

R. WATERMAN.
 GRADING MACHINE.
 APPLICATION FILED MAR. 23, 1912.

1,060,652.

Patented May 6, 1913.

2 SHEETS—SHEET 1.

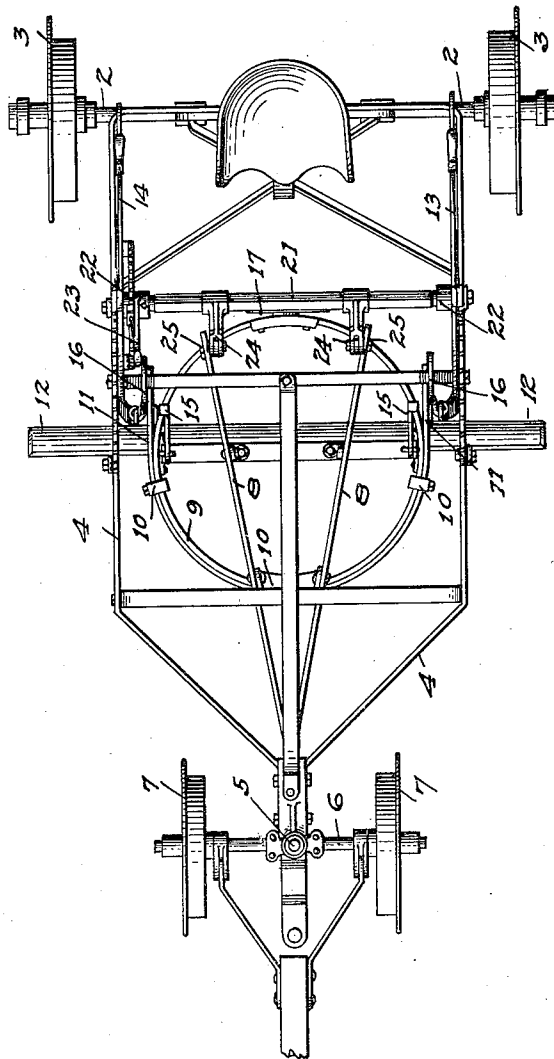


FIG. 1.

WITNESSES
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 G. E. Sorensen

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 BY *Paul Paul*
 ATTORNEYS

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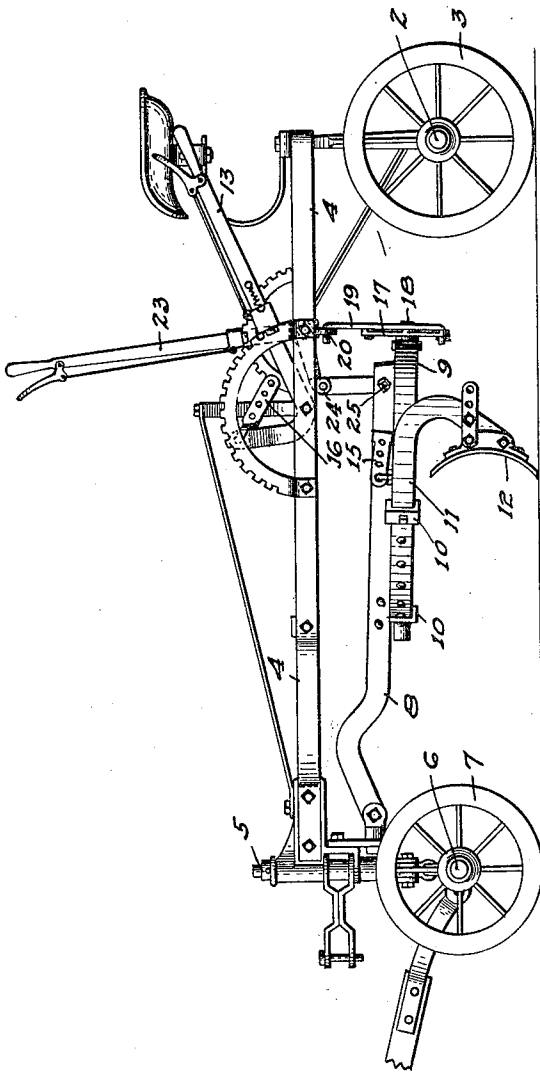


FIG. 2.

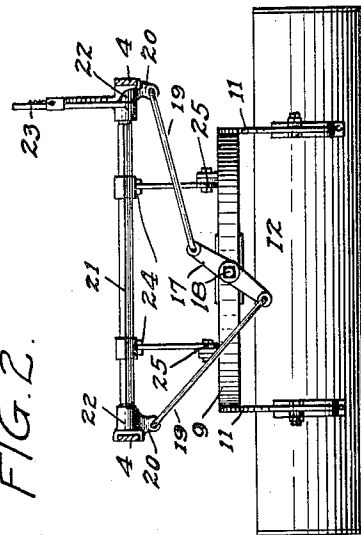


FIG. 3.

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UNITED STATES PATENT OFFICE.

RAYMOND WATERMAN, OF MINNEAPOLIS, MINNESOTA.

GRADING-MACHINE.

1,060,652.

Specification of Letters Patent.

Patented May 6, 1913.

Application filed March 23, 1912. Serial No. 685,870.

To all whom it may concern:

Be it known that I, RAYMOND WATERMAN, a citizen of the United States, of Minneapolis, Hennepin county, Minnesota, have invented certain new and useful Improvements in Grading-Machines, of which the following is a specification.

The object of my invention is to improve the apparatus shown and described in a certain application for Letters Patent of the United States, filed by me January 9, 1911, Serial No. 601,645.

The invention consists generally in means arranged to prevent lateral movement of the scraper when striking the ground or when contacting with a stone or other obstruction in the ground.

In the accompanying drawings forming part of this specification, Figure 1 is a plan view of a grading machine embodying my invention, Fig. 2 is a side elevation of the same, Fig. 3 is a transverse sectional view.

In the drawing, 2 represents the rear axle, having wheels 3 and a frame 4 supported by said axle and having a pivotal connection at 5 with a forward axle 6 provided with carrying wheels 7.

8 is a draft bar and 9 a ring carried thereby having guides 10 for a bar 11 provided with downwardly turned ends to which a scraper blade 12 is secured. Levers 13 and 14 are provided for raising and lowering the ends of the scraper blade, said levers having crank connections 15 and 16 with said ring. To prevent lateral movement of the scraper blade when it strikes the ground in lowering it to the work or when it comes in contact with an obstruction in the soil, I provide a rocker 17 centrally pivoted by a bolt 18 preferably on the rear middle portion of the ring 9. The ends of this rocker are connected by links 19 with lugs 20 provided on the side rails of the machine frame. These links 19 are inwardly and downwardly inclined from their point of connection with the frame and when the scraper blade is lowered the links will swing on their pivots, permitting the dropping of the scraper blade but preventing it from moving endwise or laterally with respect to the machine, which often occurs when a scraper blade is dropped directly upon the work. In the application above referred to, I have shown a single link connecting the ring with the frame, but as the ring moves up and down in a straight line while the inner end of the link must swing on the

arc of a circle, it necessarily follows that there is a slight lateral movement of the scraper blade. This lateral movement to a great extent is eliminated in the improvement herein shown, as the rocking bar 17 will swing on its pivot and accommodate itself to the different positions of the scraper blade and the links without pulling the blade as far to one side as would be the case where the link is attached directly to the ring itself. Furthermore, with this rocking connection there is less danger of breakage in case the scraper blade comes in contact suddenly with an obstruction. I also prefer to mount a rock shaft 21 in bearings 22 on the frame, one end of the shaft having an operating lever 23, while the shaft intermediate to its ends has arms 24 secured thereon and pivotally connected at 25 with the ring 9. By rocking the shaft 21 the operator can instantly raise both ends of the scraper blade from their working position or lower both ends to the work. In my former application I illustrated a shaft for a similar purpose, but with only one connection between the shaft and the ring. This I found to be objectionable, as it allowed the ring and scraper to rock or swing laterally, while by employing two connections, one on each side of the center of the shaft, I am able to hold the ring and scraper in their proper position under all conditions.

I claim as my invention:—

1. A grading machine comprising a frame having carrying wheels, a ring, a scraper blade carried thereby, links pivotally connected with said frame, and a rocker pivotally connected with said ring and having pivotal connections at its ends with said links.

2. A grading machine comprising a frame having carrying wheels, a ring having a draft connection with said frame, a scraper blade carried thereby, a rocker pivoted at a point intermediate to its ends on said ring, and links pivotally connecting the ends of said rocker with said frame.

3. A grading machine comprising a frame having carrying wheels, a ring having a draft bar connection with said frame, a scraper blade carried by said ring, a rocker pivotally connected with the rear portion of said ring near the center thereof, and rigid links pivotally connecting the ends of said rocker with said frame.

4. A grading machine comprising a frame

having carrying wheels, a scraper blade, a rocker having its middle portion pivotally connected with said scraper blade, and links pivotally connecting the ends of said rocker
5 with said frame.

5. A grading machine comprising a frame having carrying wheels, a scraper blade, a rocker having its middle portion pivotally connected with said blade, and means con-

necting the ends of said rocker with said 10 frame.

In witness whereof, I have hereunto set my hand this 15th day of March, 1912.

RAYMOND WATERMAN.

Witnesses:

GENEVIEVE E. SORENSEN,
EDWARD A. PAUL.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents,
Washington, D. C."