

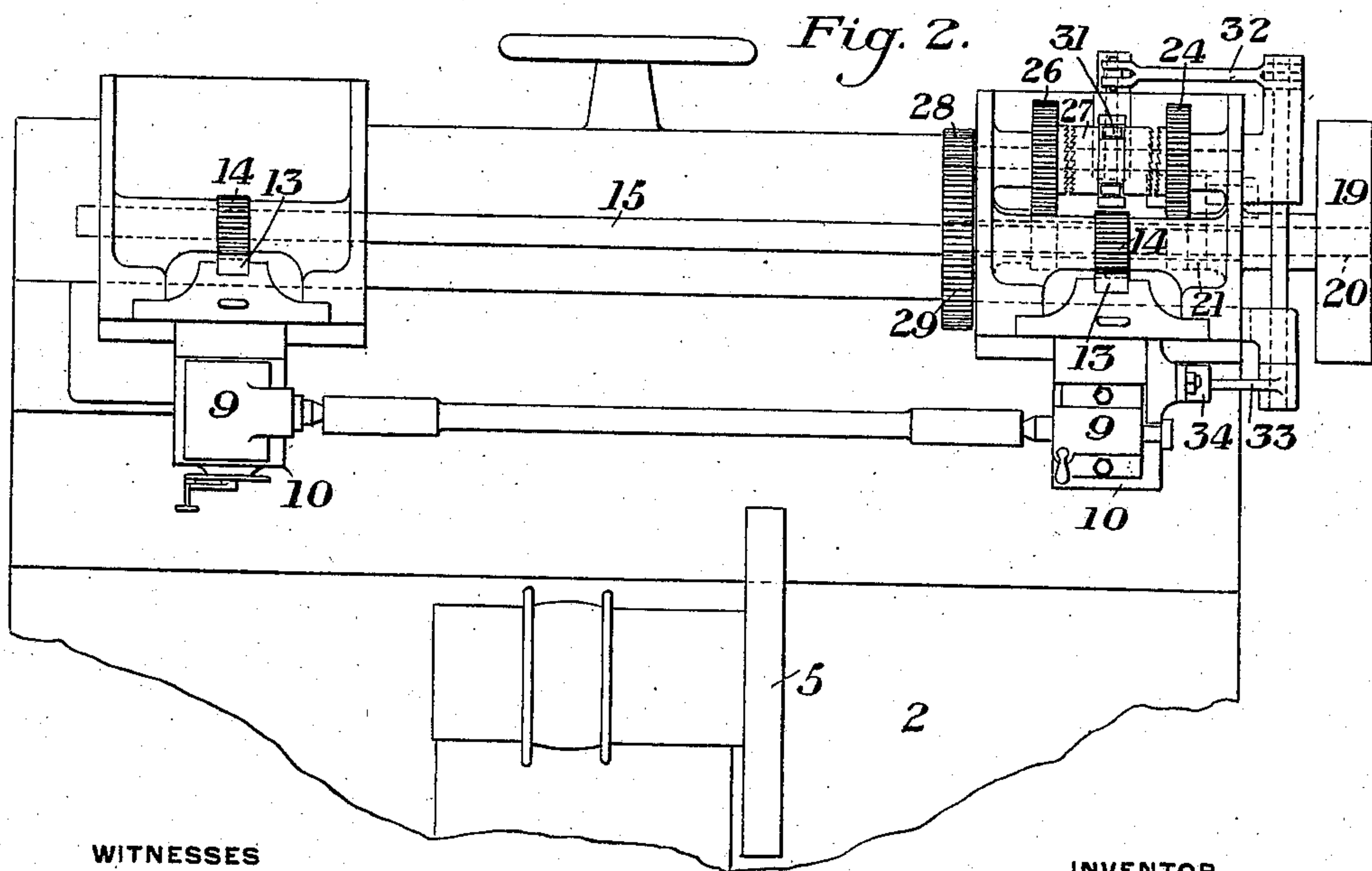
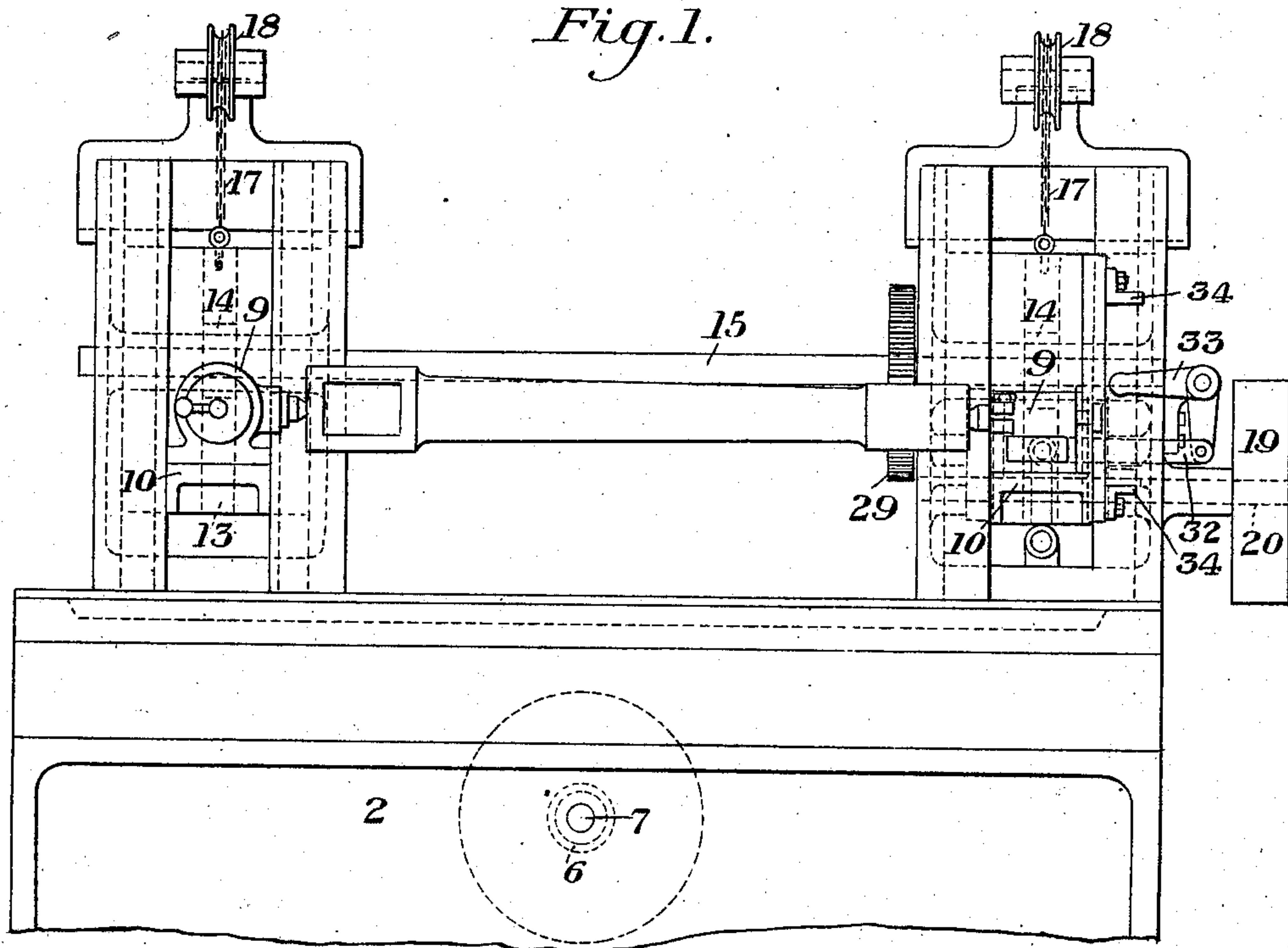
No. 867,991.

PATENTED OCT. 15, 1907.

J. T. MOLTRUP.  
ATTACHMENT FOR GRINDING MACHINES.

APPLICATION FILED MAY 31, 1907.

3 SHEETS—SHEET 1.



**WITNESSES**

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W. W. Swartz

INVENTOR

J. J. Maltrop,  
by Baker & Byrnes,  
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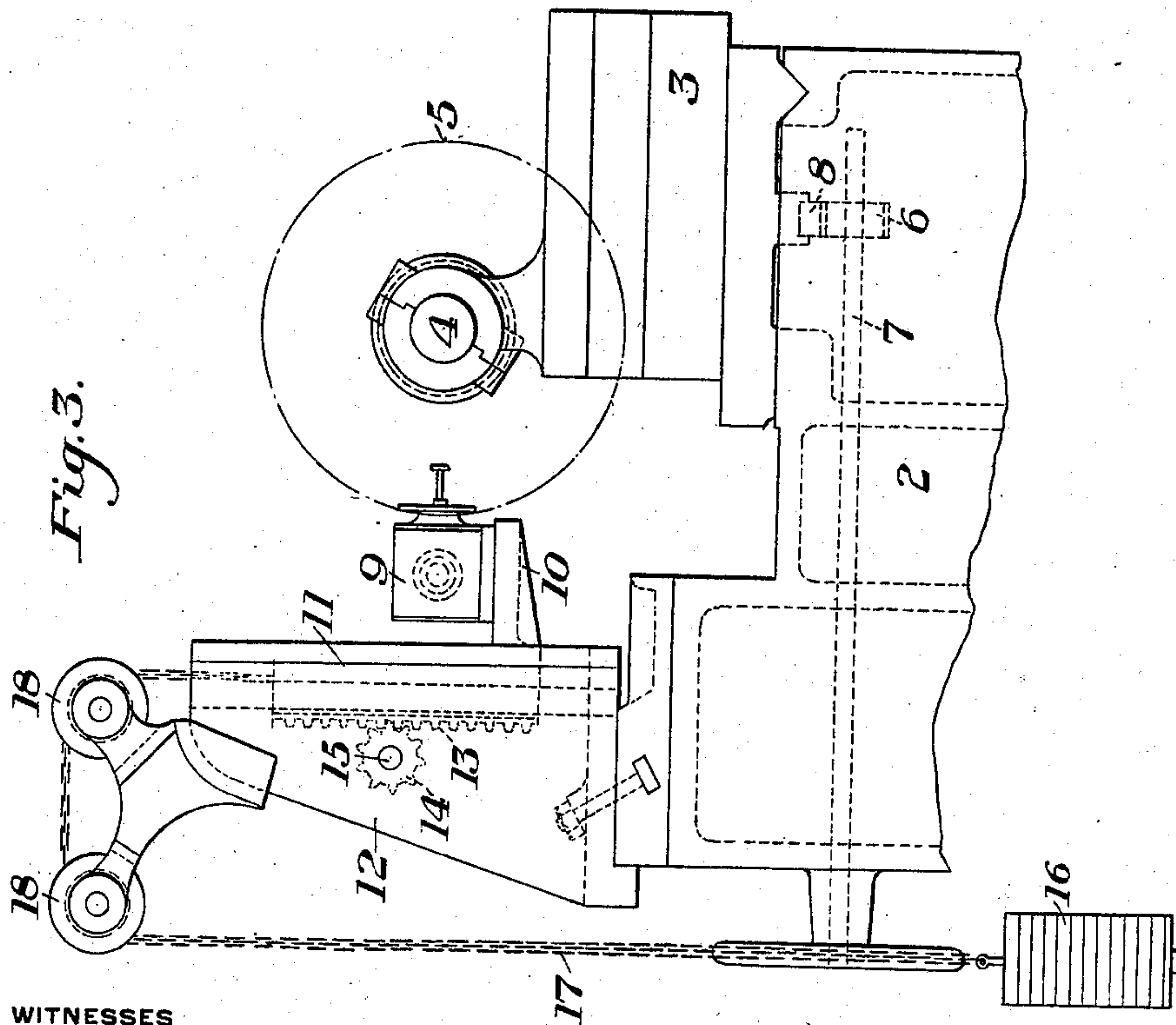
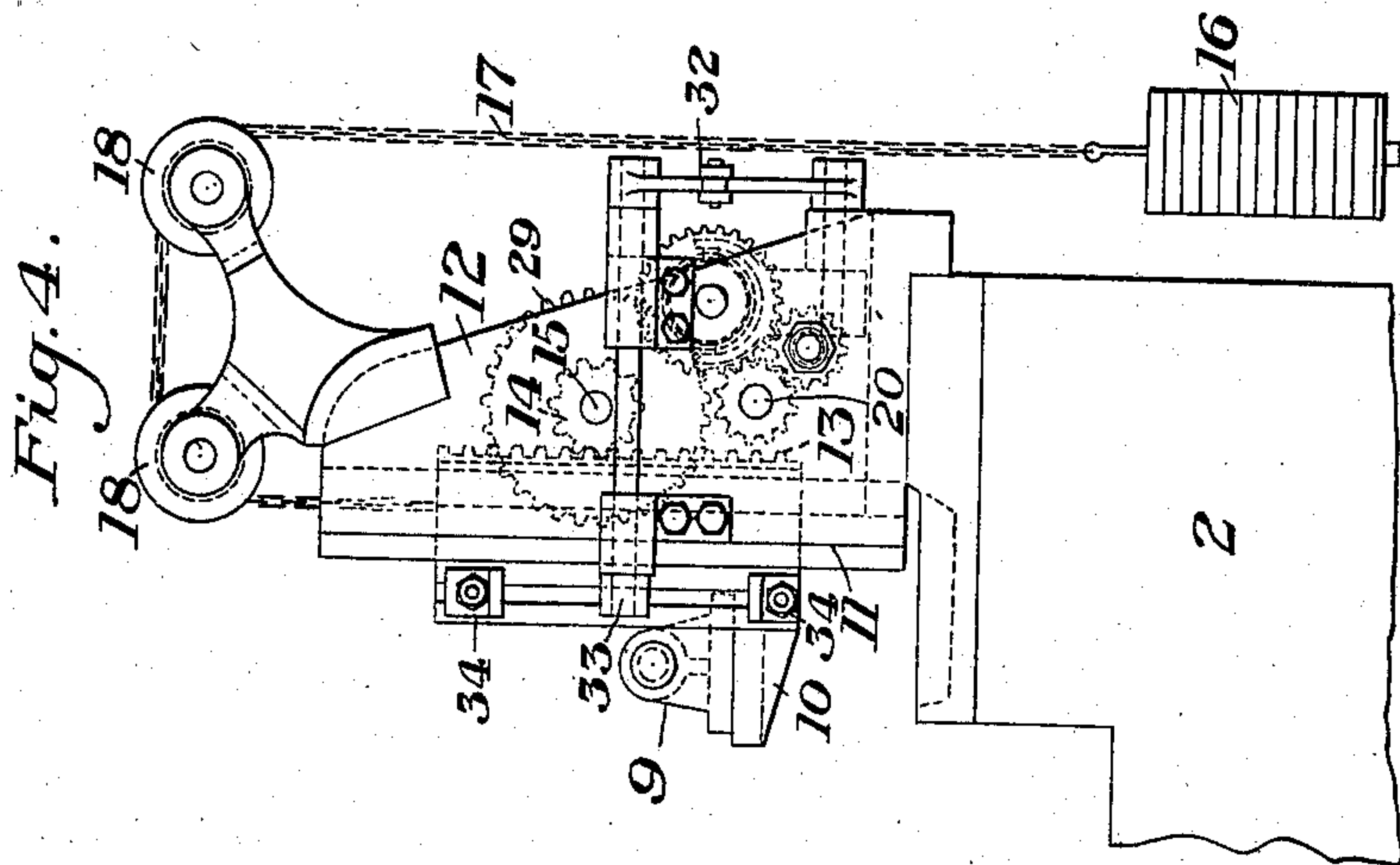
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3 SHEETS—SHEET 2.



WITNESSES

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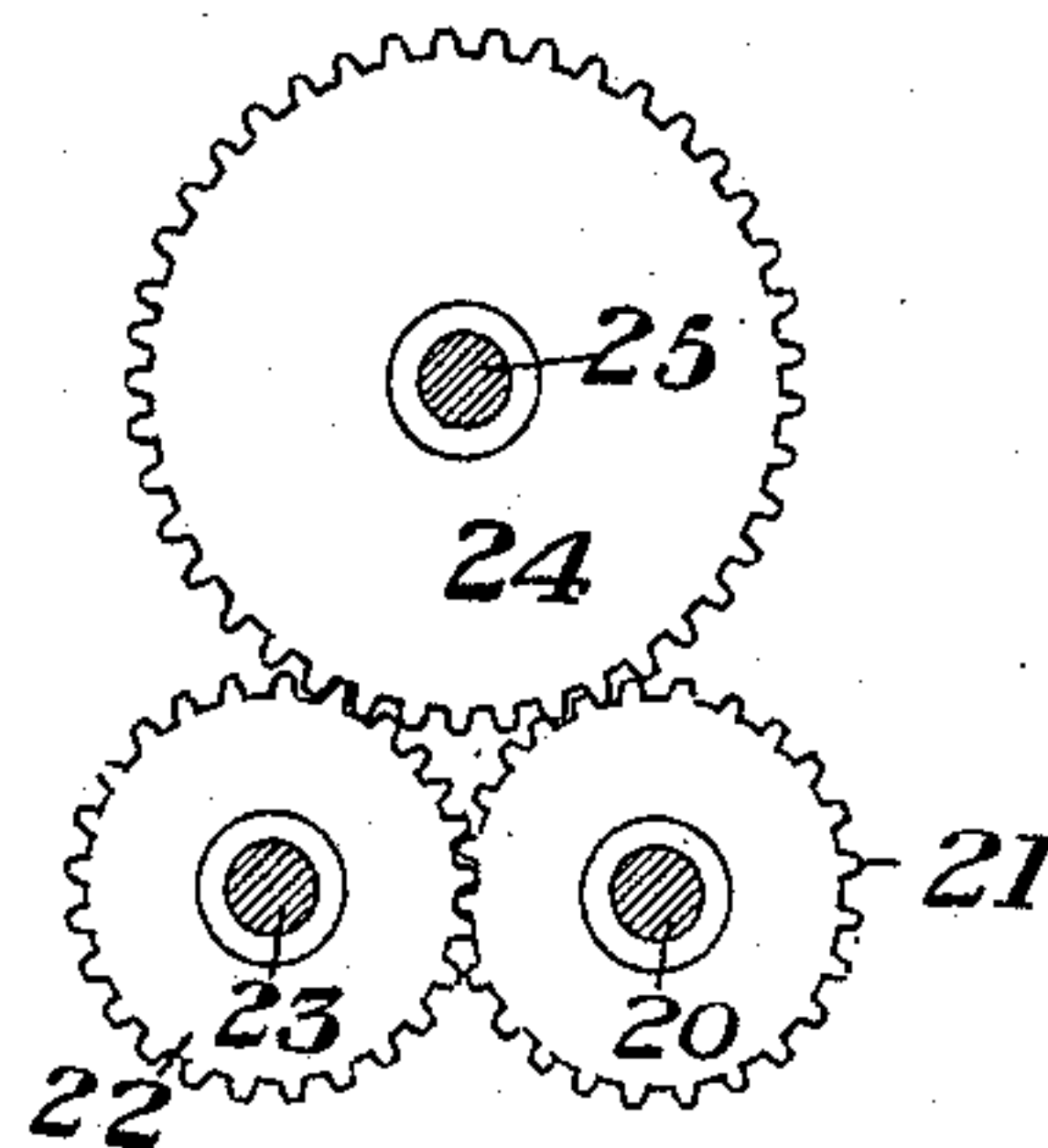
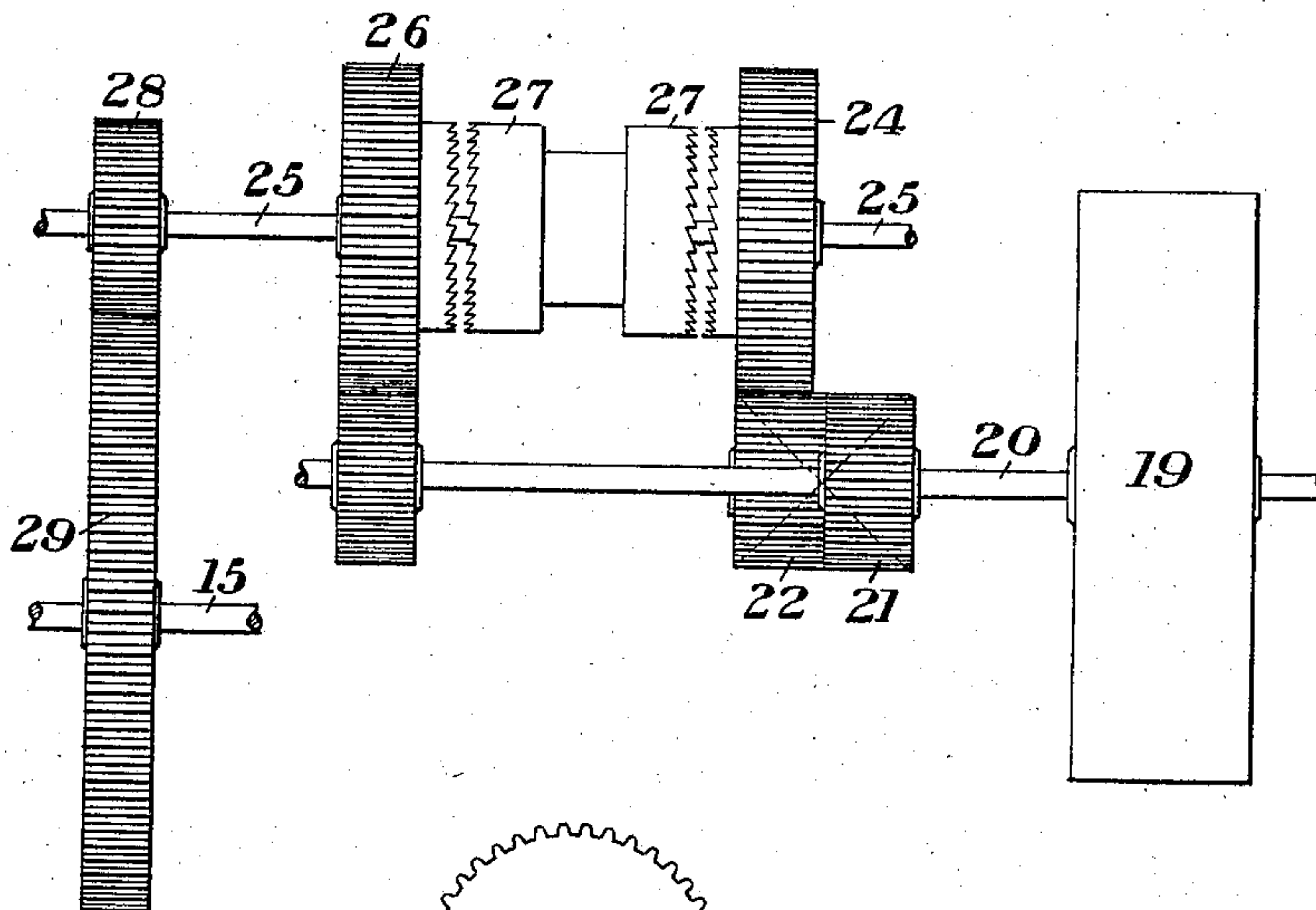
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3 SHEETS—SHEET 3.

*Fig. 5.*



*Fig. 6.*

WITNESSES

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# UNITED STATES PATENT OFFICE.

JAMES T. MOLTRUP, OF BEAVER FALLS, PENNSYLVANIA.

## ATTACHMENT FOR GRINDING-MACHINES.

No. 867,991.

Specification of Letters Patent.

Patented Oct. 15, 1907.

Application filed May 31, 1907. Serial No. 376,490.

*To all whom it may concern:*

Be it known that I, JAMES T. MOLTRUP, of Beaver Falls, Beaver county, Pennsylvania, have invented a new and useful Attachment for Grinding-Machines, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a front elevation of a portion of a grinding machine showing my invention applied thereto; Fig. 2 is a plan view of the same; Figs. 3 and 4 are end views of the same taken from opposite ends; and Figs. 5 and 6 are detail views showing the clutch-controlled gearing for reversing the movement of the work-holding heads or centers.

My invention has relation to attachments for grinding machines, and is designed to provide a simple and convenient attachment for holding the work to be ground in the proper relation to the grinding wheel and for reciprocating the work with respect to the wheel while it is being ground.

The invention has been particularly designed for use in grinding connecting rods and similar bars, but is adapted for use for a variety of other purposes.

The invention consists in an attachment for grinding machines having a pair of vertically reciprocating heads or centers for the work, which are movable in suitable ways or guides, together with automatically-controlled gearing for periodically reversing their movement so that the work is reciprocated with respect to the grinding wheel.

My invention also consists in the novel construction, arrangement and combination of parts all substantially as hereinafter described and pointed out in the appended claims.

Referring to the accompanying drawing, the numeral 2 designates the frame of a grinding machine, having mounted thereon a longitudinally reciprocating carriage 3, in which is journaled a shaft 4 carrying a grinding wheel 5. The carriage 3 may be moved longitudinally by means of a pinion 6 on a hand shaft 7 engaging a rack 8 on a carriage. These features, however, have nothing to do with my present invention, as the grinding machine itself may be made of any usual or suitable character.

9 designate two work-carrying heads or centers, which are carried by brackets 10 adapted to slide vertically in suitable ways or guides 11 of brackets or frame extensions 12 which are secured to the main frame 2. Each bracket 10 is provided with a vertical rack bar 13, whose teeth is engaged by a pinion 14 on a longitudinal shaft 15. This shaft has one of these pinions 14 near each end portion for engagement with the rack bars of both brackets

10. These brackets are preferably counterweighted, as indicated at 16, to steady their movement and prevent a too rapid downward movement thereof. The chains 17 carrying these counterweights pass over suitable bearing pulleys 18 journaled on the frame extensions or brackets 12.

The shaft 15 is actuated by the following mechanism:—19 designates a driving pulley mounted on a shaft 20 carrying a pinion 21 arranged to mesh with a broad-faced pinion 22 on a shaft 23. The pinion 22 also meshes with a gear wheel 24 on a shaft 25. The wheel 24 is normally loose on said shaft, as is also a second gear wheel 26, these two wheels being arranged to be alternately connected to the shaft 25 by means of a longitudinally movable clutch hub 27. The shaft 25 also has a pinion 28 which meshes with a gear wheel 29 on the shaft 15. With the clutch hub 27 in engagement with the hub of the wheel 24 the shaft 15 is driven in one direction from the pulley 19 through the gears 21, 22, 24, 28 and 29. With the clutch hub 27 in engagement with the hub of the gear wheel 26, the shaft 15 is driven in the opposite direction from the pulley 19 through the gears 30, 26, 28 and 29. The clutch hub 27 is automatically moved from one position to the other by means of the arm 31 connected to a rocker 32, which is actuated by the tappet arm 33, which extends into the path of movement of one of the reciprocating work carriers or heads 9, the latter having the lugs or projections 34 adapted to engage the rocker arms 33 near each limit of movement. In this manner, the clutch is automatically shifted, and the shaft 15 is automatically reversed in its direction of rotation to thereby reciprocate the rack bars 13 and the heads 9.

The arrangement described forms a simple and convenient attachment for a grinding machine, whereby the work to be ground can be securely held in position and automatically reciprocated with respect to the grinding wheel.

Various changes may be made in the details of construction and arrangement, without departing from the spirit and scope of my invention. Thus, it will be evident that various arrangements of gears may be employed for effecting the vertical reciprocation of the rack bars; that different forms of clutches may be used; and that the automatic reversal of the gearing may be effected in various ways.

What I claim is:—

1. An attachment for grinding machines, comprising a pair of work-supporting heads, guides in which the heads are movable, gearing for reciprocating the heads in the guides, and means for periodically and automatically reversing the gearing; substantially as described.

2. An attachment for grinding machines, comprising a pair of work-supporting heads, counterweights therefor, guides in which the heads are arranged to reciprocate, gearing for reciprocating the heads, and automatic means  
5 for periodically reversing the gearing; substantially as described.

3. In an attachment for grinding machines, a pair of work-carrying heads, guides in which the heads are arranged to reciprocate, rack bars attached to said heads, a

shaft having pinions engaging the rack bars, gearing for actuating said shaft, and an automatic clutch device for controlling the operation of the gearing; substantially as described. 10

In testimony whereof, I have hereunto set my hand.

JAMES T. MOLTRUP.

Witnesses:

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EARL R. LEYDA.