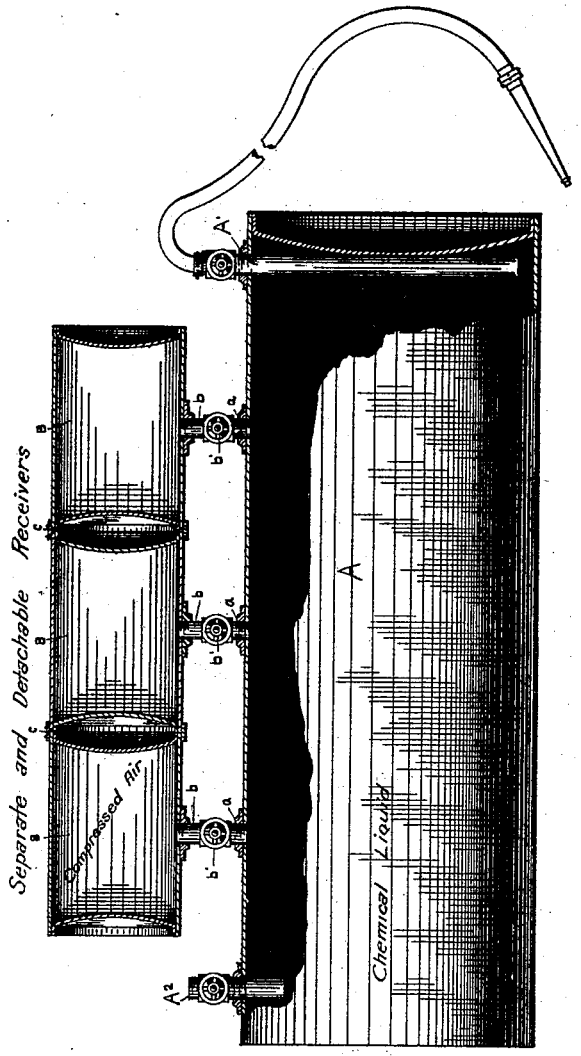
(No Model.)

H. A. HUTSON.

CHEMICAL ENGINE.

No. 343,317. Patented June 8, 1886.



WITNESSES

N. S. Austin.

Geo. W. Ketting

Henry A. Hutson INVENTOR

By

Leggett & Leggett Attorneys

UNITED STATES PATENT OFFICE.

HENRY A. HUTSON, OF CHICAGO, ILLINOIS.

CHEMICAL ENGINE.

SPECIFICATION forming part of Letters Patent No. 343,317, dated June 8, 1886.

Application filed March 6, 1886. Serial No. 194,249. (No model.)

To all whom it may concern:

Be it known that I, HENRY A. HUTSON, of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Chemical Engines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use the same.

My invention relates to improvements in that class of so-called "chemical engines" that use compressed air as a motive power for throwing a liquid, in which one or more separate containers for compressed air are employed, said air-containers being detachably secured to the engine and made interchangeable, to the end that a light, simple, durable, and effective apparatus for the purpose aforesaid is had that can be produced at a small initial cost and can be operated with little labor.

With the class of fire-extinguishers where chemicals are brought together in the apparatus, forming gas that is projected by its own pressure, the gas, for want of sufficient specific gravity, can be thrown but a short distance, and even then much of the gas commingles with the air and is wasted before reaching such a near proximity to the fire as to render the gas effective in extinguishing the fire. In contradistinction we have the so-called "chemical engines," with which my present invention is connected, in which a liquid is thrown, the said liquid being of such chemical composition that it is converted into fire-extinguishing gas after reaching the fire. Such liquid can be thrown, when necessary, as far as water, although usually but a comparatively small quantity of such chemical liquid is required. Heretofore this class of engines has usually been operated by air-pumps connected with the apparatus and worked by hand. The air-pump added somewhat to the weight of the machine, and materially increased the initial cost and limited the machine in its capacity to manual power; also, the amount of labor required to operate the apparatus was excessive. In view of these difficulties I have devised the following, to wit:

A container for the chemical liquid is provided, usually cylindrical in form, having suitable nozzle for attaching hose, and necessary connections for filling. This container has one or more nozzles or other suitable appliances for attaching smaller vessels filled with compressed air, the latter to be used as a motive power in discharging the chemical liquid. These air-vessels are detachable and interchangeable, and for filling are removed to an air-compressing machine and the air stored at such a high pressure that the contents of a comparatively small light air-vessel furnishes the requisite power for the chemical engine.

The accompanying drawing is a side elevation, partly in section, of one form of chemical engine embodying my invention.

A represents a container, in which is stored the chemical liquid to be used as fire-extinguisher, the liquid being converted into gas on reaching the fire. A tube, A′, leads inside to near the bottom of the container, and at the outer end is threaded or otherwise prepared for attaching a hose or discharging nozzle. A suitable aperture, tube, or other device, A^2, and means for closing the same is had for charging the container.

B are the air-vessels, one or more of which are provided for each container A. Each air-vessel has a tube, *b*, provided with a stop-valve, *b*′. These tubes are respectively connected, by means of suitable couplings, with corresponding tubes or nozzles, *a*, of the container A. The vessels B are made interchangeable in their fitting, so that any vessel B may be attached to any nozzle or tube *a*. The container A may be of any desired size. Smaller ones are provided that may be carried by one or two men. Others of various larger sizes are mounted on wheels, and others are made stationary in large buildings and at points centrally located, so that a large amount of property may be protected. The shape either of the air-vessels or of the container for the chemical liquid is not essential, but the cylindrical form shown is found to be well adapted for this purpose.

The exhausted air-vessels, by means of suitable couplings, are easily detached, and their places supplied with other air-vessels that have been filled with compressed air at some air-compressing machine or station.

When the apparatus is mounted on wheels

and the air-vessels are of a cylindrical form and two or more are set in line, as shown, bands *c* may be arranged to slide over the joints and hold the air-vessels together, so that they mutually support each other.

When the container for chemical liquid has been charged and the air-vessels have been filled and attached, the machine is ready for use at a moment's warning, and may remain in this condition for any length of time, if, happily, it is not needed, without deteriorating in the least or losing any of its power. There is nothing essential in the size of these air-vessels, and a single large one may be used, or several small ones, the latter having in the aggregate the desired capacity. There is, however, an advantage in using smaller air-vessels—for instance, as will frequently occur, only a small portion of the chemical liquid has been used to extinguish the fire. In such cases only such air-vessels as have been drawn from will require replenishing, whereas with one large air-vessel the latter would have to be refilled every time that a portion of the contents had been used. Otherwise there would not be power enough stored to utilize the full capacity of the liquid-container. These air-vessels may be shipped at a small expense, so that small towns that cannot afford the expense of an air-compressing machine may be supplied from larger towns that are provided with such air-compressing apparatus.

In operating my improved chemical engine there is nothing to do but to open the valve between an air-vessel and the liquid-container and to hold the nozzle of the hose. One man, therefore, is sufficient to operate the largest machine.

When the machine is not in use, there is no pressure in the large cylinder, and, consequently, the chemicals are not brought in contact with the valves, and the latter are not wasted away by the action of the chemicals.

What I claim is—

In a so-called "chemical engine," the combination, with a container for chemical liquid, said container having suitable means for attaching hose, of a series of air-vessels made detachable and interchangeable, suitable mechanism for connecting such air-vessels with the liquid-container, and valve for admitting the compressed air to the liquid-container, the parts being arranged substantially as set forth.

In testimony whereof I sign this specification, in the presence of two witnesses, this 26th day of January, 1886.

HENRY A. HUTSON.

Witnesses:
ANDREW MCLELLAN,
W. F. MCLELLAN.