

May 27, 1930.

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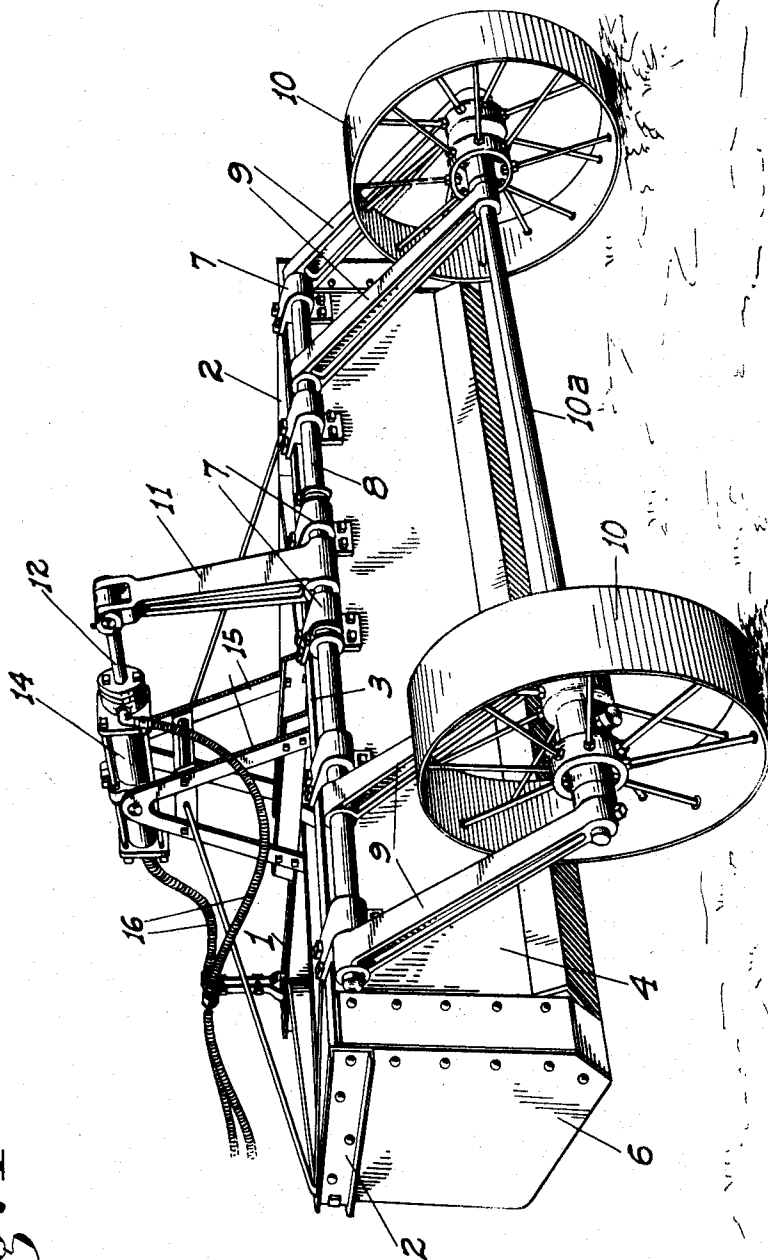
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HYDRAULICALLY CONTROLLED LEVELER

Filed April 10, 1929

2 Sheets-Sheet 1

Fig. 1



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Fig. 2

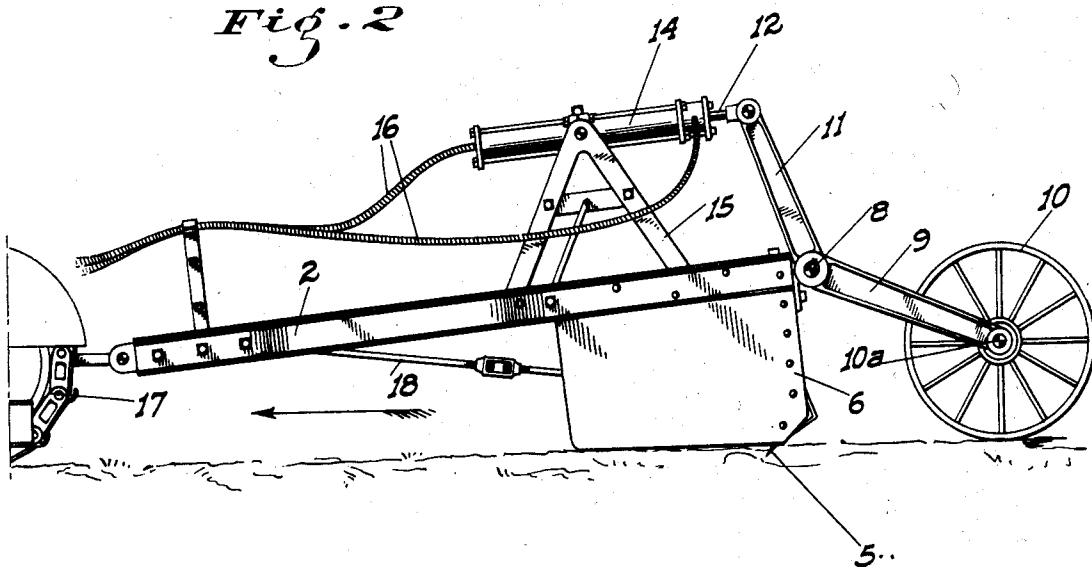
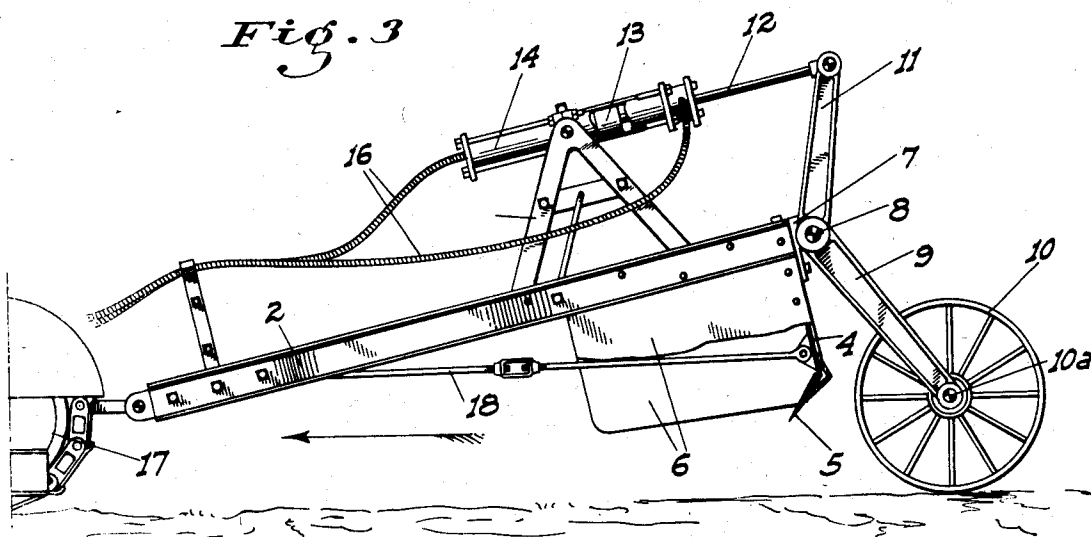


Fig. 3



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HYDRAULICALLY-CONTROLLED LEVELER

Application filed April 10, 1929. Serial No. 353,915.

This invention relates to leveling or grading apparatus, my principal object being to provide a machine of this character adapted to be drawn by a tractor having hydraulic 5 actuating means for easily and quickly controlling the scraping and other positions of the leveler blade.

The employment of a control means of this type enables the leveler to be of very large 10 size and capacity, since no manual operations, other than the manipulation of a valve to control the action of a liquid is necessary to thus manipulate the leveler.

A further object is to arrange all the parts 15 of the structure so that they offer no interference with the free passage of dirt into and out of the leveler.

A further object of the invention is to produce a simple and inexpensive device and yet 20 one which will be exceedingly effective for the purpose for which it is designed.

These objects I accomplish by means of such structure and relative arrangement of 25 parts as will fully appear by a perusal of the following specification and claims.

In the drawings similar characters of reference indicate corresponding parts in the several views:

Fig. 1 is a perspective view of my improved 30 leveler looking from the rear.

Fig. 2 is a side elevation of the structure shown in its scraping position.

Fig. 3 is a similar view showing the leveler 35 in its dumping position.

Referring now more particularly to the characters of reference on the drawings, the structure comprises a heavy horizontal frame which includes closely spaced longitudinal 40 draft beams 1, side beams 2 connected at their forward ends to the forward ends of the draft beams and diverging thence to extend alongside the body of the leveler, and a cross beam 3 at the rear end of the body and connecting the rear ends of all said beams together. These parts are all arranged in the 45 same horizontal plane and are so connected as to make a very rigid framework.

The body of the leveler is mounted at the rear portion of the framework and comprises 50 a back plate 4 depending from and secured

to the cross beam 3 and provided with a scraping blade 5 along its bottom edge, and side plates 6 depending from inside the beams 2 and connected thereto and also to the back plate by bolts, rivets or other suitable means. 55

A plurality of transversely alined bearing brackets 7 are secured to and project rearwardly from the cross beam 3 (which is at the top and back of the leveler body) and form supports for a continuous horizontal 60 shaft 8. Secured to and projecting rearwardly and downwardly from this shaft are transversely spaced pairs of transversely spaced arms 9 between each pair of which a wide faced wheel 10 is turnably mounted. These 65 wheels have a common axial shaft 10^a extending unbroken from one to the other. The length of the arms 9 is such that when they are substantially vertically disposed in a downward direction and the wheels are bearing 70 on the ground the blade 5 is then raised a considerable distance from the ground, then permitting of course the contents of the leveler to be left on the ground with a subsequent forward movement of the machine. 75

Centrally of the length of the shaft another arm 11 is secured thereto and projects upwardly from between adjacent brackets, said arm at its upper end being pivotally connected to the rear end of a forwardly extending 80 piston rod 12. This rod at its forward end has a piston 13 thereon which is slidable in a cylinder 14 closed at both ends. The cylinder is disposed directly above the leveler body and is pivotally supported intermediate 85 its ends for rocking movement in a vertical plane by brackets 15 upstanding from the central beams 1.

Flexible conduits 16 communicate with and extend from the opposite ends of the cylinder 90 to a source of liquid pressure and control means on the tractor 17 to which the forward ends of the draft beams are connected in the usual manner. Such means may be any mechanism suitable for the purpose and forms no 95 part of this invention.

In operation it will be seen that the setting of the leveler blade relative to the ground is governed by the angle of the arms 9 relative 100 to the ground and the corresponding position

of the piston in the cylinder which may obviously be altered or maintained by a proper control of the liquid in the conduits. If the piston is adjacent the forward end of the cylinder the arms 9 will be disposed at a relatively slight angle to the ground, the wheels will be correspondingly raised and the blade 5 will engage the ground. With such movement of the arms the frame and the leveler 10 as a whole moves about its flexible connection with the tractor as an axis. If the piston is advanced toward the rear end of the cylinder the angle of the arms with the ground is increased, the wheels will be lowered relative 15 to the leveler body and the latter will be raised to a leveling or full dumping position, as may be desired and as is determined by the extent of rearward movement of the piston and the consequent angling of the arms 9.

20 The pivotal mounting of the cylinder on its brackets enables the same to rock, as is necessary with the change of level of the upper end of the arm 11 with the turning thereof without any binding action being 25 had and without the necessity of employing a slotted connection between the piston rod and said arm and which would have a tendency to stick due to the great pressure necessary to actuate the structure. The draft 30 beams and frame structure being entirely above the body, these parts are not in the way of dirt being engaged by the blade and backed up ahead of the back plate by the forward movement of the tractor. Also the 35 interior area enclosed by the side and back plates being clear of any obstructions, when the leveler is raised to its full extent by the relative lowering of the wheels all the dirt confined is immediately discharged without any 40 appreciable amount of the same being possibly held back or retarded from discharging by the framework.

The parts of the structure are sufficiently strong to enable the pull of the drawbar along 45 the top of the leveler to be transmitted to the blade without liability of distorting or buckling the plates. The back plate however may if desired be reinforced by longitudinal tension rods 18 connected to the back 50 plate adjacent its ends and bottom and extending thence upwardly and forwardly to a connection with the drawbars toward their forward ends. These rods while strong may be sufficiently small in diameter so that they 55 cannot be considered as offering any material obstruction to the free movement of dirt into or out of the leveler body.

From the foregoing description it will be readily seen that I have produced such a 60 device as substantially fulfills the objects of the invention as set forth herein.

While this specification sets forth in detail the present and preferred construction 65 of the device, still in practice such deviations from such detail may be resorted to as do not

form a departure from the spirit of the invention, as defined by the appended claims.

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

1. A leveler including a rigid frame structure adapted at its forward end for connection to a draft means, said frame including a cross beam at its rear end, a back plate and blade member depending from said cross beam, a horizontal transverse shaft supported from said cross beam rearwardly of and adjacent the same, arms fixed on and depending downwardly and rearwardly from the shaft, wheels turnably supported by the arms, and means for turning the shaft. 70 75 80

2. A leveler including a rigid frame structure adapted at its forward end for connection to a draft means, said frame including a cross beam at its rear end, a back plate and blade member depending from said cross beam, arms depending downwardly and rearwardly from the cross beam, wheels turnably supported by the arms at their lower ends, pivot connection means between the upper ends of the arms and the cross beam, and hydraulic means for turning the arms of both wheels about their pivot connections simultaneously. 85 90 95

3. A leveler including a rigid frame structure adapted at its forward end for connection to a draft means, said frame including a cross beam at its rear end, a back plate and blade member depending from said cross beam, a horizontal transverse shaft supported from said cross beam rearwardly of the same, arms fixed on and depending downwardly and rearwardly from the shaft, wheels turnably supported by the arms, an arm projecting upwardly from and fixed to said shaft, a piston rod projecting forwardly from said last named arm, a cylinder supported from the frame, a piston on the rod slidable in the cylinder, and liquid conduits connected to the opposite ends of the cylinder. 100 105 110

4. A leveler including a rigid frame adapted at its forward end for connection to a draft means, a back plate and blade unit depending from the back of the frame, a continuous horizontal shaft extending transversely of the leveler behind the plate, bearing brackets supporting the shaft at intervals and directly connected to the frame, spaced pairs of spaced arms fixed on and depending rearwardly from the shaft, a continuous shaft connected to and extending between the different pairs of arms at their lower ends and wheels mounted on said last named shaft between each adjacent pair of arms, and means applied to the first named shaft for turning the same. 115 120 125

In testimony whereof I affix my signature.

ALBERT B. HAUSER. 130