

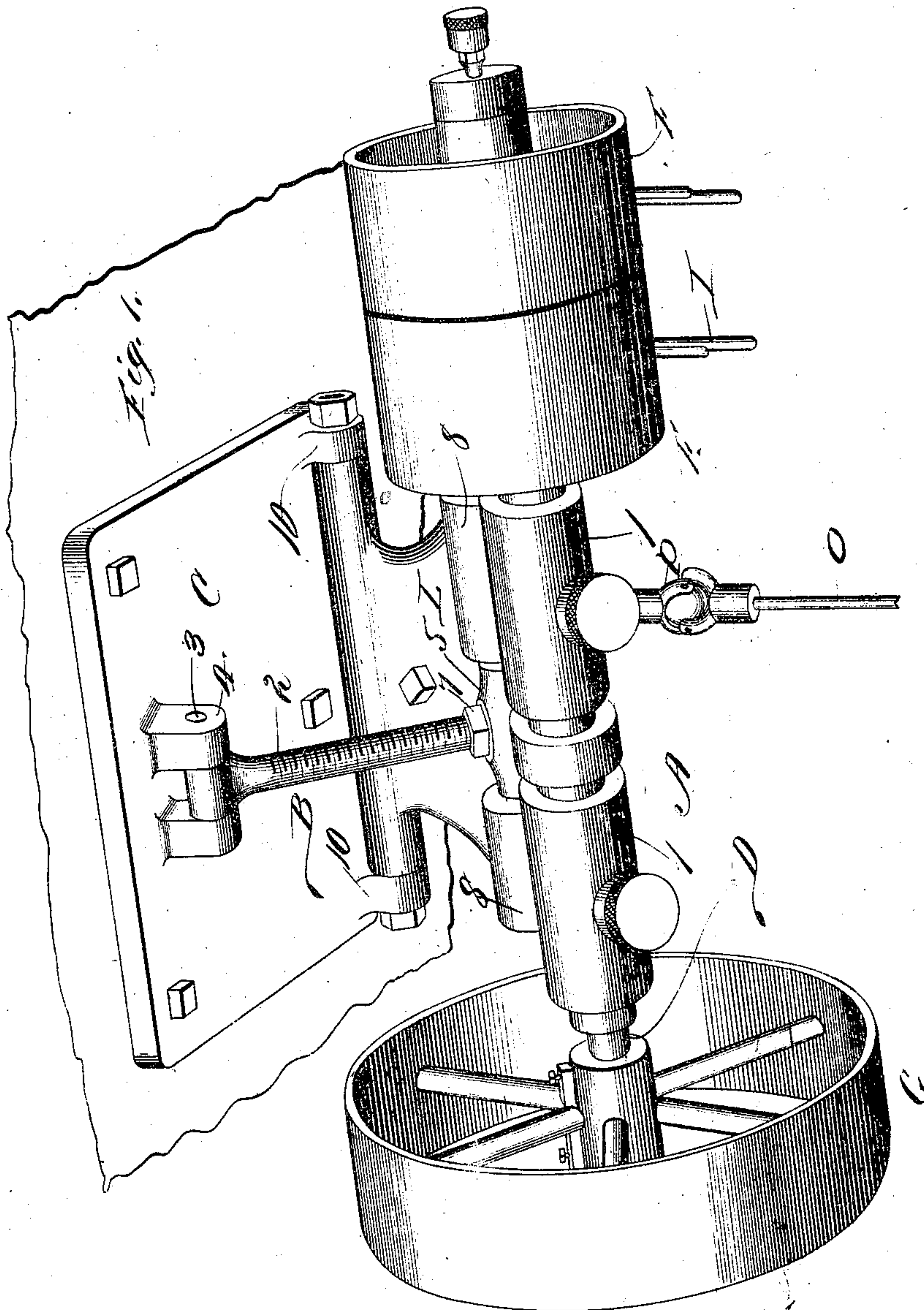
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5 Sheets—Sheet 1.

F. N. GARDNER.  
SHAFT HANGER.

No. 528,774.

Patented Nov. 6, 1894.



Witnesses  
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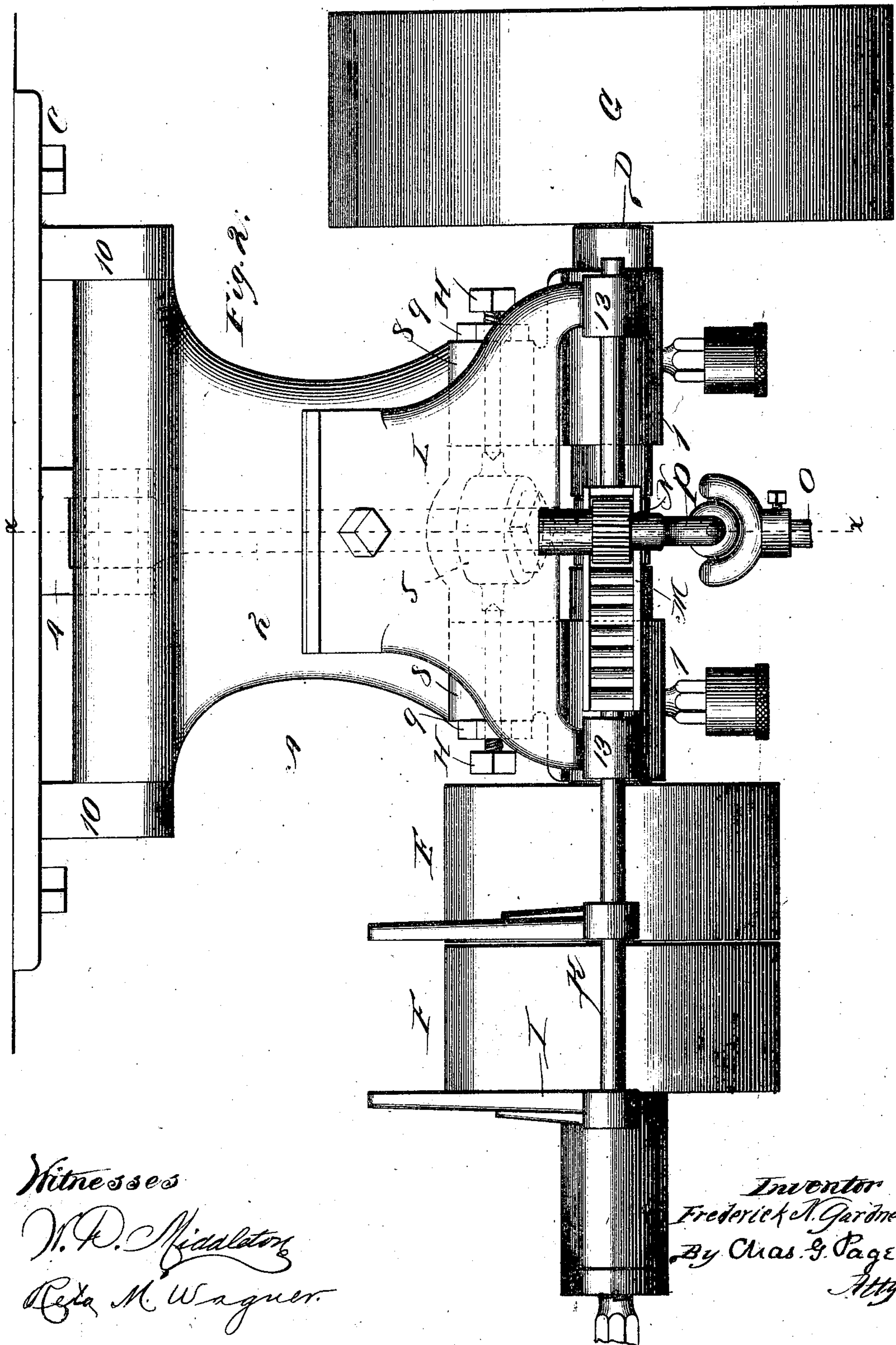
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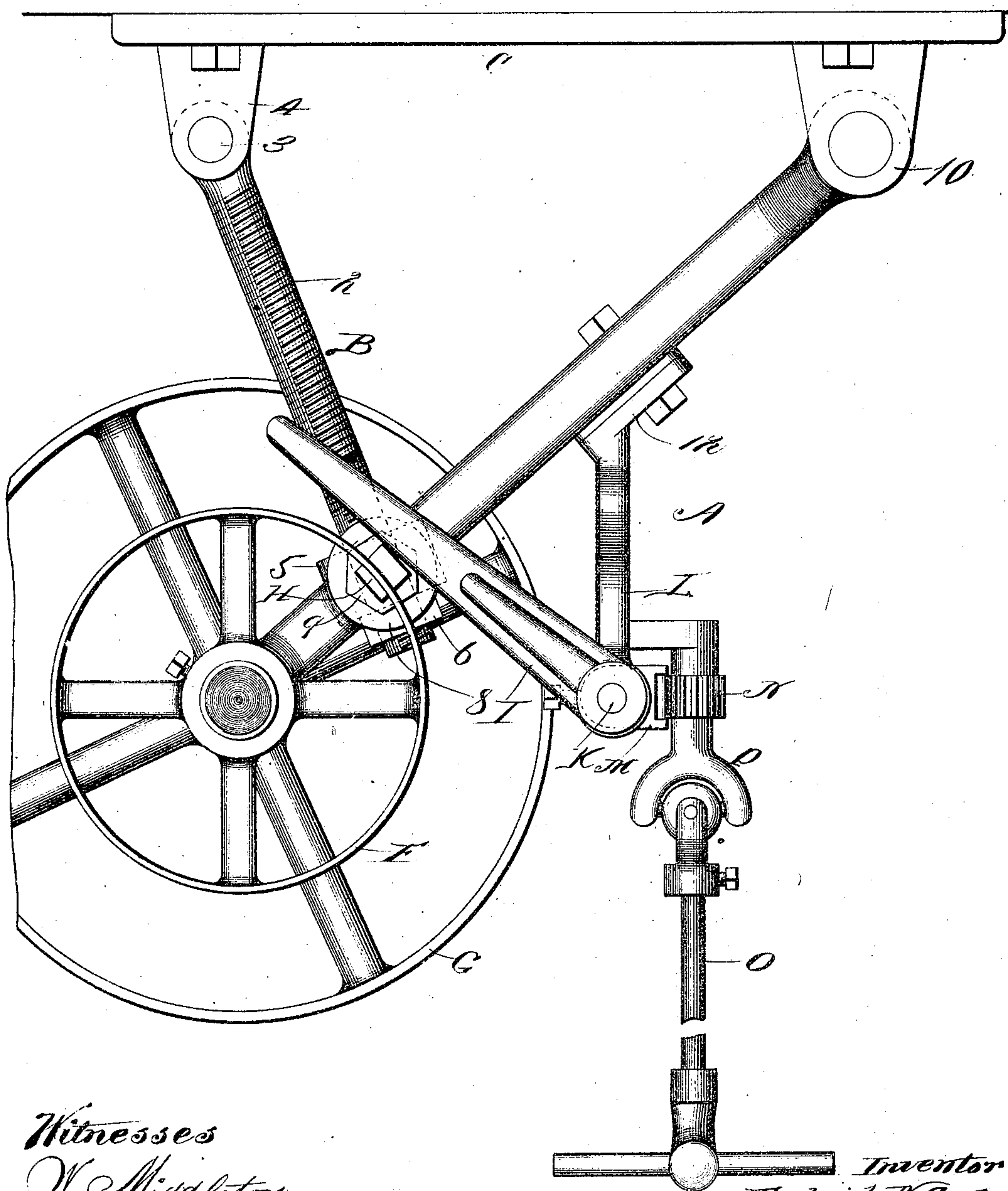
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*Fig. 3.*



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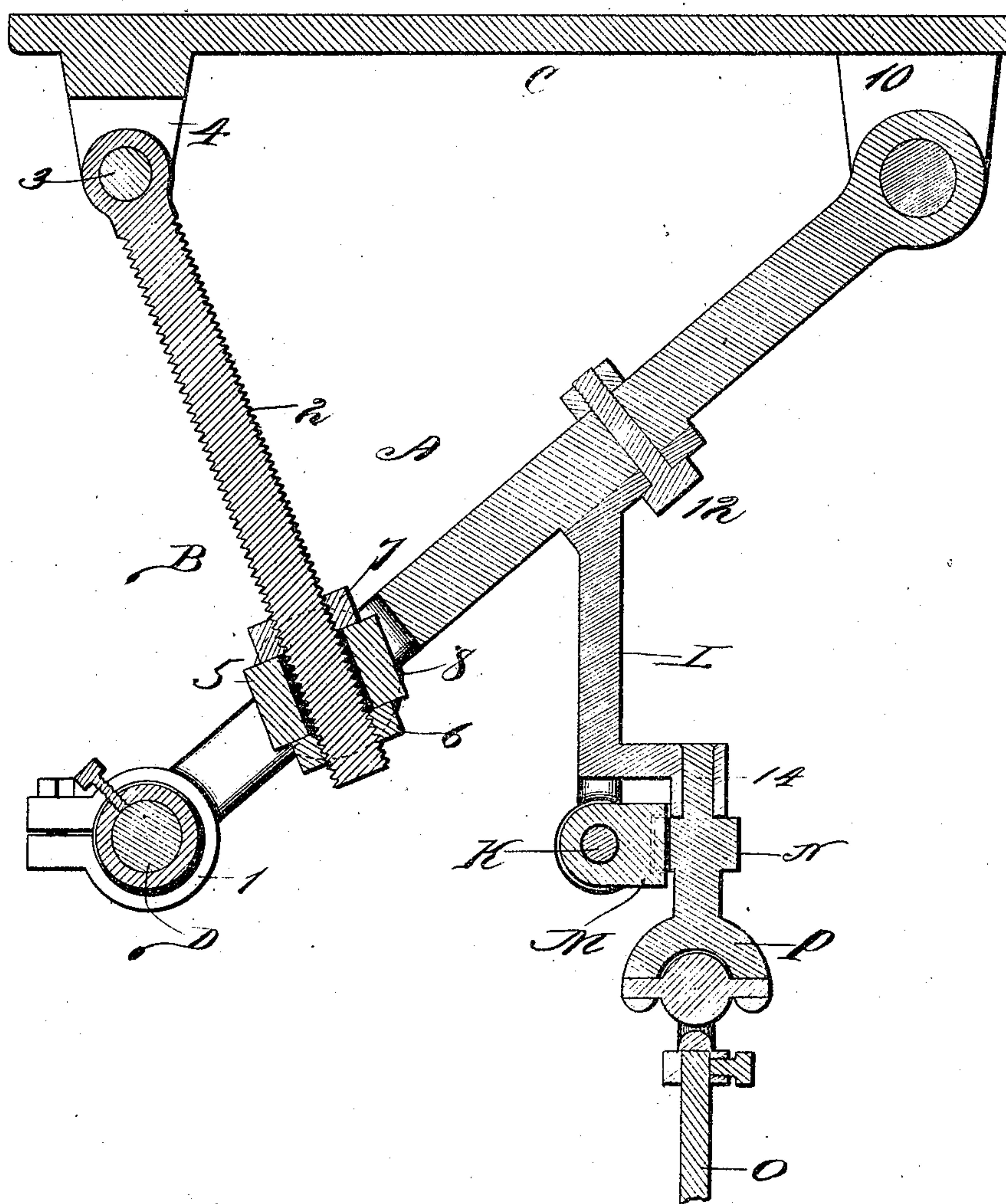
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Fig. 4.



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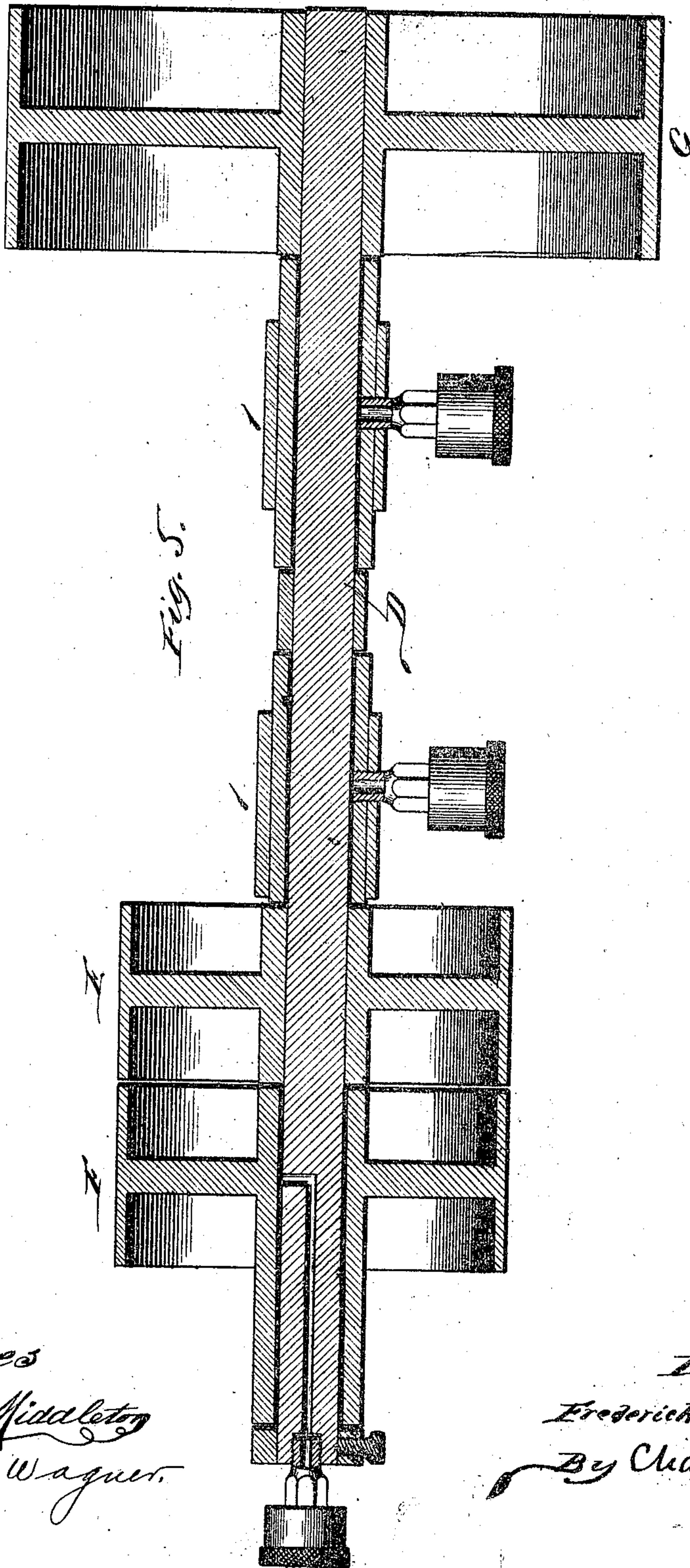
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F. N. GARDNER.  
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# UNITED STATES PATENT OFFICE.

FREDERICK N. GARDNER, OF BELOIT, WISCONSIN, ASSIGNOR TO CHARLES H. BESLY, OF CHICAGO, ILLINOIS.

## SHAFT-HANGER.

SPECIFICATION forming part of Letters Patent No. 528,774, dated November 6, 1894.

Application filed January 14, 1893. Serial No. 458,339. (No model.)

*To all whom it may concern:*

Be it known that I, FREDERICK N. GARDNER, a citizen of the United States, residing at Beloit, in the county of Rock and State of Wisconsin, have invented a certain new and useful Improvement in Shaft-Hangers, of which the following is a specification.

The objects of my invention are to provide simple, ready and efficient means for adjusting the tension of belting applied to the pulleys upon counter-shafts; to provide for adjusting the vertical belt at the expense of a slight adjustment only of the horizontal belt; to adjust the shaft hanger for the purpose of tightening the belting and at the same time preserve proper parallelism between the counter-shaft and main driving shaft; to advantageously position and operate the belt-shipping device, and to provide certain novel and improved details, substantially as hereinafter set forth.

The shaft-hanger characterized by my invention is adjustably supported or suspended from a bracket or ceiling-plate, and to such end it is hinged to the same whereby it can be swung to an extent to position it with reference to the required tension of the belting. The shaft hanger thus arranged for adjustable swing, is held in its adjustment by suitable locking means, and as a matter of further and special improvement, a locking device is provided which adapts itself to the adjustment of the shaft hanger, and thereby permits the latter to be swung to and be held at any desired angle, with reference to requirements, without detaching the locking device from the hanger. The locking device is also applied so as to effectively hold and steady the hanger, and to such end it is connected with the latter at a point sufficiently remote from the point whereat the hanger is pivoted or fulcrumed, to insure effective resistance against the pull of the belting.

The shaft-hanger carries an adjustable belt-shipping device which is operated by a rack and pinion movement, and the spindle of the pinion is operated by a handle having a flexible or universally jointed connection with said spindle so as to permit the handle to hang vertically, regardless of any adjustment

on the part of the hanger, and also so as to permit an operator standing for example upon the floor, to deflect the handle with reference to his position, and thereby conveniently manipulate the same.

Various details constituting matters of further improvement are hereinafter fully set forth.

In the accompanying drawings,—Figure 1 represents the shaft hanger in perspective. Fig. 2 represents the opposite side of the same in elevation and on a somewhat larger scale. Fig. 3 also represents the same in elevation, the view from a point to expose the ends of the counter shaft, and shipper rod. Fig. 4 is a vertical section through the bracket or ceiling-plate, hanger, locking device, and belt-shipper, with the lower portion of the handle for the belt-shipper removed for convenience of illustration. Fig. 5 is a section taken centrally and longitudinally through the counter-shaft and pulleys thereon.

The shaft-hanger A is pivotally hung or hinged so as to be capable of swing transversely to the pulley or counter-shaft which it carries. The shaft-hanger is adjustable in this said movement and hence is supported or suspended for adjustable swing, in which way it can be adjusted to any desired degree of inclination.

Broadly considered, I may provide any means suitable for locking the shaft-hanger in position, and so far as I am aware I am the first to provide a shaft hanger having an adjustable swing and carrying a counter-shaft and belt-pulleys, whereby, by varying the inclination of the shaft-hanger, the belting can be tightened. As a matter of further improvement however, I provide a locking device consisting of an adjustable connection B arranged between the shaft-hanger and such overhead support or fixture as the shaft-hanger may be suspended from.

The shaft-hanger is at its upper end hinged or pivoted to a suitable bearing C which forms a bracket or ceiling plate adapted for attachment to the ceiling, girders or other support or fixture arranged upon the wall or otherwise suitably disposed within the building where power is employed.



The shaft-hanger is provided with bearings 1, for the counter-shaft D, which latter is equipped with fast and loose pulleys E and F, at one end, and with a fast pulley or belt-wheel G arranged at its opposite end and driven by the usual power transmitting belt-

ing. By adjusting the length of connection between the hanger and an overhead fixture which for the broader purposes of my invention may be the bracket or some adjacent fixture, the hanger can be caused to swing to an extent proportional to such adjustment, and thereby adjust the tension of the belting.

With reference to certain details constituting matters of further improvement, I provide between the bracket and the hanger, an adjustable connecting device which is hinged to or pivotally connected with said members, and to such end I employ a threaded rod or bolt 2 which is at its upper end pivoted at 3 to bearings 4 on the bracket, and at its lower end adjustably connected with a swivel piece or rocking bearing 5 on the hanger. As a desirable and efficient connection between the bolt and bearing 5, the bolt passes through an opening in the bearing and carries nuts 6 and 7 arranged respectively above and below the bearing so as to lock said members together and also permit the required adjustment which can be effected by properly adjusting the nuts along the rod.

The rocking bearing is journaled or trunnioned upon set screws 11 which are placed in alignment with one another and arranged to extend through bearings 8 with which the hanger is provided. These set screws can be adjusted so as to hold the bearing 5 against rocking, and can be loosened so as to permit the bearing to rock or tilt when it is desired to adjust the hanger, and in order to effectively hold the set screws against working loose, I provide each with a jam-nut 9 which can be tightened up against the hanger.

The hanger is conveniently divided at its lower end so as to provide an opening for the rocking bearing 5, and also separate the bearings 1 for the counter-shaft, and in order to steady the hanger, it is journaled between bearings 10 on the bracket, with the axis of its journals arranged parallel with the counter-shaft.

By connecting the bolt 2 with the lower portion of the hanger as illustrated, the hanger can be effectively steadied and held against movement while the belts are running, and will resist all strain tending to swing it from a condition of accurate adjustment, and by pivoting the hanger and bolt at their upper ends, relatively arranging them substantially as shown, the hanger can be sustained in an inclined position by the lower nut 6 on the bolt, in which way, the weight of the hanger can be utilized as a further means for holding it steady. By adjusting the hanger, as hereinbefore described, the horizontally and vertically disposed belts usually employed,

can be tightened at the same time, since the hanger can obviously be adjusted in a way to move the counter-shaft with reference to the attainment of such end.

The belt-shipper may comprise any ordinary or suitable means for engaging and shifting the belt, for example, a belt-fork L.

The belt-fork is carried by a slide K which is arranged for longitudinal adjustment along a line uniformly parallel with the counter-shaft, and preferably formed by a rod or bar supported to slide in a guide or bearing on the hanger. The guide or bearing for such purpose may be integral with the hanger, or it may as illustrated consist of a pendent bracket L bolted at 12 to the hanger and adapted to provide separated guide or bearing portions 13 for the adjustable shipper rod or slide which carries the fork as aforesaid.

As a means for adjusting the belt-fork, the shipper rod or slide is provided with a rack M which is engaged by a pinion N, so that by operating said pinion the belt-shipping device comprising the fork and its adjustable support can be moved for the purpose of shifting the belt. The spindle 14 of the pinion N, is connected with a pendent handle O by means of a toggle or universal joint P in which way an operator can from different positions turn the handle so as to shift the belt, and further, regardless of the adjustment of the hanger, the said handle will normally hang perpendicular. The rack and pinion movement employed for shifting the belt-shipper permits the same to be shifted to any desired extent, and hence the same can without change be employed for shifting different widths of belting.

With further reference to the adjustment of the shaft-hanger and its desired position, it is understood that the locking device can be arranged to permit the shaft-hanger to hang vertically should such position be desirable. It will be observed however, that by sustaining the shaft-hanger in an inclined position, its further upward swing will serve to tighten the belt which is understood to be carried from the fast or loose pulley down to the machine it is to operate, and while thus tightening the said hanging or vertical belt to the desired extent, the usual horizontally arranged power belt which is applied to the pulley G will be tightened up only to a slight extent, and hence the vertical belt which is the one commonly requiring the greater extent of adjustment will be tightened up without materially affecting the remaining belt. This will be obvious from the fact that the up swing of the hanger will cause a substantially direct up pull on the vertical belt, while at the same time the axis of pulley G will move substantially in the arc of a circle about the axis of such overhead belt pulley as may be employed for driving the horizontal belt.

What I claim as my invention is—

1. A shaft hanger provided with a counter-shaft carrying pulleys for horizontal and ver-



tical belting and hinged to and suspended from an overhead bracket or ceiling plate, and a locking device consisting of an adjustable connection between the hanger and the bracket or ceiling plate, substantially as and for the purpose set forth.

2. The combination of a shaft hanger hung for swinging adjustment and provided with a suitable box or bearing for a counter-shaft, and a locking device consisting of a pivotally suspended bolt having an adjustable connection with the counter-shaft, substantially as described.

3. The combination of a shaft-hanger hinged to a bracket or ceiling plate and provided with a suitable box or bearing for a counter-shaft, a rocking bearing on the shaft hanger, and an adjustable connection between the rocking bearing and the bracket or ceiling-plate.

4. The combination of a shaft hanger hinged to a bracket or ceiling-plate and provided with a suitable box or bearing for a counter shaft, a rocking bearing on the shaft-hanger, and a bolt hinged to the bracket or ceiling-plate and adjustably connected with the rocking bearing, substantially as described.

5. The combination of the shaft-hanger hinged to a bracket or ceiling plate, the rocking bearing supported by set screws upon the shaft-hanger and the bolt hinged to the bracket and adjustably held in connection with the rocking bearing, substantially as described.

6. The shaft-hanger carrying a counter-shaft and hinged to and suspended from a bracket or ceiling plate, and an adjustable locking connection arranged between the shaft-hanger and bracket or ceiling plate and serving to uphold the shaft hanger in an inclined position and lock it in its adjustment, substantially as described.

7. The combination of an adjustable shaft-hanger, a belt-shipping device carried by the shaft hanger and a rack and pinion for operating the belt-shipper, substantially as set forth.

8. The combination of an adjustable shaft-hanger, a belt-shipping device carried by the adjustable shaft hanger, a rack and pinion for actuating the belt-shipping device, and a handle connected with the spindle of the pinion by a universal joint, substantially as set forth.

9. The combination of the adjustable swinging shaft-hanger carrying a counter-shaft, the bracket L depending from the shaft hanger, and a shipping device supported by said bracket, substantially as described.

10. The hinged shaft hanger adjustably supported in an inclined position and provided with boxes or bearings for a counter-shaft, the bracket L depending from the shaft-hanger, and a belt-shipping device supported by the bracket, substantially as described.

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