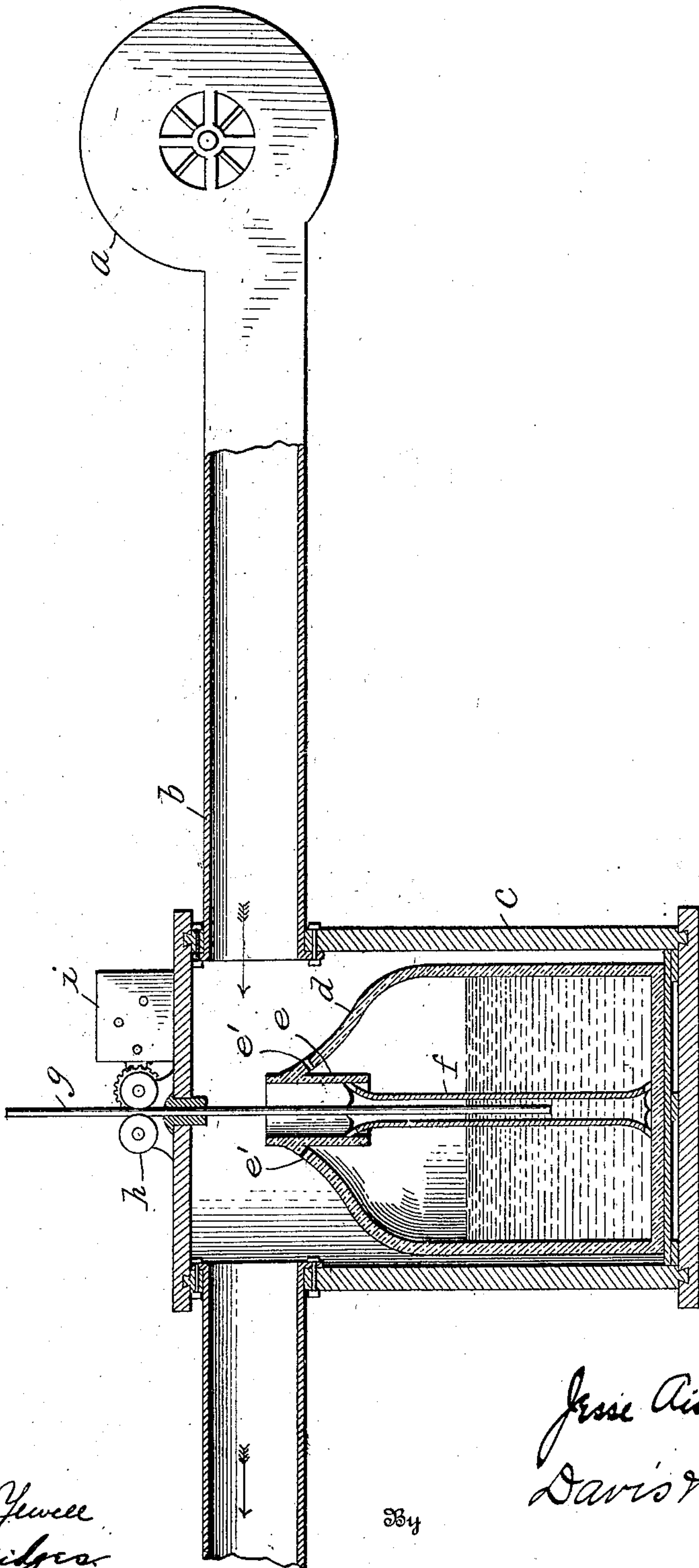


No. 863,487.

PATENTED AUG. 13, 1907.

J. AINSWORTH.
GAS GENERATOR.

APPLICATION FILED MAY 22, 1907.



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UNITED STATES PATENT OFFICE.

JESSE AINSWORTH, OF LYONS, KANSAS.

GAS-GENERATOR.

No. 863,487.

Specification of Letters Patent.

Patented Aug. 13, 1907.

Application filed March 22, 1907. Serial No. 363,906.

To all whom it may concern:

Be it known that I, JESSE AINSWORTH, a citizen of the United States of America, and a resident of Lyons, county of Rice, State of Kansas, have invented certain new and useful Improvements in Gas-Generators, of which the following is a full and clear specification, reference being had to the accompanying drawing, in which is represented a vertical sectional view of one form of apparatus adapted for carrying out my invention.

This invention has relation to that type of gas generators especially adapted for generating nitrogen peroxid or other gas for use in connection with the bleaching of wheat or flour and in which means are provided for immersing one end of the metal rod in a nitric acid solution, the rod being fed into the solution as fast as the acid consumes the metal, suitable air-forcing or sucking means being provided for sucking the gas out of the generator and intimately mixing it with a continuous supply of air preparatory to bringing the mixture into contact with the flour to be treated.

The object of this invention is to provide for a uniform feed of the rod of metal and a more thorough circulation of the acid solution, whereby a constant quantity of gas is generated until the acid is exhausted, as more fully hereinafter set forth.

Referring to the drawing annexed by reference characters, *a* designates a suitable fan-blower or other air-forcing device, *b* the exit conduit thereof which in practice will lead to the point of treatment of the flour or other material and *c* a suitable chamber interposed in the conduit and adapted to receive the generating apparatus.

In the receptacle is located a jar *d*, containing the acid solution, whose narrow neck portion *e* rises to a point about on a level with the center of the air conduit. Placed in this jar is a suitable imperforate acid resisting tube *f* whose lower end rests on the bottom of the jar and whose upper end extends a short distance up into the neck portion *e* of the jar. At each end this tube is flared outwardly and this flared portion is notched or scalloped. The notches at the lower end of the tube permit the acid solution to pass up into the tube to, the same level as the main body of acid, and the notches at the upper end of the tube permit surplus acid to overflow back into the jar. The rod of metal *g* extends down through a hole in the top of the receptacle and into the tube a suitable distance, this rod being supported between a pair of feed wheels *h* which

are adapted to be operated by a suitable clock-work *i* to feed the rod downward at a uniform predetermined rate of speed. It is probable that a feed of six inches per hour will approximate the most desirable speed. It will be observed that when the rod is immersed in the acid the reaction generates sufficient heat to cause a constant and sufficient generation of gas and that the ebullition or effervescence caused by the rapid generation of the gas will carry up sufficient acid to cover the rod up to the top of the tube. The surplus acid will pass over the top of the tube and run back into the jar. In this manner a constant and ample circulation of the solution will be constantly maintained, and the circulation being from the bottom of the jar to the top the strength of the solution brought into contact with the rod will be approximately uniform. The clockwork motor and feed wheels provide for a constant and uniform speed of the rod so that as the acid weakens more metal is exposed to the action of the acid thus contributing to uniformity in quantity and quality of gas. As the gas is generated it will be drawn out at the top of the jar by the blast of the current of air passing over the top of the same and thus intimately mix with the air on its way to the bleacher.

Having thus fully described my invention, what I claim and desire to secure by Letters Patent is:—

1. In a gas generating and mixing apparatus, an air conduit and forcing device, an air chamber interposed therein, an acid containing receptacle in this chamber having its mouth or exit in line with the current of air, a metal rod and time-controlled means for positively supporting and feeding this rod down into the acid, said means being operable independently of the pressure of the gas in the receptacle, and an acid resisting tube in the said receptacle, this tube surrounding the rod and extending up into the exit neck of the receptacle and having notches or openings at each end, for the purposes set forth.

2. In combination with an air conduit and forcing apparatus having an air chamber interposed therein, an acid receptacle in this air chamber, a metal rod and time-controlled means for positively supporting and feeding it down into this receptacle at a predetermined rate of speed, said means being operable independently of the pressure of the gas in the receptacle; and means in the receptacle for causing the circulation of the acid solution along the immersed portion of the rod.

3. In combination with an acid containing receptacle, a metallic rod immersed therein, and time-controlled means for positively feeding the rod as it is gasified by the acid independently of the pressure of gas in the receptacle.

4. In combination with an acid containing vessel, a metal rod having its lower end depending into the acid,

and time-controlled means for positively suspending and feeding said rod down into the acid as the metal is gasified independently of the pressure of gas in the receptacle.

- 5 In combination with an acid containing receptacle having an upward extending neck exit portion, a tube extending from the bottom of the vessel up into said neck portion but terminating short of the upper end of said neck portion, means being provided for permitting the acid to flow into the lower end of the tube and to overflow
10 over the top of the tube back into the receptacle, and a

metal rod extending down through the neck and into the tube, substantially as set forth.

In testimony whereof I hereunto affix my signature in the presence of two witnesses this 11th day of March 1907.

JESSE AINSWORTH.

Witnesses:

J. W. LONG,
ALVIN LONG.