

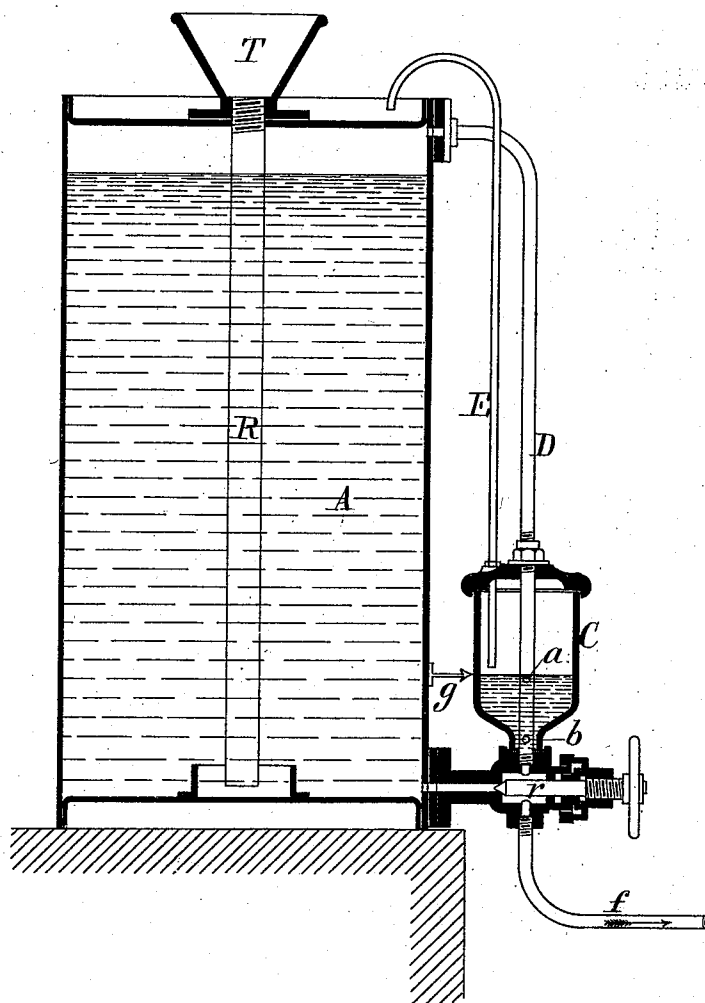
(No Model.)

H. SCHUMM.

APPARATUS FOR SUPPLYING OIL OR OTHER LIQUIDS UNDER PRESSURE.

No. 496,751.

Patented May 2, 1893.



Witnesses:
J. A. Ruthenford.
Robert Conant.

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By *James La Torre*,
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UNITED STATES PATENT OFFICE.

HERMANN SCHUMM, OF COLOGNE-DEUTZ, GERMANY, ASSIGNOR TO THE GAS-MOTOREN-FABRIK-DEUTZ, OF SAME PLACE.

APPARATUS FOR SUPPLYING OIL OR OTHER LIQUIDS UNDER PRESSURE.

SPECIFICATION forming part of Letters Patent No. 496,751, dated May 2, 1893.

Application filed August 16, 1892. Serial No. 443,248. (No model.) Patented in England April 18, 1891, No. 6,717.

To all whom it may concern:

Be it known that I, HERMANN SCHUMM, a citizen of Switzerland, residing at Cologne-Deutz, in the Empire of Germany, have invented new and useful Improvements in Apparatus for Supplying Oil or other Liquids Under a Constant Head or Pressure, (for which I have obtained a patent in Great Britain, No. 6,717, dated April 18, 1891,) of which the following is a specification.

This invention has for its object to control the discharge of oil or other liquids from a reservoir in such a manner that it shall always take place under a practically constant head, in order that a perfectly uniform supply of liquid may always be insured. Such an arrangement is more particularly of importance in the direct supply of petroleum or other oil from a reservoir to an oil motor engine, as if, without such an arrangement, the head increases or decreases owing to the filling or emptying of the tank, the quantity of oil supplied to the engine varies in a corresponding manner and consequently no uniform composition of the combustible charges for the cylinder can be obtained.

According to the present invention the above mentioned discharge under a practically constant head is obtained notwithstanding considerable variations in the level of the liquid in the main reservoir, by means of an arrangement which I will describe with reference to the accompanying drawing, which represents a vertical section of the apparatus.

This apparatus, which serves at the same time to protect volatile oils against evaporation and ignition, and which can be replenished at any time without stopping the action, consists of a closed reservoir A, which is filled through a funnel T. The filling tube R passes down to near the bottom of the reservoir so as to close the contents thereof against the atmosphere by means of the small quantity of oil contained in the tube R.

C is a closed glass vessel, the lower part of which communicates with the lower part of the reservoir through a small opening b and the oil regulating device r, while the upper part of the vessel communicates through an opening a and the air pipe D with the air space at the top of the reservoir A. The

small pipe E connects the air space of the vessel C with the open air, but its upper end is curved over the recessed top of the reservoir. A pipe f leads the oil or other liquid from the tank A and vessel C to the oil motor engine or other apparatus where it is to be used. For the correct action of the apparatus it is assumed that the discharge from the pipe f is regulated so that it shall always be less than the quantity that can flow in the same time through the plug valve r from the reservoir, as otherwise the liquid could of course not rise into the vessel C.

The action of the apparatus is as follows: Assuming the reservoir A to be filled with liquid as shown, then, on opening the valve r, liquid will pass from A both down through the supply pipe f and up into the vessel C through the hole b, while at the same time a proportionate quantity of air will pass from the upper part of the vessel C through hole a and pipe D into the upper part of the reservoir. This will continue until the liquid level has risen in C so as to cover the opening a, when, as no more air can pass through pipe D into the reservoir, no more liquid will flow from the same, and the liquid level in C will remain at the point indicated by the arrow g. The liquid will now flow off from the vessel C to the supply pipe f (the pipe E allowing the outer air to enter the same) and consequently the level will sink until the hole a is partially uncovered again, whereupon as air can again pass into the top of A, liquid will flow from the same, again partly flowing off through pipe f and partly rising up into C. Consequently the level will again rise until the hole a is covered and the discharge from A is again stopped, and so on, the liquid level continually rising and falling in C to the very small extent measured by the distance from the summit of the hole a to slightly below such summit, that is to say, practically the level will remain constant, and as it is this constant head in the vessel C that determines the rate of flow from the pipe f, the discharge will always be practically uniform, quite irrespective of the quantity of liquid in the reservoir, which may vary from full down to a level corresponding to the level in C. As soon as the level has sunk to the last named

point, this will be indicated by the fact that the level in C will no longer rise so as to cover the hole *a* but will continue to fall. As soon as this is observed, the valve *r* is closed, so as to keep the hole *a* open, and the reservoir is charged with liquid again through the funnel T, the air being expelled therefrom through pipe D hole *a* and pipe E into the atmosphere. The reservoir being charged, the valve *r* is opened again, and the discharge continues as before. The fact that the reservoir is full will be shown by the liquid flowing down pipe D and through hole *a* into the vessel C, and should this not be observed, then it will flow up pipe E and escape into the recess at the top of the reservoir.

Although the above described apparatus is more particularly intended for the supply of oil to petroleum motor engines, yet it is equally applicable for effecting a constant supply of liquid for other purposes.

Having thus described the nature of this invention and the best means I know of carrying the same into practical effect, I claim—

1. In apparatus for supplying oil and other liquids under a constant head or pressure, the combination of a closed reservoir such as A with a vessel such as C with air inlet E and a discharge pipe *f*, these parts being made to

communicate with each through valve or plug *r* and a pipe D provided with holes *a* and *b*, and connecting the upper part of the reservoir with the upper part of the vessel C, the hole *a* being closed against the ingress of air into the reservoir and consequently preventing the flow of liquid from the latter to the vessel C, as soon as the liquid level rises herein so as to close the said hole, substantially as described.

2. In apparatus for supplying oil and other liquids under a constant head, the combination of a closed reservoir such as A a filling funnel T and pipe R reaching down to near the bottom thereof, a closed vessel such as C, communicating with the reservoir A by a valve *r* a discharge pipe *f* an air pipe E and a pipe D with holes *a* and *b* connecting, the vessel C with the top of reservoir A, substantially as described.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, this 29th day of July, A. D. 1892.

HERMANN SCHUMM.

Witnesses:

FRITZ SCHROEDER,
SIBILLA LANG.