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3,493,053

FIRE FIGHTING EQUIPMENT

Filed May 21, 1968

2 Sheets-Sheet 1

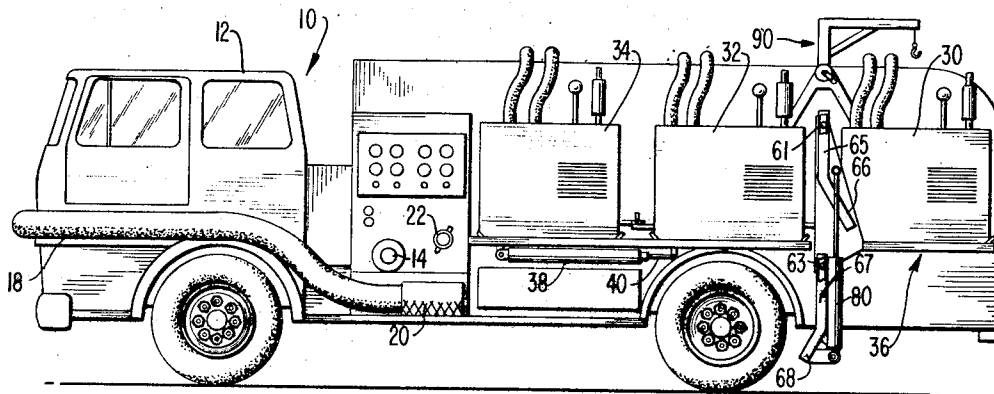


FIG. 1

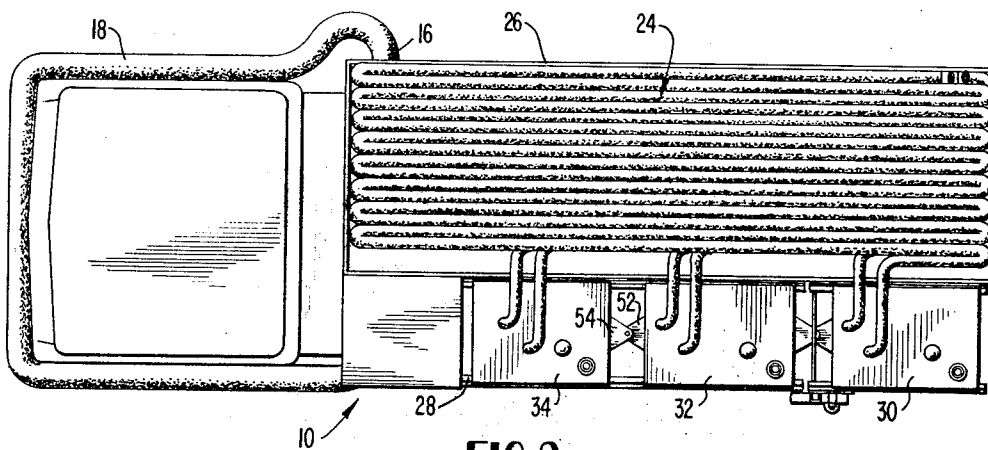


FIG. 2

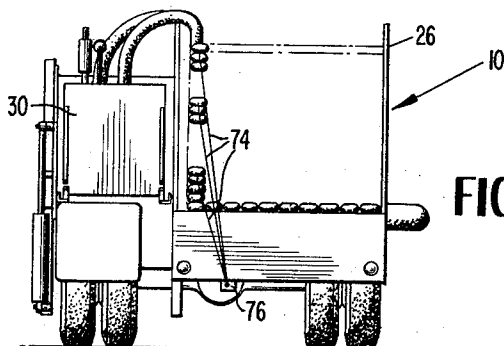


FIG. 3

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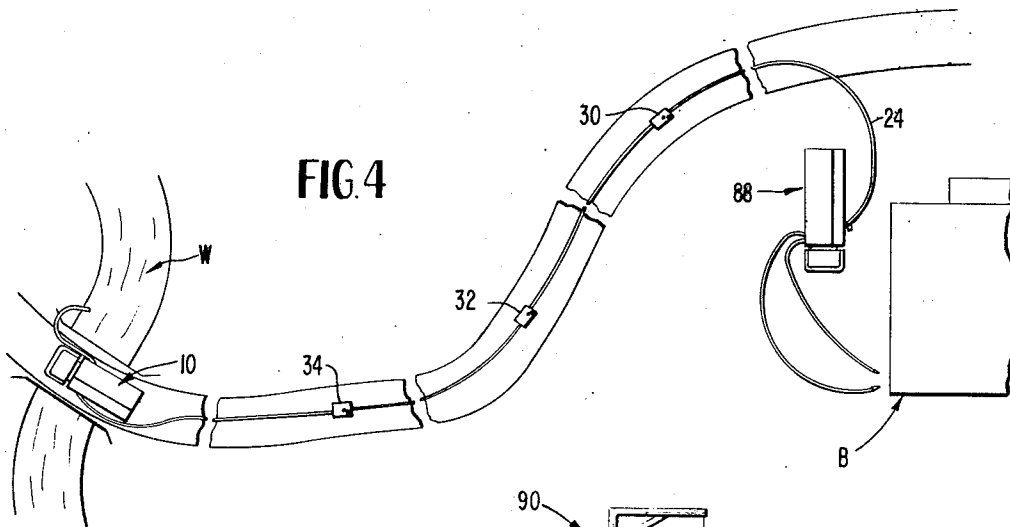
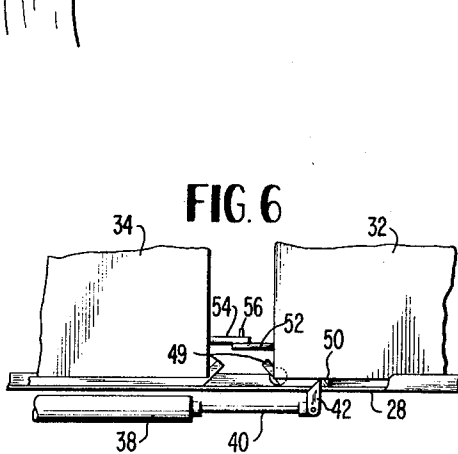
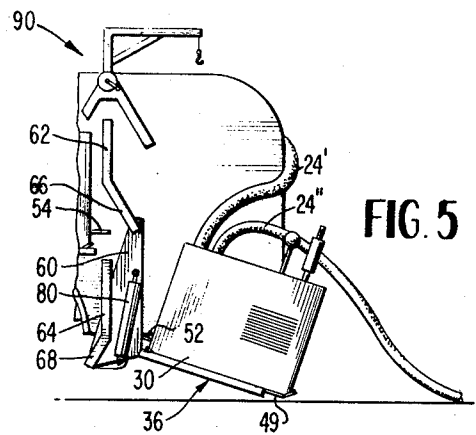
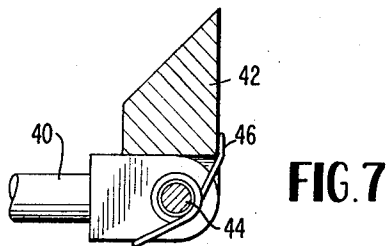
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FIRE FIGHTING EQUIPMENT

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2 Sheets-Sheet 2



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FIRE FIGHTING EQUIPMENT

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6 Claims

ABSTRACT OF THE DISCLOSURE

A series of engine-pump modules are carried by a fire fighting vehicle and are adapted to be sequentially unloaded therefrom for disposition on the ground surface, the series of modules being interconnected by hose sections so as to string out a water supply line having pumping stations along its length.

BACKGROUND OF THE INVENTION

In rural or outlying areas, a supply of water for fighting fires may not be readily accessible, being located some distance from the site of the fire and for this reason auxiliary pumping equipment is necessary in order successfully to combat a fire in such areas.

At the same time, it readily will be appreciated that time is always of the essence and any delays occasioned by the shortage of water may well make the difference between successfully fighting a fire or not.

SUMMARY OF THE INVENTION

The present invention relates to an improved fire fighting vehicle which is capable of delivering water from a distantly located supply under proper pressure supply conditions as successfully may be employed to fight the remote fire. The vehicle comprises a self-contained fire fighting system that employs a plurality of engine-pump modules which are successively unloaded off the rear of the vehicle, the modules being serially connected by links of hose sections and the modules are strung out behind the vehicle to provide a water supply line extending over a relatively long distance.

The modules are disposed in a train and supported on a trackway leading to an elevator mechanism for successively lowering the modules to the ground surface behind the vehicle upon which they are carried, and hose sections also carried by the vehicle interconnect the modules in series relationship. The elevator mechanism is automatically actuated by one of the trailing or payed out hose sections to lower the module supported on the elevator at the proper time, the elevator thereafter returning to its raised position whereat it actuates mechanism for advancing the train of modules to place the next successive module on the elevator for subsequent lowering to the ground surface as soon as sufficient length of the intervening hose section is payed out behind the vehicle.

BRIEF DESCRIPTION OF THE DRAWING FIGURES

FIG. 1 is a side elevational view showing a fire fighting vehicle constructed according to the present invention;

FIG. 2 is a top plan view of the assembly shown in FIG. 1;

FIG. 3 is a rear elevational view of the vehicle;

FIG. 4 is a diagrammatic view illustrating the invention in use;

FIG. 5 is an elevational view showing the rear portion of the vehicle and illustrating the manner in which the modules are deposited on the ground;

FIG. 6 is a view illustrating the advancing mechanism, and

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FIG. 7 is an enlarged view partly in section illustrating certain details of the advancing pawl.

DETAILED DESCRIPTION OF THE INVENTION

With reference more particularly to FIGS. 1-3, a fire fighting truck 10, which may take any convenient or conventional form, includes a cab section 12 below which is mounted the usual prime mover for the truck and the prime mover is coupled through suitable transmission mechanism to provide several power take-off shafts one of which drives a pump 14 to the inlet of which is connected, as can be seen in FIG. 2, one end 16 of a hand hose 18, the opposite end of which is provided with a strainer 20 as shown in FIG. 1. The discharge or outlet connection 22 for the pump 14 is, when in operation, connected to one end of a hose assembly 24, FIG. 2, for delivery of water from a suitable source into which the filtered end 20 of the hose 18 has been placed.

The vehicle 10 includes an open top body portion 26 within which various sections constituting the hose system 24 are stored in conventional fashion. Along one side of the vehicle is a trackway 28 upon which is supported a train of engine-pump modules 30, 32 and 34 and the end section of this support trackway 28 is constituted by an elevator platform 36, FIG. 1. Below the trackway 28 is mounted an advancing mechanism 38 which, conveniently, may comprise a hydraulic cylinder and piston assembly mounted on the truck and having a piston rod 40 extending therefrom and provided with a pawl 42, as best shown in FIGS. 6 and 7, which is pivotally carried by a pin 44 on the free end of the piston rod 40 and normally is urged by a spring 46 into the position shown for engagement with a pusher member 50 on the underside of the pump module with which said member 50 is associated.

It will be understood that the advancing mechanism 38 initially engages the module 32 which is adjacent the elevator platform 36 and, when operated as herein-after described, is effective to push the module 32 onto the platform. The modules are respectively mounted on skids 49, which may be supplemented by rollers at the leading ends, and successive modules are connected together in train fashion by means of coupling plates 52 and 54, the former of which underlies the latter, carrying a pin 56 projecting upwardly through an opening in the latter plate 54 so that movement of the module 32 along the track 28 onto the elevator platform 36 will pull the module 34 into the position initially occupied by the module 32.

The elevator platform 36 is movably supported by a mounting plate assembly 60 which carries vertically spaced rollers 61 and 63 respectively engaged in track sections 62 and 64. The upper portions 65 and 67 of these track sections are vertically aligned whereas the lower portions 66 and 68 thereof are inclined in relatively opposite directions so that when the rollers 61 and 63 carried by the supporting plate assembly 60 engage in the lower sections 66 and 68, the elevator platform 36 is tipped downwardly, as shown in FIG. 5, thereby to slide the module 30 resting thereupon onto the ground surface.

Each of the modules contains a suitable prime mover or engine which is coupled to a pump assembly, the pump having inlet and outlet connections to which the respective hose sections 24' and 24'' are connected, as shown in FIG. 5. As the hose sections are payed out behind the vehicle, the inlet hose section 24' of the module already deposited is provided with a rope, cable or similar connection 74, FIG. 3 which, respectively, are connected at one of their ends to a control member 76 and at their opposite ends to the individual inlet hose connections or sections 24', the latter being connected at

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their other ends as the outlet connections to the next successive module.

When the proper length of hose has been payed out, the respective one of the cables 74 becomes taut and actuates the control mechanism 76 to initiate the next unloading cycle. As soon as the unloading cycle is initiated, a hydraulic piston and cylinder assembly 80, FIGS. 1 and 5, is actuated to lower the elevator assembly ultimately to be disposed in the position shown in FIG. 5 whereat the associated module will be slid therefrom and deposited on the ground surface. Any suitable limit switch senses the dumping action of the module and returns the piston cylinder assembly 80 to its initial position wherein the parts are in the position of FIG. 1 and a further limit switch then actuates the advancing mechanism 38 to advance the next module onto the elevator while the next preceding module is disposed in position adjacent the elevator. The cycle is now complete and will be initiated once again when the next cable 74 actuates the control mechanism 76 to once again initiate the cycle period. It will be understood, of course, that the cable or rope connections 74 are of the break-away type.

As may be seen more clearly in FIG. 4, the vehicle may be driven from a point adjacent the site of the fire, such as a building B, first to anchor the discharge end 70 of the first hose section 24 to any fixed object. The vehicle is then driven toward a source of water supply W, such as a stream, pond, lake or the like, paying out the hose sections as the vehicle proceeds. When the control connection 74 attached to said first hose section becomes taut the control device 76 is actuated to deposit the module 30, then the module 32 and finally the module 34 and successively any succeeding modules onto the ground until the vehicle 10 has reached the suitable source of water supply W in which the strainer 20 is placed. The discharge end 70 of the first hose section is connected to a further piece of fire fighting equipment 88, such as a standard pumper, for directly fighting the fire.

The vehicle 10 may also mount a suitable crane mechanism 90, FIG. 1, whereby the various modules may be picked up at the end of the operation. It will be also understood that the manner of priming the pump 14 on vehicle 10 is done by entirely conventional methods well-known in the art and it will also be appreciated that when answering a fire call, the prime mover units of the various modules will be started up so as to be in proper operating condition when called into actual use or service and these prime movers will be supplied with the usual and conventional governor mechanisms for maintaining the proper supply pressure in their discharge connections. In this way, it will be seen that the inven-

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tion provides a self-contained fire fighting vehicle which is capable of laying out a water supply line over considerable distances while providing pumping stations at spaced points along this supply line in order to maintain the proper operating pressure for successfully fighting a fire at a site remote from the water source.

What is claimed is:

1. A fire fighting vehicle comprising, in combination, a chassis having a prime mover and a water pump driven by the prime mover,
- a plurality of engine-pump modules carried by said chassis, each having a pump inlet and a pump outlet,
- a plurality of hose sections for serially connecting said modules through the inlets and outlets thereof to said water pump on the chassis,
- a trackway mounting said modules on said chassis, elevator means at one end of said trackway, means for advancing said modules along said trackway successively onto said elevator, and means for actuating said elevator to lower a module thereon to the ground.
2. A fire fighting vehicle according to claim 1 wherein said hose sections are permanently serially connected with said modules.
3. A fire fighting vehicle according to claim 2 wherein the last means includes mechanism actuated by the hose sections payed out behind the vehicle.
4. A fire fighting vehicle according to claim 3 wherein said last means also includes mechanism for actuating the first means when the elevator is returned to its raised position.
5. A fire fighting vehicle according to claim 1 wherein said advancing means engages that module adjacent the elevator means, said modules being coupled together by mechanism disengageable in response to lowering movement by said elevator mechanism.
6. A fire fighting vehicle according to claim 1 wherein said elevator means comprises a platform, track members on said chassis for vertically guiding said platform and including end portions for tilting the platform while lowered to dump the associated module therefrom.

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ALBERT J. MAKAY, Primary Examiner

U.S. Cl. X.R.

214—518