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PATENTED AUG. 28, 1906.

R. S. SHELDON.
GRADING IMPLEMENT.
APPLICATION FILED MAY 29, 1905.

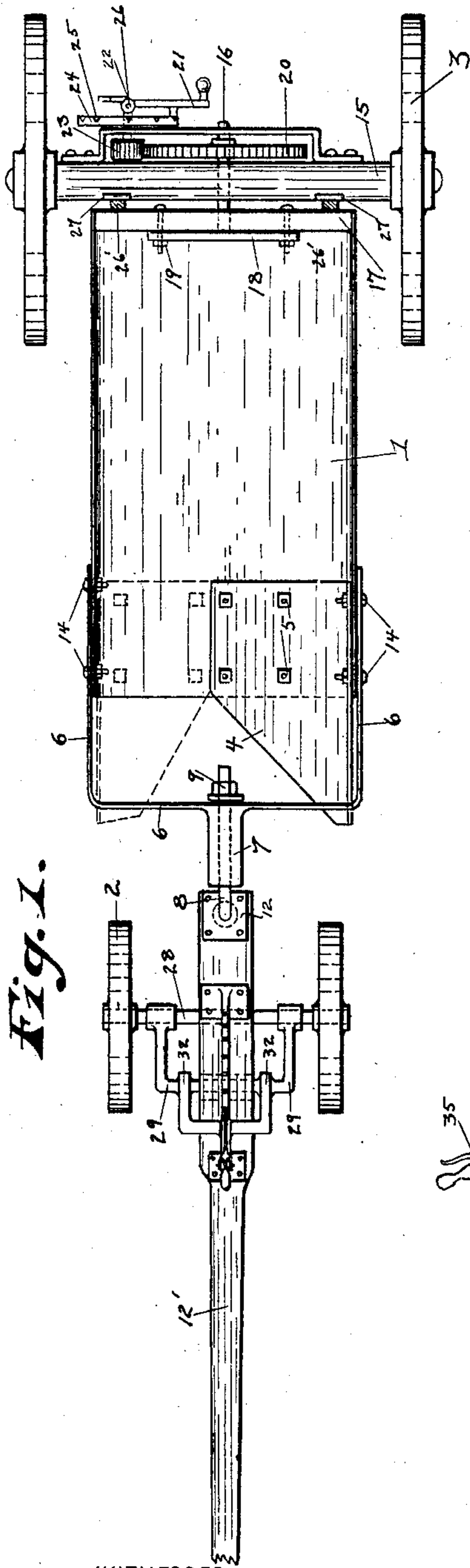


Fig. 1.

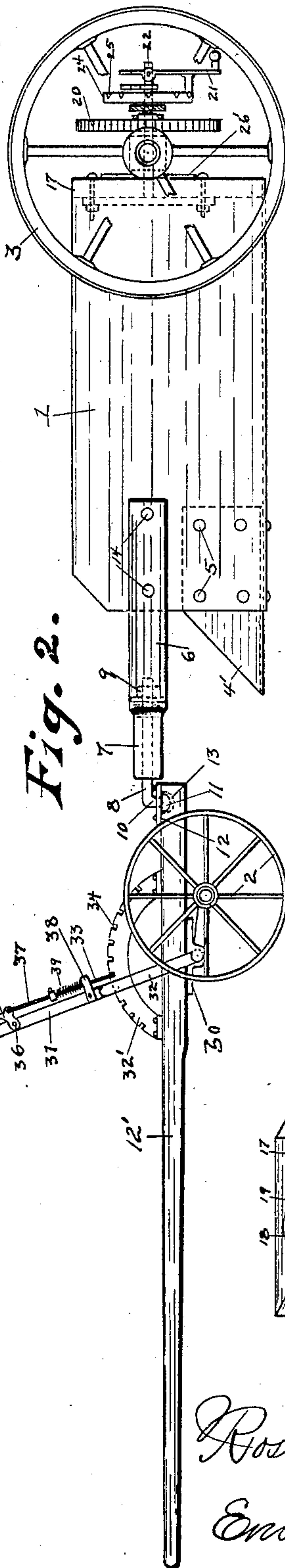


Fig. 2.

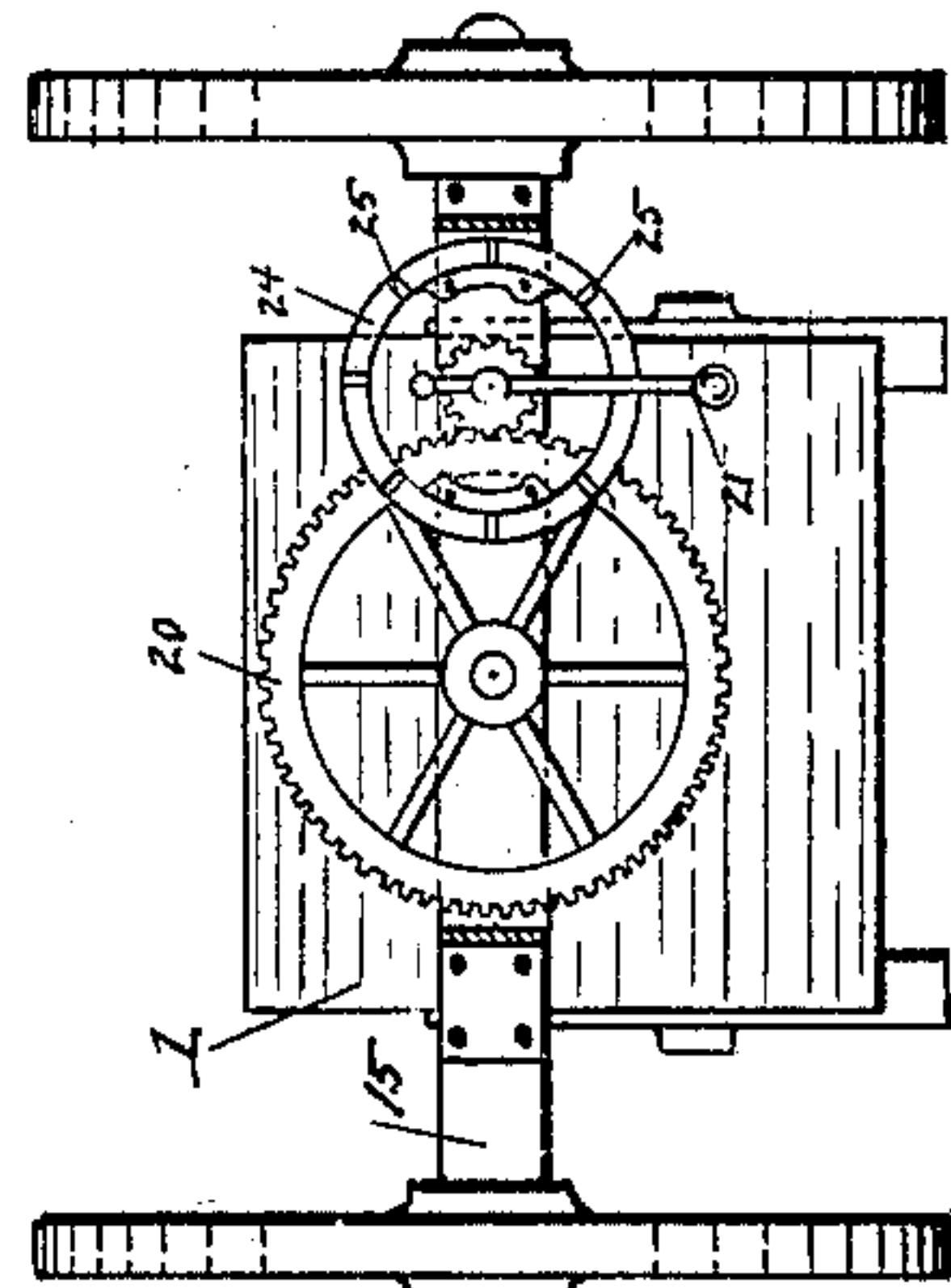


Fig. 3.

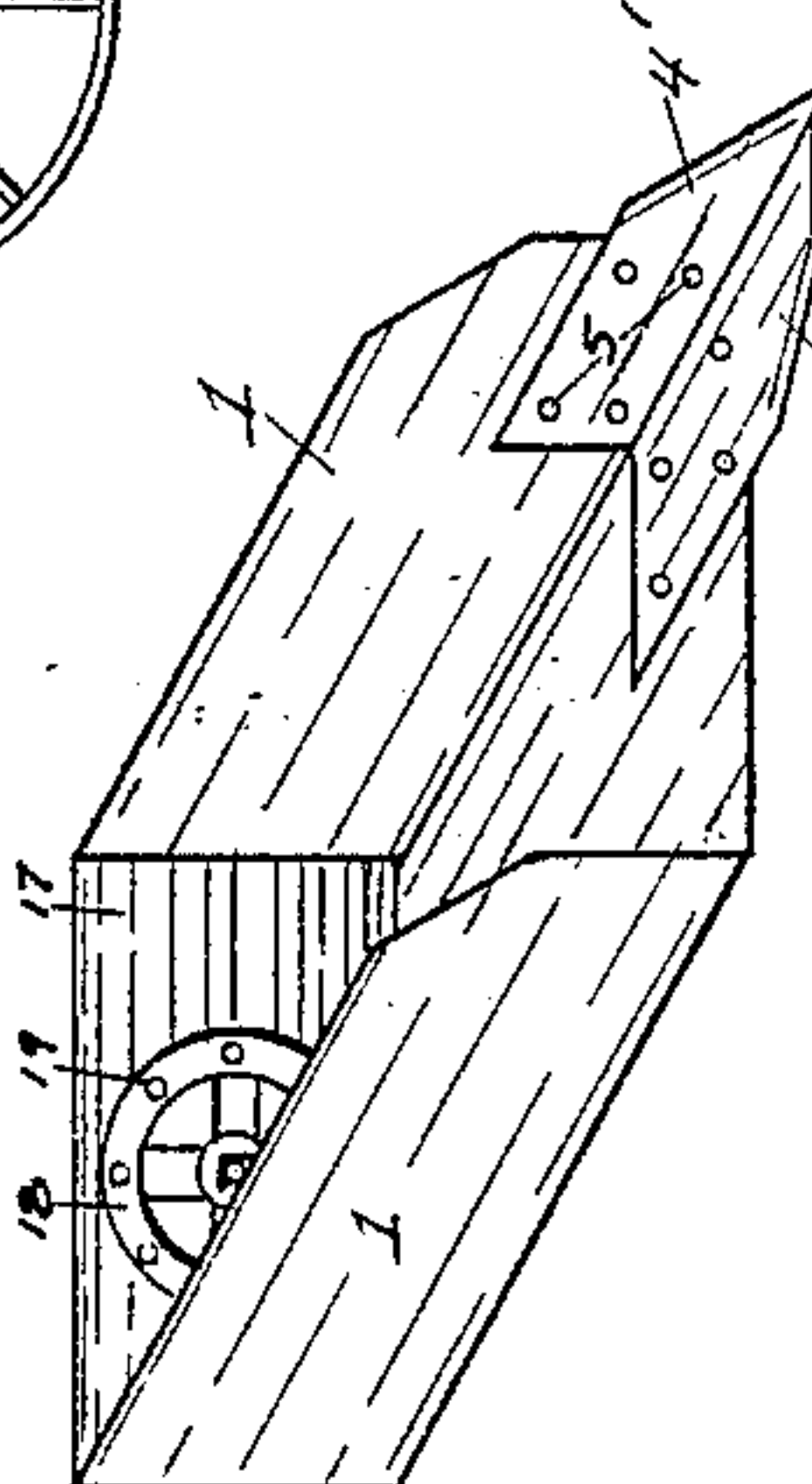


Fig. 4.

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UNITED STATES PATENT OFFICE

ROSCOE S. SHELDON, OF WEST ALLIS, WISCONSIN.

GRADING IMPLEMENT.

No. 829,491.

Specification of Letters Patent.

Patented Aug. 28, 1906.

Application filed May 29, 1905. Serial No. 262,732.

To all whom it may concern:

Be it known that I, ROSCOE S. SHELDON, a citizen of the United States, residing at West Allis, county of Milwaukee, and State of Wisconsin, have invented new and useful Improvements in Grading Implements, of which the following is a specification.

My invention relates to improvements in grading implements; and it pertains, first, to the peculiar construction and arrangement of the excavating-blades which are used in connection with the earth-scoop by which a narrow strip of earth is dug up and loosened immediately in advance of and preparatory to being taken up by the scoop or scraper, whereby the necessity of plowing the ground before using the scoop is avoided; second, to the manner of pivotally supporting the scoop and contiguous parts from two sets of wheeled trucks, whereby the scraper may be easily inverted and emptied without moving the supporting trucks; third, to the means employed for inverting the scoop by the manual act of the operator; fourth, to the mechanism for raising the front end of the scoop and adjusting it at any desired elevation above or angle to the surface; fifth, to the device for adjusting the scoop upon its longitudinal axis, whereby the excavating-blades are brought at any desired angle to the surface and whereby the apex of the two converging blades may be caused to penetrate the surface of the ground at a greater depth than their diverging sides, and, sixth, to the device for connecting the front ends of the scoop to the rear end of the front truck, whereby the front truck may be turned at any desired angle to the scoop.

The construction of my invention is explained by reference to the accompanying drawings, in which—

Figure 1 represents a top view. Fig. 2 represents a side view, and Fig. 3 an end view, thereof. Fig. 4 represents a perspective view of the front end of the scoop removed from the trucks and provided with excavating-blades.

Like parts are identified by the same reference figures throughout the several views.

1 represents the scoop. 2 is the front truck. 3 is the rear truck. 4 and 4' are the excavating-blades. The excavating-blades are secured to the scoop by the bolts 5. For ordinary purposes one set of excavating-blades 4 and 4' only are necessary when they

are connected with one of the lower corners of the scoop, as indicated in Figs. 1 and 4. If, however, it is desirable to use the implement for working forwardly and backwardly upon the same side of an excavation, two sets of excavating-blades may, if desired, be used, as indicated by dotted lines in Fig. 1. The front end of the scoop 1 is connected with the front truck 2 by two swivel connections forming a universal joint, one of which swiveled connections permits of the scoop being turned on its longitudinal axis when being emptied, and the other swivel connection permits the front truck to be turned at an angle to the scoop and rear truck. Said connections comprise the following parts—viz., the U-shaped supporting-arms 6, forwardly-projecting sleeve 7, trunnion 8, having longitudinal bearings in said sleeve 7, trunnion-retaining nut 9 and angular bend 10, provided with a retaining-knob 11 and knob-retaining plate 12. The knob 11 is provided with a retaining-recess 13, formed in the rear end of the tongue 12'. The rear end of the U-shaped arms 6 are respectively connected with the scoop 1 by bolts 14. The rear end of the scoop 1 is connected with the axle 15 of the rear truck by the longitudinal shaft 16, which shaft 16 is rigidly affixed at its front end to the rear end of the end piece 17 of the scoop by the plate 18 and bolts 19, the plate 18 being securely connected with the front end of the shaft 16. The rear end of the shaft 16 is adapted to turn in its bearings in the axle 15, whereby when the front end of the scoop is raised from the ground, as hereinafter described, the same may be turned upon its supporting-bearings when desirable to empty the same.

As a means of inverting the scoop 1 when loaded I have provided the rear end of the shaft 16 with a gear-wheel 20, which is rigidly affixed to said shaft, and motion is communicated to said gear-wheel, shaft, and scoop when desirable to invert the same from the crank 21 through the crank-shaft 22 and pinion 23. The relative diameters of the pinions 23 to the gear-wheel 20 are such that the power applied to the crank 21 is greatly multiplied, whereby but little effort is required to revolve the crank when desirable to invert the scoop for the purpose of discharging its contents. It will be obvious that by this construction the scoop may be turned in either direction upon its longitudinal sup-

ports and its contents discharged toward the right or left.

To enable me to lock the scoop at any desired point of adjustment upon its longitudinal axis, I have provided an annular fastening-plate 24, which is rigidly supported directly or indirectly from the axle 15 and is provided with a plurality of handle-retaining notches 25, located at short intervals apart upon its rear surface for the reception of the operating-crank 21. The operating-crank 21 is pivotally connected with the shaft 22 by the pin 26, which pivotal connection permits of the crank being thrown rearwardly into the retaining-notches 25, whereby when the scoop has been once brought to the desired angle to the surface it may be locked at such point by engaging the operating end of the crank in one of the notches 25 of said annular plate. When desired to lock the scoop at any desired point of adjustment, as stated, the crank 21 is pushed rearwardly in one of the retaining-notches. When, however, it is desired to readjust the scoop at any desired position upon its longitudinal axis, the crank 21 may be pulled rearwardly out of engagement with the annular plate, when it can be turned until the desired adjustment is reached.

To relieve the longitudinal shaft 16 from the twisting strain which it might otherwise receive when the implement is being turned toward the right or left, I have provided the rear end of the scoop with an annular bearing-plate 26 and the axle with corresponding bearing-plates 27 27, against which said annular bearing-plate 26 is adapted to rest, whereby as the scoop is inclined toward the right or left said annular bearing 26 will be caused to rest against one of said bearing-plates 27, and the rear truck will be turned so as to maintain the same relative position to the scoop, thereby relieving the longitudinal shaft 16 of the lateral strain to which it would otherwise be subjected.

To provide for raising and lowering the front end of the scoop, so as to change the inclination of the excavating-blades 4 and 4' to the surface or so as to raise the front end of the scoop entirely free from the ground, as indicated in Fig. 2, I have connected the axle 28 of the front truck 2 with the tongue 12 by the crank-arms 29 29. The arms 29 are formed integrally and are centrally connected with the under side of the tongue by the retaining-plate 30. 31 is an operating-lever; the lower end of which is bifurcated, and the respective forks 32 32 of said lever are rigidly connected with said arms 29 29 upon the respective sides of the tongue, whereby as said lever 31 is inclined rearwardly the rear ends of the arms 29 will be forced downwardly, whereby when the wheels of the truck 2 are resting upon a supporting-surface the tongue 12 and the connecting parts will be raised,

thereby raising the front end of the scoop, while by the reverse movement of said operating-lever 31 the movement of said parts will be reversed.

As a means of retaining the scoop and its load when raised at any desired point of adjustment I have provided an ordinary locking mechanism consisting in a semicircular ratchet-plate 32, which is rigidly affixed to the tongue 12, and an operating-lever 31, with the pawl 33, which is adapted to engage in the notches 34 of said ratchet-plate. The pawl 33 is adapted to be drawn upwardly and out of the retaining-notches 34 by the operating-lever 35, which is pivotally connected with the lever 31 by the pin 36 and is connected with the upper end of said pawl 33 by the rod 37. 38 is a pawl-retaining bracket. 39 is a spiral spring which is connected at its lower end with said bracket 38 and at its upper end to said rod 37, whereby as said pawl is drawn upwardly said spring will be drawn out and its tension increased and whereby when said pawl is released from the hand of the operator it will be thrown downwardly into one of the retaining-notches of said ratchet-plate by the recoil of said spiral spring.

While I have shown the pinion 23 and crank 21 located at one side of the center of the scoop-supporting axle, the same may, if desired, be supported upon a bracket above the gear-wheel 20 and the center of said axle, whereby the crank 21 may be more conveniently operated. It will also be understood that, if desired, a rod may be connected with the upper end of the operating-lever 31 and the same extended to the rear of the rear truck, whereby the operator may adjust the operating-lever 31 and raise and lower the front end of the scoop from the rear end of the rear truck and the necessity of going forward for such purpose avoided.

While the excavating device is referred to in the specification as a set of excavating-blades 4 and 4' and while said device may be formed either in two separate parts or integrally and secured to the scoop at the junction of its bottom with one or both of its sides, as shown in Fig. 3 and indicated in Fig. 1, I have for convenience of description referred to the same in the claims as an excavating device.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a grading implement, the combination with an earth-scoop, of an excavating device rigidly affixed to the front end of the scoop at the junction of its bottom and one of the sides, substantially as set forth.

2. In a grading implement, the combination with an earth-scoop, of an excavating device located at the junction of the bottom of the scoop and one of its sides and means for

supporting said scoop above the surface upon which it is operated, substantially as set forth.

3. In a grading implement, the combination of an earth-scoop, of an excavating device located at the junction of the bottom of the scoop and one of its sides; and means for pivotally connecting both the front and rear ends of said scoop with a pair of trucks, whereby said scoop may be inverted and emptied without moving the trucks by which it is supported, substantially as set forth.

4. In a grading implement, the combination of an earth-scoop, of an excavating device located at the junction of the bottom of the scoop and one of its sides; means for pivotally connecting both the front and rear ends of said scoop with a pair of trucks, whereby said scoop may be inverted without moving the trucks by which it is supported and means connected with the front truck for raising, lowering and adjusting the front end of said scoop.

5. In a grading implement, the combination of an earth-scoop, of an excavating device located at the junction of the bottom of the scoop and one of its sides; means for pivotally connecting both the front and rear ends of said scoop with a pair of trucks, whereby said scoop may be inverted without moving the trucks by which it is supported; means connected with the front truck, for raising, lowering and adjusting the front end of said scoop and means for pivotally connecting the front end of the scoop with the rear end of the tongue, whereby the front truck may be turned without turning the scoop.

6. In a grading implement, the combination of an earth-scoop, of an excavating device located at the junction of the bottom of the scoop and one of its sides; means for pivotally connecting both the front and rear ends of said scoop with a pair of trucks, whereby said scoop may be inverted without moving the trucks by which it is supported and means connected with the axle of the

rear truck and the rear scoop-supporting shaft for inverting said scoop by the manual act of the operator.

7. In a grading implement, the combination of an earth-scoop, of an excavating device located at the junction of the bottom of the scoop and one of its sides; means for pivotally connecting both the front and rear ends of said scoop with a pair of trucks, whereby said scoop may be inverted without moving the trucks by which it is supported; a gear-wheel rigidly affixed to the rear scoop-supporting shaft; a pinion meshing with said gear; a crank for operating said pinion; a circular plate located in the path of said crank, provided with a plurality of apertures for said crank and means for pivotally connecting said crank with said pinion, whereby said pinion, gear and scoop may be locked at any desired point of adjustment by engaging the free end of said crank in one of the notches of said circular plate, substantially as set forth.

8. In a grading implement, the combination of an earth-scoop, of an excavating device located at the junction of the bottom of the scoop and one of its sides; means for pivotally connecting both the front and rear ends of said scoop with a pair of trucks, whereby said scoop may be inverted and emptied without moving the trucks by which it is supported; a circular bearing-plate secured to the rear end of said scoop and opposing bearing-plates secured to the front sides of the rear axle, said bearing-plates being adapted to contact as the implement is turned, and reduce the strain of the rear scoop-supporting shaft, substantially as and for the purpose specified.

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

ROSCOE S. SHELDON.

Witnesses:

JAS. B. ERWIN,
NELLIE TAUGHER.