Sept. 16, 1941. B. F. OWEN 2,256,214

GRADING AND TERRACING MACHINE

Filed Nov. 28, 1940 2 Sheets-Sheet 1

Fig. 1.

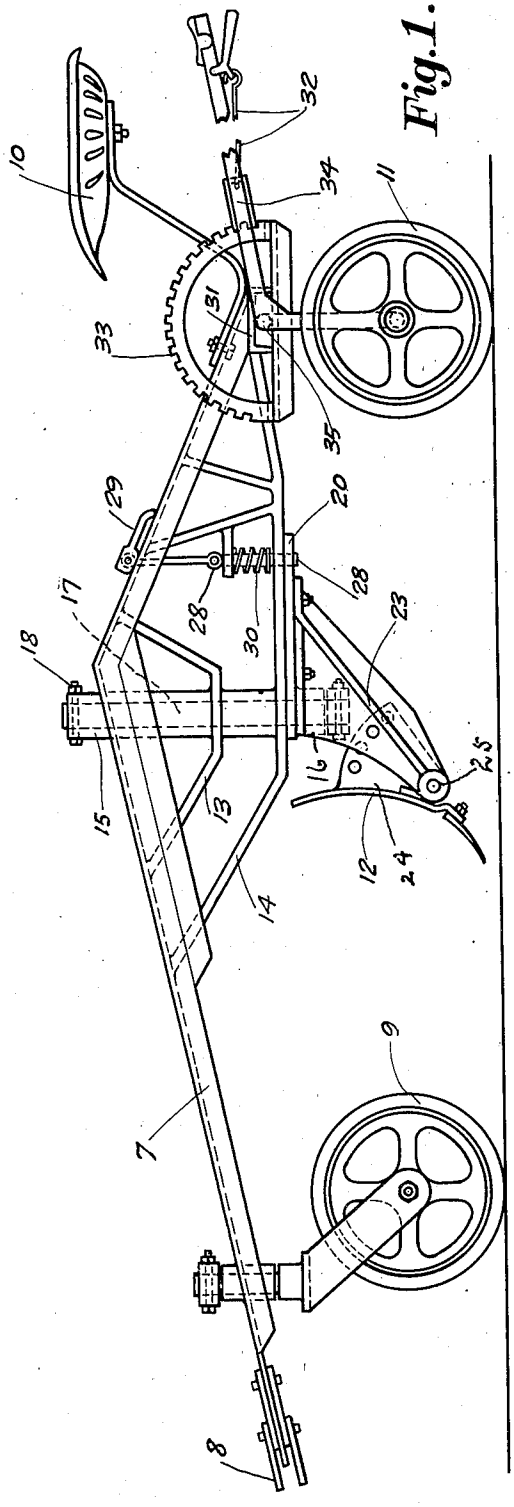


Fig. 3.

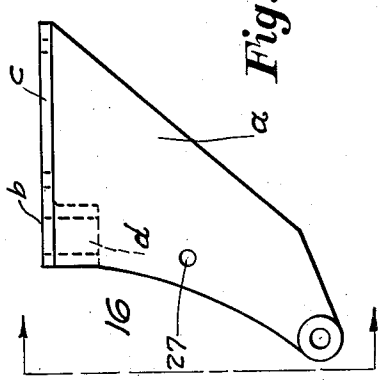
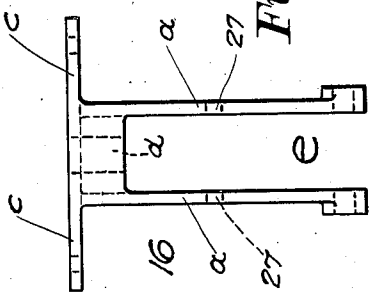


Fig. 2.



Inventor

B. F. OWEN.

By Hiram A. Sturges Attorney

Sept. 16, 1941. B. F. OWEN 2,256,214

GRADING AND TERRACING MACHINE

Filed Nov. 28, 1940 2 Sheets-Sheet 2

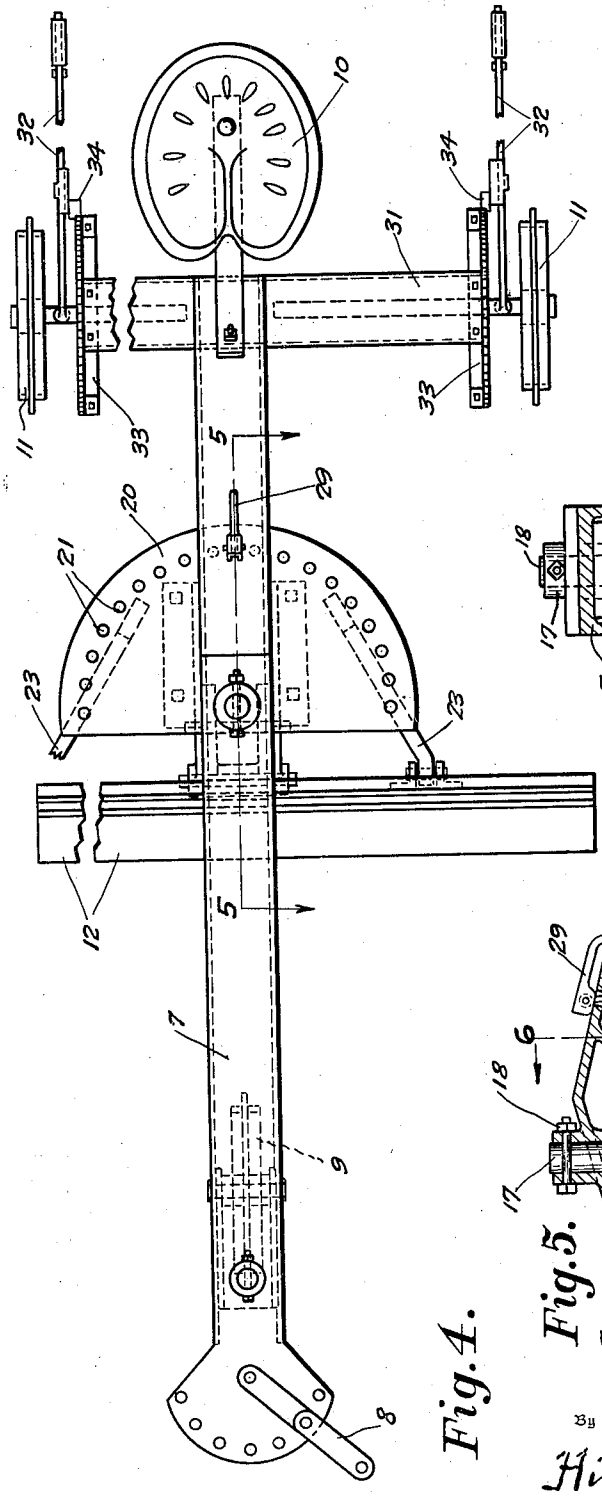


Fig. 4.

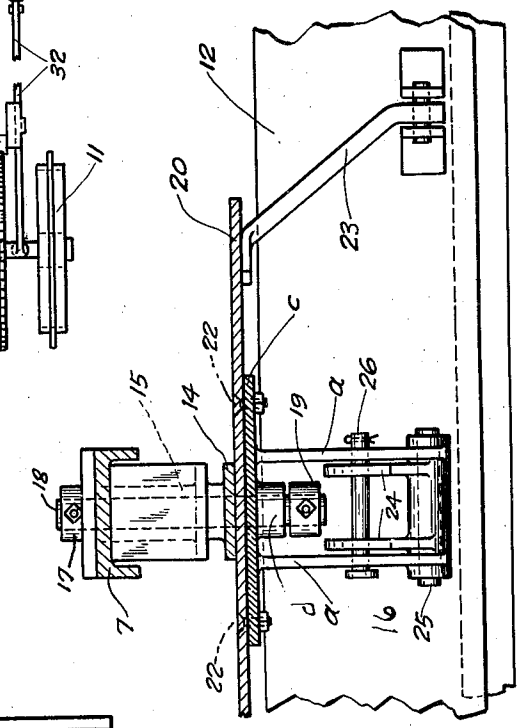


Fig. 6.

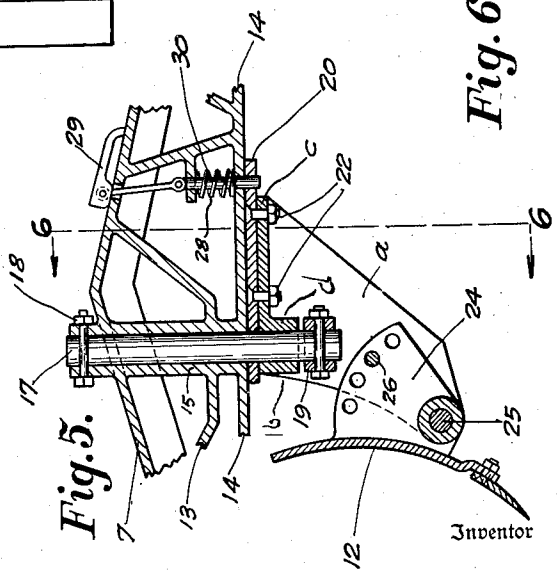


Fig. 5.

Inventor

B.F. OWEN.

By Hiram A. Sturges

Attorney

Patented Sept. 16, 1941

2,256,214

UNITED STATES PATENT OFFICE

2,256,214

GRADING AND TERRACING MACHINE

Benjamin F. Owen, Omaha, Nebr.

Application November 28, 1940, Serial No. 367,536

4 Claims. (Cl. 37—163)

This invention relates to improvements in that class of machines used in forming ground-terraces and changing ground surfaces generally in field work, such as removing hillocks or small ridges and filling earth-pockets and depressions, so that the surface will present, approximately, a level appearance, the operation being of particular advantage in preparing land for irrigation.

The invention includes certain adjustable features convenient and effective in use for changing the inclination of the cutter blade longitudinally and transversely and also for changing the inclination of the blade to fixed vertical positions, and has particular reference to such a construction that the cutter blade will be supported midway between its upper and lower edges for adequately supporting stresses directed thereto.

Since the ground to be treated is often of hard clay and gumbo formation, and since the stresses, while grading or terracing, must be supported by a single spindle, the invention includes a stabilizing frame of elongated form disposed in line with the direction of travel of the machine for an adequate support to prevent injury of the spindle. Also since the ground-engaging blade must have a transverse curvature in form and also should be arranged to permit adjustments to suitable degrees of transverse inclination, the present invention includes an improved construction relating to the mounting of the blade so that breakage or injury of parts may be avoided.

The invention consists of the new and useful construction, combination and arrangement of parts as described herein and claimed, and as shown in the accompanying drawings, it being understood that changes may be made, by applicant, in form, size, proportion of parts and minor details, said changes being within the scope of the invention as claimed.

In the drawings,

Fig. 1 is a side view of the machine, the terracing-and-grading blade being shown in elevated position at right-angles to the supporting-frame.

Fig. 2 is an end view of a casting, and Fig. 3 is a side view of the same.

Fig. 4 is a plan view of the machine, parts being broken away. Fig. 5 is a view in longitudinal section on line 5—5 of Fig. 4. Fig. 6 is a view in transverse section on line 6—6 of Fig. 5, the scale being enlarged showing the mounting of the spindle.

Referring now to the drawings for a particular description, the invention consists, in part, of a ridge-beam 7 having a length approximately equal to the length of the machine, said beam being preferably of inverted U-shape in cross-section, so that undue weight may be avoided. The front end of the beam is provided with a hitching-member 8 and leader-wheel 9, the rear end of the beam being provided with a driver's seat 10. The pair of ground-wheels which support the rear end of the machine are indicated at 11.

Means on the rear wheels for a control of the depth to which the blade-member 12 may enter the ground will be described hereinafter. In order that stresses during operation may be adequately supported, a stabilizing frame is provided beneath the ridge-beam including a pair of framing-bars or loops 13 and 14 of irregular form and disposed in spaced relation in the vertical plane of said beam, said stabilizing frame including a normally upright sleeve 15 shown as an integral construction with members 13 and 14, but the parts 13, 14 and 15 and beam 7 may consist of separate members if desired and may be connected one with the other to form the stabilizing frame for supporting the stresses mentioned.

Numeral 16 indicates a casting consisting of a pair of opposed sides *a*, a top *b* with horizontal flanges *c*, said casting also being provided with an aperture or sleeve *d* between its sides and opening on its top, the space between the parallel sides *a* forming a recess *e*.

Numeral 17 indicates a spindle, and by means of a keeper 18 it is secured in a stationary position. The lower end of the spindle is disposed in the aperture or sleeve *d* of the casting 16 and a keeper 19 is inserted in the lower end of the spindle and operates to support the casting rotatably on said spindle. The rotatable movements of the casting on the spindle, as described, are the limited movements necessary to permit the blade 12 to be maintained at a suitable inclination transversely of the line of travel.

Numeral 20 indicates a semicircular adjusting or control plate provided at its curved edge with numerous apertures 21, its front edge being secured to the flanges *c* of the casting 16 by keepers 22, said adjusting-plate being supported in position at right-angles to the spindle by a pair of inclined brace-bars 23, the lower end of each brace being secured to the blade and its upper end being secured to said adjusting-plate.

The blade-member 12 is provided midway between its ends, on its rear side, in the recess *e*, with a segment-member consisting of a pair of

connected parallel plates 24 extending upwardly from a common pivot 25 which is journalled in the sides of the casting, each segmental plate 24 being provided near its curved edge with apertures for receiving a locking-bolt 26, said bolt also engaging in apertures 27 (Fig. 6) which are provided for the side-plates *a* of the casting; and in operation, the blade-member may be adjusted transversely for operating in hard or soft ground.

Numeral 28 indicates a locking-bar pivoted at its upper end in the head of the handle 29, said bar being slidingly mounted in the beam 7 and stabilizing bar 14, under control of a spring 30, and adapted to engage in a selected aperture 21 for maintaining the blade-member at a desired angle relative to the beam-member 7.

Means are provided for moving the rear end of the beam to higher or lower positions relative to the wheels 11, said movements of the beam operating to change the altitude of the blade-member as may be desired. Numeral 31 indicates a cross-bar which is secured to the rear end of the beam-member 7 and at 32 are indicated a pair of hand-levers which are disposed near the driver's seat and swingably mounted on the ends of the cross-bar.

By means of ratchets 33 and pawls 34 the levers 32, by their movements, may elevate or may lower the beam 7 relative to the wheels 11, each hand-lever being of crank-formation and its lower end being axially mounted on a wheel, and each being swingably mounted as indicated at 35, at the junction of its angular parts, on the ends of the cross-bar 31. In operation, a single hand-lever may be used for elevating one end of the cross-bar 31 and corresponding end-portion of the blade-member when the ground is of transverse inclination and, as is obvious, the blade may be maintained in horizontal position.

I claim as my invention:

1. In a grading and terracing machine, a ridge beam provided with ground wheels and having a downwardly projecting stabilizing frame rigidly secured thereto, a casting swingably mounted on the stabilizing-frame and including a pair of parallel, connected side plates provided with horizontal flanges, an apertured, horizontal control-plate disposed upon and secured to the flanges of the casting, a scraper blade disposed below the ridge beam and having a pair of opposed adjusting-plates disposed at the sides and pivotally mounted on the casting and provided with a plurality of apertures concentric with said pivotal mountings, a keeper carried by the casting and disposed in selected apertures of said adjusting-plates, and a locking-pin on the ridge beam adapted to be moved into a selected aperture of said control-plate.

2. In a grading and terracing machine, a ridge beam having a stabilizing frame projecting downwardly therefrom, a casting disposed below and mounted for horizontal swinging movements on the stabilizing frame and consisting of a pair of opposed and connected side plates, an apertured, horizontal control-plate upon and secured to the casting, a scraper blade disposed below the ridge beam, a pair of opposed, segmental adjusting-plates carried by the scraper blade and pivotally mounted on the side-plates of the casting and provided with apertures, a bolt mounted on the side-plates of the casting and adapted to engage in selected apertures of the adjusting-plates of the scraper blade, and a locking-pin eccentrically mounted upon and movable through the ridge beam for engagement in a selected aperture of the control-plate.

3. In a grading and terracing machine, a ridge beam, a supporting-frame beneath and secured to said beam, a casting rotatably mounted on said frame and consisting of a pair of upright, connected side-plates provided with opposed horizontal flanges, an elongated scraper blade, a pair of adjusting-plates disposed in spaced relation and carried by the scraper blade, each adjusting-plate being pivotally mounted on a side-plate of the casting and provided with a plurality of apertures concentric with its pivotal mounting, a keeper carrier by the side-plates of the casting and engaging in selected apertures of the adjusting-plates, a horizontal apertured control-plate upon and secured to the flanges of the casting, a pair of opposed brace-bars each secured to the scraper blade adjacent an end thereof and extending to the control-plate for a mounting thereon, and a locking-pin mounted on the ridge beam and adapted to be moved into a selected aperture of said control-plate.

4. In a grading and terracing machine, the invention described in claim 3 and in addition,—said stabilizing-frame including a plurality of supporting bars disposed in the vertical plane and below the ridge beam with their ends secured to said beam, and an upright sleeve on the ridge beam in engagement with said supporting bars.

BENJAMIN F. OWEN.