

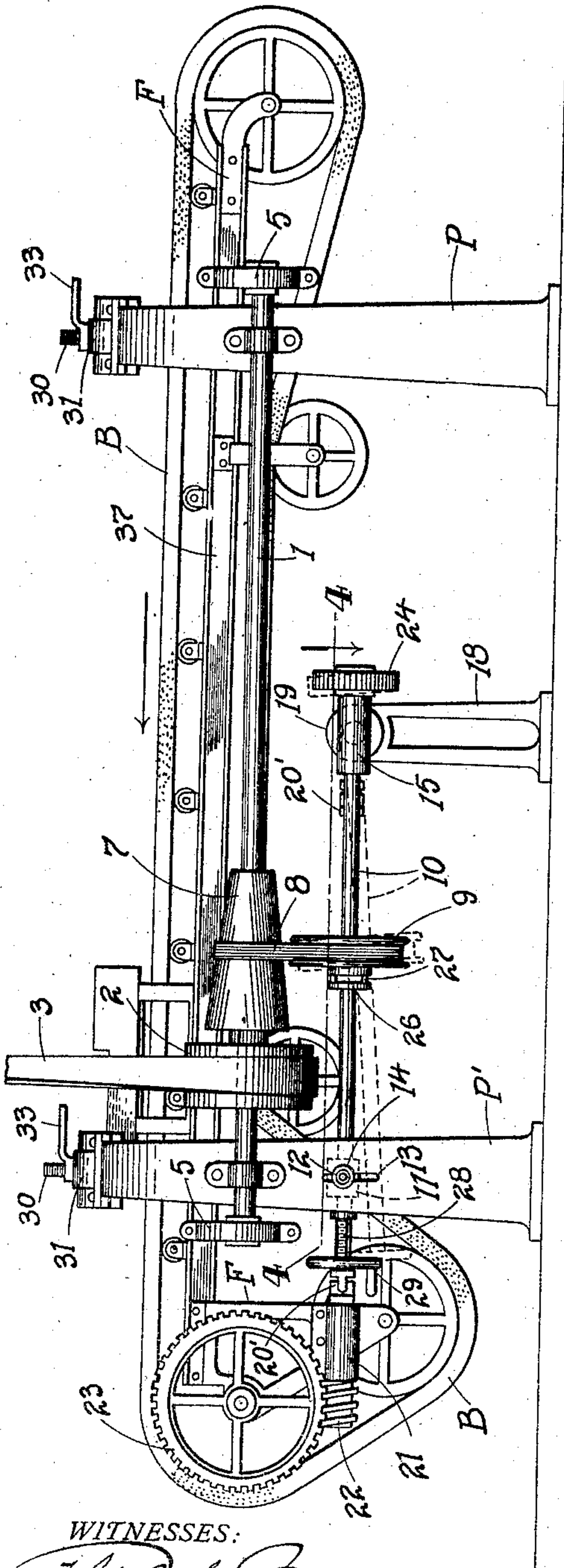
No. 850,415.

PATENTED APR. 16, 1907.

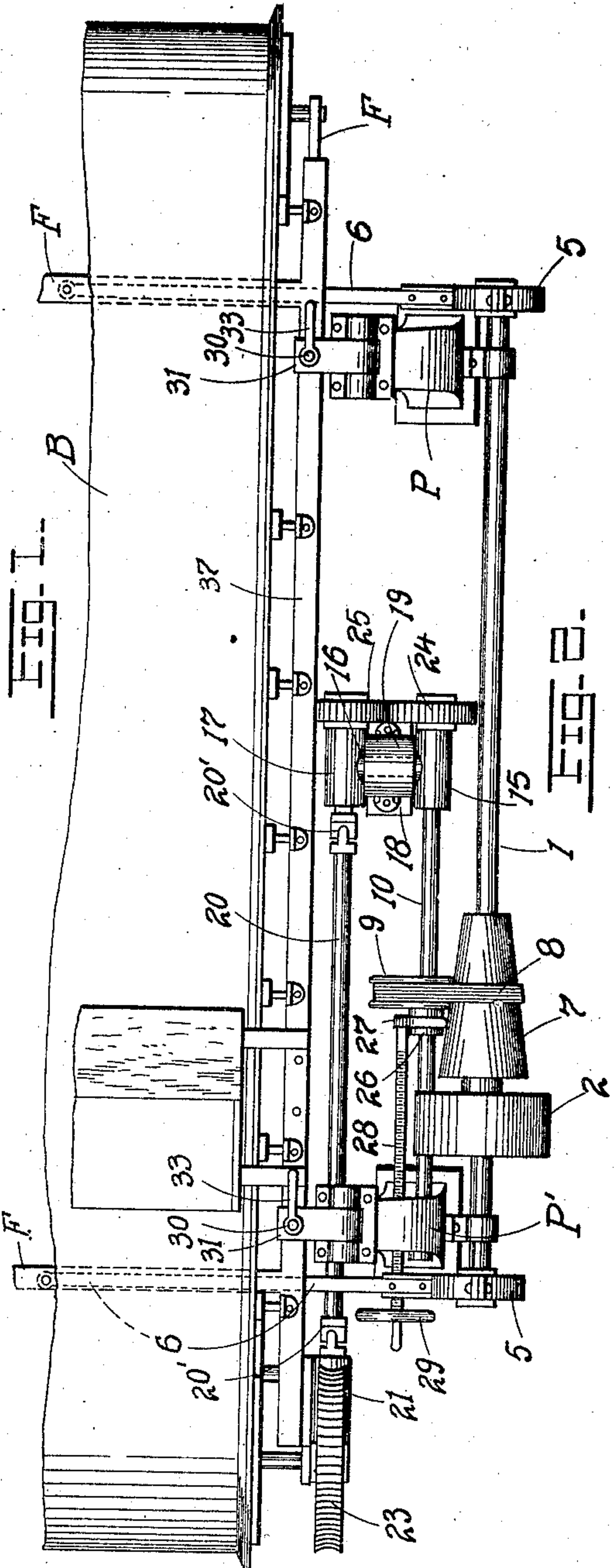
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APPLICATION FILED MAY 28, 1906.

2 SHEETS—SHEET 1.



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2 SHEETS—SHEET 2.

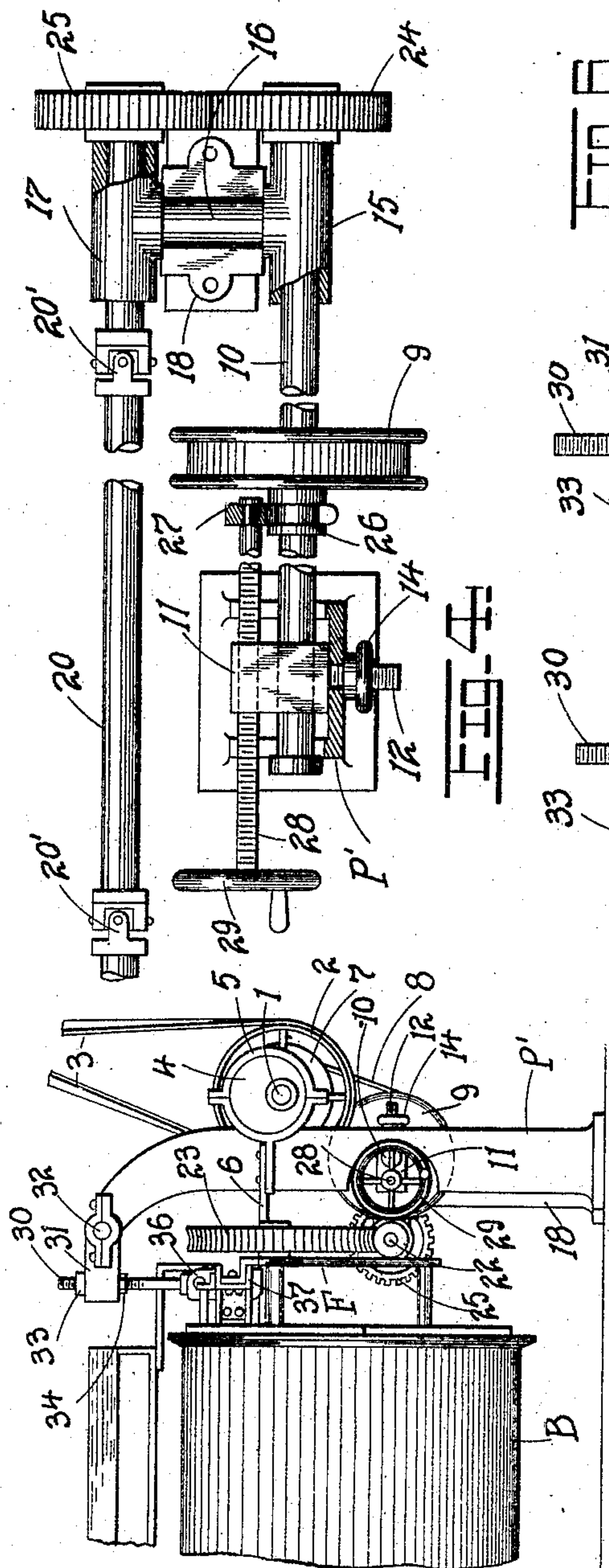


FIG. 1.

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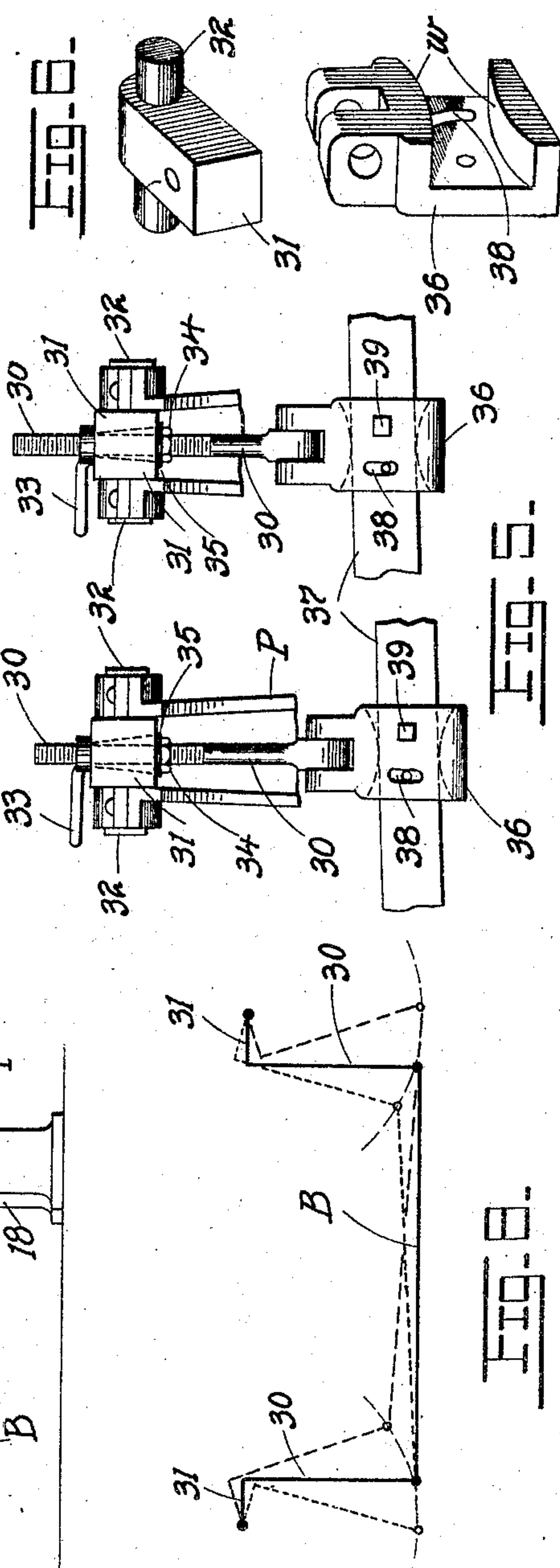


FIG. 2.

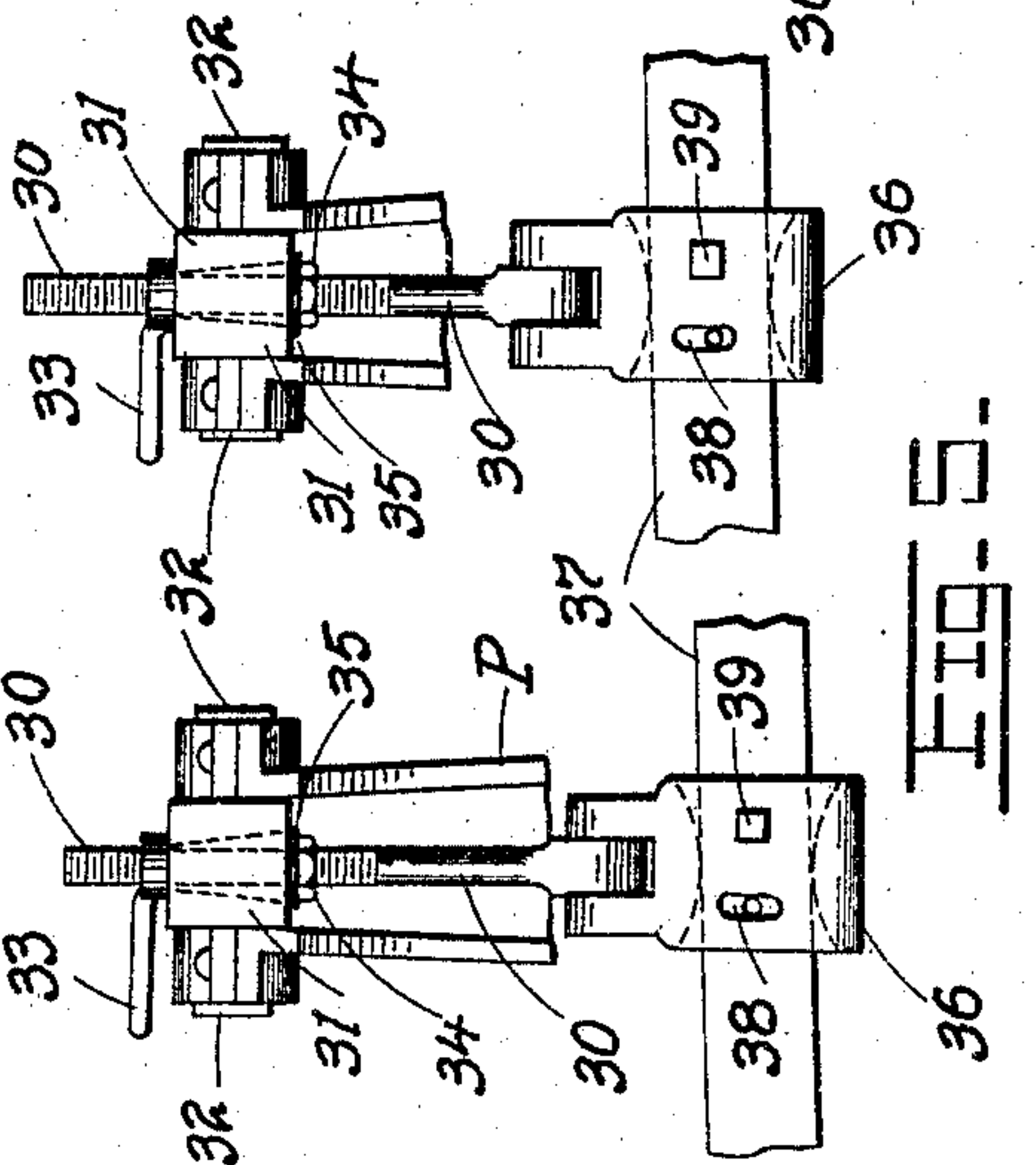


FIG. 3.

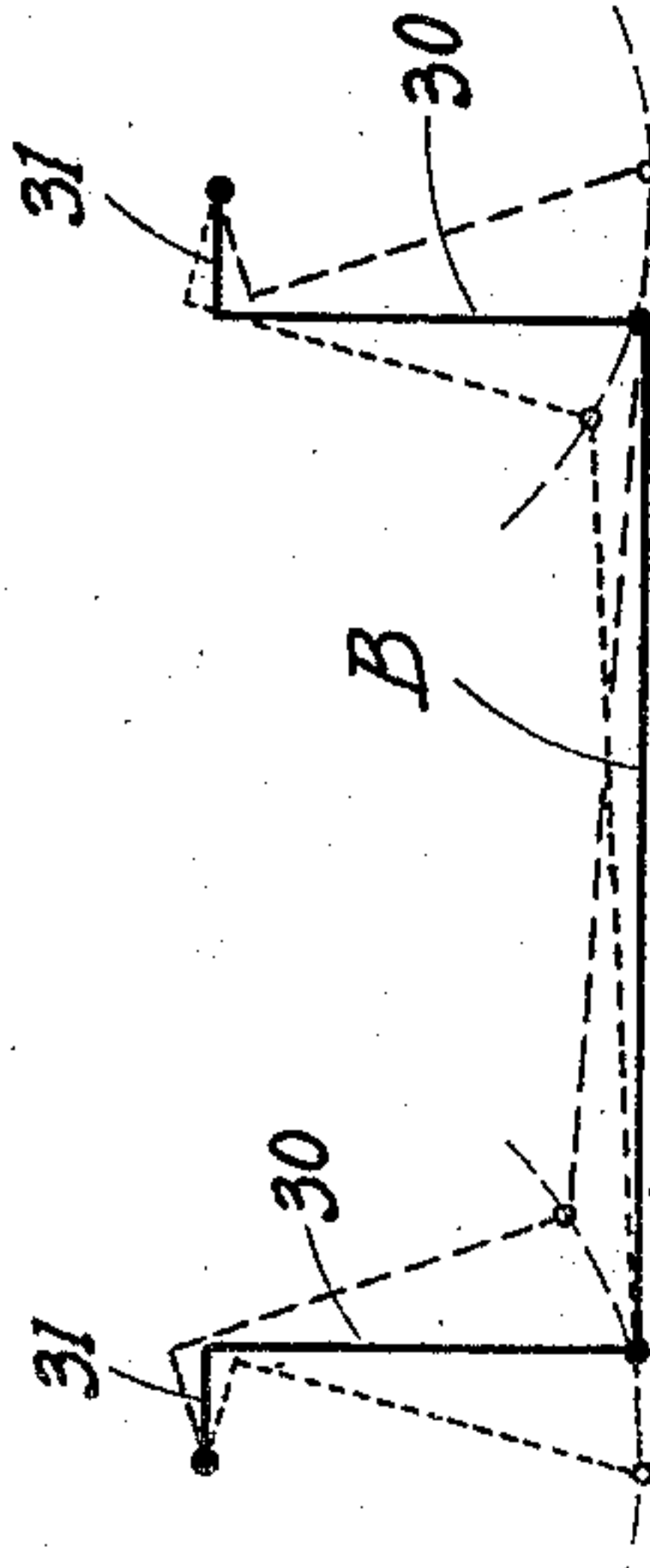


FIG. 4.

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No. 850,415.

Specification of Letters Patent.

Patented April 16, 1907.

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To all whom it may concern:

Be it known that I, GEORGE O. BRADLEY, a citizen of the United States, residing at Salt Lake City, in the county of Salt Lake and State of Utah, have invented certain new and useful Improvements in Vanners, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part hereof.

My invention has relation to improvements in suspended vanners; and it consists in the novel construction and arrangement of parts more fully set forth in the specification and pointed out in the claims.

In the drawings, Figure 1 is a side elevation of a suspended vanner, showing my improvements applied thereto. Fig. 2 is a top plan of one-half the vanner. Fig. 3 is a front elevation or end view thereof. Fig. 4 is a horizontal section on line 4 4 of Fig. 1, the cap-piece of the intermediate supporting-standard being omitted. Fig. 5 is an inside elevation of one pair of hangers, showing the manner of adjusting the available length of the rear hanger, the connecting structural member being broken at an intermediate point. Fig. 6 is a perspective of the block or offset through which the hanger-rods are passed and with which they oscillate. Fig. 7 is a perspective of the shoe supporting the structural member of the vanner table, and Fig. 8 is a diagrammatic view showing the paths described by the oscillating ends of the hangers and the motion imparted to the table.

The object of my invention is to qualify the details of the suspended type of vanner in certain particulars eminently adapted to bring about a high efficiency; to permit a perfect adjustment among its several parts; to permit adjustment in the speed and inclination of the vanner-belt in a minimum amount of time; to insure a true and perfect level in the transverse direction of the belt; to insure a permanent perpendicularity in the supporting links or hangers; to insure an even distribution of the weight of the table among the several hangers; to prevent the cramping of the trunnions of the hangers where the supporting-standards are out of alinement; to permit of a gravity method of tightening the cone-pulley belt; to permit the locking of the belt-tightening member; to permit a ready, variable, and quick adjustment in the speed of the vanner-belt; to impart an oscillatory movement to the belt in conjunction with its

lateral reciprocations, and thus prevent the sand on the table from banking up against the edges of the belt, and to bring about other and sundry advantages and superior results better apparent from a detailed description of the invention, which is as follows:

Referring to the drawings, P P' represent, respectively, rear and front corner-posts between which the vanner-belt is mounted. On one side of the vanner, between the posts P P', is mounted the drive-shaft 1, carrying a belt-pulley 2, from which leads a belt 3 to any source of power, (not shown,) the said shaft terminating in eccentrics 4 4, which through the medium of the straps 5 5 and connecting-rods 6 6, coupled to the vanner-belt frame F, impart a laterally-reciprocating movement to the frame, and hence to the vanner-belt, as the latter travels longitudinally in the operation of the concentrator. The vanner-belt frame is suspended from the posts P P' by adjustable hangers, the details of which and of the frame coöperating therewith will be presently described. The parts just referred and other parts shown, but to which no reference is made, are well known and understood and require no explanation, entering as they do into the construction of all vanners of the suspended type.

Mounted on the shaft 1 at a point between the pulley 2 and the post P is a cone-pulley 7, from which leads a belt 8 over a flange-pulley 9 on a shaft 10, disposed parallel to the shaft 1 and capable of oscillation about one end in a vertical plane. One end of the shaft 10 has its bearing in a block 11, adjustable vertically along the post P', the block being provided with a laterally-projecting stem 12, operating in a vertically-elongated slot 13 in the post, the stem being screw-threaded and carrying a clamping-nut 14, by which the block may be rigidly secured or clamped to the post when once properly adjusted. The opposite end of the shaft 10 is carried in the tubular oscillating bearing 15, said bearing being connected by a cylindrical neck 16 to a similar bearing 17, the two bearings being free to oscillate with the neck 16 as a unit on top of the supporting-standard 18, provided with a usual form of cap-piece 19. The bearing 17 supports the inner end of the universally-jointed shaft 20, whose opposite end is mounted in a bearing 21 on the vanner-belt frame F. This end is provided with a worm-pinion 22, which meshes with a worm-gear 23 at the end of the

shaft of the upper forward drum of the vanner-belt frame F. The rear end of the shaft 10 is provided with a gear-wheel 24, which meshes with a similar gear-wheel 25 at the adjacent end of the shaft 20. It is obvious, therefore, that rotation imparted to the shaft 1 from the belt 3 will be imparted, through the cone-pulley 7, belt 8, and flange-pulley 9, to the shaft 10, which in turn, through the gearing 24 25, imparts rotation to the shaft 20 and this in turn, through the gearing 22 23, to the shaft of the large drum of the vanner-belt, causing the latter to advance longitudinally from rear to front. To tighten the belt 8, the operator simply loosens the hand-wheel nut 14, lowering or dropping the block 11, which supports the adjacent end of the shaft 10, the latter correspondingly tilting the bearings 15 17, Fig. 1. When the belt has been sufficiently tightened by reason of the dropping of the free end of the shaft 10, the latter can be again securely clamped to the post P' by screwing home the nut 14. The shaft 20 readily conforms itself to any variations in the angular dispositions of the shaft 10 by reason of the universal joints 20', with which the same is provided. This makes it possible, too, to always maintain the gears 24 25 in mesh, being that both gears are oscillated together with any oscillation of the bearings 15 17. To vary the speed of rotation of the shaft 10, and hence the speed of travel of the belt B, I make suitable provision to shift the belt 8 in one direction or the other along the cone-pulley 7. This is accomplished as follows: The flange-pulley 9, which is feathered to the shaft 10, is provided on one face with a peripherally-grooved hub 26, in which operates the fork 27 at the inner end of a screw-rod 28, whose outer end passes loosely through and beyond the adjustable block 11 and terminates in a hand-wheel 29. By turning the hand-wheel in one direction or the other the screw 28 advances longitudinally and shifts the fork 27 longitudinally on the shaft 10. This in turn shifts the position of the pulley 9, and hence the belt 8, along the cone-pulley 7.

The laterally-oscillating hangers 30 30, by which the vanner-belt frame F is suspended from the posts P P', are not, as in the prevailing forms of vanners, suspended from the posts directly, but from blocks or offsets 31, themselves oscillating about their supporting trunnions 32 on top of the posts P P'. The hanger is passed through a tapering opening of the block 31 to one side of the axis of oscillation of said block, thereby placing the center of oscillation of the hanger outside of the axis of the hanger. The upper portion of each hanger-rod 30 is screw-threaded, the length of the rod below the block 31 being capable of accurate adjustment by means of the handle-wrench 33 and when once adjusted may be locked by the lock-nut 34 and

washer 35, bearing against the base of the block. Suspended from the lower ends of the hangers 30 are shoes or saddles 36, whose outer faces are provided with grooves or depressions for the reception of the longitudinally-disposed structural members or channel-bars 37, forming the sides of the vanner-belt frame F. To allow for a change of angular disposition of the channel-bars 37 within the saddles 36, the upper and lower walls of the groove receiving the channel are convexed inwardly, this arrangement permitting the channel to freely rock vertically within the saddle without binding. It will be apparent, of course, that by changing the effective lengths of the rear hangers, as previously indicated—that is, by a loosening of the nuts 34 and by a turning of the handle-wrenches 33 in proper direction—the channels 37 will be raised or lowered, inclining more or less to the horizontal, Fig. 5. The channel is secured to each shoe by two bolts, one of them passing through an elongated slot 38, whose nut prior to the adjustment is first loosened, leaving the channel to oscillate about the permanent bolt 39 as a center. When the hangers are once properly adjusted as to length, the nuts 34 and washers 35 are forced up against the block 31 and the nut carried by the bolt passing through the slot 38 is driven home. This completes the adjustment. By this means of adjustment not only is the proper inclination given to the vanner-belt frame and to the operating-surface of the belt B, but the hangers always remain in a vertically-suspended position, and the weight on the bearings carrying them remains uniform, so that each hanger has an equal share of weight to support. Should the tops of the posts P P' for any reason work out of alinement, the hangers 30 may be accurately adjusted by the means provided therefor, so that the transverse level of the table (or belt B) shall at all times be preserved.

As stated above, the axis of oscillation for any hanger 30 is to one side of the hanger, (this axis being the axis of oscillation of the block or offset 31,) so that, as seen in the diagrammatic view in Fig. 8, as one hanger swings from its axis of oscillation the other swings toward it. It follows, therefore, that the lower end of one hanger (that coupled to the saddle 36 of the frame F) will describe an arc above the horizontal plane connecting the lower ends of the hangers when in their vertically-suspended position, and the lower end of the opposite hanger will describe an arc below said plane. This movement not only imparts to the table a lateral reciprocation, (due to the action of the eccentrics 4,) but an oscillatory movement in a vertical plane, thereby preventing the sand on the table (belt B) from banking up against the edges of said table.

Having described my invention, what I claim is—

1. In a vanner, a drive-shaft, a cone-pulley carried thereby, a second pulley coöperatively connected thereto, a shaft for said second pulley, capable of oscillation about a fixed point, a jointed shaft located adjacent to said oscillating shaft, and having a section capable of conjoint oscillation with the oscillating shaft, intermediate gearing between the oscillating and jointed shafts, located contiguous to the point of oscillation of the shafts, a vanner-belt, and suitable gearing between the jointed shaft and belt for imparting motion to the belt, substantially as set forth.

2. In a vanner, a drive-shaft, a cone-pulley carried thereby, a flange-pulley located in proximity thereto, a shaft for said flange-pulley, a belt connecting the pulleys, means for shifting the flange-pulley along the shaft, a vanner-belt, a jointed shaft located adjacent to the flange-pulley shaft, intermediate gearing between the vanner-belt and jointed shaft, and suitable gearing between the jointed shaft and the shaft of the flange-pulley, substantially as set forth.

3. In a vanner, a drive-shaft, a cone-pulley carried thereby, a flange-pulley coöperatively connected thereto, a shaft for said flange-pulley capable of vertical oscillation about a fixed point, a terminal gear-wheel on said second shaft, a jointed shaft adjacent to said oscillating shaft, a gear-wheel on said jointed shaft meshing with the first gear-wheel, a post to which the free end of the oscillating shaft is secured, a vanner-belt, a frame therefor, a gear-wheel on said frame, a worm on the jointed shaft meshing therewith, and means for varying the velocity of rotation of the flange-pulley shaft, substantially as set forth.

4. In a vanner, a drive-shaft, a cone-pulley carried thereby, a flange-pulley, a vertically-oscillating and belt-tightening shaft for said flange-pulley, a jointed shaft having

a section oscillating conjointly with the oscillating shaft, terminal intermeshing gears connecting the jointed shaft with the oscillating shaft, a vanner-belt, and intermediate gearing between the jointed shaft and vanner-belt for imparting motion to the latter, substantially as set forth.

5. In a vanner, a drive-shaft, a cone-pulley carried thereby, a flange-pulley located in proximity thereto, a shaft for said flange-pulley, a belt connecting the pulleys, means for shifting the flange-pulley along the shaft and thereby adjusting the velocity of the shaft, a vanner-belt, a jointed shaft located adjacent to the flange-pulley shaft, intermediate gearing between the vanner-belt and jointed shaft, and terminal intermeshing gearing between the jointed shaft and the flange-pulley shaft, substantially as set forth.

6. In a vanner, a vanner-belt frame, suitable supporting-posts, vertically-adjustable hangers depending from the posts, saddles hung from their lower ends and coupled to the frame, and side members forming a part of said frame and pivotally connected to the saddles and capable of angular adjustment relatively to the hangers with any variation of the length of the latter, substantially as set forth.

7. In a vanner, a vanner-belt frame, suitable supporting-posts, vertically-depending adjustable hangers carried by the posts, saddles at the lower ends of the hangers, grooves formed in the saddles having inwardly-con- vexed bounding-walls, longitudinal structural members received by the grooves of the saddles, and means for coupling the structural members to the saddles, the parts operating substantially as, and for the purpose set forth.

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

GEORGE O. BRADLEY.

Witnesses:

F. T. MARCY,
GEO. W. RITER.