Dec. 11, 1923. 1,476,748

G. A. WOOD

HYDRAULIC HOIST HEATER

Filed March 15, 1920

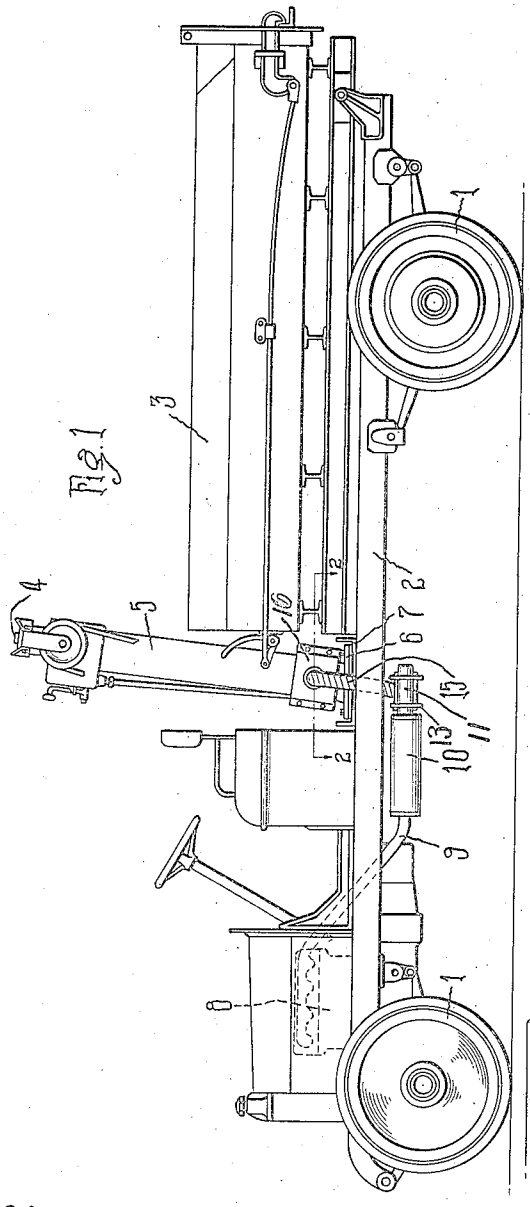


Fig. 1

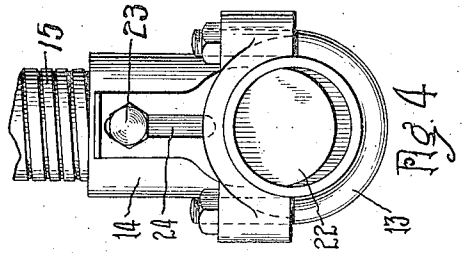


Fig. 4

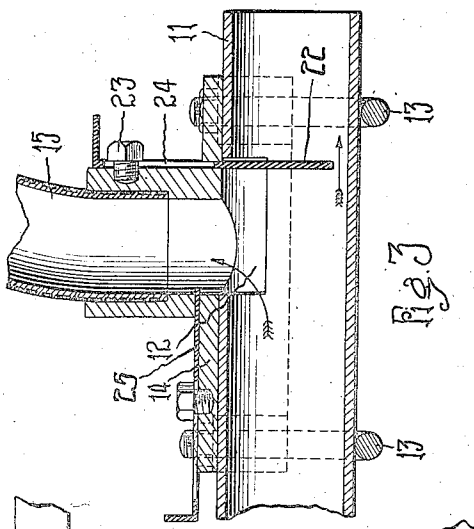


Fig. 3

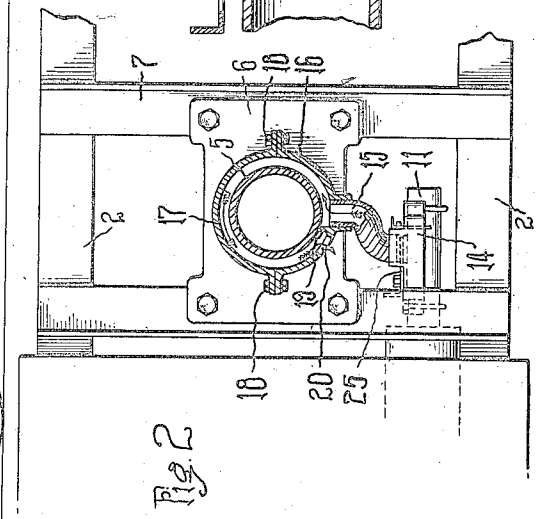


Fig. 2

Witness:

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UNITED STATES PATENT OFFICE.

GARFIELD A. WOOD, OF ALGONAC, MICHIGAN.

HYDRAULIC-HOIST HEATER.

Application filed March 15, 1920. Serial No. 366,102.

To all whom it may concern:

Be it known that I, GARFIELD A. WOOD, a citizen of the United States, residing at Algonac, in the county of St. Clair and State of Michigan, have invented a new and useful Hydraulic-Hoist Heater, of which the following is a specification.

As is a matter of common knowledge, the device most used for tilting the bodies of self-propelled vehicles is the hydraulic hoist the cylinder or cylinders of which are differently arranged in the various constructions. For example, in the most usual type the cylinder is upright, being positioned forwardly of the body, while in other cases the cylinder or cylinders is placed below the body and arranged either substantially horizontally or in upright fashion. In each instance oil is the pressure fluid generally employed, but some difficulty is experienced in the colder weather on account of the fact that oil of the proper consistency to prevent freezing does not flow freely through the pump and associated passages, particularly when the hoist has not been used for several hours. The resulting friction of course involves some loss of power, and difficulty is sometimes experienced in that the body fails to settle of its own accord after the load has been discharged.

These objections I overcome by the present invention which provides means under control of the driver for applying heat, preferably waste heat from the engine, to the circulatory liquid to insure the desirable free-flowing condition. It will be understood that any well-known heating element such as an electric coil or grid might be used, but I prefer to take the heat from the exhaust gases, and for this purpose I preferably attach to the exhaust pipe a valve-controlled hose connection leading to a jacket element preferably surrounding a portion of the hoisting cylinder. Other hot engine fluids such as the cooling liquid or air might be utilized for the same general purpose, but I prefer to use the exhaust gases for obvious reasons.

A more specific object of the invention is to provide apparatus for the purpose stated of such nature as to be readily applied to existing constructions, but the jacket may be built as a permanent part of the initial truck construction if desired.

Another object is to provide apparatus for the purpose stated wherein one main element may be applied to the engine and another to the hoist, and wherein said elements are joined by a fluid transmitting connection which need not be cut to correspond to the different relative locations of said elements in the trucks of different manufactures.

A further object is to devise an inexpensive apparatus for the purpose set forth.

In the drawings:

Fig. 1 is a side view, parts being omitted, showing the preferred manner of applying the invention to a truck wherein the hoist is of the upright type positioned forwardly of the body.

Fig. 2 is a section on line 2—2 of Fig. 1, the piston being elevated.

Fig. 3 is an enlarged horizontal section corresponding to Fig. 2, and

Fig. 4 is a view corresponding to Fig. 3 and taken from the right hand end thereof.

1 indicates the wheels and 2 the frame of an ordinary truck whereon the body 3 may be tilted when the piston and cross-bar construction 4 is elevated in the cylinder 5 as explained in my Patent No. 1,271,969, granted July 9, 1918. A more detailed description of the apparatus is not thought necessary, but it will be observed that the base casting 6 of the hoist rests on the cross-frame or bars 7 centrally of the vehicle. The usual exhaust pipe and muffler for the internal combustion propelling engine 8 appear at 9 and 10, respectively; and pumping apparatus (not shown) driven by the engine is provided for forcing the working fluid between the base 6 and the piston to elevate the latter in the general manner indicated in said patent.

In accordance with the invention I preferably provide the section 11 of the exhaust pipe beyond the muffler with a lateral opening 12 and secure around this opening as by means of the U-bolts 13, a fitting 14 to which one end of the hose or flexible conduit or tube 15 is attached, the opposite end leading into a jacket for the lower end-portion of the cylinder. This jacket may be formed in various ways, either permanently with the base or otherwise, and in the embodiment shown it comprises two sections 16—17 bolted together at 18, the section 16 having an internal rib 19 extending longitudinally of the cylinder and being provided with an outlet opening or openings 20. There is thus formed a jacket chamber through which ex-

haust gases from the hose 15 pass in the manner indicated by the arrows in Fig. 2 to heat the oil or other liquid within the cylinder, which preferably encloses the storage as well as the pressure space, as explained in said patent. By providing a suitable valve or gate such as the plate 22 slidable in and out across the pipe 11 through the opening 12 and adapted to be retained in adjustable position by the set-screw 23 which passes through a slot 24 therein, the exhaust gases may be deflected more or less from the pipe 11 into the hose 15, and a similar gate or valve 25 may be used to entirely close off the pipe 15 if desired. Obviously, these valves or the equivalent may be constructed, positioned and operated in various ways and the particular showing is merely by way of example.

During cold weather the driver sets the gate or gates in such manner as to maintain the working liquid at the proper temperature to insure free-flowing, but in warm weather the better practice is to close off the conduit 15 altogether, but the parts may be so constructed or adjusted that a small proportion of the gases will pass through the jacket 16—17 under all circumstances. The device is inexpensive and in the embodiment shown may be readily installed on existing equipment. It is evident that various other devices utilizing heat developed by or traceable to the propelling engine or power plant may be used, but I regard my invention as including an even broader conception in that I regard myself as the first to employ any heating apparatus portable with the vehicle for heating the working fluid of the hoist at will. It will be evident further that the hydraulic hoist may in some instances be used for purposes other than the tilting of a body on the truck. The flexibility of the conduit 15 permits the base 6 to sink somewhat as the load is applied without applying stress to the exhaust pipe 11 and moreover provides for ready adaptation of the device to installations wherein the relative location of the exhaust line and the hoist varies to a considerable extent. Various other types of give-and-take connections might be employed.

Again, it will be readily understood that while I have shown the hydraulic hoist mounted directly on the truck or tractor of which the engine forms a part, it may in fact be mounted on an ordinary trailer or on a "semi-trailer" resting upon or drawn by the self-propelled vehicle, the hot exhaust gases being passed to the hoist through a hose in a manner which will be obvious.

I claim:

1. A vehicle including an internal combustion engine having an exhaust conduit, a hydraulic hoist on the vehicle adjacent said conduit, jacket forming means for a portion of the circulating system of the hoist, and a conduit forming a give-and-take connection between said exhaust conduit and said means whereby exhaust gases may be applied to heat the working liquid of the hoist.

2. A vehicle comprising a hydraulic hoist including a hoisting cylinder, jacket forming means for a portion of said cylinder, a propelling engine for the vehicle, and means for directing hot fluid from the engine to said jacket forming means to heat the working liquid in said cylinder.

3. A vehicle including a propelling engine, an upright hydraulic hoist carried by the vehicle, said hoist including a cylinder, a jacket encircling the cylinder to form a heating chamber therefor near the base thereof, and means for directing waste heat from the engine to said jacket.

4. A vehicle including a propelling engine having a conduit for exhaust gases, a hydraulic hoist on the vehicle, a fitting secured on said conduit, and a flexible conduit for directing hot fluid from said fitting to said hoist to heat working liquid for the latter to a temperature at which it flows freely.

GARFIELD A. WOOD.