

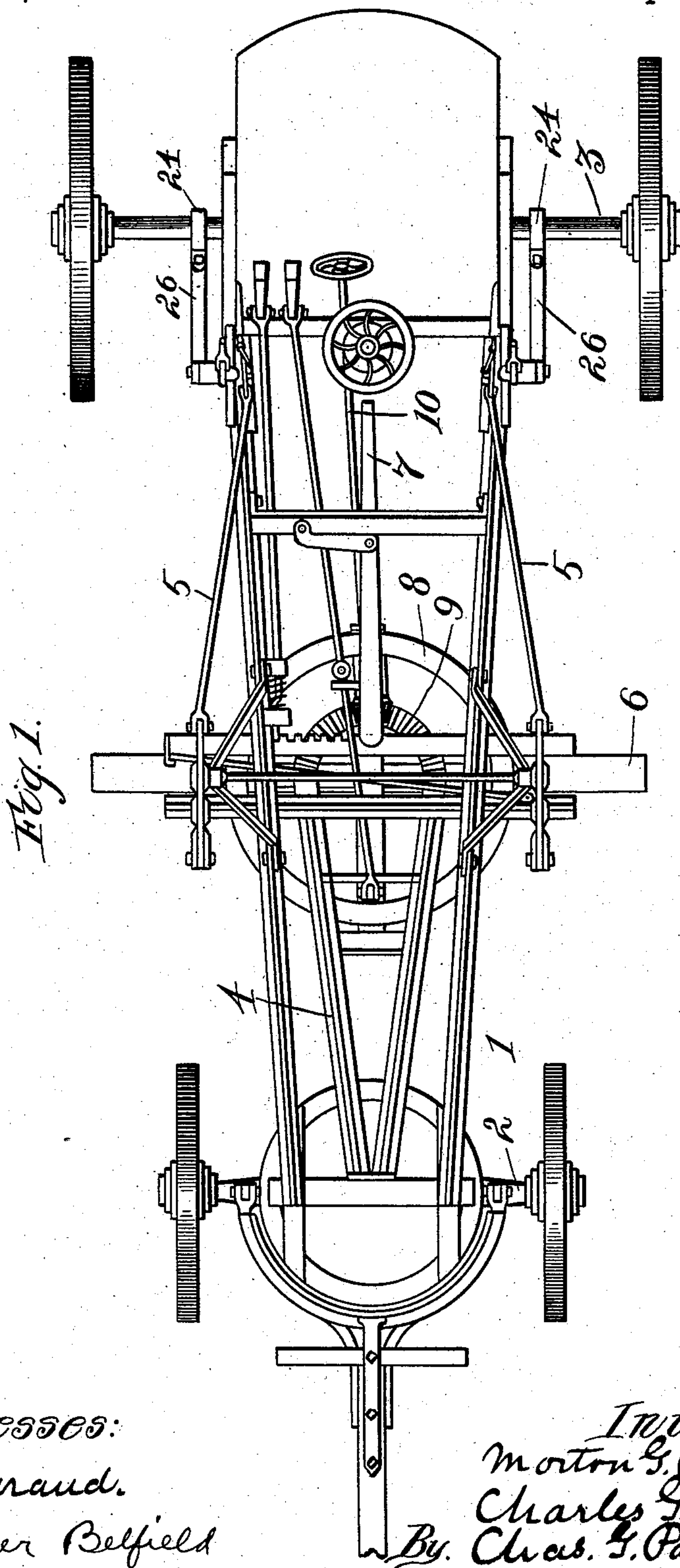
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4 Sheets—Sheet 1.

M. G. BUNNELL & C. G. PAGE.  
MACHINE FOR MAKING AND REPAIRING ROADS.

No. 567,293.

Patented Sept. 8, 1896.



Witnesses:  
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4 Sheets—Sheet 2.

No. 567,293.

Patented Sept. 8, 1896.



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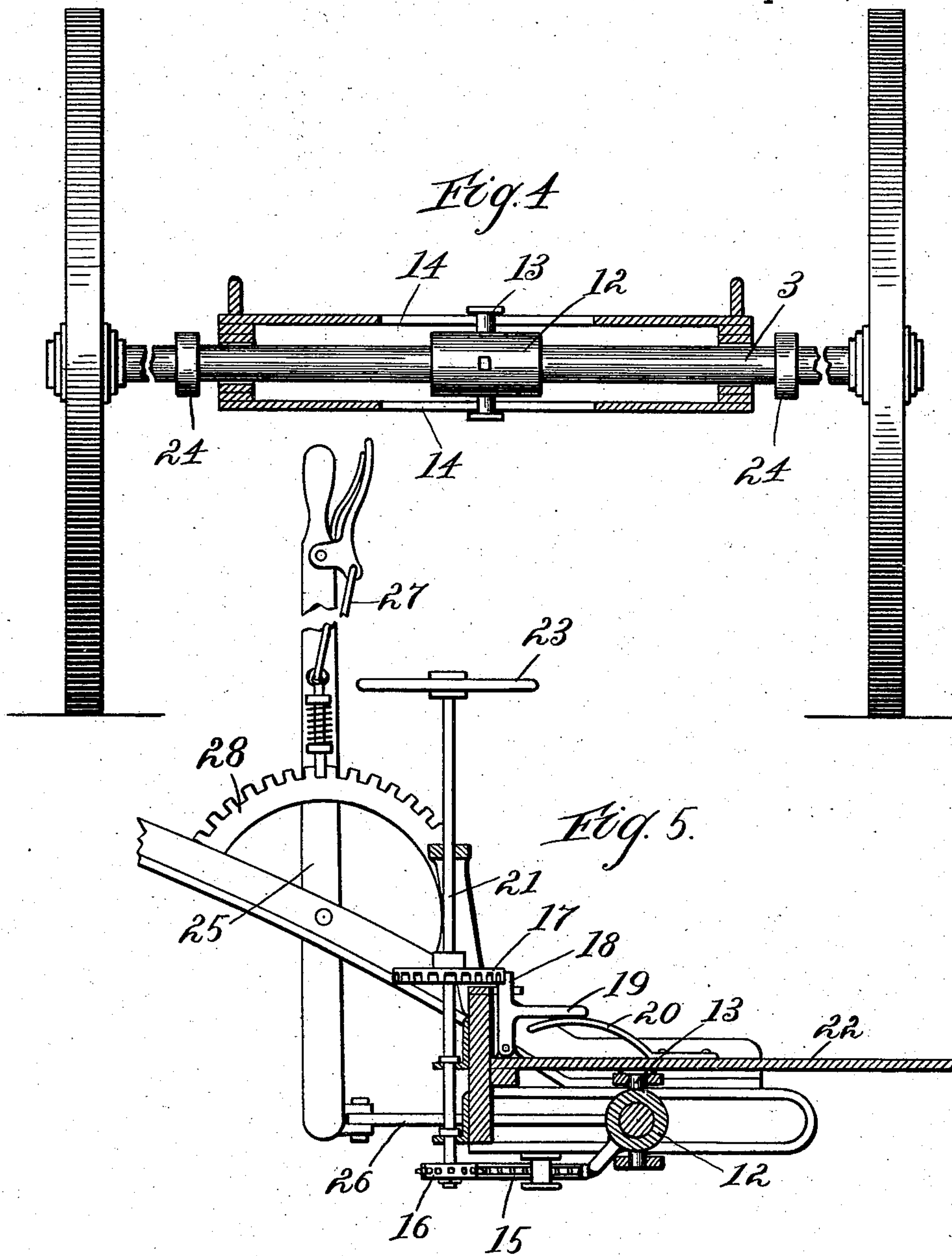
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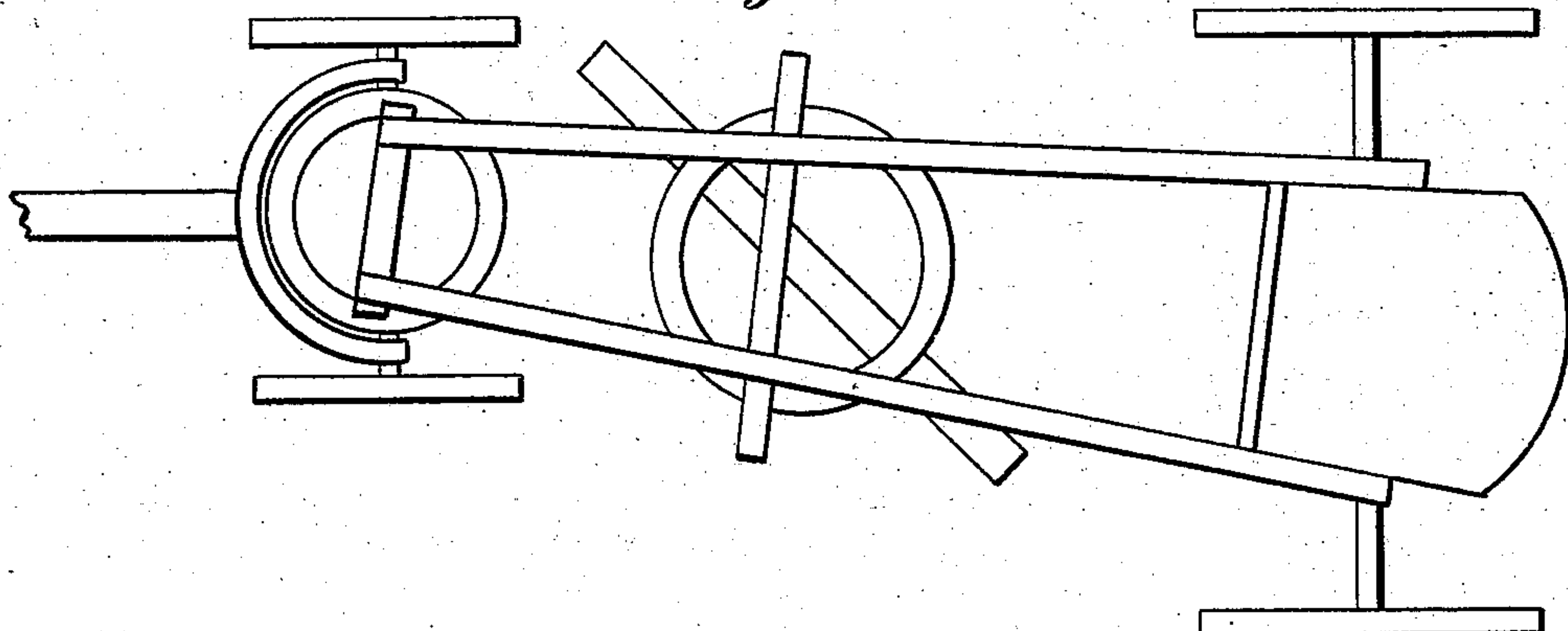
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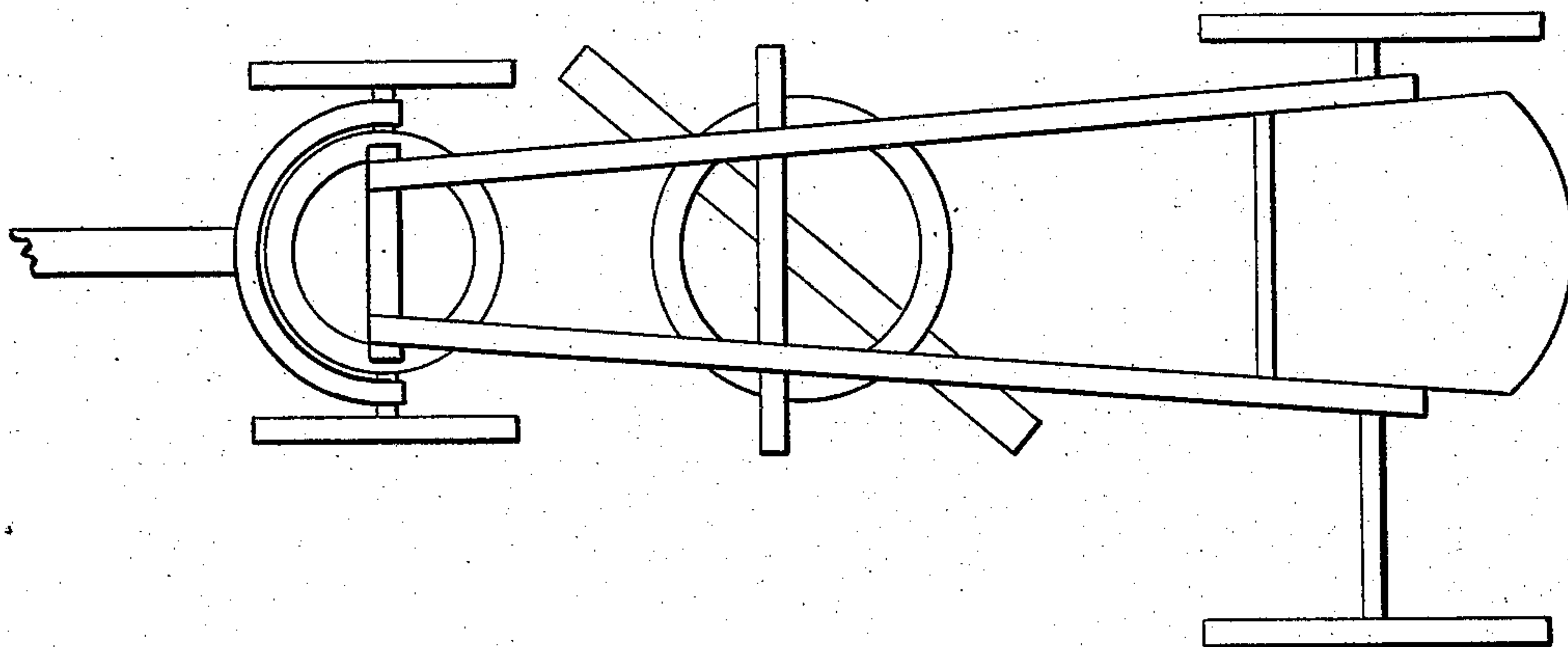
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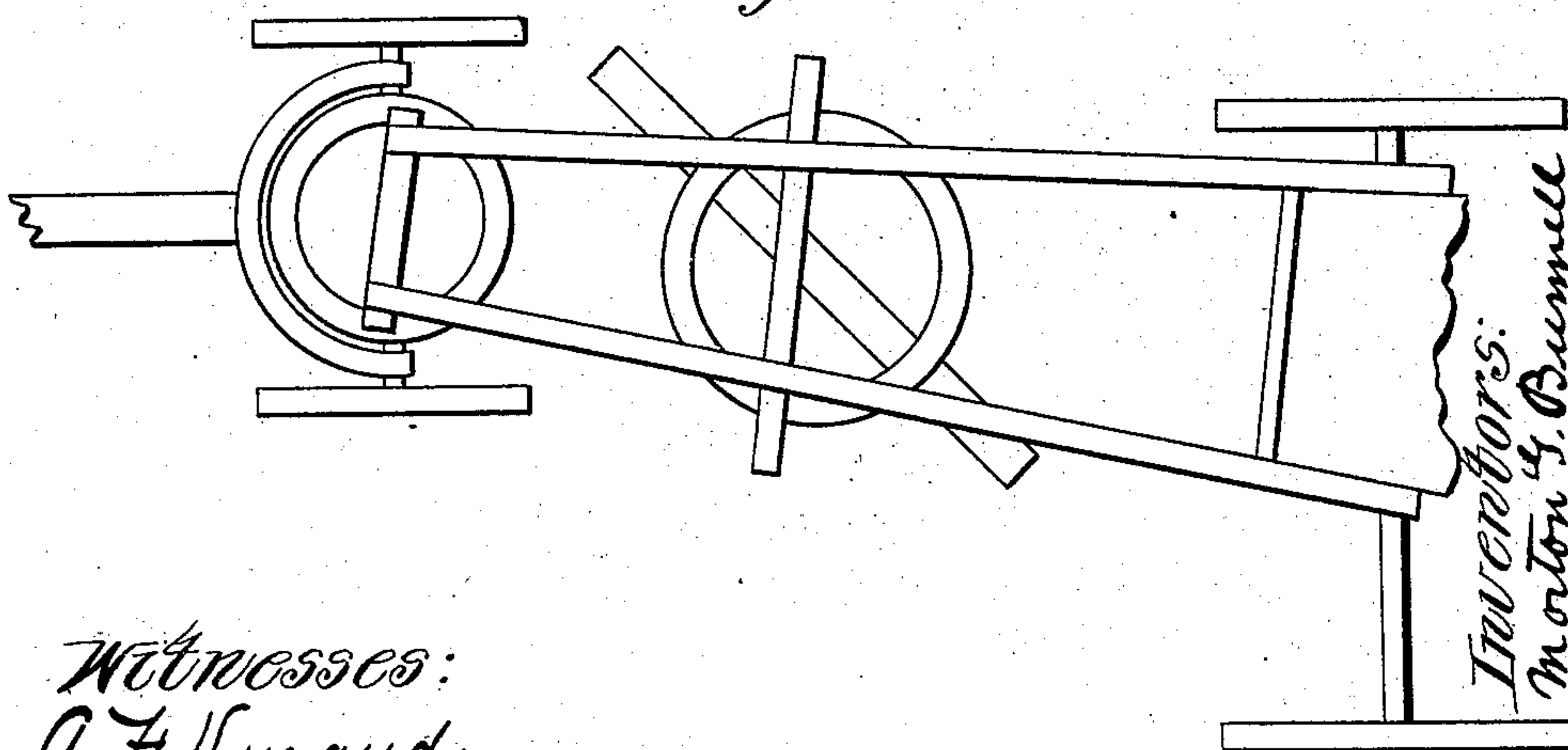
*Fig. 6.*



*Fig. 7.*



*Fig. 8.*



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# UNITED STATES PATENT OFFICE.

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## MACHINE FOR MAKING AND REPAIRING ROADS.

SPECIFICATION forming part of Letters Patent No. 567,293, dated September 8, 1896.

Application filed January 13, 1896. Serial No. 575,270. (No model.)

*To all whom it may concern:*

Be it known that we, MORTON G. BUNNELL and CHARLES G. PAGE, citizens of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Machines for Making and Repairing Roads, of which the following is a specification.

Our invention relates to road-working machines of the kind in which a long diagonally-disposed scraper-blade is arranged between the front and rear wheels of a body-frame or carriage having means for supporting and adjusting said scraper-blade, and having the rear axle arranged for adjustment relatively to the body-frame.

Prominent objects of our invention are to provide for greater range of adjustment on the part of the rear axle and to particularly adapt the same for adjustment with reference to a diagonally-reversible scraper-blade; to permit the axle to be alternately swung about a pivotal center and shifted longitudinally without lost or waste motion; to arrange simple, quick-acting, and convenient means for swinging a rear axle about a vibratory center, and also for shifting said vibratory center with reference to the body-frame; to provide simple and reliable means for connecting to the body-frame an axle capable of both vibratory adjustment and lateral shifting adjustment, and to provide certain further novel and improved details, as are hereinafter more fully set forth.

In a road-working machine characterized by our invention the rear axle, which is relatively longer than the front axle, is capable of independent horizontal swinging adjustment and longitudinal adjustment, and is vibratorily held by a holder or bearing, which, in turn, has a shifting connection with the body-frame. Said rear axle is arranged for vibratory motion by reason of the pivotal connection of its holder or bearing, and said bearing is also arranged for end thrust or adjustment across the body-frame of the machine independent of said vibratory or swinging movement of the axle. By such arrangement the vibratory holder may be so shifted as to bring either one of the rear wheels into alinement with its companion front wheel;

the axle may be swung about its pivotal connection irrespective of the position of the vibratory bearing with reference to the body-frame of the machine; the vibratory holder, and consequently the axle, may be shifted from side to side of the body-frame to any desired extent, irrespective of the inclination to which the axle may at that time be adjusted, and inasmuch as said holder may be connected to the axle at or near its middle point the various end adjustments of the latter may be obtained without moving its pivotal point far from the middle of the body-frame, which admits of a more easy and expeditious swinging adjustment of the axle than if its pivotal point were at one side of the machine.

To this end our invention consists in providing a holder which allows a vibratory movement of the rear axle with reference to the body-frame and in arranging said holder so that it may be shifted from side to side of the body-frame; in providing means for swinging the axle about its pivotal connection for shifting said pivotal connection across the body-frame for normally locking the axle in swinging adjustment and the holder in shifting adjustment, and in such other features as are hereinafter set forth.

In the accompanying drawings, Figure 1 is a plan of a road-working machine embodying our invention. Fig. 2 is a plan of the rear portion of the same. Fig. 3 is a view on the line 3 3 of Fig. 2, showing the rear axle in section. Fig. 4 is a transverse section of the machine on the line 4 4 in Fig. 2. Fig. 5 is a section on line 5 5 in Fig. 2. Figs. 6, 7, and 8 are plan views of so much of the machine as is necessary to illustrate the advantages of its construction.

For the purposes of our invention any suitable construction of body-frame may be employed. The scraper-blade can be connected with the body-frame in any preferred manner, so as to be adjustable horizontally and vertically, and arranged to be swung about a point between its ends so that it may be placed diagonally to the line of progression with either end in advance. In the preferred arrangement (shown in Fig. 1) the body-frame is supported by the pivoted short front



axle 2 and long rear axle 3. The scraper-blade 6 is arranged to extend across the width of the machine, and is suspended below the body-frame by suitable raising and lowering devices operated by levers 5. The raising and lowering mechanism is so arranged that the blade may be swung bodily from side to side of the machine; and for the purpose of thus swinging the blade it is drawn by the horizontally-swinging draft-bar 4, which is pivotally secured at the forward end of the machine and swung by the lever 7.

The blade may be connected in any suitable way for diagonal adjustment, although as a preferred arrangement it is attached to the circle or turn-table 8, having at its center a pivotal connection with the horizontally-swinging draft-bar and provided with the segment-gear 9. When it is desired to swing the scraper-blade about its pivotal connection, the hand-wheel shaft 10 is rotated, so as to turn the segment-gear 9 and thereby bring about the required adjustment of the blade.

In order to resist the side draft resulting from the resistance offered by the soil to the scraper-blade, it is desirable to swing the rear axle with reference to the horizontal angle of the blade relatively to the line of progression. With such an arrangement as we propose, either end of the axle may be swung forward, sometimes one and sometimes the other, according to the nature of the work to be done. While an end adjustment of the axle can also be used to some advantage as a means for overcoming side draft, we find it desirable to adjust the axle as aforesaid, in order to bring the wheels at one side of the machine in alinement and to extend the axle at one or the other side of the machine after it has been set oblique to the line of progression. As a simple and efficient means of accomplishing this we construct the holder for the rear axle rigid therewith, and provide it with both a pivotal and shifting connection with the body-frame instead of pivotally connecting the axle to said holder and then providing the latter with said shifting connection. Hence the holder or sleeve 12 is provided with pivots or studs 13, which permit vibratory movement of the axle; and these pivots in turn may slide in the guide-ways 14 in the body-frame, allowing an end thrust or adjustment of the holder, and consequently of the axle.

For shifting said holder along the guide-ways 14 we select the simple mechanism shown in Figs. 2 and 5, consisting in the chain 15, secured to the bearing and wound about the rotary drum 16. As a means for normally locking said drum so as to hold the bearing in adjustment, a toothed wheel 17, mounted on the drum-shaft 21, is arranged to be engaged by the catch or trip 18, having the spring 20 pressing against the arm or extension 19. The operator, standing upon the platform 22, may shift said holder to one side of the machine or the other by disengaging

the catch 18 from the toothed wheel 17 and turning the hand-wheel 23 until the desired adjustment is secured.

For swinging the rear axle about its pivotal connection any suitable device may be employed which is capable of operation, irrespective of the position of the shifting holder with regard to the body-frame of the machine.

As a preferred arrangement, the axle 3 is grasped by the collars 24 at points where a sufficient leverage may be obtained for swinging it in such a manner that the axle is free to slide through them when moved by the shifting bearing. These collars may be operated through the links 26 by the levers 25, both of which may be grasped by the operator standing upon the platform 22. Each lever is desirably provided with a spring attachment 27, which normally engages with the toothed segment 28 for holding the axle in pivotal adjustment. Obviously, by this arrangement, the shifting holder may be adjusted so as to give the axle any desired end thrust, and an independent swinging or vibratory motion may be given to the axle irrespective of the position of its shifting holder.

Referring to Figs. 6, 7, and 8, it will be seen that the companion wheels on either side of the machine may be brought into alinement by inclining the rear axle to the body-frame, as in Fig. 6; that the shifting holder may then be adjusted with reference to the body-frame, so as to bring the latter into a position substantially parallel to the line of progression, as in Fig. 7. In Fig. 8 is illustrated the range of adjustment obtainable in our machine, whereby the wheels may be accommodated to selected relations with furrows or the like, or by which the scraper-blade may be arranged to deposit soil lifted by it in desired localities.

What we claim as our invention is—

1. In a road-working machine constructed with a wheeled body-frame and a diagonally-disposed scraper-blade arranged between the front and rear wheels, the rear axle pivotally connected with the body-frame, and the pivotal connection supported for a shifting or sliding sidewise movement with reference to the body-frame; and means for adjusting the axle in either a pivotal or sidewise manner independently, whereby the axle can be projected laterally from the body-frame by a relative adjustment between the latter and the pivotal connection, and also whereby the axle may be swung into an oblique position by moving it about its pivotal connection irrespective of the position of the same with reference to the body-frame, substantially as set forth.

2. In a road-working machine constructed with a wheeled body-frame and a diagonally-disposed scraper-blade arranged between the front and rear wheels, the rear axle rigidly connected with a holder or bearing which is supported by the body-frame for both pivotal and sidewise movement with reference thereto, the said axle being provided with means for effecting the pivotal adjustment,



and the holder with means for causing the sidewise motion, substantially as set forth.

5 3. In a road-working machine, the combination with the axle having a pivotal connection with the body-frame, which connection has in turn a sidewise sliding or shifting motion with reference to said body-frame, of a couple of holders engaging the axle at either side of the pivotal point to permit its sidewise

motion; and a couple of levers connected with 10 said holders and arranged to effect the pivotal adjustment of the axle, substantially as set forth.

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