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CONSTANT SUPPLY DEVICE FOR VAPORIZING FUEL GAS MACHINES.

APPLICATION FILED AUG. 6, 1908.

962,611. Patented June 28, 1910.

2 SHEETS—SHEET 1.

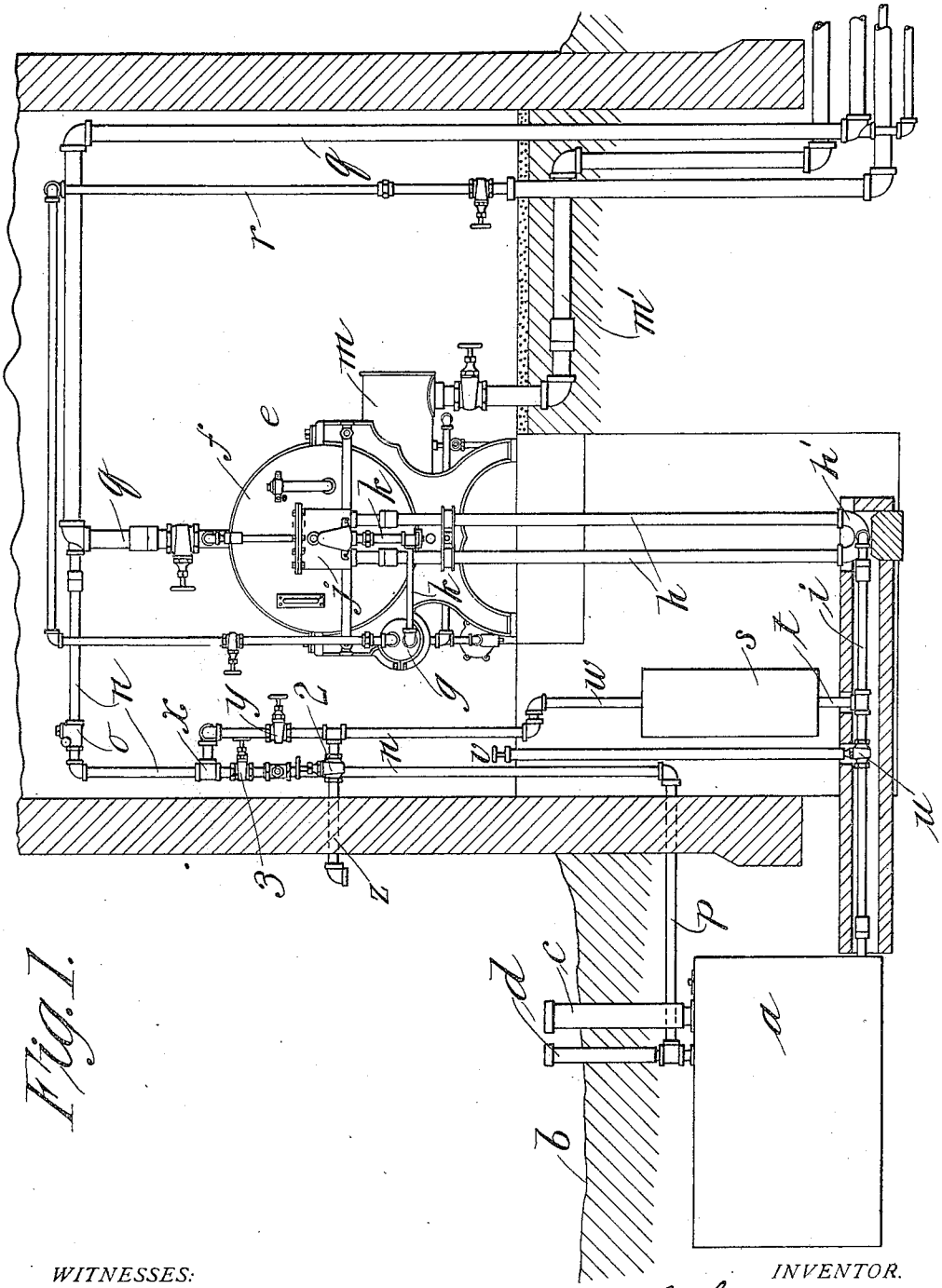

Fig. 1.

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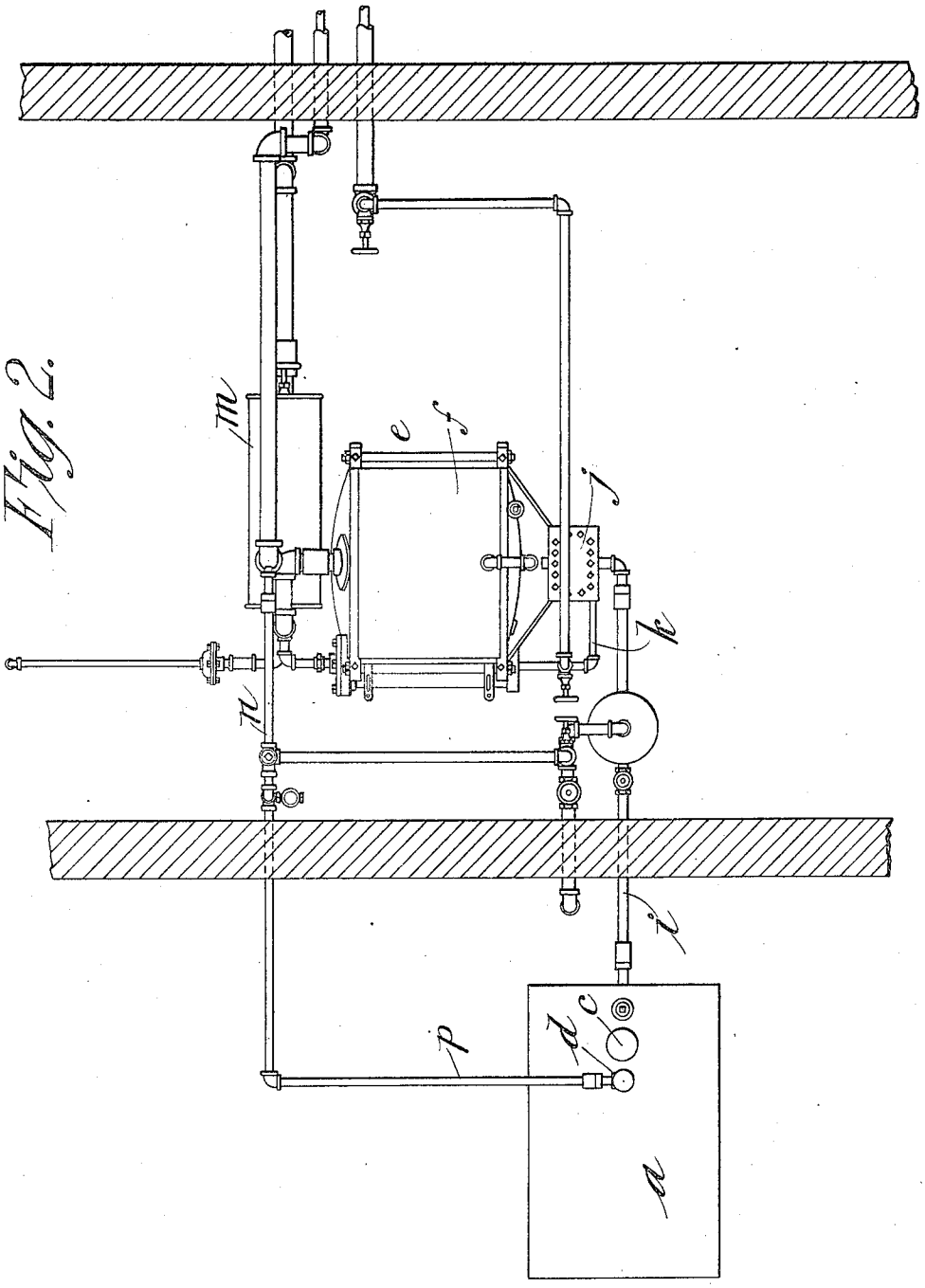
2 SHEETS—SHEET 2.

Fig. 2.



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CONSTANT-SUPPLY DEVICE FOR VAPORIZING FUEL-GAS MACHINES.

962,611. Specification of Letters Patent. **Patented June 28, 1910.**

Application filed August 6, 1908. Serial No. 447,282.

To all whom it may concern:

Be it known that I, JOHN F. BARKER, JR., a citizen of the United States of America, residing at Boston, in the county of Suffolk and State of Massachusetts, have invented new and useful Improvements in Constant-Supply Devices for Vaporizing Fuel-Gas Machines, of which the following is a specification.

My present invention relates to improvements in vaporizing fuel gas machines, the object of the improvement being to provide means for effecting the continuous operation of such machines during the process of refilling the gasolene storage tank without being obliged to interrupt the work in the shops that are dependent upon the flow of gas for use in forges or for other purposes.

At the present time, when the gasolene storage tank is being refilled, it is necessary to shut down or suspend the operation of the vaporizing fuel gas machine, which results in loss of output and unnecessary expense to the owner.

My invention, as stated, is to effect the continuous flow of gasolene to such machines during the refilling of the storage tank, and consists broadly in employing a smaller auxiliary or sub-gasolene supply tank from which the vaporizing gas machine can draw its supply of oil during the refilling of the main storage tank, and thus avoid the necessity of a shut down of the machine during such refilling operation, and consequently a suspension of operations in the work-shops.

In the drawings forming part of this application,—Figure 1 is a front elevation of my improvement which is shown connected to a vaporizing fuel gas machine of the usual construction. Fig. 2 is a plan view of the same.

Referring to the drawings in detail, *a* designates the usual gasolene supply tank located below the surface of the ground, as shown at *b*. The tank is provided with the filling and vent pipes *c* and *d*. The vent pipe *d* is only opened during the filling of the tank *a*.

The vaporizing fuel gas machine is designated as a whole by the letter *e* which indicates the ordinary air-measuring pump or motor casing *f* that incloses the usual rotary drum (not shown).

g indicates the steam heated generator or vaporizing chamber; *h* the elevator pipes for receiving the usual buckets for conveying the gasolene from the tank *a*, by means of the connecting pipe *i*, to the bucket elevator box *j*.

The part h^1 designates the lower elevator box that connects the pipes *h* with the pipe *i*.

The pipe connection for the gasolene to flow from the box *j* to the steam heated generator is shown at *k*, and the mixing chamber for the air and gasolene vapor at *m*, from which leads the main gas discharge pipe m^1.

The air-pressure equalizing pipe is shown at *n* in which is located a check-valve at *o*. This pipe is connected to some suitable means (not shown), as a blower, for maintaining a constant supply of air under pressure to the supply tank *a* by means of the pipe *p*. The main air-pipe is shown at *q* for supplying air to the casing *f* and the steam pipe at *r*, for supplying heat to the vaporizing coils in the steam heated generator chamber *g*.

The elements above mentioned are those included in the usual vaporizing fuel gas machine, but when the tank *a* is to be refilled it is necessary, as at present practiced, to cut off the flow of oil through the pipe *i* during the refilling process, of the tank *a*, and consequently a shut-down of the power of the factory or plant during the time occupied by such refilling operation is necessary. In order to overcome this serious objection of shutting down the operation of the gas machine and causing the work in the shop to come to a standstill while the main tank *a* is being refilled with gasolene, I provide an auxiliary sub-supply tank, as shown at *s*, the lower end of this tank being connected to the pipe *i* by means of the pipe *t*. In the pipe *i* is located a shut-off valve *u* that is controlled by means of the hand-wheel *v*.

The upper end of the tank *s* has leading therefrom a pipe *w* that is connected at the point *x* with the air pressure equalizing pipe *n*, and interposed in this pipe *w* is a valve *y*. A vent-pipe *z* is also connected to the pipe *w*

and leads through the wall or casing of the building, as shown, and located in the vent-pipe is a shut-off valve 2. The air-pressure equalizing pipe *n* is provided with a shut-off valve 3.

Referring now to the operation of the auxiliary or sub supply tank *s:* When the tank *a* is to be refilled without interrupting the continuous operation of the gas machine, the valve 2 in the pipe *z* is first opened permitting the gasolene to flow from the tank *a* into the auxiliary tank *s*, and the air in the tank *s* to flow therefrom through the pipe *w* and past the valve 2 out through the vent-pipe *z* to the atmosphere. This operation continues as long as air continues to blow through the pipe *z*, it being understood that the air is now passing from the pipe *n* through the pipe *p* and into the tank *a*, as the valve 3 is still open. The next step in the operation after the air ceases to blow through the vent-pipe *z* is to close the valve 3 in the pipe *n;* then closing the valve *u* also the valve 2, then opening the valve *y* at the same time; the air pressure will now flow downward through the pipe *w* and into the sub-tank *s* causing the oil to now flow from the tank *s* through the pipe *i* to the elevator or bucket pipes *h* without interrupting the operation of the gas machine or the work in the work-shops. The tank *a*, being now cut off from the machine, can be filled from the delivery supply wagon through the pipe *c*, as usual. After the tank *a* is filled and the filling and vent pipes *c* and *d* are closed, it is necessary to connect the main supply tank *a* to the gas machine again. In order to perform this operation, it is only necessary to open the valves *u* and 3 and at the same time close the valve *y*, which operation will of course permit the oil to now flow from the tank *a* through the pipe *i*, as before, and without any shut-down of the gas generating machine.

It is understood that the air pressure in the casing *f*, and tanks *a* and *s*, is equalized by means of the pipes *n*, *q*, *p*, and *h*. Normally the level of gasolene in the tanks *a*, *s*, and elevator or bucket pipes *h* is the same.

What I claim is,—

1. In a fluid feeding device for a vaporizing fuel gas machine, the combination of a gasolene supply tank, elevator-pipes, an air pressure equalizing pipe therefor, an auxiliary supply tank, a pipe connection therefrom to the elevator-pipes, a second pipe connection from said auxiliary supply tank to said equalizing pipe, a vent pipe connected to the second pipe, and valves in said vent, equalizing, and second pipes, the valve in the second pipe being located between the vent pipe and the pressure equalizing pipe, whereby when the valves in the vent-pipe and equalizing pipe are opened, the auxiliary supply tank may be filled from the supply tank, and when said valve in the equalizing pipe is closed to shut off the flow of air to the supply tank, and the valve in the second pipe is opened, the connection from the air pressure equalizing pipe to the supply tank is cut off and the gas machine may be fed from the auxiliary supply tank, and the supply tank refilled without interrupting the operation of the machine.

2. In combination with a fuel gas machine, elevator-pipes therefor, a main oil supply tank, a sub-tank for containing oil, pipe connections between the tanks and the elevator-pipes of the gas machine, a shut-off valve therein, a main air supply pipe connected to the main oil supply tank, a valve therein, a vent pipe for said tank, and to which the main air supply pipe is connected, a pipe extending from the main air supply pipe to the sub-tank, a valve therein, a vent-pipe connected to the last mentioned pipe for venting the sub tank whereby, when the valve in the vent-pipe for the sub-tank is opened, the sub-tank will fill from the main oil tank, and when said last named valve is closed, and the valve in the main air supply pipe is closed, and the valve in the pipe extending from the main air supply pipe to the sub-tank is opened, and the shut-off valve in the pipe connections between the tanks is closed, the fuel gas machine will be fed with oil from the sub-tank, as described.

3. In a continuous liquid fuel supply apparatus for gas machines the combination of a main fuel supply tank, an auxiliary fuel supply tank, a pipe connection between the same, a shut-off valve in the connection, elevator pipes connected to the said tanks, and extending to said gas machine, a pipe for supplying air under pressure connected to the main fuel supply tank, a valve therein, a pipe connected to the air pressure pipe and the auxiliary fuel supply tank respectively, a valve therein, a vent-pipe connected to said last named pipe, a valve therein, whereby when said valves are operated as described the auxiliary supply tank may be filled from the main fuel supply tank, and whereby the communication between said tanks may be cut off and the gas machine supplied with liquid fuel from the auxiliary supply tank, as described.

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