

Sept. 5, 1933.

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1,925,306

ROAD SCRAPER

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2 Sheets-Sheet 1

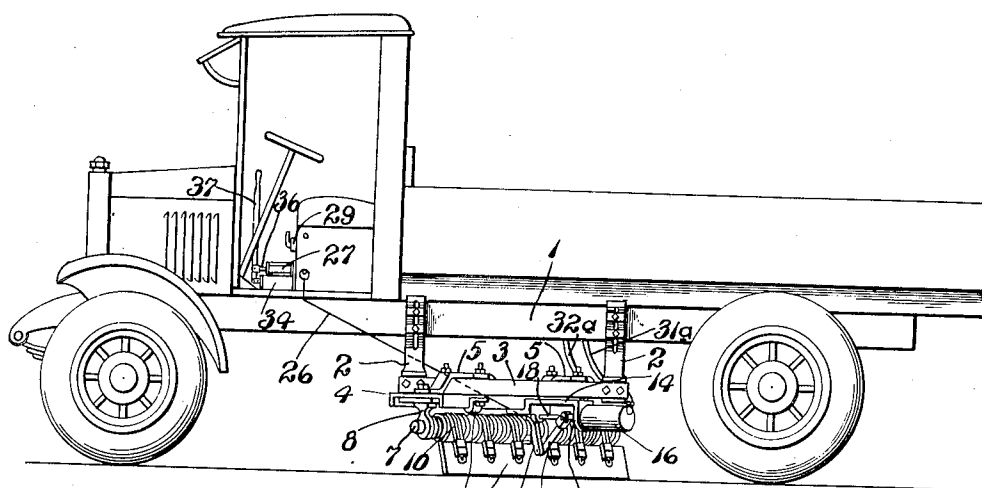


Fig. 1⁶

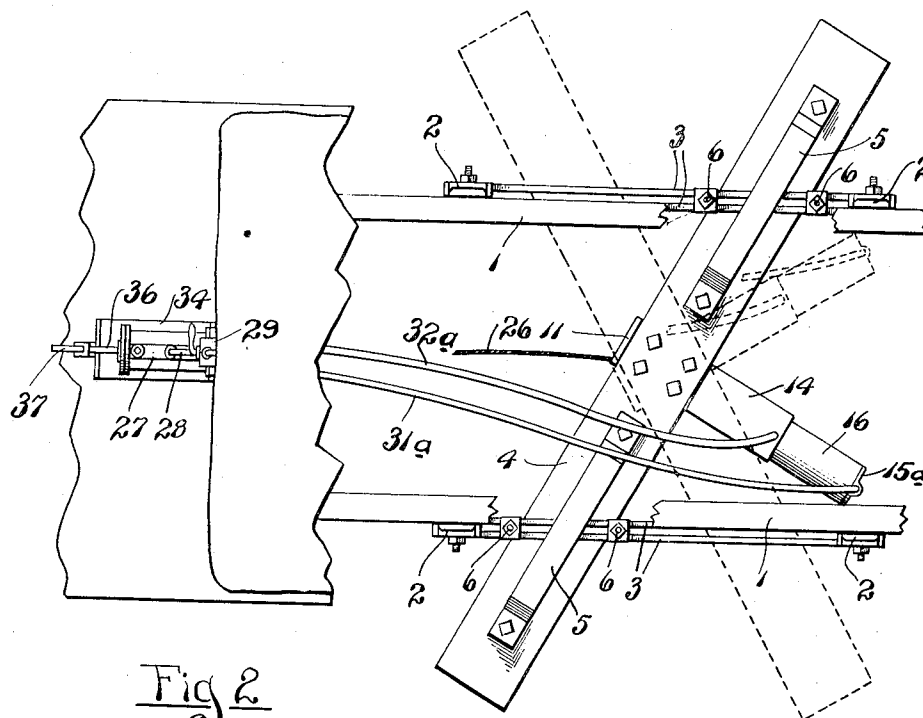


Fig 2

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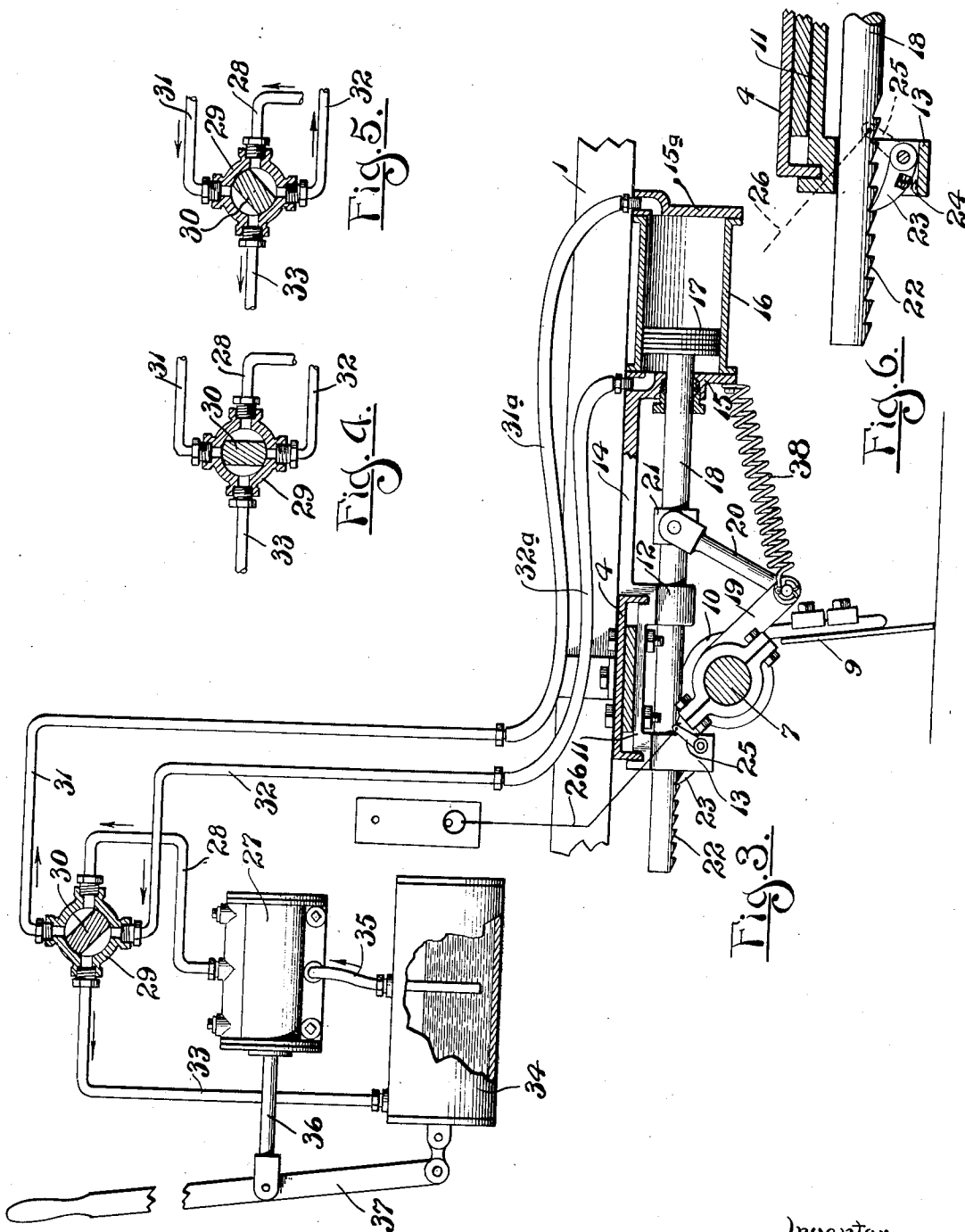
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UNITED STATES PATENT OFFICE

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ROAD SCRAPER

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3 Claims. (Cl. 37—155)

This invention relates to road scrapers and is more particularly concerned with a hydraulic means for moving the scraper into conjunction with the road surface and for elevating it away from the road surface when the scraper is not to be used. In road scrapers to which this invention is applied it is desirable that the scraper blade may be shifted to many different angles with respect to the length of the truck chassis on which it is mounted, and in my invention there is provided a construction whereby the scraper blade may be hydraulically depressed or lifted irrespective of the angular position of the blade. Furthermore, with the invention which I have made, a very simple and novel construction is provided for hydraulically operating the blade to its operative or inoperative positions, and in practice the hydraulic means used is designed to be manually operated, though the invention is not limited in any respect to manual operation of said hydraulic mechanism.

The invention is fully described in the following description and shown in the accompanying drawings, in which,

Fig. 1 is a side elevation of a truck equipped with a road scraper designed to be actuated by the hydraulic mechanism of my invention.

Fig. 2 is a fragmentary plan view with parts broken away to illustrate the scraper and the extremes of its angular adjustments, together with the hydraulic operating means therefor.

Fig. 3 is a fragmentary vertical section and elevation showing in detail the hydraulic operating means.

Fig. 4 and Fig. 5 are detailed sections showing different positions of the valve control for guiding the flow of the liquid used, and

Fig. 6 is a fragmentary section showing a locking means for holding the scraper in its operative position after it has been forced thereto hydraulically.

Like reference characters refer to like parts in the different figures of the drawings.

Road scrapers of the type with which this invention is concerned are usually carried on the chassis side frame members 1 of a truck, there being depending hangers 2 attached to the said chassis members, a plurality at each side of the truck, which serve to support pairs of horizontal bars 3, underneath and transverse of which a channel beam 4 is located having downwardly extending flanges. Stirrups 5 are connected to the beam at its upper side and extend over the bars 3 while releasable securing devices 6 are

used to hold the beam in any angular position to which it may be adjusted on said bars 3.

A shaft 7 lies below and lengthwise of the beam 4 being mounted thereon by use of suitable hangers 8. A scraper blade 9 is connected to the shaft 7 through suitable coiled springs 10, as shown. This construction also is not novel in the present application. It is enough to say that it is designed that the shaft 7 may be rocked in its bearings in the hangers 8 to either lift the scraper blade to an upper inoperative position or move it to a lower operative position as shown in Fig. 3, wherein it can be pressed with a strong yielding spring pressure against the surface of a road over which the blade passes.

On the underside of the channel beam 4 and substantially at its middle point a casting 11 is located and permanently secured by bolting to the beam; and in practice the downwardly extending flanges of the beam interlock in recesses made in the upper side of the member 11. Said member 11 at points below the flanges of the beam 4 is equipped with horizontally aligned bearings 12 and 13. The member 11 back of the bearings 12 and 13 has an extension 14 which at its rear end has an integral downwardly extending head 15 forming one head of the hydraulic cylinder 16, the opposite end of which is closed by a suitable head 15a.

A piston 17 is located within the cylinder 16 from which a heavy piston rod 18 extends through the head 15 and thence forward through the bearings 12 and 13. An arm 19 is secured to the shaft 7, extending downwardly and rearwardly therefrom to the outer end of which one end of a link 20 is pivotally secured. The opposite end of said link is pivotally connected to a block 21 fixed on the piston rod 18. It is evident that when the piston 17 is moved in a forward direction block 21 moves forwardly and rocks the shaft 7 through the connecting link and arm 20 and 19, so as to move the scraper blade to its lower operative position.

The piston rod 18 at its forward end portion and at its underside is provided with a consecutive series of ratchet teeth 22, with which a dog 23, spring actuated by spring 24, is designed to engage and hold the rod in any forward position to which it is operated, thus locking the scraper blade at its lower operative position and maintaining it in proper contact with the road, thus making ineffective any leakage of the hydraulic liquid used past the piston 17. The release of the dog 23 is accomplished by supplying its pivot shaft with an arm 25 to which a cable 26 may

be secured, the same leading to a convenient position of access to the driver of the truck.

A hand pump is used for pumping the liquid into the cylinder 16 together with a valve for directing the liquid to either end of said cylinder. A pump cylinder 27 has an outlet pipe 28 leading to the valve casing 29 of the control valve in which a valve 30 is rotatably mounted. Two pipes 31 and 32 extend from opposite sides of the valve casing 29 with which flexible hose conduits 31a and 32a, respectively, are connected, the same at their rear ends leading into the front and rear heads 15 and 15a of the cylinder 16. An additional pipe 33 is connected with the valve casing 29, leading to a reservoir 34 for liquid which has a pipe 35 extending therefrom to the pump cylinder 27. The pump cylinder is equipped with a piston (not shown) and with a piston rod 36, which at its outer end is pivotally connected to a hand lever 37 between the ends thereof, the lower end of which is pivotally mounted on a suitable bracket which in practice may be attached to the end of the reservoir 34.

With the valve 30 in the position shown in Fig. 3, liquid, usually oil, pumped from the cylinder 27 passes through the pipe 28 and the valve casing, through the pipe 31 and hose 31a to the rear end of the cylinder 16, thereby forcing the piston 17 in a forward direction. The liquid in the cylinder in front of the piston is carried through the hose 32a and pipe 32 to the valve casing 29 and thence through pipe 33 to the reservoir or tank 34 from which it may be pumped through the pipe 35 to the pump cylinder 27. This is the position of the valve when the scraper blade is to be moved to its lower position. By reversing the position of the valve, as shown in Fig. 5, a reversal of the movement of the liquid takes place and the piston 17 is moved rearwardly to lift the scraper blade. In practice a heavy coiled spring 38 is connected at one end to the cylinder 16 and at its opposite end to or adjacent the pivot connecting the arm 19 and the link 20. This serves to help lift the scraper blade when it is to be moved to its upper inoperative position. When the valve 30 is in the neutral position, shown in Fig. 4, no flow of liquid can take place and the scraper blade will be held in its lower operative position. Except for the possibility of leakage of oil past the piston 17 movement of the valve 30 to the neutral position, shown Fig. 4, would maintain the scraper blade in such lower operative position, but to take care of any possible leakage of oil past said piston the auxiliary locking means provided by dog 23 engaging the ratchet teeth 22 is used.

The construction described is very practical and operative. The pump lever 37 is mounted in the cab of the truck whereby the driver may

move the same back and forth while the valve 30 is located at the front of the driver's seat in convenient position for access by him. With this construction the scraper blade may be operated very easily and a great deal of cumbersome mechanism eliminated between the scraper blade and the cab of the truck, such as has been previously necessary when a direct manual lift or lowering of the scraper blade has been used.

The invention is fully defined in the appended claims and is to be considered comprehensive of all forms of structure coming within the scope thereof.

I claim:

1. In combination a truck, a beam adjustably mounted on and below said truck whereby the same may be adjusted to a plurality of different angular positions with respect to the length of said truck, a scraper blade carried by said beam and mounted thereon to turn about a horizontal axis, a casting secured to said beam having a part extended rearwardly of the beam and terminating in a downwardly extending cylinder head, a cylinder secured thereto, a piston in said cylinder, a rod extended from said piston through said head of the cylinder, guides on said casting through which the rod passes, means connecting the piston rod with the scraper blade whereby the scraper blade is rocked about its horizontal axis on longitudinal movement of the piston rod, and means for selectively pumping liquid into either end of said cylinder.
2. A construction containing the elements in combination defined in claim 1, said piston rod on the under side thereof being formed with a consecutive series of ratchet teeth, a spring actuated dog mounted on said casting to automatically engage with said ratchet teeth on movement of the piston rod in a direction to move the scraper blade to the lower position and manually operable means for releasing said dog.
3. In combination with a truck, a beam located below and transversely of said truck, means for mounting the beam on the truck whereby it may be adjusted to various angular positions with respect to the length of the truck, a scraper blade mounted on said beam for rocking movements about a horizontal axis, hydraulic means mounted on said beam and connected with said scraper blade for shifting the same to upper or lower positions, pawl means mounted on the beam for engagement with the said hydraulic means for positively maintaining the scraper blade in one of its lower positions, and flexible means leading from the pawl to operate the same to a point adjacent the seat of the said truck for the purpose described.

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