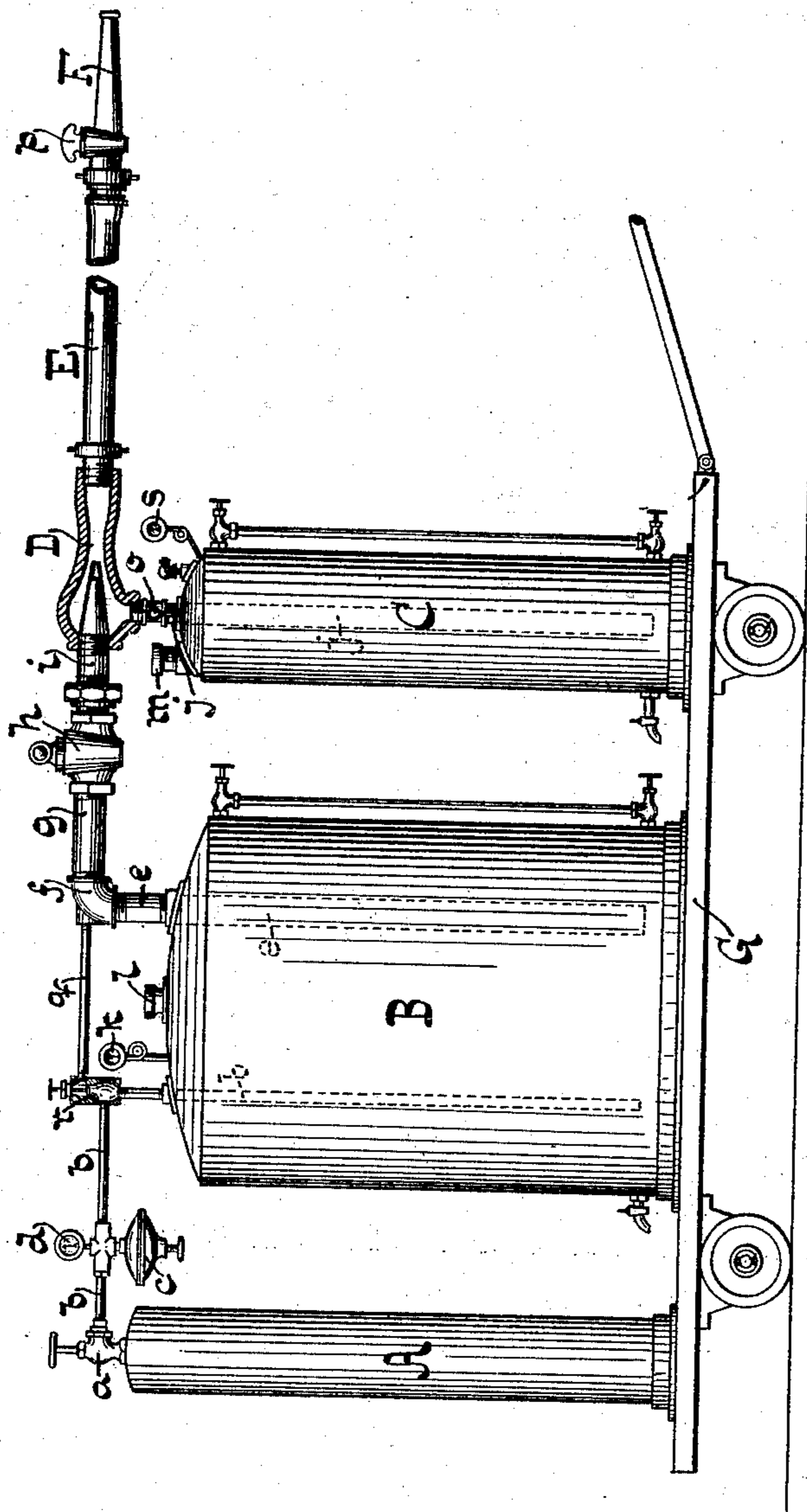


(No Model.)

H. P. WEIDIG.  
METHOD OF AND APPARATUS FOR EXTINGUISHING FIRES.  
No. 504,898. Patented Sept. 12, 1893.



WITNESSES:

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# UNITED STATES PATENT OFFICE.

HENRY P. WEIDIG, OF NEWARK, NEW JERSEY.

## METHOD OF AND APPARATUS FOR EXTINGUISHING FIRES.

SPECIFICATION forming part of Letters Patent No. 504,898, dated September 12, 1893.

Application filed February 7, 1893. Serial No. 461,377. (No model.)

*To all whom it may concern:*

Be it known that I, HENRY P. WEIDIG, a citizen of the United States, and a resident of Newark, in the county of Essex and State of New Jersey, have invented a new and useful Improvement in Methods of and Apparatus for Extinguishing Fires, of which the following is a specification.

My invention has for its object to rapidly extinguish fire by means of a jet of water combined with suitable chemicals in solution, and to this end it consists in supplying a current of carbonated water under pressure, mixing with the said current ammonia, which will combine with the carbonic acid, forming a solution of carbonate of ammonia, and discharging the mixture into the fire.

My invention also consists in apparatus for carrying out this method, which apparatus is represented in sectional elevation in the accompanying drawing.

In the drawing the letter A designates a cylinder containing liquid carbonic acid, B a closed tank to be charged with water and C a closed tank to be charged with anhydrous ammonia, or with a strong solution of ammonia in water.

*a* is a valve placed on the top of the cylinder A, *b* a pipe leading from the valve *a* to the tank B and extending downwardly into the same to near its bottom. A reducing valve *c* with pressure gage *d* of the usual construction is inserted into this pipe *b* between the cylinder A and the tank B. A pipe *e* is led from near the bottom of the water tank B, passed through the top of the same and by elbow *f* and pipe *g* is connected to a stop cock *h*. To this stop cock *h* is connected a jet nozzle *i* which projects into the casing of an ejector D.

From near the bottom of the ammonia tank C is led a pipe *j*, which passes through the top of the tank and is connected to the casing of the ejector D as shown. A stop cock *o* is inserted into this pipe *j* between the tank C and the ejector D.

To the ejector D is connected a hose E with a nozzle F, provided by preference with a cock *p*. The hose F may be wound upon a reel in the usual well known manner. The joints where the pipes *b*, *e* and *j* pass through the tanks B and C must be made air tight.

*k* and *s* are pressure gages, and *l* and *m* filling plugs.

The whole apparatus is by preference placed upon a truck or carriage G of any suitable construction.

Instead of a single cylinder A, a battery of such cylinders connected to a common pipe leading to the water tank may be used. Two or more tanks B and C may also be placed on a carriage and separately connected to the carbonic acid supply and to the ejector.

The pipes *b*, *e* and *j* instead of being placed in the interior of the respective tanks B and C may be placed outside and connected at or near the bottom of the tanks in the usual well known manner of connecting pipes at or near the bottom of tanks.

The operation of the apparatus is as follows: The proper connections being made, the tank B is filled with water and the tank C with liquid anhydrous ammonia or with strong ammonia water, and the plugs *l* and *m* as well as the cocks *h* and *o* closed. The reducing valve is set to a suitable pressure, generally to from sixty to seventy pounds, and the valve *a* is then opened. Carbonic acid gas from the cylinder or cylinders A entering the tank B near the bottom will soon saturate the water at a pressure of from sixty to seventy pounds, which pressure is maintained within the tank. In case of fire, the apparatus is brought into proper position; the cocks *h* and *o* are then opened. The pressure of the carbonic acid gas in the cylinder B causes a stream of carbonated water to be discharged into the ejector which induces an upward current of ammonia from the tank C. The ammonia and the carbonated water mingle and form a solution of ammonia carbonate, which solution is thrown into the fire through the nozzle F, the flow being controlled by the cock *p*. The cocks *h* and *o* can readily be adjusted to obtain the desired proportion of carbonic acid water and ammonia, and such positions may be indicated by marks on the cocks. The tanks B and C may be provided with glass gages in the usual manner to aid in making the proper adjustment.

Other means than those shown such as pumps may be used for bringing together under pressure carbonated water and ammonia and for mixing the same in proper proportion.

tions on their way to the discharge nozzle. By thus bringing together under pressure carbonated water and ammonia, a diluted odorless solution of carbonate of ammonia is discharged, which when striking the fire will readily decompose into steam, free carbonic acid and free ammonia gas; the carbonate of ammonia being decomposed at or above 56° centigrade.

10 The advantage of this new process is, that the carbonic acid gas, as well as the ammonia, forming a salt on their way through the hose, will be carried to their point of action without being able to escape. When several tanks  
15 B and C are placed upon a carriage, they may be used in rotation, one tank being filled while the other is discharged.

In order that the water supplied to the ejector may be properly impregnated with  
20 carbonic acid, in case a tank B is to be used shortly after refilling, that is to say, before the water has become properly saturated, a direct connection for carbonic acid gas is made to the ejector, for instance as here  
25 shown, I place a suitable T valve *r* in the pipe *b* and connect the chamber above the valve disk to the elbow *f* by a pipe *q*.

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

30 1. The herein described method of extinguishing fire, which consists in supplying a stream of carbonated water under pressure, conducting ammonia into this stream, thus forming a stream of a solution of ammonia  
35 carbonate under pressure, and discharging this solution into the fire by such pressure.

2. The herein described method of extin-

guishing fires, which consists in supplying a stream of carbonated water by the pressure of carbonic acid gas, conducting ammonia 40 into this stream, thus forming a stream of a solution of ammonia carbonate under pressure, and discharging this solution into the fire by such pressure.

3. In apparatus for extinguishing fire, the 45 combination of one or more vessels adapted to contain liquid carbonic acid, a closed water tank, a closed ammonia tank, an ejector, a hose and nozzle connected to the ejector, and connections substantially as described, 50 for admitting carbonic acid at or near the bottom of the closed water tank, for taking the water from the bottom of the water tank to the ejector and for taking ammonia from the bottom of the ammonia tank to the ejector, 55 substantially as and for the purpose specified.

4. In an apparatus for extinguishing fire, the combination of one or more carbonic acid cylinders A, water tank B, ammonia tank C, ejector D, hose E, nozzle F, pipe *b* leading 60 from cylinder A to bottom of tank B, pipe *e* leading from bottom of tank B to cock *h* connected with ejector D, and pipe *j* leading from bottom of tank C to ejector D, substantially 65 as and for the purpose specified.

In testimony that I claim the foregoing as my invention I have signed my name, in presence of two witnesses, this 6th day of February, 1893.

HENRY P. WEIDIG.

Witnesses:

A. FABER DU FAUR, Jr.,  
KLAS H. TERNSTEDT.