

M. P. ZINDORF.

LEVELING AND SCRAPING MACHINE.

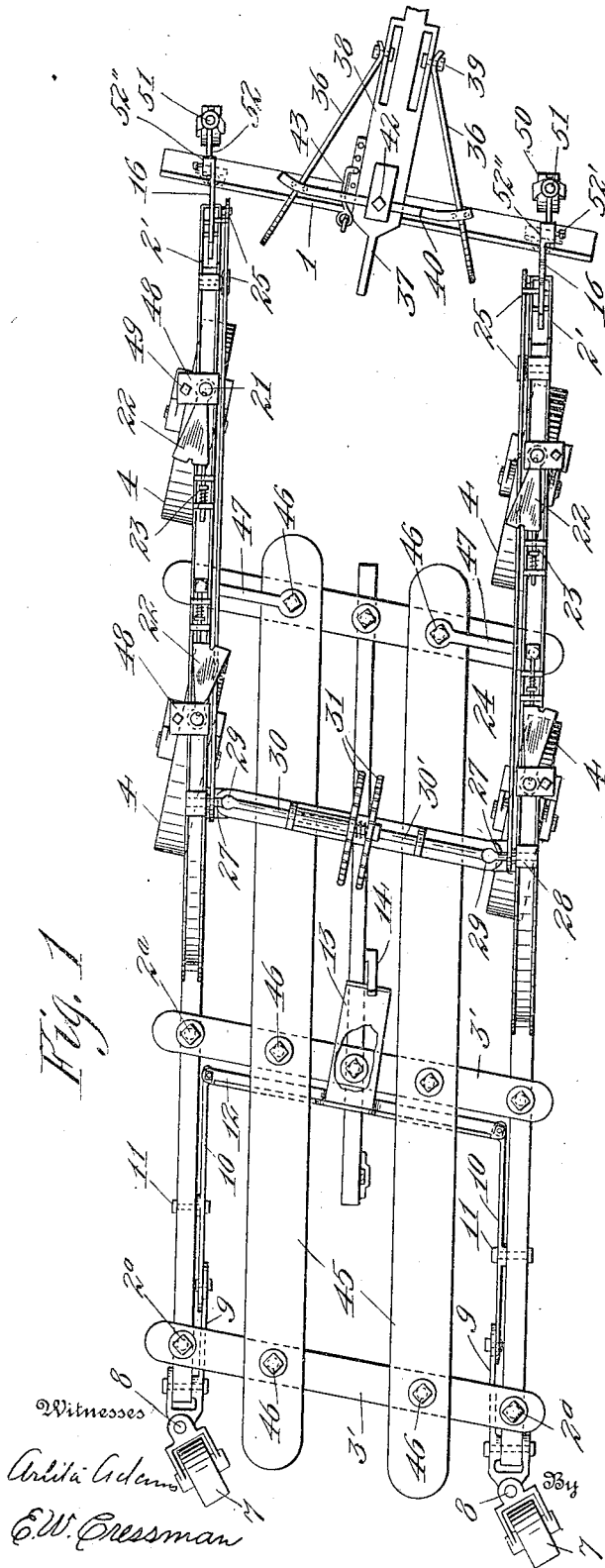
APPLICATION FILED MAY 14, 1908. RENEWED AUG. 26, 1909.

952,663.

Patented Mar. 22, 1910.

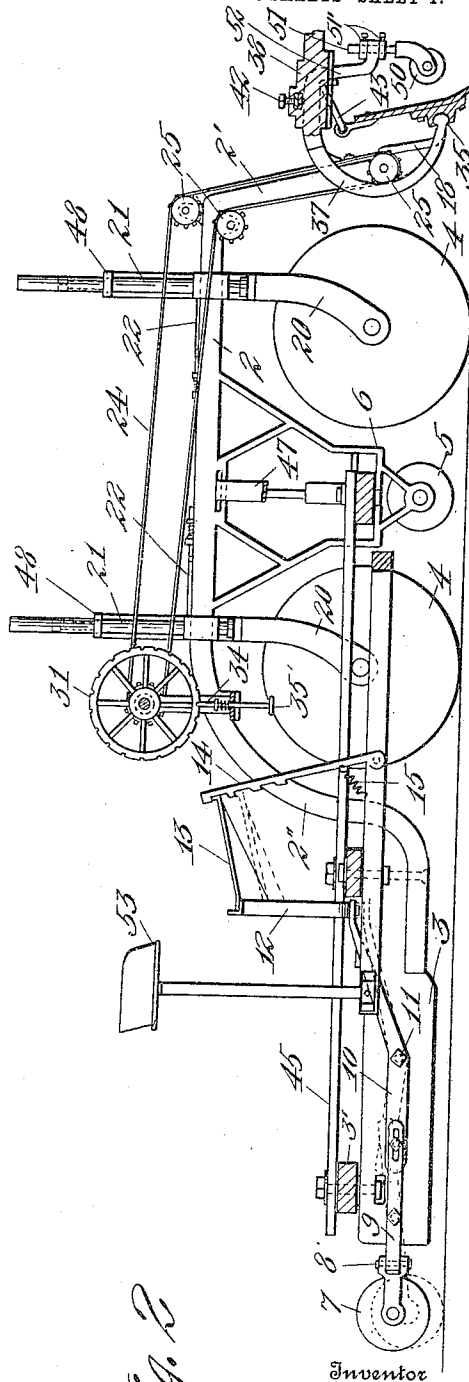
3 SHEETS—SHEET 1.

Fig. 1



Witnesses

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Fig. 2
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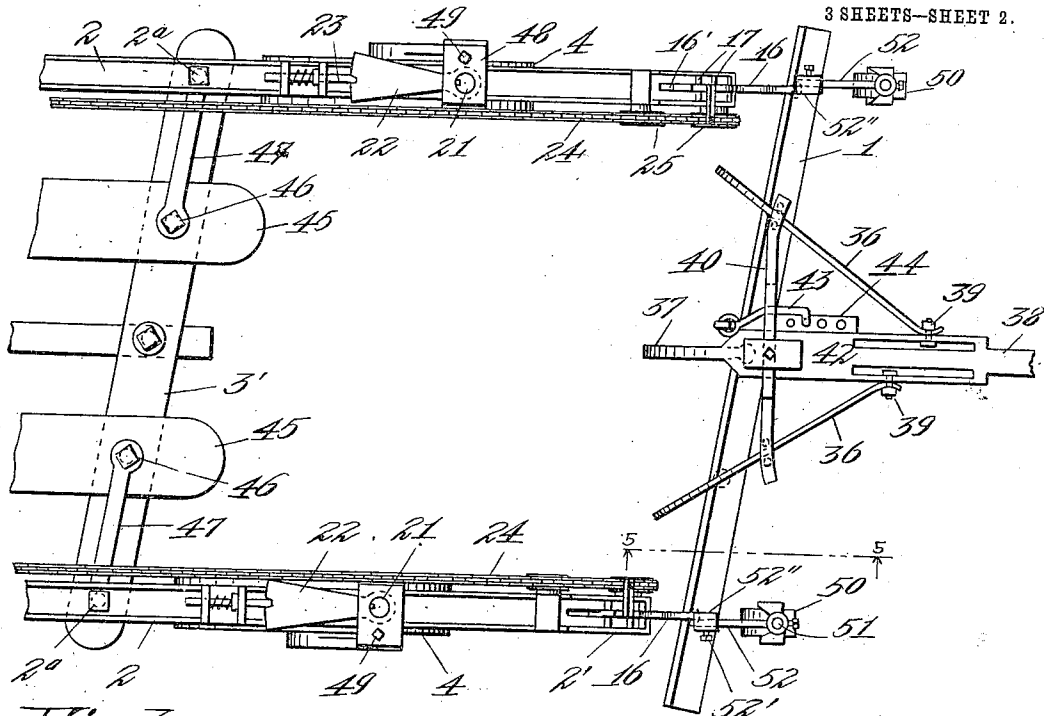


Fig. 3

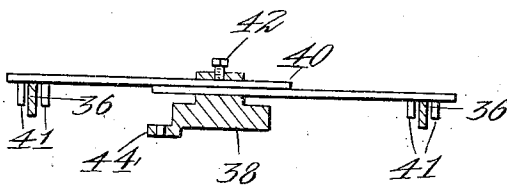


Fig. 4

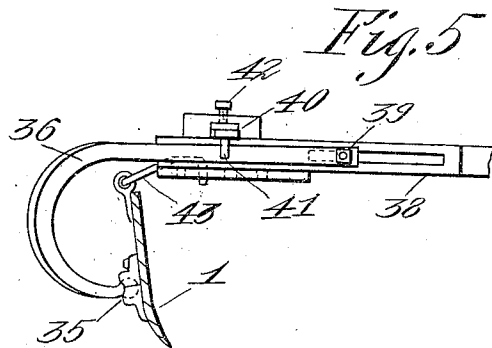


Fig. 5

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UNITED STATES PATENT OFFICE

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LEVELING AND SCRAPING MACHINE.

952,663.

Specification of Letters Patent.

Patented Mar. 22, 1910.

Application filed May 14, 1908, Serial No. 432,935. Renewed August 26, 1909. Serial No. 514,811.

To all whom it may concern:

Be it known that I, MATTHIAS P. ZINDORF, a citizen of the United States of America, and a resident of the city of Seattle, in the county of King and State of Washington, have invented certain new and useful Improvements in Leveling and Scraping Machines, of which the following is a specification.

My invention aims primarily to provide an apparatus of the above character, embracing certain features which enables the operation of leveling and grading being rapidly carried on in an efficient manner.

A further object resides in the provision of suitable wheels on which the machine proper can be supported in an elevated position as it is being hauled to and from the scene of work or turned around.

Other objects will be set forth as the description progresses, and those features of construction, arrangement and combinations of parts in which my invention resides, succinctly set forth in the appended claims.

Referring now to the accompanying drawings: Figure 1 is a view in top plan of my invention, with parts broken away and illustrating more particularly the arrangement of the various parts while the machine is turned. Fig. 2 is a longitudinal sectional view thereof. Fig. 3 is a top plan view, on enlarged scale, of the forward portion of the machine, the various parts being arranged as when the machine is operating over a straight course. Fig. 4 is a sectional view taken through the draft tongue, illustrating on enlarged scale the extensible and contactible trace carried thereby. Fig. 5 is a section taken on line 5—5 of Fig. 3. Fig. 6 is a view partly in elevation and partly in section, taken from the front of the machine with the scraper removed. Fig. 7 is a fragmentary sectional view of one of the slidably supported carriers to which the scraper is secured, and Figs. 8 and 9 are detail views on enlarged scale.

In carrying out my invention, I provide a suitable frame on the forward end portion of which a scraper 1 is supported, said frame comprising side members 2, formed of channel bars, having forward and rearward depending portions 2', 2'' respectively, to the latter of which rearwardly extending runners 3 are fixed. Members 2 are pivotally connected by bolts 2^a to cross members 3', where-

by either of said members can be adjusted longitudinally independently of the other to effect setting of the scraper to a diagonal position relatively to its line of movement, the forward cross member being connected directly to depending brackets 6, fixed to members 2, and the rear ones, as now considered, being connected to runners 3.

Reference numeral 4 indicate wheels on which the frame can be raised and lowered to effect a corresponding adjustment of the scraper, and 5 indicates suitable bearing members, preferably consisting of wheels, journaled in the brackets 6, which serve to prevent lowering of the frame beyond a predetermined distance and further, to support the frame, acting conjointly with runners 3, when the machine is operating on comparatively level ground.

To the rear of runners 3 are trailer wheels 7, journaled in frames pivoted at 8, for horizontal swinging, to levers 9, pivoted, as shown, to the runners of the frame side members. Connected to the forward end of levers 9 are the operating levers 10, the latter being pivoted at 11 to runners 3 and having their forward ends pivotally connected to a transverse connecting member 12, provided with a foot part 13. By depressing foot part 13, wheels 7 may be adjusted downwardly to bear upon the traction surface to relieve the runners 3 of frictional engagement therewith, and as may be desired in turning the machine. A toothed catch 14 is normally yieldingly held in engagement with foot part 13, as by a spring 15, to hold the same as adjusted by the operator.

Reference numeral 16 indicates carriers slidably supported in the end portions 2' of the frame side members, the same projecting through slots 16' of the webs of said end portions and being provided with suitable anti-friction rollers 17 for engagement with the opposite faces of said webs (see Figs. 6 and 7). Fixed to carriers 16 are arms 18 to which scraper 1 is connected by ball and socket joints 19.

Wheels 4 are journaled in frames 20 having fixed stems 21, journaled in the frame side members, whereby they can swing to effect short turning of the machine. Each stem 21 is provided with a notched plate or part 22 in the notches of which spring pressed catches 23 normally engage (see Figs. 3 and 8) and thereby tend to prevent

swinging of the wheel frames. The walls of the notches, also the ends of the catches, are beveled however, so the catches will be readily disengaged, as illustrated in Fig. 1, when the frame side members are forced toward one another, incident to the turning around of the machine, as will be more fully described hereinafter.

Reference numeral 24 indicates flexible operating means, consisting preferably of endless chains, as shown, to which the carriers are secured (see Fig. 7), so as to be adjusted thereby. These endless chains pass over suitable guide sprocket wheels 25 to drive sprocket wheels 26. The drive sprocket wheels are fixed, each to a respective shaft 27, journaled in boxes 28 on the frame side members and having their inner ends connected by ball and socket joints 29 to shafts 30, 30'. The contiguous end portions of shafts 30, 30' are preferably telescoped as shown particularly in Fig. 6 and provided with hand wheels 31, for operating said shafts, one of which hand wheels is slidable on its shaft toward and from the other, whereby the wheels can be arranged in proximity to one another so that both can be readily grasped by one hand and operated simultaneously. To hold the slidable hand wheel to movement with its shaft, a rib or spline as 32 is provided. A spring 33 yieldingly holds the slidable hand wheel well spaced from the other, so that the hand wheels can be independently operated to effect raising of one or the other of the ends of the scraper. Catches 34, having extensions 35' adapted for engagement by the feet of the operator, hold the hand wheels against accidental turning.

Connected to the rear face of the scraper by suitable universal connections 35, shown as being of the ball and socket type, are the upwardly and forwardly curved bars 36 and 37, the latter of which is rigidly secured to a tongue 38 to which the draft power is applied. Bars 36 have their forward end portions adjustably secured by bolts 39 to the sides of draft tongue 38.

Reference numeral 40 indicates an extensible and contractible brace for bars 36, the same being formed in sections as clearly shown (see Fig. 4) and provided at their outer ends with depending lugs 41 between which bars 36 are snugly fitted. The inner end portions of these brace sections are normally secured from movement, as by a screw 42.

Any suitable means may be provided for holding the scraper from tilting from its set position, I prefer however to employ a hook 43 which may be engaged with any of the apertures of a flange part 44 of the draft tongue, as will be readily understood.

Reference numeral 45 indicates suitable longitudinal members which are pivoted, as

by bolts 46, to the cross members 3' to form a platform.

Reference numeral 47 indicates suitable braces which are pivoted to the platform and to the frame members, as shown.

Bearing on the wheel frames 20 are brackets 48 in which screws 49 are threaded, said screws having their lower end portions swiveled in the frame side members 2, as shown, (see Fig. 6) so that when operated the machine frame can be elevated on wheels 4 to raise the scraper clear of the ground, or either side of the frame elevated independently of the other, thereby enabling the machine frame being supported in a horizontal position when the machine is operating across the side of a hill.

To adjust scraper 1 to a diagonal position relatively to the line of movement of the machine, bolts 39 are unfastened and set screw 42 loosened so as to release bars 36 and their brace 40, then tongue 38 is swung to the desired angle relatively to the scraper, this being permitted by reason of the ball and socket connections. Said bolts and set screws are then tightened so that the scraper will be held to movement with the tongue, then said tongue is moved back to its former position, whereupon the scraper will be set so as in operating, to discharge the collected dirt from its rear end to one side of its path. In turning the apparatus around, the draft tongue being swung to one side, the scraper is moved also so as to advance one side member 2 and force the other rearwardly. During this movement of the frame side members they, by reason of their pivoted connection with one another, are moved toward one another, which movement sets wheels 4 in an angular position as shown in Fig. 1 when the apparatus will be enabled to make a comparatively short turn.

Reference numeral 50 indicates gage wheels arranged in advance of the scraper for lifting the same over abrupt rises of the ground. These gage wheels are journaled in suitable frames, as shown, said frames having vertical stems 51, journaled in arms 52. Collars 51' on said stems, may be adjusted as desired, to effect vertical adjustment of the gage wheels. Arms 52 are secured by set screws 52' to arms 52'', fixed to carriers 16, whereby said arms 52 can be slid to adjust the gage wheels toward and from the scraper, as will be readily understood.

When not operating on hill sides as previously described, the frame is adjustable relatively to wheels 4 to bring the bearing members 3 and 5 to bear on the ground with said wheels, and the operator occupying a seat as 53 adds his weight to the rear portion of the machine whereupon the machine will be so balanced that the forward wheels 4 can ride well over depressions in the ground before the machine will tilt forwardly, thereby

permitting of a more perfect distribution of the earth carried by the scraper.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent of the United States of America, is:

1. In a machine of the type set forth, a frame comprising spaced side members connected for lengthwise adjustment, supporting wheels for said frame, and a scraper on the forward end portion of said frame.

2. In a machine of the type set forth, a frame comprising spaced side members pivotally connected, whereby they can be independently advanced, supporting wheels, means for raising and lowering said frame relatively to said supporting wheels, and a scraper supported on said frame.

3. In a machine of the type set forth, a frame comprising spaced side members pivotally connected, whereby they can be independently advanced, supporting wheels, axles on which said wheels are journaled, said axles being connected to said frame for horizontal swinging, and a scraper supported on said frame.

4. In a machine of the type set forth, a frame comprising spaced side members pivotally connected, whereby they can be independently advanced, supporting wheels, axles on which said wheels are journaled, said axles being connected to said frame for horizontal swinging, means yieldingly holding said axles from swinging, and a scraper supported on said frame.

5. In a machine of the type set forth, spaced members connected for independent lengthwise adjustment, a scraper supported by said members, supporting wheels for said members, pivotally supported frames in which said wheels are journaled, and means engaged with said frames for raising and lowering said members.

6. In a machine of the type set forth, comprising a scraper, a frame provided with spaced members arranged for independent lengthwise adjustment, said scraper being supported on the forward end portions of said members, wheels supported for swinging to angular positions relatively to said frame, means for raising and lowering said frame on said wheels, and draft connections on said scraper.

7. In a machine of the type set forth, comprising a scraper, spaced members on which said scraper is supported, said members being supported for independent lengthwise adjustment, pivoted wheel frames provided with supporting wheels for said members and threaded adjusting members for raising said first named members on said wheel frames.

8. In a machine for leveling and scraping, a frame, a scraper supported for swinging on said frame so that either of its ends

can be elevated independently of the frame, and gage means disposed forwardly of said scraper and connected to swing therewith.

9. In a machine of the type set forth, a frame, spaced carriers supported on said frame for vertical sliding, means for independently raising and lowering said carriers, and a scraper connected to said carriers for movement therewith.

10. In a machine of the type set forth, a frame, spaced carriers supported on said frame for vertical sliding, means for independently raising and lowering said carriers, and a scraper connected to said carriers by ball and socket joints.

11. In a machine of the type set forth, a frame, spaced carriers supported on said frame for vertical sliding, endless flexible means to which said carriers are connected, means for imparting movement to said flexible means, and a scraper swingingly connected to said carriers.

12. In a machine of the type set forth, a frame, spaced carriers supported on said frame for vertical sliding, endless flexible means to which said carriers are connected, means for imparting movement to said flexible means, a scraper swingingly connected to said carriers, and gages disposed forwardly of said scraper and being connected to said carriers.

13. In a machine of the type set forth, a frame, spaced carriers supported on said frame for vertical sliding, a scraper carried by said carriers, endless chains to which said carriers are connected, a pair of drive shafts, means for holding said shafts from rotating, hand wheels on said shafts, one of said hand wheels being slidable toward and from the other, and sprocket wheels on said shafts over which said sprocket chains pass.

14. In a machine of the type set forth, a frame, a scraper supported by said frame at the forward end portion thereof, and supporting wheels for said frame arranged rearwardly of said scraper, said frame extending rearwardly of said wheels, whereby to counterbalance the forward portion of the frame and hold the same elevated when it is moved over a depression.

15. In a machine of the type set forth, a frame, supporting wheels for said frame arranged one behind the other, and a scraper supported on said frame forwardly of said wheels, said frame extending rearwardly of the rear of said supporting wheels to serve as a counterbalance for the forward end portion of the frame, whereby the forward end portion of the frame and the forward of said supporting wheels can be moved well over depressions in the earth without said frame tilting forwardly.

16. In a machine of the type set forth, a frame, supporting wheels for said frame, and a scraper supported by said frame for-

wardly of said wheels, said frame extending rearwardly of said wheels to counter balance said scraper.

17. In a machine of the type set forth, a frame, a scraper carried by said frame adjacent the forward end thereof, bearing means for said frame arranged at the rear portion thereof, and relatively vertically adjustable bearing members arranged intermediate said scraper and said bearing means.

18. In a machine of the type set forth, spaced apart runners connected for independent lengthwise adjustment, a scraper supported by said runners, a draft tongue connected to said scraper for swinging independently thereof, bars connected to said scraper and releasable means for securing said tongue to said bars, whereby said scraper will be held to movement with said draft tongue.

19. In a machine of the type set forth, a scraper, a draft tongue connected to said scraper for lateral swinging independently thereof, rigid members for securing said blade to movement with said tongue, said members being swingingly connected to said blade and slidably engaged with said tongue, and means for rigidly securing said members to said tongue.

20. In a machine of the type set forth, a scraper, a draft tongue, and rigid members spaced on opposite sides of said draft tongue connected by universal joints to said scraper, and means for securing the forward end portions of said members to said draft tongue.

21. In a machine of the type set forth, a scraper, a draft tongue, and rigid members spaced on opposite sides of said draft tongue connected by universal joints to said scraper, and an extensible and contractible brace secured to said draft tongue and bracing said rigid members.

22. In a machine of the type set forth, a scraper, a draft tongue having a universal connection therewith, and means connected

to said scraper and to said tongue for holding the tongue against swinging independently of said scraper.

23. In a machine of the type set forth, a frame provided with spaced pairs of bearing members, a scraper supported on said frame forwardly of said bearing members, and other pairs of bearing members, one of which is arranged between said first named pairs of bearing members and another rearwardly thereof, said last named pairs of bearing members being relatively adjustable in a vertical direction.

24. In a machine of the type set forth, a frame, a scraper supported on said frame, wheels, and means for independently elevating either side of said frame on said wheels.

25. In a machine of the type set forth, a frame, a scraper supported on the forward end portions of said frame, spaced bearing members for said frame arranged at each side thereof, wheels at the opposite sides of said frame, and means for elevating said frame and said bearing members on said wheels.

26. In a machine of the type set forth, a frame, a scraper on the forward end portion of said frame, bearing members at the rear portions of said frame, wheels arranged forwardly of said bearing members, means for elevating said frame on said wheels, and bearing members for said frame arranged between said wheels to act conjointly with said first named bearing members.

27. In a machine of the type set forth, a scraper, and means to which the draft is applied, said means being connected for angular adjustment to the rear face of said scraper adjacent the cutting edge thereof.

Signed at Seattle, Wash., this 7 day of May, 1908.

MATTHIAS P. ZINDORF.

Witnesses:

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ELYNE E. WALLIN.