No. 739,292. PATENTED SEPT. 22, 1903.

M. D. COMPTON.

APPARATUS FOR FEEDING FLUID FUEL.

APPLICATION FILED JAN. 22, 1903.

NO MODEL.

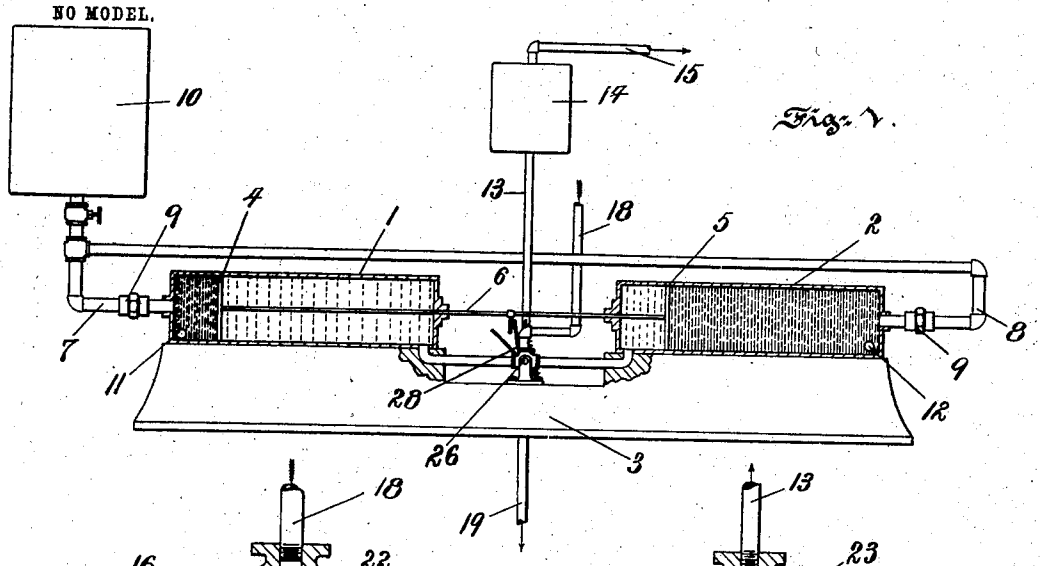


Fig. 1.

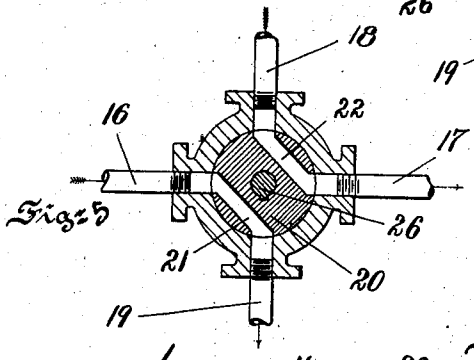


Fig. 5.

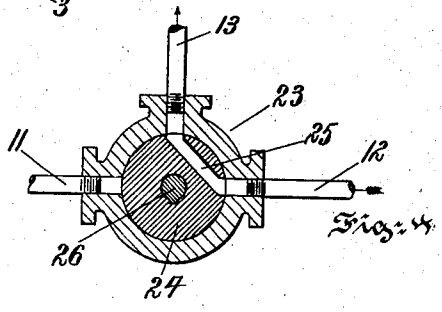


Fig. 4.

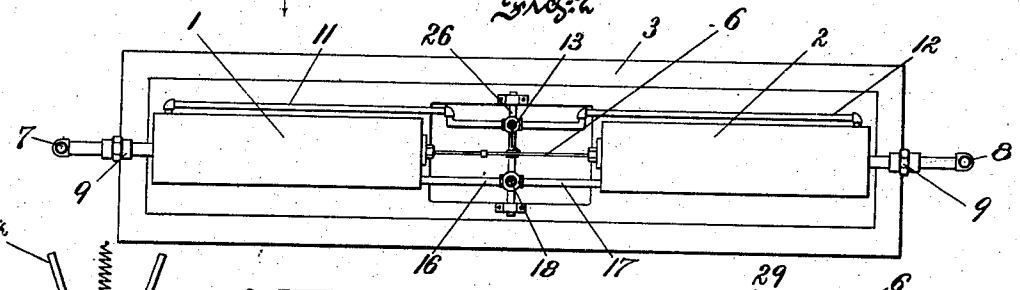


Fig. 2.

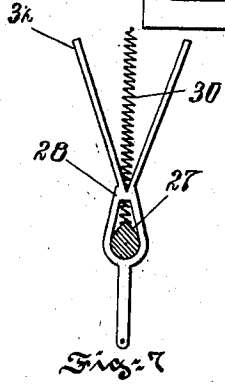


Fig. 7.

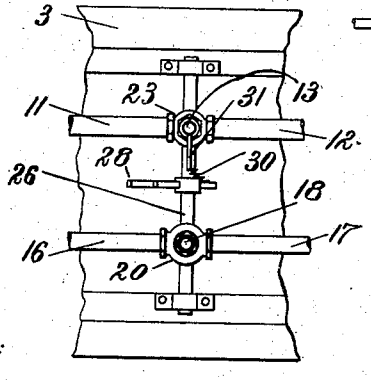


Fig. 3.

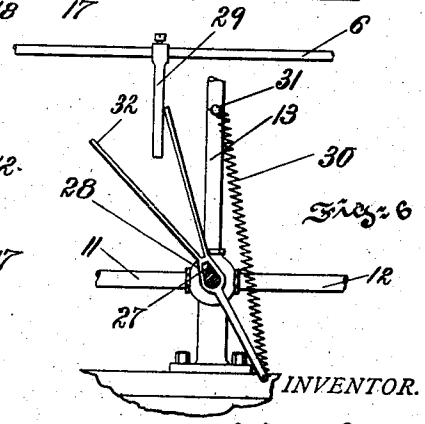


Fig. 6.

WITNESSES:

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No. 739,292. Patented September 22, 1903.

UNITED STATES PATENT OFFICE.

MELVIN D. COMPTON, OF NEW YORK, N. Y.

APPARATUS FOR FEEDING FLUID FUEL.

SPECIFICATION forming part of Letters Patent No. 739,292, dated September 22, 1903.

Application filed January 22, 1903. Serial No. 140,068. (No model.)

To all whom it may concern:

Be it known that I, MELVIN D. COMPTON, a citizen of the United States, residing at the city of New York, in the county of New York and State of New York, have invented new and useful Apparatus for Feeding Fluid Fuel, of which the following is a specification.

Objects of the present invention are to provide simple, durable, reliable, and automatic apparatus for feeding fluid fuel—as oil under pressure, for example—to burners, whereby efficiency of the latter is increased; to provide an apparatus of the kind specified which can be driven by the head of water usual in service-pipes, and which will not use a greater volume of water than the volume of oil delivered under pressure; to provide efficient valve-gear for the apparatus, and to so construct and combine the parts of the apparatus that it will occupy but a small space and is well adapted for household use.

To these and other ends hereinafter stated the invention comprises the improvements to be presently described and finally claimed.

The nature, characteristic features, and scope of my invention will be more fully understood from the following description, taken in connection with the accompanying drawings, forming part hereof, and in which—

Figure 1 is a side elevational view, partly in section, illustrating apparatus embodying features of the invention. Fig. 2 is a top or plan view of the same. Fig. 3 is a detached plan view drawn to an enlarged scale and illustrating portions of the apparatus. Fig. 4 is a sectional view, drawn to an enlarged scale, illustrating, principally in section, the fluid-fuel valve. Fig. 5 is a similar view illustrating the water-valve. Fig. 6 is an elevational view illustrating parts of the valve-gear; and Fig. 7 is an elevational view, partly in section, illustrating a detail of construction of the valve-gear.

In the drawings, 1 and 2 are cylinders, which, together with other parts of the apparatus, may be mounted upon a suitable base 3.

4 and 5 are pistons, of which one is arranged in each of the cylinders, and these pistons are connected by a piston-rod 6.

7 and 8 are fluid-fuel-supply connections which lead to the corresponding end portions of the cylinders, in the present instance to the outside end portions thereof. These connections 7 and 8 are provided with backflow-checks, which are illustrated as check-valves 9. In the drawings the connections 7 and 8 lead to a fluid-supply 10, which is so located that its contents tend to run into the cylinders, and this supply vessel 10 may be located in any convenient position. For example, if the apparatus mounted on base 3 is arranged in the cellar the supply 10 may be placed in the yard and may contain a considerable quantity of oil with perfect safety. 11 and 12 are pressure-feed-fluid connections from the same ends of the cylinders to which fluid fuel is supplied by the connections 7 and 8. These connections 11 and 12 are shown as leading by way of a pipe 13 to a pressure-chamber 14, which may be conveniently located and from which the pipe 15 leads to the burner or burners.

16 and 17 are inlet and outlet connections to the ends of the cylinders opposite the ends which receive the fluid fuel—in the present instance to the inner ends.

18 is a pipe for supplying water—for example, from the ordinary water-service pipe or from some other suitable source arranged to deliver water under pressure.

19 is a water-pipe which leads to any suitable offtake—as, for example, a sewer.

20 is a plug-valve connected with the water connections—for example, as shown in Fig. 5—and its plug is provided with ways 21 and 22. This type of valve is well adapted to let the water alternately enter one cylinder and escape from the other; but other types of valve can be used to accomplish the same purpose. When the plug is in the position shown in Fig. 5, water is entering the left-hand end of the right-hand cylinder 2 and water is escaping from the right-hand end of the left-hand cylinder 1. When the plug is turned in a left-hand direction through ninety degrees, water is entering the cylinder 1 by way of 22 and escaping from the cylinder 2.

23 is a fluid-fuel valve, and it consists of a plug 24, having a passage 25. As shown in Fig. 4, fluid fuel is escaping from the cylinder 2 by way of 12, 25, and 13. Fluid fuel is entering the cylinder 1 past the check-valve 9. When the plug 24 is turned toward the left ninety degrees, fluid fuel escapes by way

of 25, 11, and 13 from the cylinder 1 and flows past the check-valve 9 into the cylinder 2. The plugs of both valves are shown as connected with a spindle 26, and the latter is provided with an oval portion 27.

28 is a tappet-rod provided with a slot which loosely engages the part 27, so as to afford some lost motion. This tappet-rod is bifurcated and between its arms is arranged a tappet 29, carried by the piston-rod 6.

30 is a spring connected with the end of the tappet-rod and with a suitable fixed pin 31, arranged in vertical alinement with the part 27, which is the center of motion of the tappet-arm 28. As the piston-rod travels—for example, toward the left in the drawings—it engages the arm 32 and turns the tappet-arm, but without turning the valve-spindle, by reason of the lost motion at 27, until the spring 30 is thrown toward the right, as in Fig. 6. It thereupon turns the arm 28 rapidly, and the arm in turning also turns the spindle 26 and valve-plugs, with the result that the piston-rod travels toward the right and repeats the described movements of the parts, but in the other direction. It will thus be seen that the valve-plugs are not shifted until near the end of the stroke, when they are turned rapidly, so that the ports or passages in the valves are not slowly opened and closed.

It will be obvious to those skilled in the art to which my invention appertains that modifications may be made in detail without departing from the spirit thereof. Hence I do not limit myself to the precise construction and arrangement of parts hereinabove set forth, and illustrated in the accompanying drawings; but,

Having thus described the nature and objects of my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. Apparatus for feeding fluid fuel under pressure which comprises two cylinders, pistons of which one is arranged in each cylinder, a piston-rod connecting said pistons, fluid-fuel-supply connections provided with backflow-checks and leading to the corresponding end portions of said cylinders, pressure fluid-fuel-feed connections from said ends of the cylinders, a fluid-fuel-valve device for alternately opening and closing the pressure-feed connections of each cylinder, inlet and outlet connections to the other ends of the cylinders for driving the apparatus, driving-valve devices for alternately admitting and exhausting to each cylinder by way of the inlet and outlet connections, and a tappet arm and rod interposed between the piston-rod and valve devices for operating the latter, substantially as described.

2. Apparatus for feeding fluid fuel under pressure which consists of a pair of cylinders, pistons for said cylinders, a piston-rod connecting the pistons, a fluid-supply arranged above the cylinders, connections provided with check-valves and leading from the fluid-supply to the outer ends of the cylinders, a pressure-chamber, connections from the pressure-chamber to the outer ends of the cylinders, water connections to and from the inner ends of the cylinders, a four-way plug-valve for the water connections, a three-way plug-valve for the connections to the pressure-chamber, and a tappet and tappet-arm interposed between the piston-rod and valves for operating the latter, substantially as described.

3. Apparatus for feeding fluid fuel under pressure which comprises a pair of cylinders each having a piston, a piston-rod connecting the pistons, water inlet and outlet connections for one end of the cylinders, fluid-fuel connections for the other ends of the cylinders, plug-valves and their spindle for controlling said connections, a bifurcated tappet-arm connected with the valve-spindle so as to have lost motion in relation thereto, a tappet connected with the piston-rod and arranged between the fork of the bifurcation, and a spring having one end connected with the tappet-lever and the other end to a fixed point alined vertically with the center of motion of the tappet-arm, substantially as described.

In testimony whereof I have hereunto signed my name.

MELVIN D. COMPTON.

In presence of—
W. J. JACKSON,
K. M. GILLIGAN.