Sept. 2, 1941. T. L. FERGUSON 2,254,477

DEVICE FOR BREAKING PAVEMENTS

Filed July 27, 1940 3 Sheets-Sheet 1

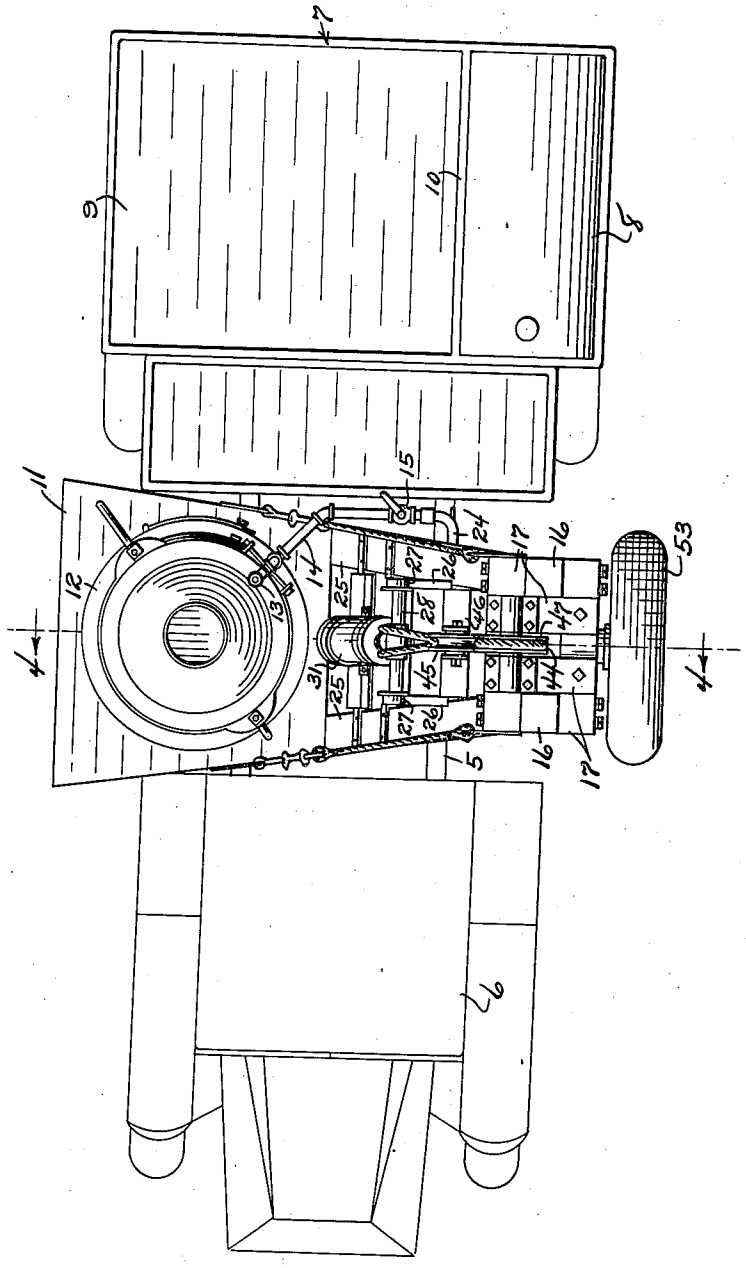


Fig. 1.

Tuliver L. Ferguson
INVENTOR

BY Victor J. Evans & Co.
ATTORNEYS

WITNESS

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Filed July 27, 1940 3 Sheets-Sheet 2

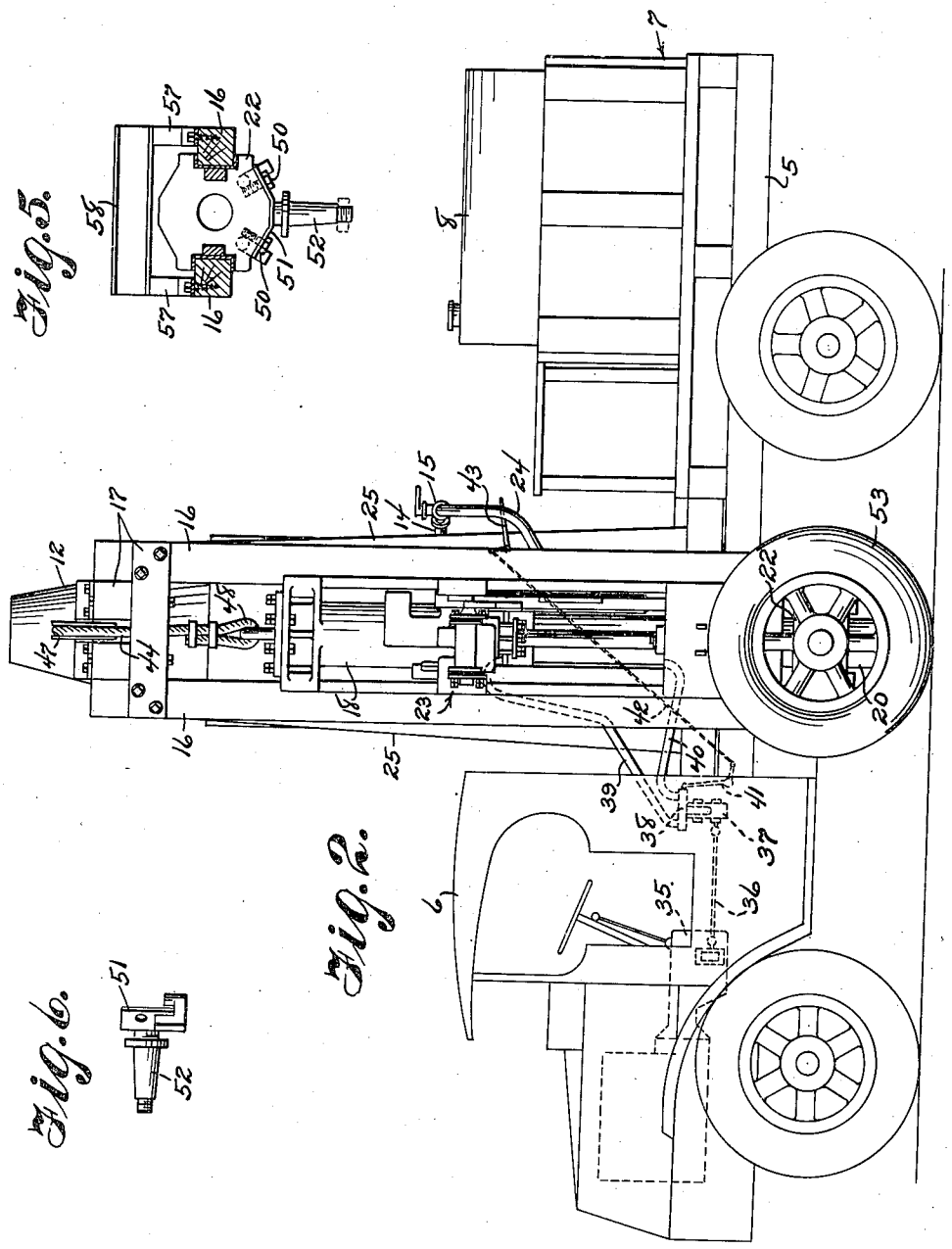


Fig. 2.

Fig. 6.

Fig. 5.

Tulliver L. Ferguson
INVENTOR

BY Victor J. Evans & Co.
ATTORNEYS

WITNESS

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Fig. 4.

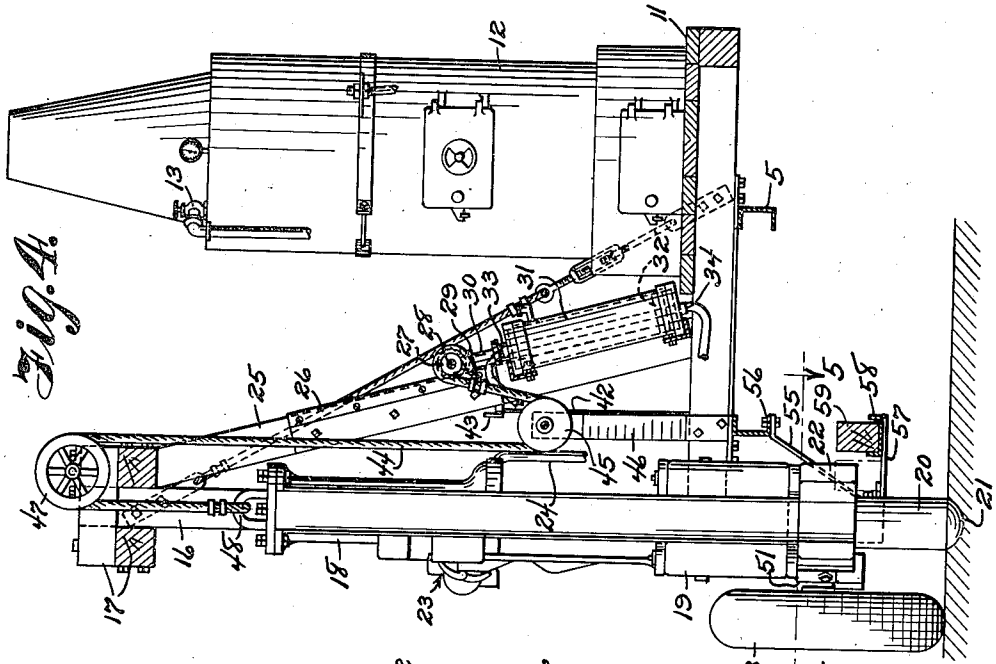
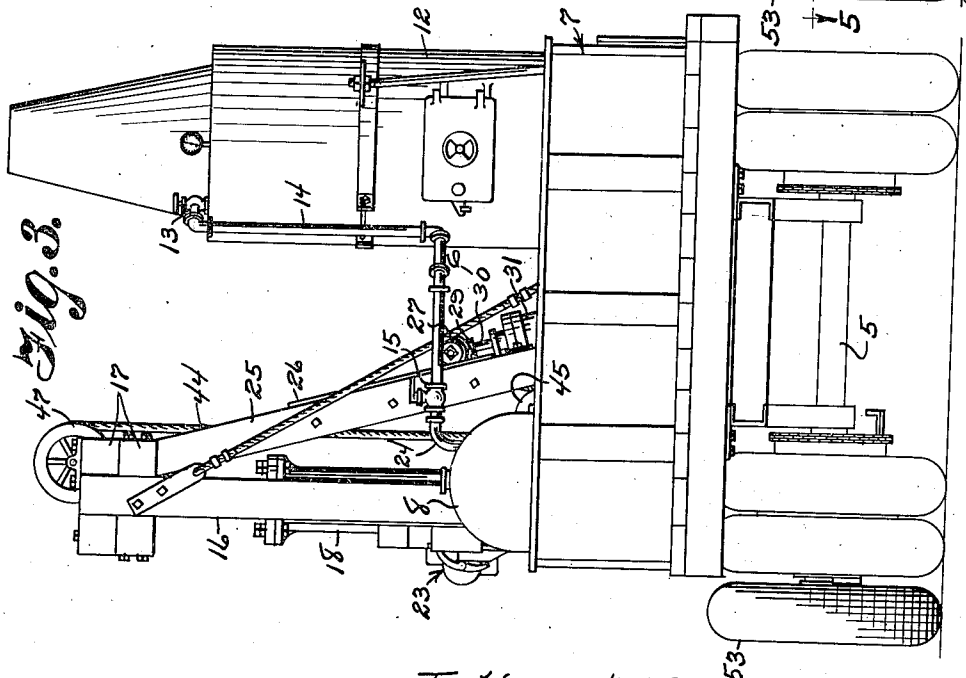


Fig. 3.



Tulliver L. Ferguson INVENTOR

BY Victor J. Evans & Co.

ATTORNEYS

WITNESS

Patented Sept. 2, 1941 2,254,477

UNITED STATES PATENT OFFICE

2,254,477

DEVICE FOR BREAKING PAVEMENTS

Tuliver L. Ferguson, Edwardsville, Ill.

Application July 27, 1940, Serial No. 347,979

4 Claims. (Cl. 262—15)

My invention relates to a machine or device for breaking or demolishing pavements, roadways and the like.

One of the principal objects of my invention is to provide a device of the above described character which is so constructed and arranged whereby the same may be mounted upon the chassis of a motor vehicle or the like and automatically operated while the vehicle is in motion or at a standstill.

An important object of my invention is to provide a device of the character described which is simple in construction, durable in use, efficient in operation and economical in manufacture.

Other objects and advantages will be apparent from the following description, appended claims and annexed drawings.

Referring to the drawings wherein like reference characters designate like parts throughout the several views:

Figure 1 is a top plan view of my invention and illustrating the same mounted on the chassis of a motor truck.

Figure 2 is a side elevation thereof.

Figure 3 is a rear elevation of the truck equipped with my invention.

Figure 4 is a sectional view taken on the line 4—4 of Figure 1.

Figure 5 is a sectional view taken on the line 5—5 of Figure 4.

Figure 6 is a detail side elevation of the axle spindle and mounting illustrated in Figure 5.

In practising my invention, as illustrated in the drawings, I employ a truck chassis 5 provided with the usual cab 6 and which has mounted on the rear end thereof a body 7 having disposed on one side a water tank 8. The opposite side of said body is utilized as a fuel compartment 9 the latter being separated from the tank by means of a partition 10. Postjacent the cab 6, one side of the chassis has mounted thereon a platform 11 constituting a bed on which is supported a steam boiler 12 having connected thereto, by means of a cut-off valve 13, one end of a steam supply pipe 14, the opposite end of which is connected to a throttle valve 15.

Adjacent the platform 11, the opposite side of the chassis has mounted thereon a pair of spaced vertically disposed stationary guides or leaders 16, the upper ends of which are connected together by means of cross members 17. Slidably mounted between and on the guides 16 is an automatic steam operated hammer 18, the latter being of an ordinary construction and of the type manufactured by the Vulcan Iron Works of Chicago, Ill. Said hammer is equipped with the usual ram 19 having attached thereto an elongated road demolishing member 20 fashioned with a convex lower face 21 for impact with the road.

The hammer is also provided with the usual base 22 through which the member 22 is reciprocated and with means 23, connected by a pipe 24 to the throttle valve 15, for controlling the supply of steam supplied to the cylinder in a manner to effect automatic reciprocation of the piston therein. Inasmuch as said hammer is of an ordinary construction and forms no part of the present invention per se, a more detailed description of the same is not believed necessary.

Fixed to the chassis, adjacent the platform 11, are the lower ends of a pair of spaced upwardly and outwardly extending frame members 25, the upper ends of which are fixed to the cross member 17. Mounted on the faces of the members 25, toward the boiler 12, are rails 26 receiving thereon flanged wheels or rollers 27. The rollers 27 are mounted on the ends of a transverse axle 28, the latter being fixed to a head 29 mounted on the upper end of a piston rod 30. The piston rod 30 extends downwardly within a cylinder 31 and has fixed thereto a piston 32 for reciprocation in said cylinder by means of a suitable fluid, for instance, oil.

The cylinder is fixed between the members 25 and is provided at its upper and lower ends with oil outlet and inlet connections 33 and 34 respectively. The truck is provided with the usual transmission disposed within the housing 35 and through which extends the front end of a shaft 36 connected to said transmission for rotation thereby. The opposite end of the shaft 36 is connected to the drive shaft of a pump 37 equipped with a valve mechanism 38, the latter being connected by means of pipes 39 and 40 to the outlet and inlet connections 33 and 34 respectively. The valve mechanism 38 is operable in one position to effect pumping of oil into the lower end of the cylinder 31 and withdrawing of oil from the upper end of said cylinder to effect upward movement of the piston 32 therein, and to effect a reverse operation of the piston when the valve mechanism is operated to another position. The valve mechanism is also capable of being operated to a neutral position whereby to maintain the piston 32 at any desired position within the cylinder. The valve mechanism 38 is operable through the medium of a bell crank lever 41 having its up-

per end connected to said mechanism 38. The lever 41 is pivotally mounted on the rear portion of the cab and has its opposite end pivotally connected to the lower end of an operating rod 42, the upper end of which is connected to a lever 43 pivotally mounted on one of the guides 16 for manual operation.

The head 29 has connected thereto one end of a cable 44 trained under a pulley 45 rotatably mounted upon the upper end of a bracket 46 fixed to the chassis. The cable is also trained over the pulley 47 rotatably mounted on the cross members 17 and between the guides 16 and has its opposite end connected to the upper end of the hammer 18 as at 48. Thus it will be apparent that when the valve mechanism 38 is operated by the lever 43, the hammer is raised or lowered within the guide 16 through the medium of the piston 32 disposed within the cylinder 31 as heretofore set forth. Inasmuch, as the valve mechanism 38 connected to the pump 37 is of an ordinary construction and constitutes no part of the present invention per se, a more detailed description of the same is not believed to be warranted.

The side face of the base of the hammer has secured thereto, by means of cap screws 50, a yoke 51 on which is fixed the rear end of a axle spindle 52 having rotatably mounted thereon a traction wheel 52 for engagement with the roadway whereby to support the truck between the front and rear wheels thereof and preclude lateral rocking of the chassis during operation of the ram. The wheel is raised with the hammer and out of engagement with the ground when said hammer is not being operated.

In order to support the hammer in raised position when said hammer is not being operated, I provide a yoke 55 having its upper end connected to the chassis frame, adjacent the lower end of the hammer, as at 56. The lower end of the yoke is fashioned with a pair of spaced inwardly extending horizontal sections 57 having their outer ends provided with U-shaped members 58 in which is mounted a cross bar 59 disposed out of the path of the hammer when the same is lowered in operating position. When the hammer is in raised position the block is removed from the members 58 and disposed outwardly and adjacent thereto upon the section 57 and within the path of the hammer as illustrated in dotted lines in Figure 4. Thus the bar 59 serves to support the lower end of the hammer when the same is in raised position.

From the foregoing, it will be apparent that I have provided a simple and efficient form of roadway demolishing device capable of being mounted on a truck chassis of ordinary construction and which device is operable both during movement of the truck and when the latter is at a standstill. Furthermore, it will be apparent that the wheel 53 provides means for precluding rocking of the truck during operation of the ram.

Without further elaboration the foregoing will so fully explain the invention that others may, by applying current knowledge, readily adapt the same for use under various conditions of service. Moreover, it is not indispensable that all the features of the invention be used conjointly since they may be employed advantageously in various combinations and sub-combinations. It is obvious that the invention is not confined to the herein described use therefor as it may be utilized for any purpose to which it is adaptable. It is therefore to be understood that the invention is not limited to the specific construction as illustrated and described as the same is only illustrative of the principles of operation, which are capable of extended application in various forms, and that the invention comprehends all construction within the scope of the appended claims.

What I claim is:

1. In combination with a truck, a roadway demolishing device comprising a pair of vertically disposed guides fixed to said truck, an automatically operated hammer slidably mounted on said guide and operable with respect to a roadway to raised and lowered positions, said hammer provided with a reciprocating ram equipped with a roadway engaging element for demolishing said roadway during reciprocation of ram when said hammer is in lowered position, means mounted on said truck and connected to said hammer for reciprocating said ram, and a wheel carried by said hammer and slidable therewith for engagement with said roadway when said hammer is in lowered position to preclude rocking of said truck during reciprocation of said ram.

2. In combination with a truck, a roadway demolishing device comprising a pair of vertically disposed guides fixed to said truck, an automatically operated hammer slidably mounted on said guide and operable with respect to a roadway to raised and lowered positions, said hammer provided with a reciprocating ram equipped with a roadway engaging element for demolishing said roadway during reciprocation of ram when said hammer is in lowered position, means mounted on said truck and connected to said hammer for reciprocating said ram, means carried by said truck and connected to said hammer for raising and lowering said hammer with respect to said roadway, a wheel carried by said hammer and slidable therewith for engagement with said roadway when said hammer is in lowered position to preclude rocking of said truck during reciprocation of said ram, and means connected to said truck and disposable under said hammer when the latter is in raised position to support said hammer in said raised position.

3. In pavement breaking apparatus, the combination of a wheeled carrier vehicle, guide means mounted on the said vehicle, a hammer slidable on the said guide means and movable toward and from a pavement, a reciprocable ram carried by the hammer having a pavement demolishing element, means for reciprocating the said ram, and a support member attached to and carried by the hammer adapted to engage the pavement when the hammer is in lowered position to steady the hammer during operation of the ram.

4. In roadway demolishing apparatus, the combination with a carrier truck equipped with a hammer guide, of an automatically operated hammer slidably mounted on the guide, means for adjusting the said hammer to lowered operative position and to elevated inoperative position, a reciprocable ram carried by the hammer having a roadway demolishing element, means mounted on the truck and connected to the said hammer for reciprocating the ram for demolishing operation, and a support member connected to and carried by the hammer adapted to engage the roadway when the hammer is in lowered operative position for steadying the apparatus during reciprocation of the ram.

TULIVER L. FERGUSON.