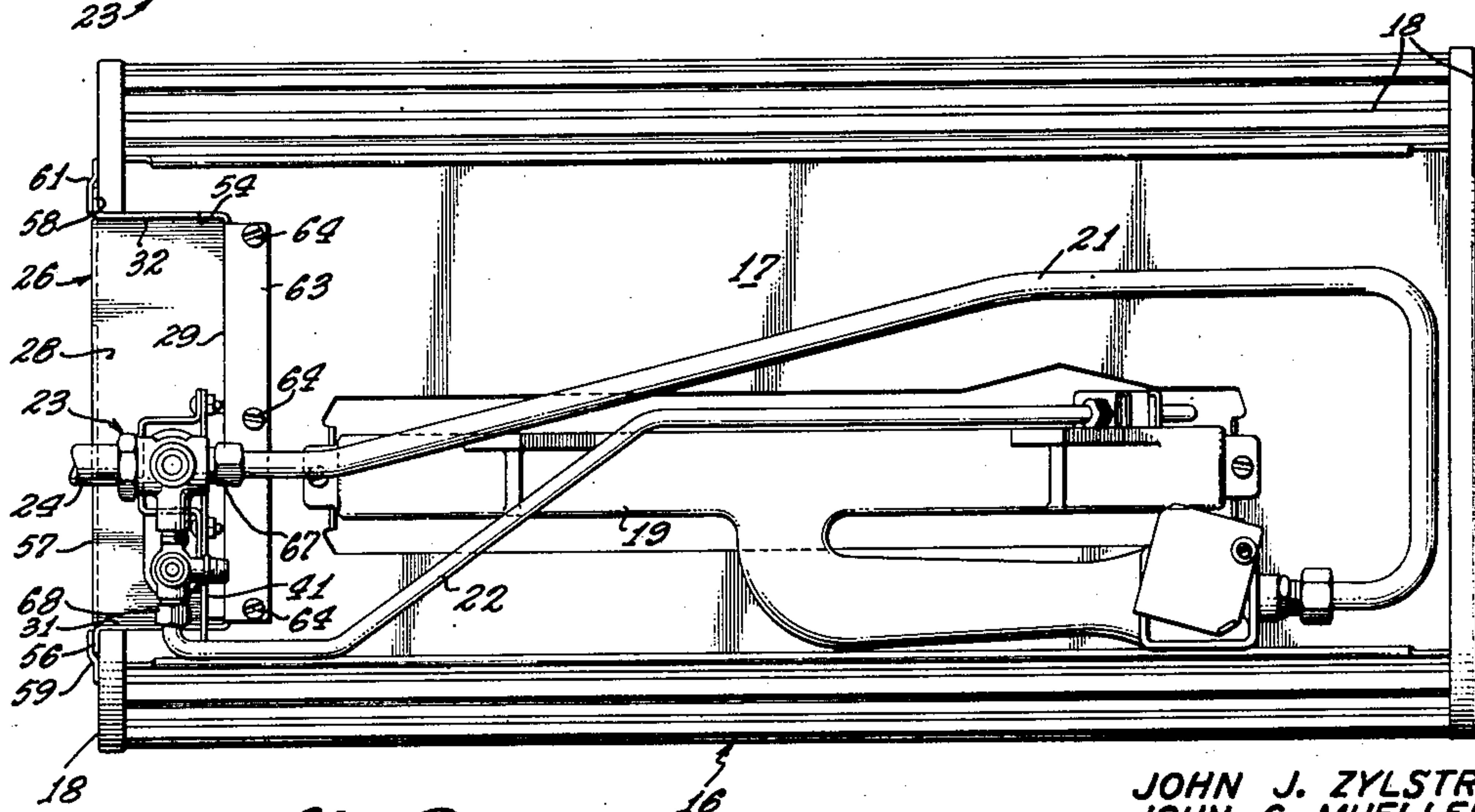
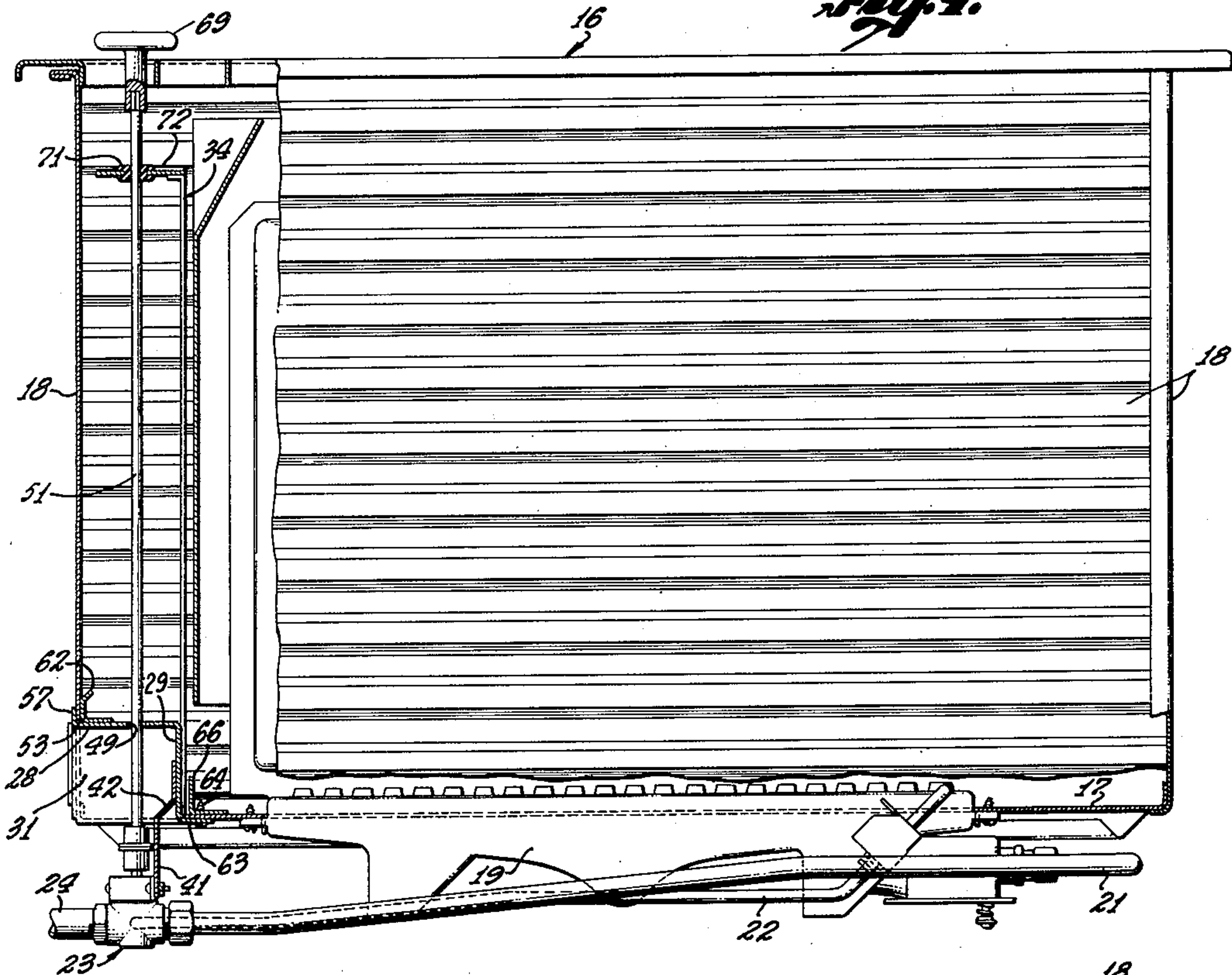
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INTERCHANGEABLE VALVE MOUNT FOR GAS HEATER

Filed July 9, 1951

4 Sheets-Sheet 1.



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4 Sheets-Sheet 2

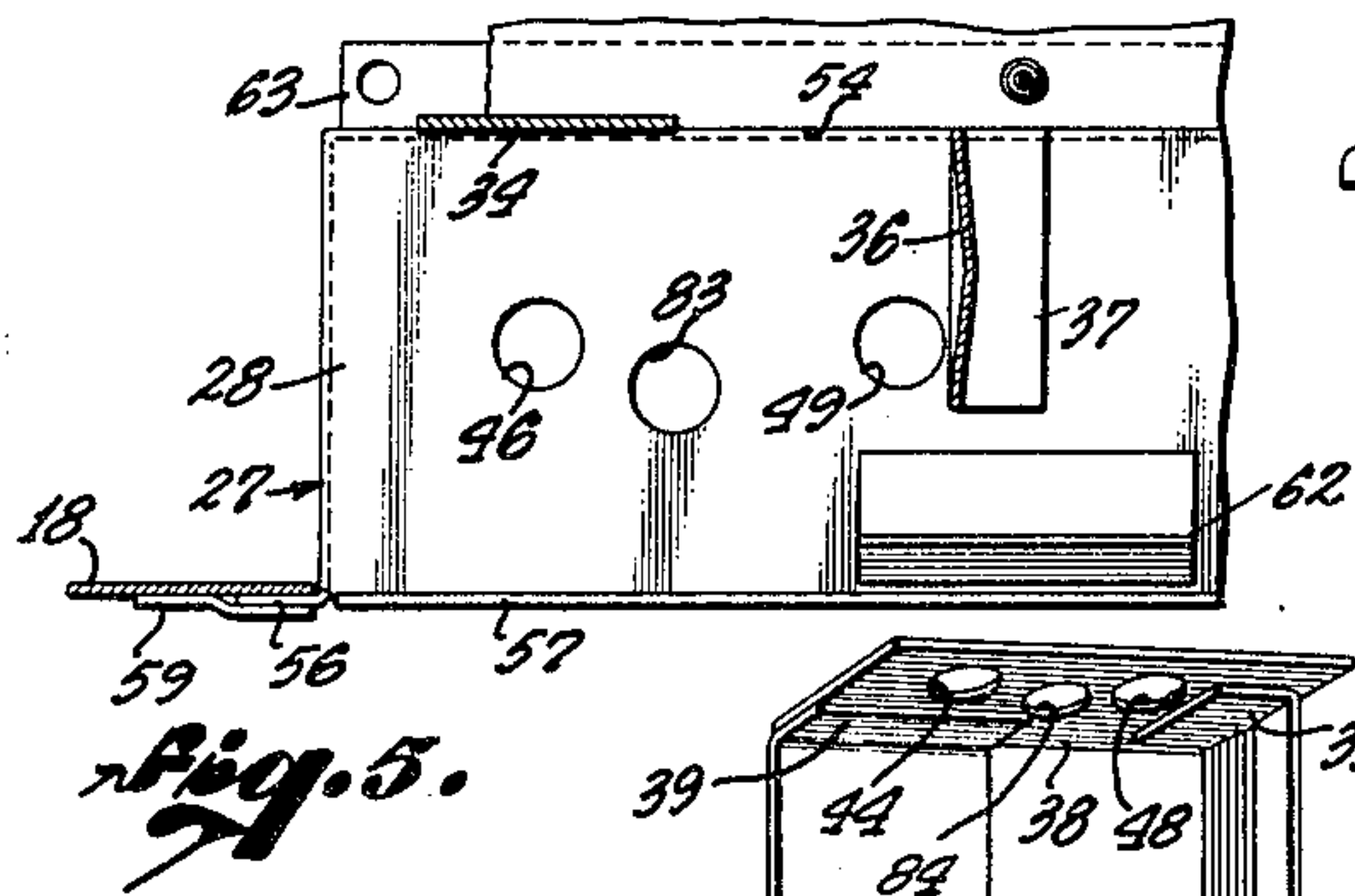
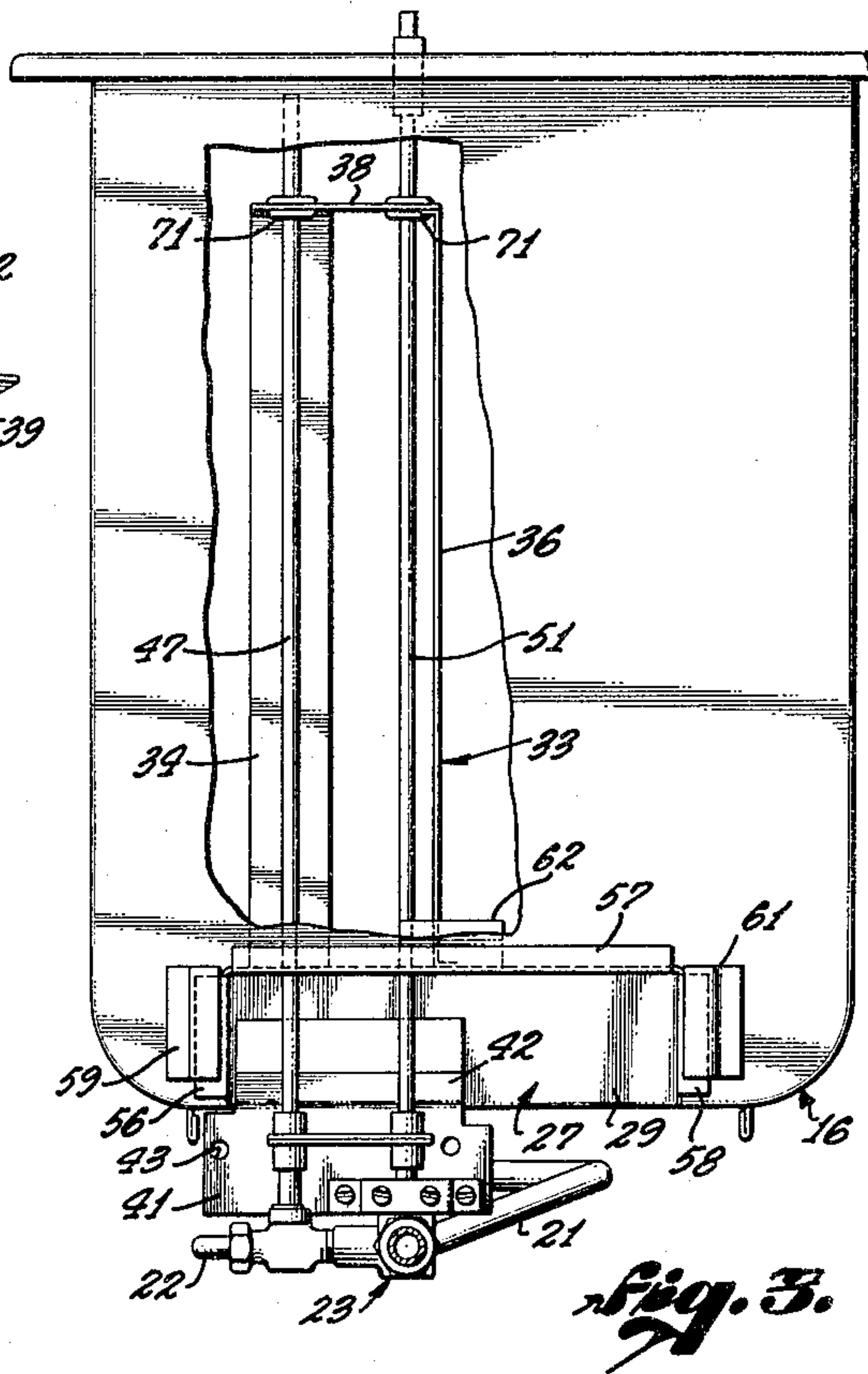
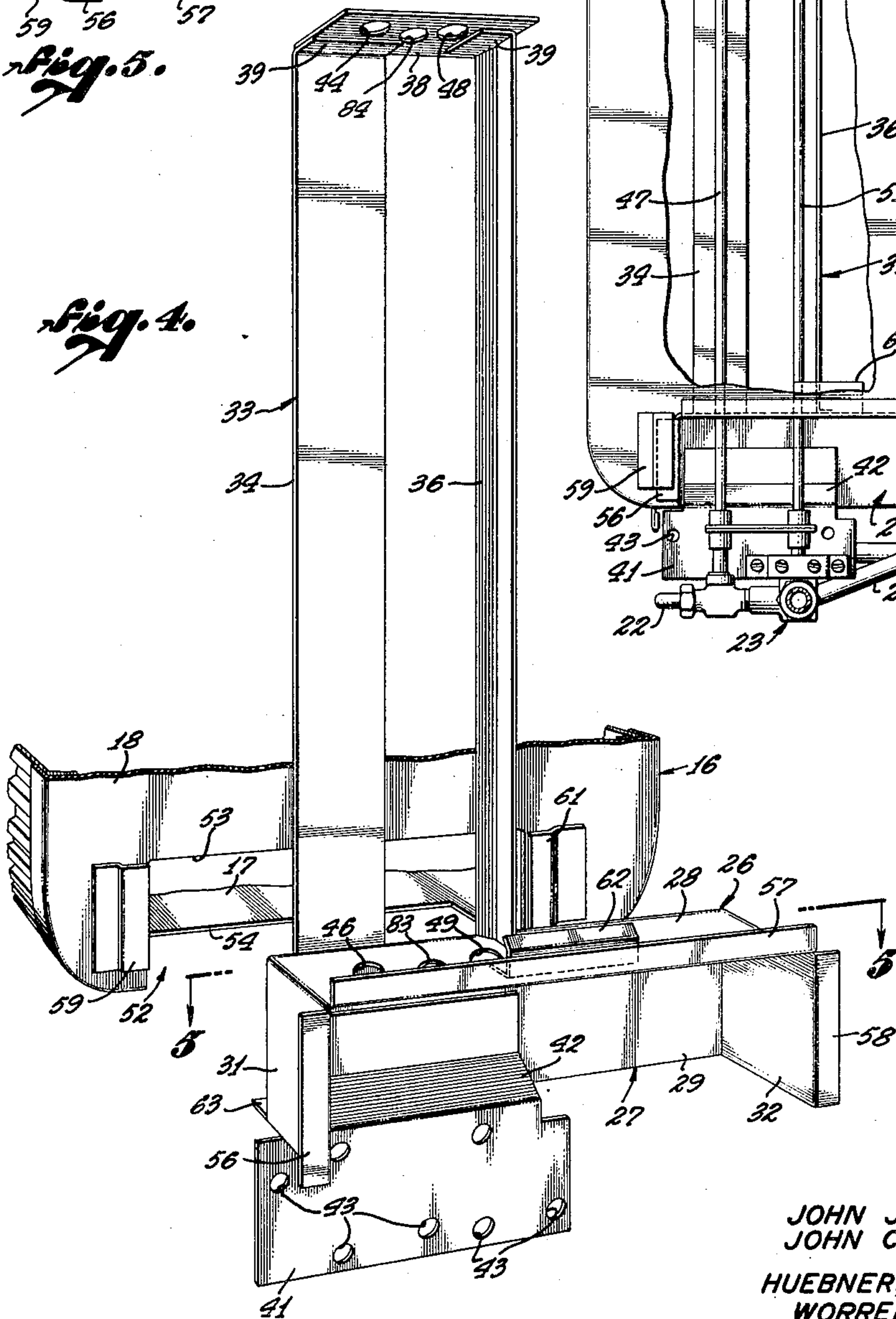


Fig. 4.



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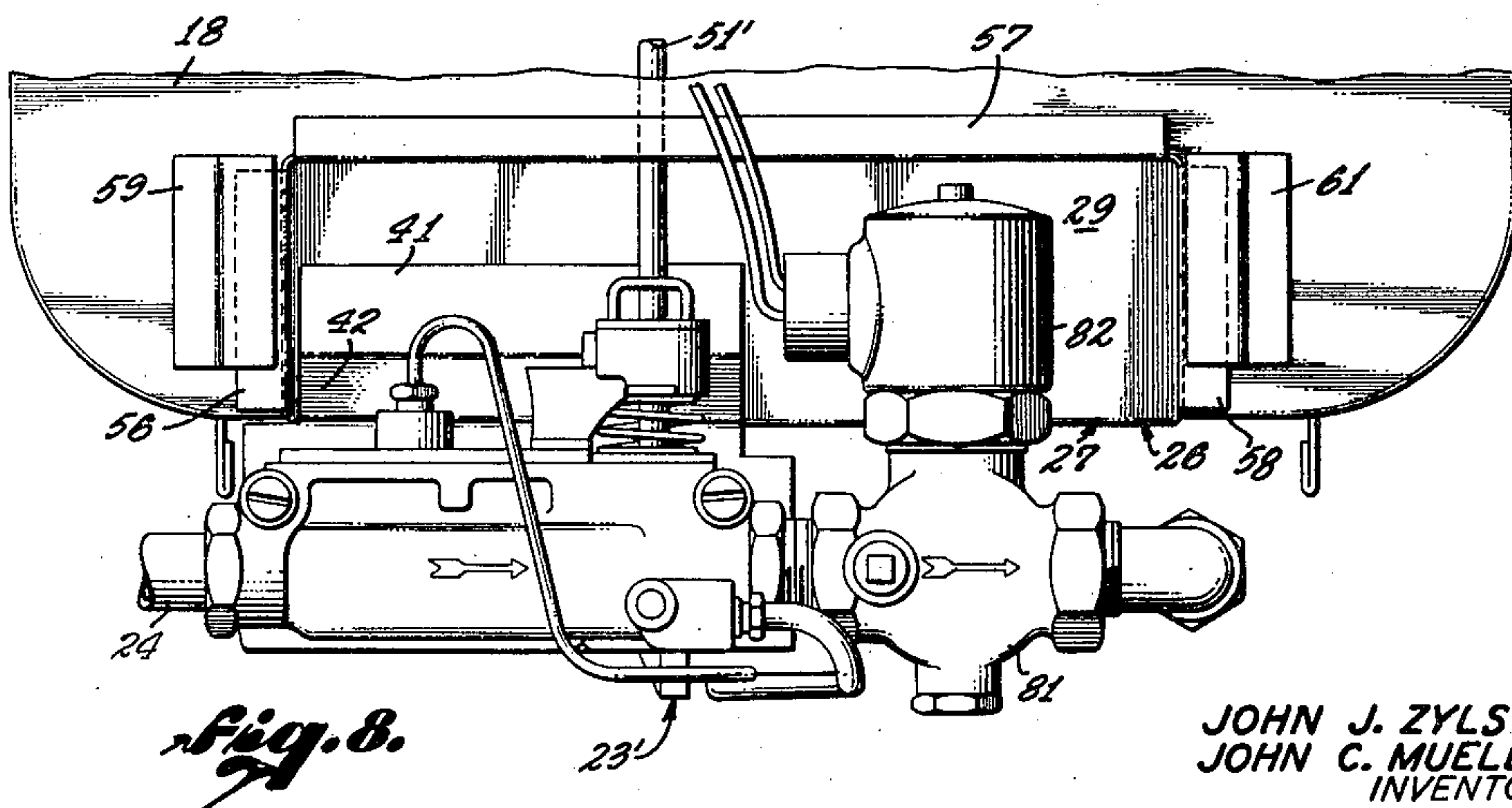
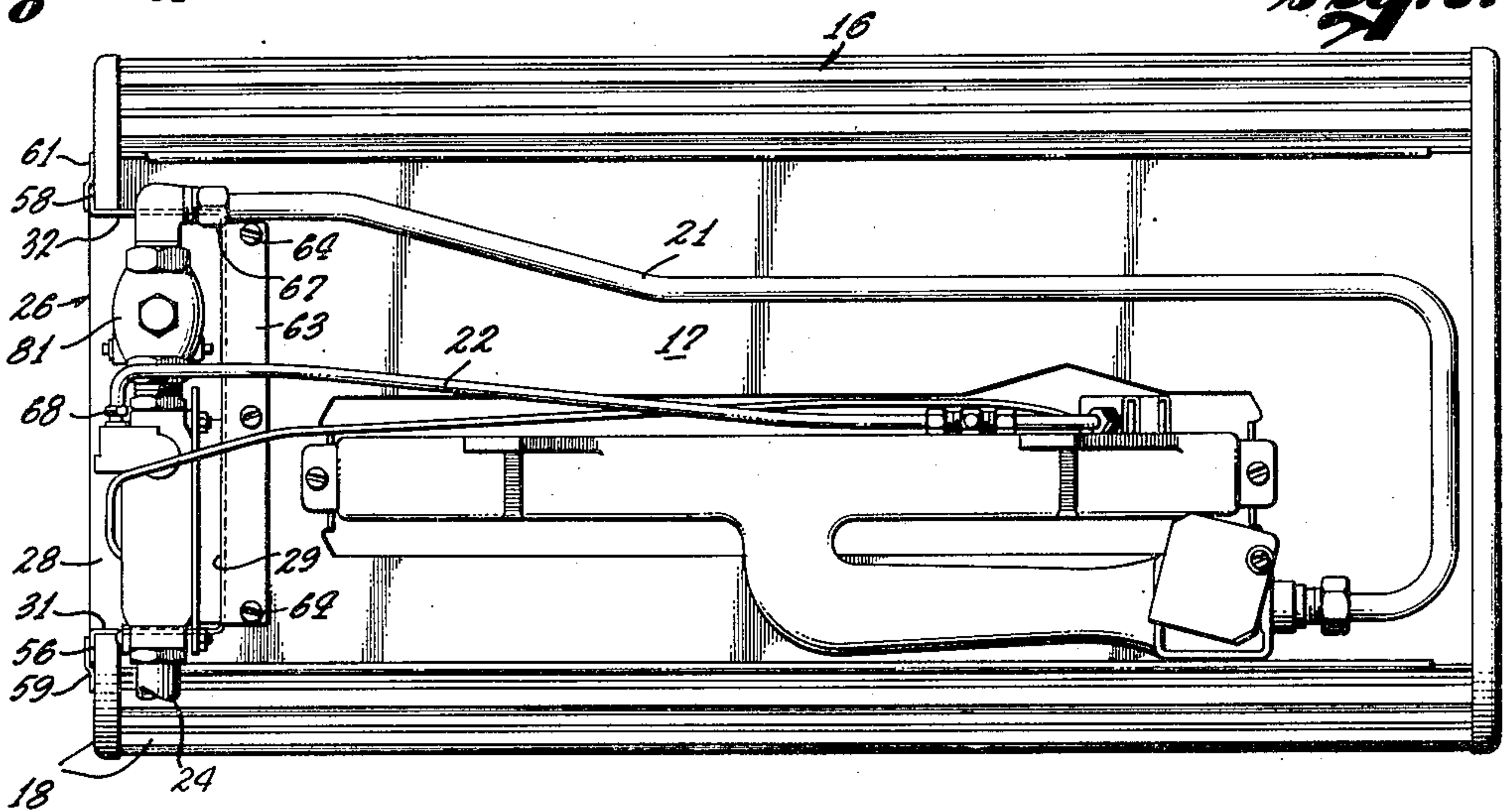
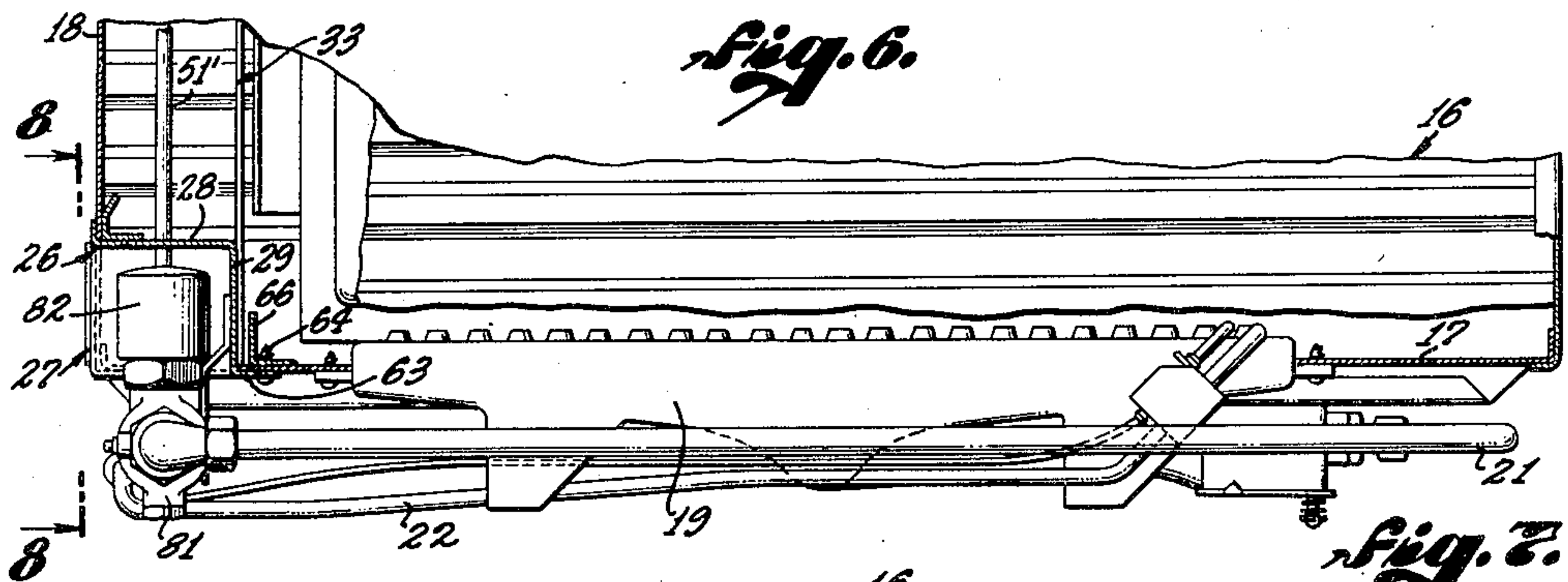
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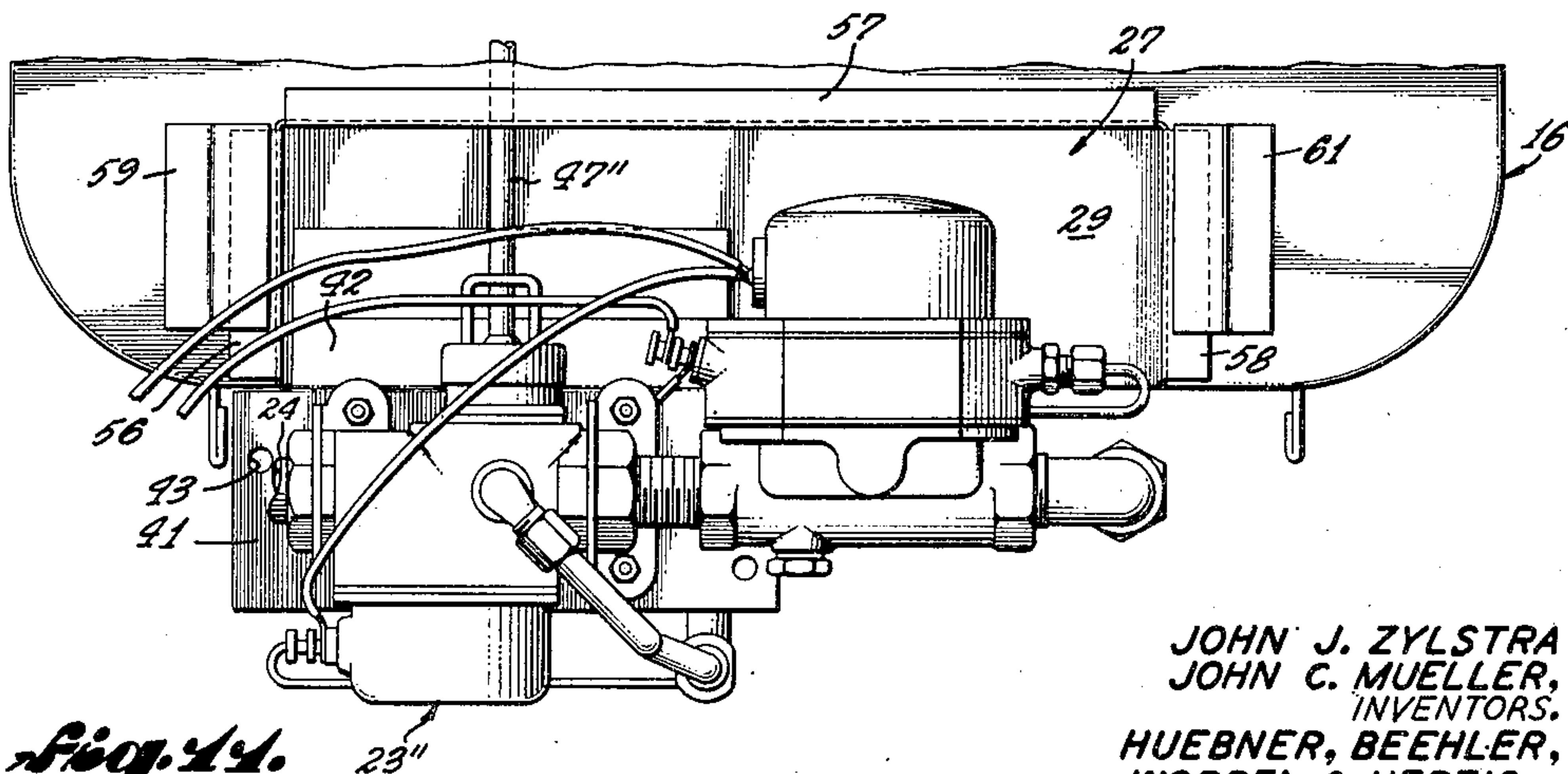
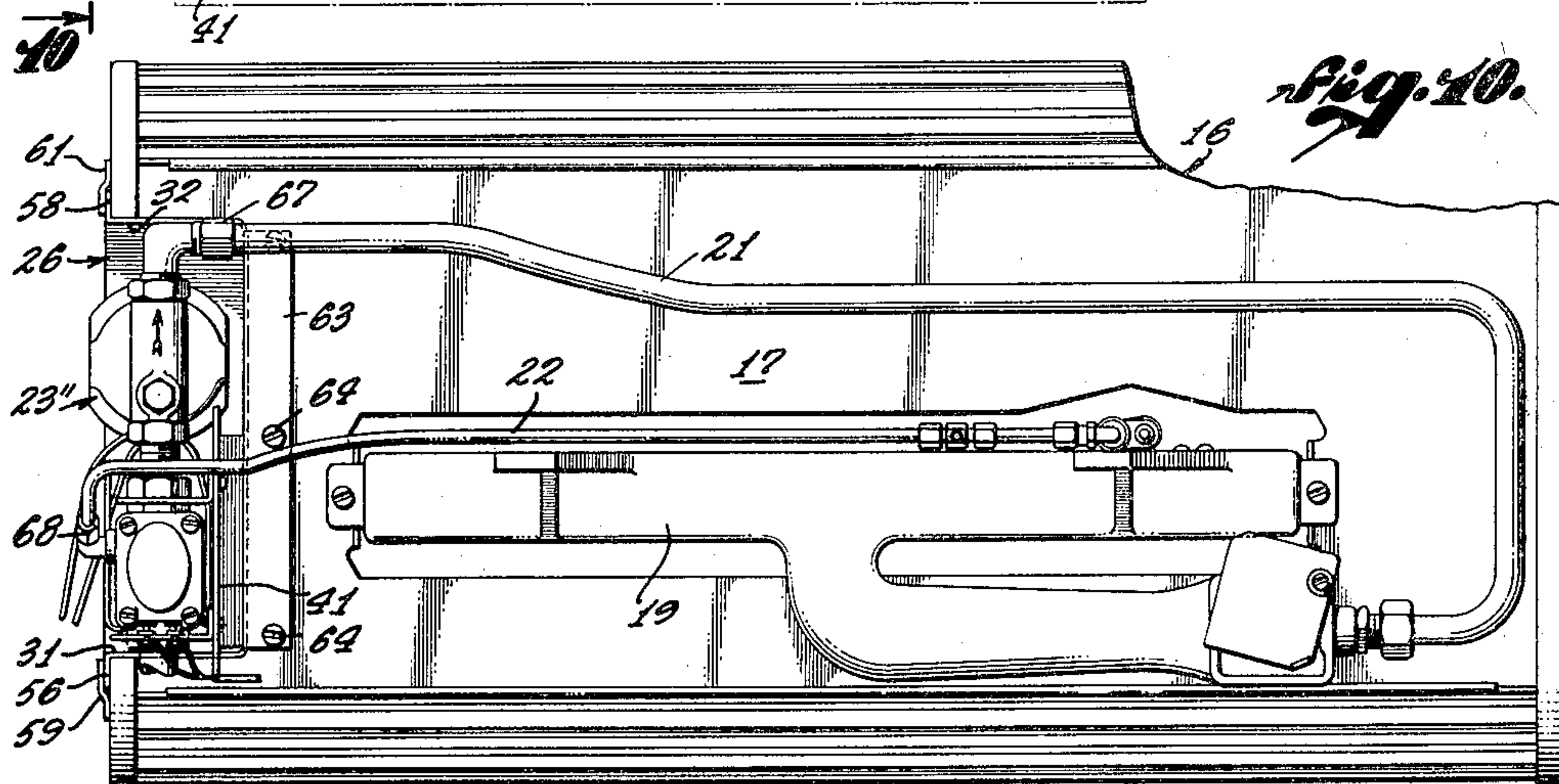
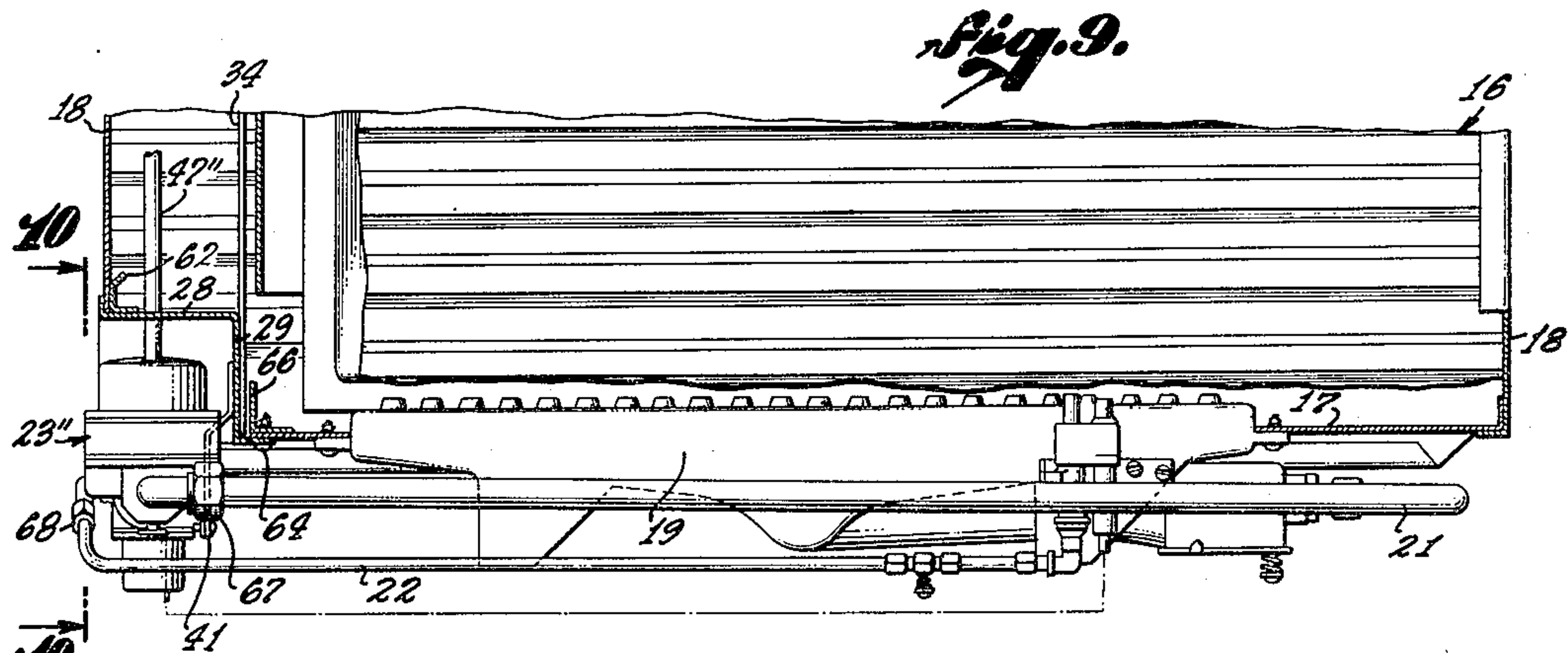
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INTERCHANGEABLE VALVE MOUNT FOR GAS HEATER

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INTERCHANGEABLE VALVE MOUNT FOR GAS HEATER

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5 Claims. (Cl. 126—116)

This invention relates to an interchangeable control valve assembly and mount therefor for a heater, particularly for a floor furnace.

In the marketing of floor furnaces it is customary for the wholesale purchaser to request a given number of complete furnaces, some with one type of control valve assembly and some with other types of valve assemblies. This variation in desired control valve assemblies stems from personal preference of the wholesale buyer, and also from the fact that certain control assemblies require an independent electrical energizing source, while others do not.

It is an object of the instant invention to provide means whereby any one of a number of control valve assemblies may be interchangeably mounted to a floor furnace after the furnace has been partially crated, or after the furnace has actually been installed in a dwelling.

For economy of storage it is highly desirable that furnaces be substantially completed and substantially crated to await receipt of purchase orders. In the past it has been necessary to anticipate the number of furnaces that will be ordered with each type of control valve assembly, and hope that the orders came through as speculated. When, as invariably occurs, the estimate is not exactly correct, it becomes necessary to completely uncrate the furnaces with the wrong control valve assemblies, and reassemble them with the desired assemblies. An alternative to this procedure is to not crate the furnaces until receipt of purchase orders, at which time the desired control valve assemblies may be placed in the furnaces before crating. This procedure has the obvious drawback of complicating the storage problem awaiting receipt of purchase orders.

It is another object of the instant invention to provide means whereby the furnace may be substantially completely packed without any control assembly whatever, and then upon receipt of purchase orders the desired control assemblies may be assembled into the furnaces and secured thereto without removing the furnaces from their crates.

In the past, after installation of a floor furnace, it has been necessary to virtually remove the entire furnace in order to change a control valve assembly, as might be required should the original assembly be defective or worn out. It is a further object of the instant invention to provide means whereby substitution of control valve assemblies may be made with great facility and without removing the floor furnace from its installed position.

A preferred form of the instant invention will now be described with reference to the accompanying drawings, wherein:

Fig. 1 is an elevation, partially sectioned, of a floor furnace illustrating the interchangeable valve mount installed in position.

Fig. 2 is a bottom view of the apparatus shown in Fig. 1.

Fig. 3 is an end view, partially broken away, of the apparatus shown in Figs. 1 and 2.

Fig. 4 is a fragmentary perspective showing the interchangeable mount of the instant invention without a

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control valve assembly secured thereto, and in position adjacent the casing of a floor furnace.

Fig. 5 is a plan section taken on line 5—5 of Fig. 4.

Fig. 6 is a fragmentary view similar to Fig. 1, illustrating the installation, in the floor furnace, of a more complex form of control valve assembly. Fig. 7 is a bottom view of the apparatus shown in Fig. 6. Fig. 8 is an end view taken on line 8—8 in Fig. 6.

Figs. 9, 10, and 11 are views corresponding to Figs. 6, 7, and 8, respectively, illustrating still a third form of control valve assembly suitable for use with the instant invention.

Referring to the drawings, 16 designates the casing of a floor furnace having a bottom 17 and four side walls 18. The furnace is provided with the usual gas burner 19 secured to the bottom 17. The burner 19 is provided with a main gas pipe 21 feeding the burner proper, and a pilot gas pipe 22 feeding the pilot burner. The pipes 21 and 22 are preferably flexible, for example by being made of thin wall copper tubing, and are connected to a control valve assembly 23 to which gas is supplied from a supply pipe 24. The control valve assembly 23 is mounted to an interchangeable mount 26.

In crating and storing the furnace above described, awaiting receipt of purchase orders, it has been found convenient to place the casing 16 in the crate upside down. The top of the crate, adjacent the bottom of the furnace (as viewed in Fig. 2), may be partially battened over or not as desired. It is preferred to originally crate and store the furnaces without mounts 26, or valve assemblies 23. The flexible pipes 21 and 22 are made long enough to attach to any assembly 23 which might be subsequently mounted to the furnace. When it has been determined by purchase orders just how many furnaces are required with each of the several types of valve assemblies, the requisite number of assemblies, secured to their mounts 26, are installed to the furnaces without removing the furnaces from their crates.

The cooperative mounting arrangement of the mount 26 to the casing 16, is best seen in Fig. 4. The mount 26 includes a housing 27, having a top wall 28, a side wall 29, and end walls 31 and 32. The housing 27 is generally box-like or orthogonal in shape, and the bottom and one side are left open as shown in Fig. 4. Extending upwardly from the housing 27 is an elongate, vertical, control-rod frame 33, comprised of an elongate plate 34 welded at its bottom end to the exterior of the side wall 29, and another elongate plate 36 disposed laterally perpendicular to the plate 34 and having a bottom flange 37 which is welded to the top 28. The plate 36 is crimped longitudinally for added strength as best seen in Fig. 5. The frame 33 includes a rectangular, horizontal plate 38 surmounting the members 34 and 36 and secured thereto by being welded to flanges 39 formed on the upper ends of the members 34 and 36.

Secured as by welding to the interior of the side wall 29 and depending from the housing 27, is a bracket 41. The bracket is bent slightly away from the wall 27 as shown at 42, and the lower portion of the bracket is provided with a plurality of mounting holes 43 so placed that any desired control valve assembly 23 may be secured to the bracket 41.

The plate 38 and the top 28 are provided with at least one set of aligned openings 44 and 46, respectively, through which extends a valve control rod 47 (Fig. 3) of the assembly 23 mounted to the bracket 41. A second pair of aligned openings 48 and 49 may be provided, through which a second rod 51, if present, may also extend from the assembly 23 to the top surface of the casing 16.

The mount 26, with any desired control assembly 23 secured thereto, is mounted to the furnace casing 16

in the following manner. At the bottom end edge of the casing 16 there is an aperture 52 formed by removing a portion of the side wall 18 as shown at 53, and a contiguous portion of the bottom 17 as shown at 54. The aperture 52 is slightly larger than the housing 27, so that the latter may be inserted into the aperture 52 substantially closing the same and forming a pocket, which is the interior of the housing 27 having the open side face and the open bottom. In so inserting the mount 26 the control rod frame portion 33 is first inserted into the aperture 52 followed by the housing 27 which closes the aperture as mentioned hereinbefore. To secure the housing 27 to the casing 18, flanges 56, 57, and 58 are formed along the respective edges of the end wall 31, the top 28 and the end wall 32, respectively, and opposite or remote from the side wall 29. Brackets 59 and 61 are secured, adjacent the aperture 52, to the exterior of the side wall 18 and form channels into which the flanges 56 and 58 are slid. A bracket 62, mounted to the exterior of the top 28 serves, in cooperation with the flange 57, to position the outer edge of the top 28 at the edge of the aperture 53, as best seen in Fig. 1.

The manner of using the instant invention is substantially as follows. The furnaces are packed upside down in their crates, leaving the top of the crate open and exposing the bottom of the furnace as seen in Fig. 2. Neither mounts 26 nor control assemblies 23 are provided initially. Instead these two parts are stored separate from the furnaces proper, a given number of mounts 26 being provided with the several types of control assemblies 23, which are pre-mounted thereto by means of the mounting holes 43 in the bracket 41. This pre-mounting involves the passage of control rods 47 and 51 through the frame 33 and the extending of the ends of the rods through the upper end of the frame as best seen in Fig. 3.

When a number of furnaces with a particular type of control are desired, for example, the simple control illustrated in Figs. 1, 2, and 3, the appropriate number of such controls, pre-mounted to their mounts 26, are inserted into the casing 16 through the aperture 52 with the ends of the rods 47 and 51 being disposed just inside the top grill of the furnace as seen in Fig. 3. The flanges 56 and 58 come to rest within the brackets 59 and 61, respectively, and the edge of the casing aperture 53 resides between the bracket 62 and the flange 57. The bottom edge of the housing wall 29 is provided with an outwardly extending flange 63 (Figs. 1 and 5) having a number of screw holes. A corresponding number of self-tapping screws 64 are passed through the holes and threaded into the casing bottom 17, backed for strength by an angle iron 66.

Next, the pipes 21 and 22 are bent so as to mate properly with the appropriate outlets of the valve assembly 23, and thereupon the two connections are made as shown at 67 and 68, respectively. Loosely packed in the crate are a pair of wheels or knobs 69 which are placed on the ends of the control rods 47 and 51 after the furnace has been installed in a dwelling. The crate is then ready to have its open face sealed up preparatory to shipment.

The holes 44 and 48 are preferably provided with rubber grommets 71 to more accurately align the rods 47 and 51 and to prevent them from rattling. To the upper surface of the plate 38 is pasted an instruction sheet or card 72 whereon are noted use and maintenance instructions appropriate to the particular control valve assembly 23.

The wide adaptability of the instant invention for many types of control valve assemblies is shown in Figs. 6-8 and 9-11, respectively. Figs. 6-8 show the application to the furnace of a mount 26 carrying an automatic remote control valve 81 controlled by an electric solenoid 82. As best seen in Fig. 7 the control unit

23' has conduit outlets located at a different position than those of the assembly 23 of Fig. 2. This, however, provides no problem since the pipes 21 and 22 are made flexible and may be bent to suit these different requirements. The control 23' has only a single control rod 51', so that no use is made of the holes 44 and 45 but only of the holes 48 and 49.

A still further form of control valve assembly is shown at 23'' in Figs. 9-11. With this assembly the control rod 47'' is positioned so that it registers with neither of the holes 44 and 49; hence it is desirable to provide an intermediate hole 83 in the housing top 28, and an aligned hole 84 is provided in the plate 38.

While the instant invention has been shown and described herein in what is conceived to be the most practical and preferred embodiment, it is recognized that departures may be made therefrom within the scope of the invention, which is therefore not to be limited to the details disclosed herein but is to be accorded the full scope of the claims so as to embrace any and all equivalent apparatus, and articles.

What is claimed is:

1. A floor furnace including a casing having a side wall and a bottom, and having at its bottom edge an aperture formed by removing a portion of said side wall and a contiguous portion of said bottom, an interchangeable mount inserted into said aperture and including a housing having substantially the same dimensions as said aperture, and an elongate control rod frame secured to said housing and extending through said casing, said frame having at its extended end a hole for passage of a control rod, said housing having a hole aligned with said frame hole, and a control valve assembly secured to said housing and including a control rod extending through said aligned holes.

2. A floor furnace including a casing having a side wall and a bottom and having at its bottom edge an aperture formed by removing a portion of said side wall and a contiguous portion of said bottom, a pair of guide brackets on the exterior of said side wall adjacent opposite edges of the aperture therein, an interchangeable mount for a control valve assembly having a top, a side, and end walls, said side being substantially of the same dimensions as the aperture in the side wall of said casing, said top being of substantially the same dimensions as the aperture in the bottom of said casing, whereby said mount may be inserted into said casing aperture to substantially close the same, one side and the bottom of said mount being open to accommodate a control valve assembly, a flange along the edge of each of said end walls remote from said side of said mount positioned within said casing brackets, a flange along the bottom edge of said side of said mount, means securing said side flange to the bottom of said casing, a vertical elongate control rod frame secured atop the top of said mount and extending upwardly through said casing, said frame being surmounted by a horizontal plate, said plate and said top being provided with aligned holes, a mounting plate depending from said mount, and a control valve assembly secured to said mounting plate and including a control rod extending upwardly through said aligned openings to the top of said casing.

3. Interchangeable burner control for a floor furnace, comprising a box-like housing having a top wall, side wall, and end walls, the bottom and one side of said housing being open, the edges of said top and end walls opposite from said side wall being turned outwardly to form supporting flanges adapted to coact with the heater to hold the housing thereto, said side wall being provided with an outwardly extending flange along its bottom edge, said flange including means for mounting said housing to the heater, a mounting bracket depending from said side wall, an elongate control rod frame extending upward from said housing, said frame being surmounted by a horizontal plate having a control rod hole therein,

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said top wall having a control rod hole aligned with the hole in said plate, and a burner control valve assembly mounted to said bracket, said assembly including a control rod extending upwardly through the hole in said top wall and through the aligned hole in said plate.

4. Interchangeable mount for heater controls, comprising a box-like housing having a top wall, side wall, and end walls, the bottom and one side of said housing being open, an elongate control rod frame mounted to said housing and extending upwardly therefrom, said frame being surmounted by a horizontal plate, aligned control rod holes in said plate and said top wall, respectively, adapted for the passage of a heater control rod, a mounting bracket depending from said side wall, the edges of said top and end walls opposite from said side wall being turned outwardly to form supporting flanges adapted to coact with the heater to hold the housing thereto, said side wall being provided with an outwardly extending flange along its bottom edge, said flange including means for mounting said housing to the heater.

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5. A floor furnace including a casing having a side wall and a bottom, and having at its bottom edge an aperture formed by removing a portion of said side wall and a contiguous portion of said bottom, an interchangeable mount inserted into said aperture and including a housing having substantially the same dimensions as said aperture, said housing including a top wall having a hole therein and a control valve assembly secured to said housing and including a control rod extending through said hole to the upper portion of said furnace casing.

References Cited in the file of this patent

UNITED STATES PATENTS

1,259,985	Holmes	Mar. 19, 1918
1,576,000	Majors	Mar. 9, 1926
2,226,213	Little	Dec. 24, 1940
2,335,678	Johnson	Nov. 30, 1943
2,541,602	Neumann	Feb. 13, 1951