Oct. 4, 1932. J. PANTHER, JR 1,880,272

FIRE FIGHTING APPARATUS

Filed May 20, 1930 2 Sheets-Sheet 1

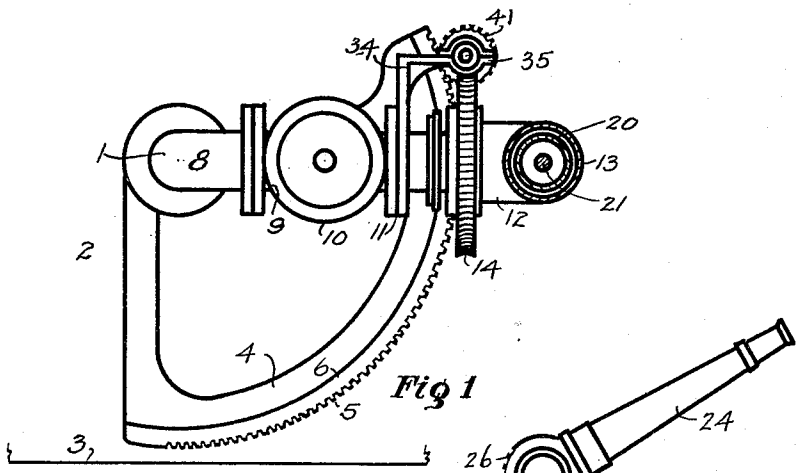

Fig 1

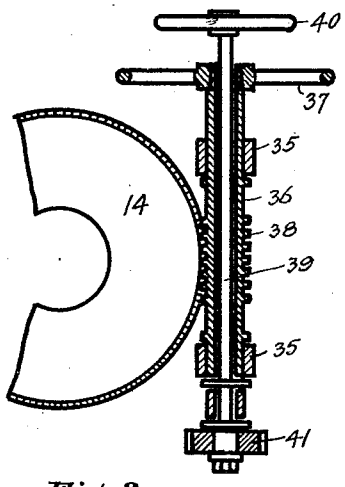

Fig 3

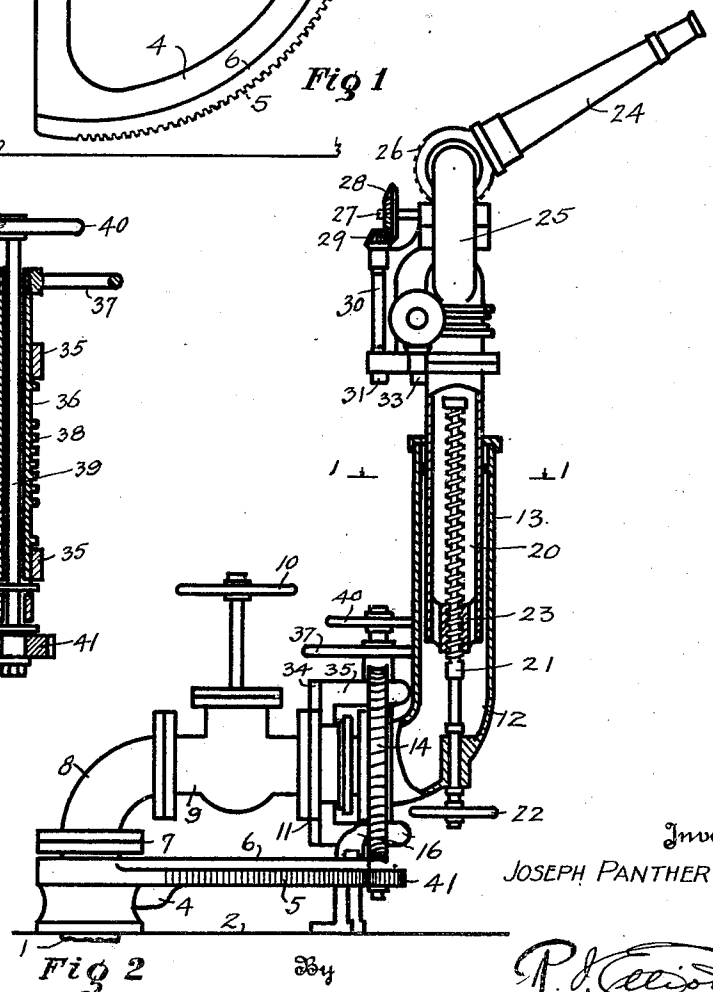

Fig 2

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FIRE FIGHTING APPARATUS

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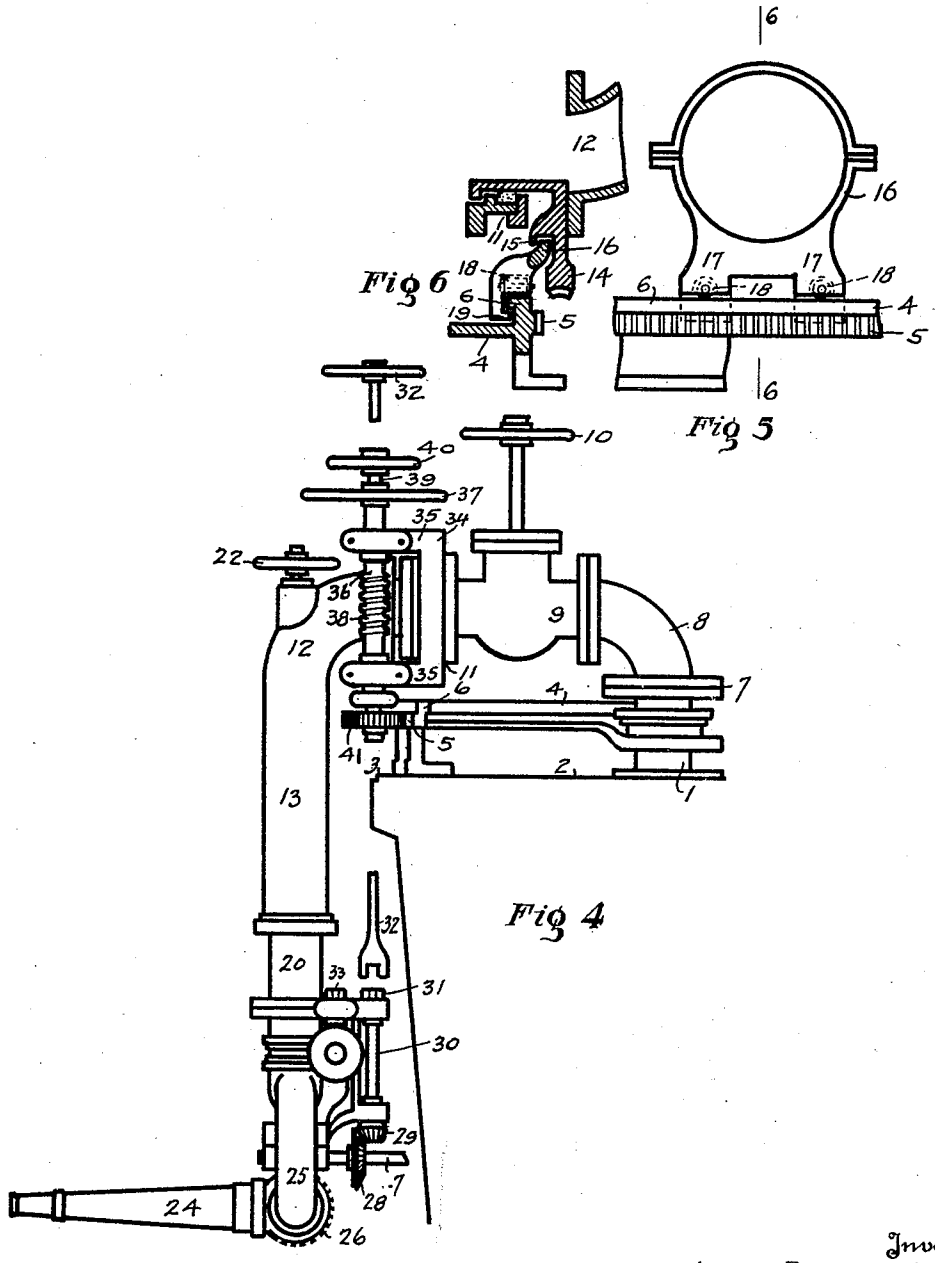

Fig 6

Fig 5

Fig 4

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UNITED STATES PATENT OFFICE

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FIRE FIGHTING APPARATUS

Application filed May 20, 1930. Serial No. 453,939.

This invention relates to devices for mounting the nozzle or monitor of a fire-fighting boat, and has for its objects to provide means, first, whereby the monitor may be swung outboard and downward to a level adjacent the surface of the water in order to fight fire beneath the floor of a dock or to be operated under similar conditions; second, whereby the monitor, when so swung out, may be operated, controlled, and directed from the deck of the fire-boat; third, whereby the position of the monitor, in relation to the level of the deck, may be adjusted; fourth, whereby the monitor may be operated, used, and controlled when swung inboard as well as outboard; fifth, whereby the monitor is anchored to the deck in order to carry the thrust reaction of the water stream therein; and sixth, which is cheap and simple to build, which will have but little wear, and which is effective in use.

I attain these and other objects by the devices, mechanisms, and arrangements illustrated in the accompanying drawings, in which—

Fig. 1 is a plan view of my apparatus, showing the delivery pipe in section on the line 1—1 in Fig. 2; Fig. 2 is a side elevation thereof, showing a portion of the delivery pipe in longitudinal section; Fig. 3 is a vertical section of a portion of the apparatus for rotating the delivery pipe on a horizontal axis to swing the monitor downward over the side of the fire-boat, and showing a portion of the apparatus for revolving the delivery pipe on the vertical axis of the supply pipe passing through the deck of the fire-boat, to swing it outboard or inboard thereof; Fig. 4 is a side elevation of my apparatus when swung outboard and down to be operated at the level of the water; Fig. 5 is a front elevation of the anchoring yoke for the joint of the delivery pipe; and Fig. 6 is a section on the line 6—6 in Fig. 5, showing a portion of the rotary joint at said yoke.

Similar numerals of reference refer to similar parts throughout the several views.

The monitors for a fire-boat are usually fixedly mounted on the deck of such a vessel and are adapted to turn on a vertical pivot and on a horizontal pivot in order to direct the stream in any desired direction. Such a monitor, however, can only operate from the level of the horizontal pivot about which the nozzle is turned. This condition renders it extremely difficult and dangerous for the fire-fighters to reach a fire which may be in the understructure of a wharf or in any other similar position. My apparatus is designed to take care of this condition, as well as to provide an apparatus which may be used under the ordinary conditions on such a monitor.

The water supply pipe 1 leads from the fire-pump within the fire-boat, and passes vertically through the deck 2 thereof at a point a short distance from the side edge 3 of the boat. This supply pipe 1 forms the vertical pivot about which the apparatus may be swung to move its axis inboard or outboard of the fire-boat as needed. A quadrant 4 is firmly secured to the deck 2 concentric with the supply pipe 1 and is provided with a curved rack or gear 5 on its outer edge, and with an anchor flange 6 (Fig. 6) adapted to take the upward thrust reaction of the water when the monitor is swung down as in Fig. 4.

A rotary joint 7, of any desired construction, joins the supply pipe 1 with a right-angle elbow 8, which connects the valve section 9 to the said supply pipe 1. The valve section 9 contains the main water control valve which is operated by the hand wheel 10. This valve section 9 always remains horizontal but may be revolved to any position around the axis of the supply pipe 1.

A second rotary joint 11 connects the outer end of the valve section 9 with the right-angle elbow 12 forming a part of the delivery pipe 13. This joint 11 is formed with a vertical circular worm-wheel 14 forming a part thereof (Fig. 6), whereby it may be turned on its horizontal axis, as hereinafter described. The worm-wheel 14 is provided with a circular concentric flange 15, on its inner side, adapted to receive the supporting and anchoring yoke 16 (Figs. 5 and 6).

This yoke 16 is provided with two feet 17, which are provided with rollers 18, adapted

to engage the upper surface of the quadrant 4. The yoke 16 is also provided with downward and outward extending anchor lugs 19, adapted to engage under the anchor flange 6 of the said quadrant 4. Thus the inner end of the delivery pipe 13, is supported against vertical downward and upward thrust by the quadrant 4, which is firmly secured to the deck 2.

The delivery pipe 13 extends at right-angles to the axis of the valve section 9, being revoluble about the said axis in a vertical plane. As seen in Fig. 2, this delivery pipe 13 is provided with a concentric telescoping extension 20 which slides axially therein through a suitable water-tight joint at its end. The position of this extension pipe 20, within the delivery pipe 13, is controlled by means of an axial screw rod 21. This rod 21 passes through a suitable water-tight joint in the elbow 12 and is provided with a hand wheel 22, by which it may be rotated, and screws into a suitable spider 23 formed in the inner end of the extension pipe 20.

The extension pipe 20 carries, on its end, the usual monitor comprising the nozzle 24 mounted on horizontal trunnions in a yoke or fork 25, which is rotatably mounted in the end of the extension pipe 20. The nozzle 24 is rotated on the trunnions by means of the gear 26 which may be rotated in the usual way by turning the shaft 27. However, in order to operate the gear 26 from a distance, either when the apparatus is in normal position and the telescopic section is extended or when the monitor is swung outboard and down beside the hull of the fire-boat, I have mounted a bevel gear 28 on the shaft 27 and have provided a pinion 29 which meshes therewith. This pinion 29 is mounted on a shaft 30 which is mounted in suitable bearings in a bracket secured to the monitor, and is always parallel with the extension pipe 20. A suitable socket 31 is formed on the end of the shaft 30 to receive the end of the turning wrench 32 (Fig. 4) whereby the said nozzle may be turned from the deck 2 to project its stream upward or downward when the apparatus is swung outboard and down.

Similarly the gearing which operates the monitor yoke 25 to turn it about the axis of the extension 20 to swing the nozzle 24 forward or towards the stern, is operated by the same or a similar wrench 32, engaging a second socket 33, whereby the gearing controlling said yoke 25 may be similarly operated.

A lateral bracket 34 is mounted on the end of the above-described valve section 9 and is provided with arms 35 which extend forward to carry the hollow vertical shaft 36 (Fig. 3). This shaft 36 is rotated by a hand wheel 37 and is provided with worm teeth 38 on its outer surface meshing with the teeth of the worm-wheel 14 secured to the second rotating joint 11. Thus, by operating the hand wheel 37 the entire delivery pipe 13, with the extension 20 and the monitor, is swung on a horizontal axis and may therefore be turned from its normal position to its downward extending position adjacent to the water level (Fig. 4).

A second shaft 39 is mounted concentrically within the above-described hollow shaft 36 and extends entirely through it and is provided, at its upper end, with a hand-wheel 40 whereby it may be operated and, at its lower end, with a pinion 41 which meshes with the teeth 5 on the outer side of the quadrant 4. Thus by operating the hand wheel 40 the entire apparatus, from the first rotary joint 7 outward, is swung on a vertical axis of the fixed supply pipe 1 and may therefore be turned from its normal inboard position (Figs. 1 and 2) to its outboard position (Fig. 4). And, when so swung outboard, then the hand wheel 37 may be operated, as above described, to swing that portion thereof, from the second rotary joint 11 outward, downward into the position shown in Fig. 4.

Thus it will be seen that my improved fire-fighting apparatus may be operated when in its normal position in the usual manner and, while still in such position, the monitor may be raised by extending the telescopic section thereof, or, said apparatus may be swung outboard from its normal position and operated in such upright position, or it may be turned to bring the nozzle down beside the boat to operate from a level below the fire-boat deck, and that in all said positions of the apparatus the nozzle is in perfect control and the reaction of the water is carried to the fire-boat through the quadrant on the deck thereof.

It is, of course, to be understood that in the above-described apparatus, such parts as are of usual construction have not been illustrated or described in detail. Further, it is to be understood, that when the word "quadrant" is herein used, it is not intended to limit the motion of the horizontal pipe to 90 degrees, as shown, but that, if desired, the apparatus may be swung entirely around the full circle. It is also to be understood that many changes may be made in the form and arrangement of the parts without departing from the spirit of my invention, so long as they come within the terms of the appended claims.

What I claim, and desire to secure by Letters Patent, is:—

1. In fire-fighting apparatus, the combination with a supporting pipe having a bend at its supported end; a pipe telescoping into the inside of said supporting pipe; an axially fixed rotatable screw-threaded rod axially mounted in said supporting pipe and having a nonscrew-threaded portion mounted in a watertight bushing passing through the bend in the end thereof; means outside

said supporting pipe for rotating said rod; a spider secured in said telescoping pipe and provided with axial screw-threads therein, adapted to be engaged by the threads of said rod, whereby the position of said telescoping pipe in said supporting pipe is adjusted by the rotation of said rod; and a nozzle mounted on the end of said telescoping pipe.

2. In fire fighting apparatus, the combination of a supported horizontal pipe; a delivery pipe; a rotatable connection between said horizontal pipe and said delivery pipe, whereby said delivery pipe may be swung around the axis of said horizontal pipe to a point upward or downward therefrom at any radial angle, and in the plane at right-angles to the axis of said horizontal pipe, and whereby the head end of said delivery pipe may be adjusted in position independent of any movement of said horizontal pipe; and a monitor mounted on the head end of said delivery pipe and comprising a nozzle and independent means for turning said nozzle around the axis of said delivery pipe or around an axis at right-angles thereto, to throw the stream in any direction from the head of said delivery pipe.

3. In fire fighting apparatus, the combination of a supported horizontal pipe; an extensible delivery pipe; a rotatable connection between said horizontal pipe and said delivery pipe, whereby said delivery pipe extends axially at right-angles to the axis of said horizontal pipe and may be swung around the axis of said horizontal pipe to any radial angle therefrom, and whereby the head end of said delivery pipe may be adjusted in position independent of any movement of said horizontal pipe; and a monitor mounted on the head end of said delivery pipe and comprising a nozzle and independent means adapted to turn said nozzle around the axis of said delivery pipe or around an axis at right-angles thereto, to throw the stream in any direction from the head of said delivery pipe.

4. In fire fighting apparatus, the combination of a supported horizontal pipe; a delivery pipe extending at right-angles to said horizontal pipe; a rotatable connection between said horizontal pipe and said delivery pipe, whereby said delivery pipe may be swung around the axis of said horizontal pipe to a point upward or downward therefrom at any angle thereto, and whereby the head end of said delivery pipe may be adjusted in position independent of any movement of said horizontal pipe; a yoke enclosing said rotatable connection and adjustably secured in place and adapted to carry the weight stress and water reaction of said movable delivery pipe; and a monitor mounted on the head end of said delivery pipe and comprising a nozzle and independent means adapted to turn said nozzle around the axis of said delivery pipe or around an axis at right-angles thereto, to throw the stream in any direction from the head of said delivery pipe.

5. In fire fighting apparatus, the combination of an elevated deck; a fixed vertical supply pipe extending upward therethrough and positioned near its edge; a horizontal pipe connected thereto above said deck and extending to the edge thereof; a delivery pipe extending at right-angles to said horizontal pipe; a rotatable connection between said delivery pipe and said horizontal pipe, whereby said delivery pipe may be swung around the axis of said horizontal pipe to a point above or below the level of said deck; a monitor mounted on the head end of said delivery pipe and comprising a nozzle and independent means adapted to turn said nozzle around the axis of said delivery pipe or around an axis at right-angles thereto, to throw, the stream of water in any direction from the head of said delivery pipe; and means whereby said monitor may be controlled from above said deck.

JOSEPH PANTHER, JR.