

UNITED STATES PATENT OFFICE.

SAMUEL J. SORNBERGER, OF CORTLAND, NEW YORK.

FIRE-EXTINGUISHING COMPOUND.

SPECIFICATION forming part of Letters Patent No. 362,232, dated May 3, 1887.

Application filed June 14, 1886. Serial No. 205,073. (No specimens.)

To all whom it may concern:

Be it known that I, SAMUEL J. SORNBERGER, a citizen of the United States, residing at Cortland, in the county of Cortland and State of New York, have invented certain new and useful Improvements in Fire-Extinguishing Compounds, of which the following is hereby declared to be a full, clear, and exact description, sufficient to enable others skilled in the art to which said invention appertains to make and use the same.

My invention relates to non-freezing fire-extinguishing compounds which can be used either by being charged into a bomb or hand-grenade, as proposed in Letters Patent No. 117,891, Johnson, August 8, 1871, and No. 282,981, Harden, August 14, 1883, and No. 300,190, Bartlett, June 10, 1884, or by being projected into the fire by means of a syringe, pump, or other device suitable for the purpose, or by dilution with the water thrown from any hose or pipe by injection into said hose or pipe. In the first two of the aforesaid patents the fire-extinguishing material consists of an aqueous solution of carbonic-acid gas retained under pressure, said gas being developed from a carbonate salt in the presence of a free acid added to the water immediately before the vessel is sealed. In the last-mentioned patent—viz., the Bartlett, of June 10, 1884—carbonic-acid gas is produced the same as in the Johnson, of August 8, 1871, and the Harden, of August 14, 1883, and, besides, the grenade is charged with an additional quantity of carbonate and a free acid in such proportions that it is claimed the carbonic-acid gas of the carbonate will remain in the combined state until it comes in contact with the heat of the fire, when it is set free.

In all the above-mentioned compounds, and in all others charged with carbonates in the presence of a free acid, there is instantaneous and continued evolution of carbonic-acid gas, and hence, if charged into a sealed bomb of frangible material, there is constant liability to explosion from overpressure from the constantly-accumulating gas at a temperature even as low as 80° Fahrenheit.

That the above statement is true is shown by the fact of the frequent explosion of these grenades when hanging in rooms where they were not even agitated by a jar. The constant

escape of the carbonic-acid gas also renders the compound of no value, as far as this gas is concerned, for use in open vessels.

The aforesaid compounds are and can be used only in hermetically-sealed bombs, while some other method of applying a fire-extinguishing compound which would better distribute it over the fire would often be more effective.

My invention is designed to furnish a non-freezing fire-extinguishing compound without the use of a carbonate, which, if put up in a sealed bomb, would not be subject to spontaneous explosion; also, to furnish a fire-extinguishing compound which may be projected upon the fire from any vessel, open or closed, by means of a syringe, pump, or other device, and when so used to exert its maximum effect, said compound to be rendered anti-freezing by the same substances which are available in it for the purpose of extinguishing fire.

The process of preparation is as follows: To every gallon of water add one and one-half pound chloride of sodium, one and one-half pound chloride of ammonium, from ten to thirty grains potassium permanganate, and four ounces sodic sulphate or its equivalent of some other sulphate or combination of sulphates. Then add sufficient chloride of sodium to saturate the solution. The proportion of the aforesaid ingredients may be varied somewhat without materially changing the results; but the best results seem to be obtained from the proportions given above.

The fire-extinguishing properties of the above compound in excess of those possessed by an equal quantity of water are due, first, to the elimination of chlorine gas from a part of the sodic chloride in the presence of potassium permanganate and sodic sulphate when exposed to the heat of an ordinary fire, said chlorine gas being a non-supporter of combustion equally as good as carbonic-acid gas, while it is two and one-half times heavier than air, thus having a tendency to lessen the draft; second, to the vast amount of sensible heat which is rendered latent by the vaporization of the ammoniac chloride, which takes place at a temperature of about 660° Fahrenheit; in this way it not only rapidly cools down the burning body, but also, since this vapor is a non-supporter of combustion and its volume

considerable, it displaces the air and deprives the flame of oxygen; third, to the exclusion of the air from the burning material by the surface coating produced by the chloride of sodium after the water has been expelled. The non-freezing properties are due to the above-mentioned salts in solution.

I am aware of the Letters Patent No. 323,170, July 28, 1885, granted to Geo. A. Lindgren, for a "chemical fire-extinguisher;" and I do not claim anything described or set forth in his said Letters Patent.

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

1. A fire-extinguishing compound containing the chlorides of sodium and ammonium in saturated solution, together with sulphate of sodium and potassium permanganate, to remain liquid at a temperature at or below zero Fahrenheit, substantially as set forth.

2. A fire-extinguishing compound contain-

ing the chlorides of sodium and ammonium in saturated solution and sulphate of sodium and permanganate of potassium, for projection upon a fire in a closed bomb of glass or other frangible material, or from any open vessel, by means of a syringe, pump, or other device suitable for the purpose, substantially as set forth.

3. A fire-extinguishing compound containing the chlorides of sodium and ammonium in saturated solution and sulphate of sodium and permanganate of potassium, for projection upon and distribution over a fire by dilution with the water thrown from any hose or pipe by injection into said hose or pipe when in use, substantially as set forth.

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

SAMUEL J. SORNBERGER.

Witnesses:

B. A. BENEDICT,
R. H. DUELL.