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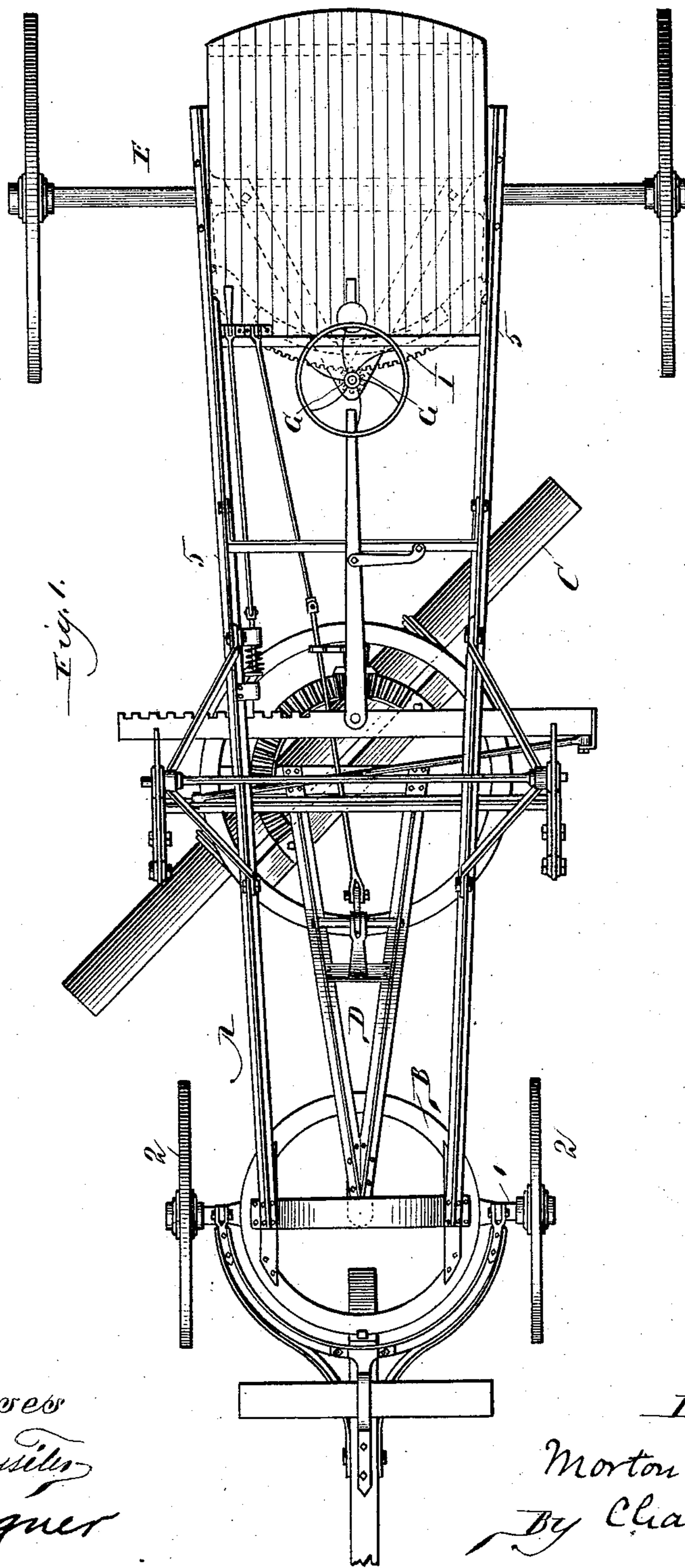
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M. G. BUNNELL.

MACHINE FOR MAKING AND REPAIRING ROADS.

No. 455,706.

Patented July 7, 1891.



Witnesses  
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R. Wagner

Inventor  
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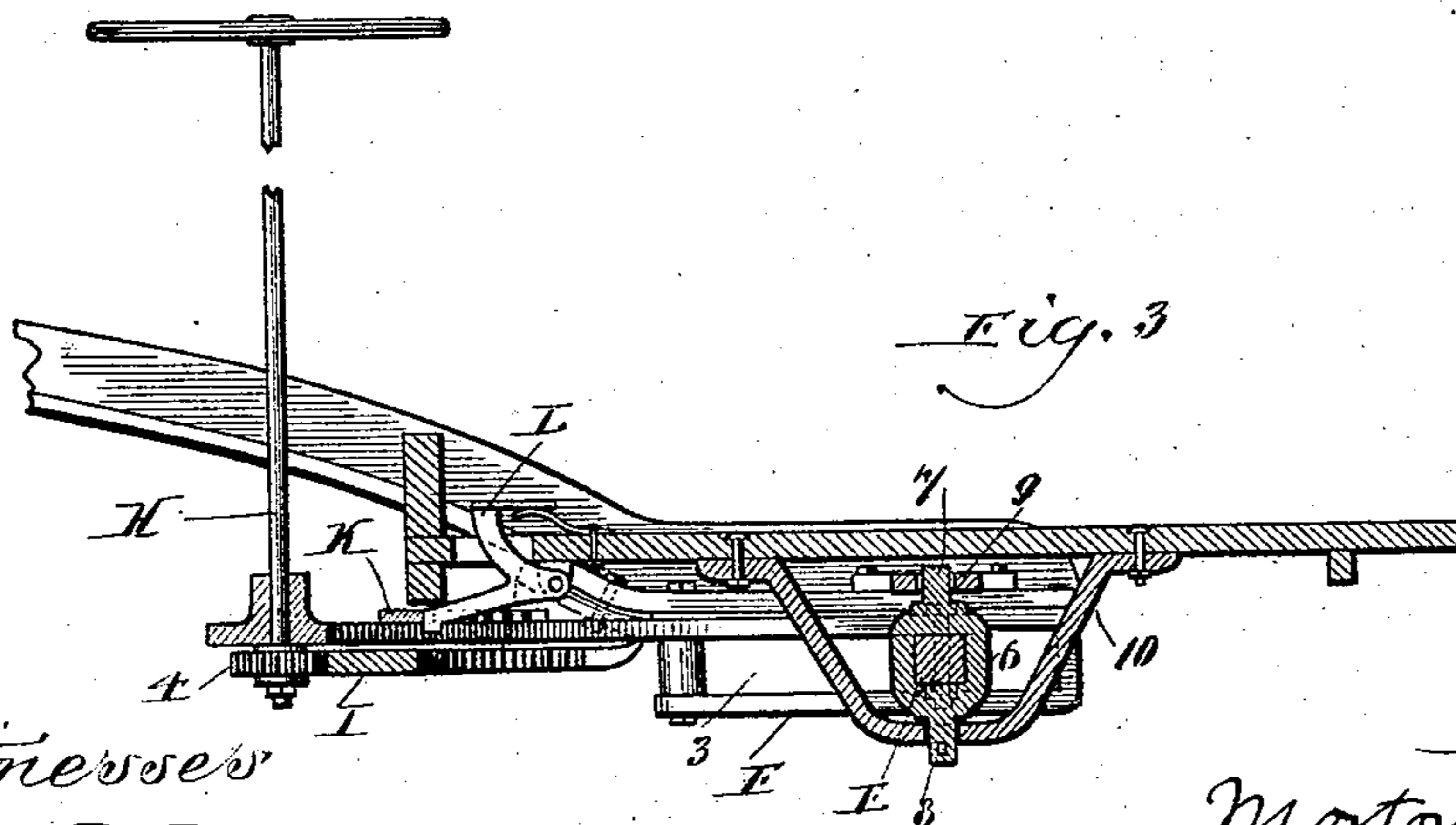
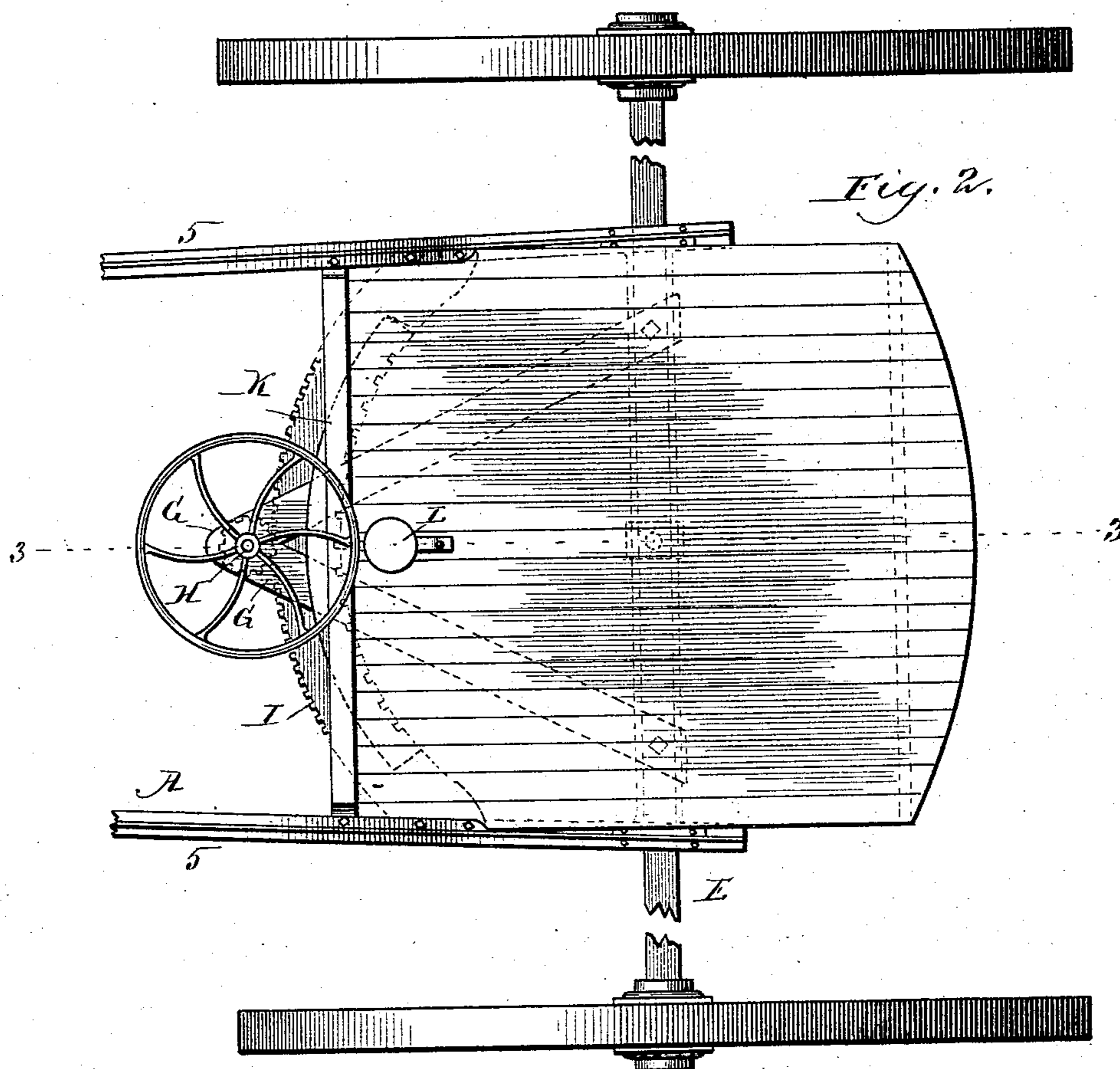
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# UNITED STATES PATENT OFFICE.

MORTON G. BUNNELL, OF CHICAGO, ILLINOIS, ASSIGNOR, BY MESNE ASSIGNMENTS, TO ANNA B. AUSTIN, OF SAME PLACE.

## MACHINE FOR MAKING AND REPAIRING ROADS.

SPECIFICATION forming part of Letters Patent No. 455,706, dated July 7, 1891.

Application filed October 27, 1890. Serial No. 369,468. (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 Machines for Making and Repairing Roads, of which the following is a specification.

My invention relates to a construction of 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 to 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.

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 road-working machine embodying my invention. Fig. 2 is a top plan view of the rear portion of the machine on a larger scale than the preceding figure and with portions of the rear axle broken away for convenience of illustration. Fig. 3 is a section on line 3 3 in Fig. 2, with the hand-wheel shaft and its gear in elevation and a portion of the hand-wheel shaft broken away for convenience of illustration.

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 and the other side of the machine. The blade is drawn by the horizontally and vertically swinging draft-bar D, with which the blade is pivotally connected, so that the 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 for raising and lowering the blade and for adjusting it about its pivotal connection with the swinging draft-bar, I have in Fig. 1 indicated as a means for attaining said ends and for swinging the draft-bar certain devices more fully illustrated in my application, No. 370,236, filed November 3, 1890.

The rear axle E is arranged to swing horizontally about a point midway of its ends and independently of the body-frame, and is extended through guideways 3, formed by guide-bearings F, which are secured to the body-frame at opposite sides thereof. These said guideways are arranged horizontally and parallel with the length of the machine, and are of a length proportional to the greatest desired extent of swing on the part of the rear axle. The rear axle is provided with a forwardly-extending arm or hounds G, which afford a support for the hand-wheel shaft H, arranged at the forward end of said arm or hounds. The hand-wheel shaft is provided with a gear 4, arranged to engage and travel along a curved rack I, which is secured to the body-frame and formed upon the arch of a circle having for its center a point midway of the ends of the rear axle. As a desirable arrangement the rack I is at its ends bolted to the side bars 5 of the body-frame. While the rear axle could be arranged so as to have a combined horizontal swing and end movement, such as is described and claimed in my pending application, Serial No. 369,466, filed October 27, 1890, I prefer to pivot the said axle at a point between its ends to the

body-frame. The rear axle may be pivoted to the body-frame in any suitable way, a preferred arrangement, however, being to provide it with a collar 6, having journals or pivots 7 and 8, respectively, engaging in bearings in a cross-bar 9 on the body-frame, and a bar 10, which is secured at its ends to the body-frame and bent downwardly between its ends, in which way the bar 9 provides a convenient bearing for the upper pivot 7. This construction of pivot is included in the subject-matter of my pending application, Serial No. 363,273, filed August 28, 1890. While the bar 10 forms a convenient bearing for the lower pivot 8, the axle can be locked in its adjustment in any suitable way—as, for example, I may provide the arm or hounds with a notched plate K, which can be engaged by a foot-latch L on the the body-frame.

By operating the hand-wheel the rear axle can be swung oblique to the length of the body-frame and held in such position as long as may be desired. When the axle is thus set oblique to the body-frame, the rear wheels will run to one side until the body-frame is oblique to the line of progression and the rear axle is again parallel with the front axle. The disposition of the rear wheels to run straight ahead will counteract side draft, and the horizontal swing of the body-frame about its pivotal connection with the front axle will effect a bodily adjustment of the scraper-blade to one or the other side of the machine, according to the direction in which the rear axle has been swung. The rear axle can be adjusted so that either one of its wheels can be caused to run in the track of the front wheel ahead of it and the rear wheels can also be made to run in other selected lines with reference to the horizontal angle of the blade relatively to the line of progression and to the positions occupied by the front and rear ends of said blade.

What I claim as my invention is—

1. The combination, substantially as hereinbefore set forth, in a machine for making and repairing roads, of a body-frame pivotally supported upon the front axle, a diagonally-adjustable scraper-blade carried below the body-frame and arranged to extend across the space between the front and rear wheels, a horizontally-swinging rear axle arranged to swing independently of the body-frame about a point midway of its ends, a curved rack fixed upon the body-frame, and a gear carried by a support on the rear axle, so that by operating said gear the rear axle can be swung in one or the other direction according to the direction in which the gear is rotated.

2. The combination, substantially as hereinbefore set forth, in a machine for making and repairing roads, of a body-frame pivotally supported upon the front axle, a diagonally-adjustable scraper-blade carried below the body-frame and arranged to extend across the space between the front and rear wheels, a horizontally-swinging rear axle pivotally connected with the body-frame, a curved rack secured upon the body-frame, and a hand-wheel shaft-gear connected with the curved rack and carried by an arm upon the rear axle.

3. The combination, substantially as hereinbefore set forth, in a machine for making and repairing roads, of the body-frame pivotally supported upon the front axle, a diagonally-adjustable scraper-blade carried below the body-frame and arranged to extend across the space between the front and rear wheels, a horizontally-swinging rear axle pivotally connected with the body-frame and provided with a forwardly-projecting arm or hounds, a curved rack secured upon the body-frame, and a hand-wheel shaft supported upon said arm or hounds and provided with a gear engaging the curved rack.

4. The combination, substantially as hereinbefore set forth, in a machine for making and repairing roads, of a body-frame pivotally secured on the front axle, a diagonally-adjustable scraper-blade carried below the body-frame and arranged to extend across the space between the front and rear wheels, a horizontally-swinging rear axle pivotally connected with the body-frame and extended through horizontally-arranged guideways on said body-frame, a curved rack secured to the body-frame, and a hand-wheel shaft carried by an arm on the axle and provided with a gear engaging the curved rack.

5. The combination, substantially as hereinbefore set forth, in a machine for making and repairing roads, of a body-frame pivotally supported on the front axle, a diagonally-adjustable scraper-blade carried below the body-frame and arranged to extend across the space between the front and rear wheels, a horizontally-swinging rear axle, a curved rack secured upon the body-frame, an operating-gear engaging the curved rack and carried by an arm on the rear axle, and a latch for temporarily holding the axle against swing independently of the body-frame.

MORTON G. BUNNELL.

Witnesses:

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CHAS. G. PAGE.