April 5, 1932. P. E. WEBB ET AL 1,852,909

CARBURETING DEVICE

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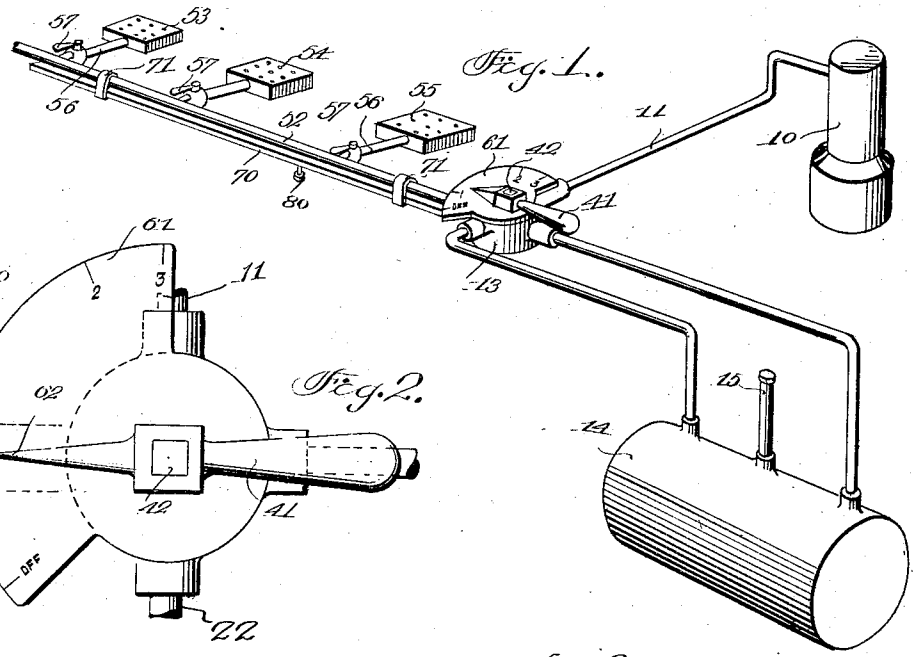
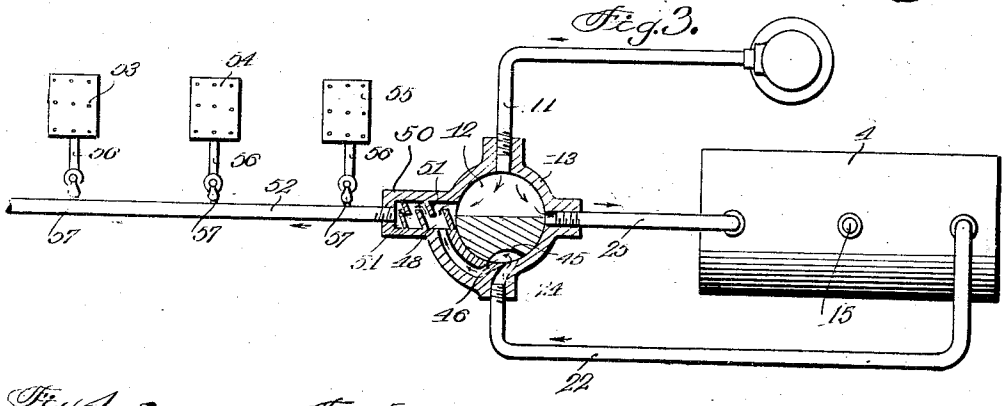


Fig. 1.

Fig. 2.



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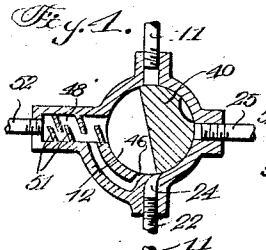

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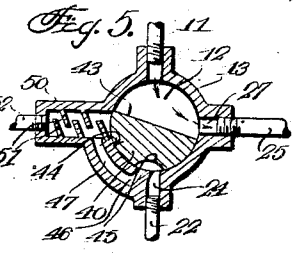

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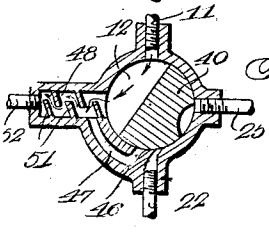

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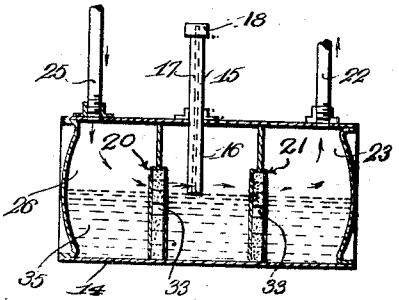

Fig. 11.

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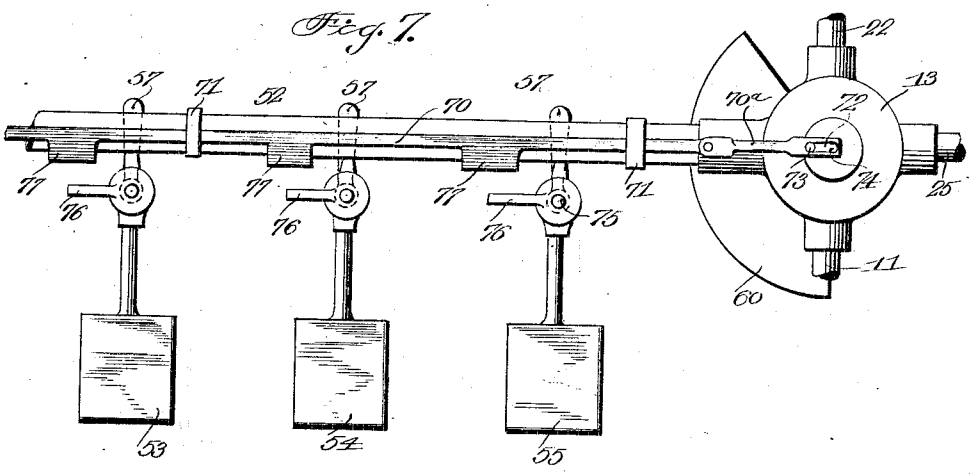
Fig. 7.



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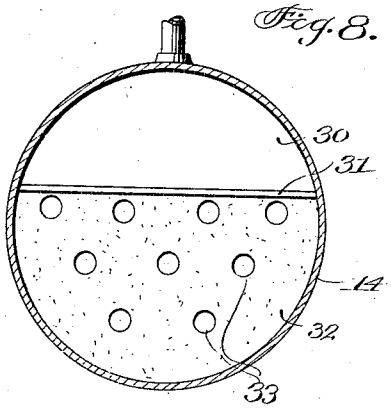
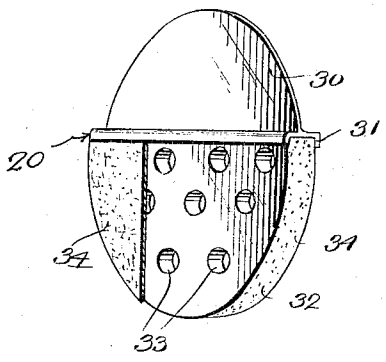


Fig. 9.



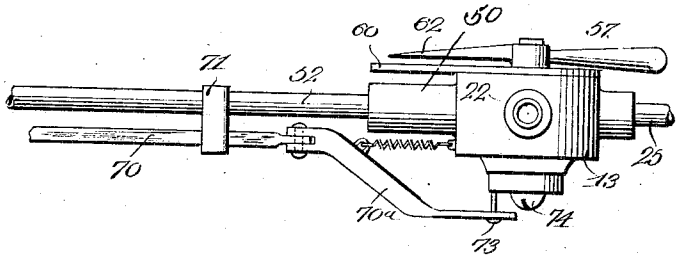


Fig. 10.

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UNITED STATES PATENT OFFICE

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CARBURETING DEVICE

Application filed February 28, 1928. Serial No. 257,765.

This invention relates to an apparatus for producing a combination gaseous fuel.

An object of the invention is the provision of an apparatus for carrying out a process of producing a combustible fuel for use in gas stoves, or for use as the motive fuel in internal combustion engines, or a fuel for welding purposes, the apparatus including a tank divided by partitions which are formed of materials capable of elevating a portion of the liquid in the tank above the level of the liquid and provided with a sufficient degree of porosity to permit the passage of gas through the saturated material whereby the gas will absorb a predetermined quantity of the liquid when passing through the partition.

Another object of the invention is the provision of a combined control valve and mixing chamber for controlling the flow of acetylene gas to a burner or supply pipe or welding torch, and also to a tank containing a hydrocarbon liquid whereby the last named portion of the acetylene gas is saturated with the hydrocarbon, after which the hydrocarbon saturated acetylene gas is conducted to the control valve and mixed where said saturated gas is mixed with the first mentioned portion of acetylene gas before the gases are supplied to the burner or to an internal combustion engine, or to a welding or cutting torch.

A further object of the invention when used with stores, is the provision of a safety device adapted to be employed in connection with a control valve and mixer for preventing closing of the individual burner valves until the main control valve has been closed so that the source from which the acetylene gas in the mixture may be cut off at the time the stop cock or burner valves are closed, provision being made to permit the cutting off of one or more burners without interrupting the flow of the combustible mixture to the remaining burners.

This invention will be best understood from a consideration of the following detailed description, in connection with the accompanying drawings; nevertheless, it is to be understood that the invention is not confined to the disclosure being susceptible of such changes and modifications as shall define no material departure from the salient features of the invention as expressed in the appended claims.

In the drawings:—

Figure 1 is a view in perspective of an apparatus for producing a combustible mixture adapted to be employed in connection with a plurality of gas burners,

Figure 2 is an enlarged fragmentary plan view of the combined control valve and mixer,

Figure 3 is a plan view of the device shown in Fig. 1, certain of the parts being in section,

Figure 4 is a horizontal section of the combined valve and mixer showing the valve in closed position,

Figure 5 is a similar section to that shown in Fig. 4, with the valve in open position,

Figure 6 is a horizontal section similar to that shown in Figs. 4 and 5, with the valve partially closing certain of the passages,

Figure 7 is a fragmentary bottom plan view of the device shown in Fig. 1,

Figure 8 is a transverse vertical section of the tank which contains a hydrocarbon liquid,

Figure 9 is a view in perspective with parts broken away to show the partitions which cause gas to be saturated with a hydrocarbon.

Figure 10 is a fragmentary side view showing the safety control,

Figure 11 is a vertical section of a hydrocarbon liquid vaporizing tank.

Referring more particularly to the drawings, 10 designates either a storage tank or a device for generating acetylene gas, which is connected by means of a pipe 11 with a chamber 12 of a valve casing 13.

A tank 14 has a filling tube 15 projecting outwardly of the tank and also inwardly, as shown at 16, and terminating midway between the tube and bottom of the tank when the tank is located at a horizontal position. A small bent tube 17 extends from the lower inner end of the pipe 15 to the outer end. By this construction the tank may be filled half full of a hydrocarbon and no more. A

cap 18 normally closes the outer end of the tube 15. The inner portion is located between a pair of partitions generally designated by the numerals 20 and 21. A pipe 22 connects the discharge end 23 of the tank 14 with an inlet port 24 formed in the valve casing 13. A pipe 25 which is adapted to supply the tank with acetylene gas is connected with the inlet portion 26 of the tank and a port 27 formed in the valve casing 13.

The partitions 20 and 21 are more particularly illustrated in Fig. 9, and in which the uppermost portion 30 is formed of metal and secured to the inner wall of the tank 14. The metal member depends from the inner wall for less than one-half the height of the tank, or less than one-half of the diameter of said tank. The inner edge is provided with a U-shaped flange 31 adapted to receive the upper edge of a felt member 32 which is provided with a plurality of perforations 33. The opposite face of the felt member 32 is covered with a coarse cotton fabric 34, such as towelling or wicking which will permit the acetylene gas to pass through the same while becoming saturated with a hydrocarbon 35 located in the lower half of the tank. It will be noted by this construction, as shown in Fig. 3, that the acetylene gas entering the portion 26 of the tank will pass through the upper portion of the coarse towelling which is saturated with hydrocarbon, pass through partition openings 33 and will then be discharged through the pipe 22. The felt 32 acts as a wick for maintaining the lower portion of the partition fairly saturated in the hydrocarbon.

Valve 40 which is semi-circular in form is rotatably mounted in the chamber 12 of the valve casing 13 and is operated by a handle 41 secured to a valve stem 42. One face of the valve, as shown at 43, is flat and is disposed in a vertical plane passing through the diameter of the circular chamber 12. The rounded portion 44 of the valve has a cut out portion 45 which is adapted to be alined with the port 24 and a port 46 for placing the pipe in communication with a passage 47 which connects the valve chamber 12 with a mixing chamber 48. At this time pipes 25 and 11 may be placed in communication with the valve chamber 12 and also with the mixing chamber 48 whereby acetylene gas may not only be supplied to the tank 14, but also to the mixing chamber.

The mixing chamber 48 is formed in an extension 50 of the valve casing 13 and is provided with a plurality of baffles 51 arranged in such a manner as to cause the combustible mixture to form a tortuous path through the mixing chamber, whereby the acetylene gas and the hydrocarbon charge are thoroughly mixed before they enter a supply pipe 52.

A plate 60 extends from the valve casing 13 and is provided with a dial 61 over which a pointer 62 moves and the dial in cooperation with the pointer determines the various positions of the valve when it operates through the handle 41.

The supply pipe 52 may be connected with an internal combustion engine for supplying a combustible mixture to the same, or said pipe may be the means for supplying a combustible mixture to a plurality of burners 53, 54 and 55, or to a welding or cutting torch. These burners are connected to the pipe 52 by means of connection 56 and are each controlled by a valve 57 of the well known type in gas burners.

When used with a stove, provision is made for preventing closing of the valve 57 while the valve 40 is open, and while the last mentioned valve permits acetylene gas to be conducted to the tank 26 and also the mixing chamber 40, while permitting the saturated gas to be conducted to the mixing chamber. This precaution is taken because of the fact that the acetylene gas will be charged into the tank 14 which is undesirable when the gas stove is not being employed. Furthermore, the tank 14 is buried at a predetermined depth in order to maintain the contents of said tank at a temperature which will prevent too great an expansion of the fluids in said tank. However, in those regions where the temperature is normally high and it is not possible to bury the tank 14 at a sufficient depth below the surface to maintain the proper temperature of said tank, a safety device is employed in connection with the burners to prevent said burners from being closed off entirely while leaving the valve 40 open.

A rod 70 is slidably mounted in guides 71 carried by the supply pipe 52 and has a link 70^a pivoted thereto. The link has a slotted portion 72 which receives a pin 73 located eccentrically with respect to the center 74 of the valve casing. Each of the stems 75 of the burner valves 57 is provided with a lug 76 adapted to engage a lug 77 on the rod 70 when the burners have been opened and which will prevent the burners from being closed as long as the valve 40 is open. It will be noted that the valve must be closed in order to permit the lug 77 to release lug 76 in order to permit operation of the valve 57. By this construction as just described it will be necessary to close the control valve 40 entirely before any of the burners can be closed. However, where a number of burners have been lighted and it is desired to cut off some of the burners while not disturbing adjustment of the control valve, it is only necessary to grasp the knob 80 connected with the rod 70 which is square in cross section and move the rod to the left while one or more burners are being closed. The slot 72 in the end of the rod which receives the

pin 73 permits the bar to be moved far enough to the left so that the burners may be closed without necessitating actuating of the valve 40.

The operation of the device is as follows:

The tank 14 is placed in the ground and disposed in a horizontal position after which the tank is filled approximately one-half full, through the pipe 15. The acetylene generator or tank 10 is connected by means of the pipe 11 with the valve casing 13 so that when the handle 41 is moved to a position where the valve 40 opens all of the ports, the acetylene gas will pass from the pipe 11 through the pipe 25 into the tank 14 and then pass through the saturated partitions thereby taking up a predetermined quantity of the hydrocarbon and carrying it through the pipe 22 and through the ports 24 and 46, and the passage 47, whence the saturated gas will enter the mixing chamber 48. Since the mixing chamber is also open to the chamber 12 of the valve casing 13, a predetermined quantity of acetylene gas will pass directly into the mixing chamber and be thoroughly mixed with the saturated gas coming through the tank 14 before it enters the supply pipe 52. It will be noted that by the proper adjustment of the valve 40 the supply of the acetylene gas to the tank 14 and also the mixing chamber 48 may be varied to give the desired results.

We claim:—

1. In a carbureting device, a tank containing a liquid hydrocarbon, a valve casing provided with a port in communication with a source of acetylene gas, an outlet port in communication with the tank for supplying acetylene gas to the hydrocarbon in the tank, an inlet port in communication with the tank for supply hydrocarbon saturated acetylene gas to the casing and a discharge port for gases from the casing, a valve in the casing for placing the first-mentioned port in communication with the outlet port, for placing the first port in communication with the discharge port, or for placing the inlet port in communication with the discharge port.

2. In a carbureting device, a tank containing a liquid hydrocarbon, a valve casing provided with a port in communication with a source of acetylene gas, an outlet port in communication with the tank for supplying acetylene gas to the hydrocarbon in the tank, an inlet port in communication with the tank for supplying hydrocarbon saturated acetylene gas to the casing and a discharge port for gases from the casing, a valve in the casing for placing the first-mentioned port in communication with the outlet port, for placing the first port in communication with the discharge port, or for placing the inlet port in communication with the discharge port, the casing having a chamber therein in communication with the ports and also having a passage connecting the chamber adjacent the inlet port with the exterior of the valve having a pocket adapted to space an end of the passage and the inlet port while cutting off the discharge port.

3. In a carbureting device, a tank containing a liquid hydrocarbon, a valve casing provided with a port in communication with a source of acetylene gas, an outlet port in communication with the tank for supplying acetylene gas to the hydrocarbon in the tank, an inlet port in communication with the tank for supplying hydrocarbon saturated acetylene gas to the casing and a discharge port for gases from the casing, a valve in the casing for placing the first-mentioned port in communication with the outlet port, for placing the first port in communication with the discharge port, or for placing the inlet port in communication with the discharge port, a mixer in communication with the discharge port, the casing having a chamber in communication with the ports, said casing being provided with a passage connecting the chamber with the mixer at a point adjacent the inlet port, the valve having a pocket adapted to connect the passage with the inlet port when the valve places the first port in communication with the outlet port.

Signed at Arkansas City in the county of Cowley and State of Kansas, this 21 day of February, A. D. 1928.

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