

Nov. 27, 1934.

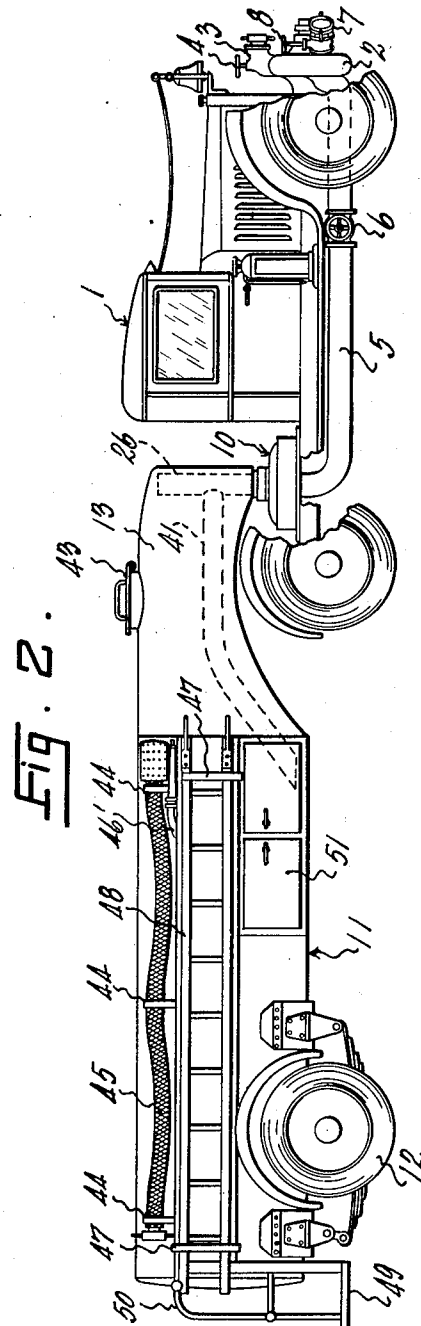
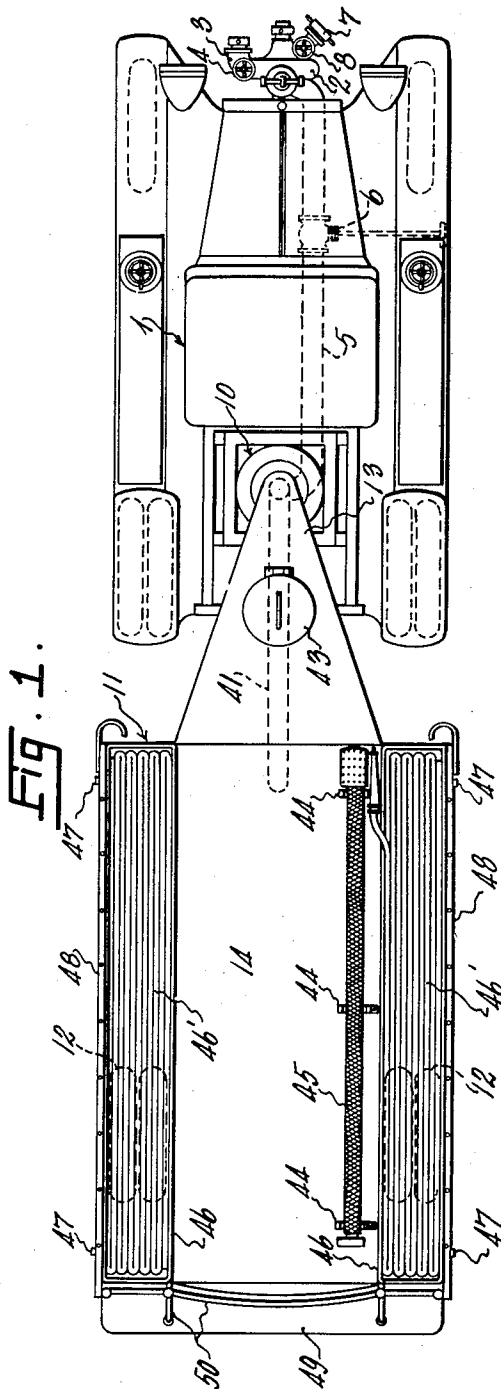
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1,982,052

SEMITRAILER

Filed Aug. 7, 1933

2 Sheets-Sheet 1



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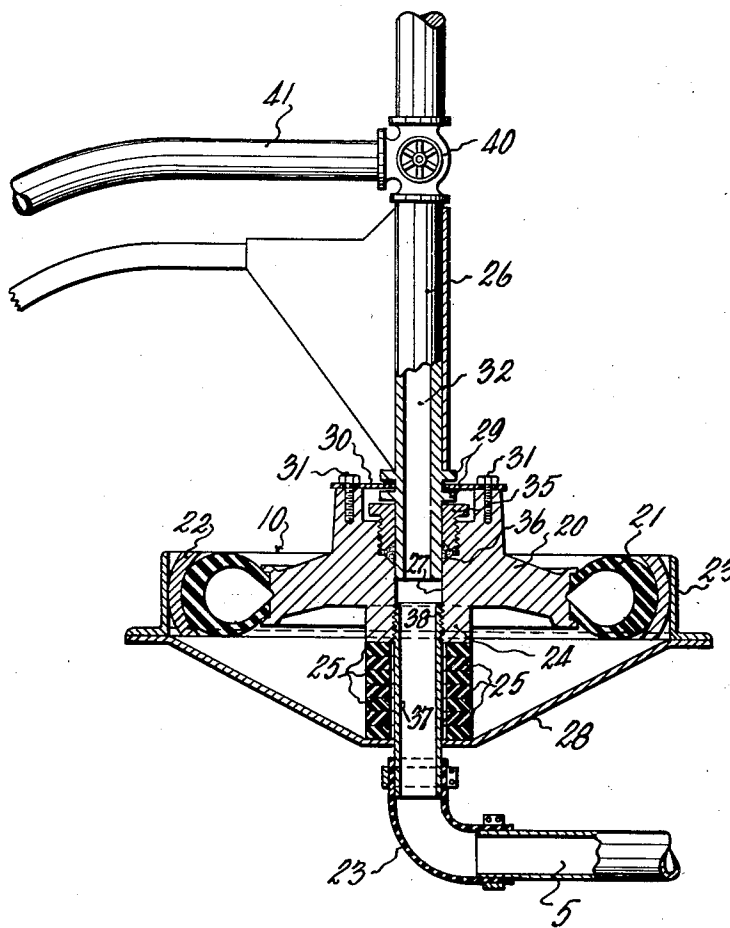
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Fig. 3.



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UNITED STATES PATENT OFFICE

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SEMITRAILER

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Application August 7, 1933, Serial No. 683,967

2 Claims. (Cl. 280—33.1)

This invention relates to fire fighting apparatus and more particularly to an articulated tractor-trailer combination forming a mobile completely self contained fire fighting unit, adapted for use in rural or forest areas where there is no systematized water supply or as an emergency unit where the contemplated water supply has dried up or is frozen or for any other reason rendered unavailable.

- 10 Among the objects of the invention are the provision of a unit of the above character having greater efficiency in the arrangement of its co-operating parts, greater capacity and increased mobility; to decrease the cost of such apparatus by making effective use of standard, low cost pumping apparatus applied to an ordinary automobile roadster or truck; and to provide a mobile fire fighting unit including a water supply in which the wheel loads are at a minimum. Other and further objects, residing in the specific construction of the parts, will be apparent from the following specification and claims.

- It is of the utmost importance that as little time as possible be permitted to elapse between the inception of a fire and the application of extinguishing material. In combating fires in isolated districts many factors tend to delay the application of a stream of water to the fire or tend to decrease the efficiency of application. The apparatus, such as pump and hose, must be transported to the scene of the fire. Upon arrival a source of water supply must be located, connections between supply and pump must be established, and a hose line laid between the pump and fire. The efficiency of the water stream depends on keeping the supply connections and hose lines as short as possible. By my arrangement the time of transportation of the apparatus is minimized by employing a semi-trailer combination particularly adapted to relatively swift travel over rough roads or even across country. The water supply is transported with the apparatus, avoiding loss of time in locating a supply, and the amount which can thus be efficiently transported is substantially increased by my construction of the apparatus itself. The connection between the pump and supply is self contained within the vehicular structures, as will be later more fully described, and it is only necessary to couple the hose to the pump upon arrival at the fire.

In the accompanying drawings, which illustrate one embodiment of my invention,

Fig. 1 is a plan view of the apparatus;

Fig. 2 is a side view of the structure shown in Fig. 1, parts being broken away; and

Fig. 3 is a sectional view on a larger scale of the coupling between the tractor and trailer vehicles.

Referring to the drawings, 1 designates the tractor vehicle which may be any standard automobile such as a truck, roadster, or coupé, affording space at the rear of the driver's seat for a fifth wheel coupling 10. The tractor 1 is equipped with a pump 2 suitably supported forwardly of the radiator of the tractor and adapted to be driven from the motor of the tractor by means of a clutch in a manner which is well known and is not, therefore, further described or specifically illustrated. Pump 2 is provided with a delivery pipe 3, controlled by a valve 4, and a suction pipe 5, controlled by a valve 6, through which the contents of the tank may be drawn to the pump. A second suction pipe 7 controlled by valve 8 is also provided through which water may be pumped into the tank as later described.

The trailer vehicle, generally indicated at 11, is of the semi-trailer type provided with rear wheels 12 and an elevated prow portion 13. The body portion of the trailer, including the prow portion, forms a tank 14. Tank 14 is so constructed as to itself form the chassis of the trailer and is preferably constructed in the manner shown and described in detail in copending application of Harold H. Robinson, Serial No. 679,883, filed July 11, 1933, except that in the present case the capacity of the tank is increased by making the prow portion part of the tank. Since the specific interior construction of the tank itself does not form part of the present invention, further description thereof is not necessary.

Suction pipe 5 is connected to tank 14 through the fifth wheel coupling 10 of the tractor and trailer in a manner best shown in Fig. 3. The fifth wheel coupling preferably takes the general form of that shown in co-pending application of Harold H. Robinson et al., Serial No. 650,346, filed January 5, 1933, in that it comprises a wheel 20 provided on its periphery with a pneumatic tire 21 non-rotatably held in arcuate members 22 by the air pressure in the tire. Members 22 are supported by a frame 23 secured to the tractor vehicle in any suitable manner. The hub 24 of wheel 20 rests upon a plurality of annular rubber members 25, supported on depending member 28 of frame 23. The nose post 26 of the trailer engages within the opening 27 of the wheel hub to effect an articulate coupling between the vehicles, the pneumatic tire 21 cushioning the draft action in all angular positions of the vehicles while member 25 acts to cushion the vertical load thrust

transmitted from the trailer to the tractor through post 26. The post 26 is provided with a double flanged collar 29 and the post is held in coupled relation with the hub by means of an apertured plate 30 engaging between the flanges of the collar and releasably secured to the wheel 20 by means of machine screws 31. According to the present invention the lower portion of post 26 is made in the form of a pipe or tube 32 and engages within the opening 27 of the hub through a gland nut 35 threaded into the hub of the wheel to form the upper portion, or a continuation of, opening 27 and acting to compress packing 36 to effect a water-tight seal between the post and hub. A pipe 37 is threaded as at 38 in the lower portion of opening 27 and extends through the annular members 25 to a point below frame member 28. A piece of flexible hose 33 connects pipe 37 and pipe 5. A valve 40 inserted in post 26 connects pipe portion 32 of the post with a pipe 41 which extends inwardly in the nose portion of the trailer to the bottom of the tank 14, as shown in dotted lines in Fig. 2.

The tank is provided with a manhole 43 through which the tank may be filled from a pressure water system, or access had to the interior of the tank for any other purpose. The manhole will also be opened when water is being pumped from the tank, as later described, to maintain atmospheric pressure in the tank.

The tank forms a support for brackets 44 in which a suction hose 45 is carried, boxes or trays 46 in which lengths of fire hose 46' are carried, and hangers 47 for hooked ladders 48. A platform 49 is secured to the rear of the tank and provided with hand rails 50 which also act as a partial support for the platform. A box 51 for tools, hose nozzles and the like is secured to the tank forward of the trailer wheels.

The construction above described provides an exceedingly efficient, flexible piece of fire fighting apparatus. The pneumatic coupling between the vehicles permits high speeds over rough roads or even across field without danger of throwing the tractor out of control from sudden shocks or pulls due to the momentum or inertia of the relatively heavy load of water carried since all such shocks are completely and uniformly cushioned and absorbed by the coupling. By utilizing the tank itself as the supporting structure for the hose receptacles, ladder hangers, tool boxes, and other accessories, the need of the usual heavy body structure is entirely avoided and greater water capacity and increased mobility is attained. Furthermore, the center of gravity of the apparatus as a whole is lowered and increased stability thereby achieved.

The operation may be briefly summarized as follows: Upon alarm of fire the apparatus is driven to the scene of the fire with the firemen riding on the tow car and on rear platform 49. Upon arrival it is only necessary to connect delivery hose 46 to delivery pipe 3, bring pump 2 into operation by the tow car motor, and an effective stream of water is immediately available. The apparatus may be driven as close to the fire as possible, the effectiveness of the water stream being increased by the shortness of the

hose line thus made possible. Where a reservoir of water is at hand, suction hose 45 may be connected to suction pipe 7, valve 8 opened, valve 6 closed, and the pump operated to force water directly through the delivery hose from the reservoir. The apparatus may also be driven to a relatively distant water supply, such as a pond, and the tank replenished from such supply by again connecting suction hose 45 to pipe 7, closing valve 4, and opening valve 6, whereby the pump operates to fill the tank.

It will be understood that various modifications in the details and arrangement of the assembly may be made without departing from the scope of the invention. Furthermore, the fluid connection through the vehicle coupling may be employed for other purposes, such as transmitting heating fluid from the motor circulation system of the tractor to a passenger trailer, or transmitting the exhaust gases of the tractor motor to the trailer for the same purpose. Electric cables may be carried through the coupling in a similar manner for transmitting electrical energy to either of the vehicles from the other. The connection may also be made to serve as a link in providing speaking tube communication between the vehicles. Partial or complete control and operation of the tractor vehicle from the trailer can be effected by passing the steering and engine control mechanism through the fifth wheel coupling in a manner similar to that shown.

I claim:

1. In a tractor-trailer combination, a coupling comprising a hollow vertical post, open at its ends, rigidly secured to one of the vehicles, a hub member non-rotatably secured to the other vehicle and provided with a vertical opening extending through the hub member within which the said post extends to form an articulated connection between the vehicles, and an annular packing member positioned in the hub opening and making a fluid-tight seal with the outer surface of the post, the opening in said hub and the hollow post affording an uninterrupted path of communication between the vehicles throughout the entire range of relative angular movement of the vehicles.

2. In a tractor-trailer combination, a coupling comprising a hollow vertical post, open at its ends, rigidly secured to the forward end of the trailer and communicating with the interior of the trailer, a hub member non-rotatably but resiliently secured to the tractor vehicle and provided with a vertical opening, said opening extending through the hub member, the upper portion thereof forming a bearing in which the lower portion of the hollow post member is received to form an articulated connection between the vehicles, an annular packing member positioned in the hub opening and making a fluid-tight seal with the outer surface of the post, and a hollow cylindrical member secured to, and forming a continuation of the opening through, the hub member, said cylindrical member, hub and opening and hollow post member affording an uninterrupted path of communication.

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