F. W. DE TRAY.

CARBURETER.

APPLICATION FILED DEC. 30, 1907.

917,264. Patented Apr. 6, 1909.

2 SHEETS—SHEET 1.

Fig. 1.

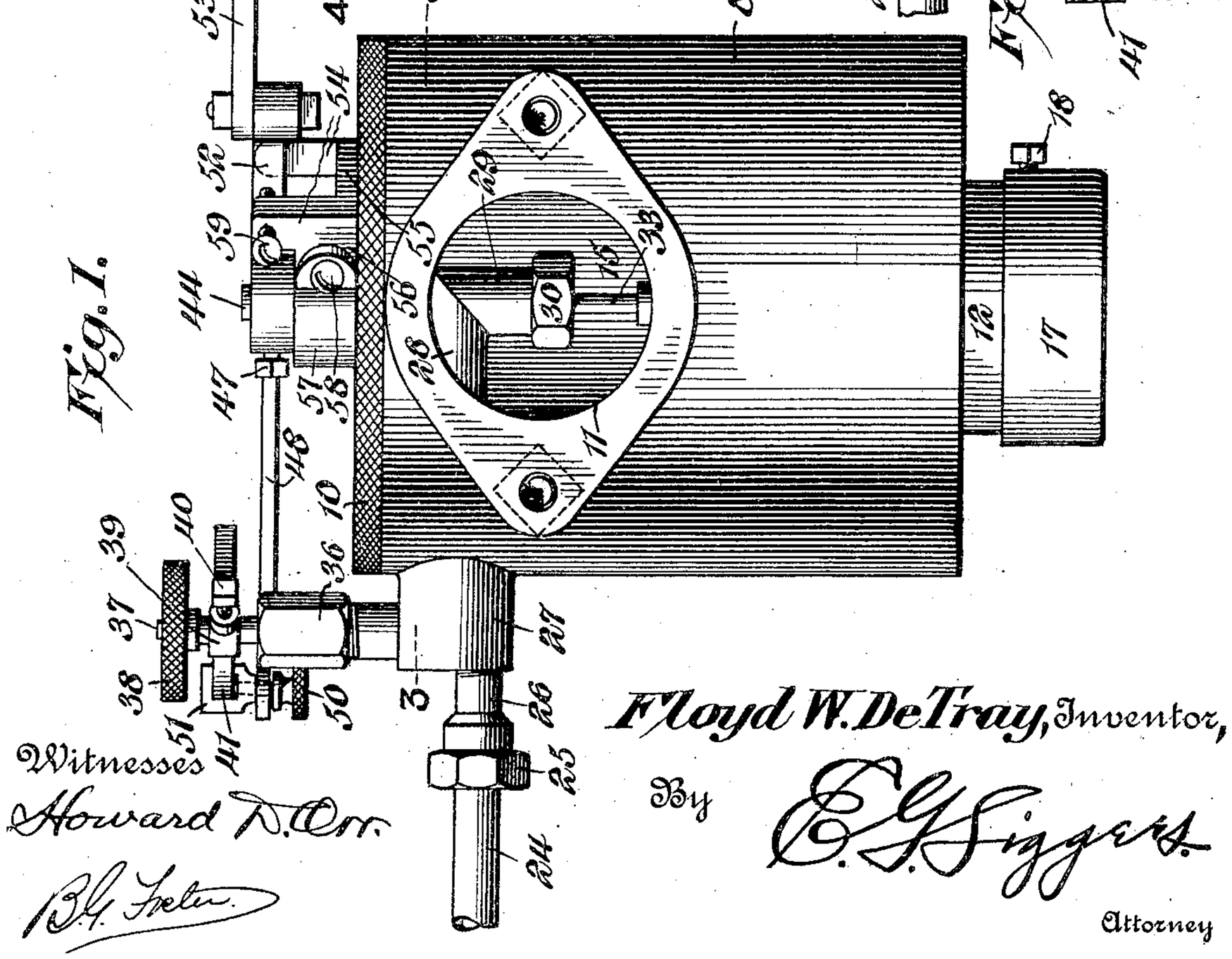

Fig. 2.

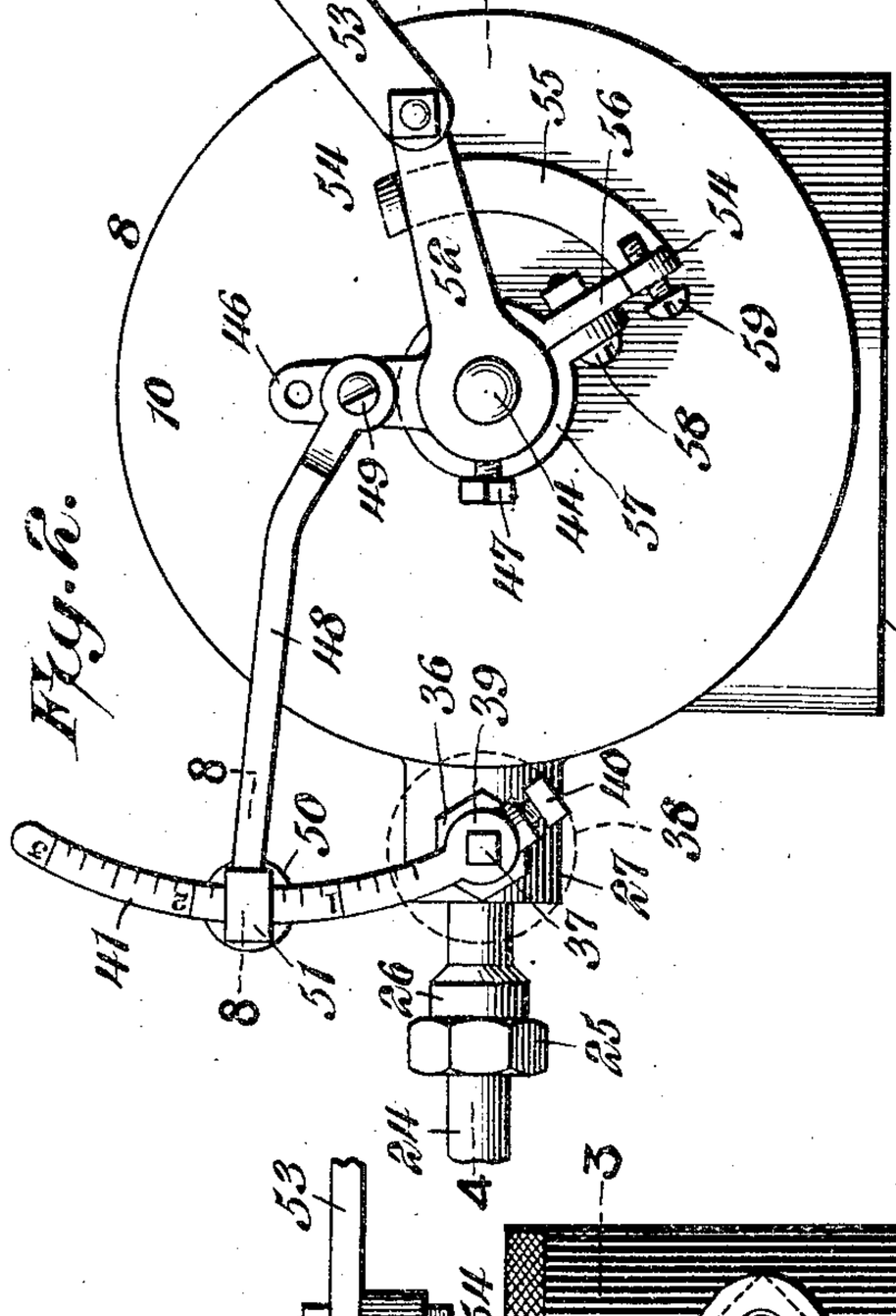

Fig. 3.

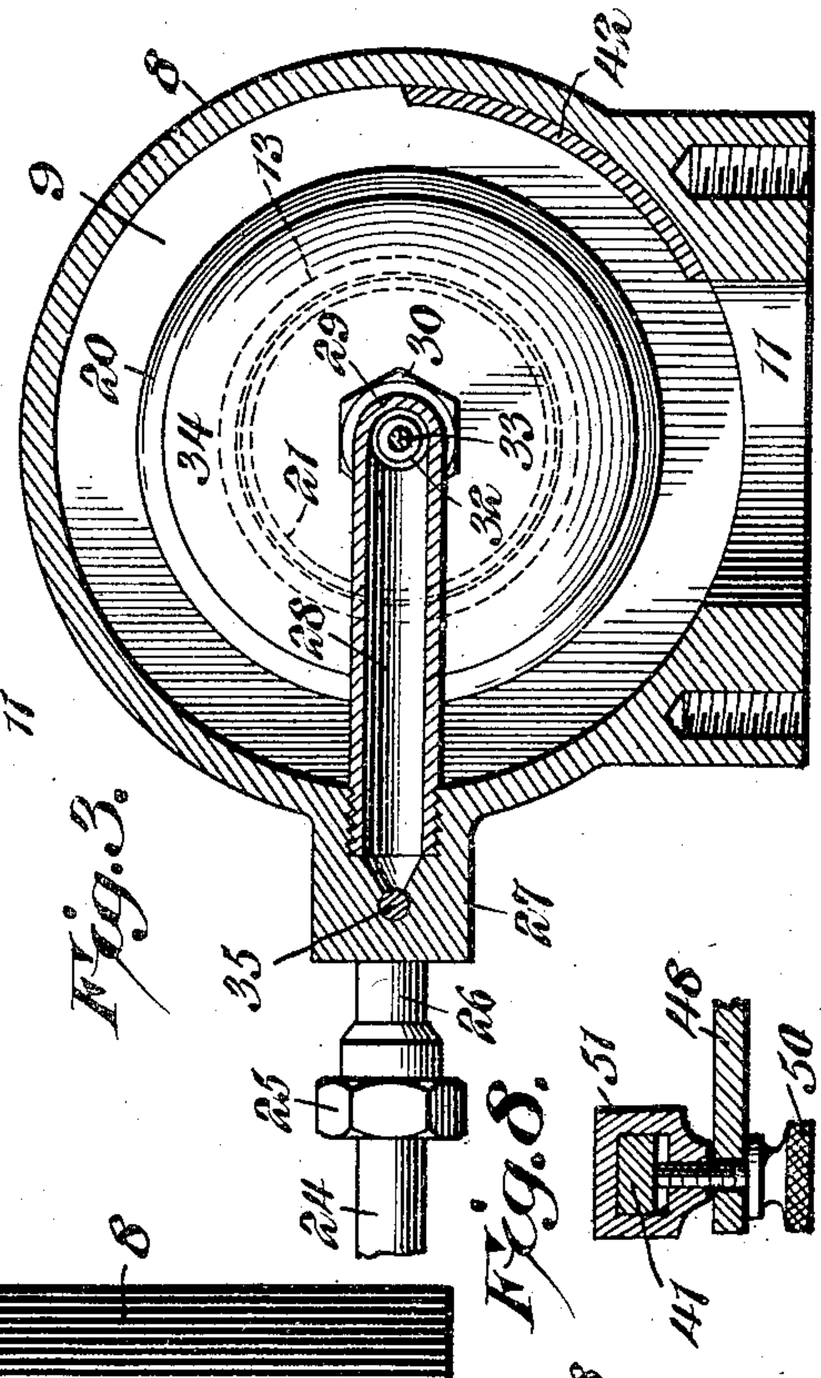

Fig. 8.

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2 SHEETS—SHEET 2.

Fig. 5.

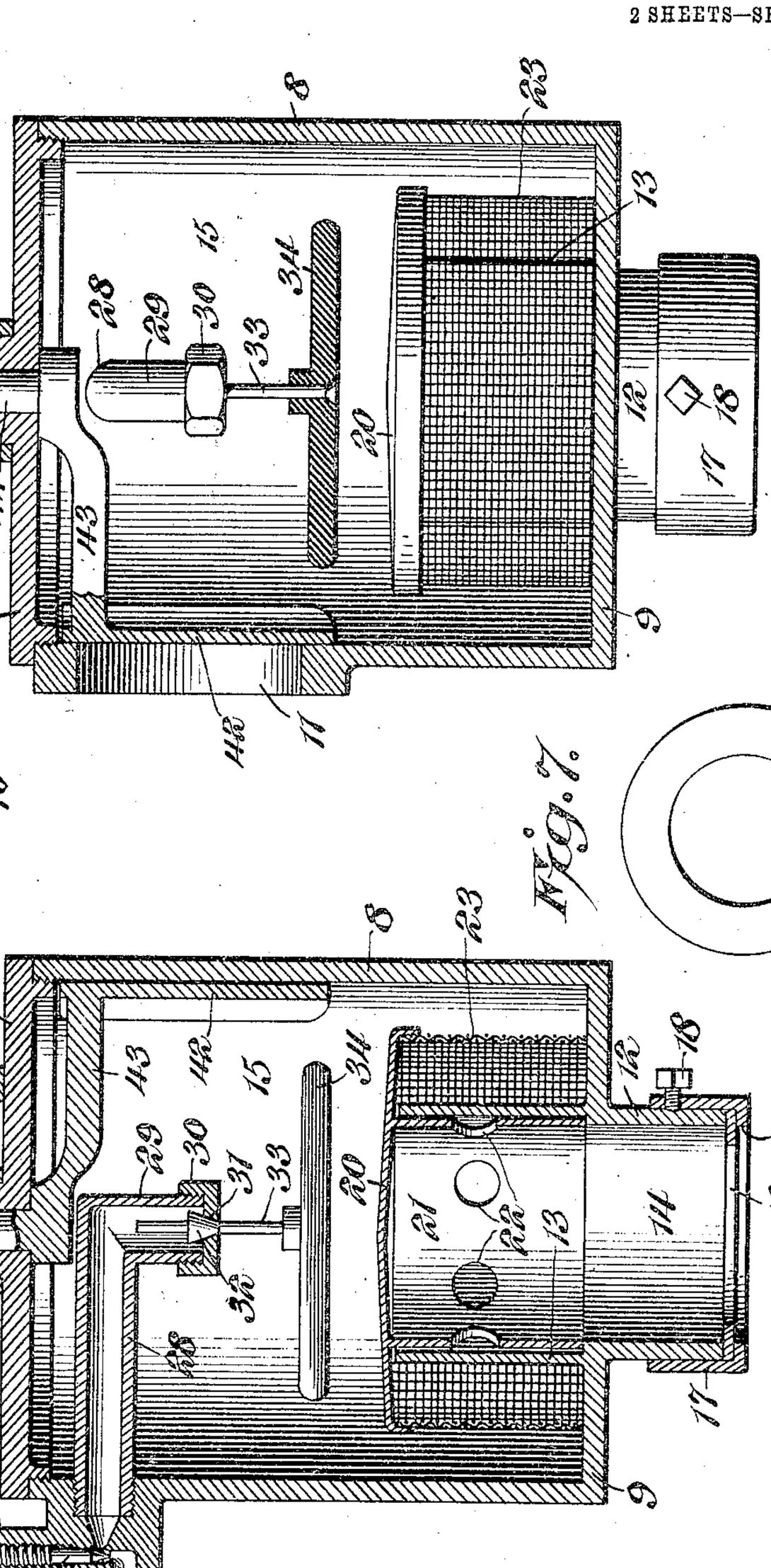


Fig. 6.

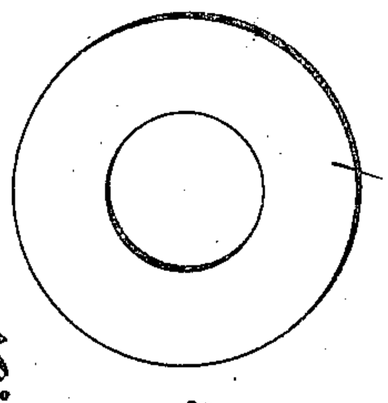
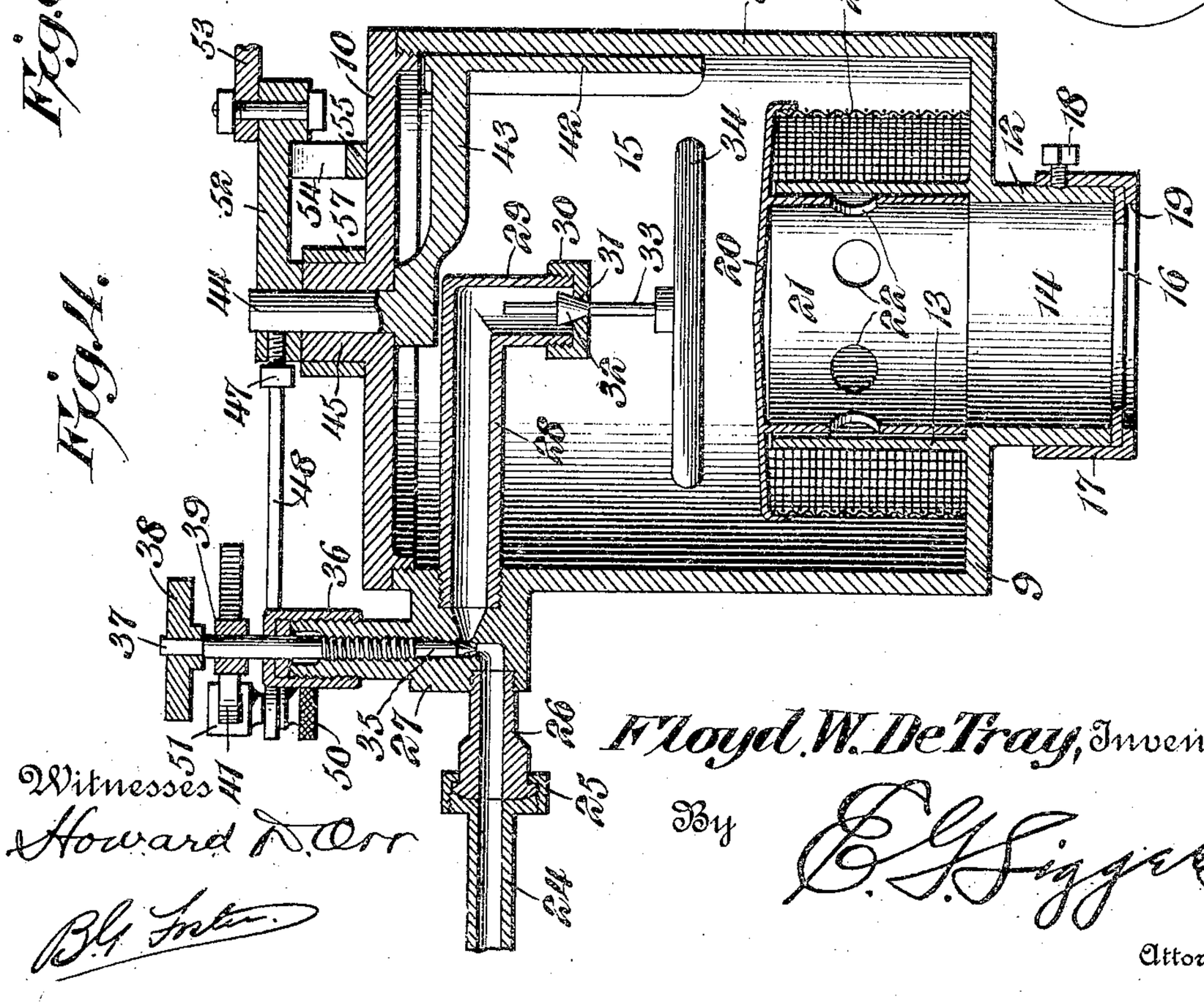


Fig. 7.

Fig. 4.



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UNITED STATES PATENT OFFICE.

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CARBURETER.

No. 917,264. Specification of Letters Patent. Patented April 6, 1909.

Application filed December 30, 1907. Serial No. 408,591.

To all whom it may concern:

Be it known that I, FLOYD W. DE TRAY, a citizen of the United States, residing at Aurora, in the county of Kane and State of Illinois, have invented a new and useful Carbureter, of which the following is a specification.

The principal object of the present invention is to provide novel, simple and effective means for producing explosive charges, said means including valve mechanisms, which are simultaneously operated, the connections being so arranged that the amount of movement of one valve can be considerably varied with respect to the amount of movement of the other valve.

Another and important object is to provide novel, simple and effective means for thoroughly vaporizing the liquid hydrocarbon or other motive fluid prior to its passage to the engine or motor, said means eliminating to a material degree the danger of flooding the carbureter.

The preferred embodiment of the invention is illustrated in the accompanying drawings, wherein:—

Figure 1 is a side elevation of the carbureter. Fig. 2 is a top plan view thereof. Fig. 3 is a horizontal sectional view on the line 3—3 of Fig. 1. Fig. 4 is a vertical sectional view on the line 4—4 of Fig. 2. Fig. 5 is a vertical sectional view at right angles to Fig. 4, and showing the throttle valve in closed position. Figs. 6 and 7 are plan views of washers employed for varying the size of the air inlet to the carbureter. Fig. 8 is a detail sectional view on the line 8—8 of Fig. 2.

Similar reference numerals designate corresponding parts in all the figures of the drawings.

In the embodiment illustrated, a cylindrical casing 8 is employed having a bottom 9 and a top 10, the latter being preferably detachable and being threaded into the upper portion of the cylindrical walls. This casing is provided in one side with an outlet 11 for the passage of explosive charges, and this outlet is adapted to be connected in any suitable manner to the intake of an explosive engine or motor, as will be evident to those skilled in the art.

The bottom 9 is provided with a depending boss 12 and an upstanding rim 13. Through this boss and rim extends the air inlet 14, which thus communicates directly with the vaporizing and mixing chamber 15 of the casing 8. The size of the inlet may be varied by employing any one of a series of washers 16 which have openings of different diameters, said washers being fitted against the lower end of the boss 12 and held in place by a cuff 17 that fits over the boss and is secured by a set screw 18. This cuff has an inwardly extending annular flange 19 on which the said washers rest. The said inlet 14 is normally closed by an upwardly movable cap 20 that is located over the rim 13, and has a circular rim 21 slidably depending within said rim 13. The rim 21 has an annular series of openings 22, which, when the cap is in its lowermost position, are covered by the rim 13, but these openings 22 will uncover when the cap is elevated a sufficient distance within the chamber 15, as will be evident. The cap 20 also carries a cylindrical screen 23 that is fastened to the margins of said cap, and is thus vertically movable with it.

A supply conduit 24 for liquid hydrocarbon or other motive fluid is coupled, as shown at 25 to a nipple 26, this nipple being connected to a valve casing 27 formed upon one side of the casing 8. A nozzle 28, leading from the valve casing 27 into the chamber 15 of the casing 8, has a downturned terminal 29 on which is threaded a cap 30. This cap is provided with a central valve seat 31, and an upwardly opening plug valve 32 located in the downturned terminal 29, normally rests on the seat, and thus closes the nozzle. The valve 32 is provided with a depending stem 33 which carries at its lower end an abutment disk 34 horizontally arranged and located in spaced relation to but in the path of movement of the cap 20. Thus upon the upward movement of said cap, it will strike the disk 34, and elevating the same, will open the valve 32. This opening movement occurs just prior to the uncovering of the openings 22.

The supply of motive fluid to the nozzle 28 is controlled by a needle valve 35 which projects through a suitable stuffing box 36 formed on the valve casing 27 and has an angular upper end 37. An actuating wheel 38 is detachably mounted on said angular end. Between the wheel or cup 38 and the stuffing box 36 is located a collar 39 which is rotatable upon the valve stem, but is normally held against movement and in adjusted position by a set screw 40. This collar carries a curved crank arm 41, which

as shown in Fig. 2, is preferably provided with a scale. The outlet 11 for the explosive charges is controlled by a rotatable throttle valve 42 movable across the same and carried by an arm 43 attached to the lower end of a vertical shaft 44. This shaft is journaled in a boss 45 formed centrally upon the removable top 10 of the casing. The upper end of the shaft has adjustably secured thereto a crank arm 46 normally held against movement with respect to the shaft by a set screw 47. A link 48, adjustably and pivotally connected to the crank arm 46 by a suitable bolt or fastener 49, is pivoted at its other end by a clamping screw 50 to a yoke 51. This yoke is slidable upon the crank arm 41, and is held in different positions by the set screw 50, which engages the same. The crank arm 46 also has another arm 52, to which a suitable operating device, as 53, is pivotally connected. The arm 52 operates between a pair of upstanding shoulders 54 formed at the ends of a curved strip 55 that is located on the cover or top 10. This strip is connected at one end, and as shown at 56 to a split collar 57 surrounding the boss 45 and clamped thereto by a suitable screw or bolt 58. In one of the shoulders 54 is threaded an adjustable stop screw 59.

The operation of the structure is substantially as follows. The controlling valve 35 is first adjusted with respect to the throttle valve by loosening the set screw 40, and turning said valve 35 by means of the wheel 38, after which the screw 40 is set and the wheel removed. It will thus be evident that upon the opening movement of the throttle valve, the controlling valve 35 will be opened, and in like manner when one is closed, the other will also be closed. The amount of movement of the valve 35 can be changed with respect to the amount of movement of the throttle valve 42 by shifting the yoke 51 toward and from the axis of rotation of the valve 35. With this construction therefore, when the valves are opened and the engine is in operation, upon every intake stroke the air will rush in through the opening 14, raise the cap 20 and this cap striking the disk 34, will elevate and open the valve 32, as already explained. When said valve opens, the liquid hydrocarbon or other motive fluid will flow downwardly over the disk 42, over the cap 20 and on to the screen where it will fill the meshes of the same. The rush of air through this screen will cause the liquid to be vaporized and it will thus be carried into the engine. Thus it will be evident that very simple mechanism is provided for effectively carrying out the objects of the invention as set forth in the preliminary portion of the specification.

From the foregoing, it is thought that the construction, operation and many advantages of the herein described invention will be apparent to those skilled in the art, without further description, and it will be understood that various changes in the size, shape, proportion and minor details of construction may be resorted to without departing from the spirit or sacrificing any of the advantages of the invention.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is:—

1. In a carbureter, the combination with a casing having a top provided with a boss and having a charge outlet in one side, of a shaft journaled in the boss and having an arm inside the casing provided with a throttle valve that operates across the outlet, a crank arm secured to the outer end of the shaft, a split collar surrounding and clamped upon the boss, spaced shoulders connected to the collar and located on opposite sides of the crank arm, and a stop for said arm adjustably mounted on one of the shoulders.

2. In a carbureter, the combination with a substantially upright casing having an air inlet in its bottom and a charge outlet in one side, of a motive fluid conduit extending into the casing, a needle valve controlling said conduit and projecting above the same, a crank arm adjustably mounted on the projecting portion of the needle valve, an upstanding boss carried by the top of the casing, a shaft journaled in the boss and having an exposed crank arm, a link pivoted to one crank arm and adjustable on the other toward and from its axis of movement, an arm carried by one end of the shaft, a throttle valve secured to the arm and movable across the other outlet, and relatively adjustable stops secured to the boss and located on opposite sides and in the path of movement of the crank arm carried by the shaft.

3. In a carbureter, the combination with a casing having an air inlet and a rim extending into the casing and surrounding the inlet, of a movable imperforate cap covering the upper end of the rim, a screen suspended from the cap and surrounding the rim, and means for supplying motive fluid to the screen.

4. In a carbureter, the combination with a casing having an air inlet and a rim extending into the casing and surrounding the inlet, of a movable imperforate cap covering the upper end of the rim, another rim suspended from the cap and slidably associated with the first mentioned rim, one of said rims having an opening that is covered and uncovered by the other on their relative movement, a screen suspended from the cap and surrounding the rims, and means actuated by the cap for supplying motive fluid thereto and thereby to the screen.

5. In a carbureter, the combination with a

casing having an air inlet, of an imperforate cap located over the inlet, a screen carried by the cap, and means for directing motive fluid against the cap, said fluid passing therefrom on to the screen.

6. In a carbureter, the combination with a casing having an air inlet, of a movable imperforate cap located over the inlet, a movable screen surrounding the inlet and associated with the cap, and means operated by the cap for directing motive fluid thereagainst, said fluid passing from the cap on to the screen.

7. In a carbureter, the combination with a casing having a bottom inlet, of a vertically movable imperforate cap located over the inlet, a screen suspended from the cap and surrounding the inlet, a motive fluid conduit having a downwardly extending discharge nozzle located over the cap, an upwardly opening valve arranged in the discharge nozzle, and an abutment disk connected to the valve and disposed in the path of movement of the cap.

8. In a carbureter, the combination with a casing having an air inlet and a rim surrounding the inlet, of a movable cap located over the inlet and having a rim slidably overlapping the first mentioned rim, one of said rims being provided with openings exposed on the movement of the cap, means for spraying motive fluid on the cap, and a valve controlling the spraying means and having a stem located in the path of movement of and operated by the cap.

9. In a carbureter, the combination with a casing having a bottom air inlet and an upstanding rim surrounding the same, of a cap located over the inlet and having a depending flange or rim slidably associated with the first mentioned rim and having openings which are uncovered when the cap is raised, a motive fluid supply conduit having a downturned nozzle arranged above the cap, a valve controlling the nozzle, and an abutment disk secured to the valve and located in the path of movement of the cap.

10. In a carbureter, the combination with a casing having a bottom air inlet and an upstanding rim surrounding the same, of a cap covering the inlet and rim, another rim depending from the cap, one of the rims having openings that are uncovered upon the elevation of the cap, a screen depending from the cap and surrounding the rim, a motive fluid conduit having a downturned nozzle located above the cap, and a valve controlling the nozzle and having an actuating portion disposed in the path of movement of the cap.

11. In a carbureter, the combination with a casing having an air inlet and an outlet for the explosive charges, of means for introducing motive fluid into the casing, said casing having an outstanding boss that surrounds the air inlet, a cuff secured to the boss, and washers having openings of different diameters, any one of said washers being arranged to be clamped between the cuff and the boss to vary the size of the inlet opening.

In testimony that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two witnesses.

FLOYD WM. DE TRAY.

Witnesses:
J. J. WARREN,
R. H. HOLCOMB.