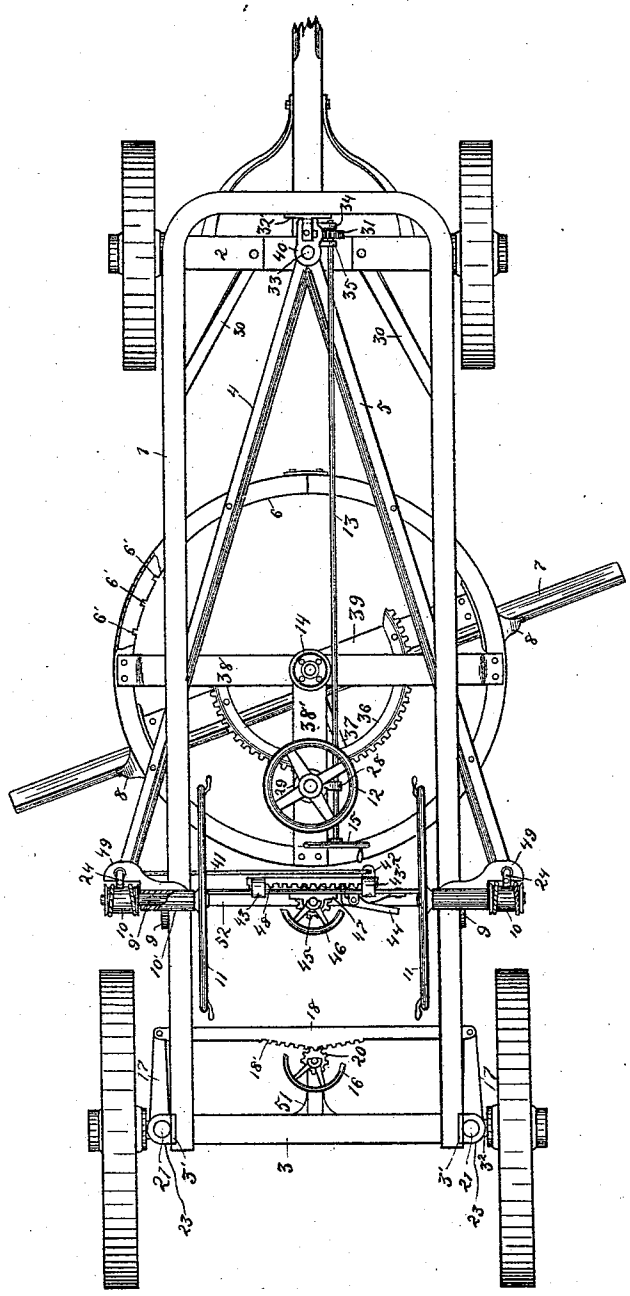
(No Model.) 3 Sheets—Sheet 1.

B. POULSON.

ROAD WORKING MACHINE.

No. 536,294. Patented Mar. 26, 1895.

Fig. 1.



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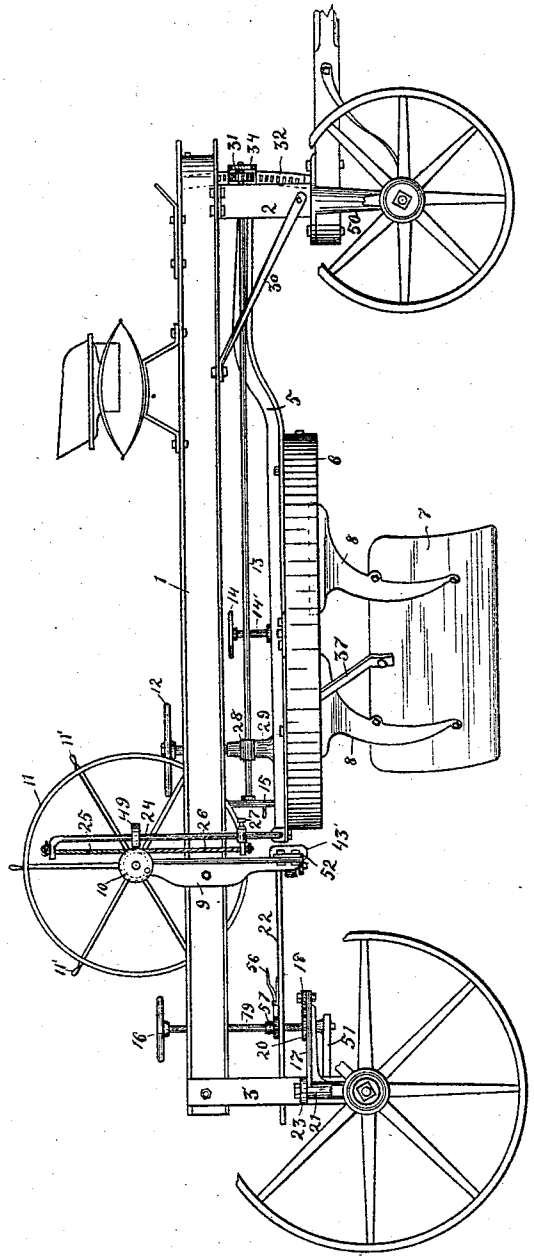
(No Model.) 3 Sheets—Sheet 2.

B. POULSON.

ROAD WORKING MACHINE.

No. 536,294. Patented Mar. 26, 1895.

Fig. 2.



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(No Model.) 3 Sheets—Sheet 3.

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Fig. 3.

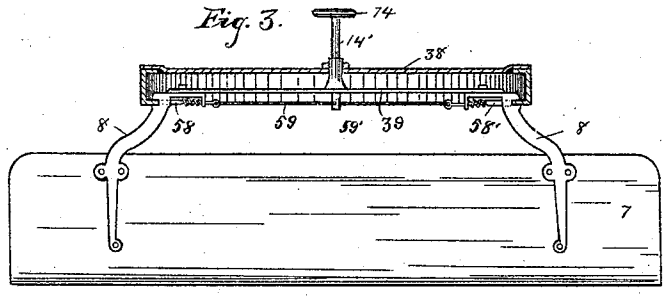


Fig. 4.

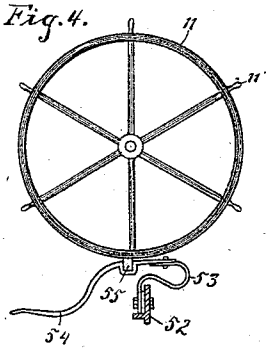


Fig. 5.

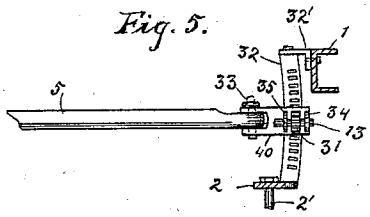


Fig. 6.

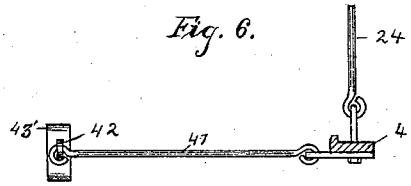


Fig. 7.

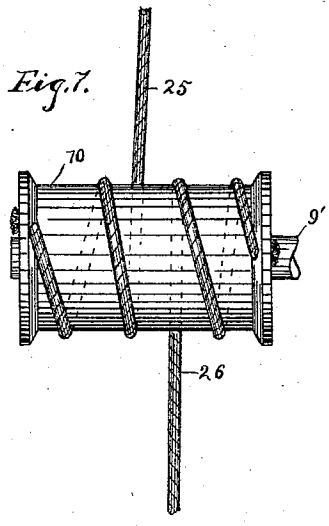
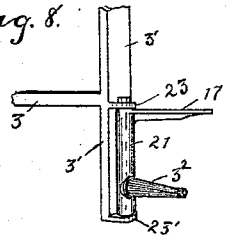


Fig. 8.



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UNITED STATES PATENT OFFICE.

BRITTON POULSON, OF FORT WAYNE, INDIANA, ASSIGNOR TO THE INDIANA MACHINE WORKS, OF SAME PLACE.

ROAD-WORKING MACHINE.

SPECIFICATION forming part of Letters Patent No. 536,294, dated March 26, 1895.

Application filed November 3, 1893. Serial No. 489,919. (No model.)

To all whom it may concern:

Be it known that I, BRITTON POULSON, a citizen of the United States, residing at Fort Wayne, in the county of Allen, in the State of Indiana, have invented certain new and useful Improvements in Road-Working Machines; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will 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 part of this specification.

My invention relates to improvements in road-working machines.

The accompanying drawings, forming part of this specification in which similar figures of reference indicate corresponding parts, represent a road-working machine embodying the above named improvements, in which it is obvious that the details of construction shown may be variously modified in well known ways without departing from the spirit of my invention.

Referring now to the drawings, Figure 1 is a plan view of my improvement showing the relative arrangement of the main frame, the draw-bars, the supporting ring, scraper-blade and other operating parts. Fig. 2 is a side elevation of the same, with the wheels broken away in section to show details of the different parts. Fig. 3 is a transverse central section of the scraper-blade-supporting ring with the blade in a transverse position. Fig. 4 is a detail of the hand or steerage wheel for raising and lowering the rear end of the draw-bars on which the blade-supporting ring is mounted, showing the friction-brake for securing the same. Fig. 5 is a detail of the rack and pinion and slotted plate by which the forward end of the draw-bars are vertically adjusted. Fig. 6 is a detail of the horizontal stay-rod which in connection with a locking device secures the said blade supporting ring in any desired lateral adjustment. Fig. 7 is a detail of the winding-drum with which the hand-wheels are connected, showing the arrangement of the cords or cables 25 and 26 adapted to be wound thereon. Fig. 8 is a detail of the pivotally mounted spindle on which the rear wheels are mounted.

The forward truck supporting my improvement is of any proper construction, having a suitable standard 50, Fig. 2, in which the tongue is rigidly mounted, and on which the forward end of the main frame 1, having a depending oblique standard 2 is properly mounted, the adjacent ends of said standards having suitable bearing surfaces and being pivotally connected by the king bolt 2′.

The main frame 1, preferably constructed of channel iron is open at the rear and is provided at its front end with a bracket 32′, Figs. 1 and 5, in which the upper end of the vertical segmental rack 32 is rigidly secured. The said rack has its lower end firmly secured to the standard 2 and has a coupling slotted plate 40 loosely mounted thereon and inclosing the same as seen in Figs. 1 and 5. The inner end of the said plate 40 has perforated ears between which the front end of the bifurcated draw-bars 4 and 5 are fastened by the pin 33. At a suitable point in the side of said plate is arranged a vertical slot in and through which the pinion 31, rigidly mounted on the rod 13, is adapted to engage the said rack 32. Upon the said plate 40 on both sides of the said vertical slot are the perforated lugs 34 and 35 in which the forward end of the said shaft 13 is rotatably mounted. The said frame 1 may be further strengthened by the oblique braces 30. The said bifurcated draw-bars 4 and 5 are thus adapted for a vertical adjustment at the forward end on the said rack 32, are provided with a slight vertical curvature near the forward end, to admit of a greater tilting of the scraper-blade when desired, and have their rear ends adapted for vertical adjustment in a manner hereinafter described. At suitable points on said draw-bars and to the lower surface thereof is rigidly secured in any proper manner, the blade-supporting ring 6, preferably made of channel iron, the lower annular flange of which is provided with the vertical slots 6′ arranged at any suitable distance apart, as seen in Fig. 1, and adapted to engage the locking device hereinafter described, designed to lock the blade in any desired horizontal position on said ring. The said supporting ring 6 is provided with a diametrical cross bar 38 rigidly secured at both extremities upon the upper flange thereof, and also with a rigid radial bar 38′ properly secured at its extremities. The said bar or

plate 38′ has a rigid standard 29 in which is properly mounted the hand-wheel 12 its supporting shaft being provided at its lower end with a suitable pinion, not shown in the drawings, adapted for engagement with the semicircular rack 36. This rack or gear may be a complete circle or any portion thereof, and is rigidly mounted on the bar 39 and is supported at its central portion by the oblique brace 37 having its lower end secured to the back of the blade.

The standard 29 has a laterally projecting and horizontally perforated lug 28 in which is loosely mounted the shaft 13 having on its free end the hand-wheel 15 and upon its forward end the pinion 31 adapted for engagement with the vertical rack 32 before described. The said wheel and shaft are provided with any suitable locking device adapted to retain the same in any desired adjustment.

The horizontal bar 39, seen in Fig. 3, is pivotally mounted at its center on the shaft 14 and is rigidly secured at both ends to the dependent arms 8 on the lower end of which the scraper-blade is rigidly fixed. The said arms or hangers 8 are curved laterally and at their end have a horizontally slotted segment adapted for rotary motion on the lower flange of said supporting ring. The said segment is also provided with a central transverse perforation for the spring actuated pawls or dogs 58 and 58′ adapted to engage the said slots 6′ in the said ring and thereby lock the said scraper blade. The said pawls are connected to the lower end of the shaft 14 by the cords or cables 59 and 59′ respectively, and the said pawls are released from their engagement with the said slots 6′ by means of the hand-wheels 14 in a well known manner. The said slotted segments of the arms 8 are also preferably provided with perforated depending lugs or ears in which the said pawls are also loosely mounted. At a suitable distance from the rear ends of the said draw-bars, the upright standards 9 are rigdily secured to the sides of the main frame. The standards project above and below said frame, having their lower ends rigidly bolted to the cross bar 52, Figs. 1 and 2, and having their upper extremities surmounted by a transverse journal box 10′ in which the horizontal shaft 9′ is rotatably mounted. The journal boxes 10′, Fig. 1, are also provided with perforated lugs or ears 49 in which the vertical hanger rods 24 are loosely mounted, the perimeter of the said perforations being sufficiently reamed out upon the upper and lower surfaces of the said lugs 49 to give the lower ends of the said rods 24 free lateral movement therein. Upon the inner ends of the shafts 9′ are rigidly mounted the hand, or steerage wheels 11, having a series of radial handles 11′ upon the perimeter thereof, while the outer extremities of said shafts are provided with the rigidly mounted winding drums 10, provided with the cords, chains or cables 25 and 26 having one end fastened therein, and adapted to be wound thereon, the other end of the said cord or cable 25 being secured in any proper manner in the top of the hanger rod 24, and the other end of the cord or cable 26 being secured in the vertically adjustable lug 27 mounted on said hanger rods, Fig. 2. When then rear ends of the draw-bars are lowered by means of the hand wheels 11, it is evident that the rope, cord or cable 26 will unwind to permit the lowering of the hanger rod 24 in the lug 49, while the same rotary movement of the winding drum which thus unwinds the cord 26 will wind thereon the cord or cable 25, as seen in Fig. 7. The said hanger rods 24 are secured at their lower ends by a proper swivel connection to the rear ends of the draw-bars 4 and 5 and are thus adapted to raise and lower the scraper-blade by raising and lowering the said hanger-rods.

The steerage wheels 11 have the handles 11′ arranged upon one side of the perimeter, as seen in Fig. 1. On the cross-bar 52 and below the said wheels 11 is firmly secured a brake therefor consisting of a spring 53 and a pedal lever 54 having a shoe 55 of wood, leather, or other suitable material, rigidly mounted therein or thereon, as seen in Fig. 4. The said cross-bar 52 is an L shaped iron bar having its horizontal flange pointing rearwardly, and having a narrow vertical flange upon its lower surface for the rack-block 48, seen in Fig. 4, on the vertical flange of which is adjustably mounted the rack-block 48, by means of the slotted hangers 43 and 43′, adapted to slide upon both the upper and lower edges of the said vertical flange, thereby securely holding said rack in position when in operation. At a suitable point on the vertical flange of said cross-bar 52 is secured a rigid perforated lug 47 in which the vertical shaft for the hand-wheel 46 is loosely mounted. The said shaft also has its lower end loosely mounted in the horizontal flange of the bar 52 in any proper manner, and is provided with a rigid pinion 45 adapted to engage the said rack-block 48 through a proper longitudinal slot in the said vertical flange of said bar.

The hanger 43′ has a laterally projecting perforated ear 42 in which one end of the stay rod 41 is properly secured, the other end of said rod being secured, to the rear end of the draw-bar 4, Fig. 6, the said rod being adapted in conjunction with the rack-block 48 and hand-wheel 46 to effect a lateral adjustment of the rear end of said draw-bars and also to firmly hold them in position when so adjusted, by means of the spring-latch or lock 44 which also engages said rack-bar through a suitable slot in bar 52.

As the hanger rods 24 have a swivel connection with the rear end of the draw-bars, and are loosely mounted in the reamed perforations of the lugs 49, it is obvious that the operator can readily secure any desired lateral adjustment of the blade by means of the hand-wheel 46, and also secure it in such position

by the engagement of the spring lock or latch 44 with the rack-block 48.

The axle-tree bar 3 is provided at each extremity with the vertical standard 3′ extending above and below said bar, the said standard being preferably integral therewith, the upper portion of which is firmly secured to the rear ends of the main frame and thereby rigidly supports the same. The lower portions of said standards are provided with the laterally projecting and integral perforated lugs 23 and 23′ in which the vertical standards 21 are rotatably mounted, as seen in Fig. 8. The said standards 21 are provided with the forwardly projecting arms 17 preferably integral therewith and on which the cross-bar 18 is pivotally mounted, as seen in Fig. 1 and they are also provided with the spindles 3^2 on which the rear wheels are mounted. The said cross bar 18 has a segmental rack 18′ of suitable length at its central portion adapted for engagement with the pinion 20, Fig. 1.

Upon the inner face of the axle-tree bar 3 and at a point equally distant from the extremities thereof, is rigidly secured the forwardly projecting horizontal arm 51 on the free end of which the vertical shaft 19, having a hand-wheel 16 and the rigid pinions 20 and 57, is rotatably mounted.

The platform 22, Fig. 2 on which the operator stands, is firmly supported by the cross-bar 52 and the axle-tree bar 3 and is provided with a foot latch 56 adapted for engagement with the pinion 57.

The operation and manner of using my improved road-making machine, thus described is, briefly stated, as follows: The driver occupies a proper seat rigidly mounted upon the main frame, as seen in Fig. 2, and the operator takes his position on the said platform 22 within a convenient reach of all the operating hand-wheels. The operator then sets the scraper-blade in any desired position on the supporting ring by means of the operating hand-wheel 12. It is then rigidly held in that position by the engagement of the spring pawls 58 and 58′ with the diametrically opposite slots 6′ in the perimeter of the supporting ring, and from which slots they are readily disengaged by means of the hand-wheel 14 as before described, when it is desired to shift the said oscillatory blade to a new position. The said blade can readily be raised or lowered or set in any desired oblique position by means of the hand or steerage wheels 11, through their connection with the rear end of the said draw-bars, and said wheels are firmly held in any desired position by the friction of the spring-pressed shoe 55 upon the perimeter thereof. The friction of said shoe upon the perimeter of said wheels is conveniently released by means of the pedal levers 54. The lost motion between the hand of the operator and the supporting-ring is regulated or entirely obviated by the vertical adjustment of the lug 27 in which the lower end of the cable 26 is secured, upon the hanger rods 24 in a well understood manner. The forward end of the draw-bars can also be readily lowered by means of the vertical hand-wheel 15 preferably provided with a suitable handle, and adapted to operate the pinion 31 upon the segmental rack 32 through the medium of the shaft 13 before described. The lowering of the front end of the draw-bars is very important when it is desirable to use the said blade in a longitudinal position as a plow, and for passing obstructions it is often desirable to raise the same. When it is desirable to set the said blade farther to one side of the machine than the other, as is often the case when it is set in a transverse position, the operator with his foot releases the lock or latch 44 from its engagement with the transverse rack-block 48, when by means of the hand-wheel 46 he can readily shift the blade supporting-ring laterally in either direction.

When the scraper-blade is set for operation in an oblique position and it is desired to set the rear truck at an angle with the main frame for the purpose of counteracting the lateral strain upon the machine caused by the load upon the blade, thereby assisting the driver in guiding the machine to its work, the operator from his position can readily set said trucks at any desired angle by releasing the foot-latch from engagement with the pinion 57 and then operating the hand-wheel 16 which shifts both the arms 17 and the rear wheels out of parallel with the main frame, as the said arms and the said wheels are mounted upon the same pivotal standards 21.

Having thus described my invention and the manner of using the same, what I claim as my invention, and desire to secure by Letters Patent, is—

1. In a road working machine, a single blade supporting ring 6 of channel iron, rigidly secured to the bifurcated drawbars 4 and 5, provided with a cross bar 38 and the radial bar 38′, as shown, and having a series of notches or slots in the lower flange of the perimeter thereof, the said slots being adapted for a locking engagement with the pawls 58 and 58′, as shown, the said ring being adapted in connection with the said drawbars for lateral adjustment, and also adapted to permit the oscillatory movement of the scraper blade upon the inner flange thereof, by means of a circular concentric rack 36 adapted for engagement with an operating pinion, as shown, all substantially as described.

2. In a machine for the purpose specified, a device for raising and lowering the forward end of the draw-bars, comprising a vertical segmental rack 32 rigidly fixed on the main frame, and a bifurcated coupling plate 40 loosely mounted on the said rack and adapted for vertical adjustment thereon, and having a vertical slot in one side thereof through which an actuating pinion is adapted to engage the said rack as shown, the said plate being

adapted to form a swivel connection with the draw-bars, and a rearwardly extending shaft 13 having upon its forward end a rigid pinion adapted to actuate the said rack, all substantially as described.

3. In a road-working machine, a device for vertically adjusting the rear ends of the draw-bars on which the blade is rotatably mounted, consisting of the rigid vertical standards 9 having upon their upper ends horizontal sleeve bearings in which the shafts 9′ having upon their inner ends the hand-wheels 11 and upon their outer ends the winding-drums 10 are loosely mounted, and the vertical hanger rods 24, loosely mounted in suitable perforated lugs 49 on said standards, provided with an adjustable lug 27 for the purpose set forth, having their lower ends secured to the rear ends of the draw-bars by a swivel connection, and the cables 25 and 26 adapted to connect the said hanger rods with the said drums, and to be alternately wound thereon, all substantially as described.

4. In a road working machine, the combination of the bifurcated drawbars 4 and 5 provided at their front end with means for vertical adjustment, the said drawbars being extended rearwardly above the blade supporting ring and having their rear end secured to the hanger rods 24, whereby the said rear end is adapted for either a lateral or vertical adjustment, a blade supporting ring 6 of channel iron having its upper inner flange rigidly secured to the said drawbars, and having a series of locking notches or slots in one of the said inner flanges, the said ring being adapted to permit the oscillatory movement of the scraper blade upon the lower flange thereof by means of the rack 36, and the described means for actuating the same, all substantially as described.

5. In a road-working machine the block 27 vertically adjustable on the hanger rod 24, having means for securing the lower end of cable 26 and adapted by its adjustment on said rod to regulate or obviate all lost motion between the hand of the operator and the supporting-ring with which the said rod is connected, all substantially as described.

6. In a road-working machine a steerage-wheel having proper radial handles arranged upon the perimeter thereof, as described, provided with a proper pedal-lever brake, and adapted for raising and lowering the scraper-blade, all substantially as described.

7. In a road-working machine having a main frame 1 properly mounted on suitable trucks, the vertically adjustable draw-bars as shown, the blade supporting ring 6 rigidly mounted on said draw-bars having the blade 7 rotatably mounted thereon and provided with the described means for locking and operating the same, in combination with the segmental rack 32, the coupling plate 40 and the pinion mounted shaft 13 adapted to raise and lower the forward end of the draw-bars, as described, the vertical standards 9 having the hand-wheels 11, the winding drums 10, the hanger-rods 24 and the cables 25 and 26, adapted to raise and lower the rear ends of the draw-bars, as shown, all substantially as described.

Signed by me, at Fort Wayne, Indiana, this 1st day of November, 1893.

BRITTON POULSON.

Witnesses:
CHAS. J. MCLAIN,
SIDNEY C. LUMBARD.