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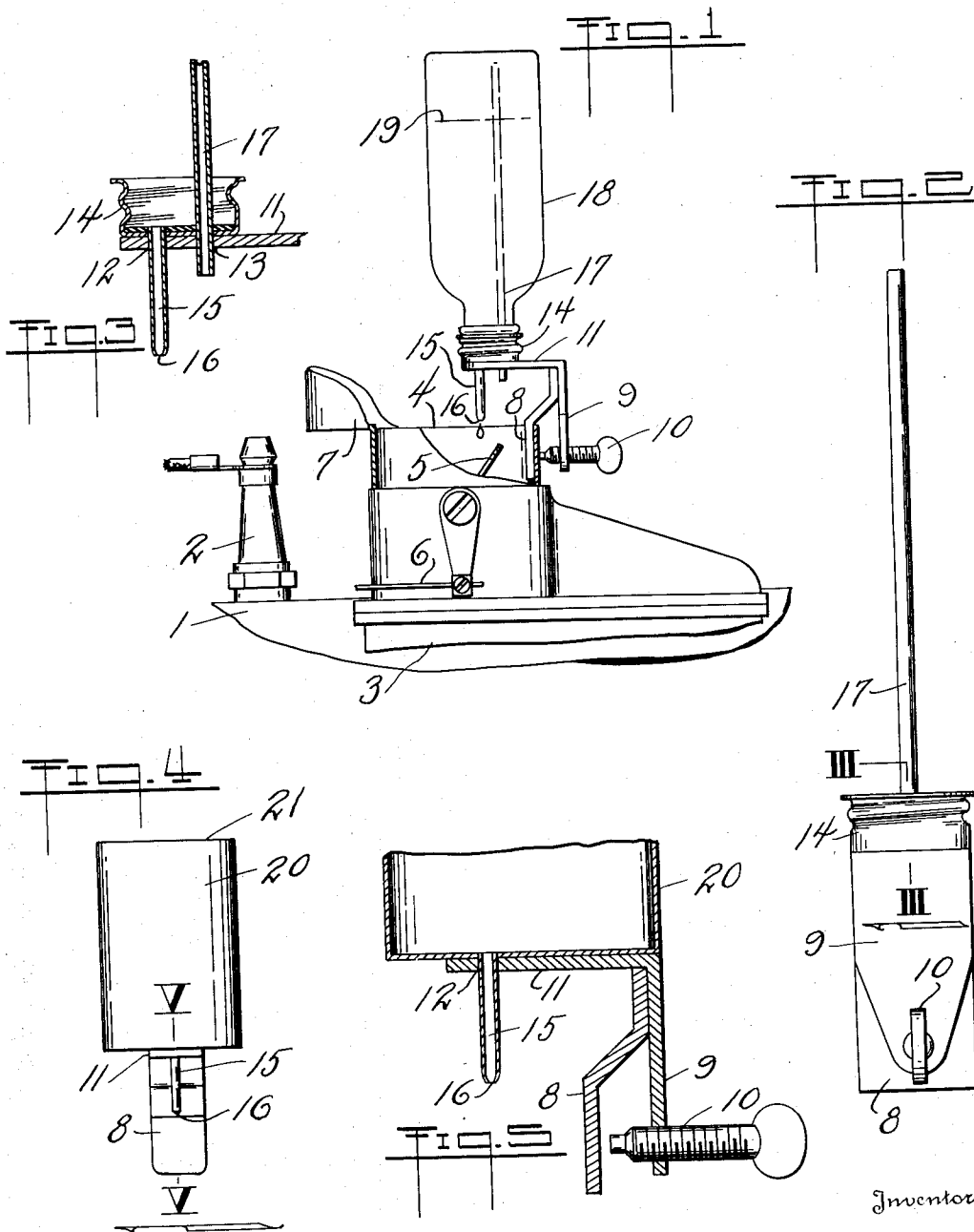
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INTERNAL COMBUSTION ENGINE TREATMENT

Filed Oct. 24, 1938

2 Sheets-Sheet 1



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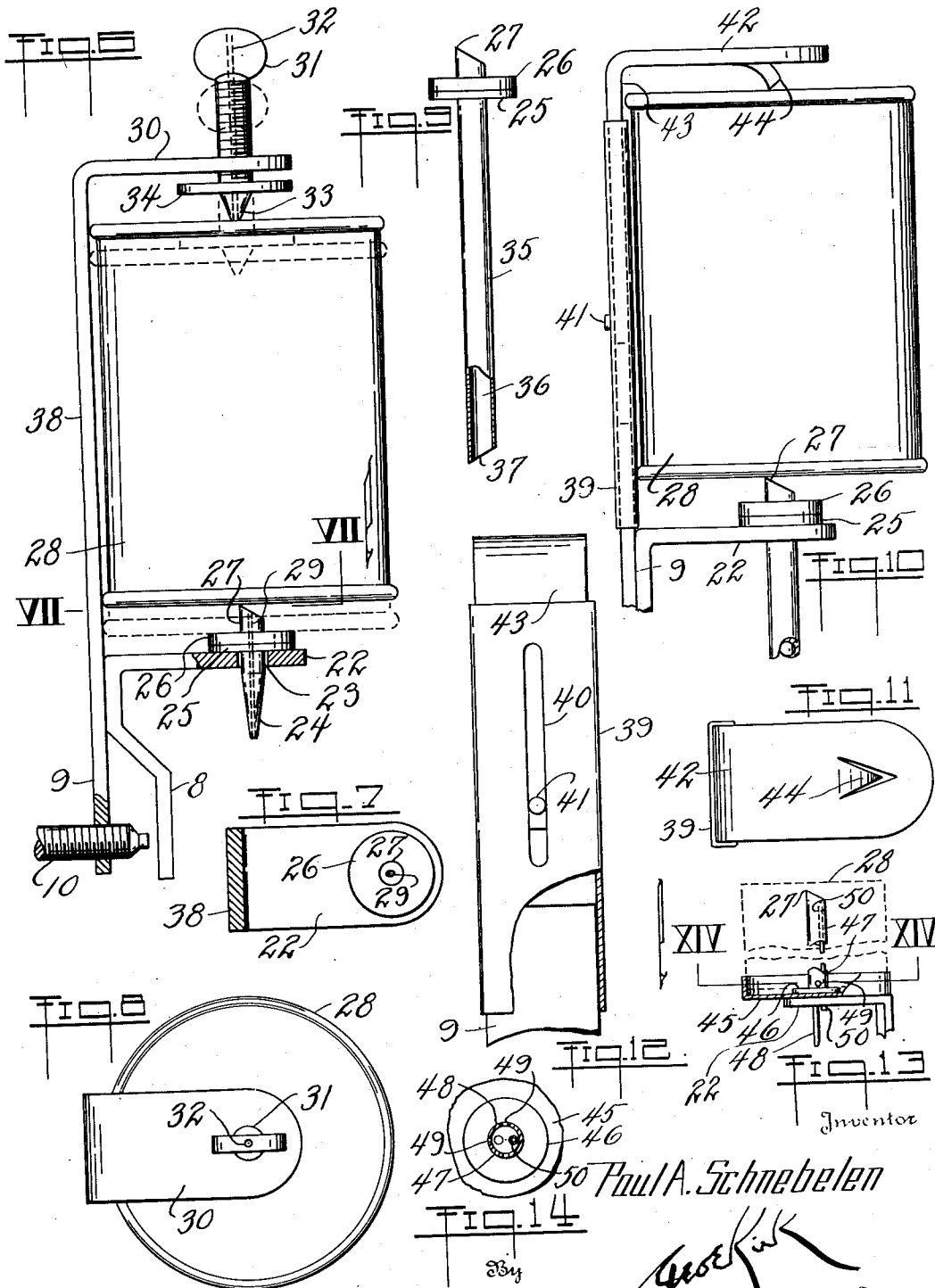
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INTERNAL COMBUSTION ENGINE TREATMENT

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2 Sheets-Sheet 2



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INTERNAL COMBUSTION ENGINE
TREATMENT

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Application October 24, 1938, Serial No. 236,626

3 Claims. (Cl. 123—198)

This invention relates to treatment in explosive areas, as engine cylinders, against detractive material accumulation therein.

This invention has utility when incorporated in uniform flow feeding of treating liquid, more particularly effected through means functioning for automatic restoration of efficient conditions for motor operation, such as substances for the removal of carbon.

Referring to the drawings:

Fig. 1 is a fragmentary view showing an embodiment of the invention at a carburetor of a multi-cylinder internal combustion engine say as for an automobile;

Fig. 2 is a detail view of the mounting device for the treatment supply liquid of Fig. 1;

Fig. 3 is a section on the line III—III, Fig. 2, showing the cap portion of the device, the clamp arm and the vent tube being partially broken away;

Fig. 4 is a view of the mounting device receptacle unit, vented by the vessel open top;

Fig. 5 is a section on the line V—V, Fig. 4, showing the mounting clamp for this unit;

Fig. 6 is a view of the clamp arm providing complete mounting for a receptacle to be seated and drained, parts being broken away;

Fig. 7 is a section on the line VII—VII, Fig. 6, showing the drain perforator;

Fig. 8 is a plan view of the receptacle in the clamp as shown in Fig. 6;

Fig. 9 is a fragmentary side view of a longer spout or drain than in Fig. 8;

Fig. 10 is a view similar to Fig. 6 with a telescopic clamp for effecting perforation of the receptacle;

Fig. 11 is a plan view of the vent perforator of Fig. 10;

Fig. 12 is a fragmentary view of the clamp slide from the left of Fig. 10;

Fig. 13 is a broken away showing of drain and vent duct of perforator type in lieu of the cap type of Fig. 1; and

Fig. 14 is a section on the line XIV—XIV, Fig. 13, showing the drain and vent port features.

Multi-cylinder internal combustion engine 1, say for automobiles, is shown as having normal ignition in spark plugs 2. There is carburetor 3 for fuel with air intake passage 4 having butterfly intake valve 5 normally controlled by rod 6. At this rim 4 of the air intake way, normally there may be mounted air cleaner or filter 7. In motor vehicle operation, efficiency maintenance requires exercise of care not only for lubrication but for the motor fuel under variations in humidity, weather conditions, and character of the fuel. Conditions of motor performance tend, over a period of use, to lower the functioning efficiency. This may be from accumulation of for-

sign material in the motor cylinders to the extent of gummy matters, resinous material, or more or less scale-forming or hard carbonized mass. This affects the compression and fuel combustion in degrees detracting from desired use of motor operation, especially from the driver's viewpoint.

A quick and efficient treatment under these circumstances may be automatically effected pursuant to the invention herein, say, by removing the air filter 7 and at such rim 4 locating abutting finger 8 on the inside of the rim 4 with opposing finger 9 to carry wing bolt 10, serving as a clamp to locate arm 11 to overhang the way of this air intake above the butterfly valve 5. This arm 11 is shown with ports 12, 13, therethrough. On this arm is closure 14, say of screw-cap type, having therefrom through port 12, flow vent duct 15 to spill port 16 centrally into the way of mingling with air intake as drawn past the butterfly valve 5. This cap 14, as fixed with the arm 11, has, at port 13 and parallel to the duct 15, vent duct 17 extending less distance below the arm 11 but a greater distance upward therefrom to the region of the top of vessel 18, herein shown as glass bottle for which the screw cap 14 is a closure. This duct 17 thus admits air to the closed upper portion of the inverted vessel as a factor in allowing normal continuity of flow through the drain port 16.

Accordingly, this bottle 18, as having charge 19 of treating or attacking liquid therein, may, with this special cap fitting mounted thereon, be readily placed in inverted position as to the bottle and so clamped by the wing screw 10. This step, being taken with the motor 1 in operation, means that during the inspiration of the air past the butterfly valve 5 there is drawn, with the explosive mixture of fuel and air for this motor 1, a uniform or metered flow rate of this attacking liquid 19. This means there is not any flooding or clogging to defeat functioning of the motor 1, but, incidental to such, there is efficient distribution throughout by the intake valves and even to the outlet valves and generally into the cylinder about the cylinder head, the piston head, and completely throughout the explosion areas as a smoothly administered dosage. This attacking medium 19, under the temperatures of the explosions, has a looseness and clearing out action persistently effective for its attack or penetration power, not only for the gum and resinous material, but for the more hard, scaly or carbon accumulations. This dissolving, occurring over a succession of explosion cycles in the metered or continuous rate, is a sort of "doctoring" action in its treatment at the explosion temperature. There is, accordingly, in a few minutes time, at the dose of say four to eight ounces, 60

a scavenging to restore the motor to function as fully clean from the detritus.

The scheme as herein disclosed involves the receptacle or container having its closure for the spill and pressure relief ducts with the facility for ready clamping of such in the proper feeding or draining position therefor.

In lieu of special container for the device hereunder, there may be receiver 20 having open top 21 into which may be poured the quantity of treating liquid 19 desired for the treatment. This supply of the treating liquid 19 is after the attachment at the air rim or ring 4. This receptacle or vessel 20 is fixedly anchored with the arm 11 and has but the single spill vent 15 therefrom having the discharge port 16, which duct 15 is through opening 12 in the arm 11. This arm 11 has its rim abutting finger 8 and opposing finger 9 with wing screw 10 for assembling in the clamped mounting position. Accordingly, with this device the vessel 20 may be clamped at the air intake and then the liquid for the charge poured into the open top 21 to have its metered continuous uniform flow by the port 16 into the air intake while the motor is exploding in its succeeding cycles of performance, thereby giving uniform continuity of liquid supply in the treatment at the high temperature of explosions. The elements of the mounting device may be rigidly assembled by welding.

In this assembly as to the clamp or bracket, the drain or pouring element is shown as mounted with the bracket as fixed when involving the cap. However, as a perforator there may be latitude for shifting. Accordingly, arm 22 is shown with port 23 (Fig. 6) having drain or drip nozzle 24 from flange 25 carrying gasket 26 about tubular perforator stem 27, upon which receptacle 28 may be jambed to effect perforating of the bottom of such container in order that the liquid may drain therefrom through duct 29. In the event the vessel or receptacle 28 be not open top or is sealed throughout, say as flat top can, overhanging arm 30 with wing screw 31 having perforation 32 therethrough may have its point 33 jambed down to create a top vent perforation and have such sealed by gasket 34. This means that with the gasket sealing there may be angular shifting for pouring or the bracket may be clamped with the finger 8 opposing finger 9 and wing screw 10 to effect clamp on the rim 4 of air intake or other port, even to the pouring into the crank case or clamping in convenient position say for the uniform ready flow into a port, such as a spark plug removed therefrom.

In the instance that there be purpose for long distance delivery of this drain material and say for more rapid uniform flow rate therefrom, bottom perforator may be substituted to conform thereto. In such instance as equipped with gasket 26, perforator 27 may have stem 35 (Fig. 9) with port or duct way 36 therethrough with pouring spout delivery end 37. In lieu of rigid bracket section 38 connecting the arm 30 with the finger 9, the portion 9 may have sleeve 39 (Figs. 10, 12) extending upward therefrom. This sleeve has slot 40 therein to receive guide pin 41. Overhanging arm 42 (Figs. 10, 11) has depending section 43 carrying this pin 41 and the overhanging portion has downward tang 44 as a perforator so that as this overhanging arm 42 is toward a container 28 resting on the perforator 27, a stroke against this arm 42 may cause this perforator 44

to effect venting of the container 28 remote from the perforator action of the perforator tang 27 and the structure is in condition for pouring action.

Instead of the dual perforation scheme, there may be unified the vent and drain even as effective for perforating. To this end arm 22 (Fig. 13) has fixed thereon seat, herein shown as cup 45, centrally carrying gasket 46 (Figs. 13, 14) from which extends upward tube 47 terminally carrying perforator tip 27. From the blank lower end of this tube 47 extends drain duct or tube 48, supply of flow thereto being through radial ports 49 into this tube 47 adjacent the seat 45. As there is provided by the perforation 27 but the single discharge or flow opening as to vessel 28, venting is important and to this end short of the perforator 27 vent tube 50 is provided. This is protected by the duct 27 and extends upward in the vessel 28 to allow venting of the upper portion of the vessel as draining or pouring action occurs through the duct 48.

In the perforating action as distinguished from the cup or cap, the gaskets seal the vessel against untoward dripping whether it be priming liquid for treating the engine to start, or whether it be lubricant or special solvent-effecting means. There is accordingly herein a simplified set up for ready adaptation in the range of activities efficiently effective for caring for motor vehicle functioning at filling station servicing.

What is claimed and it is desired to secure by United States Letters Patent is:

1. For an internal combustion engine having an air intake providing a rim, a clamp for engaging said rim including an overhanging arm, a cup thereon adapted to receive a container, there being a port through the arm and the bottom of the cup, and a drip duct through said port providing a passage for direct spill into the way clear of said rim, said duct having an upward terminus provided with a perforation effecting cutter portion aligned with said spill and adapted to pierce a container, there being a lateral minor way into the passage from the container for promoting drip flow through the passage.
2. For an internal combustion engine having an air intake providing an upstanding rim, a bracket having a pair of parallel depending arms, a set screw through one of the arms to project toward the other arm for the bracket as astride the rim, thereby to clamp the bracket with the rim, said bracket having an overhanging portion as to the air intake adapted to carry a cup having a port therefrom through the overhang, thereby locating drip flow therefrom clear of the rim to direct such drip centrally into the intake.
3. For an internal combustion engine having an air intake providing an upstanding rim, a bracket having a pair of parallel depending arms, a set screw through one of the arms to project toward the other arm for the bracket as astride the rim, thereby to clamp the bracket with the rim, said bracket having an overhanging portion as to the air intake, and a duct through the overhang clear of the rim for directing drip downward therefrom centrally into the intake and clear of said rim, said duct having a perforation-effecting-cutter terminus adapted to pierce a vessel to have liquid flow therefrom drip spilled into the air intake.

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