

C. J. MÖNCH.

APPARATUS FOR EXTINGUISHING FIRES.

No. 301,744.

Patented July 8, 1884.

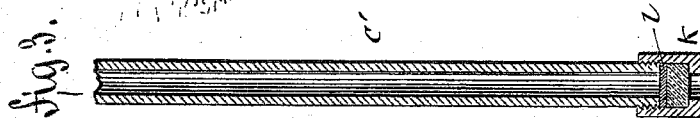
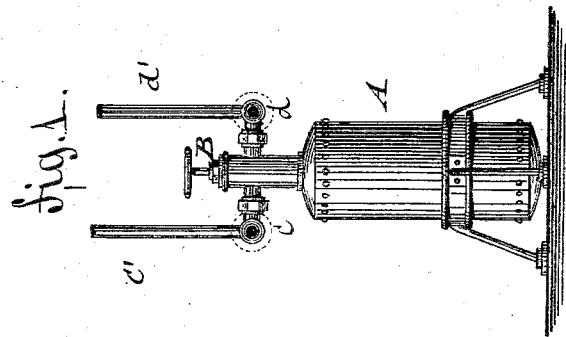
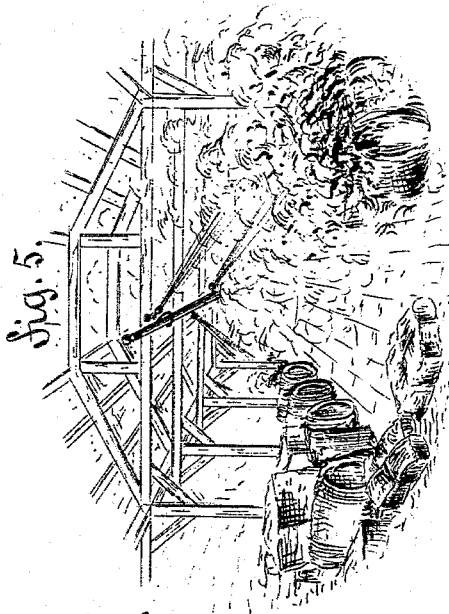
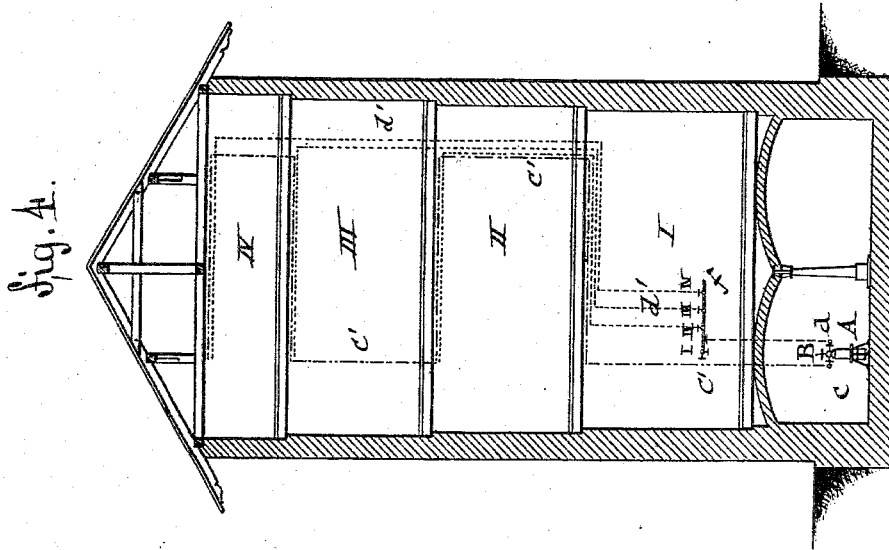


fig. 2.

WITNESSES:

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(No Model.)

2 Sheets—Sheet 2.

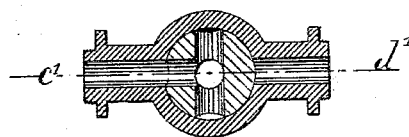
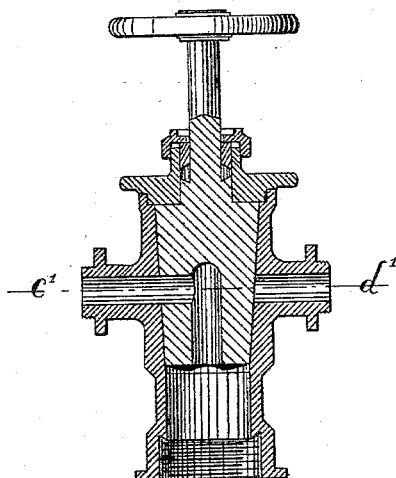
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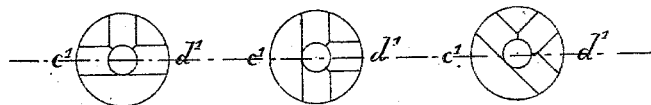
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*fig. 6.*



*fig. 7.*



*fig. 8.*

*fig. 9.*

*fig. 10.*

WITNESSES:

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# UNITED STATES PATENT OFFICE.

CARL JOHANNES MÖNCH, OF GOTHA, SAXE-COBURG-GOTHA, GERMANY.

## APPARATUS FOR EXTINGUISHING FIRES.

SPECIFICATION forming part of Letters Patent No. 301,744, dated July 8, 1884.

Application filed June 18, 1883. (No model.)

*To all whom it may concern:*

Be it known that I, CARL JOHANNES MÖNCH, a citizen of the Duchy of Saxe-Coburg-Gotha, Germany, residing at the city of Gotha, in the Duchy of Saxe-Coburg-Gotha, Germany, have invented certain new and useful Improvements in Apparatus for Extinguishing Fires, of which the following is a specification.

This invention has reference to an improved apparatus for extinguishing fire by carbonic acid, which is applied either automatically or at any required time without the use of water; and the invention consists of a receiver containing liquid carbonic acid; said receiver having a two-way valve, of distributing-pipes connected to said valve, and provided with discharge-openings having fusible plugs that melt when a certain temperature is reached, and a system of distributing-pipes connected to an intermediate distributing-cylinder, said pipes being opened so as to admit the discharge of carbonic acid whenever required.

In the accompanying drawings, Figure 1 represents a side elevation of the receiver for the compressed carbonic acid gas. Figs. 2 and 3 are the terminals of the distributing-pipes provided with plugs of easily-fusible metal. Fig. 4 is a vertical transverse section of a building, showing the arrangement of the distributing-pipes; and Fig. 5 is a perspective view of the apparatus shown in the act of discharging carbonic acid gas on burning articles. Fig. 6 is a vertical central section of the two-way cock used in connection with this apparatus. Fig. 7 is a transverse section on line 7 7 of Fig. 6 of the two-way cock, showing the turning-plug thereof in its normal position, so as to establish connection between the receiver and the automatic system of distributing-pipes, connection to the other system of pipes being shut off. Fig. 8 is a diagram showing the position of the turning-plug when the two-way cock is open to both systems of distributing-pipes. Fig. 9 is a diagram showing the position of the turning-plug when the two-way cock is open to the system of distributing-pipes controlled by the attendant and closed to the automatic system of distributing-pipes. Fig. 10 is a diagram showing the position of the turning-plug of the

two-way cock when the latter is closed to both systems of distributing-pipes.

Similar letters of reference indicate corresponding parts.

Referring to the drawings, A represents a receiver charged with liquid carbonic acid. The walls of the receiver A are made of such thickness and strength that they are able to resist an interior pressure of about two hundred and fifty atmospheres. To the upper part of the receiver A is applied a two-way discharge-valve, B, that connects the receiver with horizontal pipes *c d*, from which the carbonic acid is conducted to two systems of distributing-pipes, *c' d'*, that are extended through the different stories of a building. The system of distributing-pipes *d'* is connected to the normally-closed port of the valve B, and is intended to be used when the source of fire has been ascertained by the attendant, while the system of distributing-pipes *c'* communicates with the normally-open port of said valve B, and supplies carbonic acid automatically when the pipes of said system are opened by the melting of the fusible metal.

In the system of distributing-pipes *c'* intended for the automatic extinguishing of fires, the pipes run along the ceilings, walls, and other desirable points, and have discharge-openings which are closed by plugs of easily-fusible metal, as shown in Figs. 2 and 3. The fusible closing devices melt at a certain temperature, and furnish an exit to the carbonic acid gas. Any fire is thereby quickly and automatically extinguished soon after its inception, owing to the fact that the gas, being heavier than air, envelops the articles like a sheet, to the exclusion of atmospheric air, and removes thereby the oxygen required for combustion. As soon as the fire is extinguished the discharge-pipes are closed, and thereby the escape of carbonic acid gas interrupted.

The discharge-pipes are preferably made of wrought-iron or copper, and are tested, like the receiver A, to an interior pressure of two hundred and fifty atmospheres. The plugs *i*, at the terminals of the distributing-pipes, are arranged only for a pressure of seventy to eighty atmospheres. In Fig. 3 the plug *i* is connected by a sleeve, *k*, and intermediate

thin copper plate, *l*, to the end of the distributing-pipe *c'*. The plug of easily-fusible metal is below the thin plate *l*, so that as soon as the plug melts the copper plate *l* is forced out by the pressure of the carbonic acid. The valve *B* being normally open to the system of distributing-pipes *c'*, and said pipes being filled with carbonic-acid gas, the latter is automatically discharged as soon as the fusible plug is melted. It is, however, in some circumstances advantageous to apply the carbonic acid immediately after the fire has been discovered, without waiting for the rise of temperature required for the melting of the plugs and automatic application of the carbonic acid. For this purpose a distributing-cylinder, *f*, that is tested to the same degree of pressure as the receiver, is interposed between the same and the distributing-pipes *d' d'*, as shown in Fig. 4. The distributing-pipes lead to the different stories of the building, and are provided with valves or cocks at their points of connection with the distributor *f*. When the valves are opened, the carbonic acid passes into the distributing-pipes and is discharged. The distributing-cylinder *f* is arranged at any accessible location, preferably in the first floor, so that as soon as the location of the fire is announced, electrically or otherwise, the distributing-pipes *d'* for that story are thrown into action by opening the proper valve or cock.

In Fig. 4 the different stories are indicated by Roman figures I II III IV, and the valves of the distributing-cylinder for the different stories marked in the same manner.

It is evident that when the pressure in the receiver or pipes is such as to hold the carbonic acid in liquid form the latter will as-

sume a gaseous form when the pipes are opened, and it is permitted to escape.

The carbonic-acid receiver is preferably located in the basement or cellar, where the same is not only protected against fire, but also kept cool and not exposed to too great variations of temperature. As no water is used in extinguishing the fire, the goods are injured much less than heretofore.

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

1. The combination, in an apparatus for extinguishing fires, of a receiver for containing liquid carbonic acid, provided with a two-way valve, an automatic system of distributing-pipes connected to one of the ports of said two-way valve, said pipes being provided with discharge-openings covered by fusible plugs, and a system of distributing-pipes controlled by the attendant, connected with the other port of said two-way valve, substantially as described.

2. The combination, in an apparatus for extinguishing fires, of a receiver for containing liquid carbonic acid, provided with a two-way valve, said pipes being provided with discharge-openings covered by fusible plugs, a distributing-cylinder connected with said receiver, and a series of valved distributing-pipes connected with said distributing-cylinder, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

CARL JOHANNES MÖNCH.

Witnesses:

GERARD W. VON NAWROCKI,  
B. Roi.