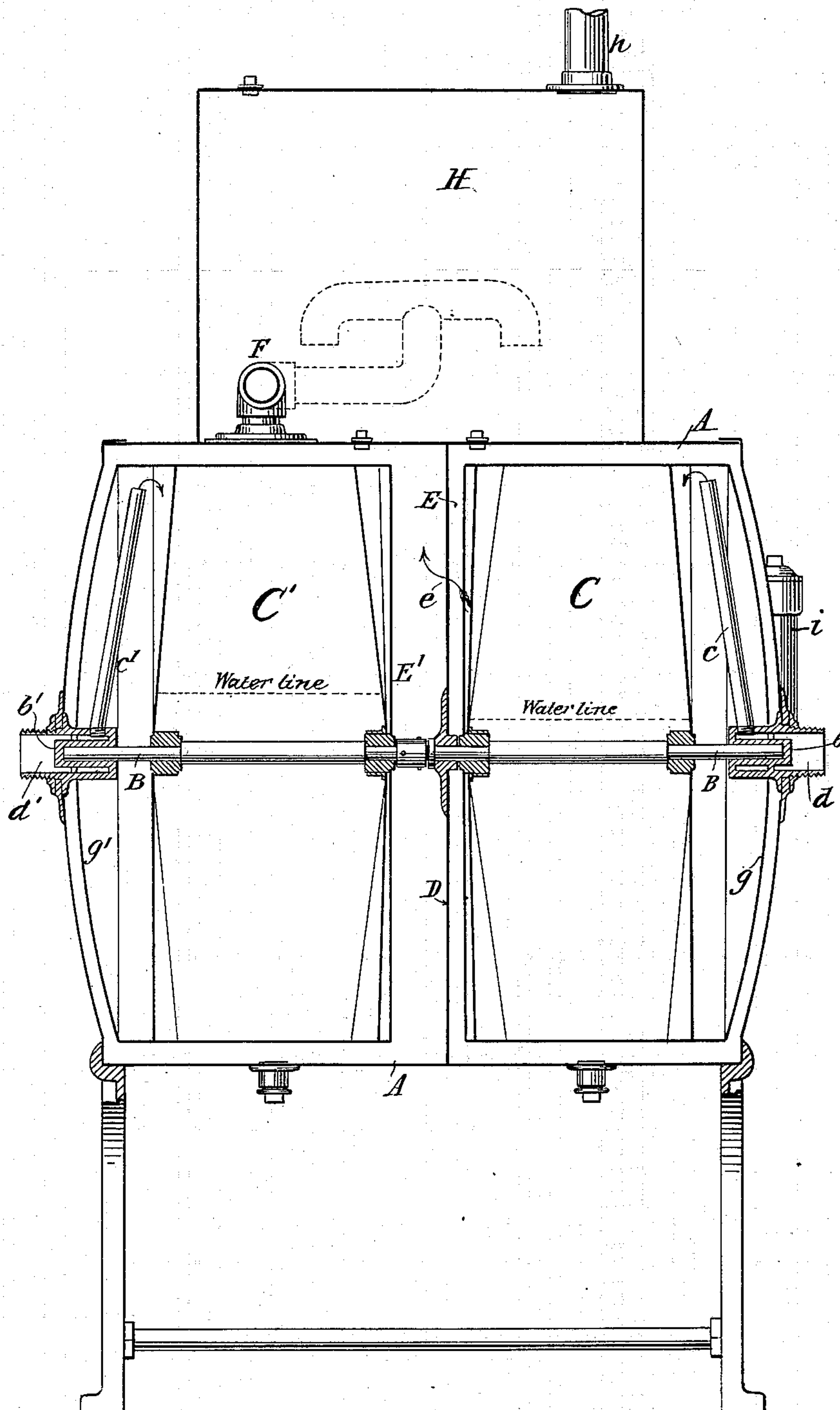


No. 615,520.

Patented Dec. 6, 1898.

J. F. BARKER.
AIR AND GAS MIXER.
(Application filed May 12, 1898.)

(No Model.)



Witnesses:
Raphael Ketter
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Inventor
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UNITED STATES PATENT OFFICE.

JOHN F. BARKER, OF SPRINGFIELD, MASSACHUSETTS, ASSIGNOR TO THE
GILBERT & BARKER MANUFACTURING COMPANY, OF MASSACHUSETTS.

AIR-AND-GAS MIXER.

SPECIFICATION forming part of Letters Patent No. 615,520, dated December 6, 1898.

Application filed May 12, 1898. Serial No. 680,451. (No model.)

To all whom it may concern:

Be it known that I, JOHN F. BARKER, a citizen of the United States, residing at Springfield, in the county of Hampden and State of Massachusetts, have invented certain new and useful Improvements in Devices for Mixing Air and Gas, of which the following is a specification.

My invention relates to that class of gas-and-air-mixing devices in which the pressure of the gas operates to draw in and mix with itself a predetermined proportion of air; and the object of my improvements is to provide a machine of this class which shall operate to mix with the gas an unvarying proportion of air irrespective of variations in the gas-pressure. To this end I provide a closed case, through which passes longitudinally a shaft, the ends of which are journaled in bearings set in the ends of the case. Upon this shaft are set two meter-wheels, into each of which projects a pipe, connected the one with the gas-supply and the other with the outer air. Between the meter-wheels is a partition extending across the inclosing case and from the bottom thereof to a point above the highest water-level therein. As the result of the operation of the two meter-wheels is to produce different water-levels in the case at the same time, the division of the case into two compartments by this partition enables such different water-levels to exist without interference and makes the discharges of air and gas uniform and steady. Connected with the case is a second chamber, into which pass the mixed air and gas, which serves both as a mixing-chamber to insure their thorough commingling and as a cushion to prevent the successive discharges from the meter-wheels from producing waves of pressure in the delivery-pipes.

The invention will be best understood by reference to the accompanying drawing, which shows a vertical longitudinal section of the device.

Referring to the drawing, A indicates a closed case, through which passes a shaft B, which is journaled in bearings *b b'*, set in the ends of the case. Upon the shaft B are set two meter-wheels C C' of any usual or well-

known form of construction. Into the meter-wheel C discharges a pipe *c*, which connects through a passage *d* in the bearing *b* with the gas-supply, and into the meter-wheel C' discharges a pipe *c'*, connected through the passage *d'* in the bearing *b'* with the air or such other gas as it is desired to mix with the gas entering through the meter-wheel C. A partition D, located between the meter-wheels C C', divides the case A into two parts or chambers E E', which are connected by a perforation *e* in the partition D. From the chamber E' a T-shaped pipe F projects into the mixing-chamber H, from which the delivery-pipe *h* leads to the point or points of consumption.

If desired, the perforation *e* in the partition D may be omitted and the air may pass directly from the chamber E into the mixing-chamber H, through a pipe or perforation in the wall of the case A provided for the purpose, or since the object of the partition D is to prevent the confusion in the operation of the apparatus, which would result from the efforts of the two meter-wheels to establish at the same time two different water-levels in the case A, it may rise only to a point above the highest water-level in the case, leaving the upper part of the case in one compartment.

I have preferred the arrangement shown, with the case divided into two separate compartments by a partition and a perforation in such partition, for the reason that by thus compelling the gas to pass to the outlet through the compartment into which the air is delivered a more complete commingling of the two is secured.

The case A is provided with a fill-pipe *i* and with the usual gages and plugs for drawing off the water.

The operation of the device is as follows: The case A having been filled with water, oil, or other suitable liquid to a level sufficiently high to seal the compartments of the meter-wheel, gas under pressure is admitted to the meter-wheel C through the pipe *c*. The meter-wheels are rotated by the gas-pressure, gas is delivered into the compartment E, and by the rotation of the wheel C' air is drawn

into the compartment E'. The gas passes through the perforation *e* in the partition D into the compartment E', and thence the mingled air and gas pass through the pipe F into the chamber H and so on to the delivery-pipe *h*, leading to the burners.

The mixture of the air and gas is assisted by their passage through the double-ended pipe F and is completed in the mixing-chamber H, the outlet-pipe *h* from which is placed at the end of the chamber most remote from the inlet-pipe F, so as to insure the retention of the gas in the chamber for as long a time as possible. Besides the function of the chamber H as a mixing-chamber, the body of mixed air and gas therein acts as a cushion to receive and absorb the successive impacts of air and gas from the meter-wheels, and thus prevent waves of pressure in the delivery-pipe and at the burners.

The relative quantities of air and gas that will be delivered can be determined by making the wheels of proper relative proportions, which can be readily calculated by those skilled in the art, and I have not therefore specified any particular proportions herein.

What I claim as new, and desire to secure by Letters Patent, is—

1. In a device for mixing gas and air the combination of an inclosing case, a shaft in such case, two meter-wheels mounted on such shaft and adapted to be rotated by gas-pressure on one of such wheels, a perforated partition between such wheels dividing the case into two parts and a mixing-chamber adapted to receive the air and gas from such wheels, substantially as and for the purposes set forth.

2. In a device for mixing air and gas the combination of two meter-wheels adapted to be rotated by gas-pressure upon one of them mounted upon a single shaft and having separate liquid seals and a mixing-chamber adapted to receive the air and gas from such wheels, substantially as and for the purposes set forth.

In witness whereof I have hereto set my hand this 10th day of May, 1898.

JOHN F. BARKER.

Witnesses:

JONATHAN BARNES,
E. H. BREWSTER.