(No Model.)

C. M. DODSON.

ROAD GRADING MACHINE.

No. 456,986. Patented Aug. 4, 1891.

Fig. 1

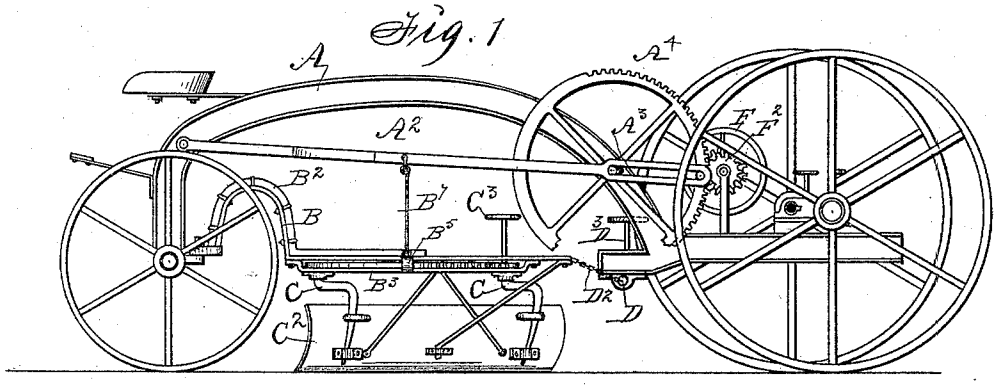


Fig. 2

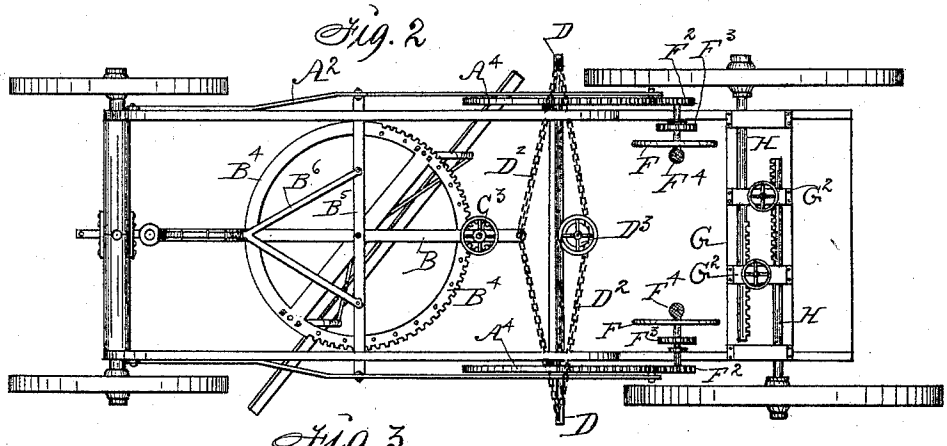


Fig. 3

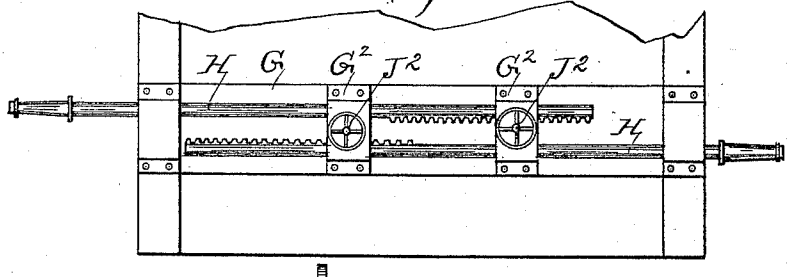


Fig. 4

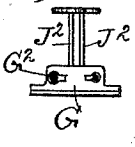


Fig. 5

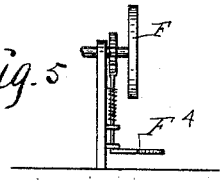
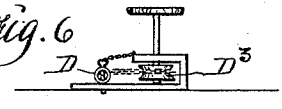


Fig. 6



Witnesses:
W. L. Smith.
S. G. Sweet.

Inventor:
Charles M. Dodson,
By Thomas G. Orwig, Atty.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

CHARLES M. DODSON, OF DES MOINES, IOWA.

ROAD-GRADING MACHINE.

SPECIFICATION forming part of Letters Patent No. 456,986, dated August 4, 1891.

Application filed July 25, 1890. Serial No. 359,956. (No model.)

To all whom it may concern:

Be it known that I, CHARLES M. DODSON, a citizen of the United States, and a resident of Des Moines, in the county of Polk and State of Iowa, have invented an Improved Road-Grading Machine, of which the following is a specification.

My object is to facilitate the adjustment of a scraper as required to move ground in different directions at different times, to move the scraper laterally relative to the line of advance of the carriage, to regulate its depth in the ground, and to carry it elevated and inoperative.

My invention consists in the construction and combination with a carriage of mechanism for reversing the scraper, mechanism for raising and lowering the scraper, and mechanism for regulating the space between parallel mating traction-wheels, as hereinafter set forth, pointed out in my claims, and illustrated in the accompanying drawings, in which—

Figure 1 is a side view, and Fig. 2 a top view, of the machine. Fig. 3 is a top view of the mechanism for adjusting the rear traction-wheels of the carriage relative to the scraper, and Fig. 4 is an end view of the same. Fig. 5 is a detail view of the locking device for retaining the scraper at different points of elevation at different times. Fig. 6 is a detail view of the device for moving the scraper laterally and retaining it in different positions relative to the center of the carriage.

A represents a carriage-frame that is arched at its central and front portion and connected with a front and rear axle in such a manner that it will serve as a reach and also as a support for the scraper suspended therefrom, and also as the base of a platform in rear of the scraper.

A^2 are levers of the second order, pivoted to the front ends of the sides of the frame in such a manner that the levers will extend rearward and move vertically.

A^3 are bridles on the rear ends of the levers.

A^4 are mutilated gear-wheels journaled to the sides of the frame A. The outer ends of their axles extend through the bridles A^3, and studs A^4, projecting laterally from the rims of the wheels, extend through the same bridles in such a manner that the levers will be operated by the motions of the wheel as required to raise and lower the scraper connected with the central portions of the levers.

B is a beam pivoted to the center of the front carriage-axle. The front portion of the beam is arched to allow the wheels on the front carriage-axle to run under the beam in making short turns.

B^2 is a re-enforcing arched bar fixed on top of the front part of the beam by means of clips, to project at right angles from the flat face of the beam.

B^3 is a flat bar, bent upward at its ends and fixed to the under side of the straight and rear portion of the beam.

B^4 is a gear-wheel on the under side of the beam and pivoted thereto to rotate horizontally in reverse ways.

B^5 is a flat bar, bent double at its ends and fixed across the top of the beam and the wheel B^4 in such a manner that its doubled ends will serve as bearings and guides for the wheel. Braces B^6, formed by forking the rear end of the bar B^2, extend from the arch of the beam to the cross-bar.

B^7 are links depending from the levers A^2 and connected with the ends of the bar B^5 in such a manner that the beam and wheel B^4 will be jointly suspended from the levers.

C are elbow-shaped standards pivoted to the wheel B^4 and flexibly connected with a scraper C^2 of common form in such a manner that the scraper will move horizontally and vertically with the wheel and beam. By thus pivoting the standards C to the wheel B^4 the scraper can be moved longitudinally and laterally relative to the line of advance while the wheel B^2 remains stationary. Adjustable braces may be pivotally connected with the scraper and the rear portion of the beam B, as indicated in Fig. 1, to aid in supporting the scraper.

C^3 is a hand-wheel journaled to the rear end of the beam and provided with a pinion on its lower end in such a manner that the pinion will engage the cogs of the wheel B^4 to rotate that wheel as required to reverse the position of the scraper, or to change the degree of its angle relative to the line of advance when in operation.

D is a sliding bar in bearings formed on or fixed to the sides of the frame A. It is con-

nected with the rear end of the beam B by means of chains D^2.

D^3 is a drum and hand-wheel combined and journaled to a bearing formed on or fixed to the center of the sliding bar in such a manner that the chains can be alternately lengthened and shortened by rotating the drum, as required to move the bar longitudinally, and thereby move the beam and scraper from one side of the center of the carriage to the other at pleasure. A pin inserted in the sliding bar, as shown in Fig. 6, or in one of the series of perforations in the flange at the bottom of the drum and a coinciding perforation in the bearing under the drum locks the drum and sliding bar in a fixed position.

F are hand-wheels on rotating axles mounted in bearings fixed to the frame A in such a manner that gear-wheels F^2 on their outer ends will engage the wheels A^4, as required to rotate said wheels, and to thereby actuate the levers A^2 to raise and lower the scraper.

F^3 are toothed wheels fixed to the same axles.

F^4 are spring-actuated bars that have treadles projecting at right angles from their lower ends. They are connected with posts that support the axles, as shown in Fig. 5, in such a manner that they can be depressed by foot-pressure to withdraw the tops of the bars from the toothed wheels by the person that seizes the hand-wheels F^2. When the foot-pressure is relaxed, the bars will lock the wheels F^2 as required to retain the wheels A^4 stationary and to keep the scraper suspended at different points of elevation at different times at the pleasure of a person on the platform at the rear end of the frame A.

G is an axle-support that has bearings G^2, adapted to receive sliding axles H, that are toothed at their inner ends. It is fixed to the side bars of the frame A and serves as a cross-piece at the rear end of the frame. There are pinions on the rotating shafts J^2, supported in the bearings G^2 in such a manner that the pinions will engage the teeth of the axle, as required to move the axles longitudinally when the shafts are rotated by means of hand-wheels on their top ends for the purpose of widening the base of the rear end of the carriage to prevent the wheels from being lifted or moved laterally when the scraper is swung out and operated at one side of the longitudinal center of the carriage.

From the foregoing description of the construction and functions of each element and sub-combination the unitary actions of all the parts and the practical operations of the complete machine will be readily understood by persons familiar with the art to which the invention pertains.

I claim as my invention—

1. A reach for the carriage of a road-grading machine, composed of a flat bar having an arch at its front end and a re-enforcing bar fitted on top of the arch to project vertically from the center of the flat top face of the arched part and forked at its rear end, in combination with a cross-bar, substantially as shown and described.

2. The combination of the beam B, the sliding bar D, the wheel B^4, pivoted to the under side of the said beam, the elbow-shaped standard pivoted to the under side of the wheel B^4 and pivotally connected with a scraper, the cross-bar B^5, and the levers A^3 and links B^7, to elevate the scraper and also to permit movement of the scraper laterally in the manner set forth, for the purpose stated.

3. The wheel B^4, pivoted to the under side of the beam B, the elbow-shaped standards C, pivoted to the wheel B^4 and pivotally connected with a scraper, and a scraper of common form, arranged and combined in the manner shown and described, for the purposes stated.

4. The levers A^2, having bridles A^3, the wheels A^4, and means for rotating said wheels, in combination with the frame A and the reach B, substantially as shown and described, for the purposes stated.

5. An axle-support having parallel grooves and axle-bearings at the outer ends of said grooves to retain two horizontally-movable axles in parallel position, axles in said bearings having toothed sections, and pinions and hand-wheels for moving said axles longitudinally in the manner set forth, for the purposes stated.

6. The axle-support G, having bearings G^2, the axles H, having teeth at their inner end portions, and pinions J on shafts J^2, in combination with a carriage-frame, for the purposes stated.

CHARLES M. DODSON.

Witnesses:
M. P. SMITH,
THOMAS G. ORWIG.