July 5, 1932. H. E. PRICE 1,865,587

ROAD SCRAPER

Filed Aug. 27, 1928 2 Sheets-Sheet 1

Fig. 1.

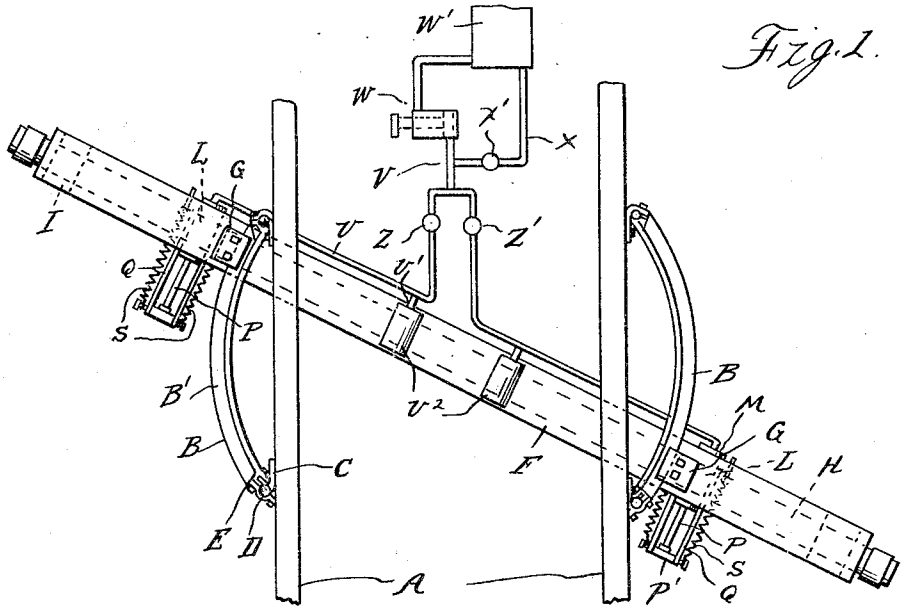
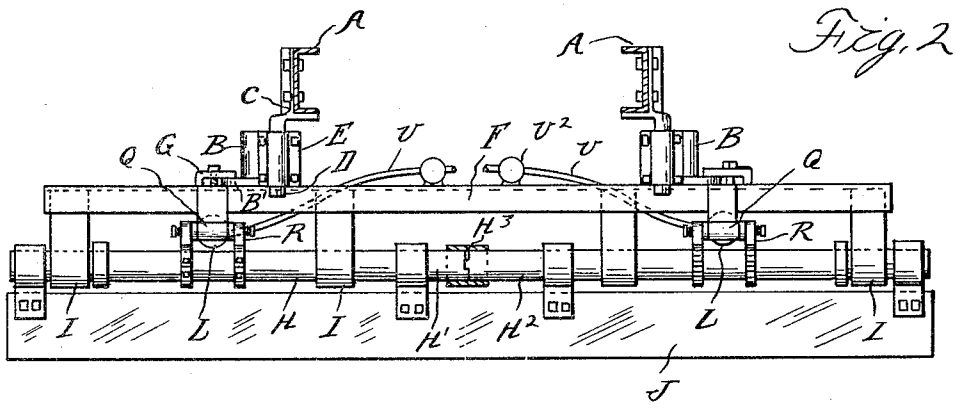


Fig. 2.



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Fig. 3.

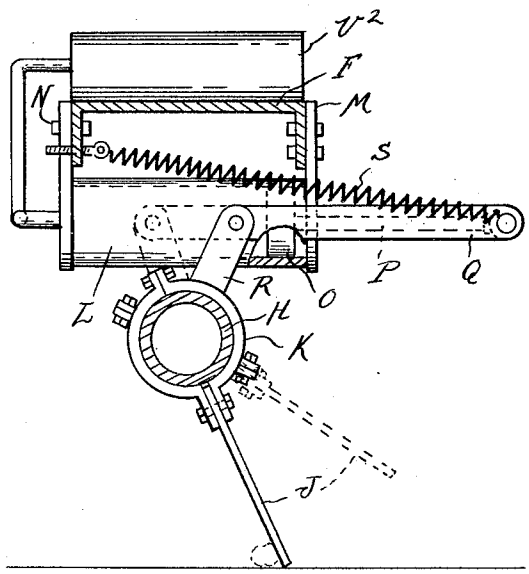
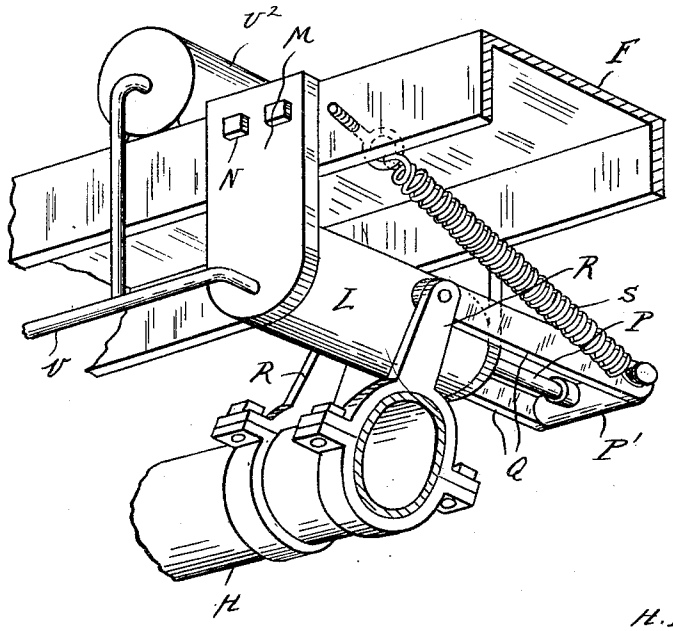


Fig. 4.



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UNITED STATES PATENT OFFICE

HARVEY EUGENE PRICE, OF CADILLAC, MICHIGAN, ASSIGNOR TO PNEU-HYDRO ROAD MACHINERY COMPANY, OF CADILLAC, MICHIGAN, A CORPORATION OF MICHIGAN

ROAD SCRAPER

Application filed August 27, 1928. Serial No. 302,222.

The invention relates to road scrapers of that type in which the scraper blade depends from a supporting beam which in turn is mounted upon the frame of a truck or other vehicle so as to be adjustable both vertically and to the various angles in the horizontal plane. It is usual to hingedly connect the scraper to its supporting beam and to arrange it in a rearwardly inclined position; also to provide springs for yieldably holding it in such position, and a lever mechanism for raising or lowering the blade to throw it out of or into work. With my improvement I have greatly simplified the construction by substituting for the springs and lever mechanism a hydraulic operating device which serves both to raise and lower the blade and also yieldably hold it in work. To this end the invention consists in the construction as hereinafter set forth.

In the drawings:

Figure 1 is a sectional plan view showing a fragment of the truck frame and my improved scraper as attached thereto.

Figure 2 is a rear elevation.

Figure 3 is a cross section.

Figure 4 is a perspective view of the hydraulic mechanism.

As shown A are the side sills of the supporting truck. B are segmental ways or guides which are vertically adjustably mounted upon the sills A through the medium of brackets C having depending posts D embraced by clamping bearings E on said guides B. The opposite guides B form complementary portions of a circle or turntable having its center approximately in the central plane of the truck. To these guides is adjustably secured the beam F shown as an inverted channel beam and the attachment is preferably by means of clamps G which engage laterally extending flanges B′ on the guides B. Thus by loosening the clamps G the beam F may be adjusted to any desired angle in relation to the truck frame A and by adjusting the clamps E the guides B and the beam F may be vertically adjusted as desired. H is a rock shaft which is journaled in bearings I depending from the beam F. This rock shaft forms the support for the scraper blade J which is attached to said shaft by clamps K, the arrangement being such that the shaft H forms a hinge connection between the scraper blade and the beam F.

The hydraulic operating mechanism for the scraper J comprises one or more hydraulic cylinders L which are mounted on the lower side of the beam F extending between the same and the shaft H. These cylinders may be attached by head plates M which embrace the sides of the beam F and are bolted thereto at N. Within each cylinder L is a piston O and the rod P extending outward through one of the heads and provided at its outer end with a cross head P′. To this cross head is attached a pair of links Q extending upon opposite sides of the cylinder and pivotally attached at their inner ends to rockarms R, clamped upon the shaft H. A pair of springs S are also attached to the cross head P′ and are anchored at their opposite ends on the bolts P having threaded shanks adjustably engaging one of the flanges of the beam F. The arrangement is such that the tension of the springs S acting upon the cross head P′ tends to retract this cross head and the piston attached thereto and through the medium of the links Q and rock arm R to rock the shaft H and the scraper blade J attached thereto in an upward direction. On the other hand fluid pressure in the cylinder operating against the piston will move the same and the connected parts in the opposite direction thereby rocking the scraper downward and into contact with the ground.

The fluid for operating the piston is supplied through a flexible conduit U which permits of the adjustment of the beam F both vertically and horizontally. The conduits U from the two cylinders lead to the center of the truck frame and are there connected to a common conduit V which is supplied with fluid under pressure by a pump W operated either manually or by power. The fluid is supplied to the pump from a tank W′ and there is also a return conduit X from the conduit V to the tank W′ controlled by a valve X′. These parts may be of any suitable construction and are merely represented dia-

grammatically in the drawings, it being understood that they are so located that the pump and the valve X′ are under the control of the operator. I also preferably provide separate valves Z and Z′ for the branch conduits U by means of which a relative amount of fluid supplied to the two cylinders may be regulated.

With the construction as thus far described it will be understood that the springs S normally hold the scraper blade rocked upward and out of contact with the ground but at any time when the pump W is in operation the fluid propelled thereby through the conduits V and U will enter the cylinders L forcing the pistons O outward thereby rocking the shaft H and scraper blade J forcing the latter downward into contact with the ground. It is, however, highly desirable that there should be a resilient element permitting the scraper to yield when meeting obstacles which it cannot carry forward and for this purpose I preferably employ a pneumatic cushion. As shown, each of the conduits U has connected thereto a conduit U′ leading to a cylinder or closed chamber U^2 which is originally filled with air at atmospheric pressure. These cylinders U^2 which may be conveniently mounted on the top of the central portion of the beam F will receive the fluid from the pump W which will compress the air therein until sufficient pressure is developed to hold the scraper blade into its work. If, however, an obstacle is met which must be surmounted or ridden over by the blade, this is permitted as the fluid in the cylinder L operating on the piston O can be displaced into the air chambers U^2. Thus I have provided a resilient cushion which takes the place of the mechanical springs usually employed on scrapers of this type and I have dispensed with any lever mechanism for raising and lowering the scraper and accomplished this by the hydraulic means.

It is sometimes advantageous to permit one end of the scraper to ride over an obstacle without lifting the entire blade. To accomplish this I have provided the two separate cylinders L and have independently controlled the passage of fluid thereto by the valves Z and Z′. Also a separate air cushion for each cylinder is provided. It is, however, necessary to permit a relative rotary movement of the two ends of the shaft H this being preferably accomplished by dividing the shaft into sections H′, H^2 having their adjacent ends coupled together but with a small amount of lost motion as indicated at H^3. This will permit one end of the scraper to ride over an obstacle by the slight rocking of the shaft section to which it is attached while the other shaft section remains stationary. The blade J is sufficiently flexible to permit of such action.

What I claim as my invention is:

1. In a road scraper, the combination with a vehicle frame, of a scraper blade mounted thereon to be rockable in a vertical plane, hydraulic actuated means for rocking said scraper and a resilient medium in connection with said hydraulic means permitting the yielding of the scraper to ride over an obstacle.

2. In a road scraper the combination with a vehicle frame, of a beam mounted on said frame to be adjustable vertically and angularly in a horizontal plane, a rock shaft journaled to said beam, a scraper blade mounted upon said rock shaft, hydraulic means for rocking said rock shaft to correspondingly rock said blade into or out of work and a resilient fluid cushion connected with said hydraulic means to permit yielding of said blade.

3. In a road scraper, the combination with a vehicle frame, of a scraper supporting beam mounted thereon, a rock shaft having a plurality of aligned sections mounted on said beam, a torque connection between adjacent rock shaft sections provided with a limited amount of lost motion, a flexible scraper blade connected to said rock shaft sections and means for resiliently but yieldably opposing rocking of said rock shaft sections independently.

4. In a road scraper, the combination with a vehicle frame, of a scraper supporting beam mounted thereon and a scraper and means for independently rockably supporting portions of said scraper from said beam.

5. In a road scraper, the combination with a vehicle frame, of a scraper supporting beam mounted thereon and a rock shaft having a plurality of aligned sections mounted on said beam, means permitting a limited independent yieldable rocking of said sections and a scraper having portions respectively movable with said separate sections.

In testimony whereof I affix my signature.

H. EUGENE PRICE.