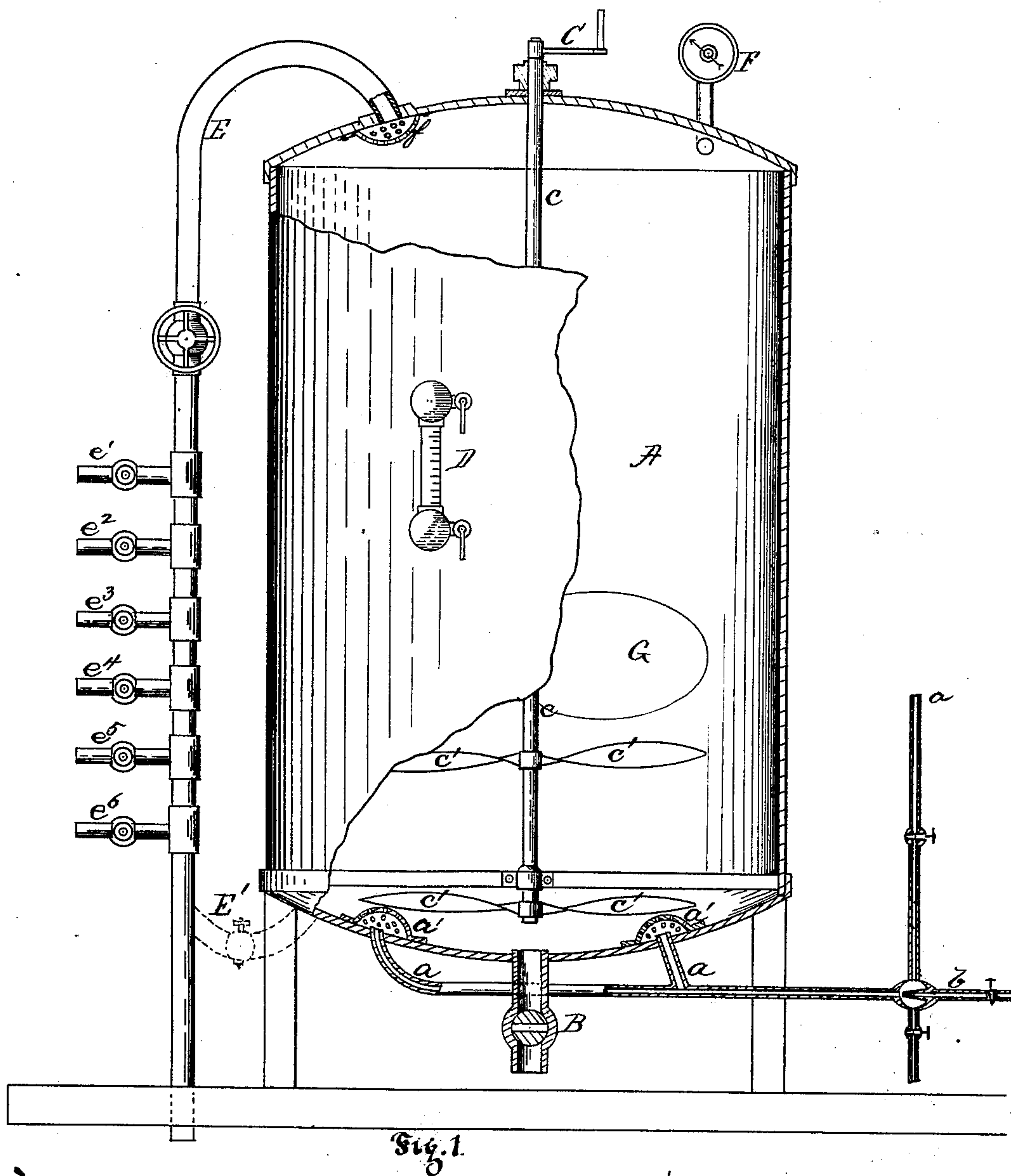


J. H. & T. E. CONNELLY.
 Apparatus for Extinguishing Fire on Ship Board, &c.
 No. 218,491. Patented Aug. 12, 1879.



Witnesses.

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Inventors
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UNITED STATES PATENT OFFICE.

JOSEPH H. CONNELLY AND THOMAS E. CONNELLY, OF PITTSBURG, PENNSYLVANIA, ASSIGNORS TO THE CONSOLIDATED FIRE EXTINGUISHER COMPANY, OF SAME PLACE.

IMPROVEMENT IN APPARATUS FOR EXTINGUISHING FIRES ON SHIPBOARD, &c.

Specification forming part of Letters Patent No. **218,491**, dated August 12, 1879; application filed June 18, 1879.

To all whom it may concern:

Be it known that we, JOSEPH H. CONNELLY and THOMAS E. CONNELLY, both of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Apparatus for Extinguishing Fires on Shipboard and in like places; and we do hereby declare the following to be a full, clear, and exact description thereof, reference being had to the accompanying drawing, forming part of this specification, and in which the devices illustrating our invention are shown partly in section.

Our invention relates to the construction of apparatus for generating and distributing carbonic-acid gas, or other equivalent gas, under pressure, for the purpose of extinguishing fires on shipboard and in like places; and it consists in combining with a generator provided with induction and eduction pipes a steam-jet arranged in the induction-pipe, and adapted to be used to both force and heat the water supplied to the generator, and also in details of construction hereinafter more specifically set forth.

In subduing fires occurring on steamers, in the holds of vessels, and similar places, the customary means employed has been a stream of water thrown by the pumps, or in some cases what is termed a "chemical fire-extinguisher," of some one of the well-known patterns, throwing a stream of water impregnated with gas, said fire-extinguisher being charged by first filling the same with water and adding the chemicals, or mixing the same with the water at the time the water was to be impregnated with the gas. This class of fire-extinguishers are only capable of throwing both water and gas; but in many instances the water is objectionable, and the gas alone is fully as effective when liberated in a closed chamber—as, for instance, the hold of a vessel.

The object of the present invention is to provide means whereby carbonic-acid or equivalent gas can be generated and delivered at the desired point unmixed with water, but which apparatus, if desired, can also be used to generate gas and impregnate water therewith, so

as to discharge both water and gas for the purpose of extinguishing fires.

We will now proceed to describe our invention, so that others skilled in the art to which it appertains may apply the same.

In the drawing, A indicates the generator, which should be of suitable plate metal, and of such strength as to resist great internal pressure. As it will in most cases be stationary, its weight is not material, but its size should be proportioned to the duty demanded of it.

Communicating with the bottom of generator or chamber A are induction-pipes *a*, (one or more,) having their openings guarded by a screen or sieve, *a'*, of sufficiently fine mesh to prevent the chemicals placed in the generator from falling into the induction-pipes *a*. *b* indicates a steam-jet, arranged in the induction-pipe *a*, in order to supply steam to heat the water and facilitate the reaction of the chemicals which liberate the gas; and such jet *b* may constitute an injector or siphon, to inject the water into the generator; or the water-supply may be obtained by connecting the induction-pipe *a* to the donkey-pump, or its equivalent.

B represents a discharge-pipe, located in the bottom of the generator, and used for discharging the spent gas-producing chemicals. Arranged within the generator, and operated from without by a suitable crank, C, is a shaft, *c*, having at its lower end arms *c'*, adapted to revolve near the bottom of the generator, so as to stir up any substance resting on the bottom of the generator. About the middle of the generator (or lower down, if preferred) is a water-gage, D, which is used to indicate when sufficient water has been admitted to chamber A.

E represents an eduction-pipe, leading from a point at or near the top of the generator A, and from said pipe branch pipes *e*¹ *e*² *e*³ *e*⁴ *e*⁵, &c., (any desired number,) lead off to between decks and to other desired points. The open end of pipe E is guarded by a screen, *f*. The induction and eduction pipes, branch pipes, and jet are each and all provided with suitable cocks, as shown in the drawing.

With the generator A a pressure-gage, F, to indicate the pressure of gas in the upper portion of the chamber, may be used, if desired; and a door, G, adapted to be closed tight, like the man-hole of a boiler or the door of a gas-retort, should be provided for introducing the chemicals.

The operation of these devices will be as follows: The door G being opened, a charge of any suitable chemicals adapted to generate carbonic-acid or equivalent gas is introduced, and the door closed perfectly tight. The chemicals we prefer to use are the sulphate of alumina or porous alum and granulated bicarbonate of soda, as described in Letters Patent granted to J. H. Connelly, October 30, 1877, No. 196,562, though any others may be used, preference being always given to such as require the presence of a liquid to cause the reaction, and which will not affect the metal of the generator. In this condition the generator may be left until required for use, when the induction-pipe will be opened, steam turned on at the jet *b*, and a supply of water, induced either by a pump or the jet, will be admitted to the generator, the cocks of the induction-pipe being regulated so that the water shall not rise in the generator above the gage D when gas only is required. The pressure-gage F will indicate the pressure of gas in the upper part of the chamber, and if the reaction needs accelerating the agitator *c c'* may be used. The gas thus generated will escape by eduction-tube E, and may be directed through pipes *c'*, &c., to any desired point in the vessel. When the chemicals are exhausted and it is desired to discharge the same from the generator the cocks of the eduction and induction pipes are closed, and that of the discharge-tube B opened; or if it is desirable to wash out the generator thoroughly, the cock of the induction-pipe may be left open and a stream of water allowed to flow through the chamber A. If water impregnated with gas is desired, the induction-pipe can be left open until the chamber A is filled with water, the indications of the water-gage D being disregarded, in which case the apparatus will op-

erate substantially the same as the ordinary chemical fire-extinguishers, throwing both water and gas until the charge of chemicals is exhausted. In this case, however, a branch pipe, as indicated by dotted lines E', should be used and the cock of the main eduction-pipe E closed.

The advantages of our invention are simplicity and effectiveness, and the ability to use it either to supply gas alone or water impregnated with gas.

Having thus described our invention, what we claim, and desire to secure by Letters Patent, is—

1. In an apparatus for generating gas for extinguishing fires on shipboard and in like places, the generating-chamber A, provided with the induction pipe or pipes communicating with the generating-chamber at or near the bottom thereof, an eduction-pipe communicating with the generating-chamber at or near the top thereof, and an agitator, *c c'*, substantially as and for the purpose specified.

2. The combination, with the generator, of an induction-pipe, an eduction-pipe, and a steam-jet arranged in the induction-pipe, substantially as and for the purpose specified.

3. An apparatus for extinguishing fires having a generating-chamber provided with two valved eduction or delivery pipes, one leading from at or near the top, and another leading from at or near the bottom, of the generator, and an induction or supply pipe communicating with the generator at a point sufficiently below the top thereof to permit the accumulation of gas in the upper portion of the generator, substantially as and for the purpose specified.

In testimony whereof we, the said JOSEPH H. CONNELLY and THOMAS E. CONNELLY, have hereunto set our hands.

JOSEPH H. CONNELLY.
THOMAS E. CONNELLY.

Witnesses:

F. W. RITTER, Jr.,
JAMES H. PORTE.