

No. 618,010.

Patented Jan. 17, 1899.

J. W. MACY.
ROAD GRADER.

(Application filed Aug. 11, 1897.)

(No Model.)

3 Sheets—Sheet 1.

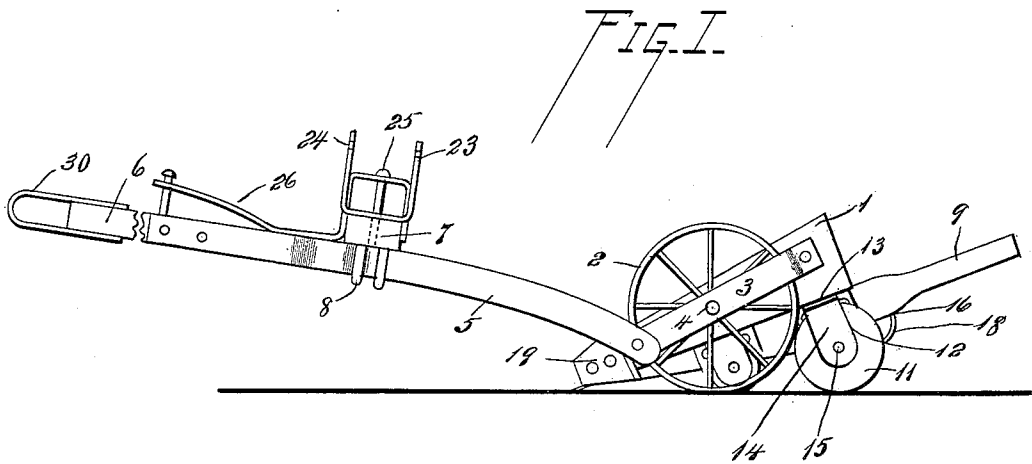


FIG. II

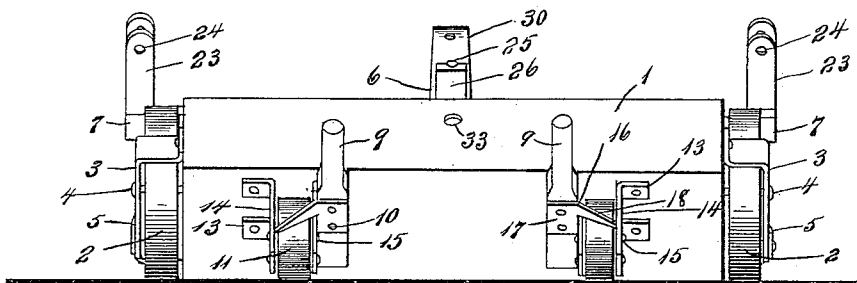


FIG. IV

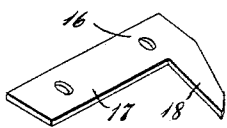


FIG. V

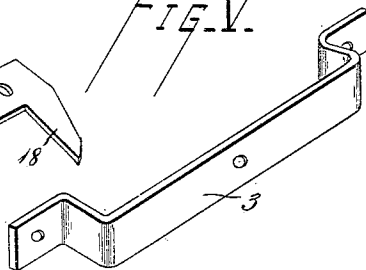
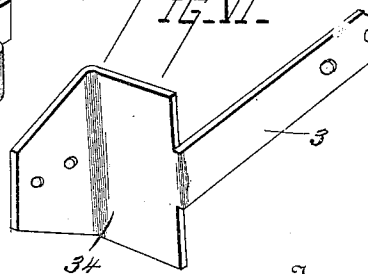


FIG. VI



Witnesses
G. L. Conner.
Victor J. Evans

Inventor
Jason W. Macy.
By *John Wedderburn*
Attorney

No. 618,010.

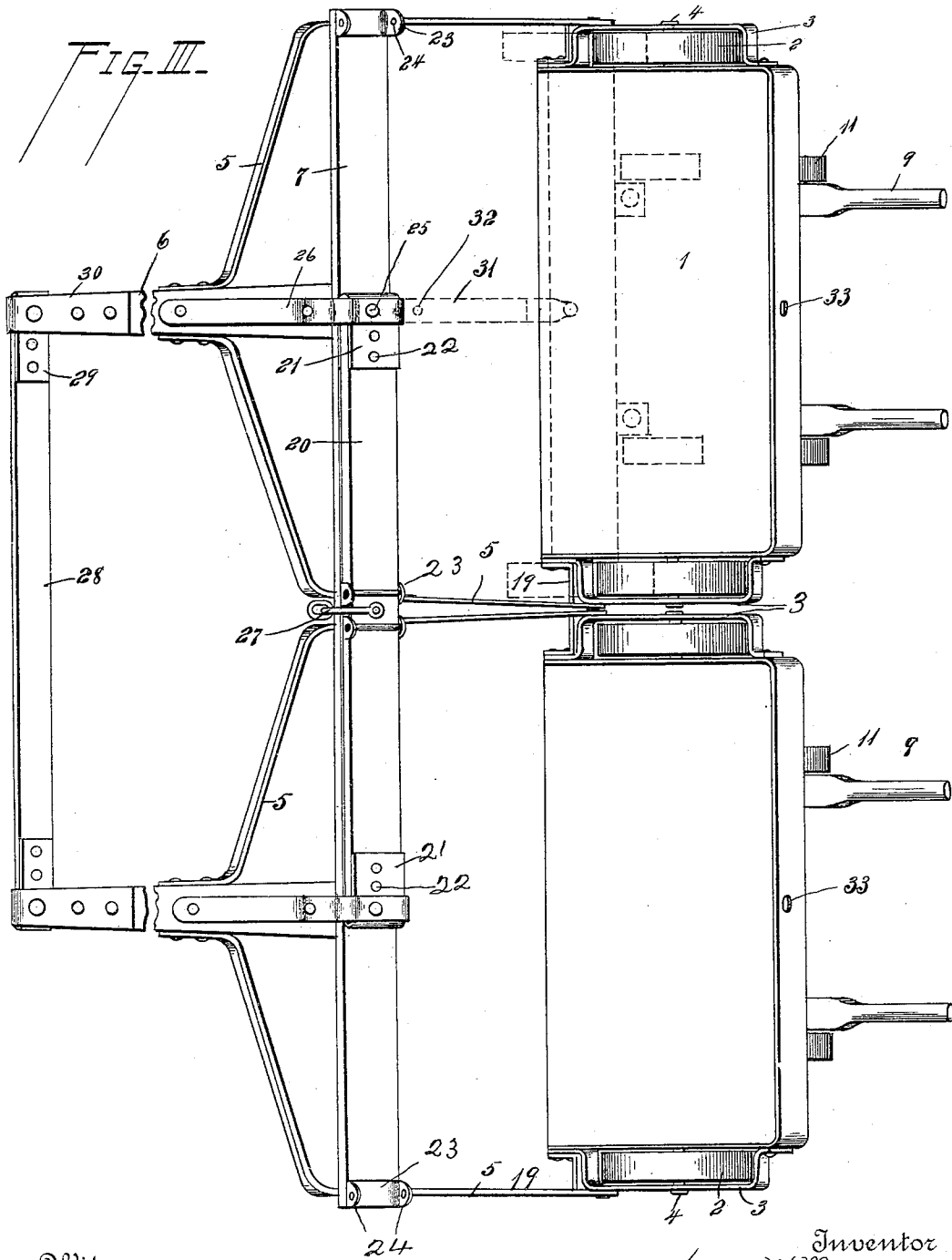
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3 Sheets—Sheet 2.



Witnesses

S. B. Conner
Victor J. Evans

Inventor

Jason W. Macy.

by John Wedderburn

Attorney

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3 Sheets—Sheet 3.

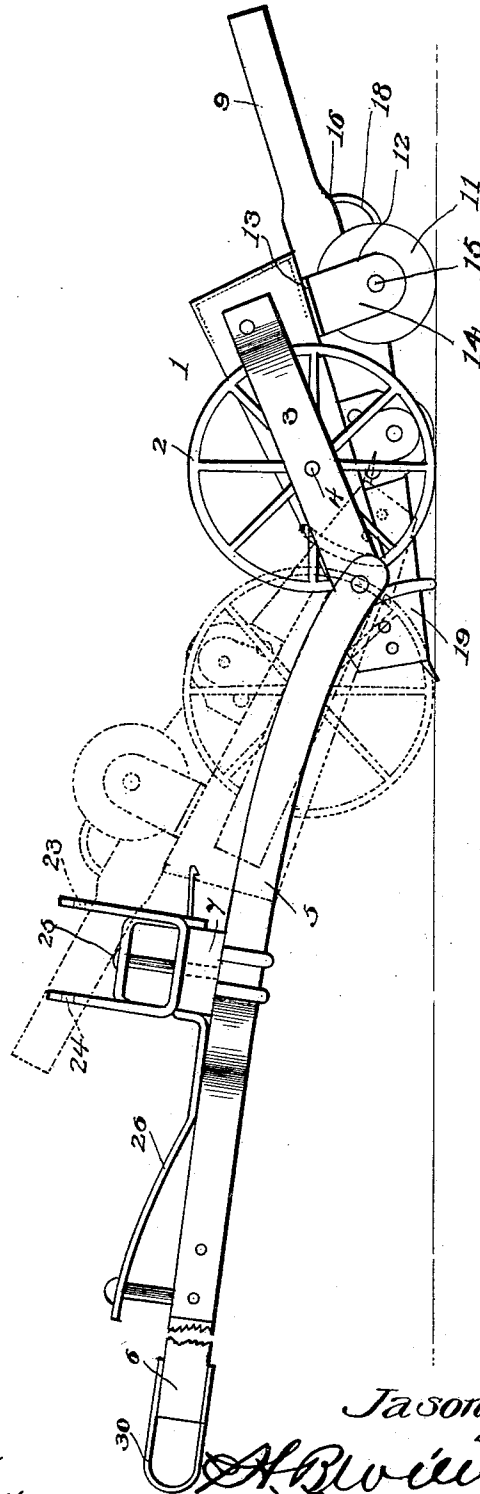


FIG. VII.

Witnesses:
T. S. Bell,
J. Wilcox.

Inventor:
Jason W. Macy,
 by
A. B. Wilson & Co.
 Attorneys.

UNITED STATES PATENT OFFICE.

JASON W. MACY, OF SEARSBOROUGH, IOWA.

ROAD-GRADER.

SPECIFICATION forming part of Letters Patent No. 618,010, dated January 17, 1899.

Application filed August 11, 1897. Serial No. 647,888. (No model.)

To all whom it may concern:

Be it known that I, JASON W. MACY, of Searsborough, in the county of Poweshiek and State of Iowa, have invented certain new and useful Improvements in Road-Graders; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to improvements in scrapers, and more particularly relates to machines of that class designed for leveling roads and the like, the invention being in the nature of an improvement upon a scraper for which a patent was granted to me June 2, 1896, No. 561,264.

The object of the present invention is to simplify the construction of the scraper as shown in the aforesaid patent and to embody improved features whereby the machine may be reduced in weight, but at the same time prove very effective in the work to be performed; and, furthermore, the invention contemplates improved means whereby a series of scrapers may be coupled together and worked by a single operator.

The invention also contemplates further objects which will appear as the nature of the improvements is better understood; and to this end it consists, substantially, in the novel construction, combination, and arrangement of parts, as will be hereinafter fully described, illustrated in the drawings, and pointed out in the claims hereto appended.

In the accompanying drawings, Figure 1 is a side elevation of a scraper constructed in accordance with the present invention. Fig. 2 is an end elevation thereof. Fig. 3 is a plan view illustrating a pair of scrapers coupled together by the improved means contemplated by the present invention, the dotted lines illustrating the position in which the scoop is placed for leveling purposes. Fig. 4 is a detail perspective view of one of the scraping-blades employed with the bearing-rollers. Fig. 5 is a similar view of one of the journal-brackets. Fig. 6 is also a detail perspective view of another form of bearing-bar. Fig. 7 is a side elevation of the improved road-grader, its bearing-wheels, bearing-rollers, and scrapers being indicated by dotted lines, showing the scraper approxi-

mately in the position it occupies when used to level the ground.

Similar numerals of reference designate corresponding parts throughout the several figures of the drawings.

Referring to the drawings, 1 designates the body or scoop of the scraper, which may be of any suitable construction, and arranged at each side of said scoop is a bearing-wheel 2. Each of the bearing-wheels 2 is secured to the scoop 1 by a bearing-bar 3, and it will be observed that each end of the bearing-bars is bent at substantially a right angle to its body portion and bolted or otherwise secured to the sides of the scoop 1. A bolt 4 serves as the axle of each of the bearing-wheels 2; but it will be observed that any other form of axle may be employed, if desired.

Pivotally secured to the forward ends of the bearing-bars 3 is a pair of braces 5, which may be curved or otherwise formed, and the forward ends of said braces are suitably secured to a pole 6. The rear end of the pole 6 has suitably connected thereto a transverse bar 7, and depending from the ends of said bar 7 are guide loops or hangers 8, through which pass the braces 5, and by means of the hangers 8 the bar 7 is securely retained upon the braces 5.

Suitably attached to the under side of the scoop 1 is a pair of rearwardly-extending handles 9, which handles are preferably bolted, as at 10, to said scoop. A series of bearing-rollers 11 are also disposed at the under side of the scoop 1, and it will be noted that said rollers are arranged in pairs adjacent to each end of the scoop 1, the forward rollers of each pair being of less diameter than the rear ones, and by means of this construction the peripheries of said rollers at their lowest sides lie in the same plane, and hence are adapted to travel along the ground, so as to provide efficient support for retaining the scoop 1 in an inclined position. Journal-brackets 12 are provided for securing the bearing-rollers 11 to the scoop 1, and each of said brackets 12 is formed of an attaching-plate 13, from one end of which depends a perforated arm 14, which arm is bent at a substantial right angle to the attaching-plate 13. A pair of the journal-brackets 12 is provided for each of the rollers 11, and it will be observed that the attaching-

plates 13 of the brackets 12, which lie adjacent to the handles 9, are disposed between the latter and the scoop 1, the bolts 10 passing through said attaching-plates 13, and thereby securing the innermost of the brackets to the scoop. A transverse shaft 15 passes through the perforations of the arms 14 and also through the rollers 11, whereby said rollers are adapted to rotate between the brackets 12. A scraping-blade 16 is secured to each of the handles 9, adjacent to the rear rollers 11, and each of said scraping-blades 16 comprises an attaching-plate 17, having at one of its ends a downwardly-inclined arm 18, the latter forming the scraper proper and lying adjacent to the periphery of the rear rollers 11, so that as the latter rotate any earth that may be thereon will be removed therefrom.

Secured to the forward end of each of the bearing-bars 3 is an angular clearing-shoe 19, and said shoes 19 are secured to the scoop 1 by the rivets or other attaching means which secure the forward ends of the bearing-bars 3. The purpose of these clearing-shoes is to remove any loose earth directly in the path of the bearing-wheels 2, and consequently said wheels are adapted to come into contact with the ground and at the same time to rotate freely without becoming clogged by the earth which may be in their path.

The foregoing description relates particularly to the scraper *per se*; but when it is desired to couple a pair of scrapers together, so that a larger amount of work may be performed by a single operator, a coupling-bar 20 is employed, which bar is provided at each of its ends with a U-shaped strap 21, the ends of the sides of said strap being bolted or otherwise secured to the ends of the bar 20, and the outer ends of the straps 21 are provided with a series of perforations 22. At each end of the transverse bars 7 is a U-shaped securing-bracket 23, the upper ends of the sides of which are perforated, as at 24, for the reception of bolts or their equivalent, and the securing-brackets at the adjacent ends of the bars 7 are adapted to receive the coupling-bar 20 when the scrapers are coupled in the manner and for the purpose described, said coupling-bar being capable of vertical movement in said brackets for facilitating dumping of the scrapers separately. It will be observed, however, that the ends of the coupling-bar 20 are secured to the bars 7 by means of bolts or pins 25, which pass through attaching-irons 26, carried by the poles, through the straps 21, adjacent to said irons, and into the transverse bars 7. It will thus be seen that the coupling-bar 20 is retained in a rigid position upon the transverse bars 7 of the scrapers; but in order that a team may be secured to the coupling-bar 20 a clevis 27 is arranged at a point midway the ends of the latter and provided with a coupling. To this clevis an equalizing-whiffletree may be connected and four horses, con-

stituting the team for the two scrapers, hitched to the equalizing-whiffletree. This is not essential, however, as an ordinary whiffletree may be mounted upon each of the poles 6 and secured thereto by the upwardly-extending forward end of the attaching-iron 26, each of the teams thereby pulling independently of each other. It will thus be seen that when a team is so hitched the animals are abreast and the machine may be readily operated. A crowd-bar 28 is employed for insuring corresponding movements of the poles 6 of the scrapers, and said crowd-bar is provided at each of its ends with a strap-iron 29, which are similar to the straps 20 and are secured within attaching-loops 30, connected to the forward ends of the poles 6.

The scoops 1 of each of the scrapers may be employed for leveling the ground, as shown in dotted lines of Fig. 3, and for retaining the scoops in the proper position for accomplishing this end a hook 31 is employed for each of said scoops, only one hook 31 being shown that being shown in dotted lines in plan view in Fig. 3 of the drawings. The forward end of each of the hooks 31 is provided with a series of alined perforations 32, through one of which is passed the bolt or pin 25, arranged in the attaching-iron 26, and the rear end of each of said hooks 31 is passed through an opening 33, formed in the rear wall of the scoop 1. With the forward end of each of the hooks 31 connected to its attaching-iron 26 and the rear end of the hook passed through its opening 33 it is quite evident that the scoops 1 will be retained in proper relation to the ground for leveling the latter, with their forward edges resting thereon, Fig. 7 approximately showing the scraper in position for leveling the ground. So long as the hooks 31 are connected to the scoops 1 in the manner stated the leveling of the contents after dumping may be effected; but when said hooks are released the scoops 1 may be returned to their normal position, the perforations 32 permitting the adjustment of the hooks 31, so that the angle of inclination of the scoops 1 may be changed as desired.

In Fig. 6 is shown another form of the bearing-bars 3, and by referring thereto it will be observed that the major portion of the said bar is similar in all respects to the bar shown in the other figures of the drawings; but the forward end of the bar shown in Fig. 6 is enlarged to form a clearing-shoe 34. By this construction the bearing-bar and the clearing-shoe are formed of a single piece.

In operation, the team having been hitched when a single scraper is employed, to the whiffletree connected to the pole 6, it will be seen that when the scoop 1 is filled the same may be readily emptied by simply raising the handles 9 slightly, so that the forward edge of the scoop 1 turns upon the pivots connecting the braces 5 with the bearing-bars 3, and the bearing-wheels 2 retain the scoop 1 in such a position that the forward edge thereof is free

from the ground when the handles 9 are properly manipulated. By reason of this the team may be backed without liability of the scoop disturbing the ground in any manner. In either position the bearing-wheels 2 assist the movement of the scoop 1 over the ground; but it will of course be understood that when the latter is in its normal position or that which it occupies when being filled the weight is distributed over the bearing-rollers 11, and these latter greatly facilitate the movement of the scoop. In the event that earth accumulates upon the rear rollers 11 the downwardly-inclined arms 18 of the scrapers 16 will remove such earth, and hence the peripheries of the rollers are always kept clean.

When a pair of scrapers are coupled together as shown in Fig. 3, the same may be manipulated by a single operator, and the advantage of thus coupling a pair of scrapers is evident from the fact that should a scoop be built sufficiently large to receive a load of earth suitable for a team of four horses such a load would be too heavy for a single person to dump, so that when two scrapers are employed and coupled together in the manner stated each of the scrapers may be dumped independently of the other, but at the same time a greater amount of work is accomplished than would be by the employment of a single scoop.

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

1. In a scraper, the combination with a scoop, of bearing-wheels carried thereby, and means also carried by the scoop and adapted to remove the earth from the path of the bearing-wheels, substantially as described.

2. In a scraper, the combination with a scoop, of bearing-wheels carried thereby, rollers also carried by the scoop, and means for removing the accumulated earth from said rollers, substantially as described.

3. In a scraper, the combination with a scoop, of bearing-wheels carried thereby, bearing-rollers also carried by the scoop, and means carried by the scoop and adapted to remove the earth from the path of the bearing-wheels, substantially as described.

4. In a scraper, the combination with a scoop, of bearing-wheels carried thereby, bearing-rollers also carried by the scoop at the under side thereof, and clearing-shoes arranged in front of the bearing-wheels and adapted to remove the earth from the path thereof, substantially as described.

5. In a scraper, the combination with a scoop, of bearing-bars arranged upon said scoop, wheels journaled between said bars and the scoop, and means for removing the earth from the path of said wheels, substantially as described.

6. In a scraper, the combination with a scoop, of bearing-bars arranged upon said

scoop, wheels journaled between said bars and the scoop, and clearing-shoes arranged in front of the wheels and adapted to remove the earth from the path thereof, substantially as described.

7. In a scraper, the combination with a scoop, of bearing-wheels carried thereby, bearing-rollers journaled to said scoop and arranged in pairs, and scraping-blades for removing the accumulated earth from said bearing-rollers, substantially as described.

8. In a scraper, the combination with a scoop, of bearing-wheels carried thereby, clearing-shoes arranged in front of said bearing-wheels and adapted to remove the earth from the path thereof, bearing-rollers also carried by said scoop at the under side thereof, handles secured to the scoop and adjacent to said bearing-rollers, and scraping-blades carried by said handles and adapted to remove the accumulated earth from the bearing-rollers, substantially as described.

9. In a scraper, the combination with a scoop, of bearing-wheels carried thereby, bearing-bars arranged at the ends of said scoop and having said wheels journaled therein, clearing-shoes arranged at the forward ends of said bearing-bars and adapted to remove the earth from the path of the bearing-wheels, bearing-rollers journaled to said scoop and arranged in pairs, the forward rollers being of less diameter than the rear ones, handles also secured to the scoop and extending rearwardly, and scraping-blades carried by said handles, and adapted to remove the accumulated earth from the bearing-rollers, substantially as described.

10. In a scraper, the combination with a scoop pivoted in a suitable frame, of a hook connected to said frame and adapted to retain the scoop in proper relation to the ground for leveling the latter, said hook being provided with a series of perforations for adjusting the same upon the frame to regulate the angle of inclination of the scoop, substantially as described.

11. In a scraper, the combination with a scoop pivoted in a suitable frame, of a hook connected to said frame and adapted to retain the scoop in proper relation to the ground for leveling the latter, said hook being provided with a series of perforations for adjusting the same upon the frame to regulate the angle of inclination of the scoop, the latter being provided with an opening adapted to receive said hook for engaging the latter with the scoop, substantially as described.

12. In a scraper, the combination with a scoop, of bearing-rollers journaled thereto, journal-brackets carried by said scoop and each comprising an attaching-plate and a perforated arm depending at right angles therefrom, said rollers being journaled in said brackets, and handles also carried by the scoop and arranged adjacent to said journal-brackets, the inner of said brackets having

their attaching-plates disposed between the handles and the scoop, substantially as described.

13. The combination with a pair of scrapers, 5 of a coupling-bar connected thereto, and provided at each of its ends with an attaching-strap, U-shaped securing-brackets carried by each of said scrapers and receiving said coupling-bar, the latter being capable of vertical 10 movement in said brackets, and pins passing through the attaching-straps of the coupling-bar for retaining the latter upon the scrapers, substantially as described.

14. The combination with a pair of scrapers, 15 of a coupling-bar for connecting the same together, and a crowd-bar secured to the poles of said scrapers, substantially as described.

15. The combination with a pair of scrapers, 20 of a coupling-bar for connecting the same together, U-shaped securing-brackets carried by each of said scrapers and receiving said coupling-bar, the latter being provided at each of its ends with a U-shaped strap hav-

ing perforations, attaching-irons also carried 25 by the scrapers and receiving the straps of the coupling-bar, pins passing through said attaching-irons and the straps for retaining the coupling-bar upon the scrapers, said coupling-bar being capable of vertical movement 30 in said securing-brackets, a crowd-bar connected to the poles of the scrapers, and a hook carried by each of said scrapers and provided with a series of perforations in one of its ends, said perforations receiving the pins for retaining 35 the coupling-bar within the attaching-irons, said hooks being adapted to engage the scoops of the scrapers for retaining the same in proper relation to the ground for leveling the latter, substantially as described.

In testimony whereof I have signed this 40 specification in the presence of two subscribing witnesses.

JASON W. MACY.

Witnesses:

O. P. MOXAR,
D. S. FLEEK.