

(No Model.)

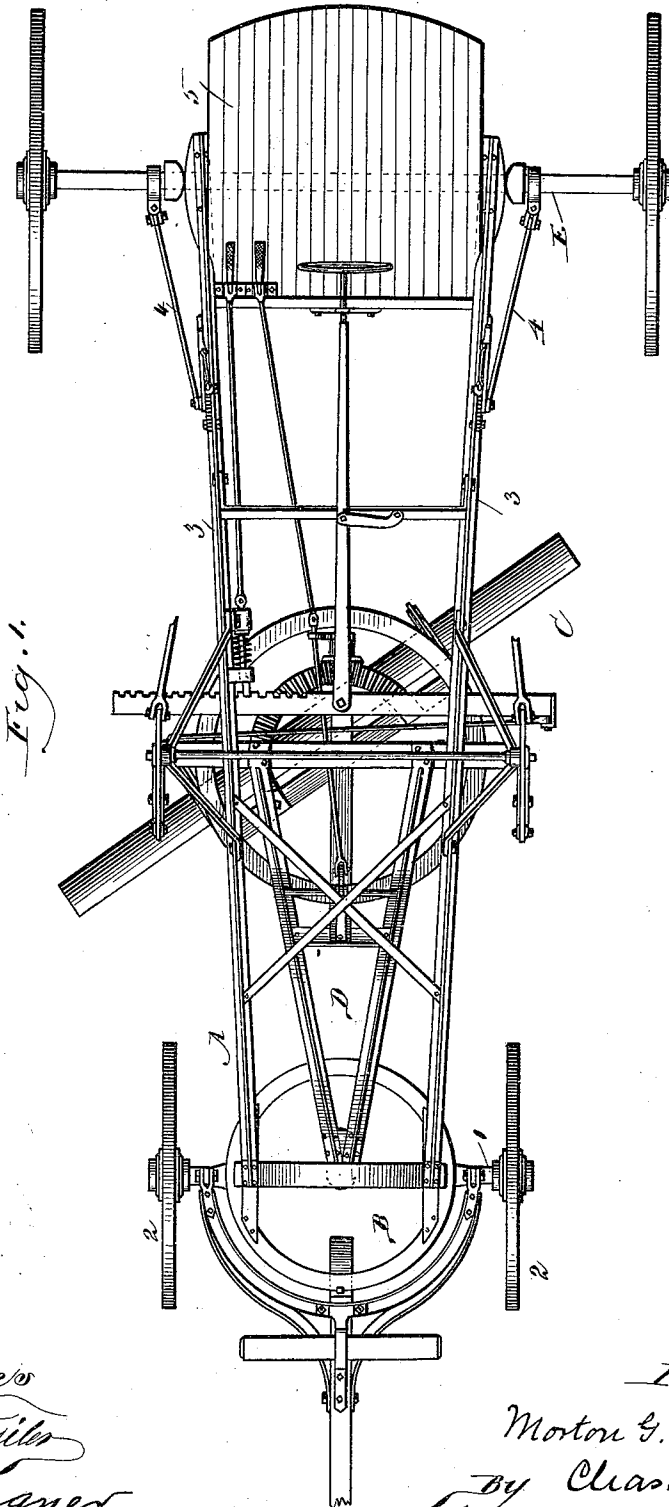
2 Sheets—Sheet 1.

M. G. BUNNELL.

MACHINE FOR MAKING AND REPAIRING ROADS.

No. 544,272.

Patented Aug. 6, 1895.



Witnesses
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R. Wagner

Inventor
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(No Model.)

2 Sheets—Sheet 2.

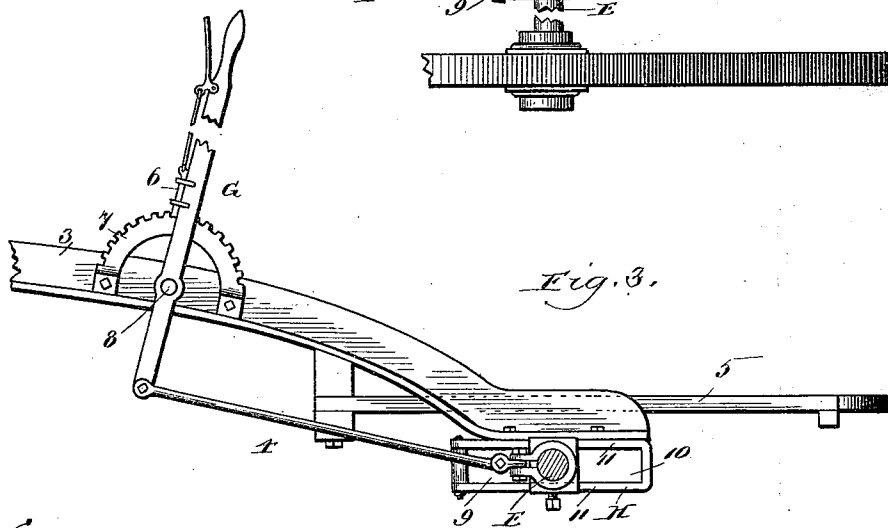
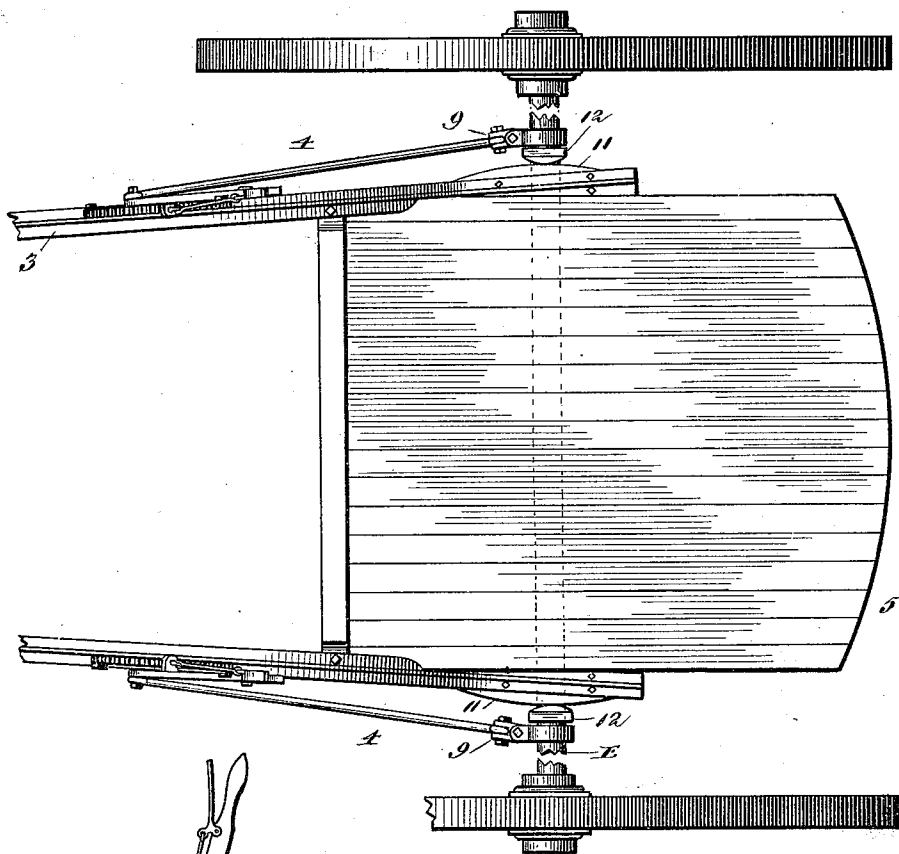
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Fig. 2.



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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. 544,272, dated August 6, 1895.

Application filed October 27, 1890. Serial No. 369,464. (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 claim.

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 said machine, on a somewhat larger scale than the preceding figure, and with portions of the rear axle broken away for convenience of illustration. Fig. 3 is a side elevation of the portion of the machine shown in Fig. 2, the rear axle being in cross-section at a point between its wheels and the body-frame.

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-adjust-

able 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 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 Patent No. 443,708, dated March 24, 1890.

In the three figures of the drawings the rear axle E is arranged so that it can be swung horizontally about a point between its ends and independently of the body-frame. As a means for swinging the axle, I provide the body-frame with a pair of hand-levers G, which are pivoted upon the sides 3 of the body-frame and connected with the end portions of the rear axle by rods or links 4. Said hand-levers are arranged within convenient reach of an attendant, who may stand upon the rear platform 5, and can be locked in their various adjustments by any suitable latching or locking devices—as, for example, they can be provided with latches 6 arranged to engage rack-segments 7 on the sides 3 of the body-frame. The rods or links 4 are preferably attached to the lower end of the levers at points below the pivots 8, by which said levers are supported upon the body-frame. The links or rods 4 are connected with the rear axle by universal joints, or practically universal joints, as at 9, so as to accommodate the connection between the rods and the axle to the swing of the lower ends of the hand-levers G. The rear axle extends through guide-bearings H, which are provided with horizontal guide-ways 10 of a length proportional to the great-

est extent of swing on the part of the portions of the axle which extend through said guideways. The guide-bearings H are secured to the body-frame and prevent the same from
 5 tilting independently of the rear axle, and as a preferred arrangement I secure said guide-bearings to the rear ends on the sides 3 of the body-frame, although I may secure them to any other fixture upon or portion of the body-
 10 frame of the machine. In order to hold the axle against end-play when the hand-levers G are locked, and also in order to properly guide the axle in its swinging movement when either or both of the levers are operated,
 15 I form the outer horizontal edges 11 of the guideways H upon curves, as illustrated in Figs. 1 and 2, which said curves may represent arcs of a circle having for its center a point
 20 midway of the ends of the rear axle. These curved edges of the guide-bearing are made with said guide-bearing in order to simplify the construction, although, as a matter of
 25 course, I may provide the body-frame with curved guides 11, which are entirely independent of any guide-bearings arranged to prevent the body-frame from tilting independently of the rear axle.

The rear axle is provided with shoulders 12 arranged to bear against the curved guides 11.
 30 These shoulders 12 may be formed with or secured upon the axle, and can, if desired, have their faces, which bear against the guides 11, formed by antifricition-rolls, so as to prevent friction.

In Figs. 1 and 2 the rear axle is shown at right angles to the length of the body-frame. When it is desired to swing the axle about a point midway of its ends, an attendant standing upon the rear platform 5 can do so by taking hold of the two hand-levers and swinging them respectively in opposite directions, in which way the axle will be swung horizontally and its shoulders 12 will traverse the arc of a circle having its center midway of the ends
 45 of the axle. On the other hand the attendant may first operate but one of the hand-levers in a direction to cause its upper end to swing back and its lower end to swing forward, and by so doing one end of the

axle will be swung forward, while the shoulder 12, adjacent to the opposite end of the axle, will simply turn or rock upon its allotted guide 11 somewhat as a pivot. While the axle could be left as thus adjusted, it will, however, be preferable to unlock the
 55 other lever, so as to allow the end of the axle which is controlled by it to swing back, and it may be here observed that a disposition of the wheel to drag or resist the forward draft will cause its allotted axle end to drop back
 60 when the same is set free, as just stated. When the rear axle is thus set oblique to the body-frame, the disposition of the rear wheels to run to one side will cause the body-frame to swing horizontally about its pivotal connection with the front axle until the rear axle is again brought parallel with the front axle and the rear wheels are in position for running straight ahead.

The various advantages derived from thus shifting the rear axle are fully set forth in my patent above referred to and hence need not be here enumerated. I may also pivotally connect the rear axle at a point between its ends with the body-frame, and in such
 75 case I may or may not employ the guides 11, it being observed, however, that by employing said guides in connection with a pivoted swinging rear axle, I am enabled to relieve the pivot from strain induced by any disposition on the part of the rear axle to shift endwise.

What I claim as my invention is—

The combination substantially as hereinbefore set forth with the body-frame in a road
 85 working machine provided with a diagonally adjustable scraper-blade, of the horizontally swinging rear axle, and guide bearings H through which the rear axle is extended, said guide bearings being provided with curved
 90 outer edges so as to form guides 11, and the axle being provided with shoulders or abutments 12 arranged to bear against said guides 11, for the purpose described.

MORTON G. BUNNELL.

Witnesses:

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