

(No Model.)

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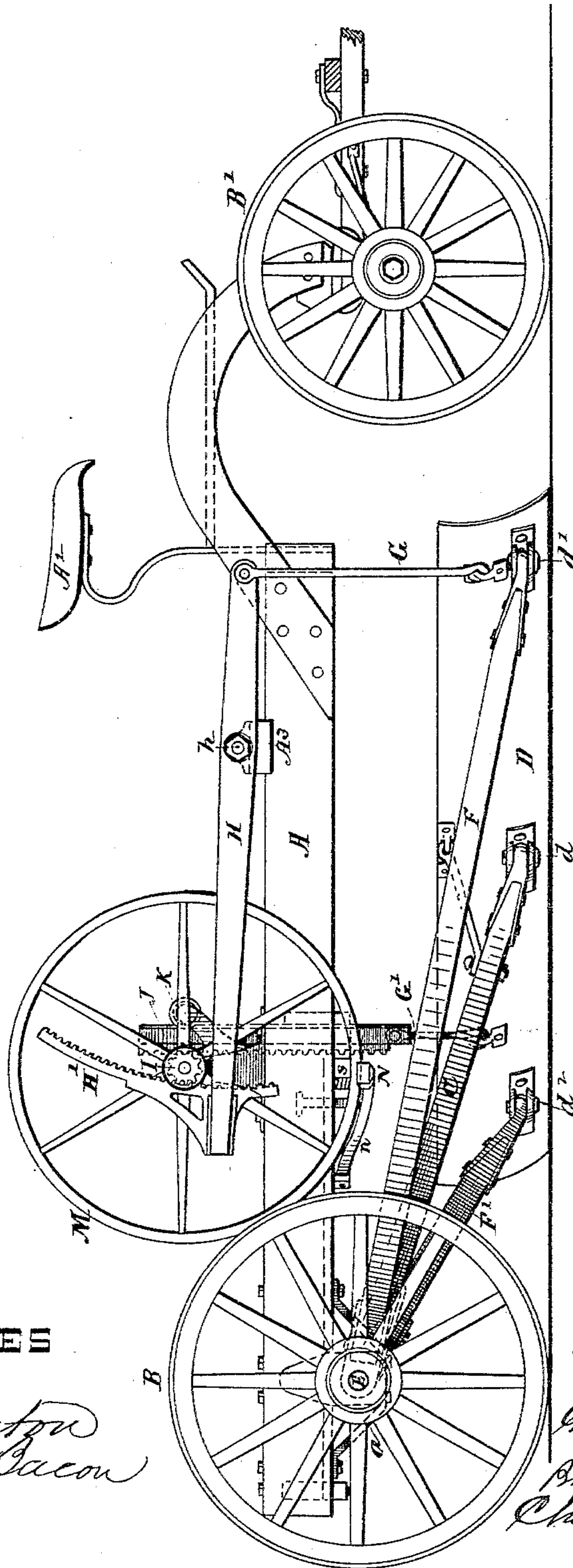
G. W. TAFT.

MACHINE FOR MAKING, REPAIRING, AND CLEANING ROADS.

No. 331,920.

Patented Dec. 8, 1885.

FIG. 1



WITNESSES

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INVENTOR

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(No Model.)

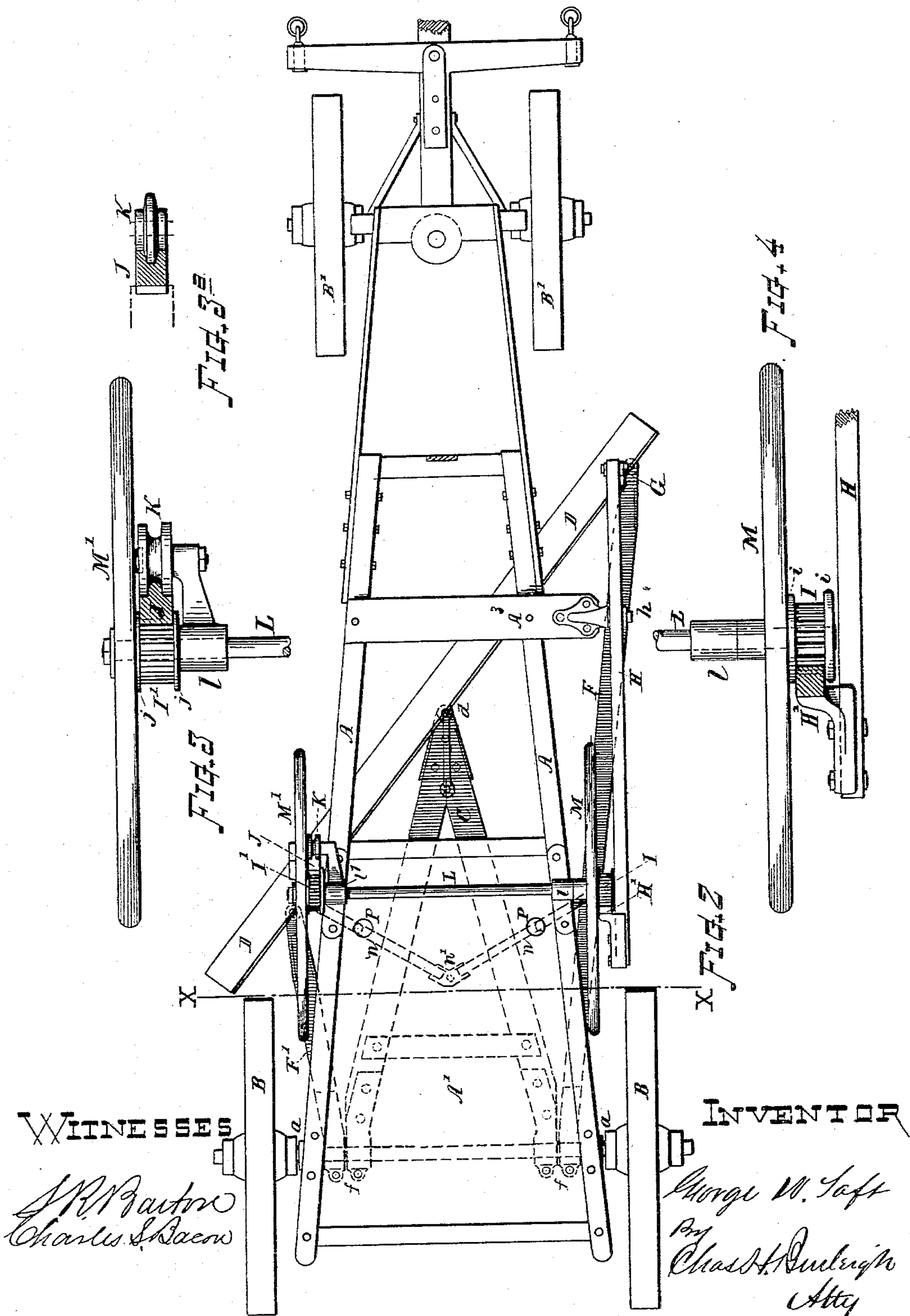
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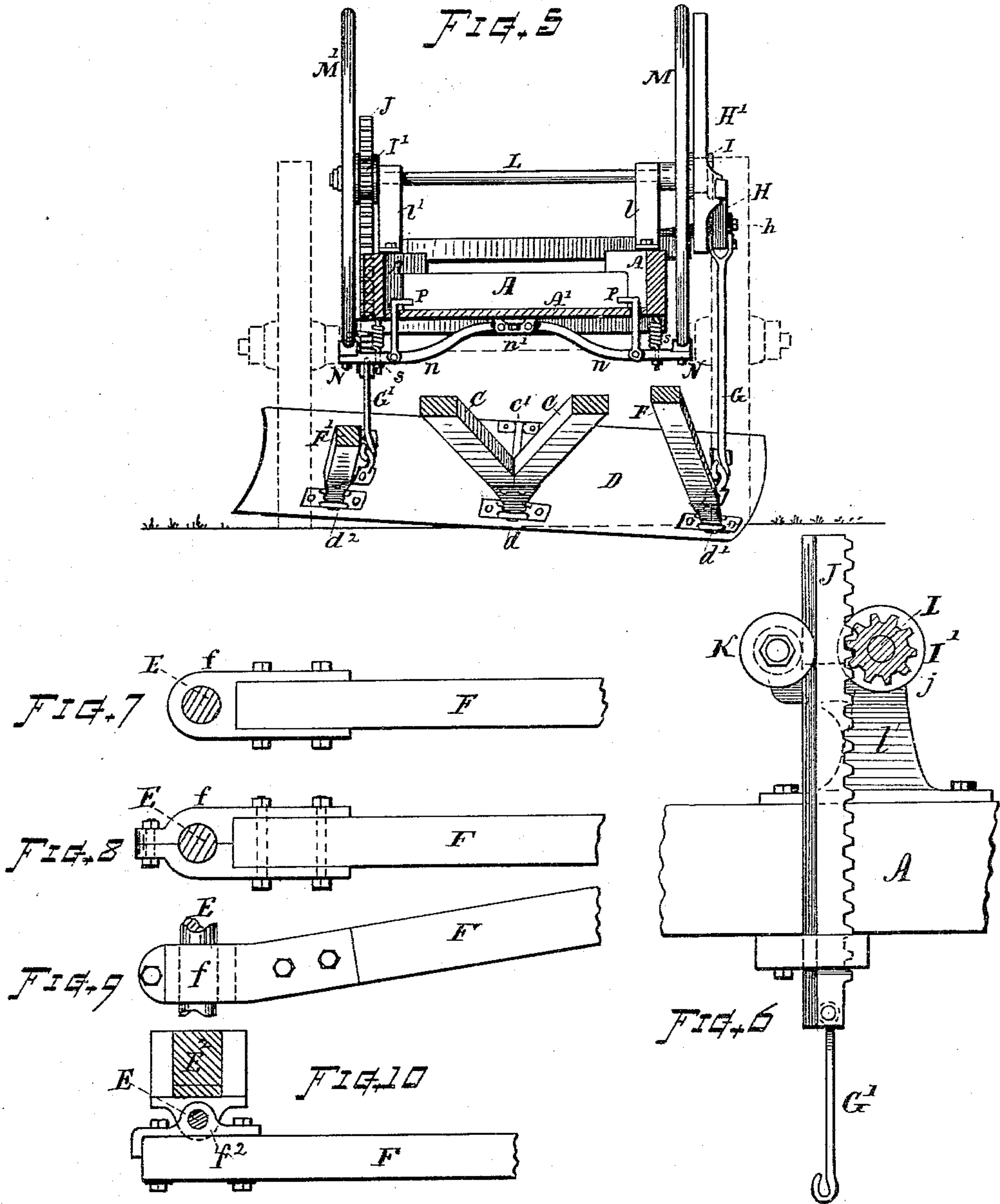
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# UNITED STATES PATENT OFFICE.

GEORGE W. TAFT, OF ABINGTON, CONNECTICUT.

## MACHINE FOR MAKING, REPAIRING, AND CLEANING ROADS.

SPECIFICATION forming part of Letters Patent No. 331,920, dated December 8, 1885.

Application filed May 6, 1885. Serial No. 164,547. (No model.)

*To all whom it may concern:*

Be it known that I, GEORGE W. TAFT, a citizen of the United States, residing at Abington, in the town of Pomfret, in the county of Windham and State of Connecticut, have invented certain new and useful Improvements in Machines for Making, Repairing, and Cleaning Roads; and I declare the following to be a description of my said invention, sufficiently full, clear, and exact to enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification.

This invention relates to improvements in that class of road-machines in which the working blade or scraper is suspended or arranged beneath a carriage or body mounted upon traveling wheels, and having thereon mechanism for adjusting the position of the blade under control of the operator who rides upon said carriage.

The objects of my present invention are to provide an efficient and convenient "stiff-angled" or non-reversible road-machine in which the ends of the blade are positively sustained against the working strain, while permitted vertical adjustment by means of push-bars extending from the rear of the machine to the back of the blade; also, to provide in a non-reversible road-machine a vertically-swinging thrust-frame and push-bar arrangement that will permit the required adjustments of the scraper in relation to the plane of the road; also, to provide in a road-machine a hand-wheel-operating device for imparting motion to the blade-elevating mechanism, whereby the respective ends of the blade can be raised and depressed in a quick, easy, and convenient manner; also, to provide an improved lifting mechanism for elevating and depressing the blade; also, to afford facilities in a road-machine, in connection with hand-wheel operating devices, of a brake or stop device for retaining the hand-wheel, lifting mechanism, and blade at position of adjustment. These objects I attain by mechanism, the nature, construction, and operation of which is illustrated in the drawings, and explained in the following description, the

particular subject-matter claimed being hereinafter definitely specified.

In the drawings, Figure 1 represents a side view of a road-machine, illustrating the features of my present invention. Fig. 2 is a plan view of the same. Fig. 3 is a detail view on larger scale, showing the lifting-bar, guide-roll, and hand-wheel for raising and depressing the rear end of the scraper or blade. Fig. 3<sup>a</sup> shows a modification of the guide-roll and lifting-bar guide-flanges. Fig. 4 is a detail view of the hand-wheel, the gears, and part of the lever for raising and depressing the forward end of the blade. Fig. 5 is a transverse vertical section of the machine in rear of the scraper-blade, at line *x x*, Fig. 2, with dotted lines indicating the relative location of the rear carrying-wheels. Fig. 6 is a detail view showing the adjusting-gear for raising and depressing the rear end of the blade. Figs. 7, 8, and 9 are detail views showing the manner of connecting the push-bars to the rear axle or their support-bar; and Fig. 10 shows a modified form of connecting-hinge for said push-bars that may be employed with a square axle or support-bar.

In reference to parts, A designates the carriage-body or supporting-frame mounted upon front and rear axles having traveling wheels B and B', the front axle being provided with a tongue and draft attachments for the team, whereby the machine is drawn forward along the road when working it. A platform or floor, A', is provided on the carriage for the attendant or operator who manages the machine, and a seat, A<sup>2</sup>, is provided for the driver who directs the team. Beneath the carriage is a thrust-frame, C, extending from the rear part of the machine to the center of the scraper-blade D, which latter is located between the front and rear wheels, as indicated. The thrust-frame C is preferably of V shape, as shown in my former patents, the broad end being hinged or joined to the rear axle, E, and the point or front end being attached to the blade D, near its lower edge, by a connecting joint, *d*, that will permit the end of the blade to be elevated or depressed. The top edge of the blade may be braced back to the thrust-frame by a rod suitably attached



thereto, to retain it from forward and backward tipping action. The rear axle, E, is preferably made as a round shaft extending across from one wheel, B, to the other, the body being rigidly attached thereto by suitable castings and braces at *a*, which firmly clamp said axle-shaft, and at the same time form seats for the body-beams and bearing-collars for the wheel-hubs.

F indicates a push-bar arranged in rear of the forward end of the blade D for sustaining the backward thrust thereon when the point is plowing into the earth. The forward end of said push-bar is attached to the lower part of blade D, at or near the end thereof, by a connecting-joint, *d'*, that admits of a limited amount of swivel action, so that the end of the blade can be raised and lowered freely. The rear end of said push-bar F is hinged upon the rear axle, E, or connected with the carriage in a manner that will permit its forward end to swing up and down while resisting the backward strain on the blade.

F' indicates a similar though shorter push-bar arranged at the opposite side of the machine for sustaining the rear end of the blade D, the end of said bar F' being attached to the blade at *d''* by a connecting-joint similar to that at *d'*, and its rear end hinged or connected in a manner similar to that of bar F. The rear ends of the push-bars C, F, and F' are preferably provided with head castings or bearings *f*, having openings that pass over and embrace the axle-shaft E in the manner shown, (see Figs. 2, 7, 8, and 9,) so that said bars can swing on the axle as a pivot.

The several parts may be disposed and located upon the axle as illustrated; or in some cases it may be desirable to have the ends of the push-bars F F' connected at the outer sides of the carriage-frames next the wheels, which may be done; but I prefer the construction shown. If preferred, or in case a square axle or beam is used to sustain the rear ends of said push-bars, they may be attached in other efficient manner, or as indicated in Fig. 10, wherein *f*<sup>2</sup> is the bearing, E<sup>2</sup> the axle or supporting-frame, and E a supplementary bar attached thereto for receiving the hinge or bearings *f*<sup>2</sup>.

The central thrust-frame, C, and the push-bars F F' together form a vertically-movable W-shaped truss in rear of the blade that sustains said blade strongly against the working-strains, while it permits the vertical and inclined adjustment of said blade as desired. The front end of the blade D is suspended by a bar or link, G, from the arm of a lever, H, that is arranged along the side of the machine and fulcrumed at *h* on a support, A<sup>3</sup>, that projects from the carriage-frame. The rear arm of said lever is provided with a gear-segment, H', that meshes with an actuating-pinion, I, by which the arm of the lever may be moved up and down for raising and depressing the front end of the lever and blade. The rear end of the blade is connected by a link, G', to a vertically-sliding rack, J, that meshes with

an actuating-pinion, I', and is guided by a flanged friction-roll, K, pivoted on a suitable bracket or support connected to the carriage-frame A. The pinion I that operates the lever H may be provided with flanges *i i'*, for embracing the sides of the internally-toothed segment H', and thus serving to guide and retain said segment and its lever H in proper relation therewith as it is moved up and down by the rotation of the hand-wheel M. The rack J and its guide-roll K are preferably fitted to each other by intermatching grooved and flanged surfaces, as indicated in Figs. 3 and 3<sup>a</sup>, and the operating-pinion I' is provided with flanges *j* to embrace the sides of the rack, so that said rack is confined and guided in proper relation as it slides up and down, and works with but little friction or resistance when adjusting the blade.

Hand-wheels M and M' are provided for imparting motion to the respective pinions I I' or operating-gear of the blade-lifting mechanism when elevating and depressing the blade or adjusting the blade to differently-inclined positions in relation to the plane of the road. These wheels may be made some three feet in diameter, (more or less,) with round or other formed rims that can be conveniently grasped by the hand at any part of their periphery. In the present instance the hand-wheels and their pinions are respectively attached to each other or formed on the same hub. They are mounted on a shaft, L, that extends across the carriage A and is supported in bearings on suitable standards, *l l'*. One of the wheels (M or M') is arranged to turn loose on shaft L, so that the two wheels can be revolved independently of each other for separately adjusting either end of the blade required. The rims of the hand-wheels are made sufficiently heavy to act as a balance against the weight of the blade-lifting devices, so that the momentum of the wheel will greatly assist the operator in the manipulation of the machine. Short shafts or studs may be used in lieu of shaft L as journals for the hand-wheels and gears, if desired. I prefer, however, to have the shaft extend across the machine, as it makes a stronger and more rigid construction.

Brake mechanism is arranged in connection with the carriage for stopping and retaining the hand-wheels to hold the blade at any position of adjustment. Said brake mechanism may be made, as indicated, with levers *n*, having one end fulcrumed beneath the platform at *n'*, and the other provided with a pad or shoe, N, to press against the rim of the hand-wheel, a suitable spring, *s*, being connected therewith to give the required holding pressure. A foot piece or pedal, P, arranged at a convenient position enables the attendant to depress the lever and brake-shoe by placing his foot thereon when he desires to throw off the brake for releasing the hand-wheel.

In lieu of connecting the hand-wheel and blade-lifting bar or lever by means of a toothed pinion and rack, said parts may be connected



by a strap or chain, (one or more,) one end whereof connects with the lift bar or lever, while the other end is arranged to wind onto the pinion or hub on the hand-wheel, or onto a sheave geared to the hand-wheel hub.

The operation of this road-machine is obvious from the drawings and foregoing description. The operator, standing upon the platform A, when he desires to raise or depress either end of the blade, places his foot upon the brake-pedal P corresponding to the end to be adjusted, and grasping the rim of the wheel where it is most convenient to his hand, swings it backward or forward (accordingly as required) with a free and easy action, and to a greater or less extent, as desired, then releases the pedal and the brake or stop is automatically applied by its springs.

A hand-wheel, in combination with and for imparting motion to mechanism for elevating and depressing the scraper or blade in a road-machine, is of great practical utility and advantage, as it enables the operator to handle and control the machine with greater ease and facility than with a lever handle or crank, and does not necessitate his taking an awkward or constrained position at any part of the action. The rim of the wheel, acting by its momentum as a balance-wheel, also enables the operator by a quick movement to suddenly throw the blade completely up from the ground to avoid contact of large stones or other obstructions while the machine is in motion. Said rim also serves as a continuous seat for the stop or brake, so that the adjustment can be held with the blade at any degree of elevation desired.

A hand-wheel adapted to act by its peripheral momentum, or as a balance-wheel, for assisting or augmenting the throw or movement when adjusting the scraper, in combination with the scraper-blade and blade-adjusting mechanism, for the purpose specified, is an important feature of my invention.

Hand-wheels may be employed for elevating and depressing the scraping-blade in a road-machine, in combination with connections or lifting devices of other construction and arrangement from those herein shown, with beneficial results, and I so intend to employ said hand-wheels; and I have in other applications (see Serial Nos. 167,212 and 173,968) for Letters Patent described and claimed certain combinations in which other forms of lifting mechanism are employed for effecting the vertical adjustment of the blade.

I am aware that a railroad snow-plow or track-clearer has heretofore been patented, in which the plow was braced from the car-axle by parallel braces rigidly connected to the plow; and that a swinging transverse scoop or shovel pivoted between the ends or rearwardly-extending braces of equal length, and in connection with a wheeled carriage, has also been shown in another patent. I am also aware that other patents exhibit road-scrappers wherein braces or links are shown which

connect blade-supporting standards in rear of the blade, with one of the side bars of the carriage-frame. Such devices I do not therefore herein claim, as neither of them attain the results incident to my improvement—viz., perfect flexibility of adjustment with direct support or thrust under all conditions of use and positions of adjustment.

What I claim as of my invention, and desire to obtain by Letters Patent, is—

1. In a machine for grading and clearing roads, the combination, with a scraper bar or blade suspended from the carriage between its front and rear wheels, of thrust-bars extending from the axle or rear of said carriage, and attached to the back of said scraper near its ends by connecting-joints that permit upward and downward adjustment at each end of the scraper-blade, independent of the other, substantially for the purpose set forth.

2. In a road-grading machine, the combination of the scraper-blade, the central thrust-frame, C, connected for supporting the middle of the blade, and the push-bars F and F', connected for sustaining the ends of the blade, substantially as set forth.

3. The combination of the non-reversible scraper-blade, the triangular thrust-frame C, the push-bar F, hinged at its rear end to the carriage or axle and at its forward end to the scraper near the advance end thereof, and a lifting connection and lever, as H, for elevating and depressing the advance end of said blade and push-bar, substantially as set forth.

4. The combination, with a diagonal scraper supported in connection with a wheeled carriage and adapted for upward and downward adjustment independently at either of its ends, of an operating-wheel (or wheels) for effecting such adjustment, adapted to act as a momentum or fly wheel, as set forth, whereby the peripheral weight of said wheel is utilized to assist in the adjustment of the blade, substantially as hereinbefore explained.

5. In a machine for grading and clearing roads, the combination of a diagonally-disposed vertically-adjustable scraper-blade supported by a push-frame in rear of said blade, an elevating mechanism connected for raising and lowering the respective ends of said blade, and a hand-wheel adapted for developing peripheral momentum carrying a pinion for imparting motion to said elevating mechanism for effecting the upward and downward adjustment of the scraper.

6. In a machine for grading, repairing, and clearing roads, the combination of a vertically-adjustable scraper-blade, a thrust-frame connected to the body or its supporting-axle in rear of said blade, a lifting-lever supported on the carriage and provided with a segment and connecting-link for raising and depressing said scraper, and a hand-wheel and pinion engaging said segment for imparting motion thereto, substantially as set forth.

7. The combination of the carriage or body mounted on front and rear wheels, the non-



reversible scraper sustained by a vertically-swinging thrust-frame from the rear axle, the suspending-rod, the backwardly-extended lever provided with a gear-segment at its opposite end, the pinion meshing therewith, and the hand-wheel for operating said pinion.

8. In a machine for grading and repairing roads, the combination of a scraper-blade, push-bars for sustaining the ends of said blade hinged to permit upward and downward adjustment, blade-adjusting mechanism, with hand-wheels for imparting motion thereto, and brakes acting upon said hand-wheels for retaining said wheels and the blade at any position of adjustment, substantially as set forth.

9. In a road-grading machine, the combination, with the carriage and the hand-wheel for operating the blade-elevating devices, of the brake-lever *n*, fulcrumed on said carriage and provided with a presser-shoe, *N*, for engaging said hand-wheel, the spring *s*, and pedal *P*, substantially as and for the purpose set forth.

10. In a road-machine, the combination of a scraper-blade adapted for upward and downward adjustment at its respective ends, an operating hand-wheel (or wheels) connected therewith for effecting such adjustment, and a brake (or brakes) acting against said wheel to arrest movement thereof and retain the parts, substantially as set forth.

11. In a wheeled road-scraper, the combination of a scraper-blade adapted for upward and downward adjustment at its respective

ends, an operating-wheel (or wheels) connected therewith for effecting such adjustment and adapted for developing peripheral momentum for throwing the blade up or down, and a brake acting against said wheel to arrest the movement thereof and retain the parts in position, substantially as set forth.

12. In a road-grading machine, the combination of the non-reversible scraper-blade, the lever *H*, having a gear-segment, *H'*, and link *G*, for adjusting the advance end of the said blade, the rack *J*, and link *G'*, for adjusting the rear end, and the pinions *I* and *I'*, and means of imparting motion thereto for effecting the adjustment, substantially as set forth.

13. In a road-machine, the combination, with an oblique scraper suspended beneath a carriage or body mounted on front and rear wheels, of means for imparting independent upward and downward adjustment at the respective ends of said scraper provided with hand-wheel and pinion devices for imparting movement thereto, and stops or brake devices acting in connection with said hand-wheels for retaining the parts at positions of adjustment, substantially as described.

Witness my hand this 2d day of May, A. D. 1885.

GEORGE W. TAFT.

Witnesses:

CHAS. H. BURLEIGH,  
E. I. TYLER.