

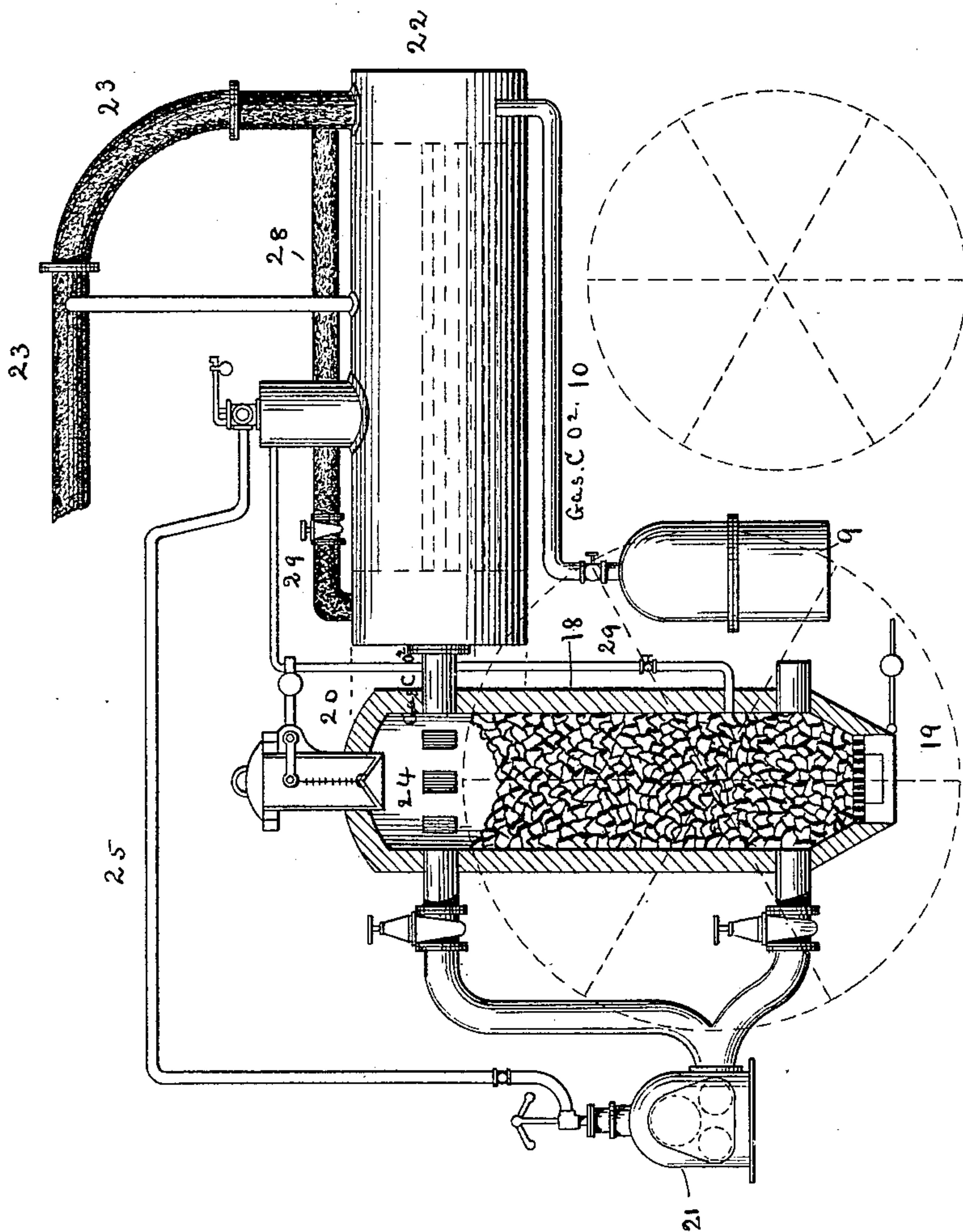
(No Model.)

H. C. REW.

PORTABLE APPARATUS FOR EXTINGUISHING FIRES.

No. 405,717.

Patented June 25, 1889.



WITNESSES
Louis A. Clark
L. B. Kendall

INVENTOR
Henry C. Rew
by
Benj. R. Catlin

UNITED STATES PATENT OFFICE.

HENRY C. REW, OF CHICAGO, ILLINOIS.

PORTABLE APPARATUS FOR EXTINGUISHING FIRES.

SPECIFICATION forming part of Letters Patent No. 405,717, dated June 25, 1889.

Application filed September 25, 1888. Serial No. 286,377. (No model.)

To all whom it may concern:

Be it known that I, HENRY C. REW, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Portable Apparatus for Extinguishing Fires; 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 appertains to make and use the same.

The object of the invention is to provide apparatus for introducing heated gases which are incombustible into fires to be extinguished, and to combine such apparatus with a steam-generator, which latter may be heated by a portion of the hot gases produced by the complete combustion of fuel in the apparatus. Extinguishing-gases used in a cold state cannot be efficiently applied to a fire under usual conditions, because of their gravity, which causes them to sink in the atmosphere and away from an ascending fire. If sufficient force be employed to drive such gases into the fire and to follow its upward progress, the current thus established acts by induction upon the surrounding atmosphere and feeds the flames with oxygen. The heat of the fire itself will act upon such portion of the extinguishing-gases as is thrown into it to expand them and counteract their tendency to fall away from the fire and sink below the lighter body of air, which is thereby floated up to the fire; but this effect is partial, and it of course fails in respect to the succeeding supply of extinguishing gases, which must necessarily be mechanically thrown to a higher level or above the point where preceding discharges of gas have extinguished the fire. The present apparatus is designed to introduce extinguishing-gases into a fire by highly heating the same, so as to rarefy and lighten them to a degree that will facilitate their ascent to and in a column of fire to be extinguished and to combine in such apparatus a steam-generator that will produce air-blasts for the fire and may furnish steam for decomposition.

In my application filed concurrently herewith and serially numbered 285,668 I have described apparatus for producing hot extinguishing-gases, which is adapted to maintain

their heat, exclude any excess of oxygen, and to heat other gases chemically produced, and direct all such gases to a fire, and such apparatus is not broadly claimed herein.

The present invention relates to modifications of such apparatus, hereinafter described and particularly pointed out.

In the accompanying drawing, which is a side elevation, partly in section, of my device, is shown a gas-generator 18, provided with a grate 19, fuel-feeder 20, and blower 21 for introducing a blast of air at the base of the fuel and also above the same. The air-supply pipes are preferably made to introduce air at several points in the circumference of the furnace, as indicated. Each blast-pipe is provided with a valve to regulate the air-supply in order to secure complete combustion and yet avoid an excess of oxygen. The lower blast induces in the fuel a partial combustion, resulting in the production of a mixture of gases containing carbonic oxide, which, escaping from the surface of the fuel into the combustion-chamber 24, is completely burned by the aid of the additional air-supply, which is so regulated as to furnish the exact amount of oxygen required. This supply of air above the fuel provides for the combustion of carbonic-oxide or other combustible gas that may not have been completely oxidized by the air introduced below the fuel. The use of valves in each air-conduit provides for regulating the supply of oxygen in manner to prevent a surplus either of oxygen or of combustible gases, which might seriously interfere with the extinguishing effect desired. This object cannot be attained in a furnace having but one air-supply, nor in one in which the air-inlets are without valves or equivalent devices. The products of this final combustion, or a part of them, may be immediately conducted through the flues of a steam-generator into a space or chamber 22, and blended with an additional supply of carbonic acid or other extinguishing-gas from a generator 9 to heat the same, and the mingled gases can be conducted through a protected conduit 23 into the fire to be extinguished.

The coal-feeder 20 of the furnace is made gas-tight by a double cover and sand-joint, or in any approved way. The ash-pit is also

constructed to be tightly closed, having, preferably, a hinged bottom for the removal of refuse. The tight closing of the furnace is important for the purpose of preventing the escape of the blast and gases, which should be directed with certainty toward the covered conducting-pipe that leads to the fire. Any known means of protecting this pipe may be used. It can be made of asbestos and covered with alternate layers of paper and asbestos or slag wool.

The steam-boiler can be made to extend to the top of the gas-generator, as indicated by dotted lines, whereby is formed a large combustion-chamber. This combustion-chamber may be surrounded in whole or in part by a water-space of the boiler, and both the boiler and gas-generator and their exit conduits or pipes are covered with asbestos, or similar material, to prevent loss of heat by radiation.

The blower is operated by steam supplied through pipe 25. This steam-pipe and the carbonic-acid pipe 10 are provided with independent cocks.

This apparatus is designed to be supported upon wheels, indicated in dotted lines. Any well-known carriage for such purpose may be adopted. The boiler is preferably supported on the front wheels, and the gas-producer on the hind wheels. The latter is made long in vertical direction to secure a deep body of fuel, and the boiler is made relatively small, as but a small volume of steam is required to run the blower, and more heat will be generated than is required for this purpose, the excess of heat being utilized to heat and expand the extinguishing-gases. A separate conduit 28 for a portion of the products is provided and so arranged that it will surrender practically little or none of its heat to the boiler.

At 29 is indicated a steam-pipe for introducing steam at intervals into the incandescent fuel in the gas-generator, whereby water-gas is generated, which can be completely burned in the combustion-chamber above the fuel with the same results as before described. This operation will tend to prevent an inconvenient excess of heat in the apparatus and affords a means of subduing the fire in the generator when the use of the apparatus is about to be suspended.

I am aware that it has been proposed to use a portable steam-generator for extinguishing fires, and to utilize the products of combustion from such steam-boiler after being passed through its flues and subsequently cooled by radiation and then further cooled by contact with the inlets for the air-supply to the furnace.

It is a characteristic of my invention that all unnecessary cooling of the products of combustion is avoided, and that the heat of the same is utilized to expand and render comparatively light the extinguishing-gases. For this purpose the gas-generator is preferably made more than sufficiently large to generate

the required amount of steam, and the excess of hot gases mixed with waste gases from the steam-generator are used to extinguish fires; and the object of the invention is further secured by the asbestos, or other coating, which checks radiation from the apparatus.

It is a further characteristic of my improvement that means for regulating the air-supply, so as to furnish sufficient to completely burn the combustible gas and avoid an excess of air, are combined with the other parts of the apparatus.

In practice pipe 23 will be made in sections, so that its total length can be varied according to circumstances, and so that the extinguishing-gases can be conducted to the pipe, and it is important that this pipe have a covering to prevent excessive radiation and to allow it to be comfortably handled. It is preferably supported in an elevated position by a post or bracket on the boiler, or on any other suitable portion of the apparatus or carriage, substantially as indicated in the drawing. If located immediately over the boiler or furnace, it will be less exposed to cooling currents of the surrounding atmosphere, as the air above the apparatus will necessarily be kept warm.

My apparatus is designed to discharge hot extinguishing-gases into a burning building, which will rise to the top and drive out the colder air at the bottom of the building, and so exclude air from the fire. Outlets at the top of a building should be closed as far as practicable on the outbreak of a fire, and fire-engine companies might post proper directions in buildings liable to burn, and could then expect in case of a fire to find when their engines arrived on the spot that the conditions were favorable for excluding air and quickly extinguishing the fire without damage to goods or wares by water. Of course every available means for extinguishing a fire should be promptly used; but the means described herein will be found very efficient, and especially so if employed before a fire has found outlets at the top of a building and created a powerful draft.

Furnaces having means for introducing a regulated air-supply both above and below the fuel are well known, and it is also customary to cover heated pipes with a non-conducting covering, and extinguishing apparatus have been furnished with flexible delivery-pipes or their equivalent, and none of these elements are of my invention, which consists in an organization adapted to completely burn gases produced from coal or other fuel and to conduct them to a fire to be extinguished without material loss of heat and without endangering either the firemen or inflammable material by the heat of the delivery-pipe.

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

1. In an apparatus for extinguishing fires,

the combination of the furnace provided with means, such as a blower for producing a regulable blast at the base of the fuel and also above the same in a combustion-chamber, with a flexible delivery-pipe having a non-conducting covering to conduct the products of combustion to a fire, substantially as specified.

2. In an apparatus for extinguishing fires, the combination of the furnace provided with means, such as a blower, for producing a regulable blast at the base of the fuel and also above the same in a combustion-chamber, with a steam-generator and a flexible delivery-pipe having a non-conducting covering to conduct the products of combustion to a fire, substantially as specified.

3. In an apparatus for extinguishing fires, the combination of the furnace with the steam-boiler, the blower, a pipe to conduct steam to the base of the fuel-chamber, and a pipe to conduct extinguishing-gases from the boiler-flues to a fire, substantially as specified.

4. In an apparatus for extinguishing fires, the combination of the furnace with the blower, the steam-boiler having flues for products of combustion, a flue to conduct a portion of the products by the boiler, and a covered pipe to conduct the extinguishing-gases to a fire, substantially as specified.

5. In an apparatus for extinguishing fires, the combination of the furnace with the blower, the steam-boiler having flues for products of combustion, a flue to conduct a portion of the products by the boiler, a distinct gas-generator to supply additional extinguishing-gas, and a covered pipe to conduct the extinguishing-gases to a fire, substantially as specified.

In testimony whereof I affix my signature in presence of two witnesses.

HENRY C. REW.

Witnesses:

ROBERT EASTON IRWIN,
TYLEE W. PARKER.