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PATENTED FEB. 18, 1908.

M. W. KOUNS.
REVERSING MECHANISM.
APPLICATION FILED JUNE 10, 1907.

3 SHEETS—SHEET 1.

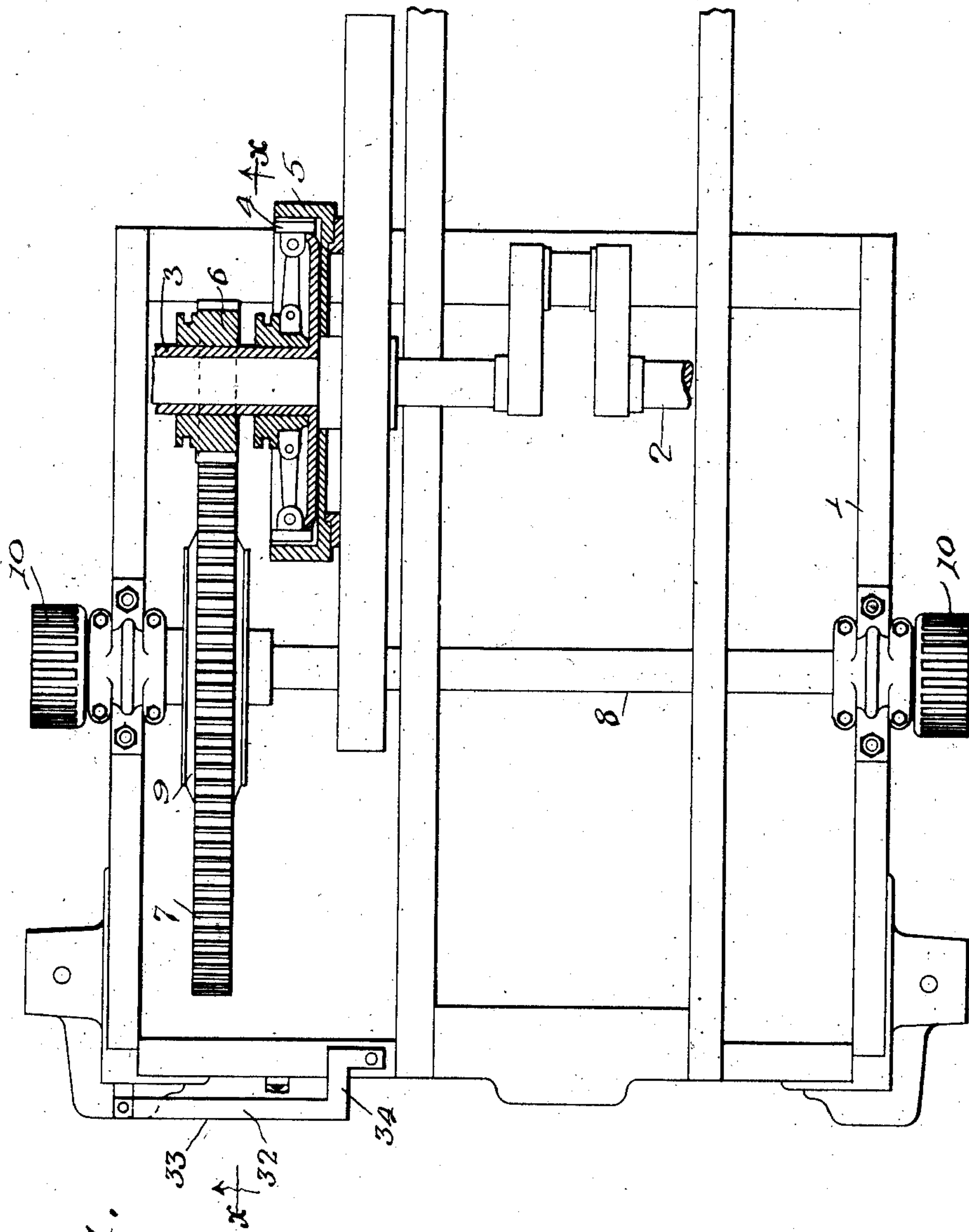


Fig. 1.

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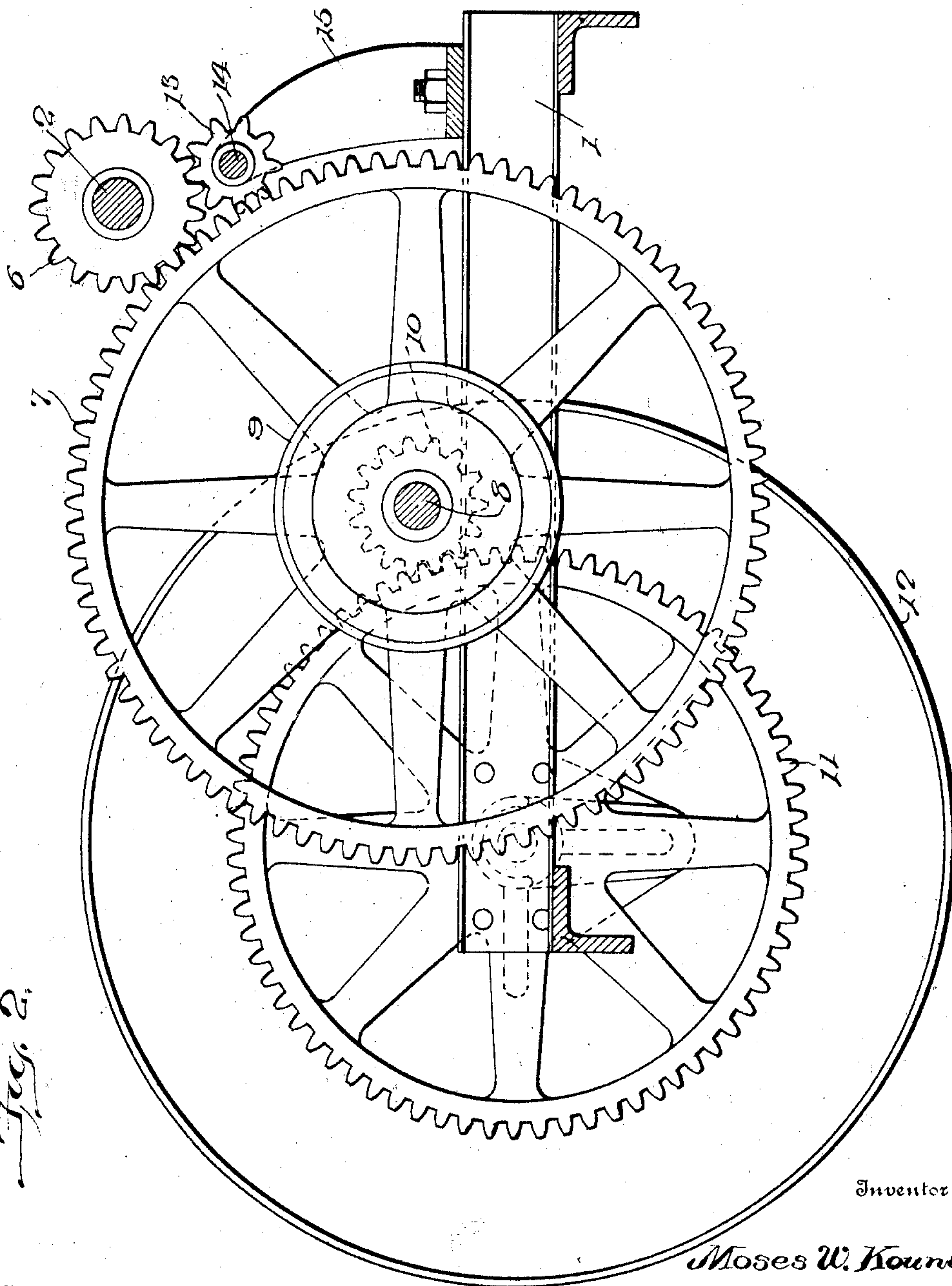
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3 SHEETS—SHEET 2.



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3 SHEETS—SHEET 3.

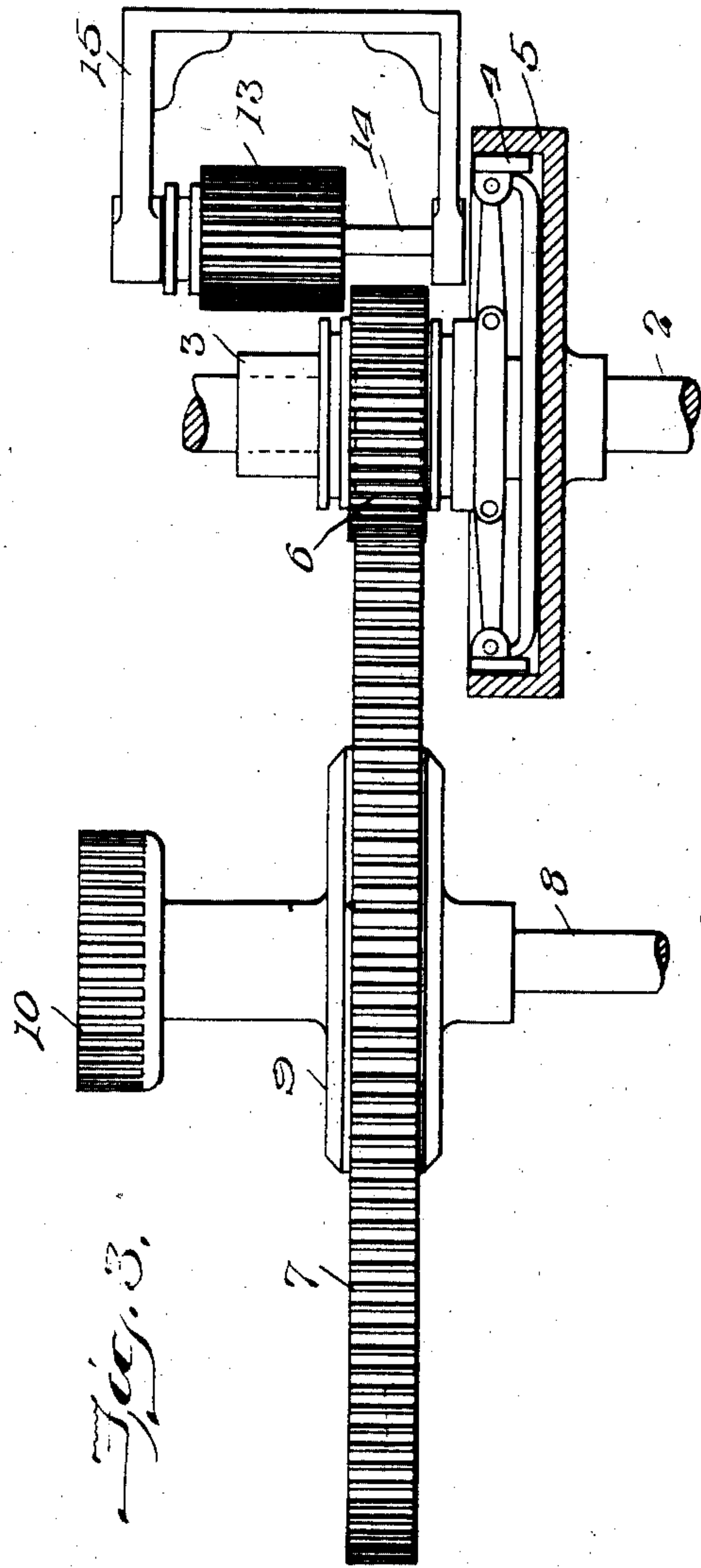


Fig. 3.

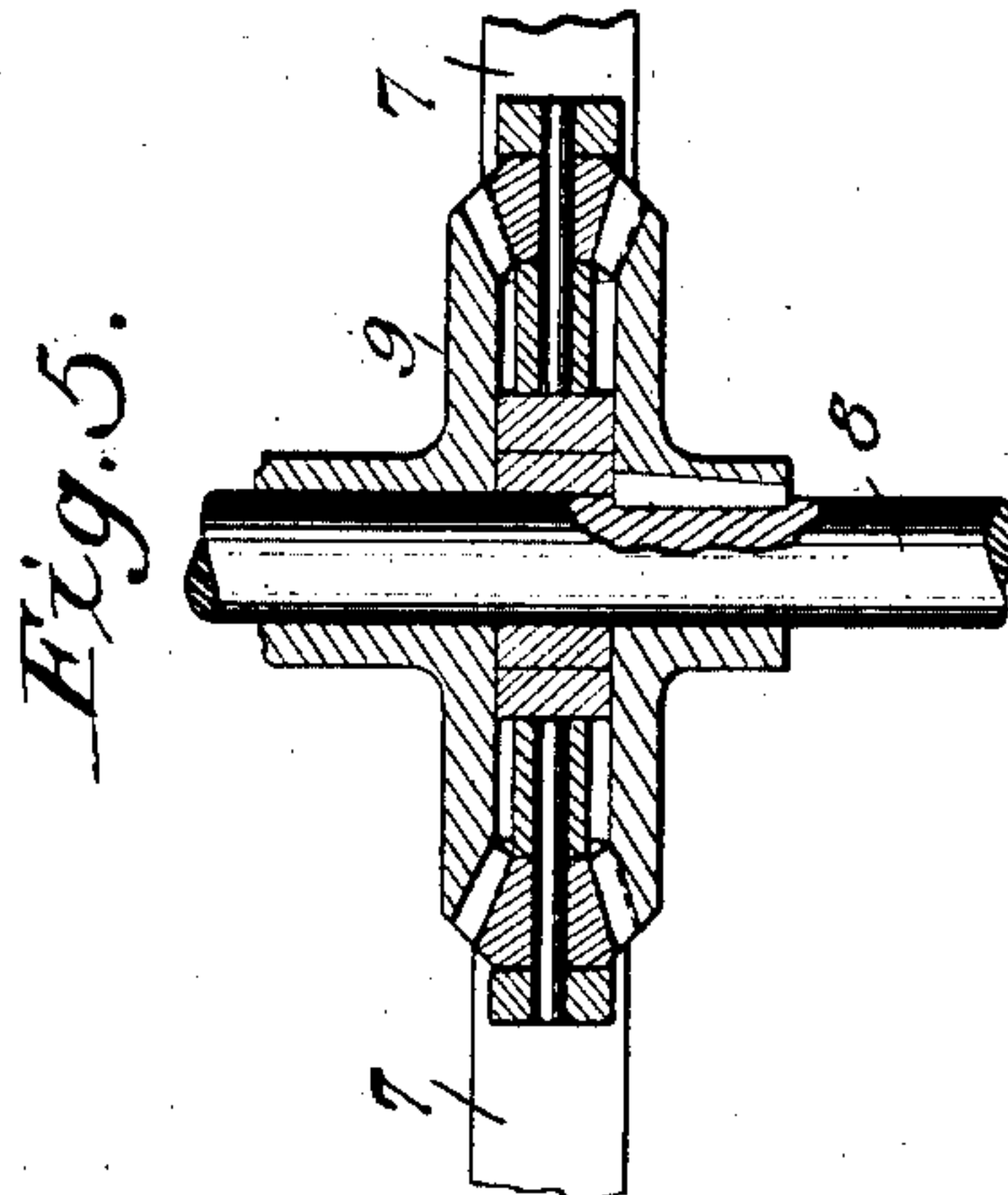


Fig. 5.

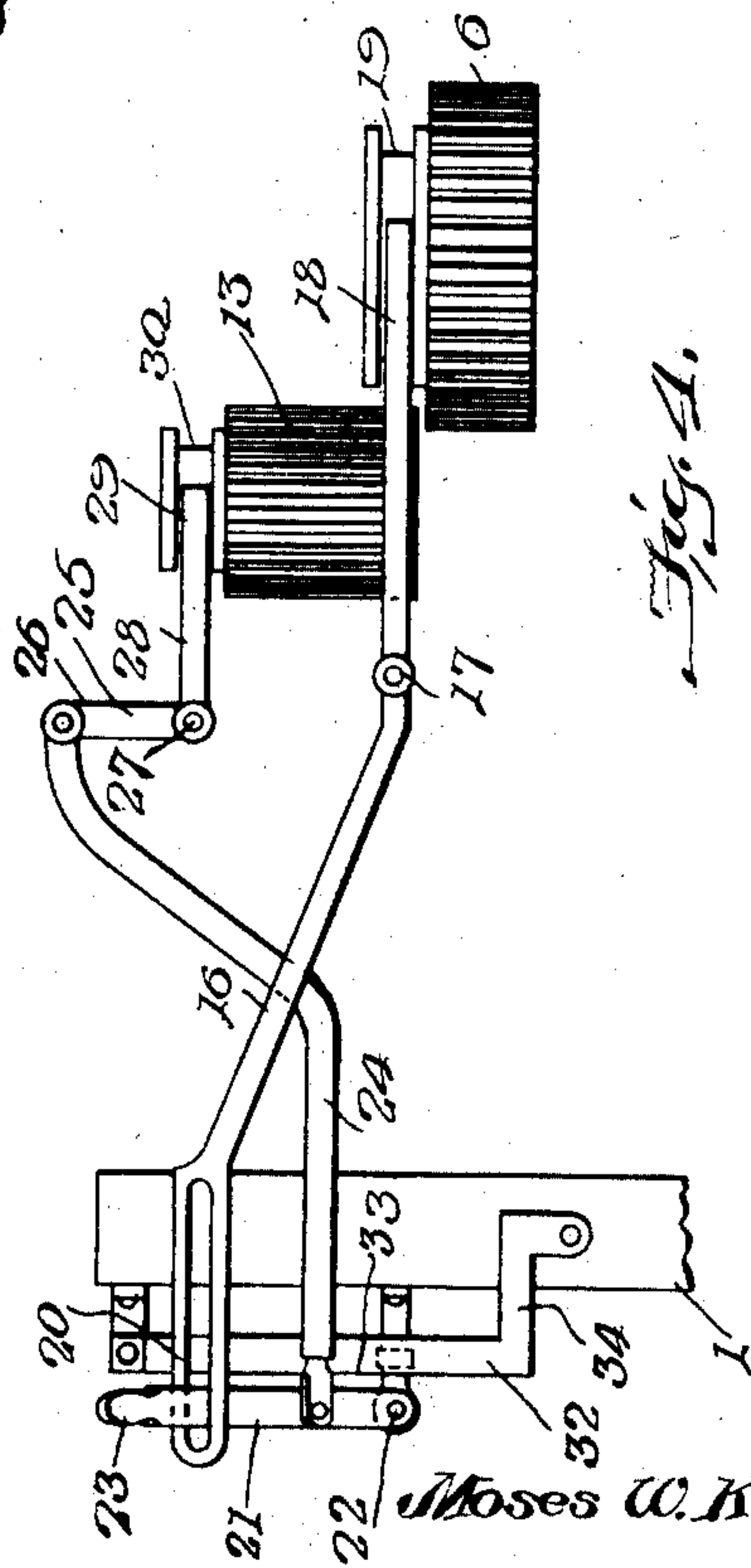


Fig. 4.

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UNITED STATES PATENT OFFICE.

MOSES W. KOUNS, OF COLUMBUS, OHIO, ASSIGNOR TO THE OHIO MANUFACTURING COMPANY,
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REVERSING MECHANISM.

No. 879,182.

Specification of Letters Patent.

Patented Feb. 18, 1908.

Application filed June 10, 1907. Serial No. 378,066.

To all whom it may concern:

Be it known that I, MOSES W. KOUNS, a citizen of the United States, residing at Columbus, in the county of Franklin and State of Ohio, have invented certain new and useful Improvements in Reversing Mechanism, of which the following is a specification, reference being had therein to the accompanying drawings.

10 The present invention relates to reversing mechanism, and is designed more particularly for use with gasoline traction engines.

15 The object of the invention is to provide a reversing mechanism of this character which will impose a minimum amount of strain upon the engine and the driving connections when the same are reversed: which will be practically noiseless in operation; and which, when the driving mechanism is moving in a forward direction, will be motionless.

20 A further object of the invention is to provide suitable means for operating said reversing mechanism.

25 With these objects in view my invention consists in certain novel features of construction and in certain parts and combinations hereinafter to be described, and then more fully pointed out in the claims.

30 In the accompanying drawings, Figure 1 is a top plan view of a portion of a traction engine embodying my invention; Fig. 2 is a sectional view of the same showing the reversing mechanism in elevation; Fig. 3 is a top plan view of the reversing mechanism, partly in section; Fig. 4 is a detail view showing the operating mechanism therefor; Fig. 5 is a detail sectional view of the compensating gear-

35 In these drawings, I have illustrated the preferred form of my invention, showing the same as embodied in a gasoline traction engine of a known construction and comprising a frame 1, adapted to support an explosive engine, which is not shown, and also to support a crank shaft 2, to which said engine is connected. This shaft is divided on one side of the frame and the two portions connected by suitable clutch mechanism. As here shown, this division is accomplished by 40 mounting a sleeve 3 upon the outer end of the shaft and providing the same with a clutch member 4, adapted to cooperate with the second clutch member 5 which is secured to the shaft 2. Mounted on the sleeve 3 and 55 adapted to slide freely thereon and to rotate

therewith is a pinion 6, which, when in its innermost position, meshes with a gear 7 connected with a driven shaft 8, which is mounted in suitable bearings on the frame 1; this connection being made by means of suitable compensating gearing which is inclosed within the gear 7 in the casing 9. The shaft 8 is provided at its opposite ends with pinions 10 adapted to engage the gears 11 on the ground wheels 12. An auxiliary or intermediate pinion 13 is slidably mounted adjacent to the gear 7 and the pinion 6. This pinion is preferably slidably mounted on a short shaft 14 which is supported in the arms of a suitable bracket 15, which, in turn, is mounted upon a suitable part of the frame 1. This bracket and the pinion supported thereby are so located that, when the pinion is moved inwardly, it will mesh with both the gear 7 and the pinion 6.

75 The pinion 13 is preferably of a length equal to approximately the combined width of the gear 7 and the pinion 6. Thus, when the pinion 6 is moved to its outer position and the intermediate pinion 13 to its innermost position, the intermediate pinion will mesh with both the gear 7 and the pinion 6, thus driving the gear 7 in a reverse direction to that in which it is driven when in direct engagement with the pinion 6. The arrangement of these pinions may, of course, be varied to adapt the same to special circumstances, but I prefer the arrangement herein shown and have provided suitable operating mechanism for shifting the pinions when they are mounted, as herein shown. This operating mechanism consists of a lever 16, pivoted at 17 to a suitable portion of the frame 1 and provided with a suitable yoke 18 at one end adapted to engage the grooved collar 19 which is secured to the pinion 6. The opposite end of the lever 16 is provided with an elongated slot 20, through which extends a lever 21, which is connected to the frame 1 by means of a universal joint 22 and is provided at its opposite end with a suitable handle 23. A rod 24 is pivotally connected to the lever 21 at a point intermediate its ends and is pivotally connected at its opposite end to the arm 25 of a bell crank lever 26 which is pivotally connected to the frame as shown at 27. The other arm 28 of the bell crank lever is provided with a yoke 29, adapted to engage a grooved collar 30 which is secured to the intermediate pinion 13.

Thus, it will be seen that when the lever 21 is moved about its pivotal center in a horizontal plane, the lever 16 will be rocked about its pivot 17 and the pinion 6 shifted longitudinally of the shaft 2, thus moving the pinion 6 out of engagement with the gear 7 and into engagement with the intermediate pinion 13. It will also be seen that when the lever 21 is moved about its pivotal center in a vertical plane, the arm 24 will rock the bell crank lever 26 about its pivotal center and move the intermediate pinion 13 longitudinally of its supporting shaft and move the same into or out of engagement with the gear 7. A suitable guide 32 may be provided for controlling the movements of the handle 21 so as to properly time the shifting of the two pinions. This guide is here shown as comprising a transverse portion 33 extending in front of the lever 21 and preventing the same from being moved forwardly until it has been moved laterally a distance sufficient to move the pinion 6 entirely out of mesh with the gear 7. At this point the guide is provided with a forwardly extending portion 34 which permits the forward movement of the lever a distance sufficient to move the intermediate pinion 13 into mesh with the gear 7 and serving to prevent the lateral movement of the lever 21 in such a manner as to move the pinion 6 into engagement with the gear 7 while the intermediate pinion 13 is in mesh with that gear.

Thus, it will be seen that I have provided a reversing mechanism which, when the traction engine is moving in a forward direction, is stationary, and which can be readily operated to reverse the direction of movement of the driving connections without imposing any considerable amount of strain upon said connections or upon the engine; that the mechanism is of such a character that when in operation the noise will be reduced to a minimum or entirely eliminated; and further, that I have provided a suitable mechanism for operating the reversing mechanism which is so controlled that the pinions move into and out of engagement with the gear at the proper time, as determined by the movement of the other pinion.

I wish it to be understood that I do not desire to be limited to the exact details of construction shown and described, for obvious modifications will occur to a person skilled in the art.

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

1. In a traction engine, the combination, with a driven shaft, a driven gear, a compensating gearing connecting said gear to said shaft, a crank shaft and a pinion slidably mounted thereon and adapted to be moved into and out of engagement with said gear, of an intermediate pinion adapted to be

moved into engagement with both said gear and said pinion when said gear and said pinion are out of engagement one with the other.

2. In a traction engine, the combination, with a frame, a driven shaft mounted on said frame, a driven gear, a compensating gearing connecting said gear to said shaft, a crank shaft and a pinion slidably mounted on said crank shaft and adapted to be moved into and out of engagement with said gear, of a bracket carried by said frame, a shaft mounted on said bracket, a pinion carried by said shaft, and means for moving said pinion into engagement with both said gear and said pinion when said gear and said pinion are out of engagement one with the other.

3. In a traction engine, the combination, with a frame, a driven shaft mounted on said frame, a driven gear, a compensating gearing connecting said gear to said shaft, a crank shaft, a sleeve loosely mounted on said crank shaft, a clutch for connecting said sleeve to said crank shaft, and a pinion slidably mounted on said sleeve and adapted to be moved into and out of engagement with said gear, of an intermediate pinion supported on said frame and adapted to be moved into engagement with both said gear and said pinion when said gear and said pinion are out of engagement one with the other.

4. In a reversing mechanism, the combination, with a driving shaft, a pinion slidably mounted thereon, a driven shaft, a gear connected thereto, a lever having one end connected to said pinion, and an operating member connected to the opposite end of said lever, of an intermediate pinion, a second lever having one end connected to said intermediate pinion and its opposite end connected to said operating member, whereby the operation of said member will shift both of said pinions.

5. In a reversing mechanism, the combination, with a driving shaft, a pinion slidably mounted thereon, a driven shaft, a gear connected thereto, a lever having one end connected to said pinion and having an elongated slot on the opposite end thereof, and an operating handle extending through said elongated slot, of an intermediate pinion, a bell crank lever having one arm connected to said intermediate pinion and the other arm connected to said operating handle, whereby the movement of said operating handle in one direction will shift said first-mentioned pinion in one direction and the continued movement of said operating handle will shift said intermediate pinion in the direction opposite to that in which said first-mentioned pinion is shifted.

6. In a reversing mechanism, the combination, with a frame, a driving shaft, a pinion slidably mounted thereon, a driven shaft, a gear connected thereto, a lever pivoted intermediate its ends to said frame and having

one end connected to said pinion and having an elongated slot in the opposite end, and an operating handle pivotally connected to said frame and extending through said slot, of an intermediate pinion, a bell crank lever pivoted to said frame and having one arm connected to said intermediate pinion and its other arm connected to said operating member, whereby the lateral movement of said operating handle will shift the first-mentioned pinion in one direction and the forward movement of said handle will shift the intermediate pinion in the direction opposite to that in which the first-mentioned pinion is shifted.

7. In a reversing mechanism, the combination, with a frame, a driving shaft, a pinion slidably mounted thereon, a driven shaft, a gear connected thereto, a lever pivoted intermediate its ends to said frame and having one end connected to said pinion and having an elongated slot in the opposite end, and an operating handle pivotally connected to said frame and extending through said slot, of an intermediate pinion, a bell crank lever pivoted to said frame and having one arm connected to said intermediate pinion and its other arm connected to said operating member, whereby the lateral movement of said operating handle will shift the first-mentioned pinion in one direction, and the forward

movement of said handle will shift the intermediate pinion in the direction opposite to that in which the first-mentioned pinion is shifted, and a guide for controlling the movement of said operating handle.

8. In a reversing mechanism, the combination, with a driving shaft, a pinion slidably mounted thereon, a driven shaft, a gear connected thereto, and a lever for moving said pinion into and out of engagement with said gear, of an intermediate pinion, a lever for moving the same into and out of engagement with said gear, an operating handle connected to both of said levers and adapted to be moved in a lateral direction to actuate said first-mentioned pinion, and in a forward direction to actuate said intermediate pinion, a guide for said handle comprising a transverse portion adapted to retain said handle against forward movement until said first-mentioned pinion has completed its movement, and a forwardly extending portion adapted to retain said handle against lateral movement while said intermediate pinion is in mesh with said gear.

In testimony whereof, I affix my signature in presence of two witnesses.

MOSES W. KOUNS.

Witnesses:

JOHNS CAREY.

R. CAREY.