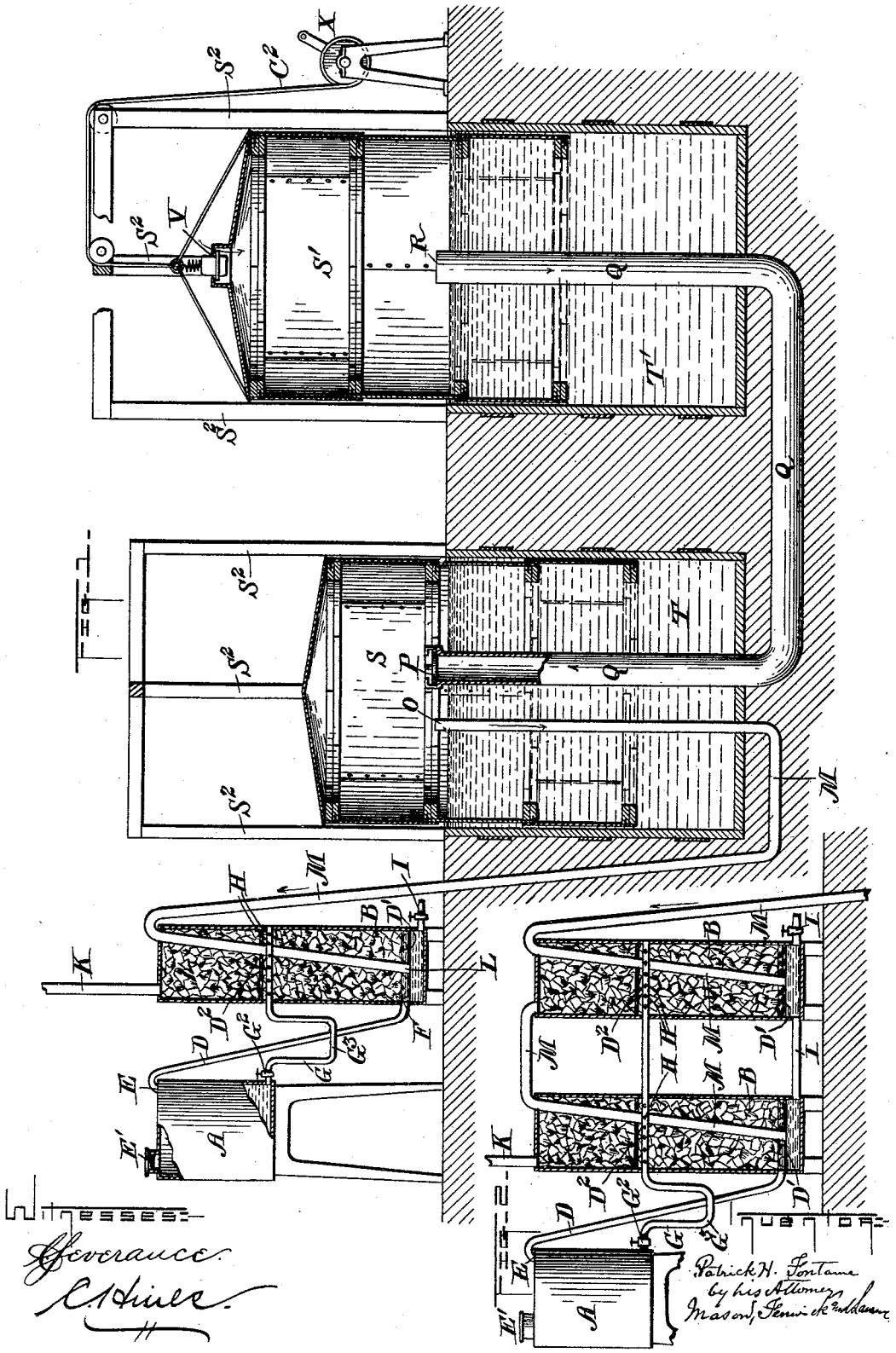
(No Model.) 2 Sheets—Sheet 1.

P. H. FONTAINE.

APPARATUS FOR CARBURETING AIR.

No. 493,992. Patented Mar. 21, 1893.



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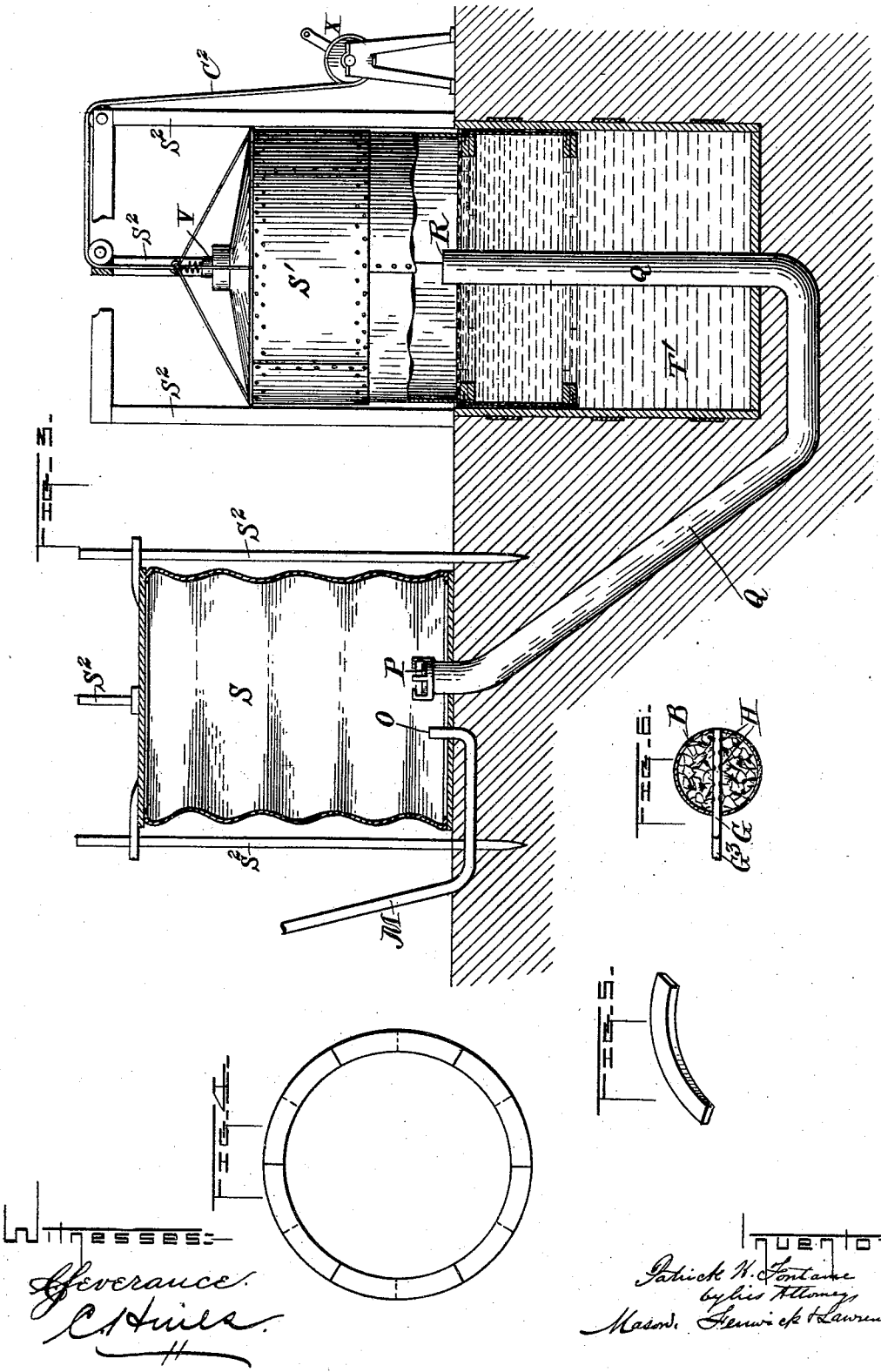

Witnesses:
Severance.
C. Hinds.

Inventor:
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UNITED STATES PATENT OFFICE.

PATRICK H. FONTAINE, OF ELMO, ASSSGNOR OF ONE-HALF TO C. G. HOLLAND AND ELLEN BLAIR, OF DANVILLE, VIRGINIA.

APPARATUS FOR CARBURETING AIR.

SPECIFICATION forming part of Letters Patent No. 493,992, dated March 21, 1893.

Application filed March 30, 1892. Serial No. 427,100. (No model.)

To all whom it may concern:

Be it known that I, PATRICK H. FONTAINE, a citizen of the United States, residing at Elmo, in the county of Halifax and State of Virginia, have invented certain new and useful Improvements in Apparatus for Carbureting Air; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to an apparatus for carbureting air for heating and illuminating purposes, and its object is to greatly simplify the construction of such apparatuses, render them more effective and durable and improve the quality of the gas produced; and it consists in certain novel combinations, constructions and arrangements of parts, as will be hereinafter described and pointed out in the claims.

In the drawings, Figure 1 is a vertical central section of my improved air carbureting apparatus. Fig. 2 is a detail section illustrating the connection of two carburetor chambers or vessels with the oil reservoir and air forcing apparatus. Fig. 3 is a vertical section of a portion of the apparatus showing the auxiliary air holder and compressor modified in its construction. Fig. 4 is a plan view of one of the annular stays applied within the air holder and compressor. Fig. 5 is a detail of a portion of one of the stays, and Fig. 6 is a horizontal section of the carburetor chamber, and showing a plan view of the pipe for discharging the oil into the chamber.

A in the drawings represents an oil tank having a filling hole with screw cap E′, and an air vent at E, connected by pipe D with an air vent F in a carburetor B. The carburetor has a lower chamber filled with charcoal and oil, and an upper chamber supplied with dry charcoal for the purpose of cleansing the gas as it passes through it.

G is a pipe with a cock at G^2 for conveying oil from tank A to carburetor B; this pipe bends downward, forming a trap at G^3 so as to prevent passage of air by said pipe from carburetor B to tank A. This pipe at H has many small holes on both sides to cause the oil to flow in many small streams upon the charcoal in the lower chamber of carburetor B.

F is an air vent in carburetor B at the level of oil therein, and connecting with the oil tank at E.

D′ is a perforated diaphragm upon which the charcoal, saturated with oil, in lower chamber of carburetor, rests.

D^2 is a perforated diaphragm upon which the dry charcoal in upper part of carburetor rests.

I is a pipe at bottom of carburetor B with cock for drawing off residuum of oil.

K is a pipe for conveying gas into the house.

M is a pipe for conveying air from air receiver to bottom of carburetor, having one end at L and the other end at O.

Q is a pipe for conveying air from air forcing chamber S′ to air receiving chamber S, having one end open at R and the other end closed by check valve P, opening upward. This pipe is considerably larger than pipe M, so that the air may be discharged from forcing chamber S′ into holder or receiving chamber S in a very short time.

S and S′ are air holders (or air compressors) working up and down in water tanks T and T′ between standards S^2. These air holders are made of light sheet metal, and have circles of wood at the top and bottom and at each horizontal joint, the said joints being made by lapping the sheet metal over the wooden circles, and driving nails through both sheets of metal into the wood, then soldering over the joints and nail heads. The wooden circles are made in segments, arranged in two tiers, breaking joints, as shown. These circles might be composed of two half circles of wood, steamed and bent like the fellies of a buggy wheel. By having the circles, or stays of wood, the air holders can be made of very light metal, and the horizontal joints can be made more easily by driving nails through the metal into the wood than by the usual method of riveting the joints; and at the same time the necessary strength and rigidity for resistance of air pressure be secured.

In Fig. 3, the auxiliary air holder S is shown constructed with a rigid top and bottom and flexible folding body, instead of being constructed of sheet metal as shown in Fig. 1.

The method of operating my apparatus is as follows: The cock G^2 on oil tank is closed

and screw cap on filling hole E′, is removed. The oil is then poured into the tank A, the screw cap is tightly closed on E′ and cock on G^2 opened. The air will then flow from bottom of carburetor B into the top part of tank A by pipe D, and oil will flow from tank A through pipe G, and be discharged in many small streams at H upon the charcoal in lower chamber of carburetor B. This flow of oil will continue until the oil rises in bottom of carburetor B to the top of the air vent F, thereby sealing said air vent. The flow of oil will then cease; but when the oil falls below the level of said air vent, by being changed into vapor and then carried off by the flow of air through the carburetor, its flow will be resumed. After the carburetor B has been charged with oil as described above, the windlass X is turned, winding up cord C^2 and thereby raising the air holder S′; valve V on top of said air holder opening downward and admitting air into S′; when S′ is filled with air the windlass X is released; S then descends forcing the air through pipe Q into air holder S, thence through pipe M into carburetor B. This air is discharged through the lower end of pipe M beneath the perforated diaphragm D′. The air then passes through the holes in said diaphragm, being thereby divided into many small streams, and is carbureted by passing through the oil and oil-saturated charcoal contained in the lower chamber of carburetor B; the carbureted air then passes through the dry charcoal contained in the upper chamber of carburetor B, in order to be deprived of any small globules of oil, and thence by pipe K directly to the burners, or to a gas storage chamber, should such a chamber be used. Air holder S′ is made a little heavier than air holder S, and pipe Q is made considerably larger than pipe M, so that a greater quantity of air is introduced in holder S by pipe Q than is discharged in a given time through pipe M, and consequently during the descent of S′, S will be caused to rise, and at the same time air will be forced through pipe M. After the air in S′ has been exhausted, the valve P will close, and the flow of air through pipe M into the carburetor B will be continued by the descent of S, and the air in S′ can be renewed by turning windlass X; thus it will be seen that a continuous supply of gas can be furnished by this operation. Another reason for having pipe Q considerably larger than pipe M is that the air may be discharged from S′ into S in a very short time, so that the operator can charge both S′ and S with air by remaining at the windlass—say only about two minutes, and thus it will not be necessary for him to come to the windlass so often as it would be if he had to wait a long time for the air to be discharged from S′ into S.

What I claim as my invention is—

1. The combination with a carburetor of separate air forcing and air receiving chambers constructed to rise and descend, and downwardly bowed air pipes of approximate U-shape and of different diameters for connecting the carburetor and the air forcing and receiving chambers, and conducting air uninterruptedly or continuously to the carburetor, the air forcing chamber being provided with an air admission valve in its top and opening downward, and also provided with a windlass mechanism for raising and lowering the said movable air forcing chamber; and the pipe directly connecting the air forcing and air receiving chambers being of greater diameter than the pipe directly connecting the carburetor with the air receiving chamber, the whole constructed, arranged and operating, substantially as described.

2. In an apparatus for carbureting air, the combination of a separate oil reservoir A, two or more separate carburetors B, each having a residuum chamber with a draw off cock and a perforated diaphragm at its top, said chambers being below the oil entrance passage and connected by a pipe; an oil supply pipe G having a U-shaped bend forming a trap G^3, and also a perforated branch extending from the trap, entering the first carburetor, running across the same, connecting with the second carburetor and extending across the same, said extension being on a plane above the level of the oil in the residuum chambers; columns of saturated charcoal below said branch and columns of dry charcoal above said branch in the carburetor; an air vent pipe D connected with the reservoir A above the oil therein and with the carburetor B at the level of the oil in the residuum chambers, and a system of piping M, connecting the carburetor and extending from the air forcing apparatus and through the carburetor and into the residuum chambers, substantially as and for the purpose described.

In testimony whereof I hereunto affix my signature in presence of two witnesses.

PATRICK H. FONTAINE.

Witnesses:

E. T. FENWICK,

C. HINES.