(No Model.) 4 Sheets—Sheet 1.

M. G. BUNNELL.

ROAD SCRAPER.

No. 427,739. Patented May 13, 1890.

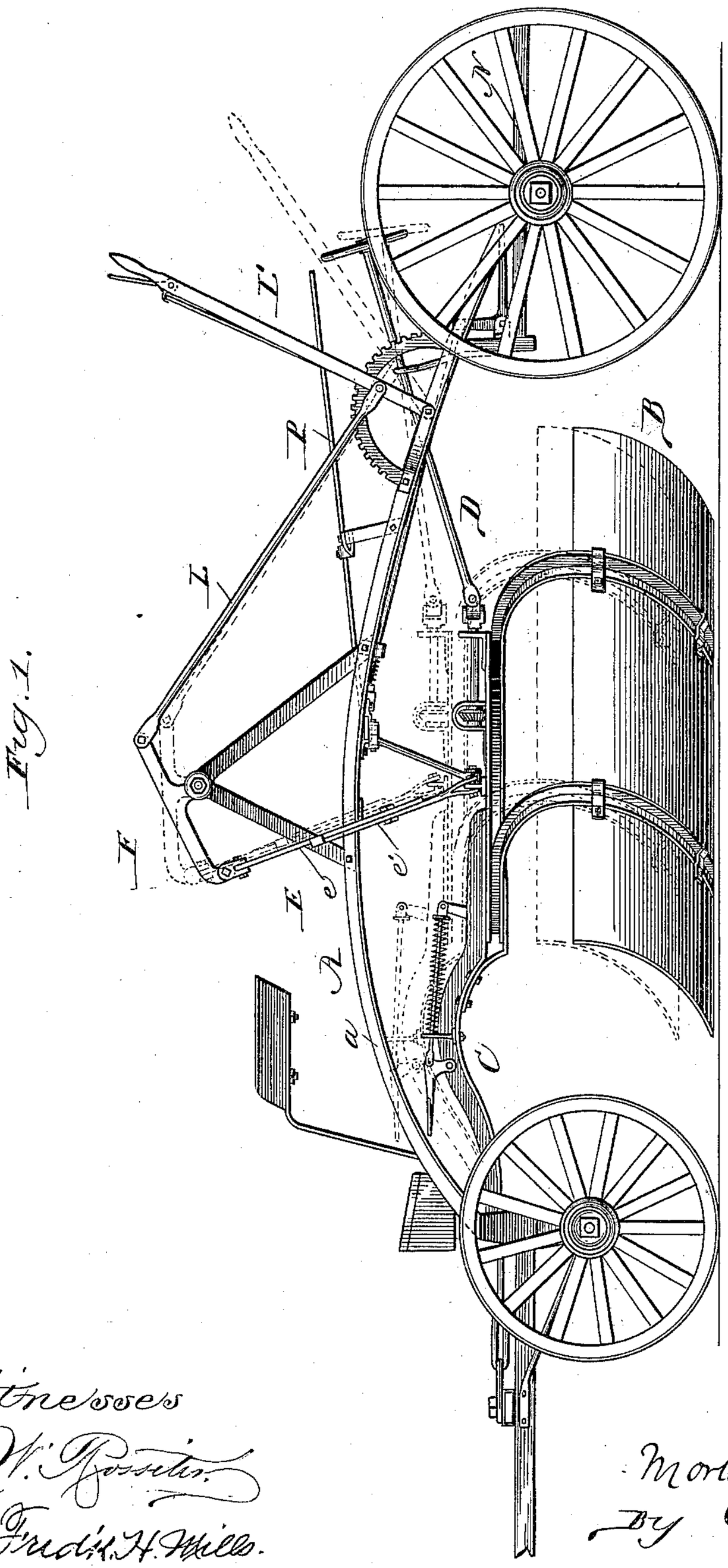

Fig. 1.

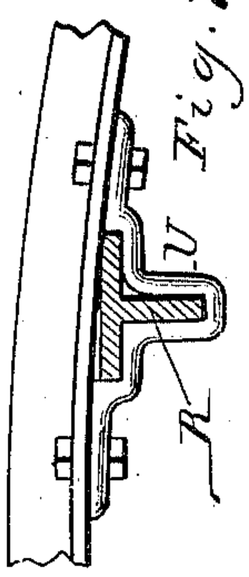

Fig. 2.

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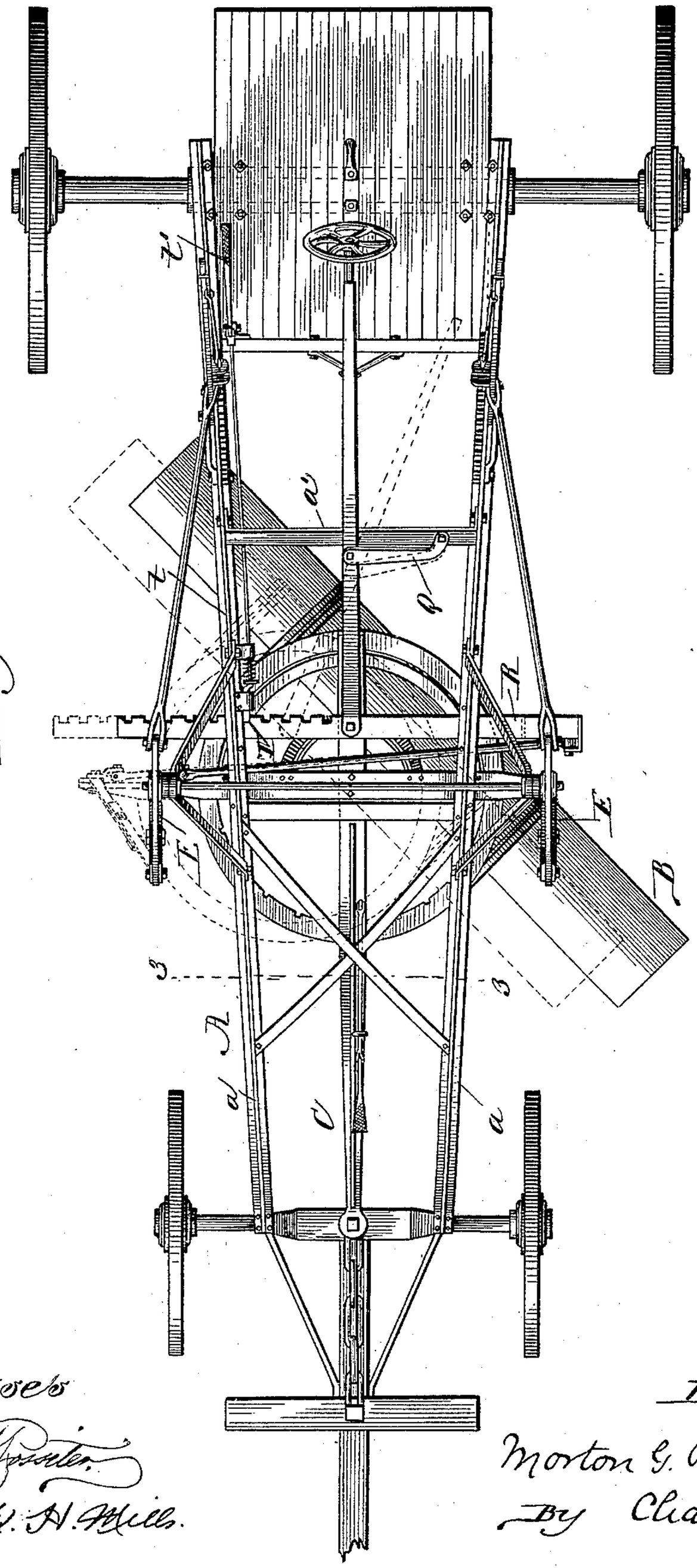

Fig. 2.

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ROAD SCRAPER.

No. 427,739. Patented May 13, 1890.

Fig. 3.

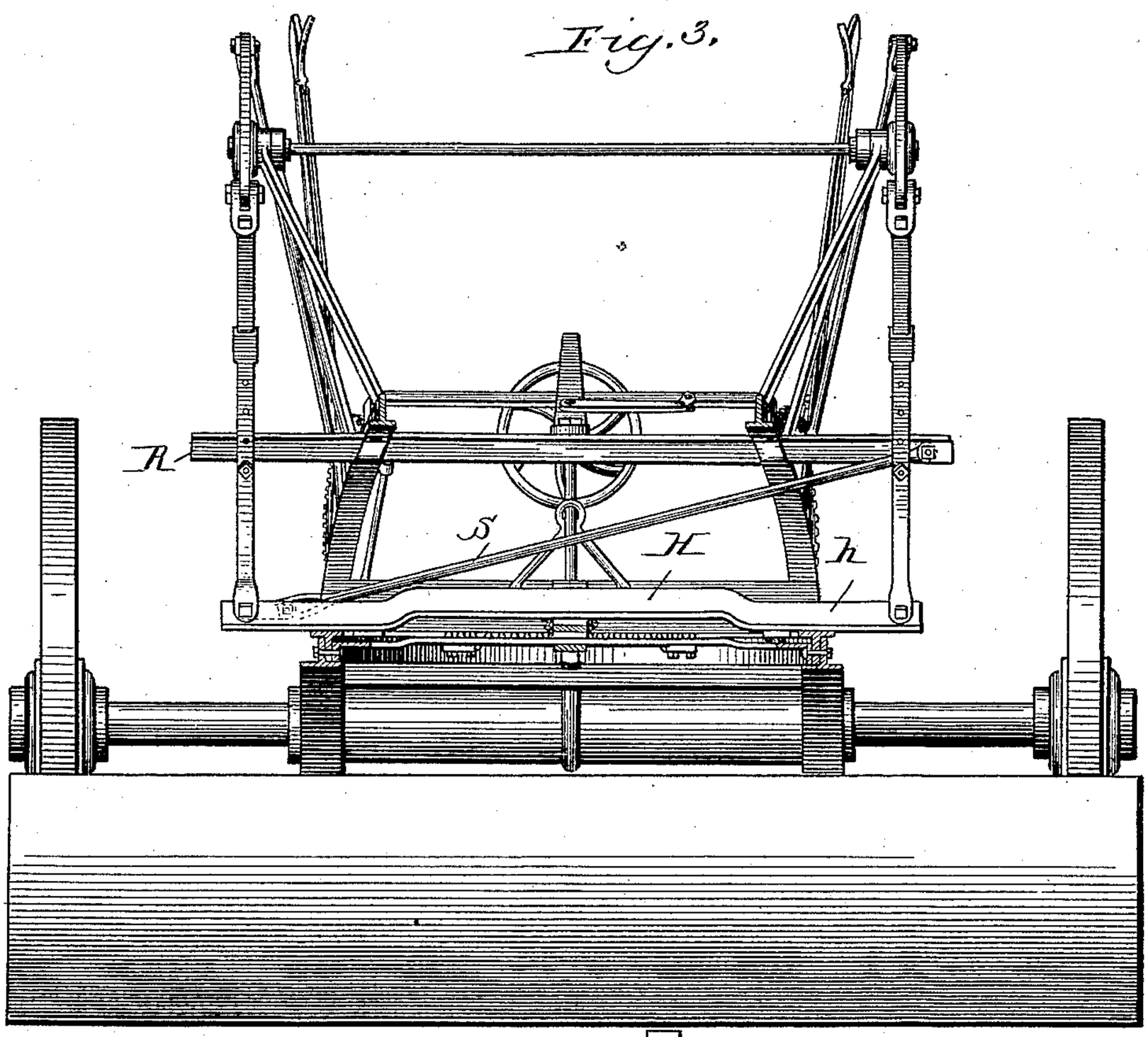
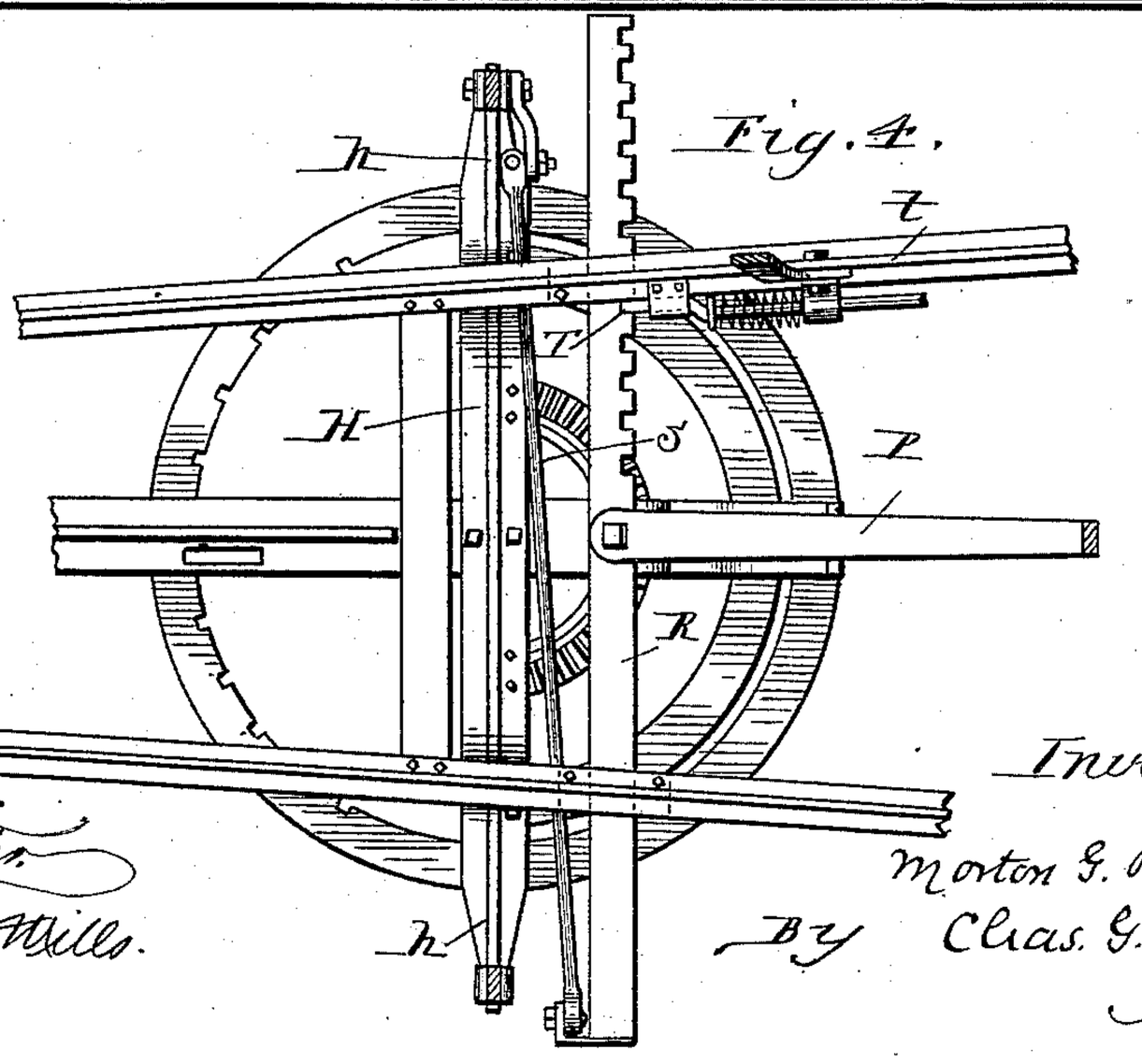


Fig. 4.



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(No Model.) 4 Sheets—Sheet 4.

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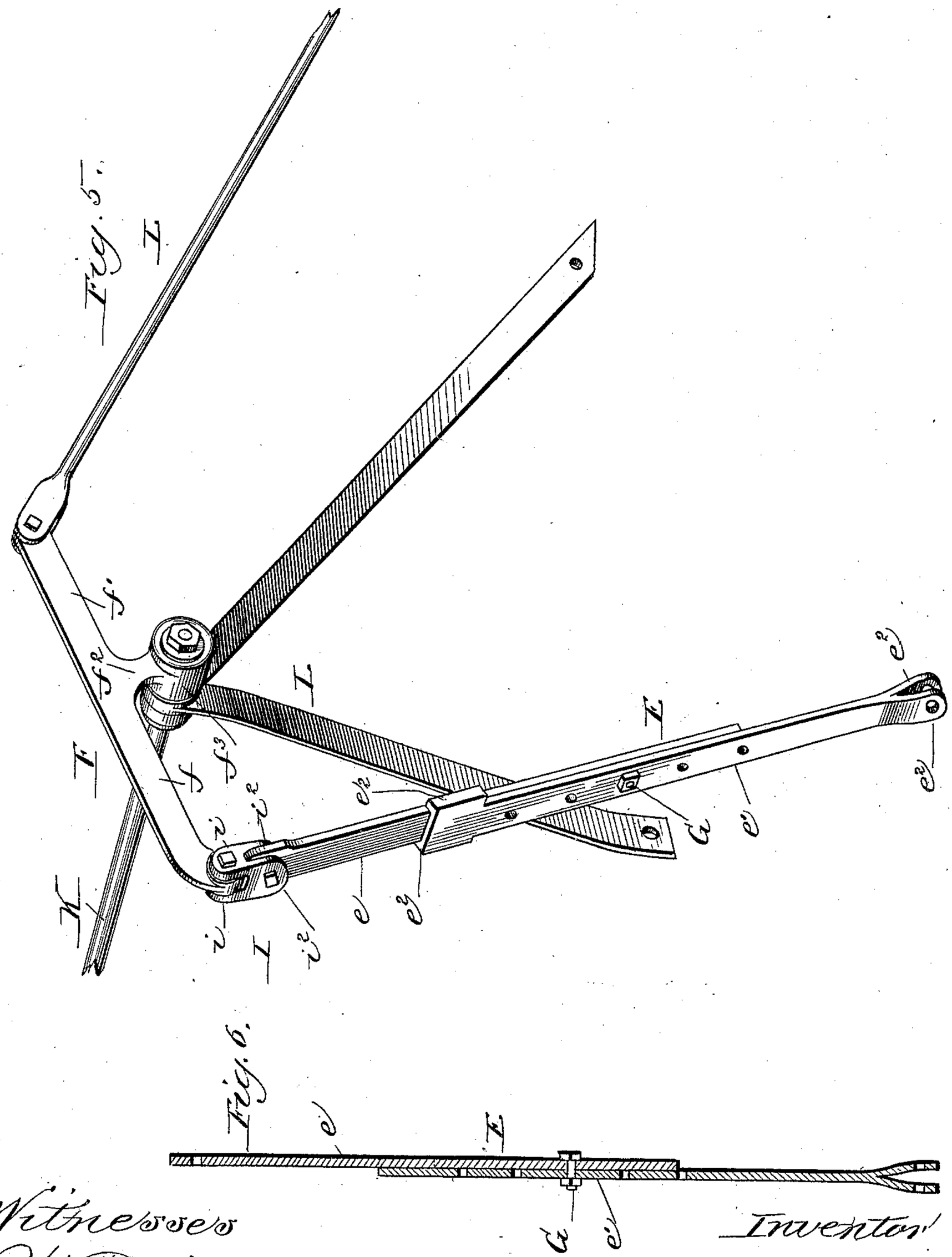
ROAD SCRAPER.

No. 427,739. Patented May 13, 1890.



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UNITED STATES PATENT OFFICE.

MORTON G. BUNNELL, OF CHICAGO, ILLINOIS, ASSIGNOR TO FREDERICK C. AUSTIN, OF SAME PLACE.

ROAD-SCRAPER.

SPECIFICATION forming part of Letters Patent No. 427,739, dated May 13, 1890.

Application filed August 12, 1889. Serial No. 320,532. (No model.)

To all whom it may concern:

Be it known that I, MORTON G. BUNNELL, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in Road-Scrapers, of which the following is a specification.

My invention relates more particularly to road-scrapers in which the blade is suspended by swinging hangers and arranged so that it can be reversed—that is to say, swung horizontally—so as to either vary its horizontal angle relatively to the line of progression or place one or the other of its ends ahead.

The objects of my invention are to provide improved hangers for suspending the blade, so that either or both of the hangers can be lengthened or shortened, according to requirements; to provide an improved construction of lever from which a suitable link or hanger for suspending the blade can be hung and to improve upon the bell-crank lever heretofore employed; to provide improved means for shifting or swinging the blade as a whole toward one and the other side of the machine, and to provide certain novel and improved details, as hereinafter set forth.

In the accompanying drawings, Figure 1 represents in side elevation a road-scraper embodying my invention, the dotted lines serving to illustrate the position of certain parts when the blade is raised from the ground. Fig. 2 is a top plan view, the position of certain parts when the blade is thrown or swung to one side of the machine being indicated in dotted lines. Fig. 3 is a cross-section on a vertical plane indicated by line 3 3 in Fig. 2. Fig. 4 principally represents in top plan the devices for reversing and swinging the blade, the front and rear portions of the main frame being broken away and certain adjuncts either removed or broken away for convenience of illustration. Fig. 5 mainly shows in perspective, on a larger scale, one of the T-levers and a hanger suspended therefrom. Fig. 6 represents a central longitudinal section through one of the hangers. Fig. 7 is a detail showing one of the bearings for bar R.

In said drawings, A indicates the body-frame, which is supported upon the front and rear axles, and which desirably involves the usual feature of long-arched side bars *a*, although such particular construction is not essential to my invention.

B denotes the scraper-blade, which is drawn by the swinging draft-bar C, and connected therewith so as to permit either end of the blade to be swung forward.

The devices herein shown for pivotally connecting the blade with the draft-bar and for reversing the blade—that is to say, for varying its horizontal angle relatively to the line of progression—are similar to those embodied in my application, Serial No. 304,209, and hence need not be herein particularly described. It may, however, be observed that the draft-bar is so hung or pivoted at its forward end that it can swing in any direction, and that the reversal of the scraper-blade can be effected by operating the jointed shaft D, as in my said application.

The independently-arranged lifting devices, by which either end of the blade can be raised and lowered independently of the other or both ends of the blade raised and lowered simultaneously, each comprise an extensible sectional hanger E, a vibratory T-lever F, and means suitable for operating the T-lever. The hanger is made adjustable in length and comprises a pair of flat bars *e* and *e'*, each provided with a series of bolt-holes for a bolt G, by which said bars, when placed together to form the hanger, can be locked against end slip upon one another. One of said bars is also provided with a sleeve or, as a simple substitute, a half-sleeve, formed by a pair of lips or flanges e^2, Fig. 5, which embrace the other bar, in which way by a simple expedient the bars are held against turning about the bolt G, and at the same time a relative longitudinal adjustment of the bars permitted when said bolt is removed to permit such adjustment to be made. The lower section *e'* of each of the hanger-bars is at its lower end pivotally attached to a cross-bar H, which crosses and is bolted to the draft-bar, and as an extremely simple mode of connection the lower ends of said hanger-bar sections *e'* are each divided to provide a couple of cheeks, between which the middle flange portion *h* of the bar H, which is made of T-iron, can be

received, and a pivot then extended through said cheeks and flange portion of the T-iron. By such arrangement the cross-bar can swing endwise when the draft-bar is swung laterally, for the purpose of throwing the blade toward either side of the machine, the pivotal connections between the hangers and the cross-bar not only permitting such movement, but also permitting play of the cross-bar in various directions, since said bar can hang quite loosely upon the pivots that are received in the cheeks e^2, and, furthermore, the cheeks can be set apart to such extent that the middle flange portion of the T-iron bar will but partially fill up the space between them. The upper ends of the hangers are jointed to the forward ends of the T-levers F by substantially universal joints, each involving an extremely simple and durable construction comprising a double-jawed piece I, having one pair of jaws i in planes at right angles to the planes of its two remaining jaws i^2. The upper ends of the upper hanger-bars e are pivotally held between the lower jaws i^2 of the blocks or pieces I, and the forward ends of the T-irons F are received between and pivotally connected with the upper jaws i of said blocks.

The T-levers are fulcrumed upon the ends of an elevated cross-rod K, which is supported by stands L, arranged to rise from the side bars of the body-frame of the machine. Each T-lever comprises the three arms f, f', and f^2. The two arms f and f' are formed by a straight bar and are long arms, while the middle arm f^2 is quite a short arm and provided at its lower end with a long eye or hub f^3, which is arranged to turn upon the cross-bar K. By thus making the arm f^2 quite short the bar which forms the long arms f and f', and which is arranged over the rod K, is set comparatively close thereto, so as to adapt the lever to practically rock upon the cross rod or fulcrum and at the same time permit such extent of bodily swing on the part of the T-lever as a whole as shall admit of the utilization of both movements as a means for rapidly lifting the scraper-blade.

The rear arms f' of the T-levers can be connected by chains or links with levers—such as hand-wheels or straight levers or similar devices—although as a desirable and simple way of operating the T-levers they can be connected by rods or links L with the hand-wheels L′. By arranging the forward and rear arms of the T-lever in line with one another and pivotally supporting said arms by the short middle arms f^2, as herein, all possibility of getting the lifting devices on dead-centers will be avoided, and a quick high lift readily attained, owing to the combined rocking and swinging action of said levers.

To permit an operator standing upon the rear platform N of the machine to shift or throw the blade transversely to the line of progression or toward either side of the machine, I provide blade-shifting device comprising substantially horizontal hand-lever P, which is arranged within reach of the attendant and connected with the scraper-blade support or carrier by a jointed connection, which, while permitting the attendant to throw or swing the scraper-blade and draft-bar toward either side of the machine will not interfere with other movements of the blade and draft-bar. The hand-lever P is at a point between its ends pivoted upon a swinging fulcrum Q, consisting of an arm or bar, which is at one end pivotally connected with the hand-lever P, and at its opposite end pivotally supported upon the main frame—as, for example, upon the cross-bar a'. By thus connecting the hand-lever with the scraper-blade by a connection which will permit a swing on the part of the lever to throw the blade toward a side of the machine, and pivoting said lever upon a swinging fulcrum which is pivotally supported upon the body-frame of the machine, the blade can be shifted with great ease, since there will be no binding or cramping of parts, and, moreover, the fulcrum will adapt itself to such arc as the blade may swing in when it is moved with an end movement, or substantially end movement toward either side of the machine. The forward end of the hand-lever P is pivoted to a horizontally-arranged slide-bar R, which is arranged transversely to the length of the machine and supported upon the main frame thereof. The slide-bar R is arranged above the cross-bar H, and is connected therewith by a link or rod S, which is at its ends pivotally connected at opposite sides of the machine, respectively, with end portions of one and the other of said two bars. By operating the hand-lever P the bar R can be shifted so as to cause the bar H and the draft-bar, to which it is attached, to move toward either side of the machine, during which said action the swinging fulcrum Q will accommodate itself to the relative movements of the hand-lever and bar R. By reason of the jointed connection formed between the slide-bar and the draft-bar or blade-support through the medium of the rod or link S′ the end movement of the said bar R will cause a bodily swing on the part of the suspended scraper toward one or the other side of the machine, it being here observed that while the cross-bar H in certain combinations herein constitutes a matter of improvement the feature of the slide-bar R and link S, in connection with the scraper-blade carried by any suitable swinging support or carrier which is suspended by any suitable construction of swinging hanger, also constitutes a feature of improvement regardless of the mode of attaching the blade to the swinging support or the devices by which such swinging support is suspended.

The bar R can be locked in its adjustment by a latch T, which is preferably spring-controlled and provided with an operating-rod f, which is extended back to and pivotally con-

nected with a foot-lever t'. The foot-lever t' is arranged within convenient reach of an attendant, who may stand upon the rear platform N, so that said attendant will have within ready and convenient reach the hand-levers L, for raising and lowering the scraper-blade, the hand-lever P, for swinging the scraper-blade to either side of the machine, the hand-wheel on rod D, for reversing the scraper-blade, and the foot-lever t', for operating the latch so as to unlock the bar R, in order to permit the scraper-blade to be swung toward one or the other side of the machine.

The bar R is preferably provided with a series of gaps or notches, so as to permit it to be engaged by the latch, and said bar is desirably made of T-iron and arranged to slide through bearings U, which are attached to the side bars of the main frame.

What I claim as my invention is—

1. The combination, substantially as hereinbefore set forth, with the scraper-blade, of the extensible sectional hanger E, comprising an upper section e, which is pivotally suspended, and a lower section e', which is adjustable upon said pivotally-suspended section for the purpose set forth.

2. The combination, substantially as hereinbefore set forth, with the scraper-blade, of an extensible sectional hanger therefor having an upper section suspended from a support by a substantially universal joint and a lower section, which is adjustable upon the upper section independently of said universal joint, for the purpose described.

3. The combination, substantially as hereinbefore set forth, with the scraper-blade, of an extensible sectional hanger therefor, comprising a pivotally-suspended bar e and a bar e', connected therewith by a sliding-sleeve connection, said bars being bolted together, substantially as in the manner and for the purpose described.

4. The combination, substantially as hereinbefore set forth, with the scraper-blade, of a hanger for suspending the scraper-blade and a vibratory lever connected at one end with an operating-rod and at its opposite end provided with the double-joint piece L, from which the hanger is suspended.

5. The combination, substantially as hereinbefore set forth, of an elevated swinging T-lever F, consisting of a straight bar formed with a downwardly-extending middle arm f^2 and extended to provide the front and rear arms f and f', a suitable standard rising from the main frame and provided with a pivot upon which the arm f^2 of the T-lever is pivotally supported at its lower end, and an operating-rod L, connected at one end with a hand-lever and at its opposite end connected with the arm f' of the T-lever, and a scraper-blade suspended from the arm f of the T-lever, for the purpose described.

6. The combination, substantially as hereinbefore set forth, of the scraper-blade suspended so that it may be swung toward one and the other side of the machine, a transversely-arranged slide-bar R, supported upon the body-frame of the machine, and a link-connection between said bar and the scraper-blade.

7. The combination, substantially as hereinbefore set forth, of the slide-bar R, the scraper-blade, the draft-bar, the transversely-arranged bar H, connected with the draft-bar, and a link-connection between said bars H and R.

8. The combination, with the scraper-blade suspended so that it can be swung toward one and the other side of the machine, of the slide-bar R, a suitable jointed connection between said bar and the scraper-blade, and the lever P, for shifting the slide-bar R, substantially as set forth.

9. In means for throwing the scraper-blade toward one and the other side of the machine, the transversely-arranged slide-bar, the scraper-blade, and suitable connection between said bar and scraper-blade, combined with the hand-lever P, pivotally connected with said slide-bar and supported upon a swinging fulcrum.

10. The combination, with the suspended scraper-blade arranged for movement in a direction transverse to the line of progression, of a shifting device for effecting such movement, comprising a hand-lever suitably connected with the blade to permit the swing on the part of the lever to throw the scraper-blade toward a side of the machine, and a swinging fulcrum Q, which is pivotally supported upon the body-frame of the machine, and which pivotally supports said lever.

11. The combination, with the notched slide-bar R in a scraper-shifting device, of a hand-lever connected with said bar and extending rearwardly therefrom, and a latch for locking the slide-bar, having an operating-rod which extends rearwardly from the latch, substantially as described.

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