D. C. MOWRY.

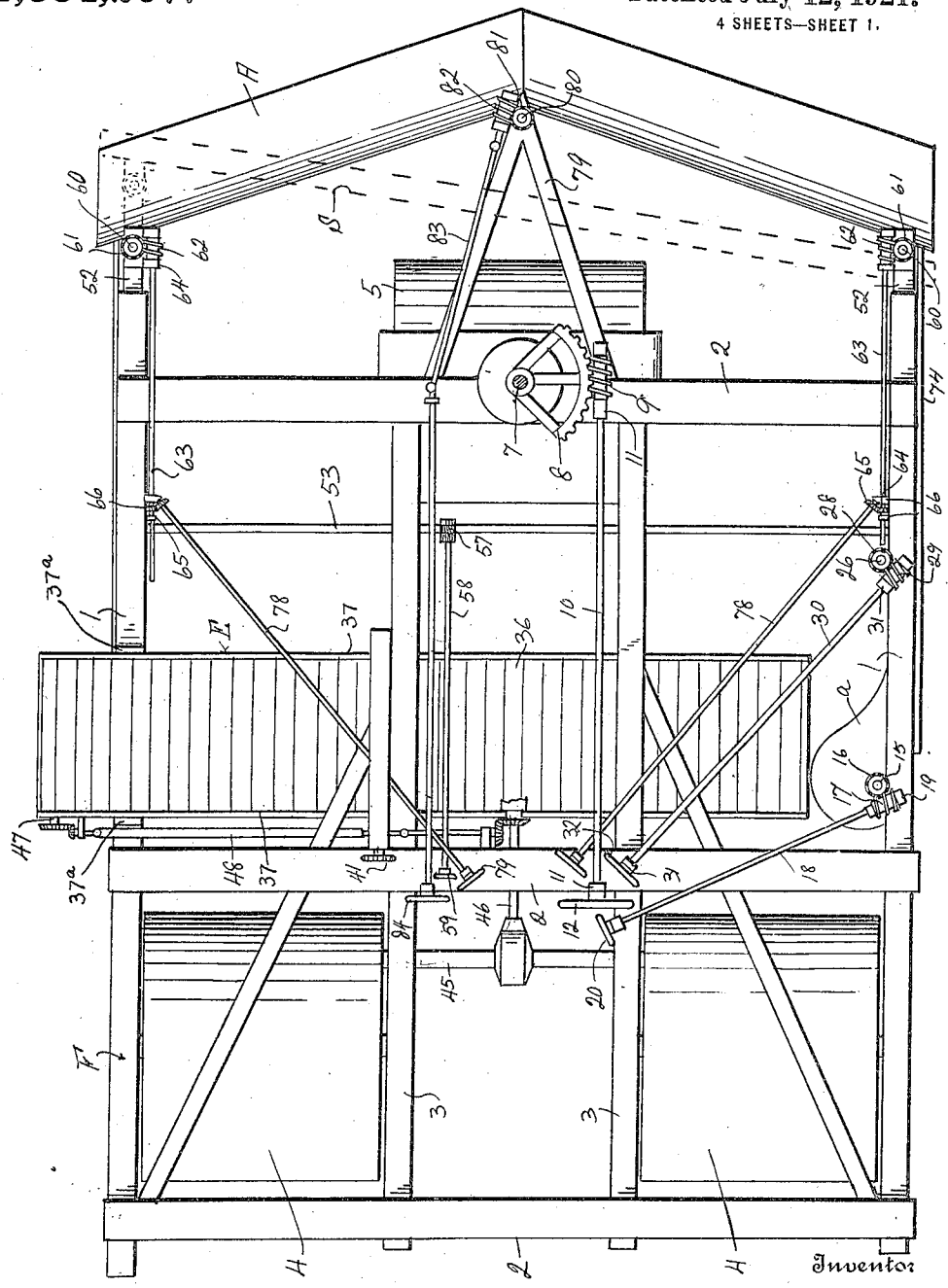
ROAD WORKING MACHINE.

APPLICATION FILED AUG. 13, 1919.

1,384,207.

Patented July 12, 1921.

4 SHEETS—SHEET 1.



Inventor

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Fig. 1.

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4 SHEETS—SHEET 2.

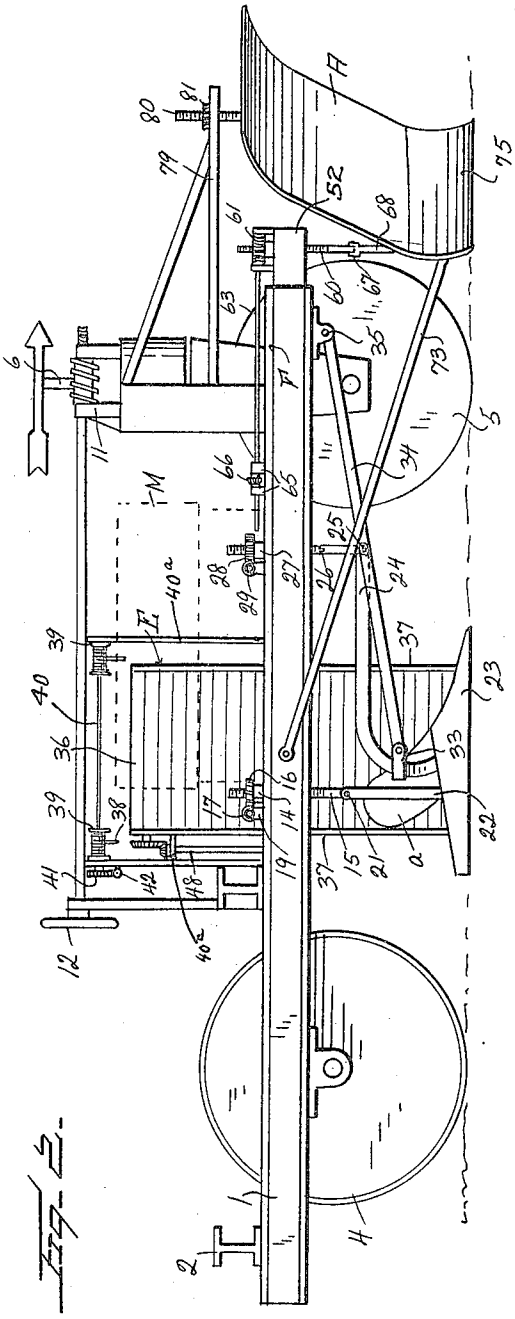


Fig. 2.

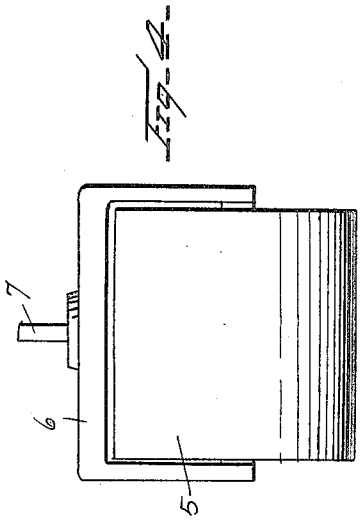


Fig. 4.

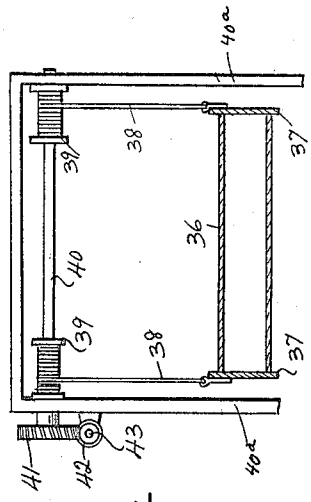


Fig. 3.

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4 SHEETS—SHEET 3.

Fig. 5.

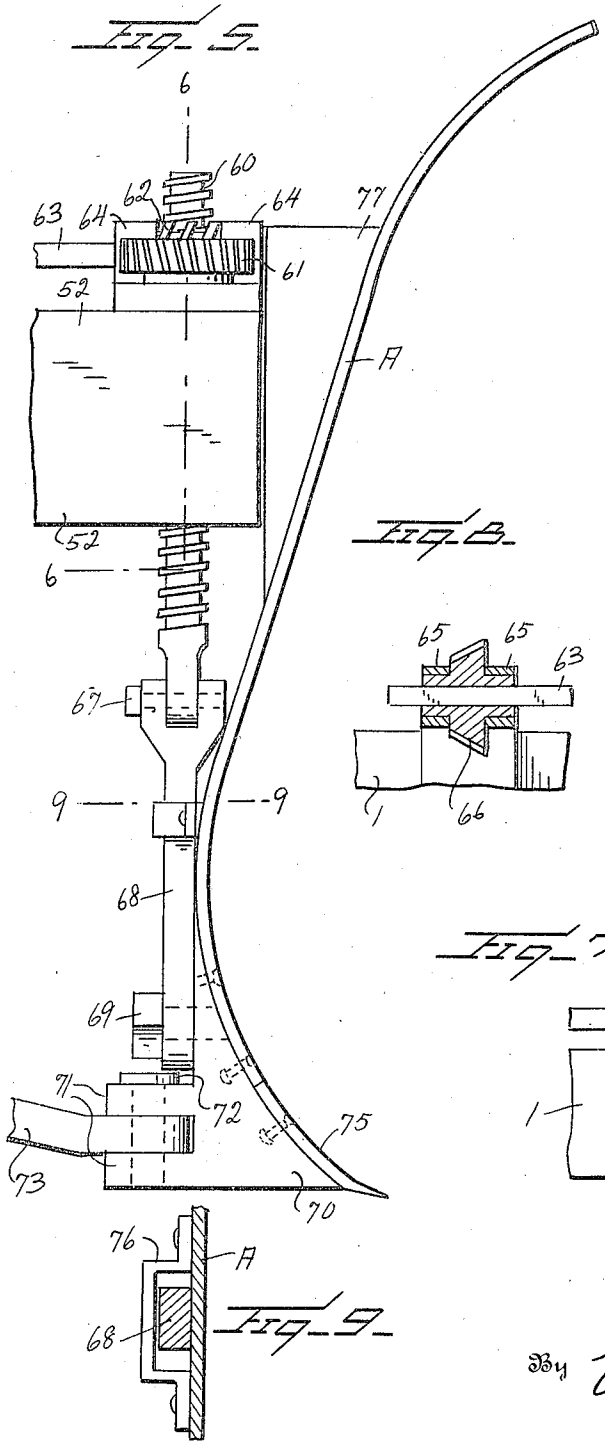


Fig. 8.

Fig. 6.

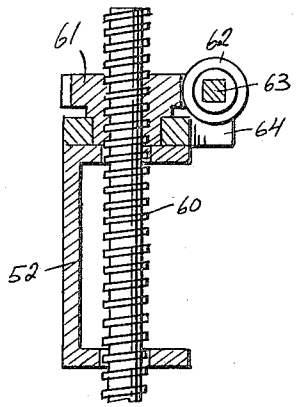


Fig. 7.

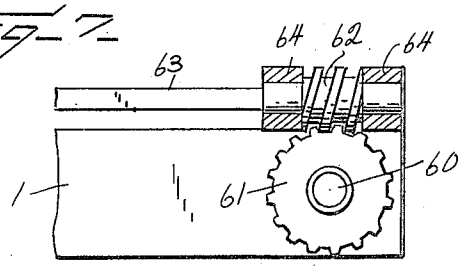


Fig. 9.

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4 SHEETS—SHEET 4.

Fig. 10.

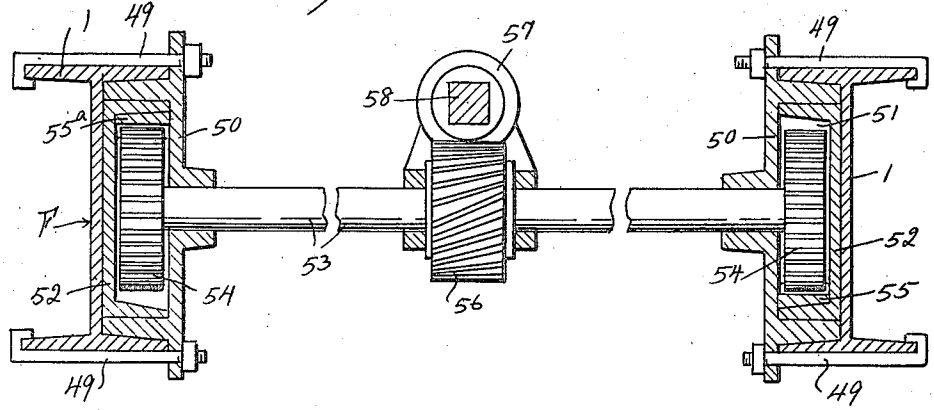


Fig. 11.

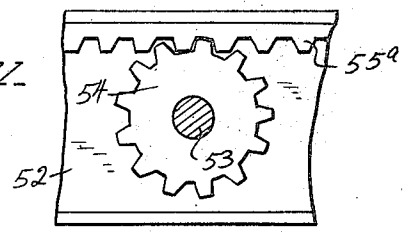


Fig. 13.

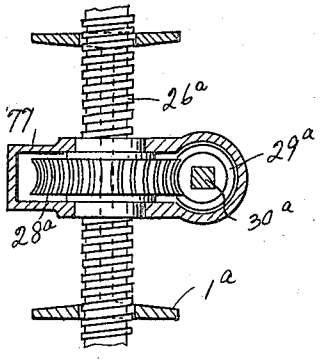
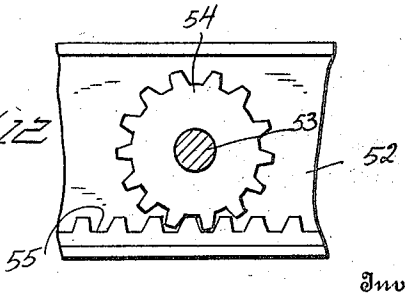


Fig. 12.



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UNITED STATES PATENT OFFICE.

DAVID C. MOWRY, OF GENEVA, NEBRASKA.

ROAD-WORKING MACHINE.

1,384,207. Specification of Letters Patent. Patented July 12, 1921.

Application filed August 13, 1919. Serial No. 317,252.

To all whom it may concern:

Be it known that I, DAVID C. MOWRY, a citizen of the United States, residing at Geneva, in the county of Fillmore and State of Nebraska, have invented certain new and useful Improvements in Road-Working Machines, of which the following is a specification, reference being had to the accompanying drawings.

This invention relates to certain improvements in road working machines, and it is an object of the invention to provide a novel and improved machine of this general character which may be employed with convenience and facility for a multiplicity of purposes.

It is also an object of the invention to provide a machine of this general character having novel and improved means whereby the same may be effectively employed as a grader and wherein a mechanism whereby the device is particularly adapted for use as a grader may also be employed in connection with a snow plow.

Another object of the invention is to provide a novel and improved machine of this general character wherein the supporting members therefor comprise elements whereby the machine may be readily used as a roller.

An additional object of the invention is to provide a novel and improved machine of this general character including ground working members readily adjustable into or out of working position so that the machine may be employed for purposes of plowing and wherein the machine is provided with an elevating mechanism for delivering the material loosened by the ground working member or members to a suitable vehicle.

The invention consists in the details of construction and in the combination and arrangement of the several parts of my improved road working machine whereby certain important advantages are attained and the device rendered simpler, less expensive and otherwise more convenient and advantageous for use, as will be hereinafter more fully set forth.

The novel features of my invention will hereinafter be definitely claimed.

In order that my invention may be the better understood, I will now proceed to describe the same with reference to the accompanying drawings, wherein:

Figure 1 is a view in top plan and somewhat diagrammatic, illustrating a machine constructed in accordance with an embodiment of my invention.

Fig. 2 is a view in side elevation of my improved machine as herein embodied, the motor being indicated by dotted lines.

Fig. 3 is a fragmentary view partly in section and partly in elevation of the mechanism for raising the elevator as herein disclosed.

Fig. 4 is a fragmentary view in elevation of the front supporting member or roller.

Fig. 5 is an enlarged fragmentary view in side elevation illustrating the mounting of the scraper or plow.

Fig. 6 is a detail sectional view taken substantially on the line 6—6 of Fig. 5.

Fig. 7 is a fragmentary view partly in plan and partly in section of a structure shown in Fig. 6.

Fig. 8 is a fragmentary view partly in section and partly in elevation of a driving gear mounted upon one of the shafts for raising or lowering the scraper or plow.

Fig. 9 is a sectional view taken substantially on the line 9—9 of Fig. 5.

Fig. 10 is an enlarged fragmentary view taken transversely of the forward portion of the device and illustrating the mechanism whereby the angle of the scraper may be adjusted as required.

Fig. 11 is a fragmentary view partly in elevation and partly in section illustrating the means for imparting movement to one of the supporting means for the scraper or plow.

Fig. 12 is a view similar to Fig. 11 and illustrating a means for imparting movement to the second supporting beam for the scraper or plow.

Fig. 13 is a fragmentary view partly in section and partly in elevation illustrating a modified mechanism for imparting movement to a vertically disposed member.

As disclosed in the accompanying drawings, F denotes a substantially horizontally disposed main frame including the side beams 1 connected by the transverse beams 2 and the transverse beams 2 are connected by the substantially centrally located longitudinally directed beams 3. The rear portions of the side beams 1 and the intermediate beams 3 have rotatably engaged therewith the supporting elements 4 herein disclosed as rollers. The forward portion of the frame F is supported by the element or

roller 5 positioned at substantially the transverse center of the frame and of a length to substantially bridge the space between the elements or rollers 4 so that the machine may be employed with facility in rolling the ground.

The roller 5 is supported by a yoke 6 suitably secured to the lower end portion of an upstanding spindle 7. The spindle 7 is rotatably engaged with the forward transverse beam 2 and has affixed to its upper end portion an arcuate worm rack or segment 8 engaged by a worm 9. The worm 9 is fixed to a rearwardly extending steering shaft 10 supported by suitable bearings 11 and is provided at its rear end portion with an operating wheel 12 so that the direction of travel of the machine may be readily controlled. Carried by a side beam 1 in close proximity to the longitudinal center thereof is a vertically disposed bearing 14 through which is loosely directed a vertically extending threaded shank 15 and engaged with the upper portion of the shank 15 is a worm member 16 whereby rotation of said worm member 16 in one direction imparts upward movement to the shank 15. In mesh with the worm member 16 is a worm 17 carried by the inwardly and rearwardly directed shaft 18 supported by suitable bearings 19. The inner end portion of the shaft 18 is provided with an operating wheel 20 so that the shaft 18 may be properly rotated to effect the desired raising or lowering of the shank 15.

The lower end portion of the shank 15 is operatively connected as at 21 with an upstanding member 22 carried by the plow or earth working member 23. The plow or member 23 has also engaged therewith a forwardly directed beam 24 operatively engaged as at 25 with the lower end portion of a vertically disposed shank 26. The shank 26 is disposed through a bearing 27 carried by the adjacent side beam 1. Engaged with the upper portion of the shank 26 and coacting with the bearing 27 is a worm member 28 in mesh with a worm 29. The worm 29 is carried by a rearwardly and inwardly inclined shaft 30 supported by the bearings 31 and is provided at its inner end with an operating wheel 32 whereby the shaft 30 may be rotated. By rotating the worm member 28 the shank 26 may be raised or lowered to control the depth of penetration of the plow or ground working member 23, while said plow or member 23 may be readily raised to an inoperative position upon the requisite rotation of the shank 15.

Suitably secured as at 33 with the sheath of the beam 24 is a forwardly directed draw bar 34. The forward end portion of the bar 34 is pivotally engaged as at 35 with the forward end portion of the adjacent beam 1.

The plow or ground working member 23 as herein employed is provided with a mold board *a* or the like whereby the earth or other material loosened by the plow or earth working member is thrown upon the lower portion of the transversely directed and upwardly inclined elevating mechanism E.

The lifting mechanism E includes an endless carrier 36 traveling between the side boards 37. The upper end portion of the elevator E is pivotally supported by the upstanding posts 37^a carried by the side beam 1 of the frame F whereby the lower portion is capable of vertical swinging movement so that the same may be raised or lowered into working position. The side boards 37 of the elevator E at a desired point intermediate their length have engaged therewith the lower extremities of the flexible members 38 which will engage with the drums 39 carried by the shaft 40. The shaft 40 is suitably positioned above the elevator E and is supported by the standards or posts 40^a carried by the frame F, and particularly one of the beams 3. The shaft 40 is provided with a worm wheel 41 in mesh with a worm 42 carried by a suitable shaft 43. The shaft 43 is adapted to be operated in any preferred manner so that desired rotation may be imparted to the shaft 40 for raising or lowering the lower end portion of the elevator E. In Figs. 2 and 3 the driving means for the shaft 40 is diagrammatically disclosed. The elevator belt is composed of L shape bars of steel and malleable chain attachments.

45 denotes a drive shaft suitably supported by the intermediate beams 3 and in driven connection in a well known manner with internal gears carried by the rollers 4. The driven shaft is operatively connected with a driving shaft 46 in operative connection with a suitable motor M indicated by dotted lines in Fig. 2. This motor is preferably of the internal combustion type although I do not wish to be understood as limiting myself in this respect. The upper roller or drum of the elevator E over which the carrier 36 passes has its shaft 47 operatively connected with a shaft 48 in driven connection with the shaft 46 as is believed to be clearly illustrated in Fig. 1 of the accompanying drawings. By this means it will be obvious that requisite travel may be imposed to the carrier 36 from the motor M.

Each of the beams 1 is of an I type and clamped as at 49 to the forward end portion of said beam is a channel beam 50 arranged inwardly thereof and whereby a guideway 51 is provided for the sliding channel beam 52. Rotatably supported by the beams 50 is a transversely disposed shaft 53 having its opposite end portions extending within the guideways 51 and each end portion of the shaft within a guideway 51 has fixed thereto a gear 54. One gear 54 meshes with a rack 55 carried by the lower flange of the coact-

ing beam 52 while the second gear 50 coacts with a rack 55ª carried by the upper flange of the coacting beam 52. The central portion of the shaft 53 has fixed thereto a worm wheel 56 meshing with a worm 57. The worm 57 is fixed to a rearwardly directed shaft 58 provided at its rear extremity with an operating wheel 59 whereby desired rotation may be imparted to the shaft 53. As the shaft 53 is rotated, one of the beams 52 will be extended and the other retracted.

The forward end portion of each of the beams 52 has loosely directed therethrough a vertically disposed rod 60 and in threaded engagement with the upper portion of the rod 60 and contacting with the upper flange of the beam 52 is a worm member 61 in mesh with a worm 62. The worm 62 is suitably fixed to a shaft 63 extending rearwardly and longitudinally of the adjacent beam 1. The forward end portion of the shaft 63 is rotatably supported by the bearing 64 carried by the beam 52 and the opposite end portion of the shaft is loosely directed through the bearings 65 carried by the adjacent beam 1. Mounted upon the shaft 63 between the bearings 65 for rotation with said shaft is a gear 66. The shaft 63 has free endwise movement through the gear 66 so that desired compensation will be had for the endwise adjustment of the beam 52.

Secured as at 67 to the lower end portion of the rod or shank 60 is a vertically disposed rigid arm 68 having its lower end portion secured as at 69 to a block or shoe 70. The block or shoe 70 is provided with a pair of rearwardly directed and vertically spaced ears 71 between which is secured as at 72 the forward end portion of a bracing rod 73. The rod 73 extends upwardly and rearwardly and has its rear end portion secured as at 74 to the adjacent side beam 1.

The blocks 70 are adapted to have secured thereto the end portions of a scraper S as indicated by dotted lines in Fig. 1 and said scraper can be adjusted at a desired incline transversely of the machine by desired relative adjustment of the beams 52 one with respect to the other. This scraper S may be of any desired construction and is adapted to engage the road surface or other work to facilitate the grading thereof.

The opposite end portions of the plow A are also adapted to be secured to the block or shoe 70 and said plow A is preferably V-shaped in top plan with its apex forwardly directed and of a vertical cross sectional configuration as particularly illustrated in Fig. 5. The lower portion of the plow A preferably comprises a removable member 75. This member 75 has contact with the road or other surface and by having the same removable it can be readily replaced should the same become unduly worn. I also find it of advantage to connect the plow A through the medium of the loop or yoke 76 carried thereby with the arm 68 and through which yoke or loop 76 said arm is directed as is particularly illustrated in Fig. 9.

I also find it of advantage to provide each end portion of the plow A with a rearwardly directed extension or abutment 77 adapted to engage the outer end of the adjacent beam 52 so that the functioning of the plow A is assured.

In Fig. 13 of the accompanying drawings, I disclose a modified mounting for the vertically disposed rods or shanks hereinbefore referred to and wherein the rod or shank 26ª is loosely directed through a beam 1ª and has threaded thereupon at a point between the vertically spaced flanges of the beam 1ª a worm member 28ª meshing with a worm 29ª carried by a shaft 30ª. In order to effect this mounting it is to be understood that the beam 1ª is provided with the requisite openings. In this form of my invention it is also of advantage to incase the worm member 28ª and the worm 29ª in the housing or casing 77.

The rods or shanks 60 operate to raise or lower the blocks or shoes 70 as the occasions of practice may require and this is accomplished by imparting requisite rotation to the shafts 63. Each of the shafts 63, in the present embodiment of my invention is rotated through the medium of a shaft 78 and in driving connection with the gear 66. The shaft 78 extends rearwardly of the frame F and is provided at its rear end portion with an operating wheel 79.

When the plow A is in use it is also of advantage to provide means for supporting the apex portion thereof and in order to provide for this support the front portion of the frame is provided with a forwardly directed bracket 79 having loosely disposed through the outer end portion thereof a rod or shank 80 having its lower end portion suitably engaged with the apex portion of the plow A. The upper end portion of the rod or shank 80 has threaded thereon a worm member 81 engaging the upper face of the bracket 79 and in mesh with a worm 82 carried by the rearwardly directed shaft 83. The shaft 83 as illustrated in Fig. 1 comprises a plurality of articulated sections and the rear end portion of said shaft 83 is provided with an operating wheel 84 whereby the requisite rotation may be imparted to the shaft 83 to raise or lower the shank or rod 80 as the occasions of practice may necessitate.

From the foregoing description, it is thought to be obvious that a road working machine constructed in accordance with my invention is particularly well adapted for use by reason of the convenience and facility with which it may be assembled and operated and it will also be obvious that

my invention is susceptible of some change and modification without departing from the principles and spirit thereof and for this reason I do not wish to be understood as limiting myself to the precise arrangement and formation of the several parts herein shown in carrying out my invention in practice except as hereinafter claimed.

I claim:

1. A machine of the class described comprising a portable frame, a pair of substantially parallel beams slidably supported by the frame and extending beyond the end thereof, a single means for imparting endwise movement to said beams in unison but in reverse directions one with respect to the other, and a working member supported by the extended portion of the beams.

2. A machine of the class described comprising a portable frame, a pair of substantially parallel beams slidably supported by the frame and extending beyond the end thereof, a single means for imparting endwise movement to said beams in unison but in reverse directions one with respect to the other, a working member supported by the extended portion of the beams, and means for vertically adjusting the working member.

3. A machine of the class described comprising a portable frame, a pair of substantially parallel beams slidably supported by the frame, said beams being of channel formation, the lower flange of one of the beams being provided with a rack and the upper flange of the second beam being provided with a rack, a transversely disposed shaft supported by the frame, gears fixed to the shaft and meshing with the racks of the beams, means for rotating the shaft, and a working member engaged with the beams.

4. A machine of the character described comprising a portable frame, a pair of substantially longitudinally alined and vertically disposed rods, means coacting with each of the rods for imparting vertical movement thereto, a ground working member provided with a beam, one of said rods being operatively engaged with the forward portion of the beam, a second rod being operatively engaged with the rear portion of the beam, and a draw bar pivotally secured to the beam and to the frame at a point in advance of the beam.

5. A machine of the class described comprising a portable frame, a pair of substantially transversely alined vertical rods carried by the frame, means for imparting vertical movement to said rods, a working member engaged with the rods, and means for adjusting the angle of the working member horizontally with respect to the path of travel of the machine.

6. A machine of the class described comprising a portable frame, a pair of transversely spaced vertical rods carried by the frame, means for imparting vertical movement to said rods, arms secured to the lower end portions of the rods and depending therefrom, shoes carried by the lower extremities of the arms, a working member secured to the shoes, and means for connecting the working member to the arms.

In testimony whereof I hereunto affix my signature.

DAVID C. MOWRY.

Witnesses:
FRANK W. SLOAN,
CARL E. SCHNEIDER.