

(No Model.)

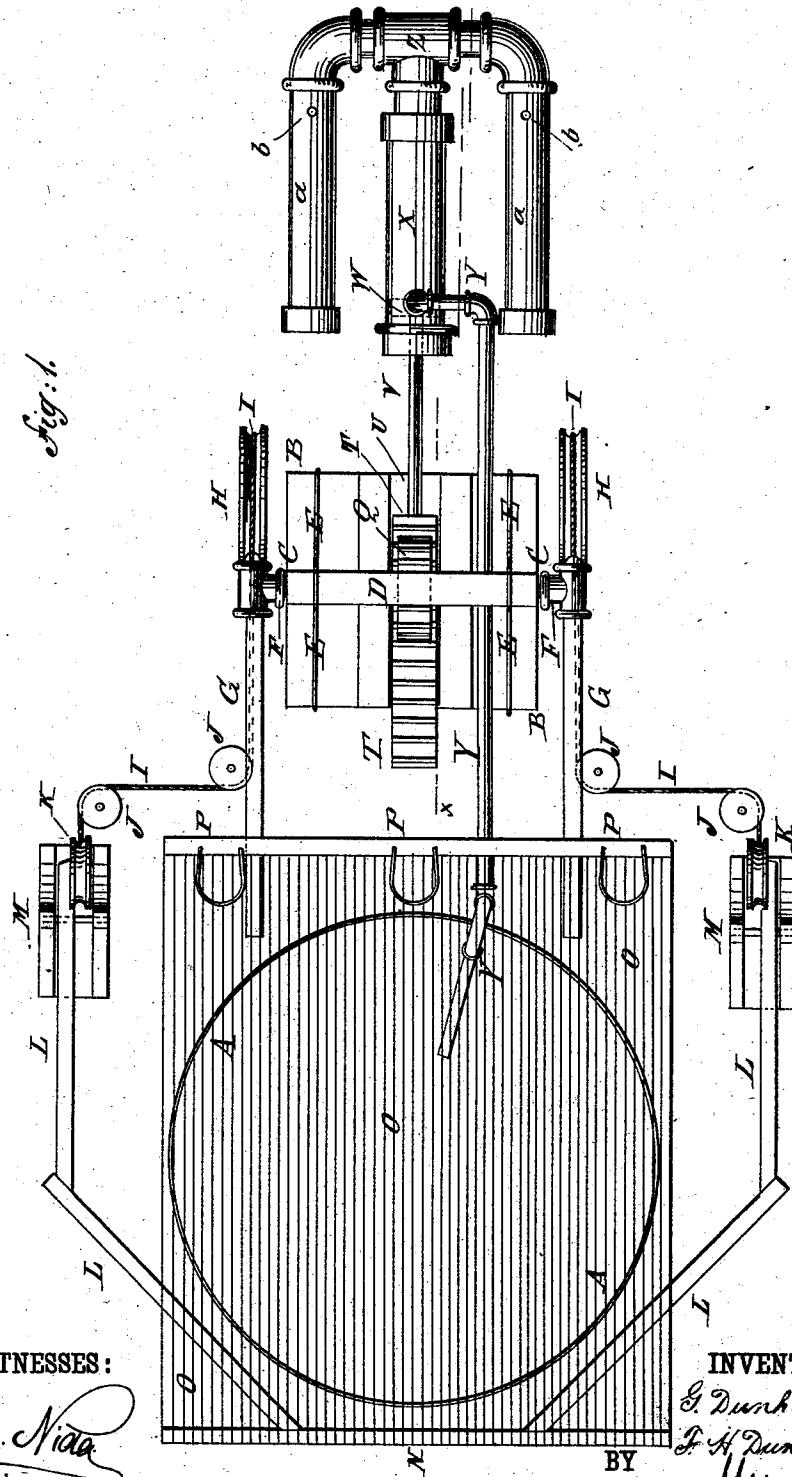
2 Sheets—Sheet 1.

G. & F. H. DUNHAM.

APPARATUS FOR EXTINGUISHING FIRES IN OIL TANKS.

No. 290,010.

Patented Dec. 11, 1883.



WITNESSES:

Chas. Nida
C. Sedgwick

INVENTOR:

G. Dunham
F. H. Dunham
Munn & Co.

ATTORNEYS.

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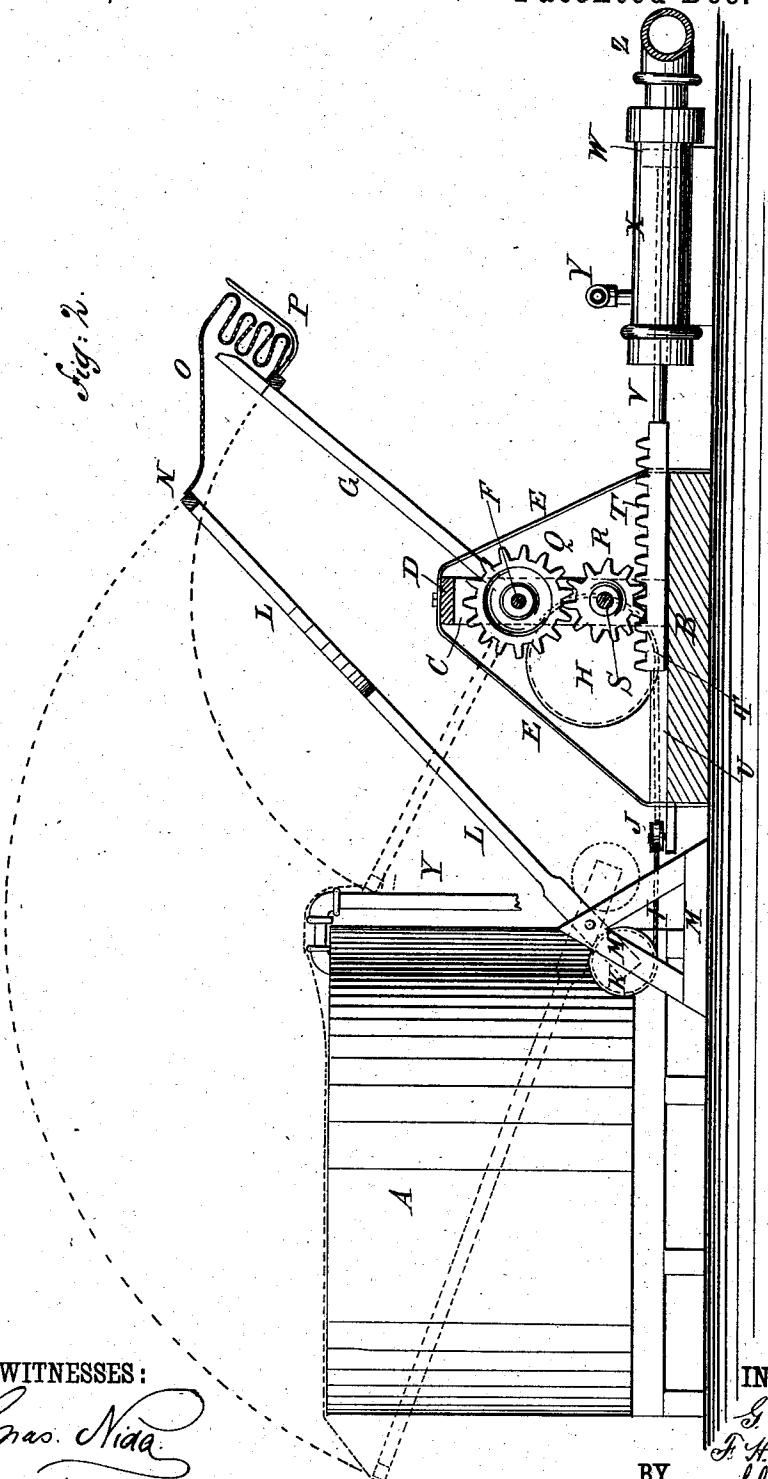
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UNITED STATES PATENT OFFICE.

GEORGE DUNHAM AND FRANK HATCH DUNHAM, OF OLEAN, NEW YORK.

APPARATUS FOR EXTINGUISHING FIRES IN OIL-TANKS.

SPECIFICATION forming part of Letters Patent No. 290,010, dated December 11, 1883.

Application filed January 30, 1883. (No model.)

To all whom it may concern:

Be it known that we, GEORGE DUNHAM and FRANK H. DUNHAM, of Olean, in the county of Cattaraugus and State of New York, have 5 invented a new and Improved Apparatus for Extinguishing Fires in Oil-Tanks, of which the following is a full, clear, and exact description.

Reference is to be had to the accompanying drawings, forming part of this specification, in which similar letters of reference indicate corresponding parts in both the figures.

Figure 1, Sheet 1, is a plan view of our improvement. Fig. 2, Sheet 2, is a side elevation of the same, partly in section through the line xx , Fig. 1.

The object of this invention is to facilitate the extinguishing of fires in oil-tanks.

The invention consists in an apparatus for extinguishing fires in oil-tanks, constructed with two pairs of pivoted bars having a sheet of asbestos cloth attached at their upper ends, connected at their lower ends by cords, and provided with gear-wheels and a sliding rack-bar, connected with the piston-rod of a cylinder provided with a discharge-pipe and one or more fire-annihilators, whereby a non-combustible gas can be discharged into the top of a burning oil-tank and the said top covered 30 with asbestos cloth, as will be hereinafter fully described.

A represents an ordinary oil-tank, at a suitable distance from which is placed a platform, B. To the ends of the platform B are attached 35 two standards, C, the upper ends of which are connected by a cross-bar, D, and which are strengthened in position by braces E.

In bearings in the upper parts of the standards C revolves a shaft, F, to the projecting 40 ends of the journals of which are attached two bars, G, at a little distance from their lower ends.

To the lower ends of the bars G are attached, or upon them are formed, two grooved 45 wheels, H, to which are attached the ends of two cords, I. The cords I pass around guide-pulleys J, and their other ends pass around and are attached to grooved wheels K, made smaller than the wheels H, and attached to 50 or formed upon the lower ends of two bars, L, which are pivoted at a less distance from their lower ends than the bars G to supports M,

placed at the opposite sides of the forward part of the tank A.

To the upper ends of the inwardly-inclined 55 upper parts of the bars L, or to the upper ends of inwardly-inclined bars attached to the said bars L, is attached a cross-bar, N, of a length a little less than the diameter of the oil-tank A, and to which is attached the edge 60 of a sheet, O, of asbestos cloth, the said sheet being made larger than the top of the oil-tank A. When the bars G L are swung back away from the tank A, the asbestos cloth O is folded into a rack, P, attached to the bars 65 G, as shown in Fig. 2. With this construction, when the bars G are swung forward toward the tank A, the cords I will swing the bars L forward at the same time, and the difference in size of the wheels H K, the difference 70 in position of the pivoting-points of the bars G L, and the difference in length of the said bars will cause the upper ends of the bars L to move faster and farther than the upper ends of the bars G, so that the asbestos cloth 75 O will be drawn from the rack P and lowered gently and evenly upon the top of the tank A.

To the middle part of the shaft F is attached a gear-wheel, Q, the teeth of which mesh into the teeth of the smaller gear-wheel R, attached 80 to the shaft S. The shaft S is journaled to the standards C below and parallel with the shaft F. The teeth of the gear-wheel R mesh into the teeth of the rack-bar T, which slides in a groove, U, or other guide-bearing formed in 85 or attached to the platform B.

To the outer end of the rack T is attached the end of the piston-rod V, the piston W of which works in a cylinder, X. With an aperture in the side of the cylinder X, near its 90 forward end, is connected the end of a pipe, Y, which passes to the tank A, up the side of the said tank, and its upper end is bent into a U form, to pass over the upper edge of the said tank and discharge its contents into the tank 95 A above the oil in the said tank. The outer end of the cylinder X is connected by a pipe, or coupling, Z, with the outer ends of one or more fire-annihilator cylinders, a, placed at the sides of the cylinder X. The cylinders a 100 have their inner ends closed, and have an aperture, b, formed in the forward parts of their sides, for the insertion of a fuse for the ignition of chemicals placed in the said cylinder a,

and which should be of such a character that their combustion will produce an incombustible gas heavier than air; or the cylinders can be constructed in the manner of ordinary fire-annihilators with an alkali and an acid contained in a glass or other suitable vessel, to be broken or overturned by a mechanism operating through the apertures *b*, but which is not shown in the drawings, as there is nothing new in such construction. With this construction, when a fire occurs in an oil-tank, the chemicals in one of the cylinders *a* are ignited or the chemicals mixed, and the gases thus developed pass into the cylinder *X* and force the piston *W* forward, and then pass through pipe *Y* into the upper part of the tank, where they spread over the surface of the oil and put out the fire. At the same time the forward movement of the piston *W* moves 15 the rack *T* forward, which turns the gear-wheels *R Q* and swings the bars *G L* forward, spreading the asbestos cloth *O* over the top of the tank to aid in extinguishing the fire in the tank-cover and guard against the rekindling 20 of the fire.

Having thus fully described our invention, we claim as new and desire to secure by Letters Patent—

1. An apparatus for extinguishing fires in oil-tanks, constructed substantially as herein shown and described, and consisting of the following elements, viz: one or more fire-annihilators for generating non-inflammable gases, a cylinder having a piston operated by the said gas, a mechanism operated by the cylinder-piston for spreading a cloth over the tank, and a pipe for conducting the gas into the tank, as set forth.

2. In a fire-extinguisher, the combination, 40 with one or more fire-annihilators, of arms carrying a cloth and adapted to be operated by said annihilators, and intermediate mechan-

ism to effect the spreading of said cloth simultaneously with the operation of the annihilator, substantially as and for the purpose set forth.

3. In a fire-extinguisher, the combination of one or more fire-annihilators with a cylinder and its piston having a rack-bar connected to its piston-rod, and levers or arms carrying a 50 cloth, and adapted one to travel faster and farther than the other, said arms being operated by gearing driven by the rack-bar of the piston-rod, as set forth.

4. In an apparatus for extinguishing fires in oil-tanks, the combination, with the actuated rack-bar *T* and gearing *Q R*, of two pairs of pivoted bars, *G L*, provided at their upper ends with a folded sheet, *O*, of asbestos cloth, and connected at their lower ends by cords *I*, substantially as herein shown and described, whereby the said sheet of cloth can be spread over the tank automatically, as set forth.

5. In a fire-extinguisher, the combination of one or more fire-annihilators with a cylinder and its piston with its piston-rod provided with a rack, levers or arms connected together by a rope or other suitable means passed around pulleys of said levers or arms and around intermediate pulleys, said levers or arms being adapted to move one faster and farther than the other and carrying a cloth, and gear-wheels transmitting motion from the rack of the piston-rod to the said levers or arms, substantially as specified.

GEORGE DUNHAM.

FRANK HATCH DUNHAM.

Witnesses to signature of George Dunham:

C. H. MORTON,
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J. E. EGGLESTON,
D. E. McLAUGHLIN.