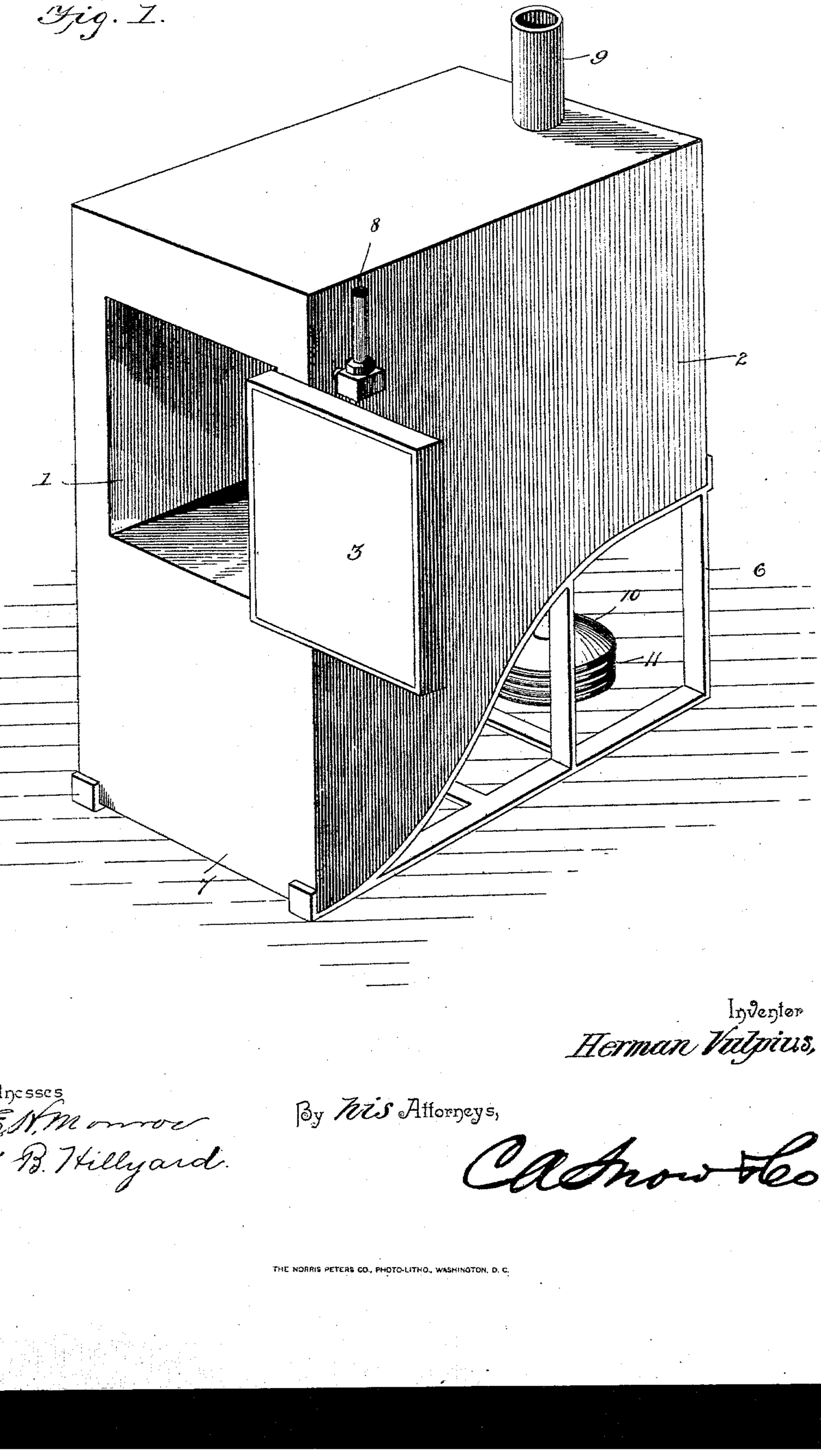
(No Model.) 2 Sheets—Sheet 1.

H. VULPIUS.

HEATER FOR EXPLOSIVES.

No. 571,712. Patented Nov. 17, 1896.

Fig. 1.



Inventor
Herman Vulpius,

Witnesses
E. N. Monroe
U. B. Hillyard.

By his Attorneys,
C. A. Snow & Co.

(No Model.) 2 Sheets—Sheet 2.

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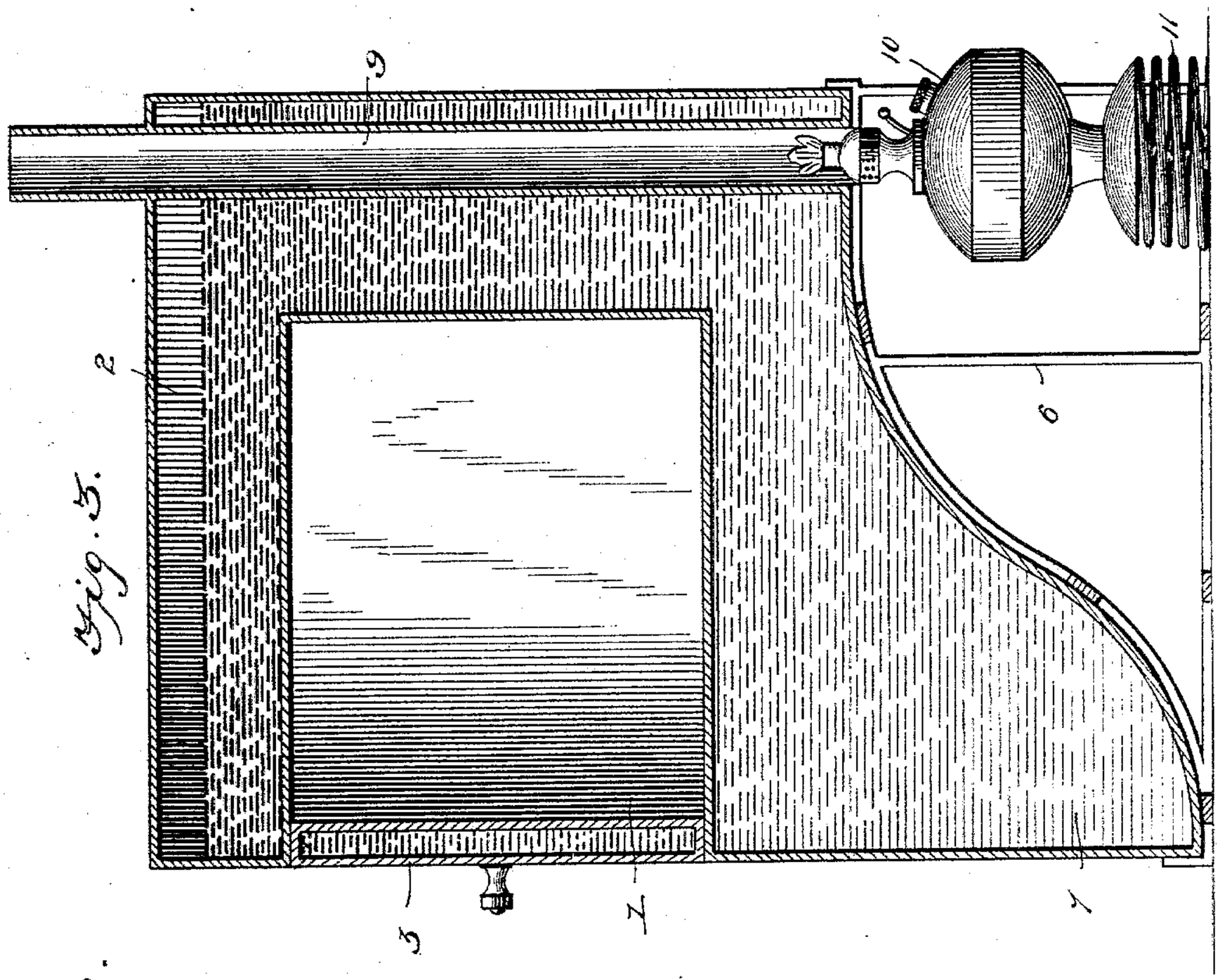
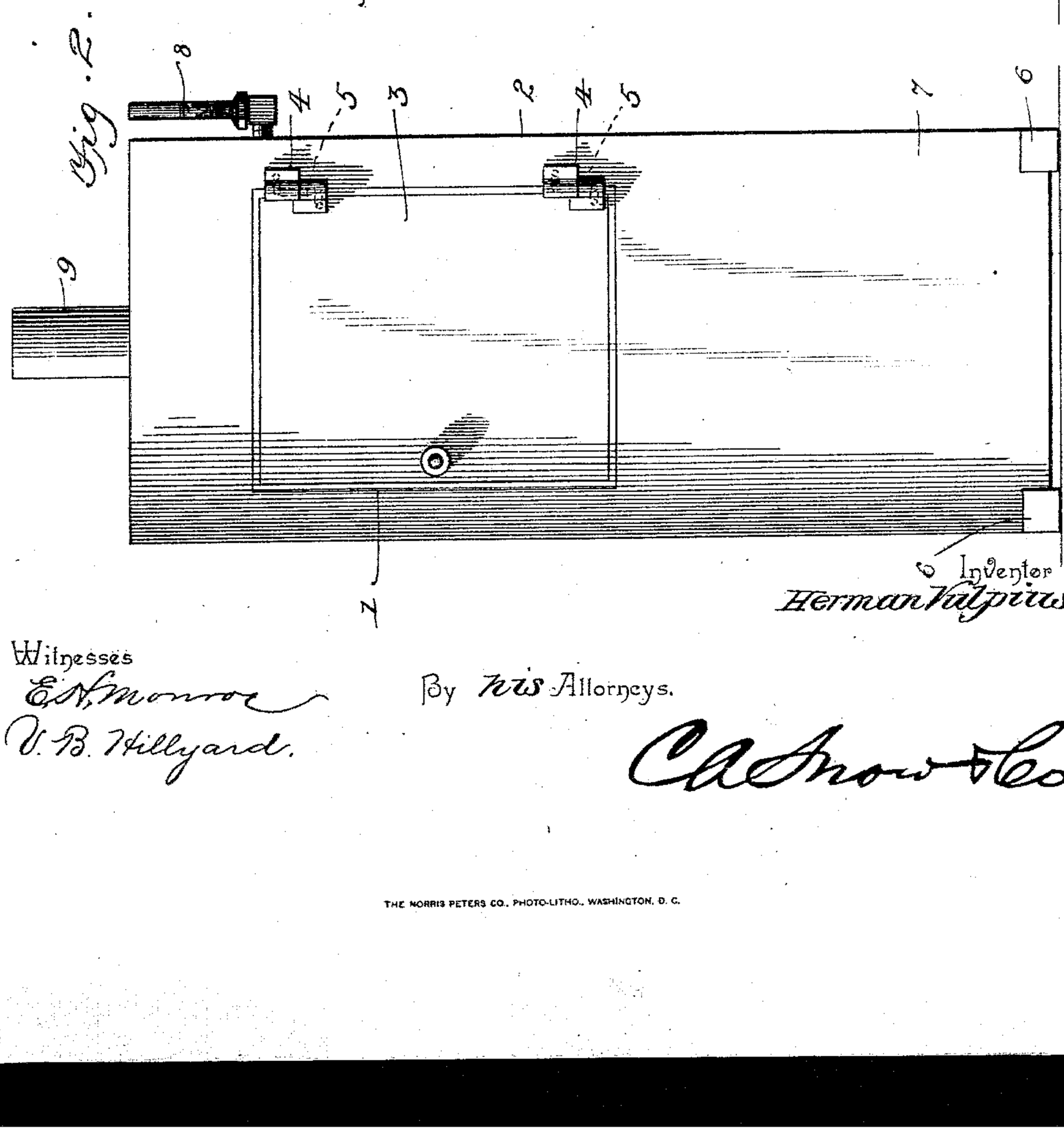


Fig. 2.



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UNITED STATES PATENT OFFICE.

HERMAN VULPIUS, OF LEADVILLE, COLORADO, ASSIGNOR OF TWO-THIRDS TO H. KAHN AND JOHN S. DODDRIDGE, OF SAME PLACE.

HEATER FOR EXPLOSIVES.

SPECIFICATION forming part of Letters Patent No. 571,712, dated November 17, 1896.

Application filed April 27, 1896. Serial No. 589,269. (No model.)

To all whom it may concern:

Be it known that I, HERMAN VULPIUS, a citizen of the United States, residing at Leadville, in the county of Lake and State of Colorado, have invented a new and useful Heater for Explosives, of which the following is a specification.

This invention relates to appliances for warming explosives, such as powder, dynamite, and the compounds thereof. The object is to prevent dangerous heating of this class of compounds even though there should be a lack of watchfulness and extreme care on the part of the attendant upon whom devolves the task of warming the explosive.

The principal feature of the invention is a box open at one side and surrounded on the remaining sides by a water-jacket, a hollow door closing the open side of the box and communicating with the water-jacket, and means for heating the fluid or water in the jacket. To attain this end by the provision of simple and effective means is the primary object of the invention; and the latter consists of the details of construction and the novel features which hereinafter will be more particularly set forth, illustrated, and finally claimed.

The improvement is susceptible of various changes in the form, proportion, and the minor details of construction without departing from the principle or sacrificing any of the advantages thereof, and to a full disclosure of the invention an adaptation thereof is shown in the accompanying drawings, in which—

Figure 1 is a perspective view of a heater constructed in accordance with the principles of this invention for attaining the objects thereof, the door of the box being open. Fig. 2 is a front view thereof. Fig. 3 is a longitudinal vertical section of the same.

Corresponding and like parts are referred to in the following description and indicated in the several views of the drawings by the same reference-characters.

The box 1 for receiving the explosive to be heated is open at a side and is enveloped by a water-jacket 2, the open side being closed by a hollow door 3, which is in communication with the water-jacket in any convenient way, so that the water or fluid in its circulation will pass through the door and thereby subject all the walls of the box to about an equal temperature. As shown, the hinges 4, connecting the door with the water-jacket, have registering passages 5 in their members, so that the communication between the water-jacket and the water-space of the door will be maintained at all adjustments and positions of the door, and by effecting communication in this way extra connections are not required and the parts are reduced to a minimum number.

The lower rear end portion of the water-jacket is cut away and is supported upon a metal frame or stand 6, thereby providing a pit or chamber 7 at the lower front portion of the water-jacket, which serves to moderate the water or fluid and prevent overheating, which is essential when warming explosives of high order. A gage 8 is applied to the upper portion of the water-jacket and admits of the level of the water in the jacket being determined, and by means of a funnel or other device water may be supplied to the jacket through the said gage, as will be readily understood. A tube 9 extends vertically through the rear portion of the water-jacket, and the hot air from a suitable heater passes therethrough and by radiation from the sides thereof heats the water in the jacket. Any form of heater may be employed, and, as shown, a lamp is had recourse to, since it is best adapted for the purpose. This lamp 10 is mounted upon a yielding base or coil-spring 11, fixed to the lower portion of the frame or stand 6. The burner portion of the lamp projects into the lower end of the tube 9, and the latter forms in effect a chimney, and by reason of the yielding base the lamp can be depressed, so as to withdraw the burner from the tube 9 for lighting or for any other purpose.

The explosive to be warmed is placed within the box 1, and the lamp being lighted and adjusted to the position shown will warm the water in the jacket 2, which in turn will heat the walls of the box and raise the explosive

to the required temperature, overheating being prevented by the pit or cooling-chamber 7 and by a proper adjustment of the flame.

Having thus described the invention, what is claimed as new is—

1. A heater for explosives comprising a box, a water-jacket enveloping the box on all sides except the front and having its lower rear end cut away, providing a cooling-chamber, a hollow door fitting within and closing the front side of the box and having communication with the water-jacket through its hinges, a tube extending vertically through the rear portion of the water-jacket, and a heater located in the space formed by cutting away the lower rear portion of the jacket, and adapted to cause a circulation of hot air through the said vertical tube, substantially as and for the purpose set forth.

2. A heater for explosives, comprising a box, a water-jacket enveloping the box and having its lower rear end portion cut away, forming a pit or cooling-chamber at the lower front end, a stand fitted to the said cut-away portion of the water-jacket, a tube extending vertically through the rear portion of the jacket, a yielding base, and a lamp mounted upon the yielding base and having its upper portion fitted to and extending within the lower end of the vertical tube, substantially as and for the purpose set forth.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

HERMAN VULPIUS.

Witnesses:

SOL A. GEETHMAN,

ISAAC KAHN.