

(No Model.)

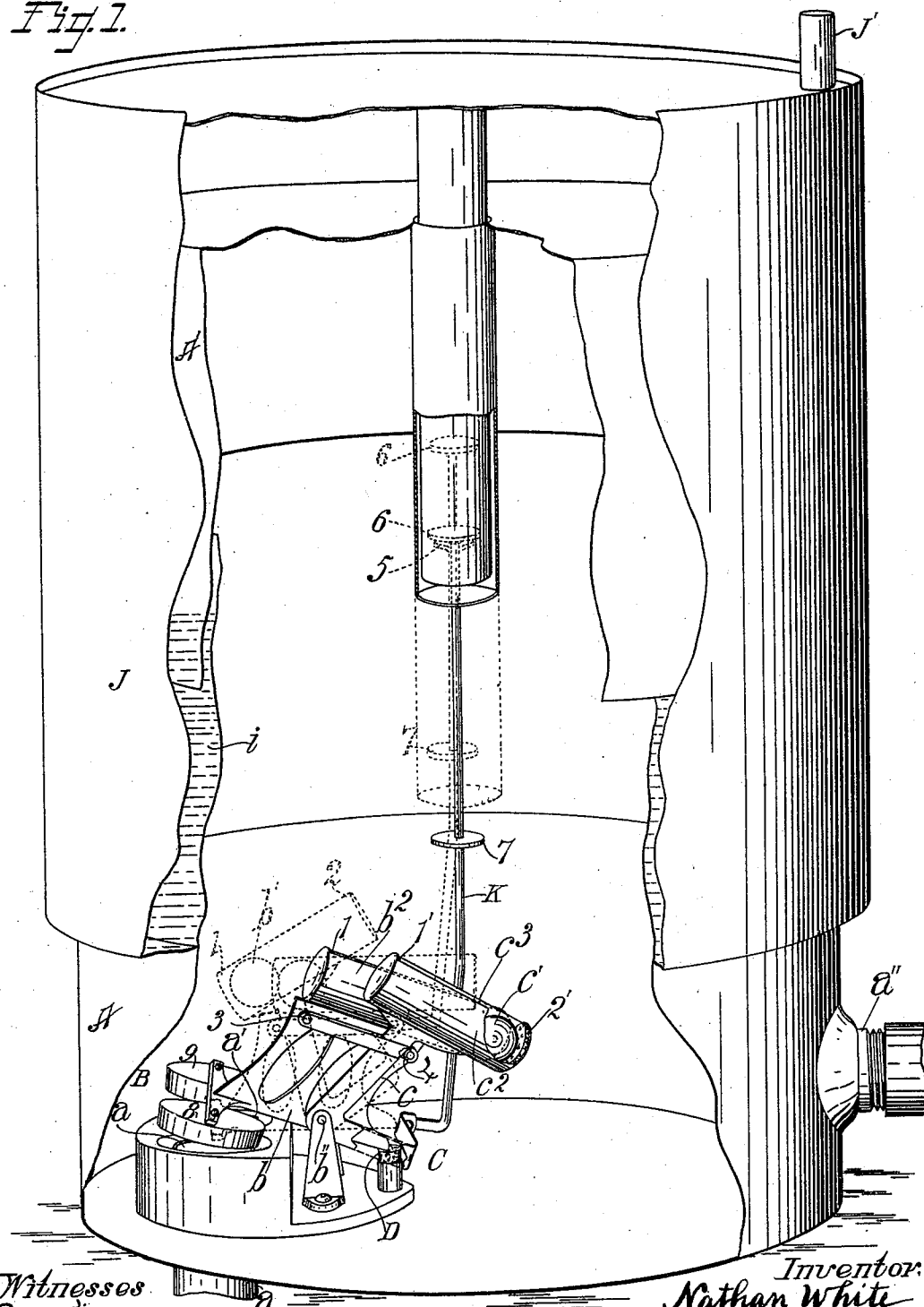
2 Sheets—Sheet 1.

N. WHITE.
AIR AND GAS MIXER.

No. 574,595.

Patented Jan. 5, 1897.

Fig. 1.



Witnesses:  a.
 Perry Kingman.
 Alfred Townsend.

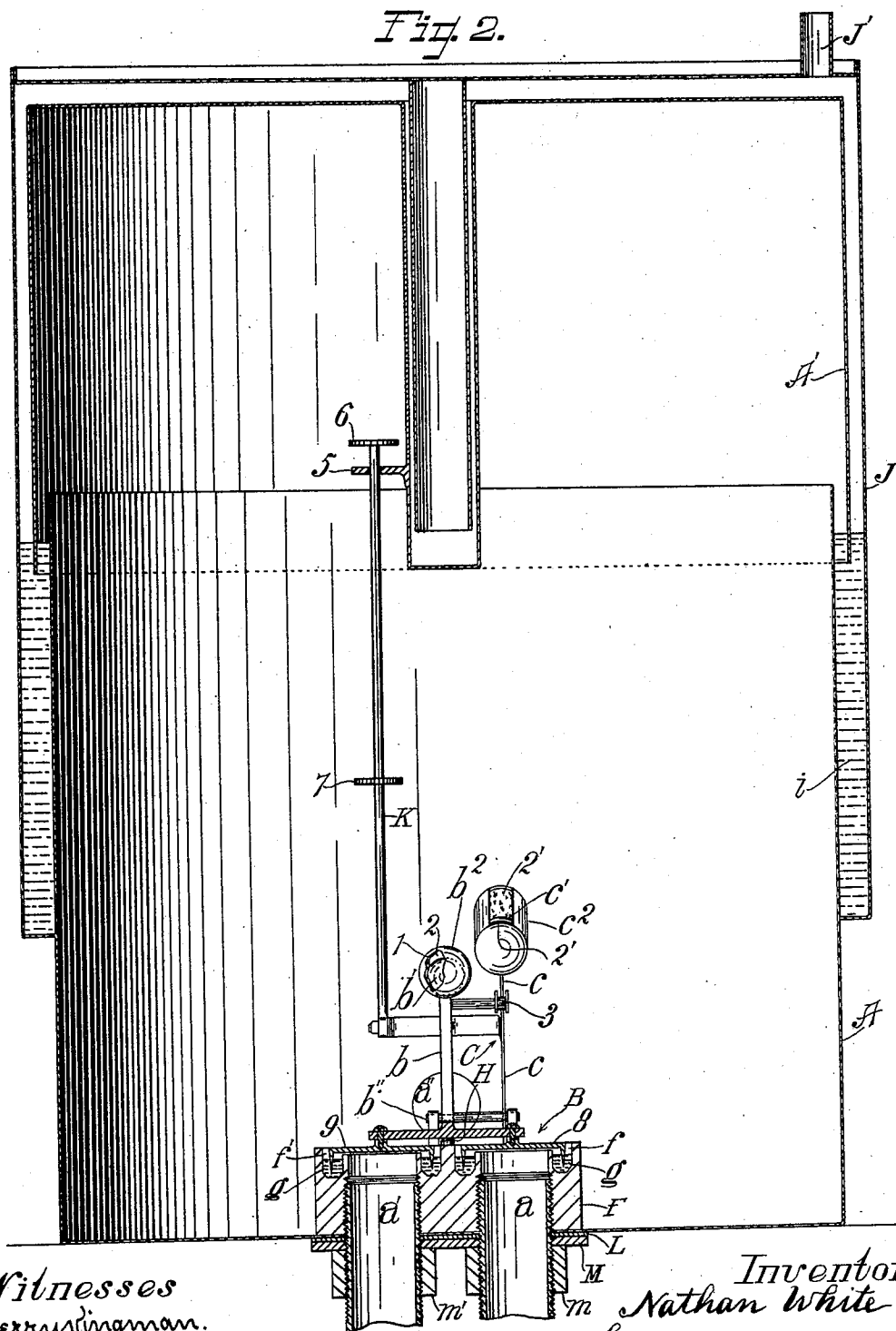
Inventor:
Nathan White
by Hazard Townsend
his Atty's.

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Fig. 2.



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UNITED STATES PATENT OFFICE.

NATHAN WHITE, OF PASADENA, CALIFORNIA, ASSIGNOR TO EDITH WHITE,
OF SAME PLACE.

AIR AND GAS MIXER.

SPECIFICATION forming part of Letters Patent No. 574,595, dated January 5, 1897.

Application filed October 16, 1896. Serial No. 609,142. (No model.)

To all whom it may concern:

Be it known that I, NATHAN WHITE, a citizen of the United States, residing at Pasadena, in the county of Los Angeles and State of California, have invented a new and useful Maximum Air and Gas Mixer, of which the following is a specification.

My invention relates to that class of machines by which to mix air with gas or with vapor from gasoline or other volatile substances for fuel and light.

The object of my invention is to provide an air and gas mixer which will mix a maximum charge of air and gas or air and vapor in a minimum length of time, then to allow the same to escape from the mixer before another charge is mixed.

It is necessary, in order to perfectly accomplish this result, that the air and vapor or air and gas be freely admitted into the receiver until the receiver is filled, and then the supply be shut off until the charge has been drawn out. The valve which controls the inlets must open and close as quickly as possible.

It is desirable that the receiver shall not hold a large quantity of the mixed air and vapor, so that the supply to the burners will always be well mixed and of uniform quality; also, that the pressure of the holder on the gaseous mixture will be as uniform as possible, and that the inlet-valve be operated with such force that it will not be blown open or held open by the inflowing air and vapor or gas.

My invention accomplishes these desirable ends. It applies to that class of air and gas mixers in which the air and gas are introduced into the receiver through separate inlets and become mixed within the receiver, and it comprises means by which the inlet-valve which controls the inlets is operated positively and practically instantaneously to admit the air and gas or vapor to fill the receiver and to as instantaneously shut off the inflow of air and gas or vapor to allow the receiver to empty. The accompanying drawings illustrate my invention.

Figure 1 is a fragmental perspective view showing my invention ready for operation. The valve is shown open and dotted lines in-

dicate the position of parts when the valve is closed. Fig. 2 is a fragmental elevation viewed at right angles to Fig. 1 and in section on two planes, cutting, respectively, through the guide for the holder and through the valve and inlet-pipes.

My invention comprises the combination, with a gas-tank A, having an air-inlet *a*, a gas or vapor inlet *a'*, and a gas-outlet *a''*, and a sealed holder A', which covers the tank and is arranged to rise and fall with relation thereto, of a valve B to close the said inlets; a lever *b*, carrying such valve; an overbalance-weight *b'*, the same being movably mounted on the valve-lever *b* and having its path from side to side of a vertical drawn from the pivot *b''* of the valve-lever; stops 1 2, connected with the valve-lever to stop the weight *b'* at the ends of its path; an auxiliary weighted lever C, the weighted arm *c* of which is adapted and arranged to move the center of gravity thereof from side to side of a vertical drawn from the pivot of such lever; stops 3 4 on the valve-lever arranged in the path of the auxiliary lever C on opposite sides of a vertical drawn from the pivot *b''* of the lever; a catch 5, connected with the holder A' to rise and fall therewith, and two catches 6 7, connected with the auxiliary lever and arranged, respectively, above and below the catch 5, carried by the holder and having their paths respectively extending into the path of the catch 5.

The catches 6 and 7 are arranged to play such a distance that when the lever C is tilted to open the valve, as shown in solid lines in Fig. 1, the catch 6 will be below the upper end of the path of the catch 5, and when the lever is in position with the valve closed the catch 7 will be above the lower end of the path of the catch 5; but the greater portion of the path of the catch 5 will be unobstructed, so that the holder can move freely throughout the greater portion of the time during which the receiver is filling or emptying. When the catch 5 has risen so as to engage the catch 6 and lift it sufficiently to tilt the lever C far enough toward the valve to move the center of gravity of the weight of such lever to that side of a vertical drawn from the pivot of such lever, the lever will over-

balance and the weight will strike upon the stop 3 and rest thereon, thus to overbalance the valve-lever and start it toward closing the valve. The movable weight b' on the valve-lever C will then fall into position and assist to close the valve and to hold it closed against the air and gas pressure. These weights also cause the lever to throw the catch 7 up into the path of the catch 5. When the receiver falls, by reason of the discharge of gas through the outlet a'' , the catch 5 will pass freely downward until it strikes the catch 7 and pushes it down until the lever C is again overbalanced away from the valve. The said lever then strikes the catch 4 and tilts the valve-lever and opens the valve. The movable weight b' will move back to the first position away from the valve, thus to assist in opening it. At the same time the weights cause the lever to throw the catch 6 down into the path of the catch 5, ready to be lifted when the holder has risen and the receiver is filled.

In practice the movable weight on the valve-lever is preferably a rolling weight and is preferably a ball, as shown, and the stops at the ends of the weight-runway are cushioned with cork or some other suitable substance which will not be affected by the gas or vapor.

The weighted lever C is also provided with a rolling weight, such as the ball c' , which rolls in the weight-runway c'' , which corresponds to the weight-runway b'' of the valve-lever. The stops $1' 2'$ at the ends of this runway are cushioned like the stops 1 and 2. The stops on the valve-lever have paths which extend, respectively, on opposite sides of a vertical drawn from the pivot of the lever. This is also true of the stops on the auxiliary lever. In practical construction the paths of the stops 1 and $1'$ preferably extend across such vertical and the movement of the levers tilt the runways so that the ball-weights will roll past the vertical drawn from the pivot of the levers whenever the levers are tilted from side to side of such vertical; and it is desirable that but slight tilting of the levers should be effective to roll the balls from end to end thereof. The balls are preferably of lead. The stops 3 and 4 on the valve-lever are preferably cushioned to prevent any noise caused by contact therewith of the auxiliary lever.

D indicates a cushion-stop to stop the valve-lever when in its open position.

The valve B comprises two caps 8 and 9, which set down over the inlet-pipes $a a'$, which respectively conduct air and vapor into the receiver. The upper ends of these pipes are surrounded by channels $f f'$, which are partly filled with mercury to form seals g , into which the collars of the caps 8 and 9 will be inserted when the valve is closed. The collars of the caps are thin and sharp-edged at their lower or free ends, so that they will not displace any large quantity of mercury.

H indicates a cushion-stop which supports

the valve when it is in its closed position, thus to prevent any noise resulting from the closing of the valve.

i indicates a seal for the holder. The outer wall J of the chamber which contains the seal extends up and is capped over to inclose the holder.

j indicates an air-passage to relieve and supply the atmospheric pressure between the cap and holder as the holder rises and falls.

The stops 6 and 7 are preferably mounted on a rod K, which connects the catches with the lever C.

F indicates a cast-metal valve-base having the seal-channels $f f'$, and the pipes $a a'$ are screwed into this base.

L indicates packing around pipes $a a'$, and M m m' indicate a clamp-plate and nuts on the pipes to secure them and the valve-base in place.

It is to be understood that the air and vapor supply pipes are each provided with an index-cock of any of the well-known forms, so that the relative proportions of air and gas or vapor admitted to the tank can be readily determined. The cocks are not shown in the drawings; but they are common in this class of machines, and illustration thereof herein is not necessary.

Now, having described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination with a gas-tank having an air-inlet, a vapor-inlet and a gas-outlet, and a sealed holder which covers the tank and is arranged to rise and fall with relation thereto; of a valve to close the said inlets; a lever carrying such valve; an overbalance-weight, the same being movably mounted on the valve-lever and having its path from side to side of a vertical drawn from the pivot of the valve-lever; stops connected with the valve-lever to stop the weight at the ends of its path; an auxiliary weighted lever, the weighted arm of which is arranged to move the center of gravity of the weight thereof from side to side of a vertical drawn from the pivot of such lever; stops on the valve-lever arranged in the path of the auxiliary lever on opposite sides of a vertical drawn from the pivot of the lever; a catch connected with the holder to rise and fall therewith; and two catches connected with the auxiliary weighted lever to move the same, and arranged respectively above and below the catch carried by the holder and in the path of such catch.

2. The combination with a gas-tank having an air-inlet, a vapor-inlet and a gas-outlet, and a sealed holder which covers the tank and is arranged to rise and fall; of a valve to close the said inlets; a lever carrying such valve and provided with a weight-runway with stops at the ends thereof and which stops have paths respectively on opposite sides of a vertical drawn from the pivot of the lever; a weight arranged in such runway to move therealong; an auxiliary lever provided with

a weight-runway with stops at the ends thereof and which stops have paths respectively on opposite sides of a vertical drawn from the pivot of the lever; a weight arranged in
5 such runway to move therealong; stops on the valve-lever arranged in the path of the auxiliary lever on opposite sides of the vertical drawn from the pivot of the lever; a catch connected with the holder to rise and
10 fall therewith; and two catches connected with the auxiliary weighted lever to move the same and arranged respectively above and below the catch carried by the holder and in the path of such catch.
15 3. The combination of the pivoted valve-lever provided with a weight-runway having stops at opposite sides of a vertical drawn from the pivot of the lever; a rolling weight in such runway; an auxiliary lever provided
20 with a weight-runway having stops at opposite sides of a vertical drawn from the

lever-pivot; a rolling weight arranged to move along such runway; and stops arranged on the valve-lever on opposite sides of said vertical in the path of the auxiliary lever. 25

4. A pivoted valve-lever carrying a valve and provided with a weight-runway having stops with paths at opposite sides of a vertical drawn from the pivot of the lever; a weight arranged to move along such runway; an auxiliary lever provided with a weight-runway having stops with paths at opposite sides of
30 a vertical drawn from the lever-pivot; a weight arranged to move along such runway; and stops arranged on the valve-lever on opposite sides of said vertical in the path of the
35 auxiliary lever.

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Witnesses:

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