March 24, 1925. 1,530,668

M. H. HARTER

COMBINED FEED AND CUT-OFF VALVE

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Fig. 1

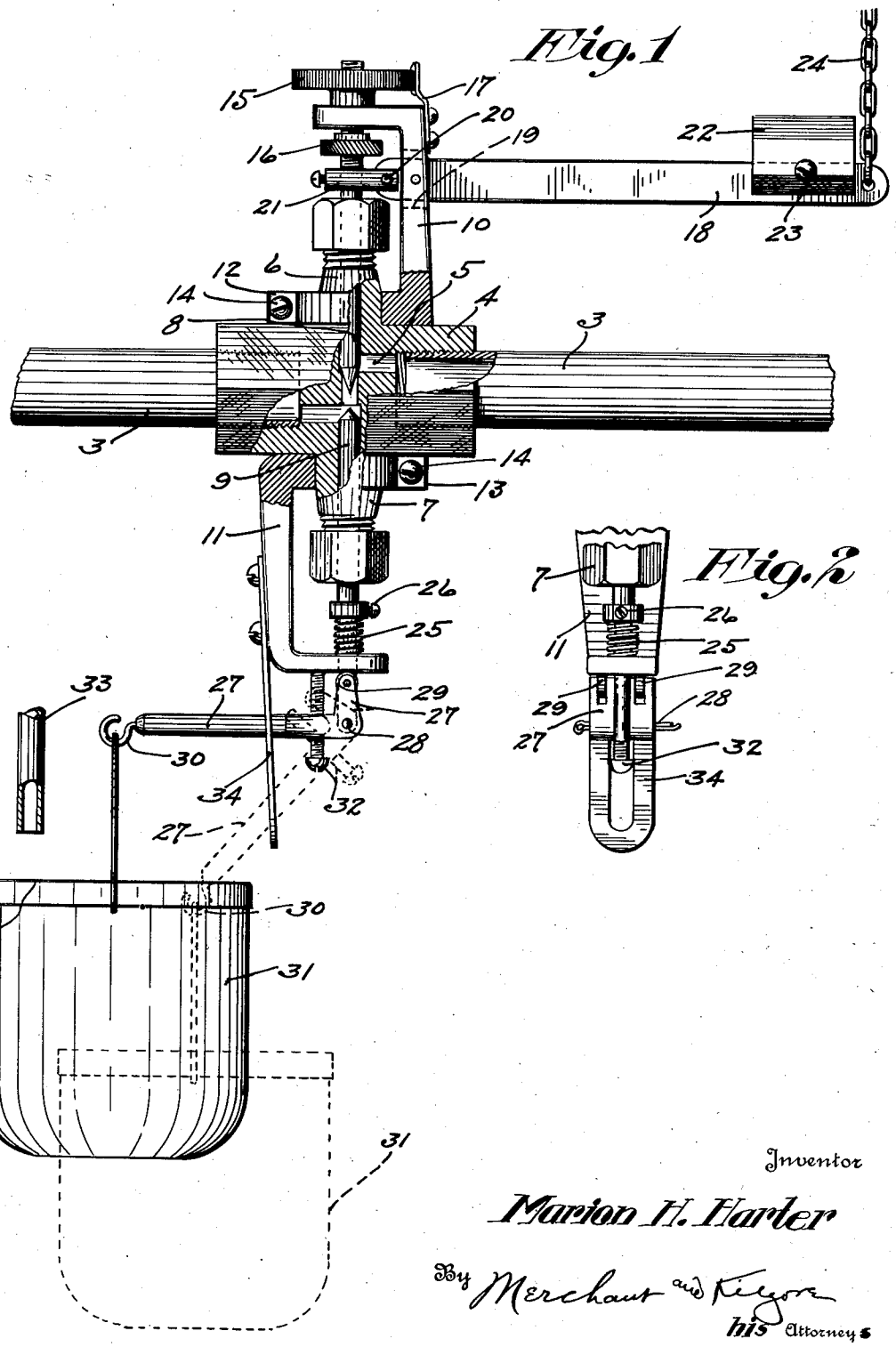


Fig. 2

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MARION H. HARTER, OF MINNEAPOLIS, MINNESOTA, ASSIGNOR, BY MESNE ASSIGNMENTS, TO FRANK J. EVANS AND HERMAN C. HANSON, BOTH OF MINNEAPOLIS, MINNESOTA.

COMBINED FEED AND CUT-OFF VALVE.

Application filed April 26, 1924. Serial No. 709,149.

To all whom it may concern:

Be it known that I, MARION H. HARTER, a citizen of the United States, residing at Minneapolis, in the county of Hennepin and State of Minnesota, have invented certain new and useful Improvements in Combined Feed and Cut-Off Valves; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My present invention has for its object to provide combined feed and cut-off valves intended for general use but especially adapted for use in connection with oil burners, and to this end it consists of the novel devices and combinations of devices hereinafter described and defined in the claims.

In the accompanying drawings, which illustrate the invention, like characters indicate like parts throughout the several views.

Referring to the drawings:

Fig. 1 is a view partly in side elevation and partly in section, with some parts indicated in different positions, by means of broken lines; and

Fig. 2 is a fragmentary detail view showing the stem of the cut-off valve and controlling lever and spring.

The numeral 3 indicates an oil supply pipe which may be assumed to lead from a suitable source of supply to a burner, not shown. Interposed in the supply pipe 3 is a body member 4 having a Z-shaped port 5 for connecting one of the sections of the supply pipe 3 with the other.

Upper and lower diametrically opposite stuffing box-equipped nipples 6 and 7, respectively, are formed with the body member 4 and project radially therefrom. The oil feed or controlling valve 8 is mounted in the upper nipple 6 and works through its stuffing box, and an oil cut-off valve 9 is mounted in the lower nipple 7 and works through its stuffing box. These valves 8 and 9 are both of the needle type, axially aligned, and arranged to seat in opposite ends of the intermediate or vertical portion of the port 5.

Vertically disposed upper and lower brackets 10 and 11, respectively, have transversely split bases 12 and 13, respectively, and which bases are turnably mounted on the nipples 6 and 7, respectively. The end portions of each base 12 and 13 are connected by a screw 14 for clamping said bases on the respective nipples with the brackets 10 and 11 set in different rotated positions around the respective nipples. The outer end portions of the brackets 10 and 11 extend horizontally over the respective nipples 6 and 7 and are apertured to receive the stems of the valves 8 and 9, respectively, which work therethrough.

Upper and lower knurled nuts have screw-threaded engagement with the stem of the feed valve 8 and afford adjustable stops 15 and 16, respectively, for engagement with opposite faces of the bracket 10 to limit the closing and opening movement of said valve. A spring latch 17 is secured to the bracket 10 for engagement with the knurled stop 15 to hold the same where set.

An operating lever 18 for the feed valve 8 is inserted through a vertical slot in the bracket 10 and fulcrumed at 19 to said bracket. The inner or short end of said lever 18 is pivoted at 20 to an arm 21 secured to the stem of the valve 8 between the nipple 6 and stop 16. Mounted on the operating lever 18 is a sliding weight 22 releasably held in different longitudinal adjustments on said lever by a set screw 23, and which weight holds the feed valve 8 open.

A lifting chain 24 is attached to the outer end of the lever 18 for closing the feed valve 8, and which chain may be operated by hand or by a thermostat. The stop 15 is so set as to hold the feed valve 8 slightly open when the lever 18 is raised by the chain 24 to permit a sufficient flow of oil through the supply pipe 3 to a pilot light, not shown, for the burner.

Encircling the stem of the cut-off valve 9 is a coiled spring 25 compressed between a collar 26 on said stem and the bracket 11 and under strain to close said cut-off valve. A bell crank lever 27 is pivoted at 28 to the lower end of the stem of the cut-off valve 9, and which short arm is bifurcated and has journaled therein two anti-friction rollers 29 which, together with the short arm, engage the under side of the bracket 11 and hold the cut-off valve 9 retracted to open the port 5 against the tension of the spring 25. The purpose of the anti-friction rollers 29 is to cause the short arm of the bell crank lever 27 to freely move over the bracket 11

when said bell crank lever is set to compress the spring 25 and hold the cut-off valve 9 open.

The long arm of the bell crank lever 27 extends horizontally and is equipped with a hook 30 from which is suspended a bucket or other receptacle 31. A stop screw 32 has screw-threaded engagement with the long arm of the bell crank lever 27 and engages the bracket 11 to limit the lifting movement of said long arm. The bucket 31 is held suspended under an overflow pipe 33 which may be assumed to lead from the burner. Attached to the bracket 11 is a slotted plate 34 into which the long arm of the bell crank lever 27 works. The purpose of this plate is to cause said lever to turn with the bracket 11 when the same is adjusted on the nipple 7.

In case the fire in the burner goes out, the overflow of oil therefrom will be fed by the pipe 33 to the receptacle 31, and the weight of the oil in said receptacle will swing the bell crank lever 27 downward and thereby carry the same out of engagement with the bracket 11, thus releasing the spring 25 to close the cut-off valve 9 and thereby prevent further flow of oil to the burner.

As previously stated, the stops 15 and 16 limit the closing and opening movements of the feed valve 8 to regulate the flow of oil to the burner and at the same time prevent the oil from being entirely cut off to the pilot light when the lever 18 is raised to close said valve either by hand or under the action of a thermostat.

The purpose of adjustably mounting the brackets 10 and 11 is to permit the lever 18 and bell crank lever 27 together with the receptacle 31 to be set in various different positions to the pipe 3 as may be convenient in installing the apparatus.

What I claim is:

1. The combination with a body member having a port, of a feed valve and a cut-off valve of the non-rotary plunger type for independently opening and closing said port, yielding means under strain to open the feed valve, yielding means under strain to close the cut-off valve, and an automatic trip normally holding the cut-off valve open.

2. The structure defined in claim 1 in further combination with adjustable means for limiting the closing movement of the feed valve.

3. The structure defined in claim 1 in further combination with adjustable means for limiting the opening and closing movements of the feed valve.

4. The combination with a body member having a port, of a feed valve and a cut-off valve of the non-rotary plunger type mounted in the body member for independently opening and closing said port, a spring under strain to close the cut-off valve, a bell crank lever pivoted to the stem of the cut-off valve, the short arm of said lever normally engaging an abutment to hold the cut-off valve open against the tension of said spring, a receptacle carried by the long arm of said lever, and an overflow pipe arranged to discharge into said receptacle.

5. The combination with a body member having a port, of upper and lower stuffing box-equipped nipples on said body member, a feed valve and a cut-off valve mounted respectively in said upper and lower nipples, said two valves being arranged to seat in opposite ends of said port, upper and lower brackets adjustably mounted respectively on said upper and lower nipples, an operating lever attached to the feed valve and fulcrumed on the upper bracket, a spring reacting against the lower bracket and operative on the cut-off valve to close the same, a bell crank lever pivoted to the stem of the cut-off valve with its short arm normally engaging the lower bracket to hold the cut-off valve open against the tension of said spring, a receptacle carried by the long arm of said bell crank lever, said bell crank lever being held by the lower bracket for adjustment therewith, and an overflow pipe arranged to discharge into said receptacle.

6. The structure defined in claim 5 in further combination with adjustable means for limiting the closing movement of the feed valve.

7. The structure defined in claim 5 in further combination with adjustable means for limiting the opening movement of the feed valve.

8. The structure defined in claim 5 in further combination with yielding means operative on the operating lever to open the feed valve, and means by which said lever may be operated to close said valve.

9. The structure defined in claim 5 in which the short arm of the bell crank is bifurcated to receive the stem of the cut-off valve and equipped with a pair of anti-friction rollers for engagement with the lower bracket.

In testimony whereof I affix my signature.

MARION H. HARTER.