No. 895,273. PATENTED AUG. 4, 1908.

H. KEITEL.

CARBURETING APPARATUS.

APPLICATION FILED AUG. 27, 1907.

Fig. 1.

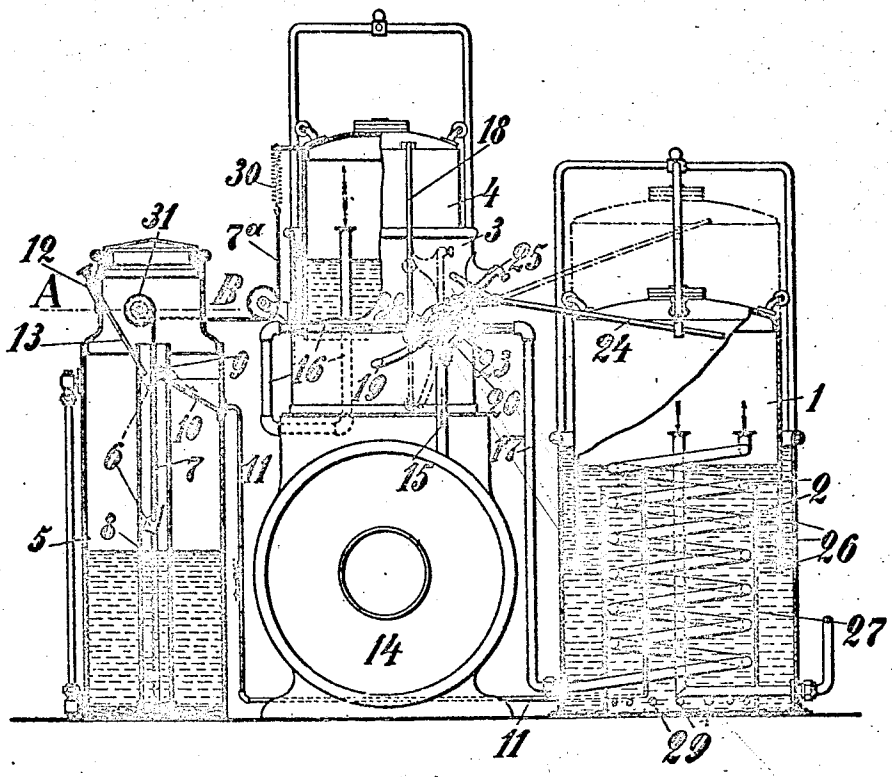
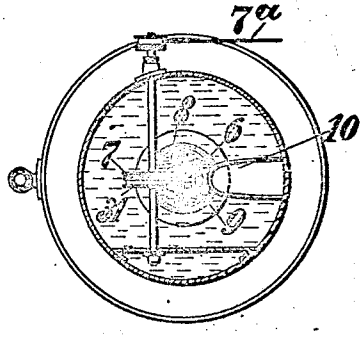


Fig. 2.



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HUGO KEITEL, OF DÜSSELDORF, GERMANY.

CARBURETING APPARATUS.

No. 895,273. Specification of Letters Patent. Patented Aug. 4, 1908.

Application filed August 27, 1907. Serial No. 390,321.

To all whom it may concern:

Be it known that I, HUGO KEITEL, a subject of the German Emperor, residing at Düsseldorf, Germany, have invented new and useful Improvements in Carbureting Apparatus, of which the following is a specification.

The subject of the present invention, is an apparatus for the production of carbureted air from liquid hydrocarbon and air, and is thereby characterized, that there are two gasometers, of which one measures off a stated and always equal quantity of air, and actuates a distributer and a vat or reservoir for measuring off the hydrocarbon, while the second gasometer stores up the generated carbureted air and contains in its basin a carbureter in the form of a helical tube the top-bell of which, when there is a sufficient supply of carbureted air, causing the distributing mechanism to come into action, *i. e.*, it stops the working of the apparatus when the carbureted air is no longer required.

The accompanying drawing shows in Figure 1, a mode of construction of the apparatus, in longitudinal section and partly in front elevation, and in Fig. 2 a section in the direction of the line A—B of Fig. 1.

In principle the apparatus consists of a helical tube, 2 constituting the carbureter, built into the basin of the gasometer 1, and of a reservoir, for the measuring off of a certain volume of air, formed of a basin or tank 3 filled with a blocking fluid and a top-bell 4, and the reservoir 5 for the liquid hydrocarbon. This reservoir 5 is intended to act as a supply for a large quantity of the liquid hydrocarbon, so that it is capable of receiving the whole contents of a barrel. In the reservoir 5 there is used a scoop 6, which is connected by a rope 7 with a winder 31 which dips the scoop gently into the hydrocarbon and as gently raises it, in order to avoid ripples which would otherwise be caused by the cold occasioned by vaporization. In the case of the construction shown in the drawing, the winder is actuated by the top-bell 4, the connection being effected by the rope 7^a. The scoop 6 and the stirrup and bolt which fastens the rope or other similar contrivance 7, and guided between angle rails or upright guides 8, so that the scoop can neither turn swing nor otherwise move out of the perpendicular. The outlet or spout of the scoop is chamfered and engages, on being raised, over the stop-block 9. As a consequence of striking this stop-block, the scoop is brought out of its more or less perpendicular position into the horizontal, so that the carbureting fluid is tipped into the grooved guide 10, and runs from thence into the pipe 11, which discharges below the upper turn in the carbureter 2. There is a screw provided against which the scoop strikes on being tipped; this screw passes through the wall of the reservoir 5 and turns in the threaded part 12. If this screw is raised or lowered, the scoop delivers more or less of the hydrocarbon. If desired, a scale may be arranged on or beside the screw, whereby it could readily be ascertained what quantity of fluid the scoop delivered at each operation. Instead of the adjusting screw, an adjusting push-rod or other similar contrivance could be employed, and it is not essential that the screw itself should form the block or stop, but may be employed for adjusting the block only.

The air is carried to the aerometer or the top-bell 4, through the tubes 15 and 16 to which must be coupled the tube 17 leading to the carbureter. The air is compressed by a compressor in the housing 14, and the compressor may be an air pump, Roots blower, or it may be worked by weights or hydraulic power. Between the tubes 17, 16 and 15, there is a three-way tap 28 which is so actuated by the top-bell 4, that when the latter is raised, the lead 16 is connected with the lead 17 and when it is depressed, the lead 16 is connected with the lead 15. On the top-bell 4, there is attached a carrier 18 which actuates an overbalanced tilting lever 19, which is placed in front of the cone of the three-way tap. When the top-bell 4 moves downwards as shown, the carrier takes the tilting lever 19 into the position shown by the broken lines, *i. e.* over the perpendicular, so that, finally, it tilts over to the other side. It then engages with a pin 23 which is in the disk 20 which is attached to the tap-cone, thus bringing the tube 16 suddenly out of connection with the tube 17 and, at the same time, setting up the connection with the tube 15. On the top-bell being raised through the agency of the inrushing air, the carrier 18 strikes against the other weighted arm of the tilting lever and moves it by pushing forward the somewhat pointed weight until it slips over and strikes against the other of the pins 23 and turns the disk 20 and the tap-cone, so that the connection between the pipe 16 and

the pipe 15 is suddenly interrupted and the pipes 16 and 17 again put into connection with each other. At every rise and fall, *i. e.* at every filling and emptying of the top-bell 4 the scoop, which is connected by the rope &c. 7 is raised and lowered and, consequently, filled and emptied. In the rope &c., 7^a there is an interpolated spring 30 which, when the screw is turned down so far that the screw strikes it before the bell is completely raised, permits it to go further on its upward travel. For the case when, on account of the carbureted air being no longer required or only a small quantity is being drawn off, the top-bell of the gasometer has risen only to a certain point, the supply of air to the aerometer 4 or to the carbureter 2, is automatically interrupted. For the interruption of the carbureting process, there is a two-armed lever 24 which is actuated by the top-bell of the gasometer, which, when the bell has risen to a certain point, engages with a lateral catch or stud over a finger 25 of the disk 20 and thus prevents its turning and setting up the connection of the pipes 16 and 15.

The air under pressure which is always exactly measured by the top-bell 4 and driven into the carbureter 2 and which has a correct ratio to the contents of the scoop, ascends within the carbureter coil and here meets the hydrocarbon delivered by pipe 11 and slowly descending within said coil. As the distance which the two components of the carbureted air have to travel in opposite directions is considerable and as, in consequence of the helical form a certain whirling motion is set up, but especially of the air, the hydrocarbon is completely absorbed and, as the hydrocarbon and the air are mixed in carefully measured quantities and the velocity of the air employed in the helical carbureter remains the same, no matter whether a large or small quantity of carbureted air is being drawn off, the latter always contains the same components in their correct ratios. As the hydrocarbon is fed underneath the upper turn or turns of the carbureter, a union of this component with the finished product under the top-bell and a consequent absorption independent of the fresh compressed air, is prevented. The blocking liquid for the meter bell 1, serves, at the same time, to prevent a too sudden cooling of the pipes of the carbureter. As a suitable liquid, we take one which does not show any consistency under 55° C. (cold) and which is fire proof. In order that there is a good and constant circulation of the liquid, and that, instead of that which is cooled by the pipes of the carbureter other, warmer liquid comes to take its place, there are legs, knives or other similar contrivances placed on the inside wall of the top-bell; the carbureter is, besides this, arranged in a hollow cylinder 27 which is perforated as at 29. Through the rising and falling of the top-bell, the knives 26 or similar contrivances stir up the liquid, while, the hollow cylinder 27, in itself, brings about a natural circulation, in that the specific gravity of the blocking fluid in the hollow cylinder has been heightened by the cold occasioned by evaporation in the helical carbureter, causing it to sink and leave the cylinder 27 by the holes 29 when the legs or knives catch it and churn it round. The top-edge of the hollow cylinder is lower than the surface of the blocking fluid, so that the warmer portion and, consequently, the lighter, circulates round the carbureter, keeping it always at nearly the same temperature.

I claim:

1. A device of the character described, comprising a tank adapted to contain a blocking liquid, an air bell telescoped by the tank, an air compressor, a carbureter, a gasometer bell communicating therewith, a three-way cock, means controlled by the air bell for setting said cock to establish alternate communication between air bell and compressor and between air bell and carbureter, and means controlled by the gasometer bell for locking the three-way cock, substantially as specified.

2. In a device of the character described, a gasometer having a bell and adapted to contain a blocking liquid, a carbureter within the gasometer, and stirrers on the gasometer-bell for agitating the blocking liquid, substantially as specified.

Signed by me at Düsseldorf, Germany, this seventh day of August 1907.

HUGO KEITEL.

Witnesses:

ALFRED POHLMEYER,

M. ENGELS.