M. E. KUEBLER.

FLOAT FEED DEVICE.

APPLICATION FILED NOV. 23, 1915.

1,259,415.

Patented Mar. 12, 1918.

2 SHEETS—SHEET 1.

Fig. 1.

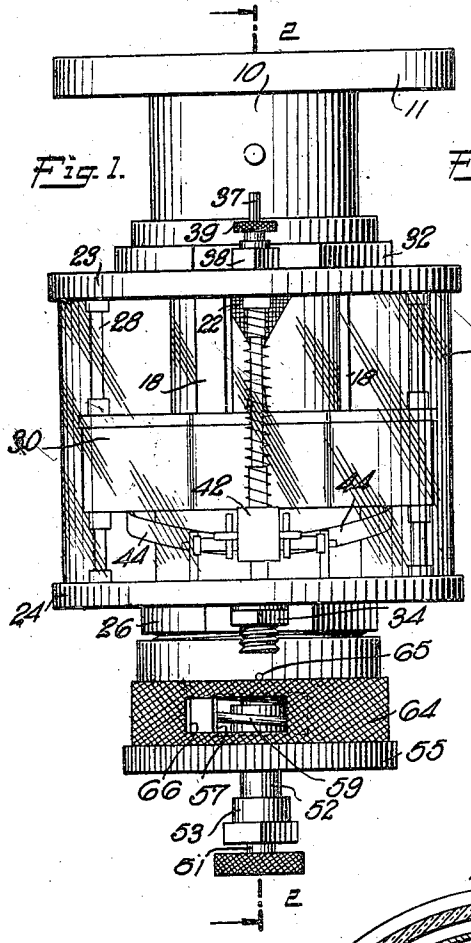


Fig. 2.

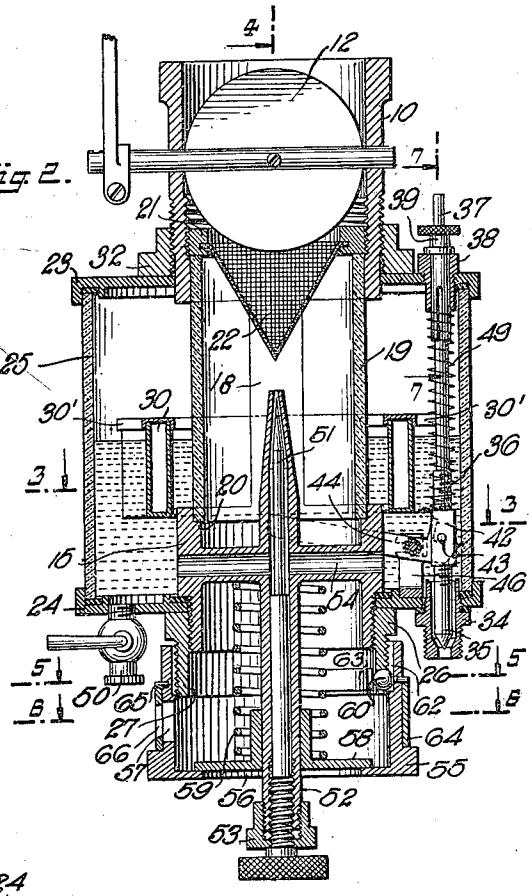
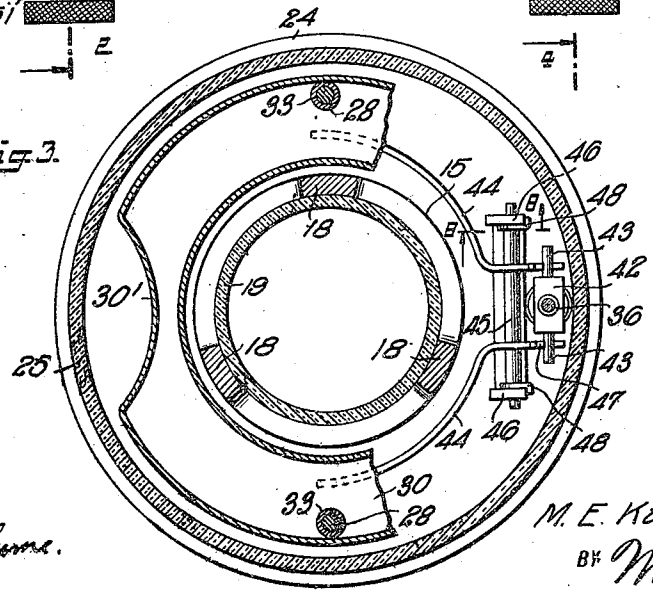


Fig. 3.



WITNESSES

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2 SHEETS—SHEET 2.

Fig. 4.

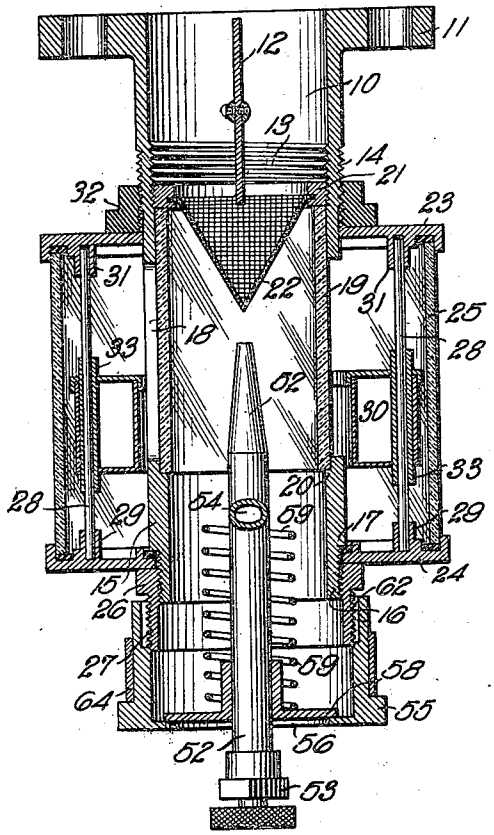


Fig. 7.

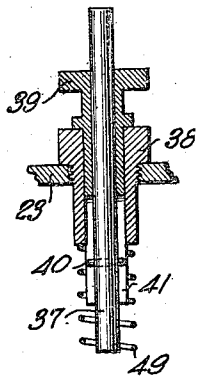


Fig. 8.

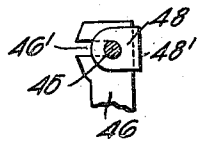


Fig. 5.

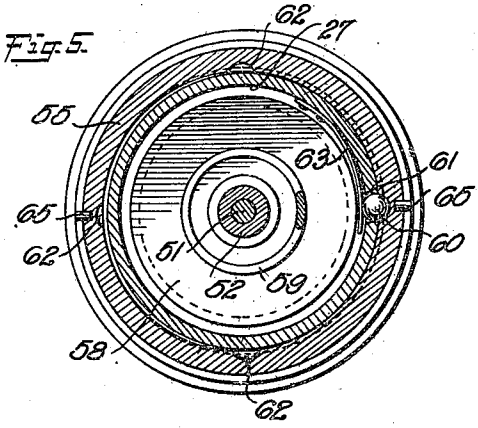
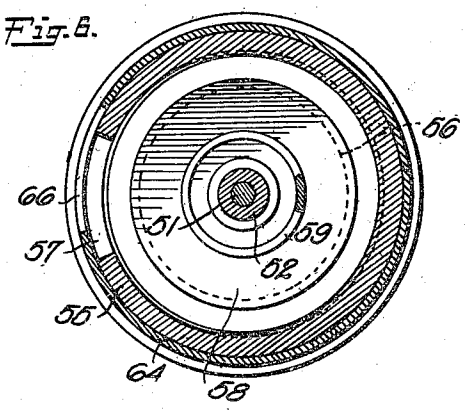


Fig. 6.



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MAX EMIL KUEBLER, OF YONKERS, NEW YORK.

FLOAT FEED DEVICE.

1,259,415. Specification of Letters Patent. Patented Mar. 12, 1918.

Application filed November 23, 1915. Serial No. 62,953.

To all whom it may concern:

Be it known that I, MAX EMIL KUEBLER, a subject of the Emperor of Germany, and a resident of Yonkers, in the county of Westchester and State of New York, have invented a new and Improved Float Feed Device, of which the following is a full, clear, and exact description.

This invention relates to float feed devices and has particular reference to structural details relating to efficiency and reliability of operation of carbureters or the like.

Among the objects of the invention is to provide a carbureter having improved facilities for controlling the feed of fuel oil thereto.

Another object of the invention is to provide a new and improved form of float element coöperating with said means for regulating the feed.

With the foregoing and other objects in view, the invention consists in the arrangement and combination of parts hereinafter described and claimed, and while the invention is not restricted to the exact details of construction disclosed herein, still for the purpose of illustrating a practical embodiment thereof reference is had to the accompanying drawings, in which like reference characters designate the same parts in the several views, and in which—

Figure 1 is a front elevation of a preferred embodiment of the invention;

Fig. 2 is a vertical sectional view of the same on the line 2—2;

Fig. 3 is a horizontal section on the line 3—3 of Fig. 2;

Fig. 4 is a vertical sectional view on the line 4—4 of Fig. 2, parts being in elevation;

Figs. 5 and 6 are horizontal sections on the corresponding lines of Fig. 2, but on a larger scale;

Fig. 7 is an enlarged sectional detail on the line 7—7 of Fig. 2; and

Fig. 8 is a sectional detail on the line 8—8 of Fig. 3.

Referring now more particularly to the drawings, I show a carbureter construction including a tubular head 10 adapted to be secured in fixed position by fastening devices (not shown) passing through a flange 11, and in which head is mounted a butterfly valve 12 of well known nature. The head is threaded internally at 13 and externally at 14 at the region of the butterfly valve shown as the upper end of the body structure including a downward extension 15 of the head, the extreme end of which is externally threaded at 16. Adjacent the thread 16 is a shoulder 17. Between its ends the body is cut away leaving a plurality of vertical parallel ribs 18 constituting a rigid connection between the head and the lower portion of the body 15.

At 19 is indicated a tubular transparency fitted within the ribs 18 and extending from the head 15 to the head 10. The lower end of the transparency is fitted against a shoulder 20, and a nut 21 carrying a conical gauze 22 is threaded along the threads 13 on the interior of the head 10 snugly against the upper end of the transparency, locking it firmly and tightly in place and forming a carbureting chamber within the transparency. The apex of the conical gauze extends downwardly in the axial center of the structure.

The float chamber surrounds the central tubular body and comprises upper and lower caps 23 and 24 between which is fitted a transparent cylindrical wall 25. The lower cap 24 is locked against the shoulder 17 of the body 15 by means of a lock nut 26, the lower end of which is externally threaded at 27. A pair of guide rods 28 extend upwardly from sockets 29 formed on the upper surface of the cap 24, and the improved form of float element 30 is slidable along said rods 28. The upper cap 23 is placed upon the upper edge of the wall 25 and has a pair of sockets 31 receiving the upper ends of the rods 28. A lock nut 32 coöperating with the external threads 14 of the head locks the upper cap 23 snugly in position.

The float 30 is of annular form, being made hollow as heretofore, and preferably of sheet metal. A pair of tubes 33 extend vertically through opposite sides of the float and constitute guide means coöperating with the rods 28. The tubes 33 are fitted tightly in the walls of the float and hence prevent the entrance of the liquid into the interior of the float. The outer wall of the float is concaved, as shown at 30′, on opposite sides, one concavity accommodating the inlet or feed mechanism for the oil and the other concavity being provided to maintain proper balance of the float.

At 34 is indicated an inlet valve seat or

nipple through which the fuel oil is delivered into the float chamber. The valve 35 coöperating with this valve seat has a threaded stem 36 and extension 37 leading upwardly from the threaded portion through the upper cap 23. A thimble 38 is tapped into the cap 23 and constitutes a bearing for a key 39 having pin and slot connection with the stem extension 37. The pin is shown at 40 and the slot at 41; see Fig. 7. The key 39 has a frictional fit in the thimble 38 and is free to be rotated within the thimble or to be withdrawn from the extension 37 if desired. A knuckle 42 is mounted upon the threaded portion 36 of the valve stem and has opposite laterally projecting fingers 43 coöperating with the short arms of a yoke 44 fixed on a rock shaft 45 journaled in the upper ends of a U-shaped bracket 46. The fingers 43 rest upon the upper edges of the short arms of the yoke, and a pair of upwardly projecting fingers 47 coöperate with the laterally projecting fingers 43 to prevent rotation of the knuckle and to maintain the proper correlation between the knuckle and the yoke. The longer arms of the yoke project beneath and coöperate with the bottom of the float closely adjacent the guide rods 28. The shaft 45 is journaled in inwardly directed open slots 46′ of the bracket 46, as shown best in Fig. 8, and the ends of the rock shaft are locked from displacement from the slots by means of light metal plates 48 slipped in flat form upon the ends of the rock shaft and lying against the inner faces of the bracket extensions. After slipping into place in this manner, the outer vertical edges 48′ of these plates are clenched over against the outer vertical edges of the bracket extensions; see Figs. 3 and 8. Rotation of the valve stem by means of the key 39 and pin and slot connections determines the effective opening of the valve as controlled by the action of the float. A spring 49 surrounding the valve stem and bearing against the thimble at one end and the knuckle at the other tends to hold the valve closed. When, however, the level of the liquid in the float chamber falls, the float acting downwardly upon the longer arms of the yoke will lift the knuckle and valve to admit more liquid. The wall 25 being transparent provides not only for clear view of the mechanism for adjustment, but also for the detection of an accumulation of water at the bottom of the float chamber which may be drained off through a stop cock 50. The normal running action, moreover, of the carbureter may be observed through the transparent walls of the structure, the spray of gaseolene in the carbureting chamber being plainly visible as it impinges against the gauze 22.

The needle valve 51 is adjustably fitted in a central tube 52 upon which is fitted a gland 53. The tube 52 is carried rigidly in the vertical axis of the structure by a transverse tube 54 leading inwardly from the bottom of the float chamber and secured to the lower end of the main supporting body 15. The transparent walls of the structure facilitate the delicate adjustment of the needle valve.

Fresh air is admitted into the carbureting chamber through the bottom of the body 15. The amount of such air is regulated by means of a cap 55 adjustably fitted upon the end portion 27 of the lock nut 26. This cap has a large central opening 56 surrounding the needle valve tube and a lateral opening 57. The main central opening 56 is adapted to be closed by a valve 58 slidable along the tube 52 against the force of a spring 59 whose other end bears against the transverse tube 54. The tension of this spring is regulated by a rotation of the cap 55 with respect to the lock nut 26, and this adjustment is automatically maintained by a detent in the form of a ball 60 operating through a hole 61 formed through the threaded extension 27 of the lock nut and adapted to snap outwardly into any one of a plurality of notches 62 formed in the inner wall of the cap 55 under the force of a leaf spring 63 or its equivalent carried by said lock nut extension. The opening 57 is adjustably regulated by means of a collar 64 rotatable around the cap 55 and held in vertical position by means of pins 65. This collar is provided with an opening 66 adapted to register more or less completely with the opening 57 of the cap. This lateral opening of the cap provides fresh air for low speed operation of the engine, and the central opening 56 provides admission of air during high speed operation.

I claim:—

1. In a float feed device, the combination of a central tubular body, a wall surrounding the body, upper and lower caps fitted to the body and to the upper and lower edges of said wall forming a float chamber, an annular float in the float chamber surrounding the body, a valve seat secured in one of said caps, a valve coöperating with said seat to control the admission of liquid into the float chamber, said valve having a stem projecting through the opposite cap, a portion of said stem being threaded, a non-rotary knuckle mounted upon the threaded portion of the stem, lever mechanism between the float and said knuckle, and means coöperating with the valve stem and accessible from the outside of the float chamber to rotate the valve and thereby regulate the effect of the float through said knuckle and lever mechanism, said means including a thimble in the upper cap, a tu-

bular slotted key fitted frictionally in said thimble and a pin carried by the valve stem and fitting in the slots of the key.

2. In a float feed device, the combination of a rigid tubular body, vertical and horizontal walls forming a float chamber surrounding the body, an annular float within the float chamber, said float having a concavity in its outer wall, and means coöperating with the float to regulate the admission of liquid into the float chamber, said last mentioned means including a reciprocating valve, a knuckle secured to the valve stem and having a laterally projecting finger, said concavity accommodating the valve stem and knuckle thereon, and a yoke pivoted intermediate its ends within the float chamber, one end of the yoke coöperating with the bottom of the float and the other end thereof coöperating with said finger, substantially as set forth.

3. In a float feed device, the combination of a rigid tubular body, vertical and horizontal walls forming an annular float chamber surrounding the body, a float within the float chamber, means coöperating with the float to regulate the admission of liquid into the float chamber, said means comprising a reciprocating valve coöperating with one of said horizontal walls and having a stem projecting through the opposite wall, a knuckle secured to that portion of the valve stem between the walls, a spring surrounding the stem and acting upon the knuckle tending to maintain the valve closed, a bracket fixed in position between the valve and the float, said bracket including spaced apart slotted arms and a rock shaft carried in said slots, and a yoke fixed upon the rock shaft, means carried by the rock shaft to prevent its displacement from said slots, one end of the yoke coöperating with said knuckle and the other end coöperating with the bottom of the float, substantially as set forth.

4. In a float feed device the combination of a tubular body, a wall surrounding said body, upper and lower caps, fitted to the body and to the upper and lower edges of said wall forming a float chamber, said upper and lower caps having sockets on their inner faces, guide rods seated in said sockets and spacing the upper and lower caps, an annular float within the float chamber having vertical passages therethrough to receive the aforesaid guide rods, and valve means actuated by said float to regulate admission of liquid into the float chamber and tubular body.

5. In a float feed device, the combination with a tubular body, an annular float chamber surrounding said body, a hollow annular float within said float chamber and surrounding said body, means actuated by the float to regulate the admission of liquid to the float chamber, said means including a valve rod and adjusting mechanism carried thereby, said float having diametrically opposite concavities in its outer wall, one of which accommodates the liquid admission regulating means and the opposite concavity maintaining proper balance of the float.

MAX EMIL KUEBLER.

Witnesses:
JACOB A. BERNSTEIN,
PERRY A. KIPP.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."