

C. W. HORTON.
ROAD GRADING MACHINE.
APPLICATION FILED JULY 31, 1909.

955,071.

Patented Apr. 12, 1910.

3 SHEETS—SHEET 1.

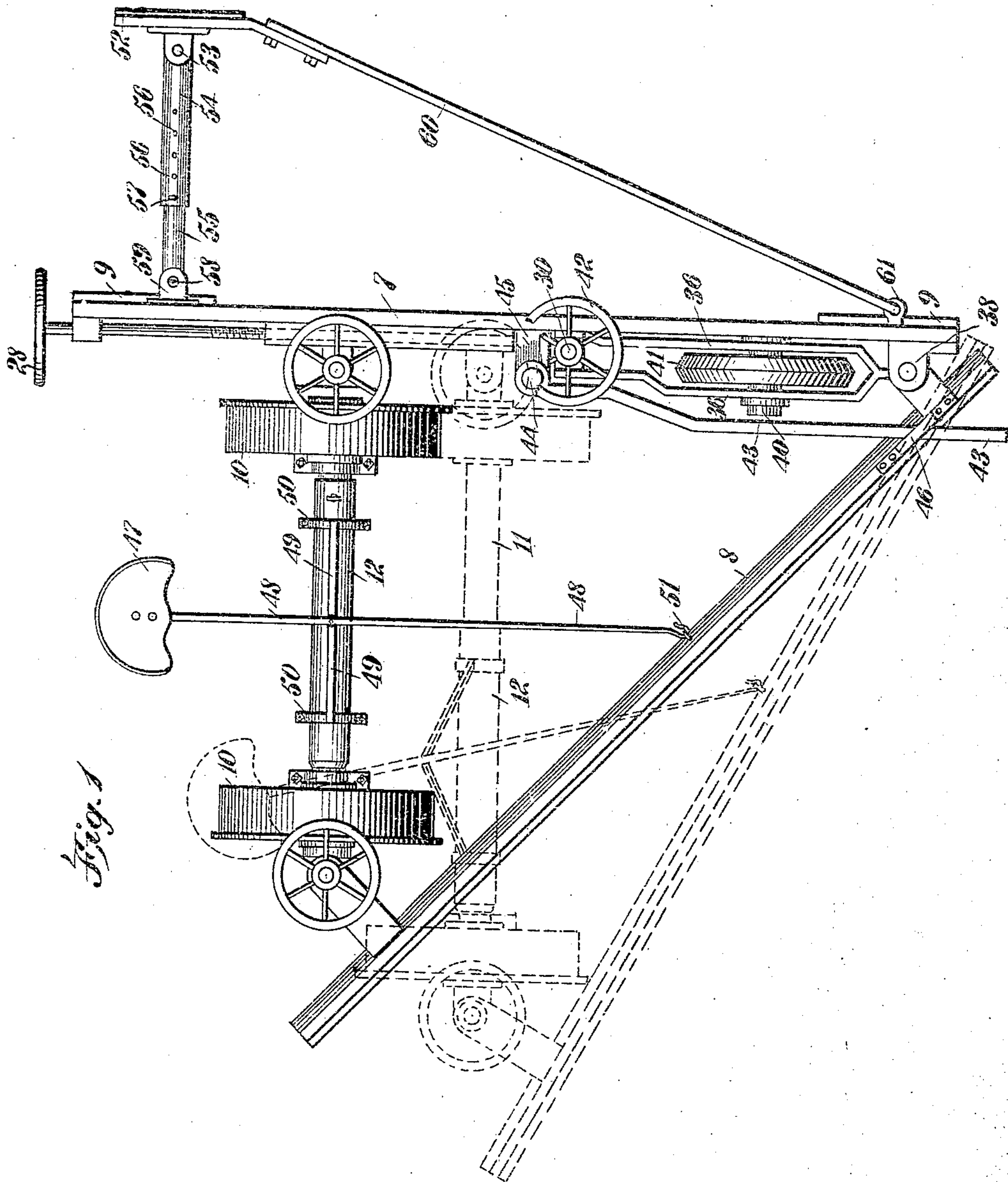


Fig. 1

WITNESSES

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3 SHEETS-SHEET 2.

Fig. 2

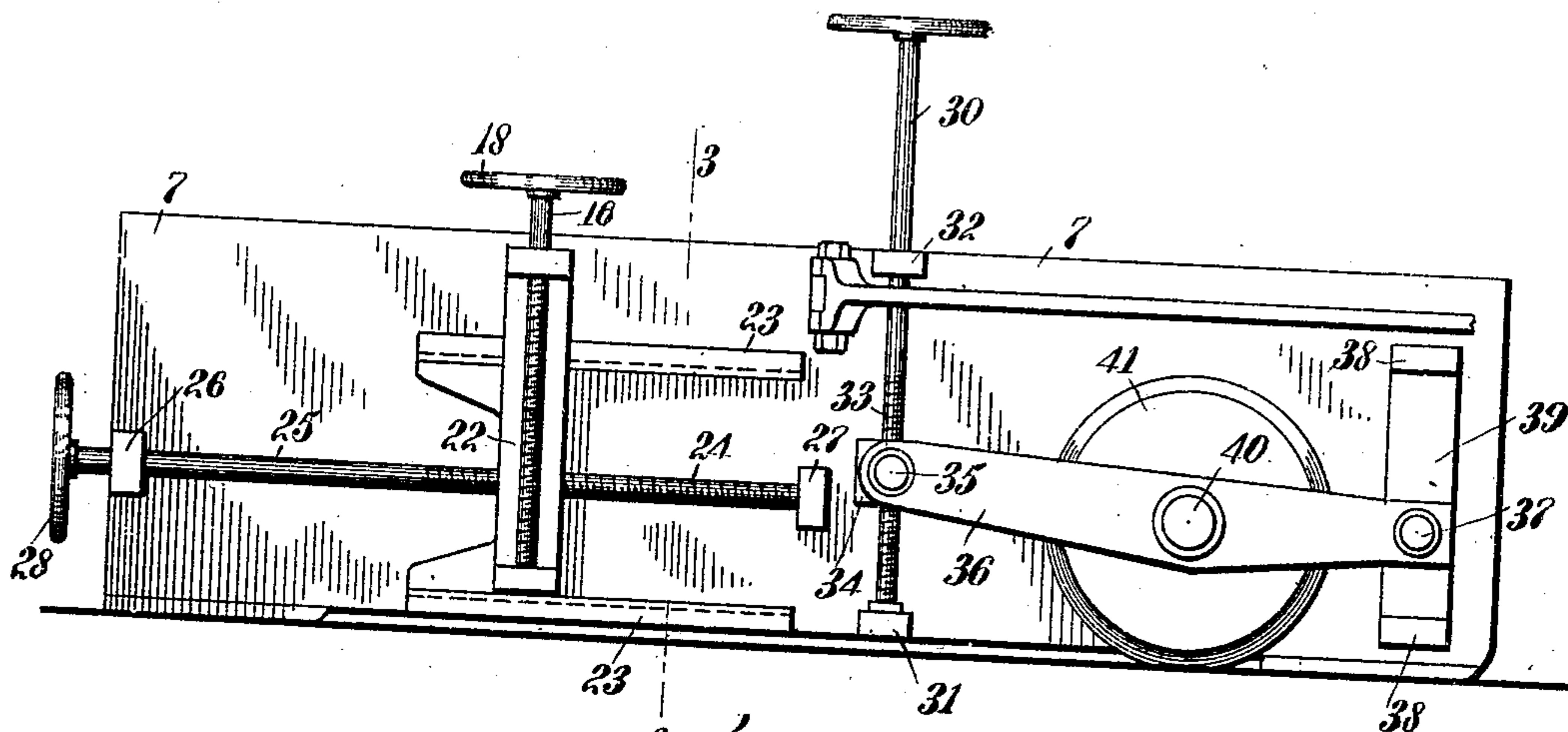
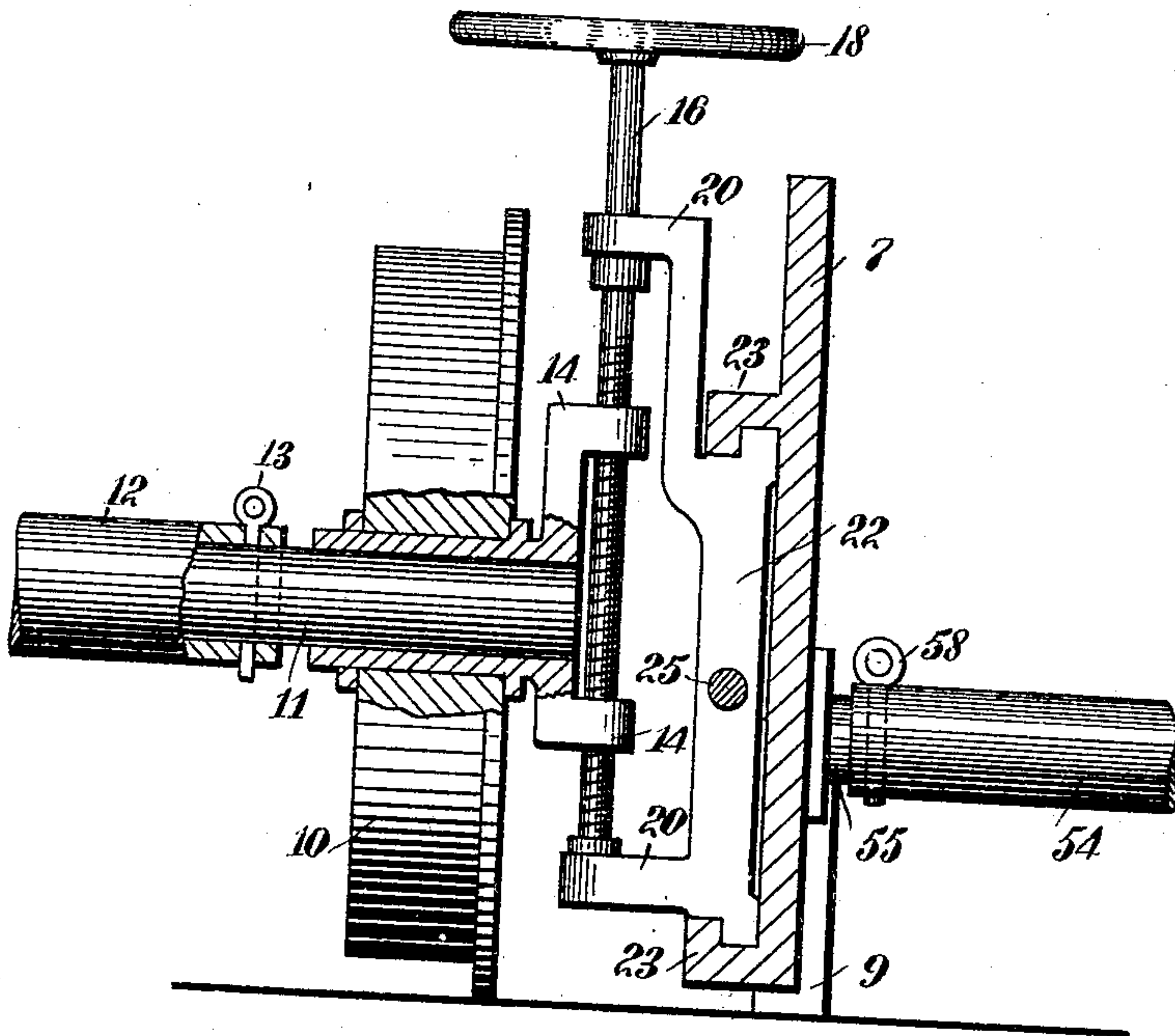


Fig. 3



WITNESSES

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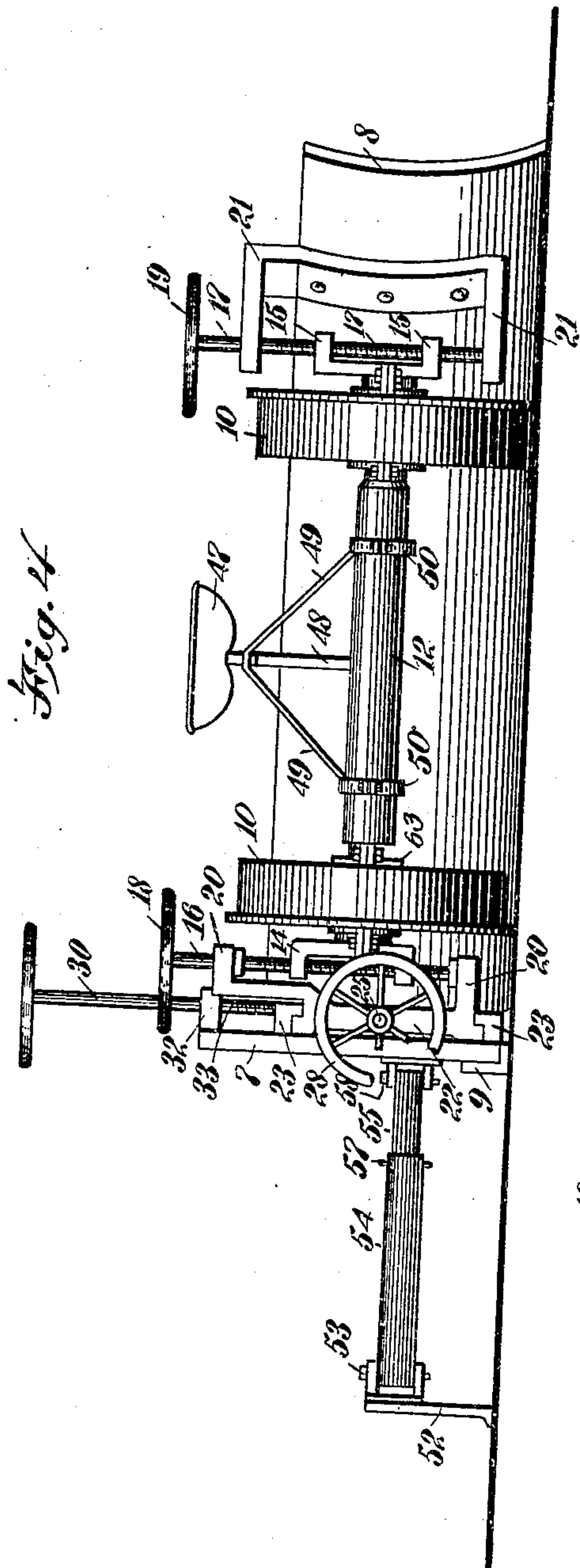


Fig. 4

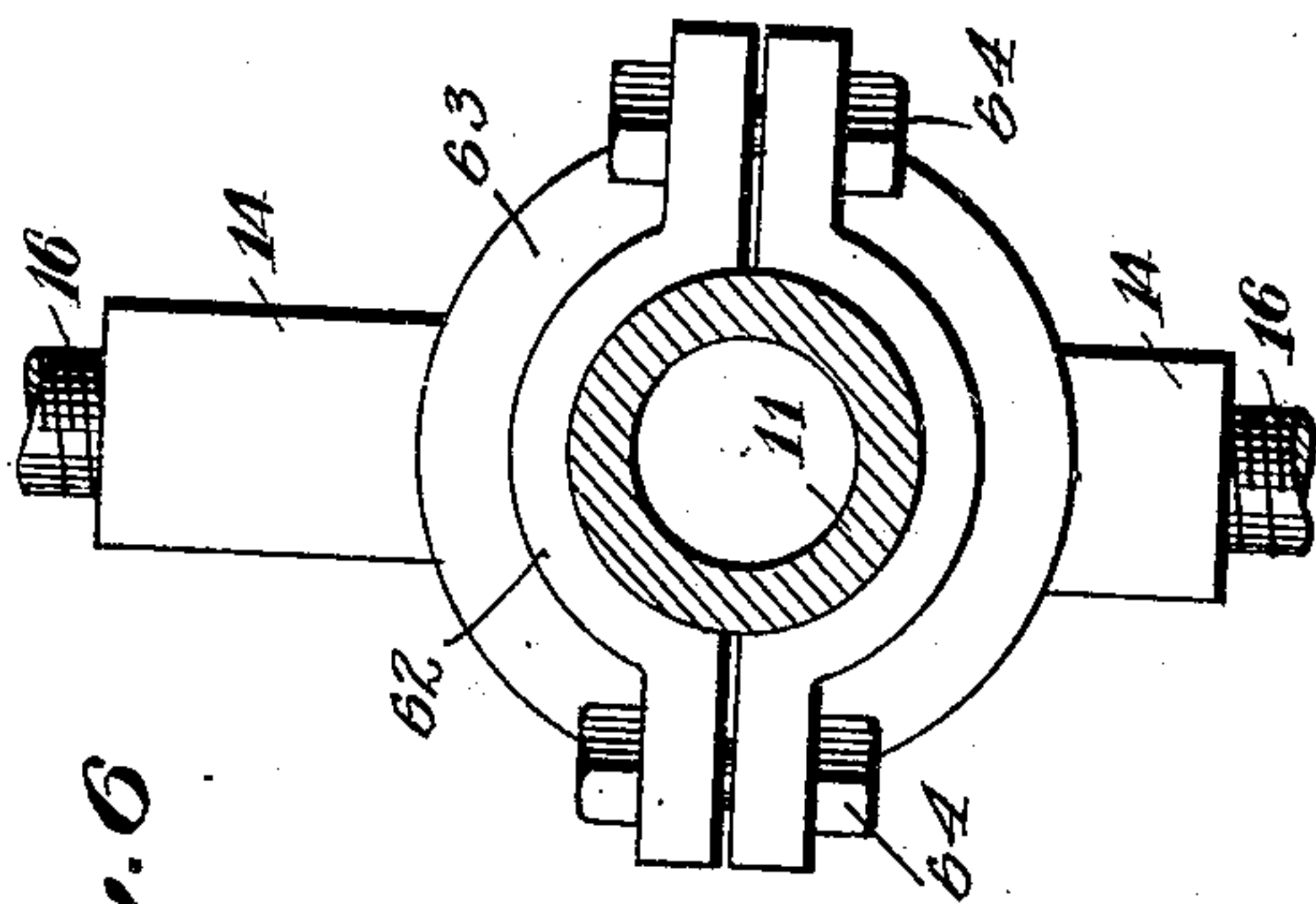


Fig. 6

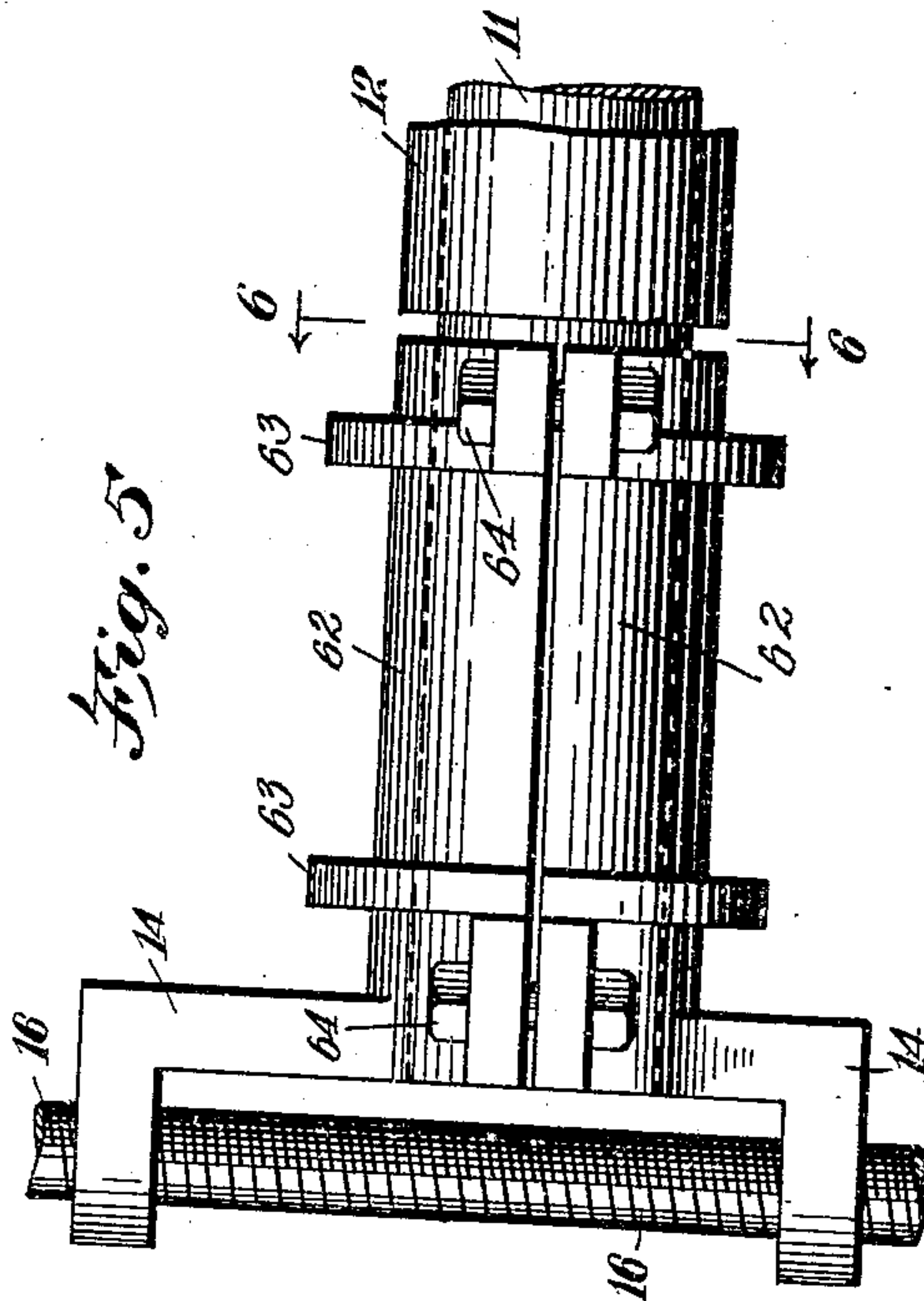


Fig. 5

WITNESSES

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UNITED STATES PATENT OFFICE.

CHARLES W. HORTON, OF BELLE RIVE, ILLINOIS.

ROAD-GRADING MACHINE.

955,071.

Specification of Letters Patent.

Patented Apr. 12, 1910.

Application filed July 31, 1909. Serial No. 510,593.

To all whom it may concern:

Be it known that I, CHARLES W. HORTON, a citizen of the United States, and a resident of Belle Rive, in the county of Jefferson and State of Illinois, have invented a new and Improved Road-Grading Machine, of which the following is a full, clear, and exact description.

Among the principal objects which the present invention has in view are: to provide a construction whereby a grader may be controlled to operate over an increased area; to provide a structure wherein the operating angle of the grading blade may be adjusted; and to provide a structure which is simple, efficient and durable.

One embodiment of the present invention is disclosed in the structure illustrated in the accompanying drawings, in which like characters of reference denote corresponding parts in all the views, and in which—

Figure 1 is a plan view of a machine constructed in accordance with the present invention; Fig. 2 is a side elevation in detail of the inner side of the land side of the machine; Fig. 3 is a section taken on the line 3—3 in Fig. 2, showing the main axle and land side extension beam in elevation; Fig. 4 is a rear elevation of the machine; Fig. 5 is a detail enlarged and in elevation showing the supporting yoke for the main axle and the bearing for the land side carrying wheel; and Fig. 6 is a cross section of the main axle taken on the line 6—6 in Fig. 5.

The invention more particularly contemplates that form of operation wherein a road bed is graded with reference to a certain level and wherein the shifting dirt is moved in one direction only.

The machine is provided with a straight land side 7 to which is hingedly mounted an elongated grading blade 8, the relation between the land side and grading blade being in the present machine in several respects similar to that between the land side and the mold board of an ordinary plow. The land side 7 is provided at the rear and front ends with shoes 9, 9 which are formed to an angular shape and are adapted to rest upon the surface of the cut ground and against the side wall of the former cut.

The machine is carried by three traction wheels, the wheels 10, 10 being mounted on the main axle. The main axle is constructed

from two sections of pipes 11 and 12 the former telescoping within the latter. The pipes 11 and 12 are maintained in their normal relation by means of an eye-block 13 which is probed through suitable perforations provided in the end of the pipe 12 and at different points along the length of the pipe 11. The purpose in telescoping the main axle is to permit the swing of the blade 8. The main axle is further pivotally mounted at either end, being carried by the yokes 14 and 15 the former of which is mounted rigidly upon the pipe 11 while the latter is mounted upon the pipe 12. These yokes are each provided with perforations in the yoke arms through which are threaded shafts 16 and 17 having hand wheels 18 and 19. The shafts 16 and 17 are rotatably mounted in the yoke arms of the framing yokes 20 and 21, the former being slidably mounted upon the land side 7 while the latter is fixedly mounted upon the blade 8. The bracket arms 20 are extended from a body 22 which is suitably mounted in slides 23, 23 rigidly secured upon the land side 7. The body 22 is provided with a perforation suitably tapped to receive a screw threaded extension 24 of a screw 25. The screw 25 is rotatably mounted in bearings 26 and 27 fixedly secured upon the land side 7. The screw 25 is provided with a hand wheel 28 whereby the said screw is rotated.

When in the course of operation it becomes desirable to extend the blade 8 to such a position, for instance, as shown in Fig. 1 of drawings, it is necessary that the main axle should be adapted to be extended longitudinally, and, also, it is equally necessary that the main axle and the wheels mounted thereon shall be advanced to the position shown in dotted lines in said Fig. 1. The movement of the axle with reference to the framing yoke 21 is accommodated by the pivotal relation of the screw shaft 17 to the yoke 21, permitting the yoke 15 and the pipe 12 by which it is carried to swing upon the screw shaft as a pivot. If now the wheel 10 next the land side be not advanced the extension of the axle 11, 12 would not place the wheel in position to track parallel with the land side 7, which is necessary to the correct operation of the machine. It is for the shifting of the wheel 10 next the land side that I have provided the screw 25. By rotating the said screw 25 the body 22 is ad-

vanced or receded toward and away from the front of the machine, as is also shown by the dotted lines in Fig. 1 of drawings.

The screw shafts 16 and 17 are further provided to raise and lower the land side 7 and the blade 8 relative to the carrying wheels 10, 10. This operation may be carried to such an extent as to raise the blade and land side free of the ground, in which position the scraper is moved to and from the field of operation. These screw shafts can also be adjusted so that the extent of the operation of the cutting blade is regulated thereby.

In the operation wherein the blade and land side are raised from the ground or regulated with regard to the cut to be made therein, the carrying wheel 41 is likewise raised. This is accomplished by the screw 30 which is rotatably mounted in bearing blocks 31 and 32 rigidly secured upon the land side 7 just forward of the bearing block 27 which holds the screw 25. Held upon the screw threaded extension 33 of the screw 30 and in screw threaded engagement therewith is a trunnion block 34, the trunnions 35 of which are extended through suitable perforations in the carrying arms 36, 36. The arms 36, 36 are pivoted at 37 within the hinge yoke arms 38, 38. The hinge yoke arms 38 are set out from the body 39 forming the hinge for the blade 8. The pivot 37 is fixed while the bearing block 34 is raised and depressed on the threaded portion 33 of the screw 30. Midway between the pivot 27 and the trunnions 35, and upon the arms 36, 36, are formed bearings for trunnions 40 of the crown wheel 41. The periphery of the wheel 41 is centrally ridged or crowned, as shown in the drawings, to compel the same to track in a line parallel with the land side 7. When now the screw 30 is rotated to raise or lower the block 34 the land side 7 is raised from or lowered to the ground. This action transpiring at the forward end of the land side and corresponding with the raising and lowering of the wheel 10 at the rear end of the land side, the land side is lifted from the ground in a level position. To facilitate the rotation of the screw 30 it is provided with a hand wheel 42.

The machine is designed to be drawn by animals, and is provided with a draft bar 43 which is pivotally mounted at 44 in brackets 45 set out from the land side 7. The draft bar 43 is extended forward, passing under a loop 46 provided in the upper edge of the blade 8. At the forward end of the bar 43 there is provided any suitable form of clevis for attaching the team.

The machine is provided with a seat 47 for the driver which is mounted in the end of a seat bar 48. The said bar 48 is supported by a brace 49 which is bowed upward from collars 50, 50 by which it is secured to

the pipe 12. At the forward end of the bar 48 there is provided a hook 51 which is secured to an eyelet suitably provided in the blade 8. The bar 48 is usually constructed from a material having sufficient resiliency to form a spring between the brace 49 and the seat 47. By means of this attachment the said structure in no wise interferes with the adjustment of the blade 8, yielding to all positions of the same. It is to permit this adjustment that the connection between the bar 48 and the brace 49 is formed by a suitable pivot.

With a machine such as described the operation would consist in forming, in the first instance, a ditch wherein the land side 7 would be placed so that the shoes 9, 9 rest upon the bottom of the ditch and against the side wall thereof. In this position of the land side the blade 8 is lowered into position to cut to a depth equal to the ditch. The blade 8 is contracted as far as possible to approach the land side 7, and in this position the team is started, causing the machine to displace the ground laterally for a certain width. On the second operation, when the machine is returned to the starting point, the land side 7 is again adjusted to the bottom and side wall of the first mentioned ditch, the blade 8 is thrown to an extended position and the operation repeated, the outer end of the blade 8 operating to displace laterally the ground for a wider area. These operations are repeated until the blade 8 is extended to its fullest capacity. If the grading be wider than that accommodated by the extension of the blade 8 the extended land side is called into operation. The extended land side comprises a shoe 52 of sufficient length to bear against the side wall of the first made ditch and to resist the thrust of the blade 8. It is mounted on a frame pivoted at 53 to a pipe 54, which forms, with a pipe 55, a telescopic relation. The telescopic extension is regulated by perforations 56, 56 formed in the outer pipe 54 and a pin 57 adapted to extend through the said perforations 56 and into the perforation provided in the pipe 55 to receive it. The pipe 55 is pivoted at 58 to brackets 59 set out from the side of the land side 7. The frame carrying the shoe 52 is braced in operative position by a stay rod 60 which is pivoted to an eye-bolt 61 set out from the said land side 7 at the forward end of the machine. When employing the extended land side carrying the shoe 52 the operation of the plate 8 is the same as above described, starting on the most contracted angle to the land side 7 and gradually expanding to the widest spread angle, such as shown in drawings at Fig. 1. The result of the total operation is that from a given ditch as a guide the whole surface of the road bed is graded.

The wheels 10, 10 are mounted upon split

bearings 62 which are formed in the two parts illustrated in the drawings having the flanges 63 extended therefrom to guide the said wheels. The parts 62 are drawn tightly together upon the pipe 11 or 12, as the case may be, and clamped rigidly in such position by means of bolts 64.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:

1. A road grading machine, comprising a land side extended in a line parallel to the line of draft; a scoop blade hingedly secured to said land side at the forward end thereof; carrying wheels for said machine; an extensible axle for said wheels pivotally attached to the land side and blade; and an adjusting mechanism for moving the said carrying wheels lengthwise relative to said land side.

2. A road grading machine, comprising a land side extended in a line parallel to the line of draft; a scoop blade hingedly secured to said land side at the forward end thereof; carrying wheels for said machine; an axle for said wheels formed from pipes telescopically connected; means for securing the pipes in fixed relation; a pivotal mounting for one of said pipes to the said blade; a sliding connection on the land side for the other of said pipes; and a screw for adjusting said sliding connection.

3. A road grading machine, comprising a land side extended in a line parallel to the line of draft; a scoop blade hingedly secured

to said land side at the forward end thereof; carrying wheels for said machine; a slide member set out from the bearing side of said land side and adapted to bear against the wall of the ground; and means for extending and holding said slide member in extended position.

4. A road grading machine, comprising a land side extended in a line parallel to the line of draft; a scoop blade hingedly secured to said land side at the forward end thereof; carrying wheels for said machine; a slide member adapted to bear against the side of the excavation in the ground and a telescopic arm interposed between said slide member and said land side.

5. A road grading machine, comprising a land side extended in a line parallel to the line of draft; a scoop blade hingedly secured to said land side at the forward end thereof; carrying wheels for said machine; a sliding member adapted to bear against the side of the excavation in the ground; a telescopic arm to carry said sliding member and extended from the bearing side of said land side; and a suitable stay to maintain the said sliding member in operative position.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

CHARLES W. HORTON.

Witnesses:

F. C. WILBANKS,
JAMES A. ESMAN.