H. L. THOMPSON.

INTERNAL COMBUSTION ENGINE.

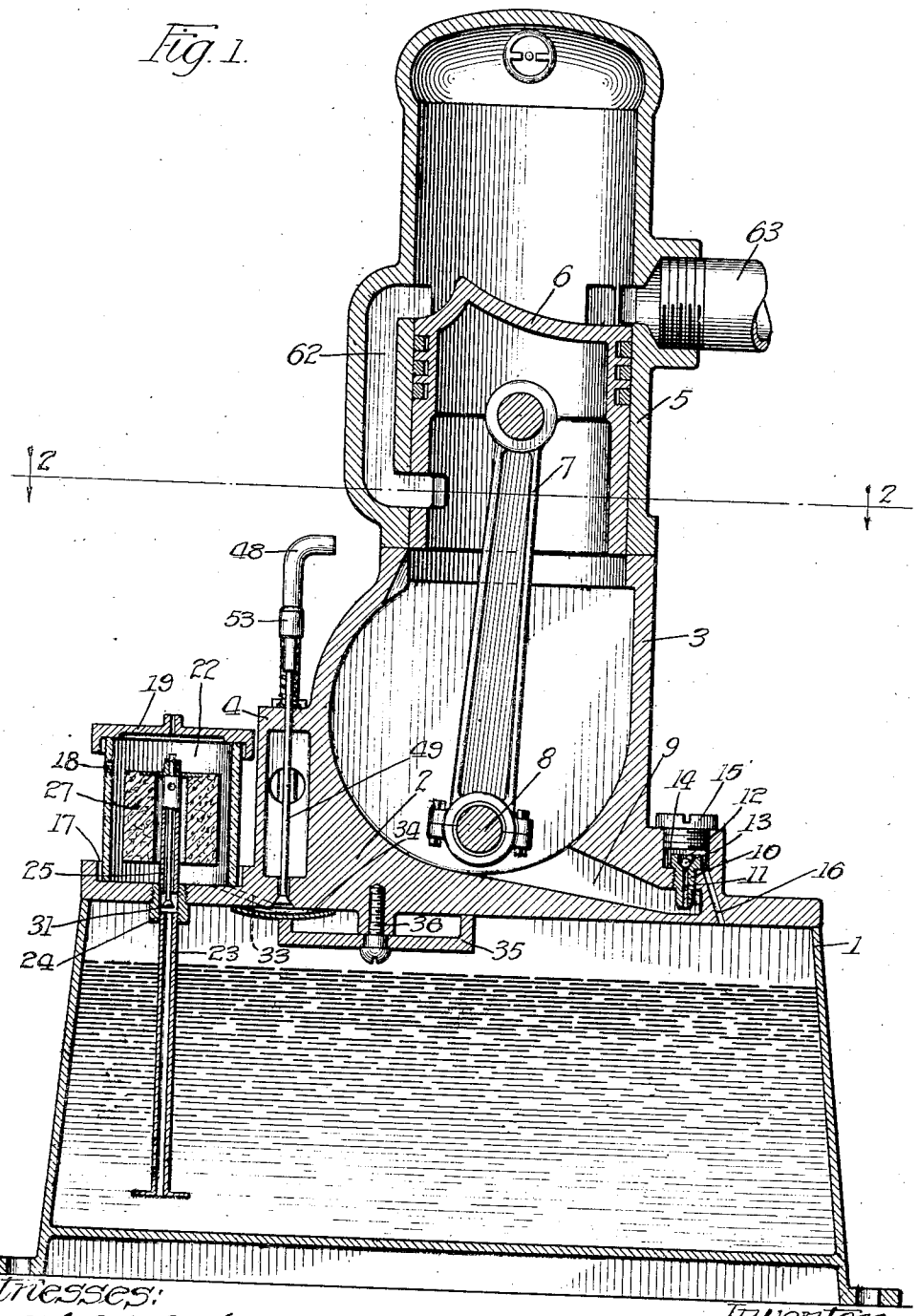
APPLICATION FILED APR. 27, 1916.

1,351,880.

Patented Sept. 7, 1920.

3 SHEETS—SHEET 1.

Fig. 1.



Witnesses:

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3 SHEETS—SHEET 2.

Fig. 2

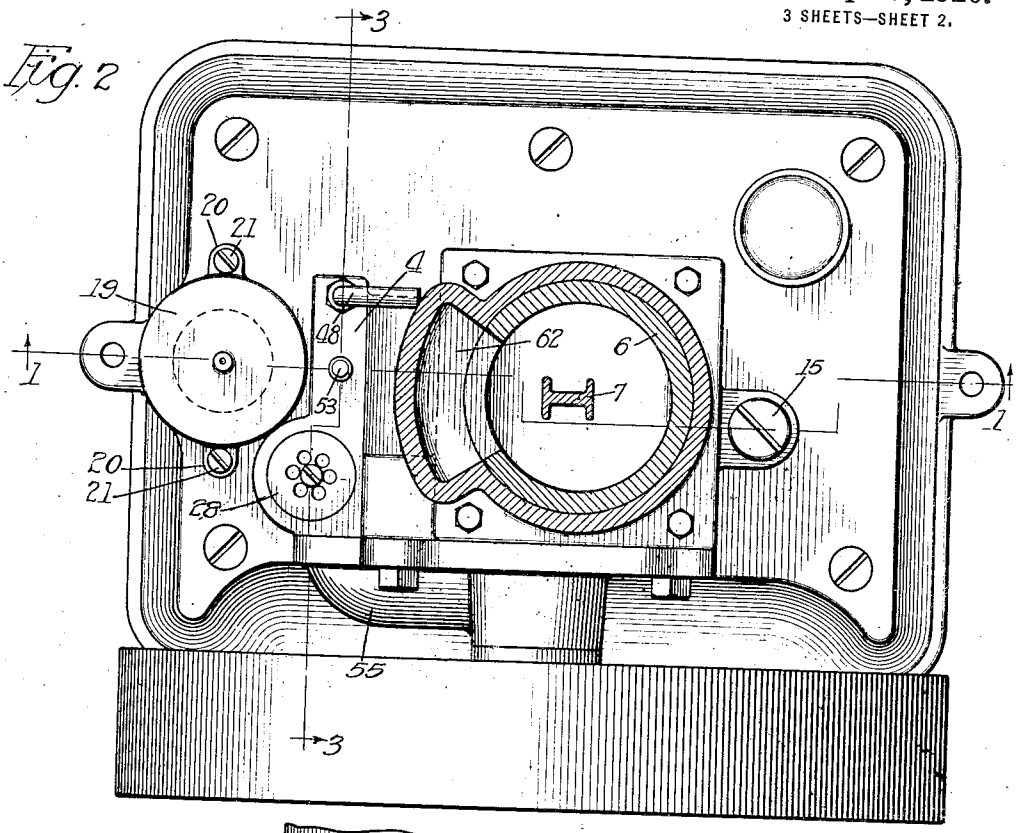
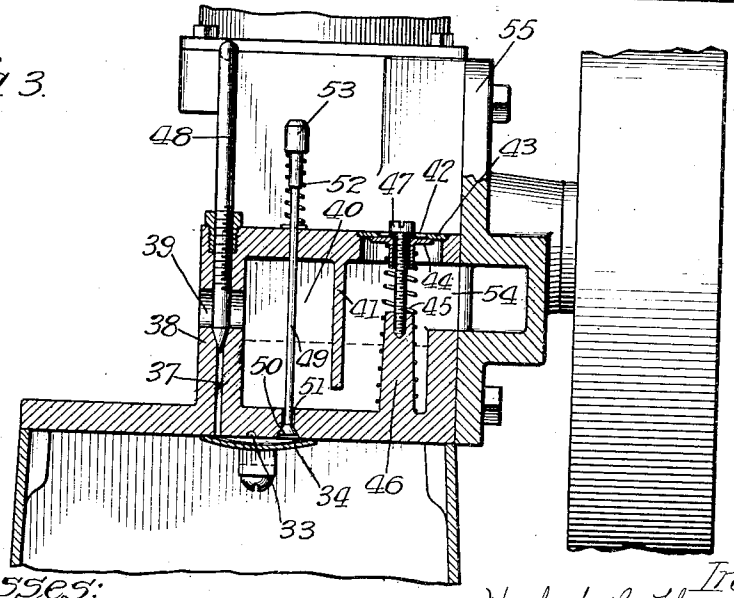


Fig. 3.



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3 SHEETS—SHEET 3.

Fig. 4.

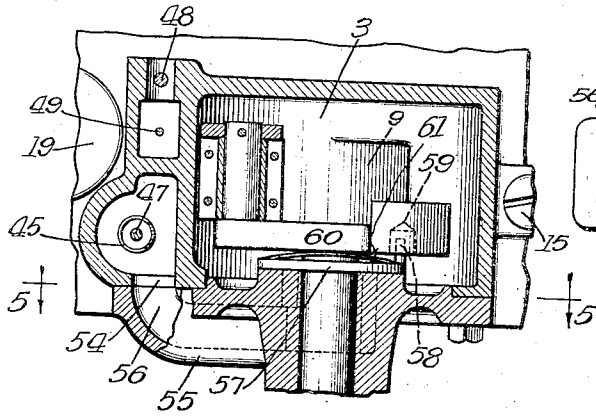


Fig. 5.

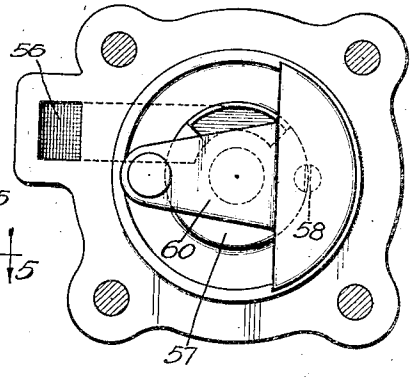


Fig. 6.

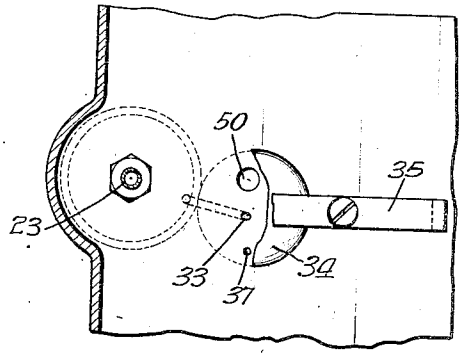
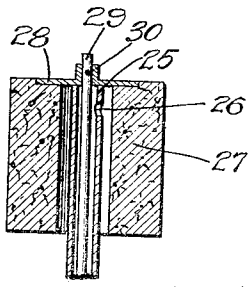


Fig. 7.



Witnesses:

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UNITED STATES PATENT OFFICE.

HERBERT L. THOMPSON, OF ELGIN, ILLINOIS, ASSIGNOR TO THE MAYTAG COMPANY, OF NEWTON, IOWA, A CORPORATION OF IOWA.

INTERNAL-COMBUSTION ENGINE.

1,351,880. Specification of Letters Patent. Patented Sept. 7, 1920.

Application filed April 27, 1916. Serial No. 93,854.

To all whom it may concern:

Be it known that I, HERBERT L. THOMPSON, a citizen of the United States, residing at Elgin, in the county of Kane and State of Illinois, have invented certain new and useful Improvements in Internal-Combustion Engines, of which the following is a specification.

This invention relates to internal combustion engines and particularly to two cycle engines of a novel, simple, economical and efficient type.

It is an object of my invention to provide a deflooding apparatus automatically serving to keep the crank case of a two cycle engine clear of accumulated fuel and, at the same time, to employ the fuel ejected from the crank case to augment the fuel supply provided for the engine, and thus save waste and prevent the loss of such fuel.

It is another object of the invention to provide a simple and efficient carbureter provided with means whereby the starting of the engine is rendered easy.

It is another object of the invention to provide means whereby the intake passage to the engine cylinder may be at will completely filled with fuel whereby the charge of air sucked in is forced through said fuel and thus becomes excessively enriched to serve for starting purposes.

Other objects and advantages of the invention will appear as the description to follow proceeds.

In the drawings:

Figure 1 is a cross-sectional elevation on the line 1—1 of Fig. 2 of an engine constructed according to my invention.

Fig. 2 is a plan sectional view thereof on the line 2—2 of Fig. 1.

Fig. 3 is a sectional elevation of a portion of the engine on the line 3—3 of Fig. 2.

Fig. 4 is a detail plan section of the inlet valve.

Fig. 5 is a sectional plan view on the line 5—5 of Fig. 4.

Fig. 6 is a bottom view of the fuel cup and associated channels.

Fig. 7 is a cross-sectional view of the float.

In the drawings, 1 represents the fuel bed or base piece of an internal combustion engine constructed according to my invention, secured upon which is a casting 2 comprising a crank case 3 and a carbureter casing 4. The engine cylinder 5 is suitably secured upon the crank case and contains the piston 6, the connecting rod 7, the crank 8, and inlet and exhaust passages and controlling mechanisms hereinafter more fully described. Downwardly inclined from the bottom of the crank case is a passageway 9 connected to which is a threaded aperture partly closed by the screw-threaded plug 10, which has a small vertical passage therethrough as indicated at 11, terminating in a cup 12 in which is seated a ball 13. The cup 12 of the plug 10 is smaller than the aperture 14 in which it is seated and which is closed by the screw-threaded plug 15. Leading downwardly from the annular space in the recess 14, not covered by the cup 12, is a passageway 16 communicating with the fuel bed.

By this construction it will be obvious that as fast as condensed fuel accumulates in the crank case it will be drained downwardly along passage 9 and blown by the compression in the crank case up through the passageway 11 down through passageway 16 back into the fuel bed 1, when it will become available for use again in the engine, and that at the same time with this discharge of condensed fuel from the crank case the compression in the fuel bed will be maintained. The ball valve 12—13 prevents loss of compression in the fuel bed 1 in an obvious fashion.

I will now describe the carbureter forming an important part of the present invention and designed to coöperate with the means employed to maintain compression in the fuel bed. I provide a circular recess 17 in the top 2 of the fuel bed in which is clamped a section of glass tubing 18 by means of the cap 19 secured to the top of the fuel bed by lugs 20 and screws 21, as clearly indicated, the glass tubing 18 being provided so that the level of the supply in the chamber thereby produced may be instantly seen. Leading downwardly from the chamber 22 formed by the glass tubing and its surrounding members is a pipe 23 extending to a point near the bottom of the fuel bed 1, and secured at its upper end in a hollow plug 24 secured in the bottom of the cover 2. Securely threaded into the hollow plug 24 is a pipe 25 provided near its upper end with an aperture 26, see Fig. 7. A cork 27 drilled longitudinally and loosely supported about the pipe 25 is provided

with a plate 28 in which is rigidly mounted a longitudinal pin 29 by means of a cotter pin 30, the pin 29 extending downwardly through the pipe 25 and terminating at its lower end in a check valve 31 designed to close the same. By this construction it will be apparent that fuel forced up the pipe 23 will fill the chamber 22 until the level of fuel in this chamber is sufficient to raise the cork 27 and close the valve 31, preventing further ingress of fuel into the chamber 22 until the level of the fuel therein has been lowered.

The chamber 22 is in open communication by an inclined passage 33 with a metallic cup 34, secured in fluid-tight relation upon the bottom of the casting 2 by means of the bridge 35 maintained by the screw 36; a gasket (not shown) being of course used to maintain such fluid-tight relation.

Leading upwardly from the cup 34 is a vertical passageway 37 (see Figs. 3 and 6) drilled into the integrally formed wall 38 of the casing 4, hereinbefore described, and provided with a transverse orifice 39 comprising the normal air intake for the engine. The casing 4 comprises a chamber 40 divided by a partition 41 which extends from the top almost to the bottom of the chamber 40 and provided with a spring-operated air valve 42 comprising an apertured disk 43, the apertures in which are held closed by the auxiliary disk 44 operated by the spring 45 encircling the boss 46 in which the screw 47 which holds the apertured disk 43 is mounted. A needle valve 48 fits into the upper end of the passageway 37 and controls the supply of fuel admitted to the engine therethrough. Mounted in the chamber 40 is a priming valve comprising a spindle 49, a valve 50 adapted to close a large orifice 51 communicating from the cup 34 to the chamber 40, the spindle 49 being held upwardly by a spring 52 and provided with a knob at its upper end 53. Air being drawn through the orifice 39 is drawn from the chamber 40 underneath the partition 41 and out through the aperture 54. Bolted to the side of the crank case is a casing 55 having a passageway 56 forming a continuation of the opening 54 and communicating to the crank case 3 through the disk valve 57 operated by a tang 58 in engagement with the recess 57 in the crank 60, the disk valve 57 being held to its seat by a flat spring 61; the passage 62 communicating from the crank case to the cylinder as is usual in engines of this type, the engine being exhausted through the exhaust passage 63.

The operation of the carbureting attachment is as follows:

The air charge passing inwardly to the cylinder through the orifice 39 by the path above pointed out picks up the fuel admitted through the adjustable needle valve 48; fuel for ordinarily running the engine being admitted in this way. The needle valve 48 can of course be connected if desired with a governor to regulate the supply and, therefore, the speed and power of the engine. When it is desired, however, to start the engine while cold the valve 50 is opened by means of the manually-operated spindle 49, thus permitting a supply of fuel to flow into the chamber 40 up to a level substantially as that shown in dotted lines in Fig. 3 *i. e.*, the level maintained by the float 27. The fuel passing downwardly from the chamber 22 through passage 33 and upwardly through the opening 50 directly into the chamber 40 instead of through passage 37 and needle valve 48 as in the ordinary operation of the engine. When the fuel is up to the dotted line in Fig. 3 in chamber 40, the air charge by reason of the partition 41 will have to bubble through said fuel in its passage to the engine and will thereby become excessively enriched making sudden starting of the engine easy.

Claims:

1. In an internal combustion engine a fuel supply, a compression chamber, means to draw air to said chamber and to charge said air with finely divided fuel in its passage to the compression chamber, and manually operable means for causing said air to bubble through said fuel in passage to the compression chamber.

2. In an internal combustion engine, a fuel supply, a compression chamber, an air intake, means in said intake to supply finely divided fuel to the air in said intake, a chamber through which said air passes, said chamber having a permanently fixed bottom therein, and manually operable means to flood said chamber to enrich the mixture.

3. In an internal combustion engine a fuel bed, a compression chamber in combination therewith, an air intake, a needle valve in said air intake and adapted to supply finely divided fuel to the air in said intake, a chamber through which said air passes and manually operable means to flood said chamber to enrich the mixture.

4. In an internal combustion engine a fuel bed, a fuel supply chamber in combination therewith, a passage from said supply chamber to an air intake port, a needle valve controlling the feed of fuel to said port, a chamber having an aperture near the bottom through which the incoming charge passes, a passage connecting said chamber with the fuel supply, and manually operable means for opening said passage whereby fuel will be admitted directly to said chamber and above the level of the opening therein.

5. In an internal combustion engine a fuel bed, a fuel supply, a compression chamber, an air intake port and a passage

communicating from the same to the compression chamber, a chamber in said passage having a partition therein extending from the top thereof to a point near the bottom, manually operable means for flooding said chamber to a level above the bottom of said partition.

6. In an internal combustion engine a fuel bed, means for maintaining compression in the same, a float-regulated fuel supply in communication with said fuel bed, an air intake port, a passage leading therefrom to the engine, manually operable means to completely close the same with fuel to excessively enrich the mixture for starting or acceleration substantially as described.

7. In an internal combustion engine a fuel bed, means for maintaining compression in the same, a float-regulated fuel supply in communication with said fuel bed, an air intake passage way, a cup, a passage leading thereto from the fuel supply, a passage leading therefrom to an air intake port, another passage leading therefrom to a point in the air intake passageway and manually operable means for opening and closing said last-named passage whereby the air intake passage way may be flooded with fuel.

8. In apparatus of the class described a fuel bed, a chamber situated in proximity thereto, a passage leading from said chamber through the top of the fuel bed, a passage leading from a point in the top of the fuel bed, adjacent the outlet of said first-mentioned passage, vertically upward to an intake port, a needle valve controlling the outlet of said second-mentioned passage, a third passage leading upwardly from a point adjacent the outlet of said first-mentioned passage and a removable cup member attached to the top of the fuel bed and adapted to cover the outlets of all of said passages.

9. In apparatus of the class described an engine casing, a float-controlled fuel supply chamber, an inlet supply passage through which fuel passes to the engine, a priming passage, a passage from said float-controlled fuel supply chamber, all of said passages terminating at adjacent points in the casing of the engine, and a removable cup member covering terminal points of all said passages.

10. In apparatus of the class described a fuel supply chamber, a priming chamber, an air inlet port, a passage leading from the fuel supply chamber, a passage leading from a point adjacent the outlet of said fuel supply chamber directly to said priming chamber, a passage leading from a point adjacent to the outlet of said fuel supply passage directly to the air inlet port, valves in said last-mentioned two passages and a removable cup member covering the adjacent outlet points of said passages.

11. In apparatus of the class described a fuel bed, carbureter mechanism mounted thereon, including a plurality of passages leading from parts of said carbureter to the fuel bed, the openings of said passages into the fuel bed being adjacent, and a removable cup member for covering said openings.

In witness whereof, I hereunto subscribe my name to this specification in the presence of two witnesses.

HERBERT L. THOMPSON.

Witnesses:
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W. V. SPARKS.