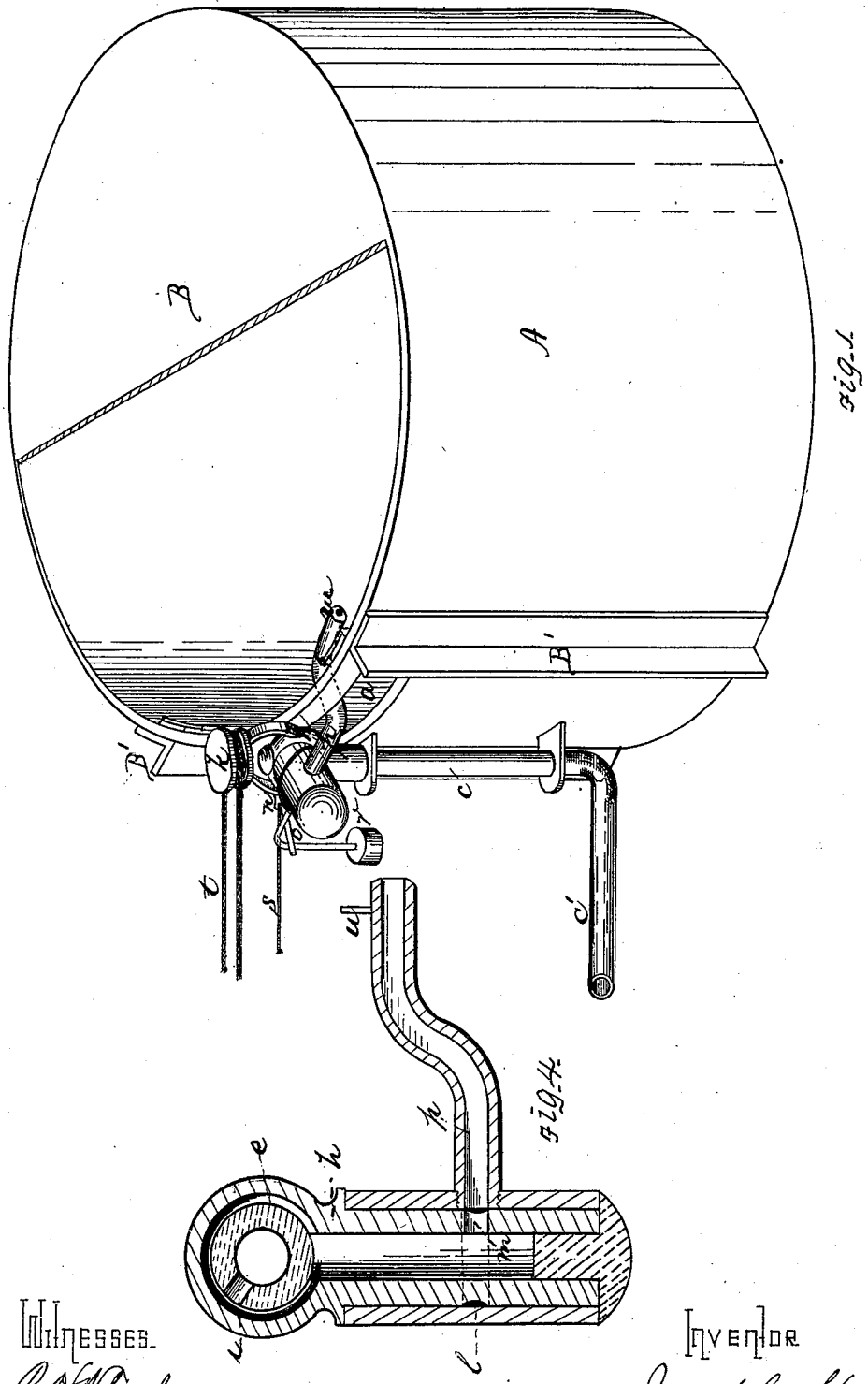
2 Sheets—Sheet 1.

J. H. & T. E. CONNELLY.

Device for Extinguishing Fire in Oil-Tanks and Similar Places.

No. 204,887. **Patented June 18, 1878.**



Witnesses.
R. A. Whittlesey
Jno. B. Smith

Inventor
Joseph H. Connelly
Thomas E. Connelly
by Bakewell & Kerr
Attys

2 Sheets—Sheet 2.

J. H. & T. E. CONNELLY.

Device for Extinguishing Fire in Oil-Tanks and Similar Places.

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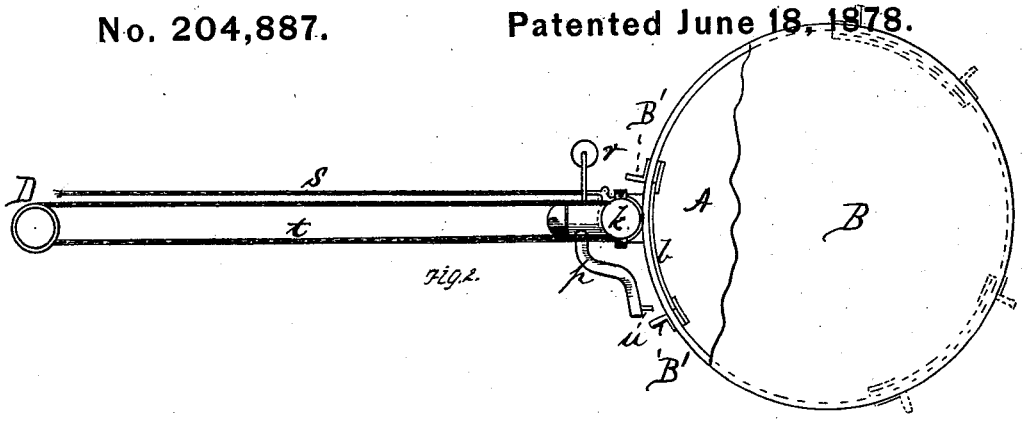

fig. 2.

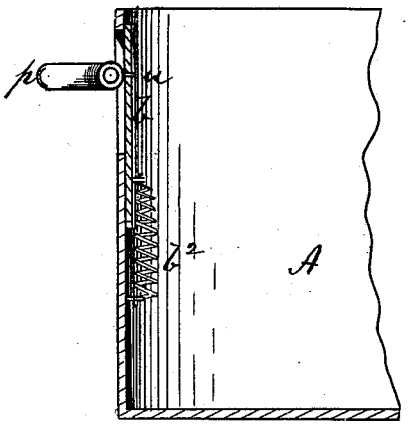

fig. 3.

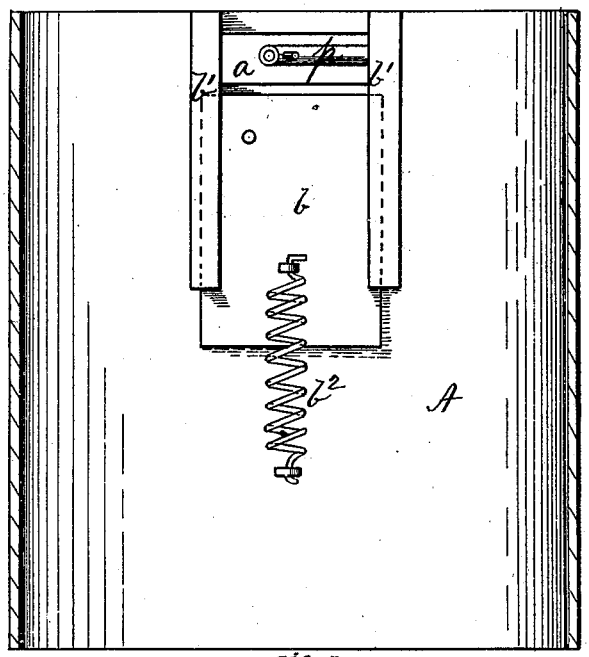

fig. 5.

Witnesses.
R. F. Whittlesey
J. K. Smith

Inventor.
Joseph H. Connelly
Thomas E. Connelly
by Bakewell & Co.
Attys

UNITED STATES PATENT OFFICE.

JOSEPH H. CONNELLY AND THOMAS E. CONNELLY, OF PITTSBURG, PA., ASSIGNORS TO THEMSELVES AND CHARLES LOCKHART, OF SAME PLACE.

IMPROVEMENT IN DEVICES FOR EXTINGUISHING FIRE IN OIL-TANKS AND SIMILAR PLACES.

Specification forming part of Letters Patent No. **204,887**, dated June 18, 1878; application filed March 30, 1878.

To all whom it may concern:

Be it known that we, JOSEPH H. CONNELLY and THOMAS E. CONNELLY, of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Devices for Extinguishing Fires in Oil-Tanks and Similar Places; and we do hereby declare the following to be a full, clear, and exact description thereof, reference being had to the accompanying drawing, forming part of this specification, in which—

Figure 1 is a perspective view of devices embodying my invention. Fig. 2 is a top-plan view of the same. Fig. 3 is a sectional view, and Fig. 4 is an enlarged detached view, of the devices, partly in section, showing the swiveling connection of the delivery-nozzle. Fig. 5 is a detailed view of the automatic door for tank.

Like letters refer to like parts wherever they occur.

Our invention relates to the construction and operation of devices for distributing gas, water charged with gas or with gas and chemicals, to oil-tanks and like places for the purpose of extinguishing fires; and consists, first, in providing the tank or like chamber or receptacle with a door adapted to automatically unclose the opening in the tank or receptacle at such times as the fire-extinguishing devices are operated; secondly, in bracing the tank or like receptacle at or near the location of the fire-extinguishing devices and the door or port through which the gas, water, &c., is injected, whereby the warping of the tank and disarrangement of the devices are prevented; thirdly, in combining with a tank or like receptacle for oil, &c., one or more pipes or tubes, arranged on the exterior thereof, and provided with universal-jointed nozzles or delivery-pipes, whereby gas or gas and water can be delivered to all points of the tank; fourthly, in combining with the universally-jointed delivery-nozzle a series of sheaves or pulleys and chains, wires, or ropes, or equivalent means, whereby the devices can be operated at such a distance from the tank or from such a position off the tank that the operator will not be affected by heat, smoke, &c.; and, finally, in details of construction hereinafter more specifically set forth.

Heretofore, so far as we are aware, such devices as have been provided for protecting oil-tanks and like receptacles and for extinguishing fires therein have been arranged within the tanks, or in such relation thereto as to be subject to the action of the heat, flame, &c.; and as a consequence they have been of little or no use, first, because the heat is apt to warp the tank, disarranging the devices and rendering them inoperative; secondly, because the smoke, gummy matters from the oil, &c., clogged the fine perforations in the delivery-pipes, preventing a sufficient discharge of gas, water, &c.; and, thirdly, because of the rapid destruction of the devices by fire to which they were exposed. Furthermore, in most, if not all, the means heretofore devised for this purpose, a closed chamber is required to render the whole operative, and also the operator has to approach the tank to turn on or off the gas, water, &c., which is a matter of great risk at any time, and at most times an impossibility, especially if the fire has any start before its discovery.

The object of our invention is, first, to supply devices that will deliver the gas, water, &c., in abundance and to every part of the receptacle; secondly, to thoroughly protect the devices, so that they cannot become inoperative; and, thirdly, to so construct them that they can be operated at a distance from the tank.

We will now proceed to describe our invention, so that others skilled in the art to which it appertains may apply the same.

In the drawing, A represents a tank or similar receptacle for storage of oil or other inflammable substance, which, if it is desired or required, may be closed by a cover, B, of any approved construction. At one or more points around the tank, and preferably near the top thereof, (or above the oil-line,) I form an opening or openings, *a*, of such form and size as will permit the introduction of a nozzle for the distribution of water, gas, &c.; and to close the same we provide a door or doors,

b, which may be hinged at one side, and automatically opened by springs or equivalent means; but preferably we construct the door or doors *b* to move in slides b^1, and retract it by means of a spring, b^2, or its equivalent—a weight.

At various points around the tank or receptacle A, and preferably at or near the openings *a*, we arrange braces B′, usually of angle-iron, riveted or otherwise secured to the sheets of the tank. The braces B′ strengthen the tank materially under all circumstances; but their especial function is to prevent the warping and collapse of the tank under the intense heat incident to fire therein. Adjacent to the tank or receptacle A, either in brackets secured thereto or on a separate support, as preferred, and opposite the opening *a*, is a tube or pipe, *c*, with ground branch *c′*, that extends from the tank sufficiently far to be beyond the effects of the heat. To the distant end of pipe *c′* hose leading to the fire-extinguisher or generator may be attached. The upper end of the pipe *c* is formed with a shoulder, to support the swiveled horizontal tube *h*, and is grooved above the shoulder, as at *e*, and perforated at one or more joints, *i*, to permit the passage of water, gas, &c.

h indicates a short tube, swiveled on the vertical tube *c* at one end, and provided above with a sheave or pulley, *k*, by means of which and a suitable belt, chain, or wire, *t*, said tube can be turned in any direction on the tube *c*. The tube *h* is also grooved, as at *l*, and perforated, as at *m*, for the passage of liquid, and is provided with an eye, *n*, and check or stop *o*, for controlling the nozzle *p*.

p indicates a nozzle, swiveled on the short horizontal arm *h*, so that it can be pointed up or down at will. It is overbalanced by a weight, *r*, and its upward movement is limited by the stop *o*, so that when not otherwise directed it will rest in, or nearly in, a horizontal position; but in order to turn the nozzle down, so as to sweep the bottom of the tank, one end of a wire or chain, *s*, is secured to the nozzle *p*. The chain is then wrapped once around the horizontal arm *h*, passed through the eye *n*, and the free end secured at some distance from the tank A. At or near the end of nozzle *p* is a small lug or pin, *u*, adapted to enter a small hole in door *b*, in order to sustain the door or lock it up when the tank is to be closed. The chains, wires, or like means, *t* and *s*, may be passed to a post, D, or other convenient point from which to operate the nozzle.

Having devices like those described, or their equivalents, they are set and operated as follows: The door *b* is raised and the lug or pin *u* of the nozzle inserted in the small hole to sustain the door *b* in position and close port *a*. By means of a suitable hose the tube *c′ c* is connected to a generator or vessel properly charged with carbonic-acid gas and water, charged with chemicals or not, as preferred. Should the contents of the tank take fire, the wire or chain *t* is operated to draw back the nozzle *p* slightly, thus withdrawing the pin *u* and permitting the door *b* to drop or open. The water, gas, &c., are then admitted to pipes *c c′* and nozzle *p*, and, the cords *t* and and *s* operated, turn the nozzle horizontally and vertically, whereby it can be caused to project into the tank and to sweep the whole interior thereof. The size of nozzle preferred will deliver from one-half to three-fourths of an inch stream. Any number of tubes and nozzles may be arranged at convenient points around the tank.

The advantages of our invention are, first, that they are simple and effective; secondly, that they are not exposed to the action of the flame, and cannot, therefore, be destroyed or rendered inoperative; thirdly, that they can be operated from a point out of reach of the heat and smoke of the fire, and the nozzle can be directed so as to sweep the whole interior of the tank.

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

1. The oil-tank provided with an opening closed by a door, adapted to automatically unclose said opening to admit the swinging nozzle, substantially in the manner and for the purpose specified.

2. In combination with the oil-tank, a series of angle-irons or braces arranged thereon at or near the nozzle-openings of the tank, substantially as and for the purpose specified.

3. The combination, with an oil-tank or similar receptacle, of one or more tubes or pipes provided with universally-jointed nozzles, arranged on the exterior of the tank, and adapted to deliver a stream or streams of water, gas, &c., to the interior of the tank, substantially as specified.

4. The combination, with the universally-jointed delivery-nozzle, of a series of pulleys, wires, chains, &c., the whole arranged and adapted to operate the devices from a point off the tank, substantially as specified.

In testimony whereof we, the said JOSEPH H. CONNELLY and THOMAS E. CONNELLY, have hereunto set our hands.

JOSEPH H. CONNELLY.
THOMAS E. CONNELLY.

Witnesses:
R. H. WHITTLESEY,
F. W. RITTER, Jr.