Sept. 20, 1932. E. A. WEEKS 1,878,080

HYDRAULIC ROAD SCRAPER

Filed April 18, 1931 3 Sheets-Sheet 1

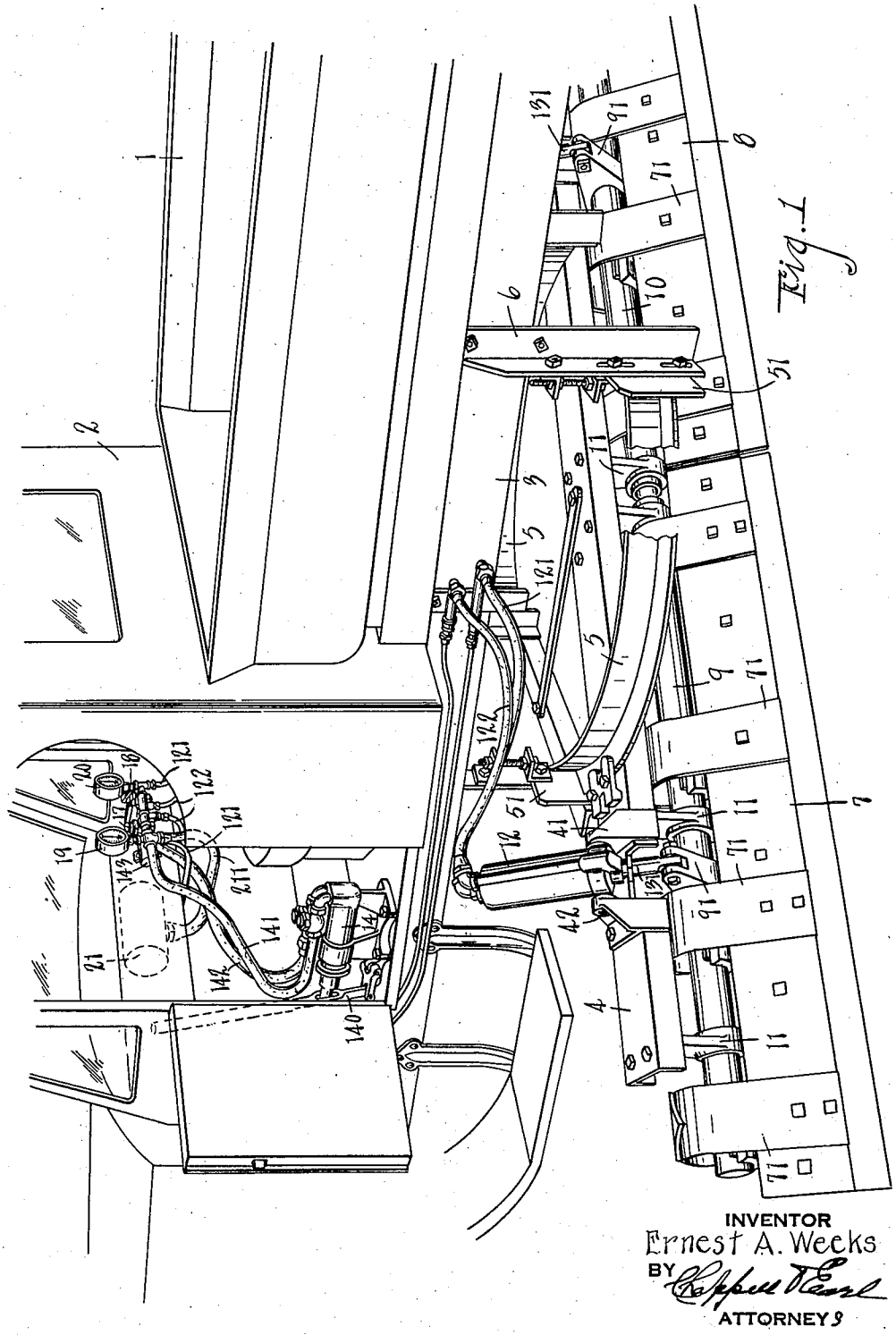


Fig. 1

INVENTOR
Ernest A. Weeks
BY Ralph Pearl
ATTORNEYS

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HYDRAULIC ROAD SCRAPER

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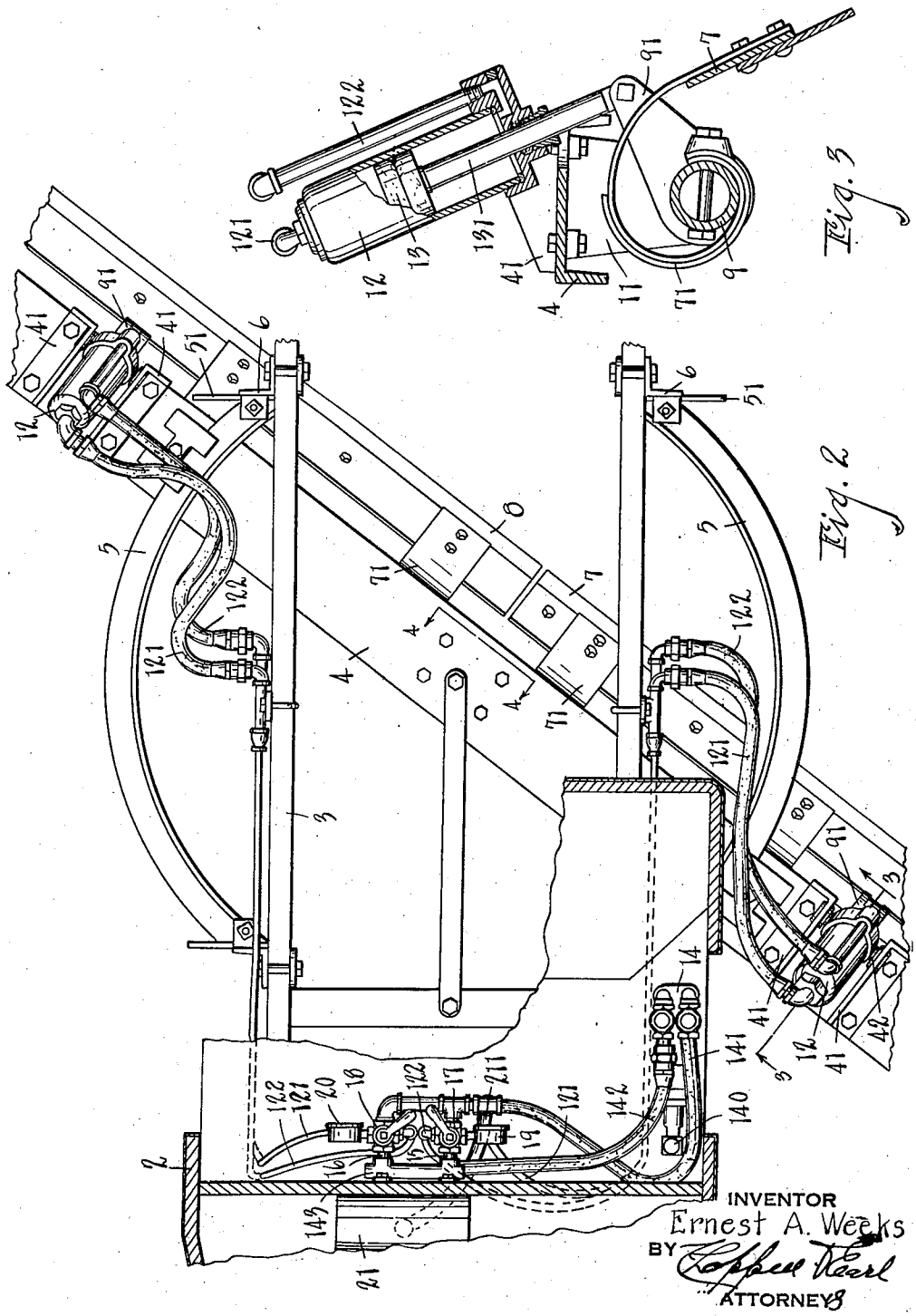


Fig. 2

Fig. 3

INVENTOR
Ernest A. Weeks
BY Cushman Darby & Cushman
ATTORNEYS

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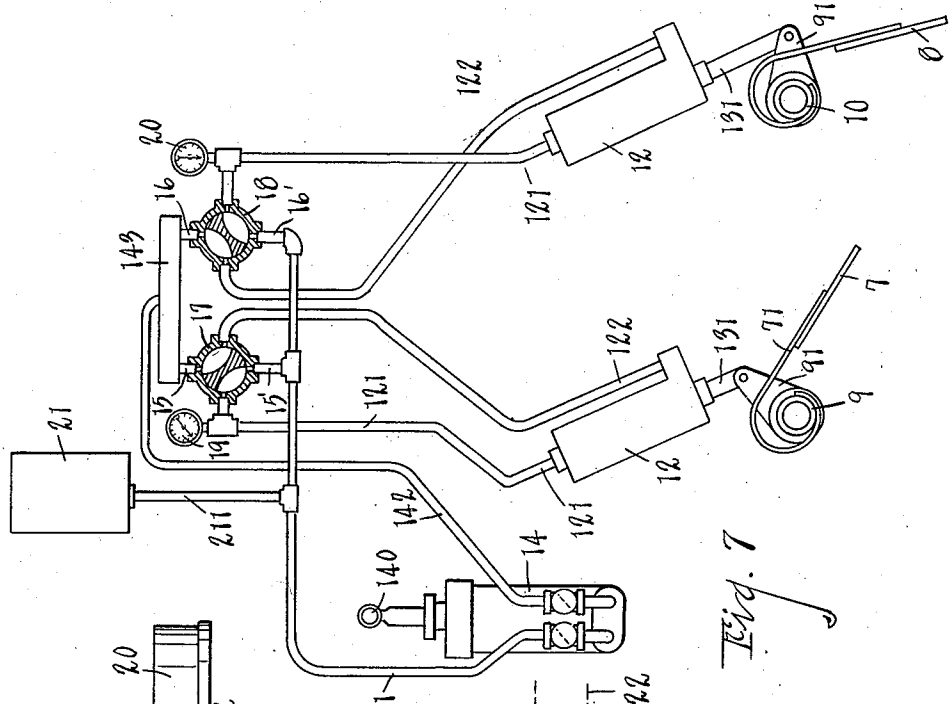


Fig. 7

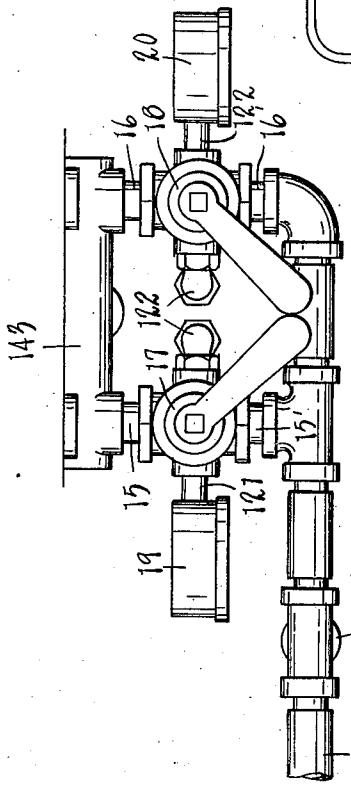


Fig. 5

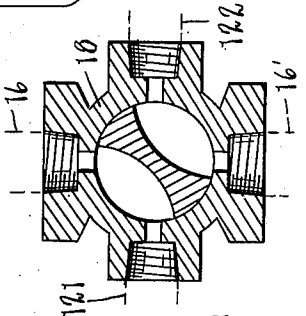


Fig. 6

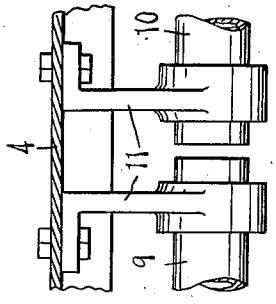


Fig. 4

INVENTOR
Ernest A. Weeks
BY Chappell & Earl
ATTORNEYS

Patented Sept. 20, 1932 1,878,080

UNITED STATES PATENT OFFICE

ERNEST A. WEEKS, OF KALAMAZOO, MICHIGAN, ASSIGNOR TO ROOT SPRING SCRAPER COMPANY, OF KALAMAZOO, MICHIGAN

HYDRAULIC ROAD SCRAPER

Application filed April 18, 1931. Serial No. 531,029.

The objects of this invention are:

First, to provide an improved construction of double hydraulic scraper.

Second, to provide an improved construction of cylinder and piston connection therefor.

Third, to provide a construction in which the effort for applying the hydraulic pressure can be minimized, the scraper being allowed to swing to place by gravity.

Fourth, to provide improved control means for a double hydraulic scraper.

Fifth, to provide improved control means for a hydraulic scraper.

Further objects will appear from the description to follow. A preferred embodiment of my invention is illustrated, so far as necessary, in the accompanying drawings, in which:

Fig. 1 is a perspective view of parts of an auto truck with my improved scraper in position, portions of both the truck and the scraper being broken away for the sake of clearness.

Fig. 2 is a detail plan view of the frame portion of the truck and fragments of the truck cab with my improved scraper and its hydraulic controls in position, the ends of the scrapers being broken away.

Fig. 3 is an enlarged detail elevation of one of the hydraulic cylinders and its connections taken on a line corresponding to line 3—3 of Fig. 2.

Fig. 4 is an enlarged detail sectional elevation view on line 4—4 of Fig. 2 showing the separate rockshafts.

Fig. 5 is a detail view of the pair of four-way valves and their connections for controlling the hydraulic means.

Fig. 6 is a detail sectional view of one of the four-way valves, particularly the four-way valve 18 as adjusted.

Fig. 7 is a diagrammatic view of the hydraulic connections and control valves.

The parts will be identified by their numerals of reference which are the same in all the views.

1 is the truck body, 2 is the cab, and 3 is the truck frame or chassis. 4 is the hanger board or beam which supports the scraper structure. 5 are the curved segments on which the hanger board and scraper are suspended and adjusted to various angles to the mid-line of the highway. 6, 6 are special adjustable hangers for said segments, unnecessary to detail in this behalf, the same being connected to the truck frame and to special brackets 51, 51 at the ends of the segments 5. 7 and 8 are the pair of scrapers. 9 and 10 are the pair of rockshafts axially in alignment and supported on the hanger board or beam 4 by hangers 11, there being illustrated three hangers to each shaft. Scrapers are connected to the shafts by a multiple of spring arms 71, 71, or they may be otherwise connected, the spring connection being preferred.

Rocker arms 91 are connected to each rockshaft. Hydraulic cylinders 12 trunnioned to brackets 41 by pivots 42 are disposed and supported on the top of the hanger board, one towards each end thereof. Double acting hydraulic pistons 13 are within each cylinder and are each connected by piston rod 131 to the corresponding arm 91, as indicated particularly in Fig. 3.

The hydraulic cylinders are supplied through conduits 121 and 122 as seen in Fig. 3, 121 connecting at the top and 122 at the bottom. 14 is a simple plunger hydraulic pump with handle 140, which controls the hydraulic supply. This pump is supplied with an intake pipe 141 and discharge pipe 142, both containing check valves. Discharge pipe 142 connects to a header 143 which is provided with nipple connections 15 and 16 to the four-way valves 17 and 18 respectively. The discharge nipples 15′ and 16′ from these valves connect to the pump intake 141. The pipes 121 and 122 also connect to the respective four-way valves 17 and 18. Pressure gauges 19 and 20 are provided in each of the pipes 121 to indicate the pressure in the cylinder so as to know and be able to regulate the pressure on the scrapers. 21 is the supply tank delivering through pipe 211 to pump intake 141.

It will be seen that the control valves and the gauges are in front of the driver on the

dashboard, the pump handle 140 being within easy and convenient reach.

The driver drops the scrapers to the road by turning the handles of the four-way valves 17 and 18 to permit a flow of liquid, preferably oil, to the tops of the cylinders. The weight of the scrapers pulls the double acting pistons 13 downward, forces oil out through the pipes 122 through the four-way valves, back down to the pump, thence through the pump, around through the pipe 142 to the header 143 through the four-way valves to the tops of the cylinders. The weight of the scrapers readily overcomes the resistance and they drop slowly to place.

The operator then, by a stroke or two of the pump handle, puts on the necessary pressure, turns the four-way valve to neutral and thus cuts off and holds the pressure during the scraping operation. If the pressure goes down for any reason, a stroke of the pump brings it up.

When it is desired to elevate the scraper, the four-way valves are reversed, the pump is operated forcing oil down through pipes 122 into the bottoms of the cylinders, the oil is returned from the tops of the cylinders through the four-way valves, as previously indicated, the same being now set for that purpose. When the scraper is elevated, the four-way valves are adjusted to neutral and hold the scrapers in elevated position. The weight of the scrapers is thus very readily handled.

From this it will be seen that either scraper can be utilized independent of the other and that the scrapers can be set to different elevations for different work, and can be set at different pressures for different work, a matter of considerable advantage in the practical operation of the scraper.

It will be seen that what I have produced is an improvement on the broad inventions that I have claimed in my prior patent applications, Ser. No. 245,982, filed Jan. 11, 1928, and Ser. No. 322,552, filed Nov, 28, 1928.

I desire to claim this invention specifically and broadly within its scope, as pointed out in the appended claims.

My patent No. 1,750,610, issued March 11, 1930, shows a power pump that can be utilized in place of the pump means here utilized. That pump and motor is reversible. A direct power pump can be used here without change. It might be a power driven plunger or cylinder and piston pump.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:

1. The combination of a truck chassis, a hanger board adjustably suspended therefrom, a pair of axially disposed rockshafts, hangers connecting the said shafts to the said hanger board, a scraper on each rockshaft, spring arms from the rockshafts to the said scrapers, a double acting hydraulic cylinder for each scraper, trunnions for each of said scrapers, brackets on the upper side of said hanger board to which the said hydraulic cylinders are trunnioned, double acting pistons within the said cylinders, supply connections to the top and bottom of each cylinder, a pair of four-way valves in the cab of the said truck, inlet and outlet header connections to and from said four-way valves, a hydraulic pump with check valves in its intake and outlet conduits connected to the said inlet and outlet headers, a supply tank connected to the intake conduit of the said pump, supply conduits leading to the said cylinders, and a pressure gauge in the conduit to the top of each cylinder.

2. The combination of a truck chassis, a hanger board adjustably suspended therefrom, a pair of axially disposed rockshafts, hangers connecting the said shafts to the said hanger board, a scraper on each rockshaft, spring arms from the rockshafts to the said scrapers, a double acting hydraulic cylinder for each scraper, trunnions for each of said scrapers, brackets on the upper side of said hanger board to which the said hydraulic cylinders are trunnioned, double acting pistons within the said cylinders, supply connections to the top and bottom of each cylinder, a pair of four-way valves in the cab of the said truck, inlet and outlet header connections to and from the said four-way valves, a hydraulic pump with check valves in its intake and outlet conduits connected to the said inlet and outlet headers, a supply tank connected to the intake conduit of the said pump, and supply conduits leading to the said cylinders.

3. The combination of a truck chassis, a hanger board therefor, a pair of scrapers disposed end to end carried by said hanger board, and independent means for controlling the said scrapers.

4. The combination of a truck chassis, a hanger board therefor, a pair of scrapers disposed end to end carried by said hanger board, independent hydraulic cylinders for said scrapers, a four-way valve for each cylinder, and a pump having supply and return connections to said four-way valves.

In witness whereof I have hereunto set my hand.

ERNEST A. WEEKS.