

1,041,387.

R. WATERMAN.
GRADING MACHINE.
APPLICATION FILED JAN. 9, 1911.

Patented Oct. 15, 1912.

4 SHEETS—SHEET 1.

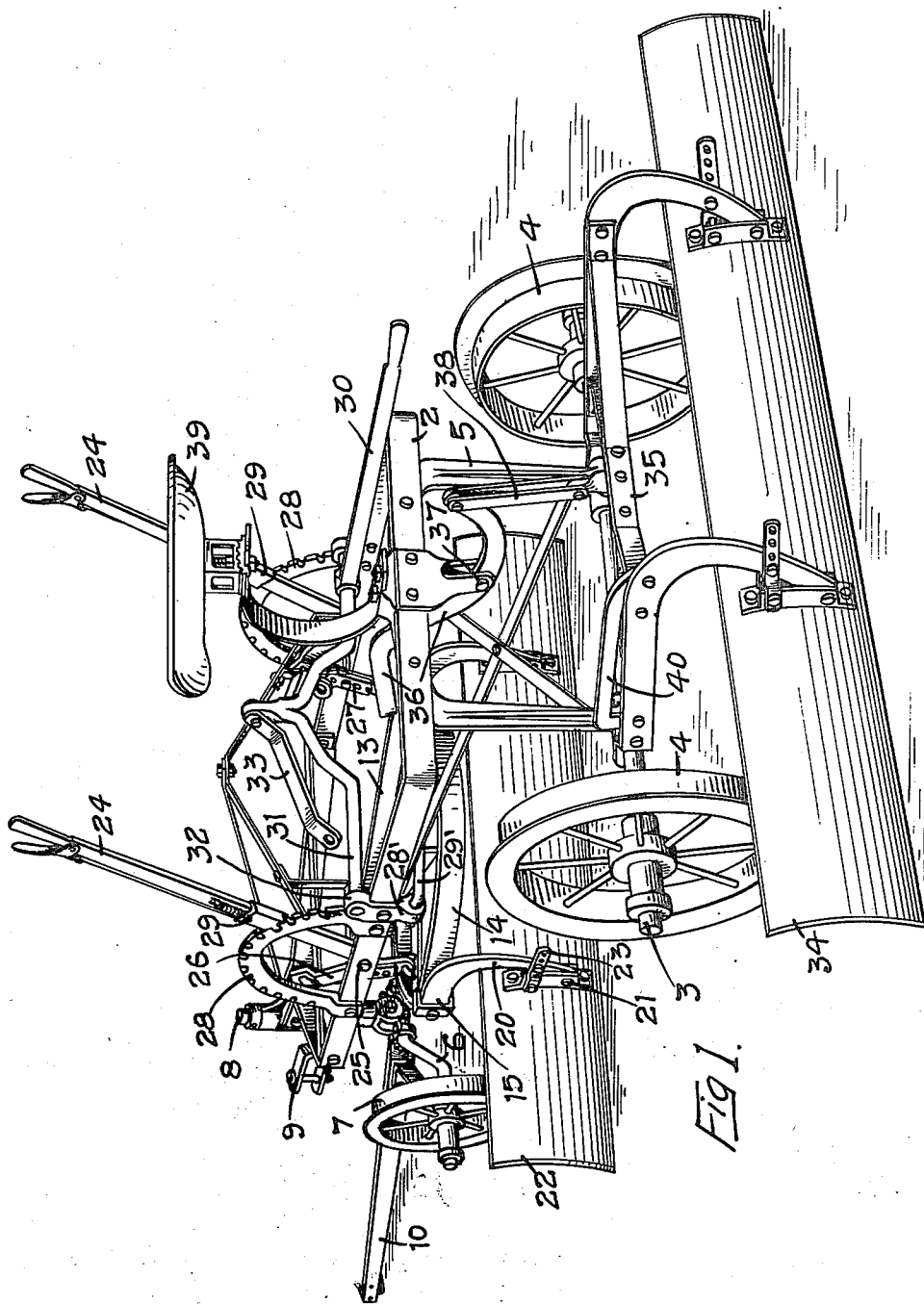


Fig. 1.

WITNESSES
R. Waterman
E. A. Paul

INVENTOR
RAYMOND WATERMAN

BY *Paul & Paul*
ATTORNEYS

R. WATERMAN.
GRADING MACHINE.
APPLICATION FILED JAN. 9, 1911.

1,041,387.

Patented Oct. 15, 1912.

4 SHEETS—SHEET 2.

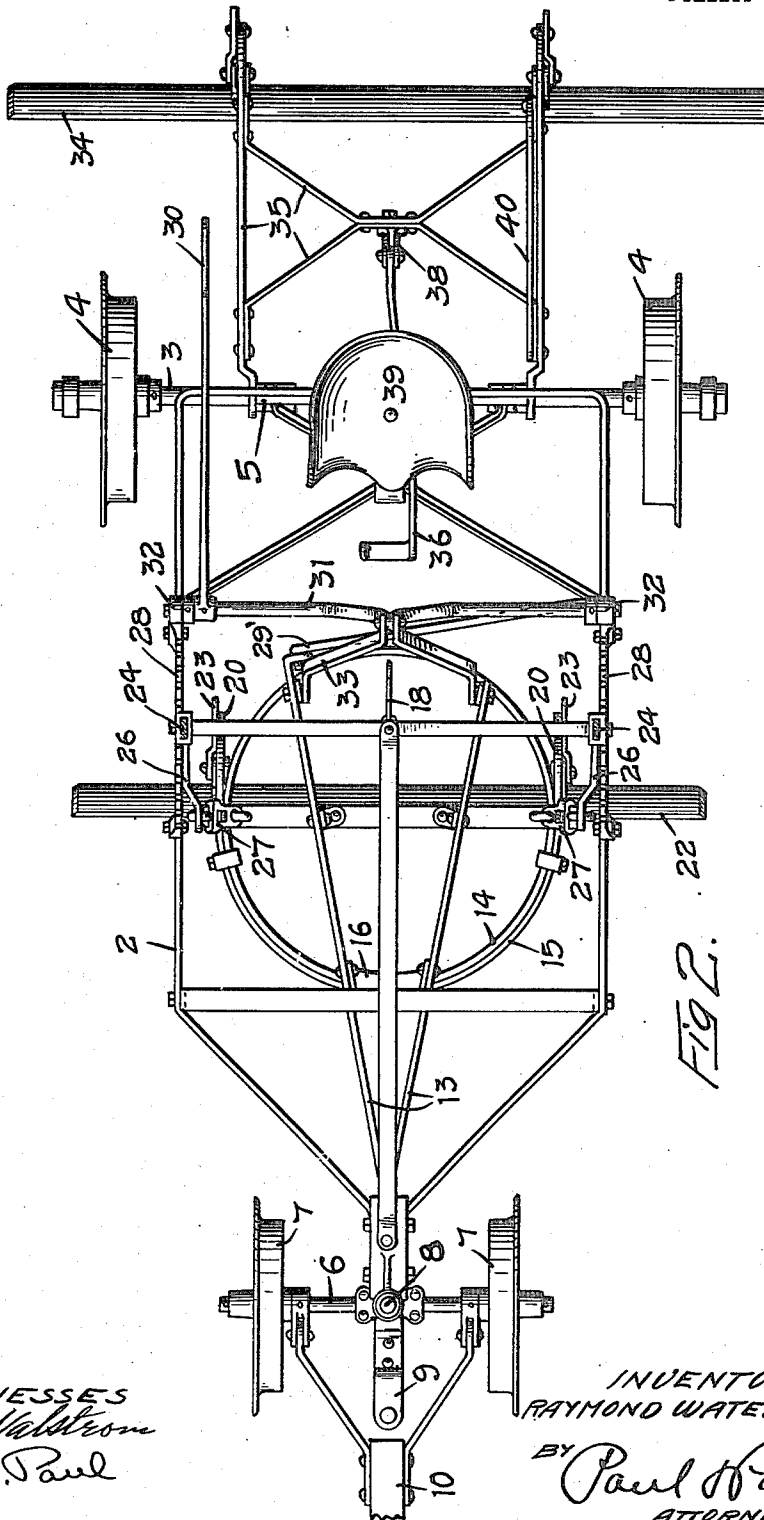


Fig. 2.

WITNESSES
E. L. Paul

INVENTOR
RAYMOND WATERMAN
BY *Paul Paul*
ATTORNEYS

1,041,387.

R. WATERMAN.
GRADING MACHINE.
APPLICATION FILED JAN. 9, 1911.

Patented Oct. 15, 1912.

4 SHEETS—SHEET 3.

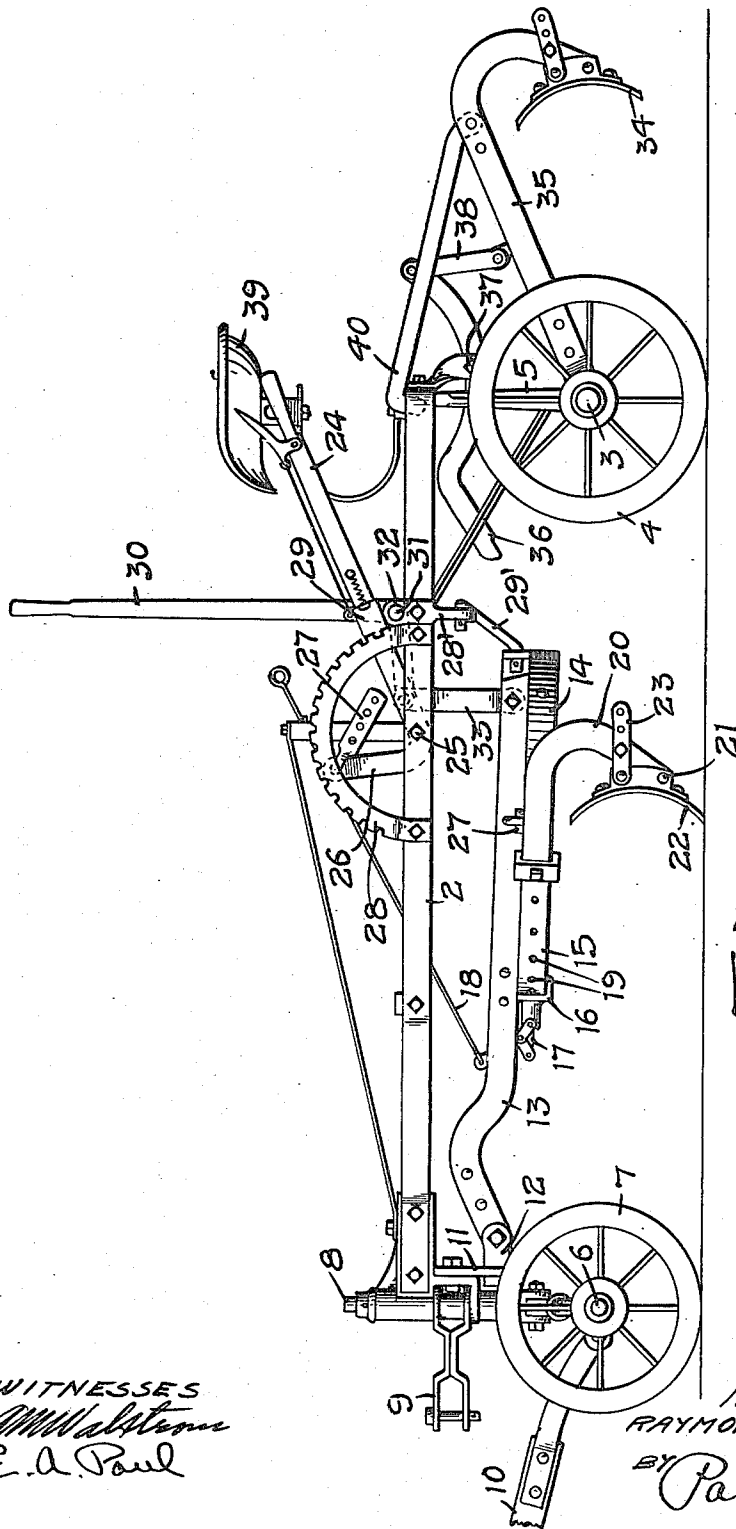


FIG. 3.

WITNESSES
R. Waterman
E. A. Paul

INVENTOR
RAYMOND WATERMAN
BY *Paul Paul*
ATTORNEYS

1,041,387.

R. WATERMAN.
GRADING MACHINE.
APPLICATION FILED JAN. 9, 1911.

Patented Oct. 15, 1912.

4 SHEETS—SHEET 4.

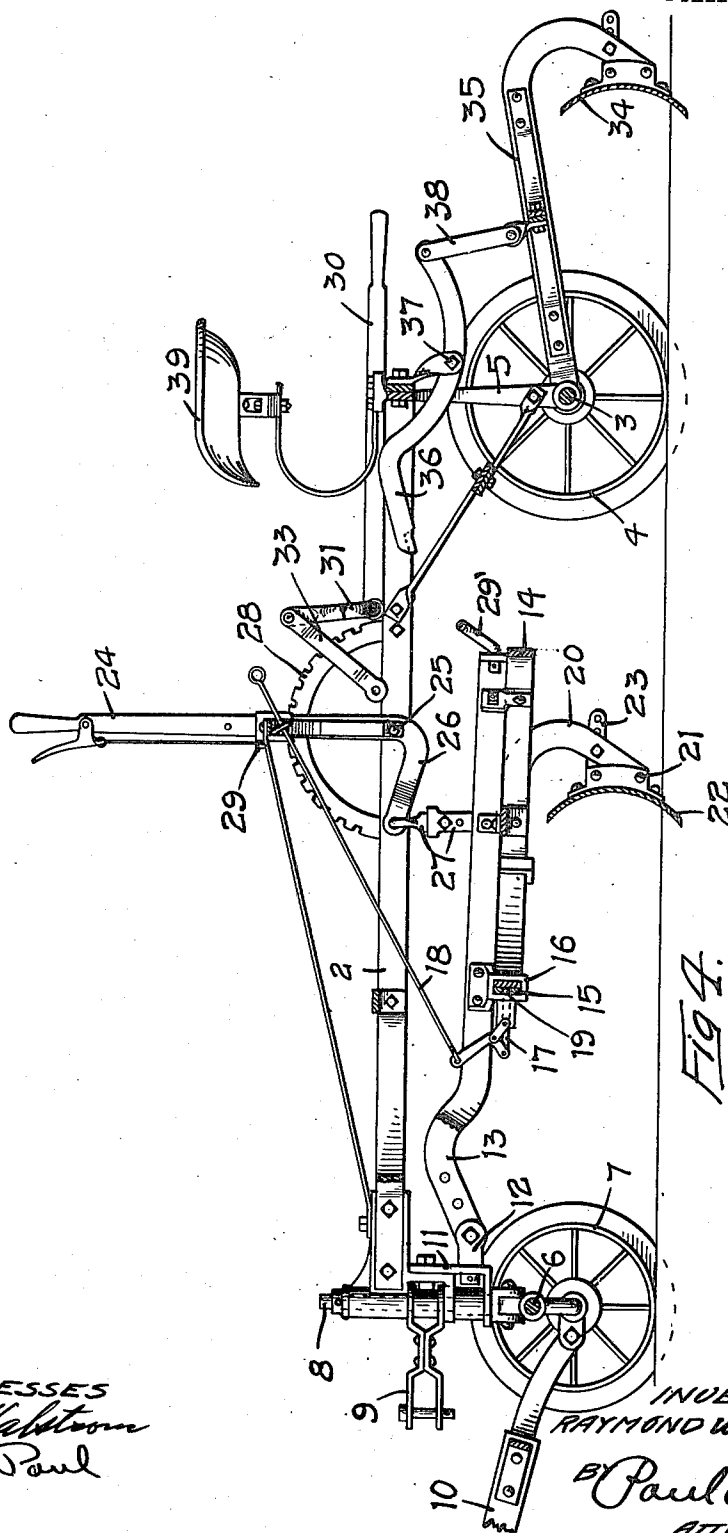


Fig. 4.

WITNESSES
R. Waterman
E. A. Paul

INVENTOR
RAYMOND WATERMAN
By *Paul Paul*
ATTORNEYS

UNITED STATES PATENT OFFICE.

RAYMOND WATERMAN, OF MINNEAPOLIS, MINNESOTA.

GRADING-MACHINE.

1,041,387.

Specification of Letters Patent.

Patented Oct. 15, 1912.

Application filed January 9, 1911. Serial No. 601,645.

To all whom it may concern:

Be it known that I, RAYMOND WATERMAN, of Minneapolis, Hennepin county, Minnesota, have invented certain new and useful

5 Improvements in Grading-Machines, of which the following is a specification.

The object of my invention is to provide means to prevent lateral movement of the ditcher blade when it strikes the ground.

10 A further object is to provide improved means for lifting both ends of the blade simultaneously.

My invention consists generally in various constructions and combinations, all as hereinafter described and particularly pointed out in the claims.

In the accompanying drawings forming part of this specification, Figure 1 is a perspective view of a grading machine embodying my invention, Fig. 2 is a plan view, Fig. 3 is a side elevation, Fig. 4 is a longitudinal sectional view illustrating the mechanism for operating the scraper and leveling blades.

In the drawing, 2 represents the frame of the machine, 3 the rear axle having carrying wheels 4 and brackets 5 supporting the frame 2 on the said axle. The forward axle 6 has carrying wheels 7 and a king-bolt 8 passes through the forward portion of the frame and has a draft connection 9. A pole 10 is connected to the forward axle. A bracket 11 is mounted on the king-bolt 8 and secured to the forward portion of the frame 2 and has a swiveled connection 12 with a drag-bar 13 whereon the inner ring 14 is supported by a suitable means. The outer ring 15 conforms to the curvature of the inner ring and is adapted to slide in guides 16 carried by the drag-bar 13, and said outer ring is locked against premature movement by a latch device 17 that is operated by a rod 18, said latch device including a bolt adapted to enter holes 19 in the outer ring. Said outer ring has downwardly turned ends 20 which are pivotally connected at 21 to a scraper blade 22. Links 23 connect the scraper blade with the arms 20 and allow the blade to be tilted to the desired angle. The angle of this blade with respect to the work is obtained by sliding the outer ring 15 in its guides, the locking device having been previously released. By this means I am able to set the scraper blade at the desired angle with respect to the work to be performed. The forward portion of the drag-bar is swiveled, as heretofore indi-

cated, and for the purpose of raising one end of the scraper blade and lowering the other one I provide levers 24 pivoted at 25 on the frame 2 and having arms 26 at their lower ends which are adjustably connected with the inner ring by links 27. Quadrants 28 are mounted on the frame and the levers 24 are locked thereon by latches 29. By the operation of these levers the rings may be tilted and one end of the scraper blade raised or lowered to adapt it for ditching purposes.

On one side of the machine I secure a block 28' having its lower end pivotally connected with the rear portion of the draw-bar by a rod 29'. This rod is capable of swinging on its pivots and permitting the rings to be tilted and the scraper blade ends raised or lowered and at the same time the rod will positively prevent lateral sliding or swinging of the scraper blade when it strikes the ground. Generally in machines of this type a flexible connection is employed between the operating levers, such as 24, and the scraper blade supporting ring, and when the blade comes in contact with the ground it will often jump to one side or the other and require considerable attention and effort on the part of the operator to hold it in its working position. The use of this rigid rod does away entirely with all this annoyance and objection to the ordinary machine. It does not in any way interfere with the lifting of the ring or the tilting of it and the scraper blade and at the same time will positively prevent the scraper from sliding to one side or the other when it contacts with the ground. I prefer also in this machine to provide a means for lifting the scraper blade and ring by the operation of a single lever, so that the driver can readily manipulate the scraper and handle the team at the same time. This lever I have designated by reference numeral 30, mounted on the crank shaft 31 that is journaled at 32 and is pivotally connected at its middle portion with a bail 33. This bail is secured to the draw-bars and when the shaft 31 is rocked by the movement of the lever 30, the bail and draw-bars will be moved bodily. When the scraper is controlled by this single lever the links 27 may be disconnected from the ring and the levers 24 thrown back to the inoperative position shown in Fig. 3.

At the rear end of the machine I prefer to provide a leveling blade 34 carried by a

frame 35 that is pivoted on the rear axle and is lifted by means of a foot-operated lever 36 that is pivoted at 37 and connected by a link 38 with the frame 35. The operator's seat 39 is preferably arranged over the rear axle, where the lever 36 can be conveniently operated. A hook 40 is mounted on the frame 35 and adapted to engage the rear portion of the frame 2, for the purpose of locking the frame 35 in its raised position. The blade 34, as shown in the drawings, is longer than the width of the machine, extending out on each side beyond the rear wheels. The purpose of this blade primarily is for leveling the soil in the rear of the machine, particularly in irrigated lands, where the wheels would leave ruts or depressions in the soft soil and allow the water to collect therein. This scraper blade, following behind the machine, fills up the wheel tracks and leaves the surface smooth and unbroken. When the rear blade is not in use it may be lifted up and supported by the hook described above.

In various ways the details of this machine may be modified without departing from the spirit of my invention.

I claim as my invention:—

1. A grading machine comprising a frame having carrying wheels, a ring, a scraper blade supported thereby, a drag-bar having

a forked rear portion having guides to receive said ring, a transverse bail having its ends connected to the fork of said drag-bar at the rear portion thereof and a crank shaft journaled in said frame and having an operating lever and a crank at its middle portion pivotally connected with said bail, substantially as described.

2. A grading machine comprising a frame having carrying wheels, a ring, a draw-bar connected therewith, a scraper blade carried by said ring, a bail having its ends attached to said draw-bar, a transversely arranged crank shaft having its crank pivotally connected with said bail in the rear of said ring and draw-bar, and an operating lever for said crank shaft.

3. A grading machine comprising a frame having carrying wheels, a scraper blade, a rotating support therefor, a draw-bar connected with said support, a bail connected to said draw-bar, a transversely arranged crank shaft having its crank pivotally connected with said bail, and an operating lever for said crank shaft.

In witness whereof, I have hereunto set my hand this 3d day of January 1911.

RAYMOND WATERMAN.

Witnesses:

GENEVIEVE E. SORENSSEN,
C. H. REHFUSS.