

A. T. NEWELL.

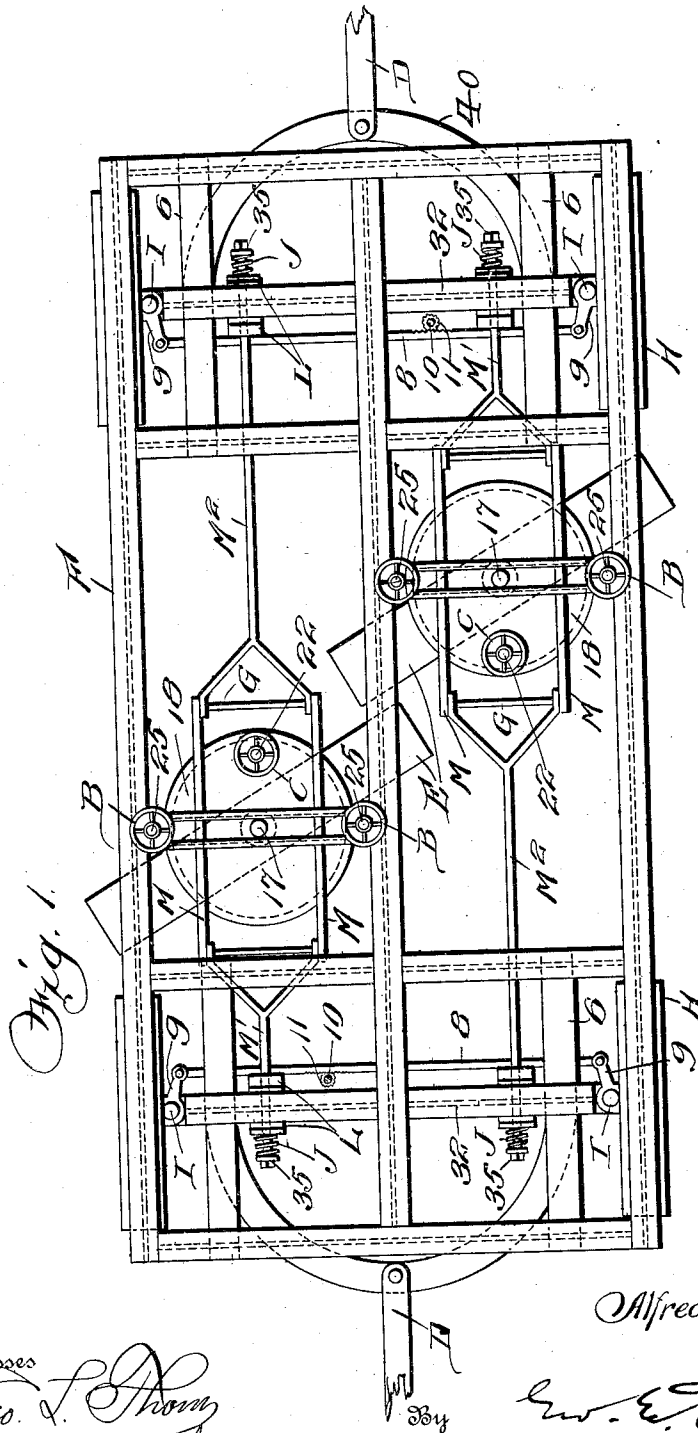
ROAD SCRAPER.

APPLICATION FILED JAN. 7, 1910. RENEWED AUG. 24, 1912.

Patented Mar. 25, 1913.

4 SHEETS-SHEET 1.

1,056,930.



Witnesses
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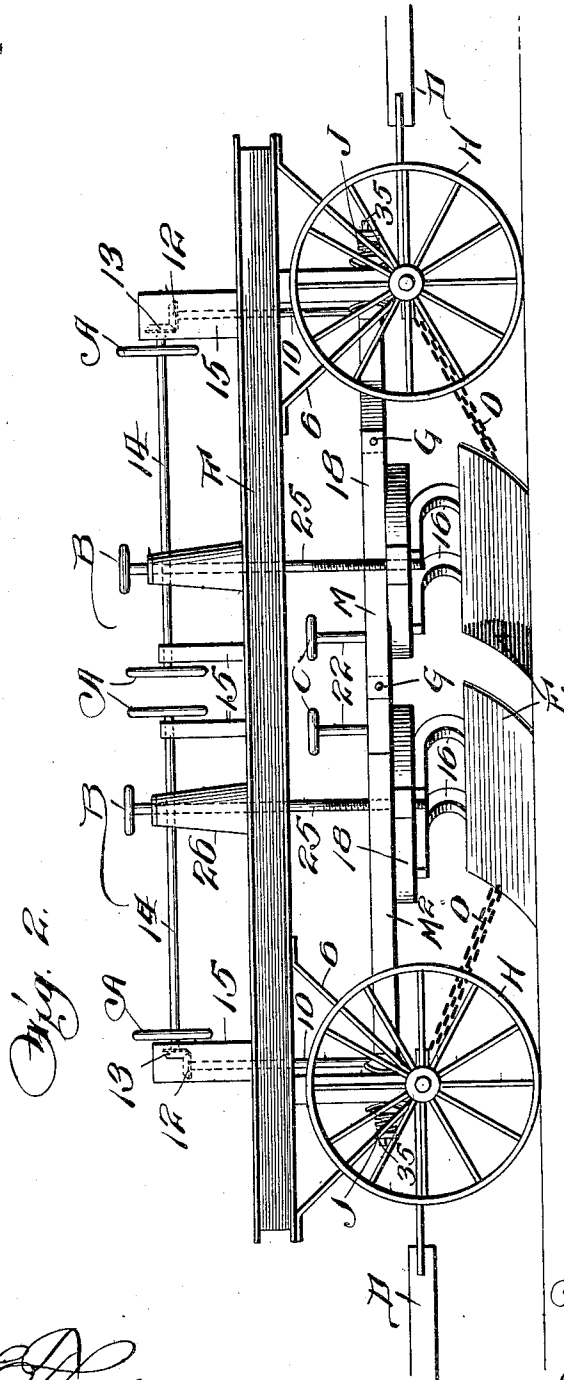
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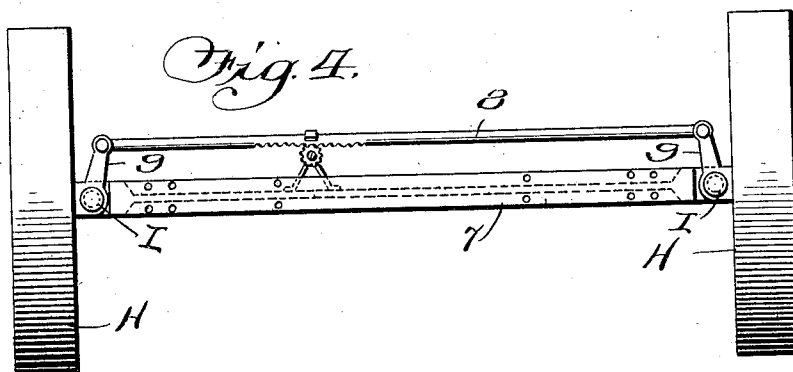
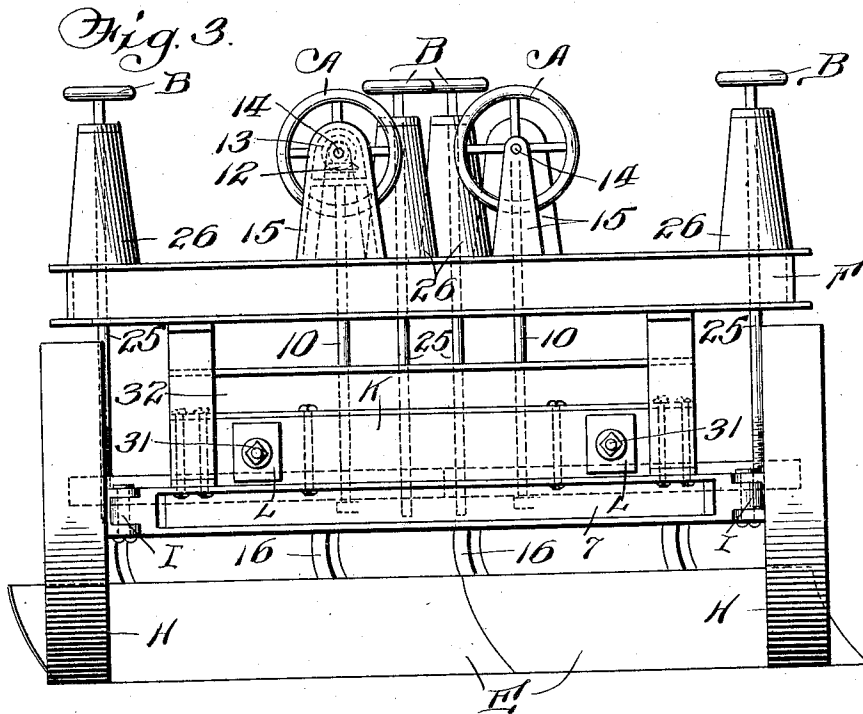
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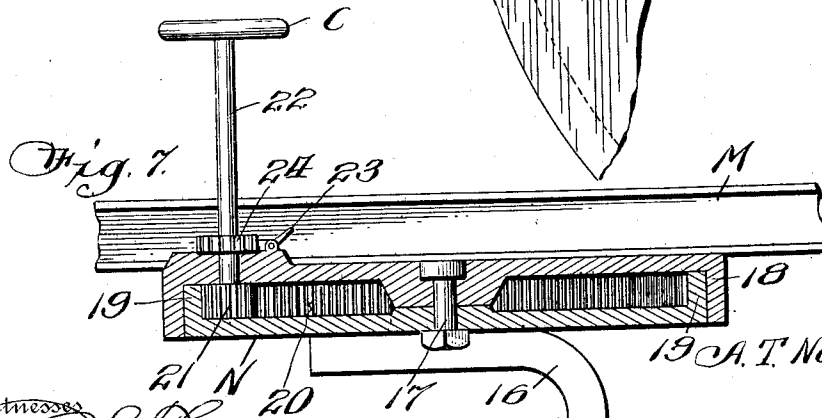
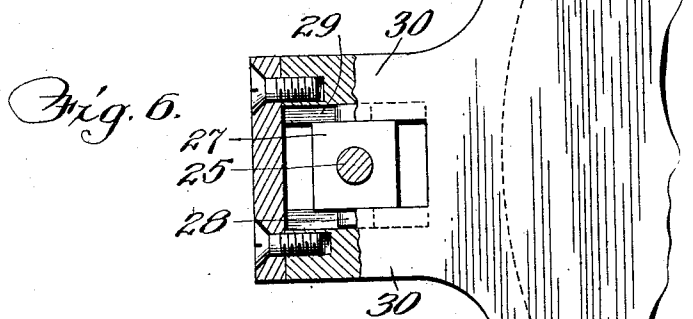
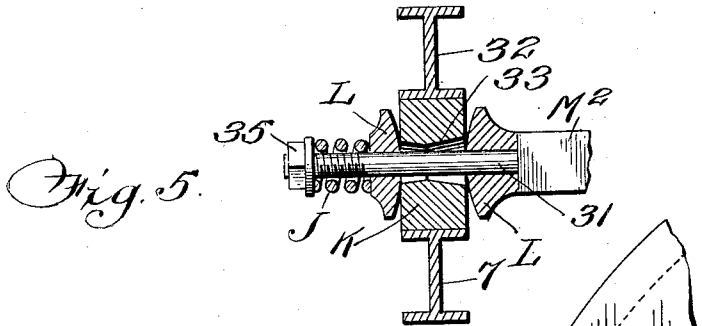
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UNITED STATES PATENT OFFICE.

ALFRED TURENNE NEWELL, OF BIRMINGHAM, ALABAMA.

ROAD-SCRAPER.

1,056,930.

Specification of Letters Patent.

Patented Mar. 25, 1913.

Application filed January 7, 1910, Serial No. 536,932. Renewed August 24, 1912. Serial No. 716,881.

To all whom it may concern:

Be it known that I, ALFRED T. NEWELL, a citizen of the United States, residing at Birmingham, in the county of Jefferson and State of Alabama, have invented certain new and useful Improvements in Road-Scrapers, of which the following is a specification.

This invention is a scraper particularly adapted and intended for grading roads, but capable of other uses if desired.

The object of the invention is to provide an improved road grader a characteristic feature of which is that it can be operated in either direction without being turned around, the machine being provided with a pair of blades which can be turned around to work in either direction, or which can be set at different angles so as to work both sides of the road at once.

Each blade is carried by an annulus which can be turned to vary the angle of the blade. Also the machine is mounted upon steering wheels at front and rear, and so can be guided, independent of motive power, to act in the exact position required. The ends of the machine can be steered independently at the same time, and the rear wheels set at an angle to the line of draft so as to avoid side pressure.

Improved means for transmitting a direct draft to the blades are provided, avoiding the use of a bent frame and applying the power more directly to the work.

In addition to the angular movement in a horizontal plane, improved means are provided for tilting the blades in a vertical plane, to give desired slope or contour to the road. The blades can also be raised or lowered vertically, and put out of action.

The machine is capable of operation with any desired draft power, such as traction engines, cables from distant power, or draft animals.

Various other advantages will be apparent from the following description and the accompanying drawings.

In the drawings, Figure 1 is a plan view of the machine, parts being removed for the sake of clearness. Fig. 2 is a side elevation. Fig. 3 is an end elevation, the draft rigging being removed. Fig. 4 is a plan in detail of part of the steering devices. Fig. 5 is a detail in section of a draft block and joint connections with one of the bolsters. Fig.

6 is a detail in plan of part of the turntable which supports the blade, showing the means for tilting the same vertically. Fig. 7 is a detail in vertical cross section of one of the turn-tables or blade carriers.

Referring specifically to the drawings, F is the main or platform frame conveniently made of I-beams or other structural metal, and suitable to support the parts hereinafter mentioned. It is rectangular in shape, as shown, but may be varied in any manner not inconsistent with its functions. It is mounted at opposite ends, by means of pedestals 6, upon fixed bolsters 7, to which are attached the steering wheels H, the arrangement at both ends being the same, so that steering may be effected at one or both ends. The connection between the wheels and the bolsters may be made by any suitable devices. I have illustrated knuckles I, pivoted to the ends of the bolsters and provided with journals on which the wheels turn. Suitable means to swing the knuckles are provided, comprising, as illustrated, a transverse rack bar 8 connected to arms 9 on the knuckles and shifted by means of a vertical shaft 10 provided with a pinion 11 meshing with the rack. At the upper end the shaft has a bevel pinion 12 meshing with the pinion 13 carried by a horizontal shaft 14 which extends lengthwise of the machine and has hand wheels A thereon, for convenience of operation by an operator at either the end or the middle part of the frame. These shafts are suitably mounted on supports 15 on the main frame. The devices described are duplicated as shown, for operation of both pairs of steering wheels. It is within the scope of the invention to substitute other suitable steering devices.

The machine carries twin blades arranged respectively on opposite sides of the middle longitudinal line of the machine. The blades and their mountings, and the means for adjusting the same, are duplicates, and a description of one will answer for both. Each blade E is connected by arms 16 to an annular carrier or turn-table N, which turns about a pivot pin 17 at the center thereof, said pin depending from a circular plate 18, the carrier N, being relatively rotatable, and the plate 18 being relatively fixed, the flange of the latter fitting against the flange 19 of the turn-table, to strengthen and steady the same and take some of the strain

off the pivot pin. The flange 19 of the turn-table has an internal gear 20 with which meshes a pinion 21 on a shaft 22 having a hand wheel C, said shaft extending through a bearing in the plate 18. By this means the blade carrier may be turned, and it may be locked at any desired angle by appropriate means, such as a latch 23 and notched wheel 24, to hold the turn-table as set. The turn-table and associated parts just described are carried by a flexible draft frame which extends between the bolsters. Said frame consists of a pair of parallel beams M which are fastened to the plate 18 so as to be rigid therewith, and said bars are united at opposite ends to yokes or Y-shaped bars M' and M², the connection between the parallel bars M and the branches of the yokes being made by means of long pivot bolts G. By reason of the flexible connections at G the blade carriers may be raised and lowered, such action being accompanied by slight longitudinal movement of the yokes, permitted by means to be described. Also the yokes and frame may be tilted laterally on a horizontal longitudinal axis to raise or lower either end of the blade, this action being also permitted by means to be described.

To raise the blade carrier, or to tilt the same as indicated, I provide a pair of long vertical screw rods 25, carried by supports 26 on the main frame and provided with hand wheels B at the top. These screws are located at diametrically opposite points on a transverse line across the turn-table. Each screw is connected to the turn-table by means of a swiveling nut 27 (see Fig. 6) which has opposite pins 28 which slide in grooves 29 in opposite jaws 30 projecting from the plate 18 at the periphery thereof. This sliding and swiveling connection is formed to accommodate the lateral variation incident to tilt of the turn-table table. It is evident that by rotating both screws the same way (if the threads are in the same direction) the turn-table and parts connected thereto will be raised or lowered as a whole. If one screw is turned one way and the other the other way, one side of the turn-table will be raised and the other lowered, and the blade accordingly, thereby varying the vertical angle of the blade with respect to the road.

In order to permit the adjustments of the blade as above described the stems of the yokes are connected to the respective bolsters by a pivotal and swiveling connection shown particularly in Fig. 5. Each stem M' or M² terminates in a circular rod 31 which extends through a block K inset between the bolster 7 and a cross beam 32 extending between the pedestals 6, the block being rigidly fixed to the bolster and beam. This block has a flaring bore 33 through which

the rod 31 extends, and said rod is provided with blocks L having segmental faces and bearing against opposite ends of the draft block K. The outside head L may slide on the rod 31, and bears against a spring J held by a nut and washer 35 on the end of the rod 31. This construction permits the stems of the yokes to turn in the blocks K, as when the blade is tilted, the blocks at the front and rear bolsters being in line with each other. It also permits the yokes to yield inwardly when the blade is raised by means of the wheels B, the springs J being compressed by this action to permit the longitudinal movement of the yokes; and furthermore, the thrust of the blade is transmitted through the springs to the draft blocks K and the bolsters, thereby easing the pressure of the blade. The swinging movement of the stems of the yokes is permitted by the enlarged bores 33 in the draft blocks.

A tongue D or other suitable draft device is attached to each bolster by draft irons 40 or the like. A chain O will preferably be attached to the end of each blade and connected to a fixed part of the machine, to assist in holding the blade at the angle desired, and the chains can be taken up or let out according to the angle of the blades.

The length of the blades is preferably such that their inner ends lap each other in the line of draft, as shown in Fig. 1, forming substantially a continuous scraper from one side of the machine to the other. They may be set at the same angle as shown, or one blade may be set one way and the other at the opposite inclination. The latter arrangement will be desirable in ridging up a road in the middle, the blades throwing toward each other. When set at similar angles one blade delivers to the other. By reason of the turn-tables on which they are mounted they may be turned entirely around or reversed, whereby the machine can be pulled in opposite directions back and forth. The steering devices are independent of the draft devices, which is advantageous in applying the machine to local conditions. When the machine is being transported the blades can be raised clear of the road. For narrow work one blade can be used with the other idle. Also one blade can be set at a considerable angle to gather from a ditch at the side of the road, and the other set substantially crosswise to act as a spreader at the crown of the road.

The scope of the invention is not limited to the exact construction shown and described, nor to the particular uses referred to. The blade holding and adjusting devices are capable of application to a single bladed machine, as well as to a double bladed one, and various other modifications may be made within the scope of the appended claims.

What I claim as new is:—

1. The combination of a wheeled main frame provided with bolsters rigid therewith and at both ends thereof, blocks fixed to the bolsters, a draft frame extending lengthwise under the main frame and between the bolsters, said draft frame having yokes at opposite ends with pivot stems extending through said blocks to turn therein, spring supported heads on the stems, bearing against the blocks to allow limited longitudinal yielding movement of the draft frame, a blade carrier attached to the draft frame, and suspension devices between the main frame and the carrier.
2. The combination of a wheeled main frame including bolsters at both ends thereof, a draft frame extending lengthwise under said main frame and comprising middle beams, and end yokes the branches of which are connected to the middle beams by transverse pivots and the stems of which have swiveling and yielding connections to the bolsters, a blade carrier attached to said middle beams, and adjustable suspension devices between the main frame and the carrier.
3. The combination of a wheeled main frame, a blade support supported under said frame and having grooved jaws at opposite sides thereof, screw rods depending from the main frame, and nuts on the rods, having pivot pins projecting into said grooves.
4. The combination in a wheeled scraper, of a flanged circular plate supported by the frame of the machine, a turn-table pivoted to said plate and provided with a circular peripheral flange, against which the flange of the plate fits, and an internal gear on said flange, a shaft extending through the plate, a pinion thereon meshing with said gear, and a scraping blade carried by said turn-table.
5. The combination of a wheeled frame, a pair of cooperating reversible scrapers carried thereby, and arranged to deliver from one to the other in either direction of draft, draft means at opposite ends of the frame, whereby it may be drawn in opposite directions, and steering means at opposite ends of the frame.
6. The combination of a frame, a pair of cooperating reversible scrapers carried by the frame and arranged to deliver from one to the other in either direction of draft, steering wheels at opposite ends of the frame, draft devices at opposite ends of the frame, and means independent of the draft devices to operate said wheels for steering.
7. The combination of a wheeled frame symmetrically constructed at opposite ends, and a pair of cooperating reversible scraping blades carried by the frame, side by side on vertical pivots, for operation in either direction, and adjustable on said pivots to deliver from one blade to the other when desired.
8. The combination of a wheeled scraper frame symmetrically constructed at opposite ends, a pair of cooperating reversible scraping blades carried thereby, and located side by side and adjustable to deliver from or to each other, steering wheels at opposite ends of the frame, and draft connections at opposite ends of the frame.
9. The combination of a wheeled scraper frame, and a pair of reversible independently adjustable cooperating scraper blades symmetrically arranged at opposite sides of the frame respectively, one blade being located in advance of the other to deliver material thereto.
10. The combination of a wheeled scraper frame symmetrically constructed at opposite ends for draft in either direction, and a pair of reversible independently adjustable cooperating scraper blades carried at opposite sides of the frame respectively and adjustable to deliver from one to the other in either direction of draft.
11. The combination of a wheeled main frame, a pair of draft frames extending lengthwise beside each other under the frame at opposite sides thereof, rotatable blade carriers secured to said draft frames, blades connected to said carriers respectively and rotatable therewith to act in either direction of draft and located adjacent to each other to deliver to each other, and adjustable to vary their angles with respect to each other and to the line of draft, and suspension devices between the main frame and the carriers, adjustable to vary the vertical angles of the respective blades.
12. The combination of a wheeled main frame, a pair of reversible scraping blades suspended side by side thereunder with one blade adjacent the rear end of the other to receive material therefrom in either direction of draft, and means to set the blades at various angles with respect to each other.

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

ALFRED TURENNE NEWELL.

Witnesses:

Mrs. B. L. WHITE,
E. L. PENRUDDOCKE.