

(No Model.)

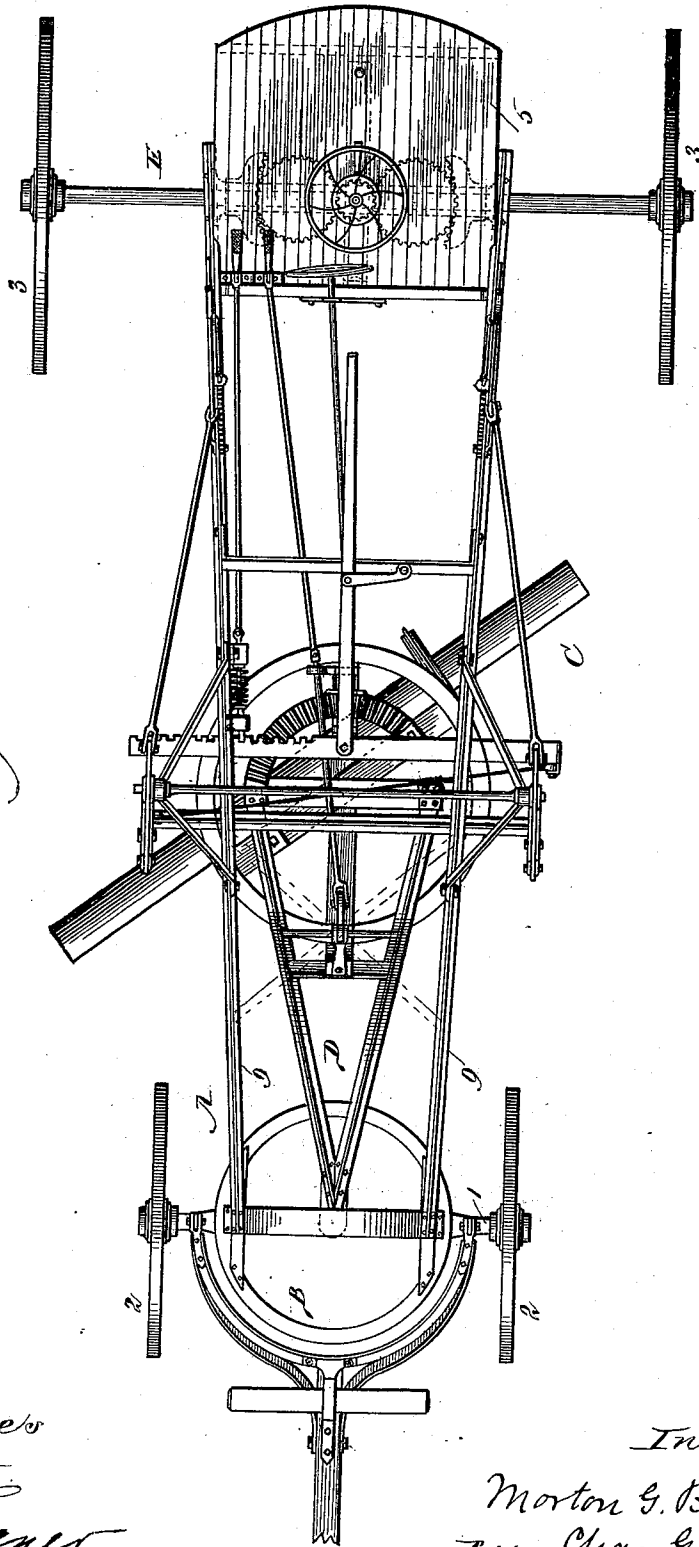
3 Sheets—Sheet 1.

M. G. BUNNELL.

MACHINE FOR MAKING AND REPAIRING ROADS.

No. 511,287.

Patented Dec. 19, 1893.



Witnesses
W. B. Smith
R. Wagner

Inventor
Morton G. Bunnell
By Chas. E. Page
Atty.

(No Model.)

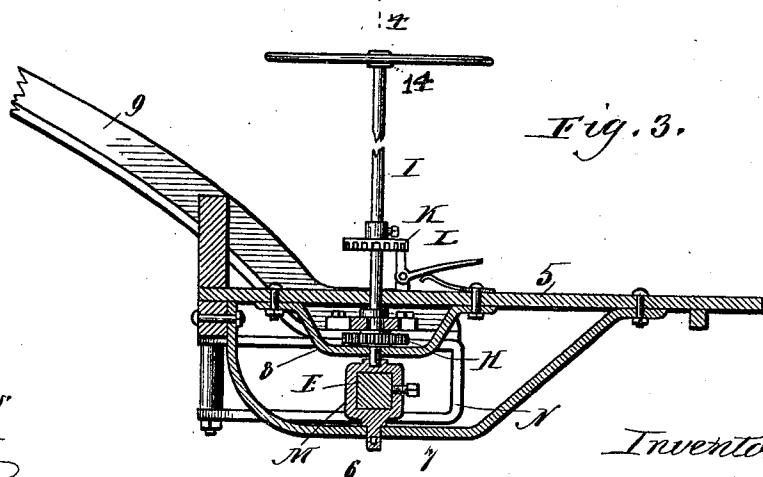
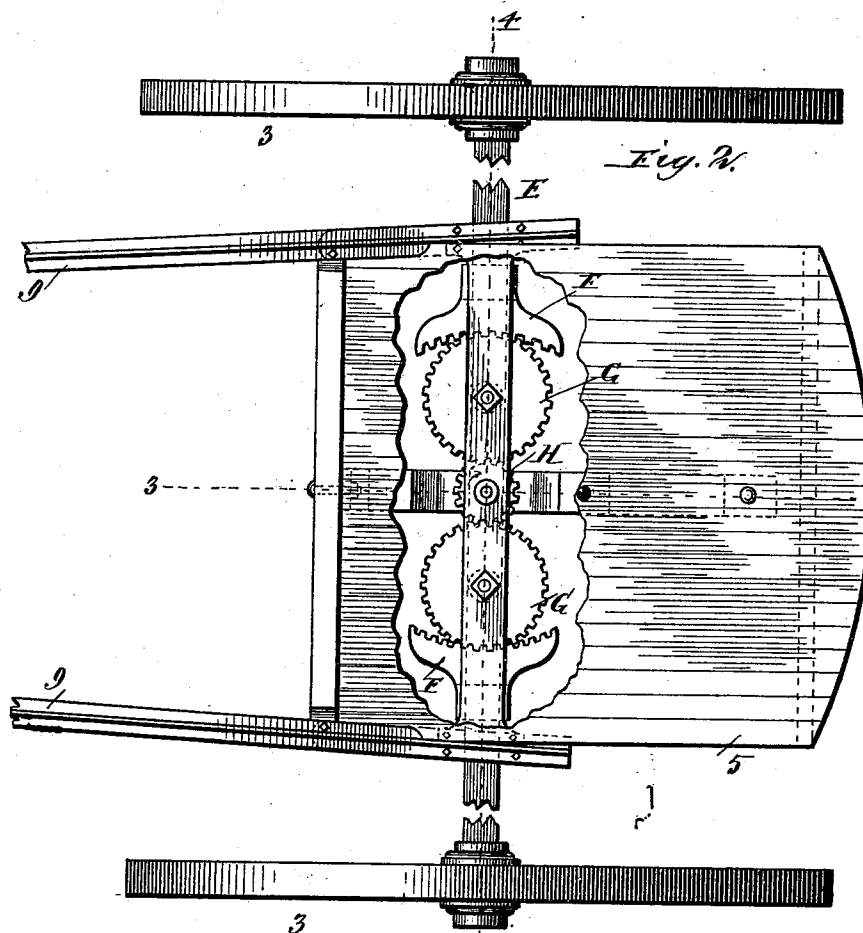
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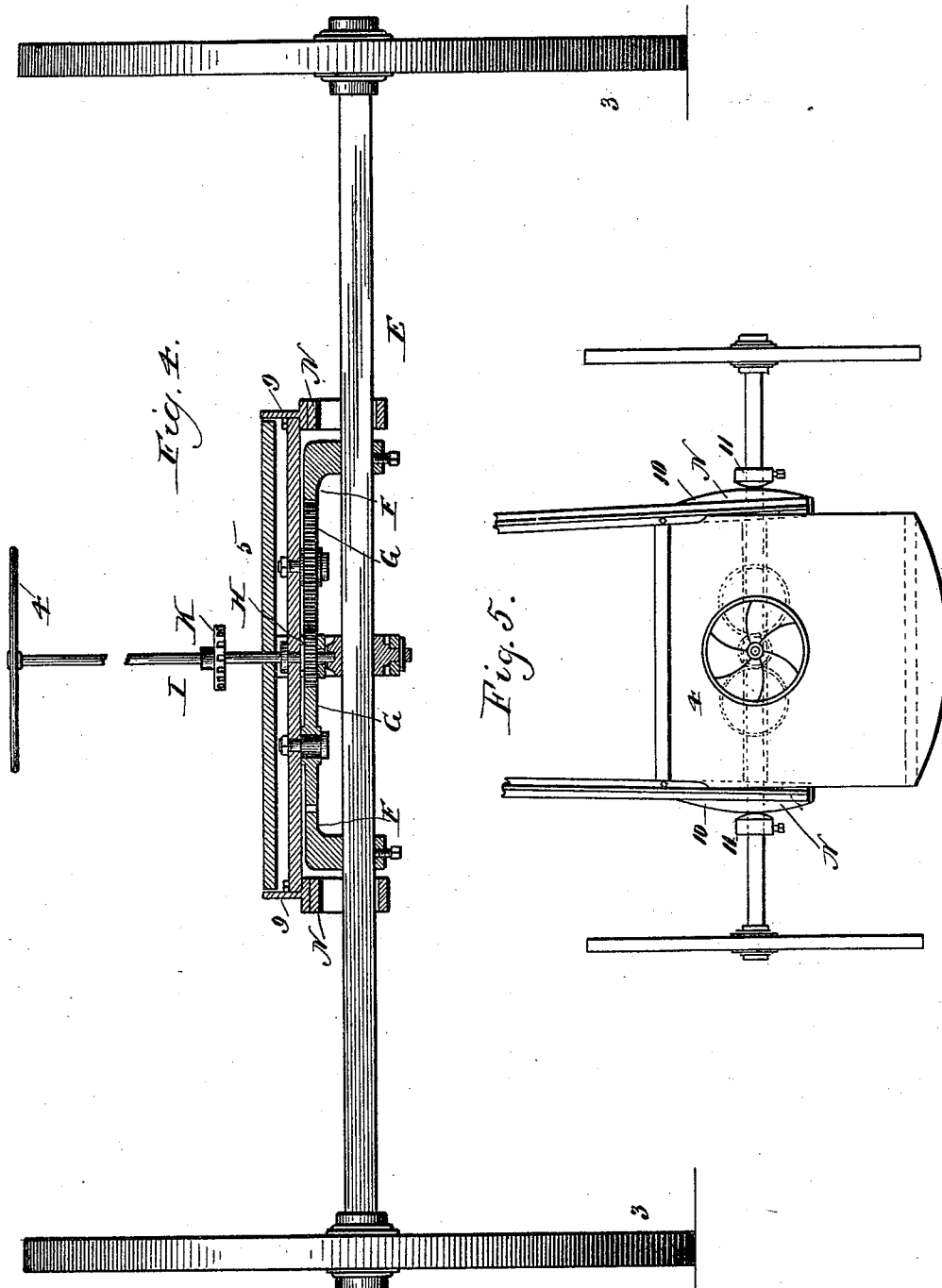
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UNITED STATES PATENT OFFICE.

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

MACHINE FOR MAKING AND REPAIRING ROADS.

SPECIFICATION forming part of Letters Patent No. 511,287, dated December 19, 1893.

Application filed October 27, 1890. Serial No. 369,463. (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 machine 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 involving my invention. Fig. 2 is a top plan view of the rear portion of said machine on a somewhat larger scale than the preceding figure with a portion of the rear platform and portion of the rear axle broken away for convenience of illustration. Fig. 3 is a section taken through Fig. 2 on line 3—3, a portion of the hand-wheel shaft being broken away for convenience of illustration it being here noted that I have in Fig. 2 omitted the hand-wheel on said shaft so as to more clearly show a small gear on the hand-wheel shaft. Fig. 4 is a section through Fig. 2 on line 4—4, the axle and its wheels being however shown in elevation. Fig. 5 represents on a smaller scale than the preceding figure, a top plan view of the rear portion of the machine having a horizontal swing but non-pivoted rear axle.

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 Serial No. 370,236, filed November 3, 1890.

In the first four figures of the drawings, the rear axle E which is provided with wheels 3 and extended considerably beyond the sides of the body-frame, is pivotally connected at a point between its ends with the body-frame. As a means for adjusting the horizontally swinging rear axle about its pivotal connection with the body-frame I provide said axle with a pair of curved racks or gear segments F which are rigid with the axle and arranged at points between its wheels and its pivotal connection with the body-frame. The body-frame carries a pair of gear wheels G each engaging one of the racks or gears F on the axle. As a means for simultaneously operating the gears G relatively in opposite direction, I provide between them a gear or pinion H which is arranged upon a hand-wheel

shaft I, and placed in engagement with said gears G. The hand-wheel shaft is also carried by the body-frame and has its hand-wheel 14 arranged within convenient reach of an attendant who may be standing upon the rear platform 5 of the machine. By operating the hand-wheel shaft so as to turn its allotted gear H either way, the rear axle can be swung about its pivotal connection with the body-frame in a direction determined by the direction in which the gear H is rotated.

It is obvious that when the gear H is turned, it will rotate the gears G simultaneously in opposite direction and hence while one of said gears G will by reason of its engagement with one rack on the axle tend to swing one end of the axle forward, the other one of the gears G engaging the remaining rack on the axle will tend to swing the remaining end of the axle to the rear. In this way I apply the power not only for drawing one end of the axle forward but also for pushing the opposite end of the axle rearwardly.

In Fig. 3 a hand-wheel shaft is provided with a notched wheel or ratchet K which can be engaged and locked by a foot latch L; while the rear axle can be pivotally connected with the body-frame in various ways, I have herein shown it as provided at a point between its ends with a collar M having on its under side a vertical pivot 6 arranged to engage in a bearing 7 on the under side of the body-frame of which the platform 5 may be considered a part. In place of providing the collar M with a vertical pivot or journal upon its upper side I can extend the hand-wheel shaft I, down through a bearing 8 on the under side of the platform and arrange the lower end of said hand-wheel shaft to enter a socket bearing in said collar as in Fig. 3 and thereby utilize the hand-wheel shaft as a pivot or journal on the upper side of the collar.

To the under side of the body-frame I secure guide bearings N for the end portions of the swinging rear axle. These guide bearings are conveniently bolted to the side bars 9, of the body-frame and provide guide-ways proportional in like manner to the greatest extent of swing it is desired the rear axle shall have. In place, however, of pivoting the rear axle to the body frame, I may dispense altogether with the pivot and rely upon the gears G and racks F as a means for keeping the axle in place and causing it to operate substantially as though it were pivoted to the body-frame. Where I thus dispense with a pivot as a means for connecting the axle with the body-frame I prefer to form the outer side edges of the guide-bearings N upon a curve as at 10, Fig. 5, which said curve generally corresponds with the arc described by the swinging axle of the preceding figures at a point adjacent to the said combined guide and bearing, and with such arrangement I

provide the axle with collars 11 arranged to bear against the outer curved edges 10 of said guide-bearings. The object of this arrangement is to avoid undue cramping or binding between either rack F and its allotted gear G as a result of end thrust on the part of the axle it being observed that while the collar or shoulder 11 will ride along the curved edges 10 of the guide-bearings when the axle is swung about a point between its ends, the contact between said shoulder and curved edges will resist any independent play of the axle and hence will maintain the racks F in free and proper working relationship to the gears G. The said curved guides 10, and collars 11, are included in the subject-matter of a separate application, Serial No. 369,464, filed by me October 27, 1890.

By either of the foregoing arrangements the rear axle can be swung and set oblique to the length of the body-frame and thereby cause the rear wheels to 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. In this way all side draft will be overcome and one of the rear wheels can be caused to run in the track of the front wheel directly ahead of it so as to permit the machine to run close up to a bank and also so as to allow said two wheels at one side of the machine to run in one and the same furrow. Various other advantages are instant to the adjustment of the rear axle but need not be herein further numbered since the same are fully set forth in my application, Serial No. 370,236, filed November 3, 1890.

What I claim as my invention is—

1. The combination substantially as hereinbefore set forth of the body-frame and diagonally adjustable scraper-blade, of the horizontally swinging rear axle, racks fixed upon said axle, gears engaging said racks, and an operating pinion arranged between and engaging said gears.

2. The combination substantially as hereinbefore set forth of the body-frame, the diagonally adjustable scraper-blade, the horizontally swinging rear axle, racks F fixed upon said axle, gears G engaging said racks, and a pinion H fixed upon a hand-wheel shaft and engaging said gears.

3. The combination substantially as hereinbefore set forth of the body-frame, the diagonally adjustable scraper-blade, the horizontally swinging rear axle, racks F fixed upon said axle the gears G engaging said racks, a pinion H engaging said gears, and a hand-wheel shaft carrying said pinion and having its lower end arranged in a bearing on the horizontally swinging rear axle.

MORTON G. BUNNELL.

Witnesses:

JOSEPH F. KELLEY,
HARRY COBB KENNEDY.