

(No Model.)

3 Sheets—Sheet 1.

O. E. MOATS.

MACHINE FOR MAKING AND REPAIRING ROADS.

No. 534,339.

Patented Feb. 19, 1895.

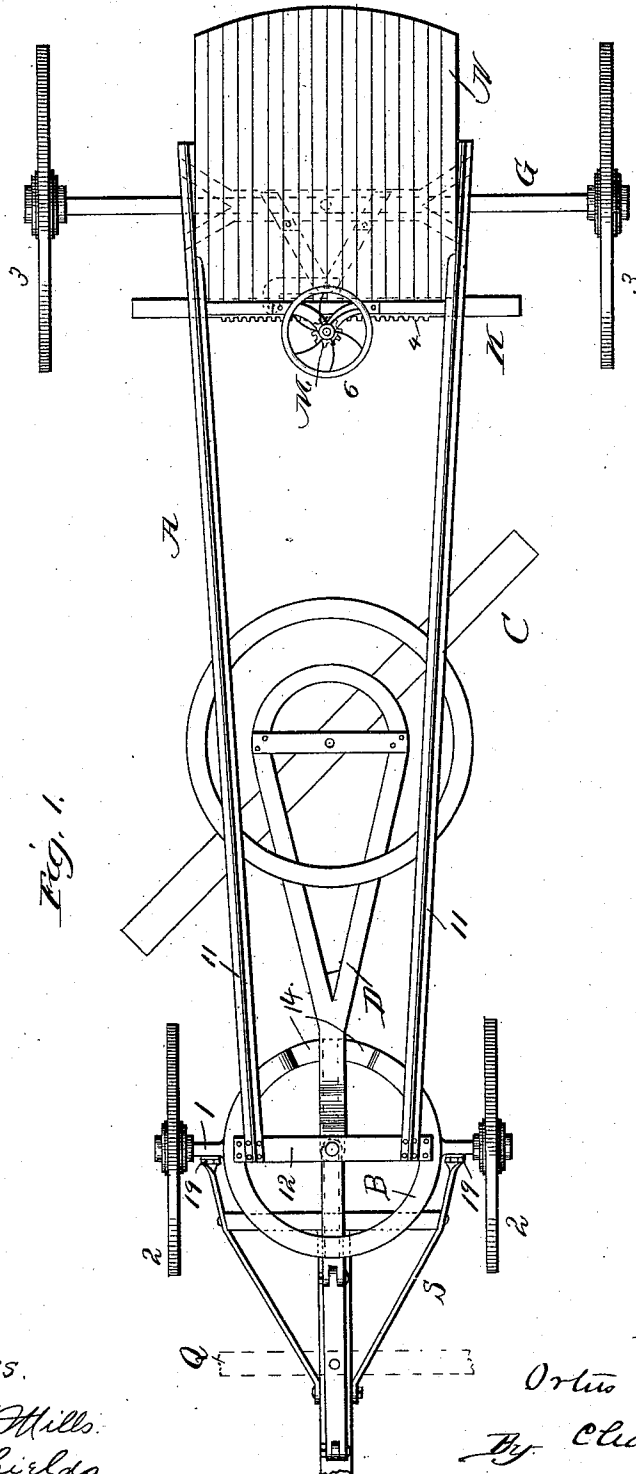


Fig. 1.

Witnesses.
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M. E. Shields.

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Fig. 2.

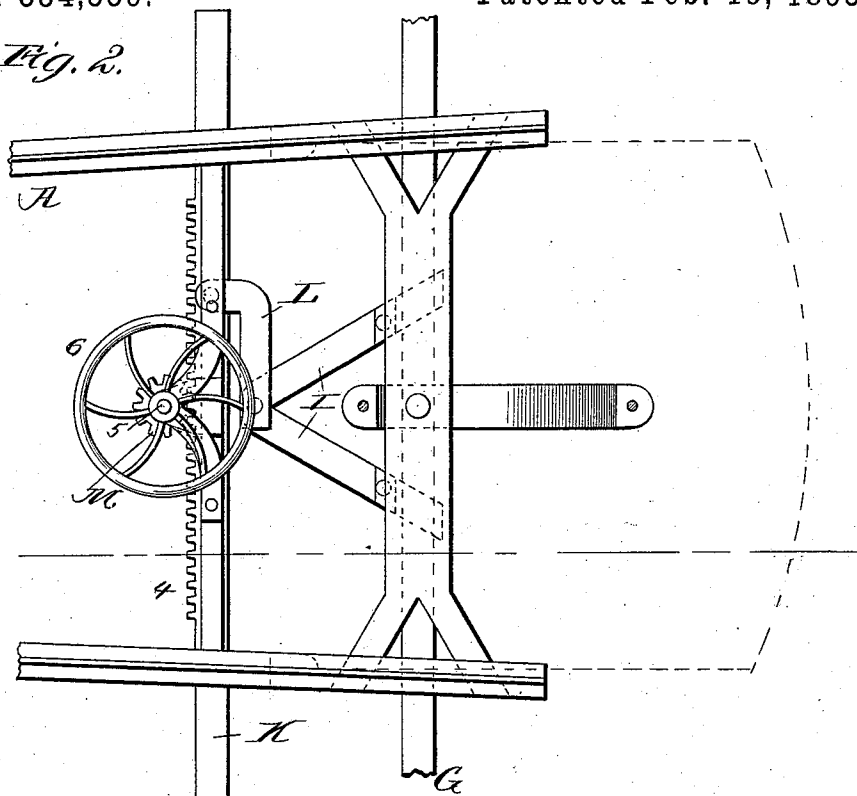
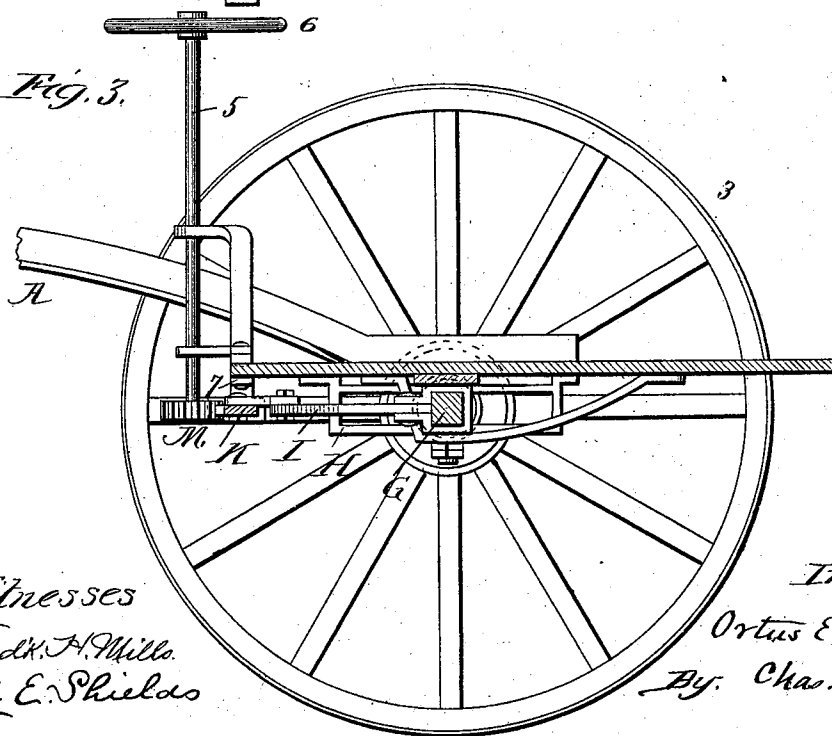


Fig. 3.



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Fig. 4.

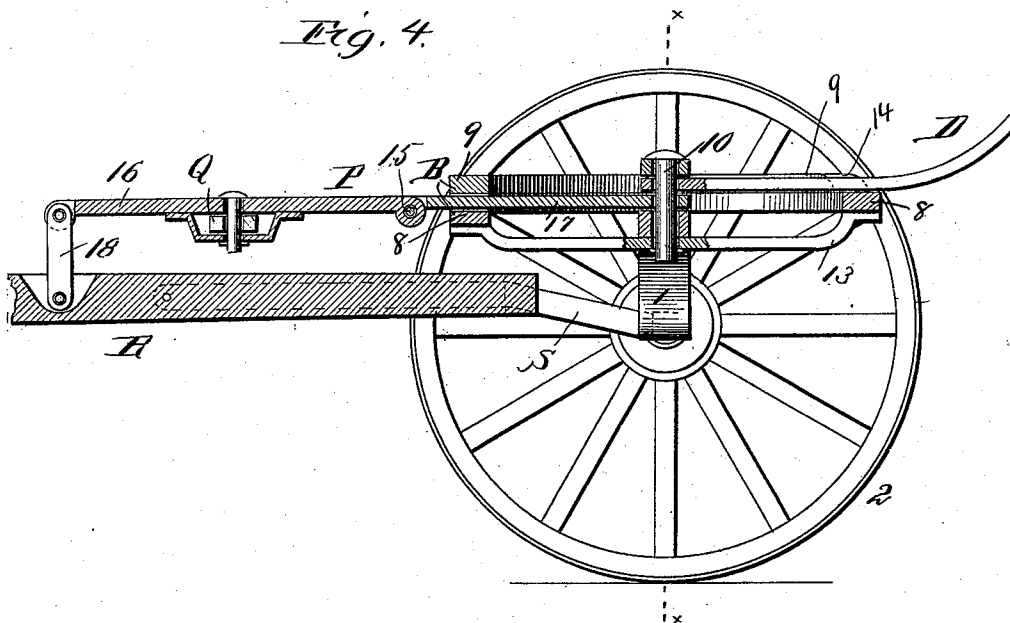
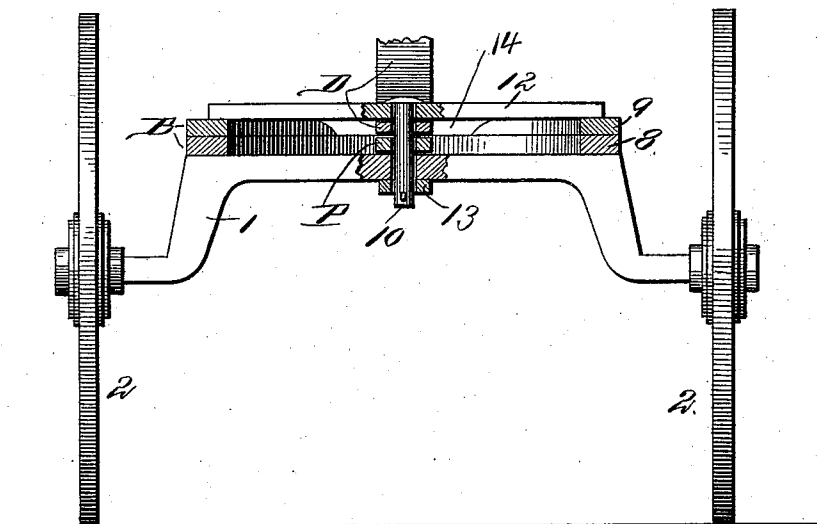


Fig. 5.



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UNITED STATES PATENT OFFICE.

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MACHINE FOR MAKING AND REPAIRING ROADS.

SPECIFICATION forming part of Letters Patent No. 534,339, dated February 19, 1895.

Application filed March 9, 1891. Serial No. 384,297. (No model.)

To all whom it may concern:

Be it known that I, ORTUS E. MOATS, a citizen of the United States, residing at Des Moines, in the county of Polk and State of Iowa, have invented a certain new and useful Improvement in Machines for Making and Repairing Roads, of which the following is a specification.

My invention relates to road-making and road-repairing machines involving a body-frame supported upon horizontally swinging front and rear axles, and a diagonally adjustable scraper-blade arranged so that it can be adjusted in various horizontal angles relatively to the line of progression of the machine.

The object of my invention is to provide novel and improved means for swinging the rear axle horizontally, so as to effect certain changes in the position of the rear wheels relatively to the front wheels and to the position and horizontal angular adjustment of the diagonally adjustable scraper-blade, to effect a change in position of the scraper-blade, and to overcome such side draft as may result from the oblique position of said blade; also, to provide an improved fifth wheel and improved connection between the draft and a draw-bar by which the scraper-blade is drawn. To the attainment of the foregoing and other useful ends, my invention consists in matters hereinafter set forth and particularly pointed out in the claims.

In the accompanying drawings,—Figure 1 is a top plan view of a working machine embodying my invention. Fig. 2 is a top plan view of the rear portion of the machine, on a scale larger than the preceding figure; the rear platform being removed for convenience of illustration. Fig. 3 is a section taken transversely through the rear axle so as to show the body portions of the machine in said figure in side elevation. Fig. 4 is a central longitudinal section on a vertical plane through the forward end portion of the machine. Fig. 5 is a cross section on line $x-x$ in Fig. 4, the front axle and its wheels being in elevation.

In said drawings,—A indicates the body-frame, which is pivotally supported at its forward end upon the short swinging front axle 1, which said axle is provided with wheels 2

in the ordinary way. While the forward end of the body-frame may be pivotally supported upon the front axle in various ways, I prefer to employ a turn-table or large fifth wheel B, as a pivotal connection between said body-frame and front axle.

A diagonally-adjustable scraper-blade C is arranged below the body-frame; and is suspended therefrom by suitable raising and lowering devices which, however, permit the blade to be swung bodily toward one or the other side of the machine. The blade is preferably drawn by a horizontally and vertically swinging draw-bar D, with which the blade is pivotally connected in any known or described way, so that the respective ends of the blade may be alternately placed ahead, and, also, so that the blade which is arranged to extend across the space between the front and rear wheels can be swung horizontally about its pivotal center in order to vary its horizontal angle relatively to the line of progression.

While I may employ various means of raising and lowering the blade and for adjusting it about its pivotal connection with the swinging draw-bar, it is suggested that efficient means for attaining said ends and for swinging the draft-bar, certain devices are fully illustrated in Letters Patent of the United States No. 448,708.

The rear axle G is arranged to swing horizontally, so that either of the rear wheels 3 can be placed ahead; and, to such end, it is at a point midway of its ends pivotally connected with the body-frame, as a preferred arrangement. The rear axle can be pivoted to the body-frame in any suitable way; as, for example, it can be provided with upper and lower vertically arranged journals or pivots engaging in bearings and on the body-frame, as in said patent of Bunnell. The rear axle extends through guides H on the body-frame (one of said guides being shown in Fig. 3); and is provided with a forwardly projecting arm or hounds I. As a means of swinging the rear axle, I provide upon the body-frame a slide bar K which is arranged transversely to the length of the body-frame and connected with the arm or hounds by a link or analogous jointed connection L, so that the longitudinal shift or adjustment of said bar will

swing the arm or hounds and hence swing the rear axle in a direction dependent upon the direction of movement on the part of the bar.

5 For the broader purpose of my invention, the end shift or adjustment of the bar K can be attained in any desired way; but, as a matter of further improvement, I provide the bar with rack teeth 4 and engage the same
10 by a gear M, which may be either a pinion or its obvious mechanical equivalent, a worm, on a hand-wheel shaft 5. The hand-wheel shaft carries a hand-wheel 6 at its upper end and is supported upon the body-frame at a
15 point to place the hand-wheel within convenient reach of an attendant standing upon the rear platform N.

In place of pivoting the rear axle to the body-frame, it can be simply extended through
20 the guides; in which case, the guides should have curved outer edge-portions and the rear axle should be provided with rolls or shoulders arranged to bear against said curved portions as in Patent No. 455,705 of Morton
25 G. Bunnell; and in such way the effect of pivoting the axle can be attained. I prefer, however, to pivotally connect the rear axle with the body-frame.

By operating the hand-wheel, the rear axle
30 can be set relatively to the body-frame and to the horizontal angle of the diagonally-adjustable blade, so as to overcome side draft; it being understood that, when the axle is adjusted oblique to the length of the body-frame, the rear wheels will run to one side
35 until the body-frame is oblique to the line of progression, and the rear axle is again parallel with the front axle. Under such conditions, the disposition of the rear wheels to maintain the rear axle and the body-frame in
40 said general position, will oppose a resistance to side draft. The rear axle can also be adjusted so as to cause either rear wheel to run directly in the track of the front wheel
45 ahead of it. The lateral swinging shift of the body-frame as an incident of said adjustment on the part of the rear axle can also be utilized as a means of shifting the position of the scraper-blade laterally to the line of pro-
50 gression; and, also, the said adjustment of the rear axle permits various desirable relative adjustments between the wheels and scraper-blade, and permits the latter to be used for a wide range of service. The ad-
55 justable bar K which is arranged to move transversely to the length of the machine, can be supported to slide endwise in any suitable bearings on the main frame, one of such bearings 7 being indicated in Fig. 3.

60 The fifth-wheel or turn-table B comprises a circle, 8, which is supported upon and rigid with the high middle portion of the front axle; and a circle 9 which is pivotally held by the king-bolt 10 and supported to turn upon the
65 lower circle. The forward ends of the side-bars 11 of the body-frame are supported upon and rigid with the upper circle 9; being either

bolted directly to the circle or bolted to a cross-bar 12, which is rigid with the circle, as in Fig. 1. The king-bolt has its upper bearing in the cross-bar 12, and its lower bearing
70 both in the front axle and in a bent brace 13 which fits at its middle portion against the under side of the axle and has its upwardly bent end portions secured to the under side
75 of the lower circle 8. The draw-bar D is at its forward end pivotally held by the king-bolt at a point between the front axle and the upper cross-bar 12 of the upper circle, which circle has a gap or notch 14 of sufficient width
80 to allow the draw-bar to swing laterally. The draft-bar could be bent so as to extend over the rear portion of the upper circle; but, by providing the latter with said gap and extending the draw-bar through the same, unnecessary bending of the draw-bar is effected, and
85 hence the pull on the king-bolt can be substantially co-incident with the line of forward draft, which is attained by a draft connection between the king-bolt and evenner or double-
90 tree consisting of a bar or rod P to which the double-tree or evenner Q is attached.

It is here stated that the upwardly curved portion of the draft-bar D shown at the right
95 in Fig. 4, is simply the portion of an arch with which the draft-bar in road making machines of this type is provided.

The draft-bar P is jointed at 15, in which way it comprises a couple of sections 16 and 17 and permits its forward section to rise and
100 fall with the pole R. The king-bolt extends through the rear section 17 of the draft-bar, which section, at its rear end, lies against the forward end of the draw-bar D. The said section 17 of the draft-bar passes between the
105 two circles, which are notched for such purpose; the joint 15 in the draft-bar being forward of the fifth-wheel.

The evenner Q is pivoted to the forward section 16 of the draft-bar; and said section is,
110 at its forward end, upheld upon and connected with the tongue or pole R by a jointed connection, such for example, as a swinging link 18. The pole R is suitably connected with the rear axle; as, for instance, by hounds S, which
115 are rigid with the pole but hinged to the front axle at 19, 19. By the foregoing described arrangement, I attain a substantially direct line of draft between the evenner and scraper-blade, since the draw-bar D is substantially in line
120 with the draft-bar P. The draw-bar D also exerts a back-pull on the king-bolt at a point between the upper circle and the front axle. The front axle and fifth-wheel can also rock independently of the pole or the pole can tilt
125 independently of the front axle; it being observed that while the back-pull on the draw-bar D tends to rock the fifth-wheel and front axle to the rear, the forward pull or draft through the draft-bar P tends to rock the
130 fifth-wheel and front axle forward, and hence counter-acts such back-pull.

What I claim as my invention is—

1. The combination substantially as here-

inbefore set forth, in a machine for making and repairing roads, of a body-frame pivotally connected with the front axle, a diagonally adjustable scraper-blade arranged to extend across the space between the front and rear wheels, a horizontally-swinging rear axle, a transversely arranged slide supported upon the body-frame, and a jointed connection between said slide and an arm or hounds upon said rear axle.

2. The combination substantially as here-inbefore set forth, in a machine for making and repairing roads, of a body-frame pivotally connected with a front axle, a diagonally adjustable scraper-blade arranged to extend across the space between the front and rear wheels, a horizontally swinging rear axle provided with an arm or hounds, a sliding rack supported upon the body-frame and connected with the arm or hounds of said rear axle, and a gear for operating said rack.

3. The combination substantially as here-inbefore set forth, in a machine for making and repairing roads, of a body-frame pivotally connected with the front axle, a diagonally adjustable scraper-blade arranged to extend across the space between the front and rear wheels, the horizontally swinging rear axle provided with an arm or hounds, the sliding rack-bar K connected with said arm or hounds, a gear engaging said rack and a hand-wheel shaft carrying said gear.

4. The combination in a machine for making and repairing roads, of the fifth-wheel having a gap 14 for the draw-bar with which the scraper is connected, a draw-bar connected at its rear end with a scraper-blade and at its forward end pivotally held by the king-bolt, and a draw-bar connected with the king-bolt and carrying the evenner, or double-tree substantially as set forth.

5. The combination in a machine for making and repairing roads of a draft-bar connected at its rear end with the king-bolt and at its forward end attached to the pole by a jointed connection and carrying between its ends the evenner or double-tree, a scraper-blade, and a draw-bar for drawing the scraper-blade pivotally held by the king-bolt, substantially as set forth.

6. The combination in a machine for making and repairing roads, of a scraper-blade, a draw-bar for drawing the scraper-blade pivotally held at the forward end of the machine, and a jointed draft-bar P for the evenner or double-tree, held at its rear end adjacent to the said draw-bar and at the forward end connected with the pole by a jointed connection.

7. The combination in a machine for making and repairing roads, of a fifth-wheel comprising the lower circle rigid upon the front axle, and an upper circle pivotally held by the king bolt and sustaining the forward end of the body frame, a scraper-blade, a draw-bar for drawing the scraper-blade pivotally held by the king-bolt, and a draft connection between the evenner or double-tree and the king-bolt, substantially as set forth.

8. The combination in a machine for making and repairing roads of a fifth-wheel comprising a lower circle rigid on the front axle, and an upper pivoted circle, a draw-bar D connected with the scraper-blade and pivotally held by the king-bolt, and a jointed draft-bar P connected with the king-bolt and attached to the pole by a link connection, substantially as set forth.

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