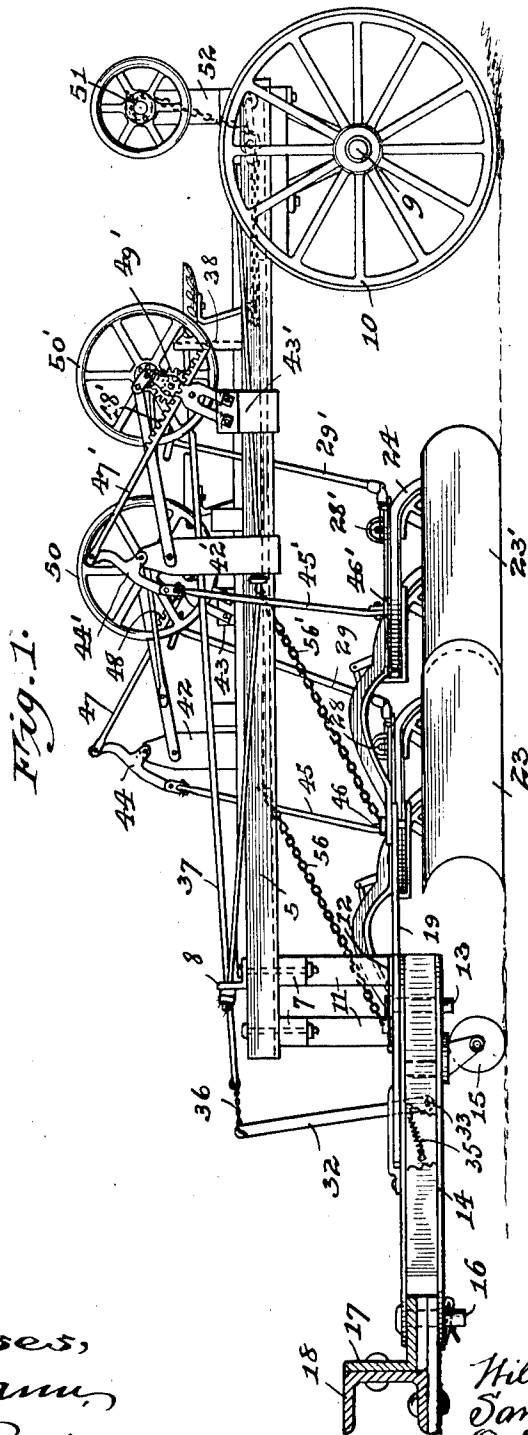


W. H. MORENUS, S. F. BEATTY & O. E. MOATS.
DOUBLE OR GANG ROAD GRADER.
APPLICATION FILED SEPT. 7, 1909.

1,066,643.

Patented July 8, 1913.

3 SHEETS—SHEET 1.



Witnesses,
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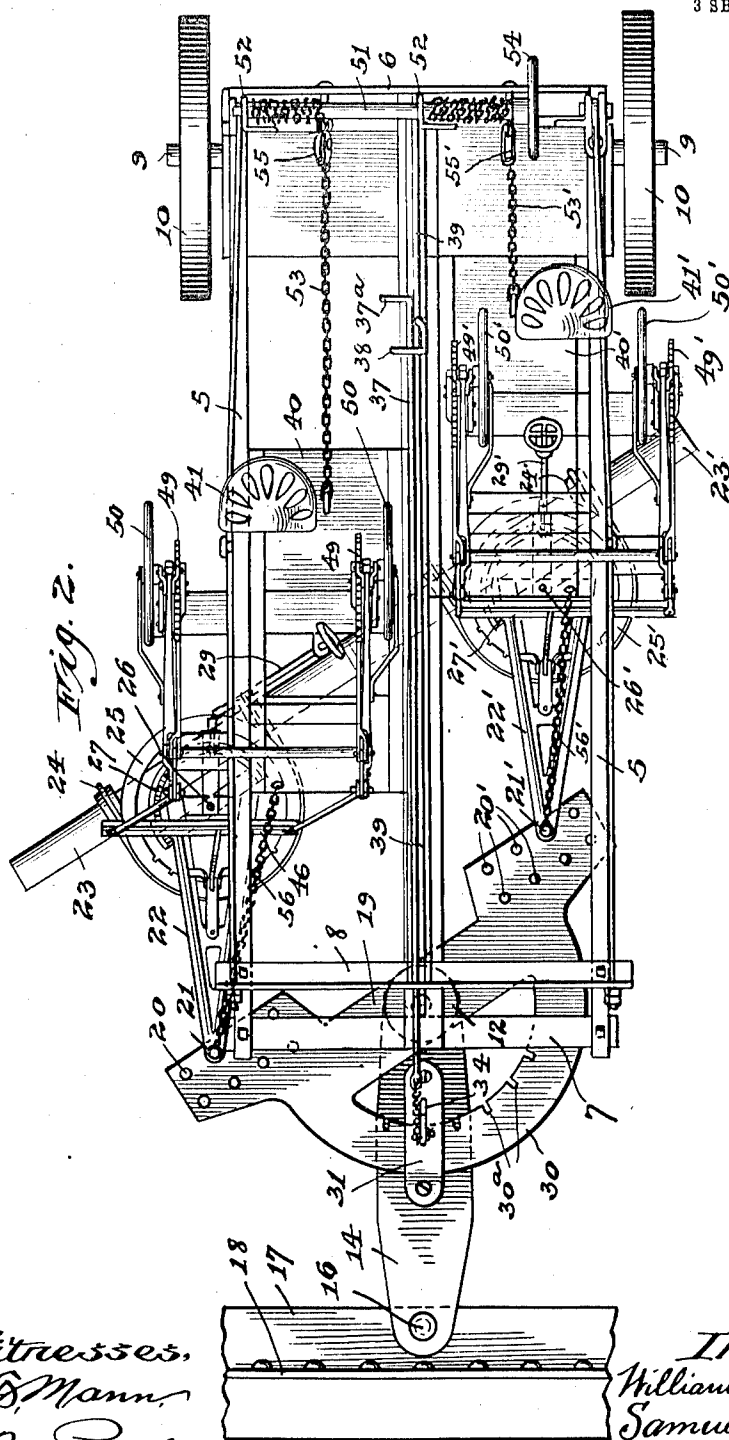
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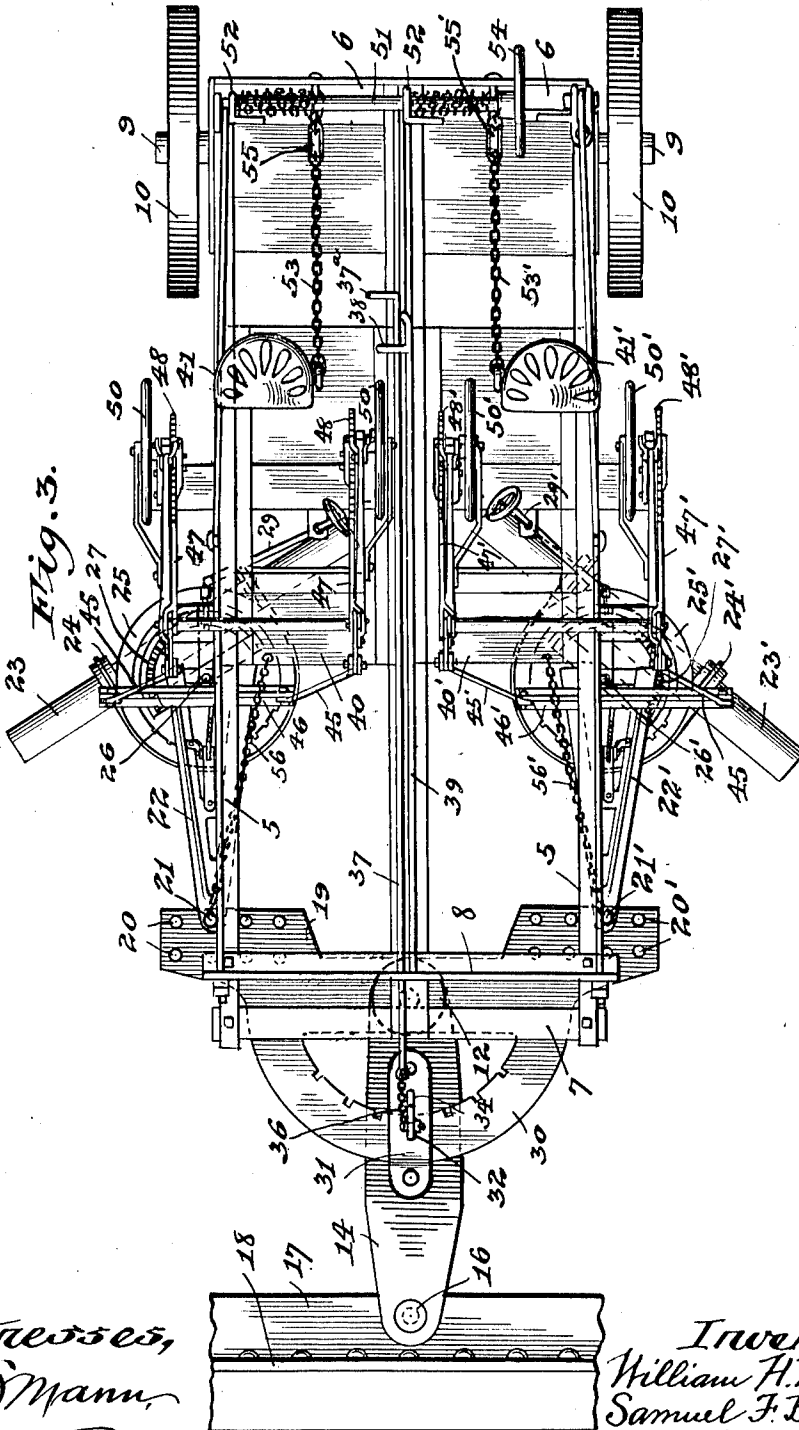
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UNITED STATES PATENT OFFICE.

WILLIAM H. MORENUS, OF LAKE VIEW, IOWA, AND SAMUEL F. BEATTY AND ORTUS E. MOATS, OF CHICAGO, ILLINOIS, ASSIGNORS TO AUSTIN MANUFACTURING COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

DOUBLE OR GANG ROAD-GRADER.

1,066,643.

Specification of Letters Patent.

Patented July 8, 1913.

Application filed September 7, 1909. Serial No. 516,373.

To all whom it may concern:

Be it known that we, WILLIAM H. MORENUS, a citizen of the United States, residing at Lake View, in the county of Sac and State of Iowa, and SAMUEL F. BEATTY and ORTUS E. MOATS, both citizens of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Double or Gang Road-Graders, of which the following is a specification.

This invention relates to earth-handling machines, and pertains more particularly to that class of machines known as road graders.

The main object of the invention is to provide a machine of large capacity and capable of performing a large variety of operations, such as ditching, grading, scraping, leveling, and the like.

In carrying out the invention we employ, as the chief novel feature thereof, a pair of scraper-blades, the scraper-carrying frames of which are hung from a corresponding pair of platforms, which latter are adjustable longitudinally of the main frame of the machine and are provided with means for independently raising, lowering and leveling the scraper-carrying frames, as well as for adjusting the angular positions of the scraper-blades relatively to their carrying frames and to each other, whereby said blades may be so set as to perform the various operations referred to.

Our invention will be readily understood when considered in connection with the accompanying drawings showing one practical mechanical embodiment thereof, in which—

Figure 1 is a side elevational view of the complete machine. Fig. 2 is a top plan, showing the scraper blades in the same relative position as in Fig. 1. Fig. 3 is another top plan showing a different adjustment of the scraper blades.

Referring to the drawings, 5 designates the longitudinal side bars, 6 the rear end crossbar, and 7 each of a pair of twin front cross-bars secured to and connecting the forward ends of the side bars 5 beneath the latter, an additional upper cross-bar 8 being also shown vertically above the inner lower cross-bar 7. The rear end of the main frame is supported in the usual manner upon a rear axle 9 and rear wheels 10, and

the lower cross-bars 7 at the forward end 55 of the main frame rest on a twin block bolster 11, in turn supported on a center bearing plate 12, this latter being pivotally connected by a king-bolt 13 with the inner end of a drawbar 14, this latter being supported on a caster wheel 15 pivotally mounted in advance of the king-bolt 13 and adapted to be connected at its forward end, as by a pivot-bolt 16, to a bracket 17 on the rear end of the frame of a traction engine 18. Centrally pivoted on the king-bolt 13 between the center plate 12 and the inner end of the drawbar is a transverse draft-beam 19, the end portions of which are each formed with a plurality of apertures 20 and 20', respectively, which afford adjustable points of connection for the pivot-pins 21 and 21' of the supporting frames 22 and 22' of a pair of scraper blades 23 and 23'. These latter, as usual in scrapers of this class, are rigidly secured by hangers 24, and 24' to turn-tables 25 and 25' pivotally suspended at 26 and 26' from the frames 22 and 22' and provided with the usual segment racks 27 and 27' and pinions 28 and 28' operated through universal joint connections with steering posts 29 and 29'. With the specific construction of the scraper-carrying frames and the specific means for adjusting and locking the scraper-blades thereon the present invention is not concerned, as the parts and mechanism indicated for this purpose are old and well known.

The pivoted transverse draft-beam 19 has formed integral with its forward side an internally notched arc-bar 30 sliding through a keeper 31 on the upper side of the drawbar 14, whereby said transverse draft-beam 19 is adapted to be locked in the various angular positions by means of a locking bar 32 pivoted at 33 (Fig. 1) in the drawbar 14 and passing upwardly through a longitudinal slot 34 in the keeper 31. Said locking bar 32 is normally drawn into locking engagement with one of the notches 30^a of the arc-bar 30 by a spring 35 (Fig. 1); and the upper end of the bar 32 is connected by a short chain 36 with a lock-operating rod 37 extending rearwardly of the main frame and having at its rear end a handle 37^a whereby it may be operated, said operating rod being supported and guided in aper-

tures in the front crossbar 8 and a post 38 on the main frame.

The main rectangular frame of the machine is provided with a pair of central longitudinal angle-bars 39 between the front and rear cross-bars, which angle-bars, in connection with the inwardly facing channel side bars 5, forms longitudinal ways supporting a pair of platforms 40 and 40'. These platforms are each provided with operators' seats 41 and 41', and with suitable uprights, such as the posts 42, 43 and 42', 43' (Fig. 1) on which are mounted the raising, lowering and suspending means of the scraper-carrying frames 22 and 22'. These means, which are in duplicate on each side of each platform, comprise essentially levers 44, 44' pivoted to the upper ends of posts 42, 42', suspension links 45, 45' connected respectively to the ends of rigid cross-bars 46, 46' of the scraper-carrying frames, and connecting rods 47, 47' formed with racks 48, 48' engaged by gear pinion trains indicated as an entirety at 49 and 49' operated by hand wheels 50 and 50'.

The relative positioning of the scraper-blades in a variety of ways to effect the several kinds of operations referred to is effected partially, of course, by the angular adjustments of the scraper-blades on their individual carrying frames 22 and 22'; and by their individual raising and lowering mechanisms last described; but their correct relative position for many of the functions and operations of which the machine is capable is effected by adjustments of the supporting platforms 40 and 40' relatively to each other and to the main frame. These longitudinal adjustments of the platforms 40 and 40' are effected by means of a windlass 51 mounted in posts 52 on the rear end of the main frame and provided with chains 53 and 53' connected to the platforms 40 and 40', respectively, and provided with a hand-wheel 54 for turning the same. The chains 53 and 53' are guided over pulleys 55, 55' anchored to the rear frame member 6 of the main frame. The chains 53 and 53' are wound in opposite directions on the windlass 51, so that, as the latter is turned, one chain is wound up while the other is paid out, and vice versa. The forward ends of the platforms 40 and 41 are connected by chains 56 and 56' to the opposite ends of the pivoted transverse draft-beam 19, being conveniently connected to the pivot-bolts 21 by which the scraper-blade-carrying frames 22 and 22' are pivoted. By reason of this construction, the turning of the windlass 51 in either direction causes a simultaneous travel of the platforms 40 and 40' in opposite directions longitudinally of the main frame, when the locking-bar 32 has been retracted to permit such adjustment; the draft-beam 19, of course, turning angularly and the

scraper-blades 23 and 23' being carried bodily in opposite directions during such adjustment. The platforms 40 and 40' being connected to the windlass at one end and to the transverse draft-beam 19 at the other by the chain connections described, they are practically locked in any adjusted position when the windlass 51 is locked against turning by the usual pawl-and-ratchet means ordinarily employed for such purposes. However, any suitable positive locking devices between the platforms and their respective slideways may be employed, if desired.

A machine constructed substantially as described is capable of a large variety of adjustments of the two scraper-blades so as to effect practically all of the earth-handling operations accomplished by the various types and kinds of machines of this general character now in use. Figs. 2 and 3 show simply two relative positions which the scraper-blades may assume out of a large possible number. In Fig. 2 the blades are shown as disposed in oblique alinement wherein they effect a wide cutting or scraping action with delivery wholly to one side. In Fig. 3 they are shown in ditching position, each blade being so disposed as to deliver beneath the center of the machine. By reversing the relative positions or the blades from that shown in Fig. 3, the blades may be caused to separately deliver to the opposite sides of the machine. By raising one blade relatively to the other when in the obliquely alined position shown in Fig. 2, parallel grading at different levels may be performed with delivery wholly to one side of the machine. The provision for connecting the forward ends of the scraper-frames adjustably at a considerable variety of points on the transverse draft-beam 19 also contributes to the range of adjustability of the scraper-blades, as likewise to the variations in outside width of the sphere of action of the blades; and it being here noted that the described means whereby the scraper-frames are suspended from the platforms are adapted to permit a considerable lateral swing of said scraper-frames in action.

It will be evident to those skilled in the art that the details of construction and relative arrangement of parts as herein shown and described may be considerably modified without departing from the principle of the invention or sacrificing any of the advantages thereof. Hence, we do not limit the invention to the particular mechanism disclosed, except to the extent clearly indicated in specific claims.

We claim:

1. In a road-grader, the combination of a main frame having a pair of longitudinal slideways, platforms mounted in said slideways, scrapers suspended from said plat-

forms, and means for adjusting said platforms lengthwise of said slideways, substantially as described.

2. In a road-grader, the combination of a main frame having a pair of longitudinal slideways, platforms mounted in said slideways, scraper-frames suspended from said platforms and carrying scraper-blades, a pivoted transverse draft-beam to which said scraper-frames are hitched on either side of its pivot, respectively, a draw-bar connected at its inner end to said transverse draft-beam, and means for adjusting said platforms lengthwise of said slideways, substantially as described.

3. In a road grader, the combination of a main frame having a pair of longitudinal slideways, platforms mounted in said slideways, scraper-frames suspended from said platforms and carrying scraper-blades, a pivoted transverse draft-beam to which said scraper-frames are hitched on either side of its pivot, respectively, a draw-bar connected at its inner end to said transverse draft-beam, and means for moving either of said platforms rearwardly of said main frame, substantially as described.

4. In a road grader, the combination of a main frame having a pair of longitudinal slideways, platforms mounted in said slideways, scraper-frames suspended from said platforms and carrying scraper-blades, a pivoted transverse draft-beam to which said scraper-frames are hitched on either side of its pivot, respectively, a draw-bar connected at its inner end to said transverse draft-beam, a windlass mounted on said main frame in rear of said platform, and chains wound in opposite directions on said windlass and connected to said platforms, substantially as described.

5. In a road grader, the combination of a main frame, a pair of platforms mounted side by side thereon and slidable longitudinally thereover, scraper-frames suspended from said platforms and carrying scraper-blades, scraper raising and lowering devices mounted on said platforms, a pivoted transverse draft-beam to which said scraper-frames are hitched on either side of its pivot, respectively, a drawbar connected at its inner end to said transverse draft-beam, and means for simultaneously adjusting said platforms in opposite directions longitudinally of said main frame, substantially as described.

6. In a road-grader, the combination of a main frame having a pair of longitudinal slideways, platforms mounted in said slideways, scrapers suspended from said platforms, a windlass mounted on said main frame in rear of said platform, chains

wound in opposite directions on said windlass and connected to said platforms, a transverse draft-beam pivotally connected to the forward end of said main frame, and chains connecting the opposite ends of said draft-beam to said platforms, respectively, substantially as described.

7. In a road-grader, the combination of a main frame having a pair of longitudinal slideways, platforms mounted in said slideways, means for adjusting said platforms longitudinally of said slideways, scraper-frames suspended from said platforms and carrying scraper-blades, a transverse draft-beam centrally pivoted beneath the forward end of said main frame and provided with means for adjustably pivoting the forward ends of said scraper-frames thereto, a draw-bar connected at its inner end to said transverse draft-beam, and a centrally disposed caster wheel supporting the forward end of said main frame, substantially as described.

8. In a road-grader, the combination of a main frame having a pair of longitudinal slideways, platforms mounted in said slideways, means for adjusting said platforms longitudinally of said slideways, scraper-frames suspended from said platforms and carrying scraper-blades, a transverse draft-beam centrally pivoted beneath the forward end of said main frame and provided with means for adjustably pivoting the forward ends of said scraper-frames thereto, said draft-beam being also provided with a notched arc-bar, a draw-bar pivotally connected at its inner end to and centrally of the forward end of said main frame coaxially with the pivot of said draft-beam, a locking bar carried by said drawbar and adapted to cooperate with the notches of the arc-bar, and a caster wheel mounted in the under side of said draft-beam in advance of the pivot of the latter, substantially as described.

9. The combination of a wheeled scraper frame, adjustable blade carriers arranged side by side and supported by said frame, with cooperating blades which deliver to each other, and adjustable connections between the frame and each of said carriers, for varying their position with respect to each other and to the frame.

In testimony that we claim the foregoing as our invention, we have hereunto subscribed our names in the presence of two witnesses.

WILLIAM H. MORENUS.
SAMUEL F. BEATTY.
ORTUS E. MOATS.

Witnesses:

SAMUEL N. POND,
MATTIE B. BLISS.