G. A. GHENT.

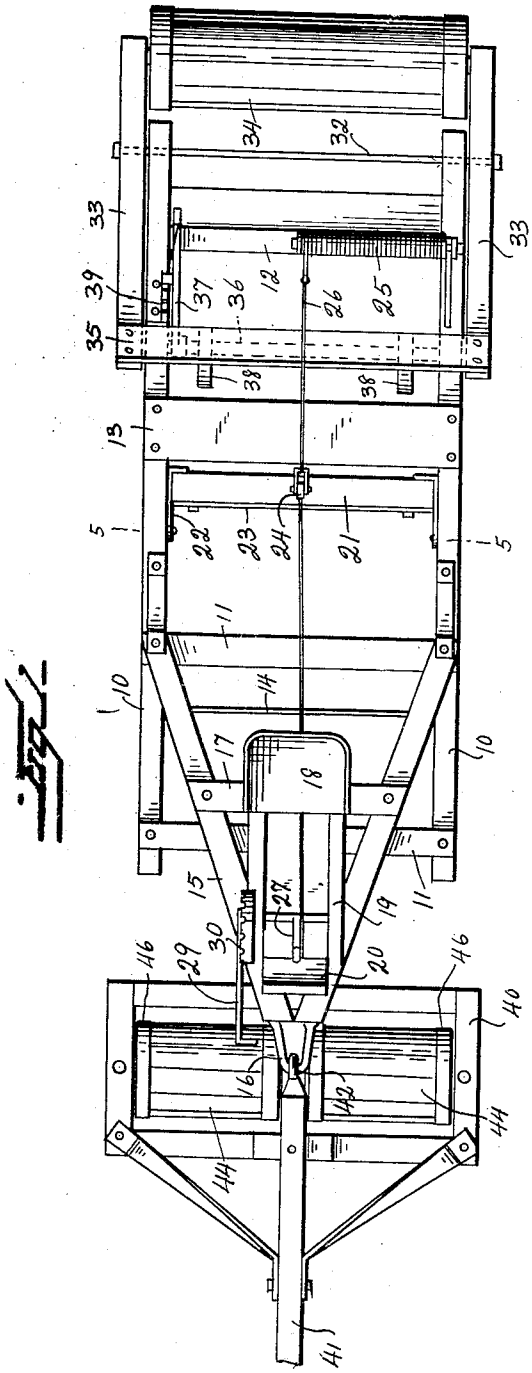
LAND LEVELING MACHINE.

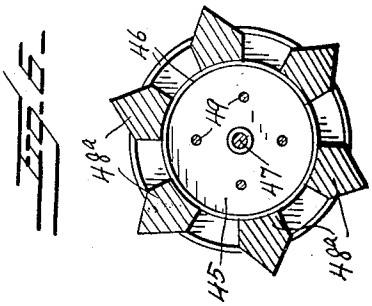
APPLICATION FILED MAR. 10, 1919.

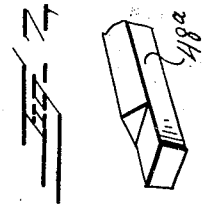
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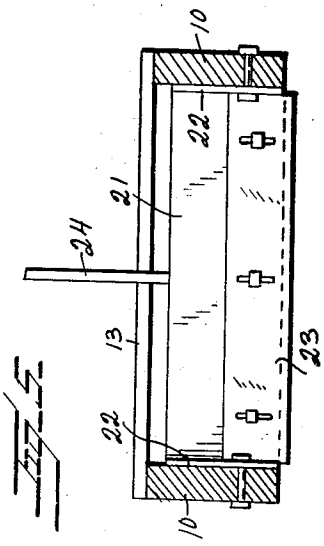
Patented Apr. 20, 1920.

2 SHEETS—SHEET 1.









Inventor

G. A. Ghent

By Watson E. Coleman

Attorney

G. A. GHENT.

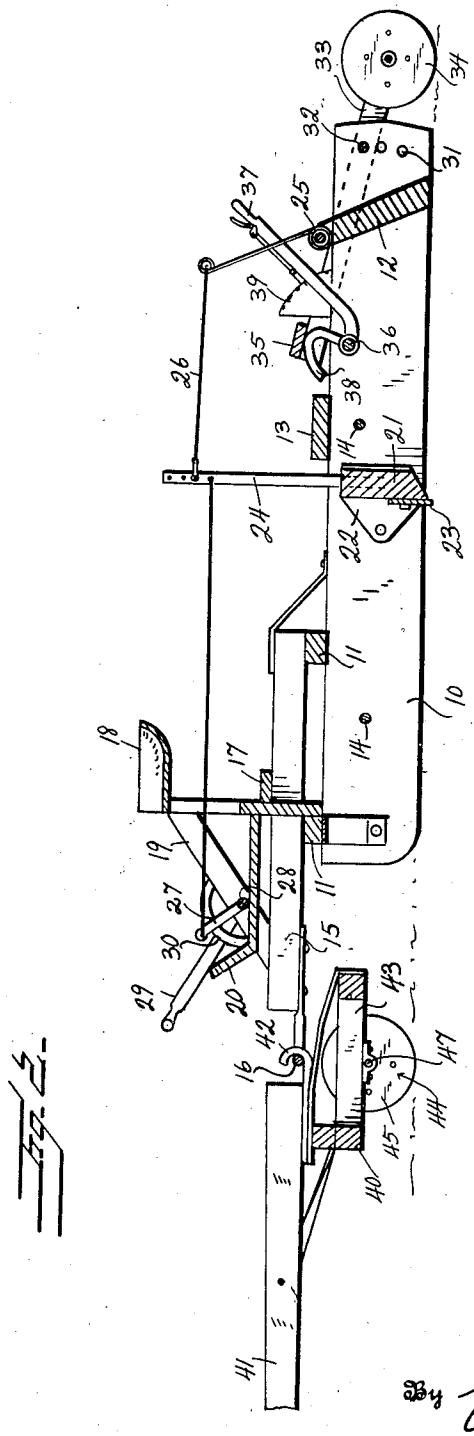
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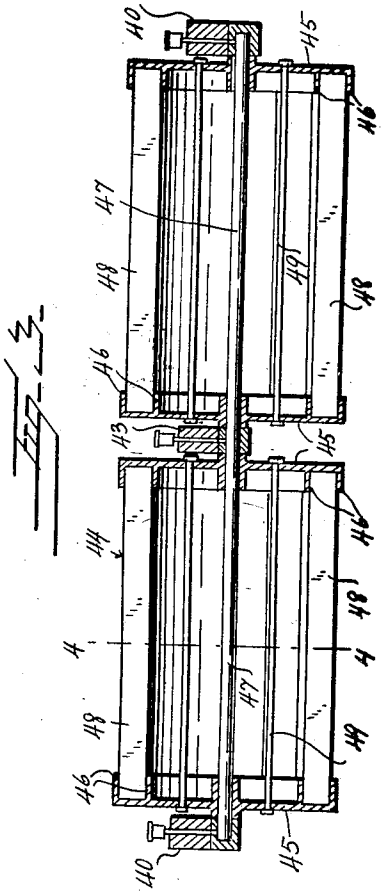
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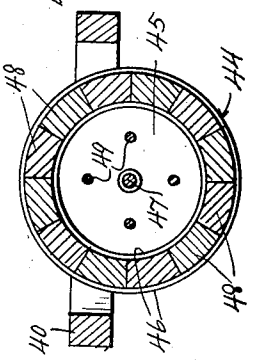
1,337,355.

Patented Apr. 20, 1920.

2 SHEETS—SHEET 2.







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UNITED STATES PATENT OFFICE.

GEORGE A. GHENT, OF BUHL, IDAHO.

LAND-LEVELING MACHINE.

1,337,355. Specification of Letters Patent. Patented Apr. 20, 1920.

Application filed March 10, 1919. Serial No. 281,721.

To all whom it may concern:

Be it known that I, GEORGE A. GHENT, a citizen of the United States, residing at Buhl, in the county of Twin Falls and State of Idaho, have invented certain new and useful Improvements in Land-Leveling Machines, of which the following is a specification, reference being had to the accompanying drawings.

This invention relates to earth working machines, and particularly to means for leveling or grading land.

The general object of the invention is to provide a very simple machine which may be used for leveling land by scraping off the soil in high places and carrying the soil to low places, and at the same time rolling the land to break up clods and level the surface after the scraper has passed.

A further object is to provide a device of this character in which the frame supporting the forward pair of rollers acting to break up the clods may be detached from the body of the machine and used separately, or the machine used without the forward pair of rollers.

A further object is to provide a construction of this kind with a forward pair of rollers used for breaking up clods, a rear roller used for rolling and smoothing the surface of the soil after it has been scraped, and an intermediate scraper, and provide means whereby the intermediate scraper and the rear roller may be adjusted to suit the exigencies of the occasion.

A further object is to provide a construction of this character wherein the scraper is resiliently urged into engagement with the soil and wherein a pedal is operatively connected to the scraper to adjust the angle of the scraping blade and carry it into operative position.

Other objects will appear in the course of the following description.

My invention is illustrated in the accompanying drawings, wherein:—

Figure 1 is a top plan view of a land leveler constructed in accordance with my invention;

Fig. 2 is a longitudinal sectional view thereof, the rear and front rollers being shown in elevation;

Fig. 3 is a vertical diagrammatic section of the front rollers;

Fig. 4 is a section on the line 4—4 of Fig. 3;

Fig. 5 is a section on the line 5—5 of Fig. 1;

Fig. 6 is a sectional view on the same line as Fig. 4 but showing a modified form of staves; and

Fig. 7 is a fragmentary perspective view of the staves shown in Fig. 6.

Referring to these drawings, it will be seen that my leveling machine comprises a supporting frame consisting of two longitudilally extending sills or runners 10. These are connected by a pair of transverse braces 11 at the forward end of the machine, and resting upon the top of the sills is a rear transverse brace 12 which extends down for the full depth of the runners and is inclined slightly rearward and downward, and an intermediate transverse brace 13. Transverse bolts 14 may be disposed at any desired intervals so as to brace these runners and hold them securely in place. I do not wish to limit myself to any particular manner of connecting these runners to form the frame of the machine.

Resting upon the transverse braces 11 are the forwardly convergent beams 15 which carry at their forward ends the clevis or eye 16. These convergent braces are connected by means of a brace 17 and these convergent beams and the brace 17 together support the seat 18, the downwardly and forwardly extending seat supports 19, and the foot piece 20.

Pivotally supported intermediate the forward and rear ends of the runners 10 is the scraper 21. This consists of a transversely extending beam connected by ears 22 to the runners 10, to which these ears are pivoted. The scraper 21 is provided with a scraper blade 23 and normally the lower edge of this scraper with its blade extends slightly below the runners. When the upper edge of the scraper is tilted forwardly, however, the scraper will, of course, be raised out of its operative position. The scraper is provided with the upwardly extending arm 24 and mounted upon the brace 12 is a coiled spring 25 having an upwardly extending arm connected by a cable 26 to the arm 24, and from this arm the cable 26 extends to an arm 27 carried by a shaft 28 which is illustrated as being mounted within the seat supports 19, and as being provided with a lever 29 operating over a sector 30. This lever is preferably in the from of a pedal so that the operator by a pres-

sure of his foot may shift the lever to rotate the scraper into any adjusted position. When this pedal is released, the spring 25 will act to rotate the scraper to its operative position. The angle of the scraper may, of course be controlled by adjusting the foot pedal 29 on the scraper 30.

The rear ends of the runners 10 are provided with a plurality of openings 31 arranged in vertical series, and through any of which openings the transverse rod 32 may be passed. This transverse rod supports the oppositely disposed arms 33 which are pivoted upon the rod, the rear ends of these arms carrying the transversely extending land roller 34. The arms extend forward and upward and are connected by means of a transverse brace 35. Disposed below the brace 35 is a rock shaft 36 having at one end a handle 37 and this rock shaft is formed at its ends with the curved portions 38 constituting cams, which bear against the under face of the transverse brace 35. This handle 37 may operate over a sector rack 39 and when the handle is shifted rearward, these cams will lift the transverse brace 35 and depress the rear end of the roller so that the rear ends of the runners 10 will be lifted off the ground. When the brace 35 is depressed, however, the roller 34 will rise to a level with the under faces of the runners, and the weight will be distributed along the entire machine.

In order to provide means for breaking the clods or lumps of earth in advance of the scraper where this is necessary, I provide a land roller comprising a frame 40 and having mounted thereon a tongue 41 which extends at its rear end over the frame and is provided with the hook 42 adapted to engage the clevis 16. This frame has an intermediate brace 43 and disposed on each side of the brace are the rollers 44. Each of these rollers comprises a head 45 having annular, inwardly extending flanges 46 at the perimeter of the head and having a central hub through which the axle or shaft 47 passes. Disposed between the annular flanges 46 are staves 48 which may be disposed nearer to or farther from each other as the exigencies of the case may require, and the heads are connected by longitudinally extending bolts 49. It will be obvious that if the staves be placed close together, a roller having an almost unbroken or uninterrupted periphery will be provided, whereas if the staves are placed farther apart, there will be provided a roller which will have considerable irregularity in form and will, therefore, tend to break up and smash the clods or lumps of earth in front of the machine. It will be obvious that with this construction, staves of various forms may be used, and as indicated in Fig. 6, these staves 48a might have sharpened edges or corners to more effectively break up the ground. It will be obvious that the staves can be readily changed whenever desired. One of the drums or rollers so formed will be keyed to the shaft or axle 47 and will rotate with this axle, while the other drum or roller will be free to rotate on the axle. This will make the forward rollers turn easily when the machine is being turned.

It will be seen that inasmuch as this roller frame is connected to the main frame by means of the hook 42 engaging the clevis 16, that this forward roller frame may be readily shifted and will make the machine very easy to guide. Furthermore, by forming this front roller frame 40 as described, it may be detached and used as a separate roller when desired. It will be also obvious that the team may be directly connected to the clevis 16 without the use of the forward roller frame when desired.

This machine in its practical embodiment will be approximately 26 feet long, and about 6½ feet wide. Preferably, hard oil cups will be used in connection with all the bearings so as to secure requisite lubrication. The axle or shaft 47 and the rear shaft or the drum 34 will be supported by cast boxes bolted to the under sides of the supporting arms and the ends of the outside boxes will be closed to keep out dust or sand. The rearmost roller 34 will be keyed to its shaft and this shaft will rotate in closed ended boxes. When this roller 34 is depressed, as before stated, it will lift the rear end of the machine, and this will be particularly convenient when moving along a road or over culverts. It will be obvious that the bolt 32 may be adjusted in the holes 31 so as to secure a greater or less elevation of the rear end of the frame when the roller 34 is depressed. Preferably, the scraping blade 23 will be vertically adjustable upon the beam which forms the body of the scraper so as to secure a greater or less scraping action, and preferably the arm 24 will have a plurality of perforations, and the cable 26 will be provided with a U-bolt or clip whereby it may be connected to the arm 24 and may be adjusted in any one of said perforations to thus secure greater or less leverage or a greater throw of the blade. If the scraper blade should strike a stone or boulder or any other practically immovable object, which would tend to break the scraper blade, the scraper blade will move backward so as to ride over this object against the tension of the spring 25 and then as soon as the scraper blade has passed the object, the tension of the spring will cause the scraper blade to return to its original and scraping position.

It will be seen that in this machine, when in use the sills or runners will ride over the ground. The scraper is lower than the sills

and, therefore, cuts any elevated portion of the ground and carries the cut dirt along between the sills or runners until a low spot is reached, when the dirt will be caused to fill up this low spot. If it is required to deposit the dirt at one place, the driver may dump the dirt by throwing the pedal 29 forward, which pulls the scraper lever forward, raises the rear end of the scraper, and leaves the dirt where required. Upon taking off his foot or releasing the pedal, the spring 25 will pull the scraper back to its original position. This scraper will be approximately 18 inches deep and in rough ground will carry a full load without the load going over the top of the scraper. The forward rollers, as before remarked, break up the clods and lumps, the scraper levels the ground, and the rear roller finishes and rolls the ground. This machine is very effective and rapid in its work, as it simultaneously levels, rolls, and packs the ground, and it is particularly useful in leveling and rolling ground designed to be irrigated.

I claim:—

1. An earth working machine of the character described comprising parallel runners braced from each other and having a forwardly extending frame mounted at its forward end and provided at its extremity with a clevis, a roller supporting frame having a tongue provided with a hook to engage said clevis, an adjustable roller supported on the rear ends of the runners, and means for adjusting said rear roller to elevate the rear portion of the runners and increase the weight of the front roller by pressure of the clevis on the tongue.

2. An earth working machine including parallel runners, the rear portion of said runners having a series of openings, an adjustable bolt detachably engaged with one of said openings in each runner, arms pivoted to said supporting bolt, a brace connecting the front portions of the arms, a roller carrier at the rear ends of the arms, and means carried by the runners and operatively engaged with the brace for adjusting the roller.

3. An earth working machine of the character described comprising parallel runners braced from each other, a roller pivotally connected to the forward portion of said runner, arms pivoted to the rear ends of the runners extending rearward therefrom, a land roller rotatably mounted upon the rear ends of the arms, the forward ends of the arms being connected, a shaft having cams operatively engaging said arms, the shaft being provided with an operating lever, cams, when the shaft is turned in one direction acting to depress the rear roller, a transversely extending scraper having forwardly extending ears pivoted to the runners and having a pivotally extending arm, a spring operatively engaging said arm to urge the upper end of the arm rearward and the lower edge of the scraper forward and into operative position, a manually operable lever, and an operative connection between said lever and said arm to thereby shift the scraper against the action of said spring.

4. An earth working machine comprising a pair of parallel runners, braces connecting the runners, converging beams mounted upon the runners at their forward ends, a seat supported upon said beams, a forward roller supporting frame connected to said beams, a pair of independently rotatable rollers mounted in said frame, a supporting bolt extending through the rear ends of the runners, the rear ends of the runners being provided with a plurality of perforations trough which the supporting rod may be passed whereby to adjust it, arms pivoted upon the supporting bolt, a roller carried at the rear ends of the arms, the forward ends of the arms being connected by a transverse beam, a shaft disposed below the beam and having forwardly extending curved cams and having an adjusting lever whereby to raise the forward ends of the arms and depress the roller, a scraper pivotally mounted between the runner and having an upwardly extending arm, a spring mounted upon one of said braces operatively connected to the arm, and a shaft mounted in conjunction with the seat and operatively connected to the upwardly extending arm and shiftable to shift the scraper against the force of said spring.

In testimony whereof I hereunto affix my signature in the presence of two witnesses.

GEORGE A. GHENT.

Witnesses:
F. K. Hyde,
Geo. L. Layne.