

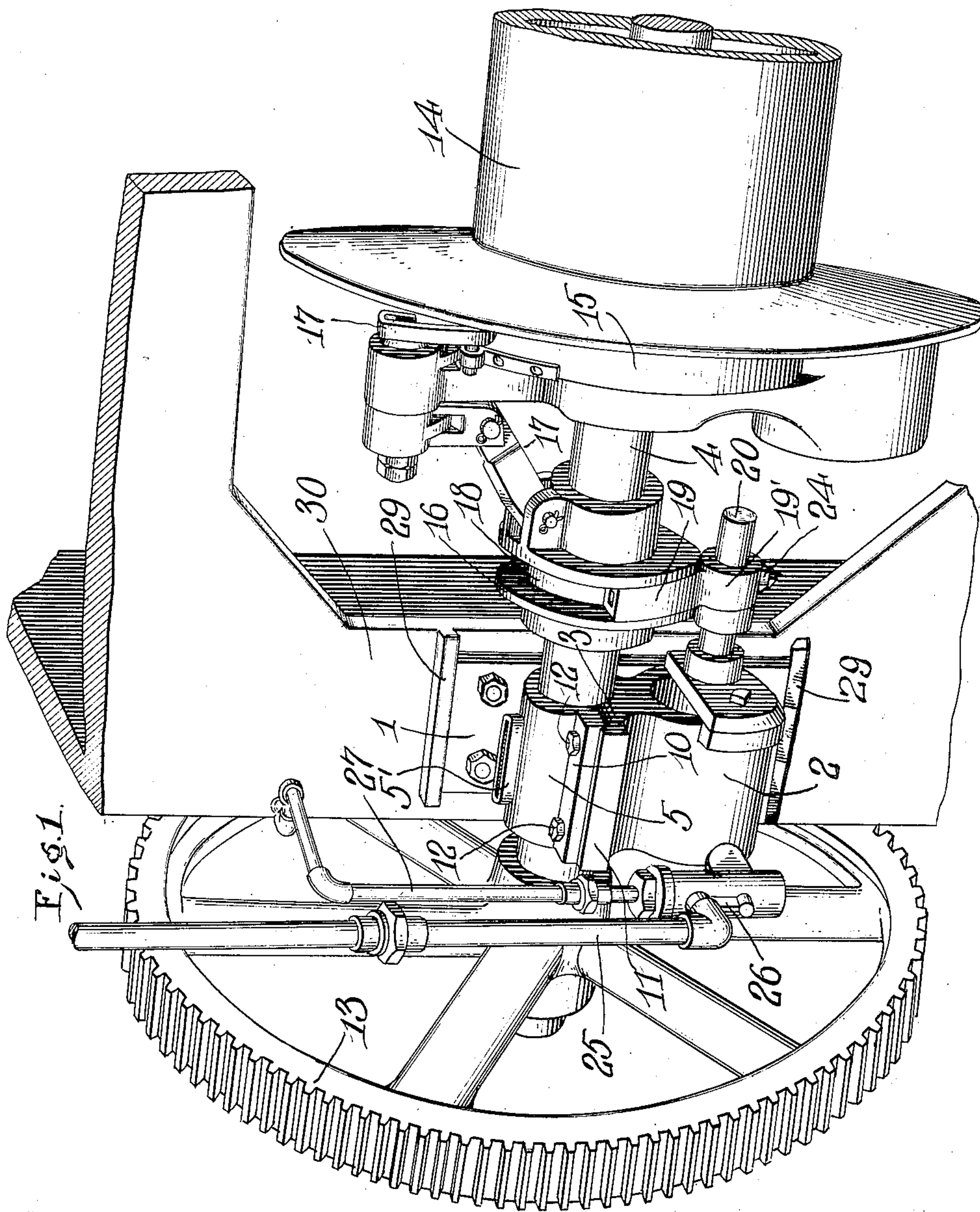
No. 897,330.

J. G. WESTBROOK. PATE
CLUTCH THROWING MECHANISM.

PATENTED SEPT. 1, 1908.

APPLICATION FILED JAN. 20, 1908.

3 SHEETS—SHEET 1.



WITNESSES:

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Gusant Church

C. H. Fessler

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his Attorneys

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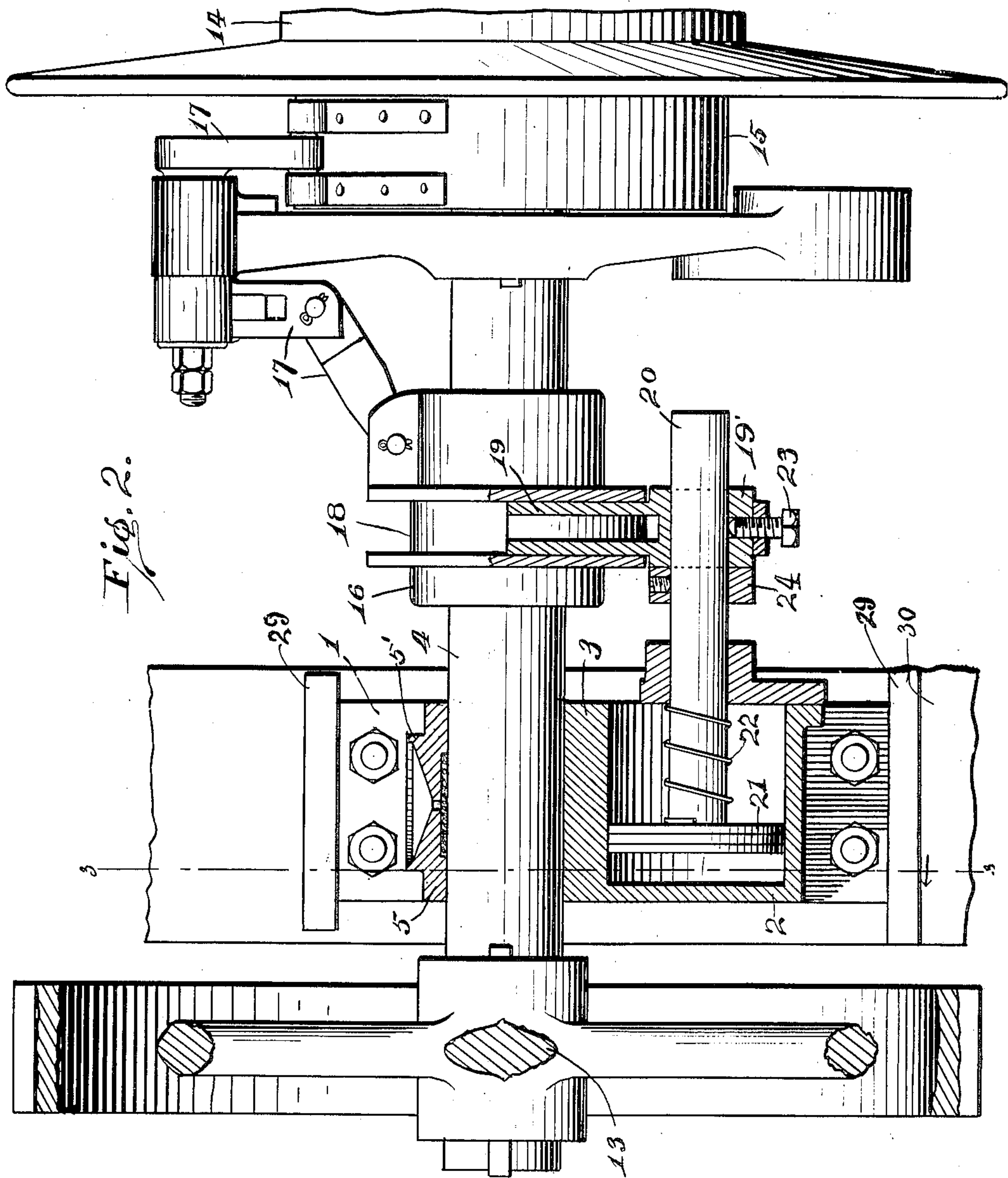


Fig. 2.

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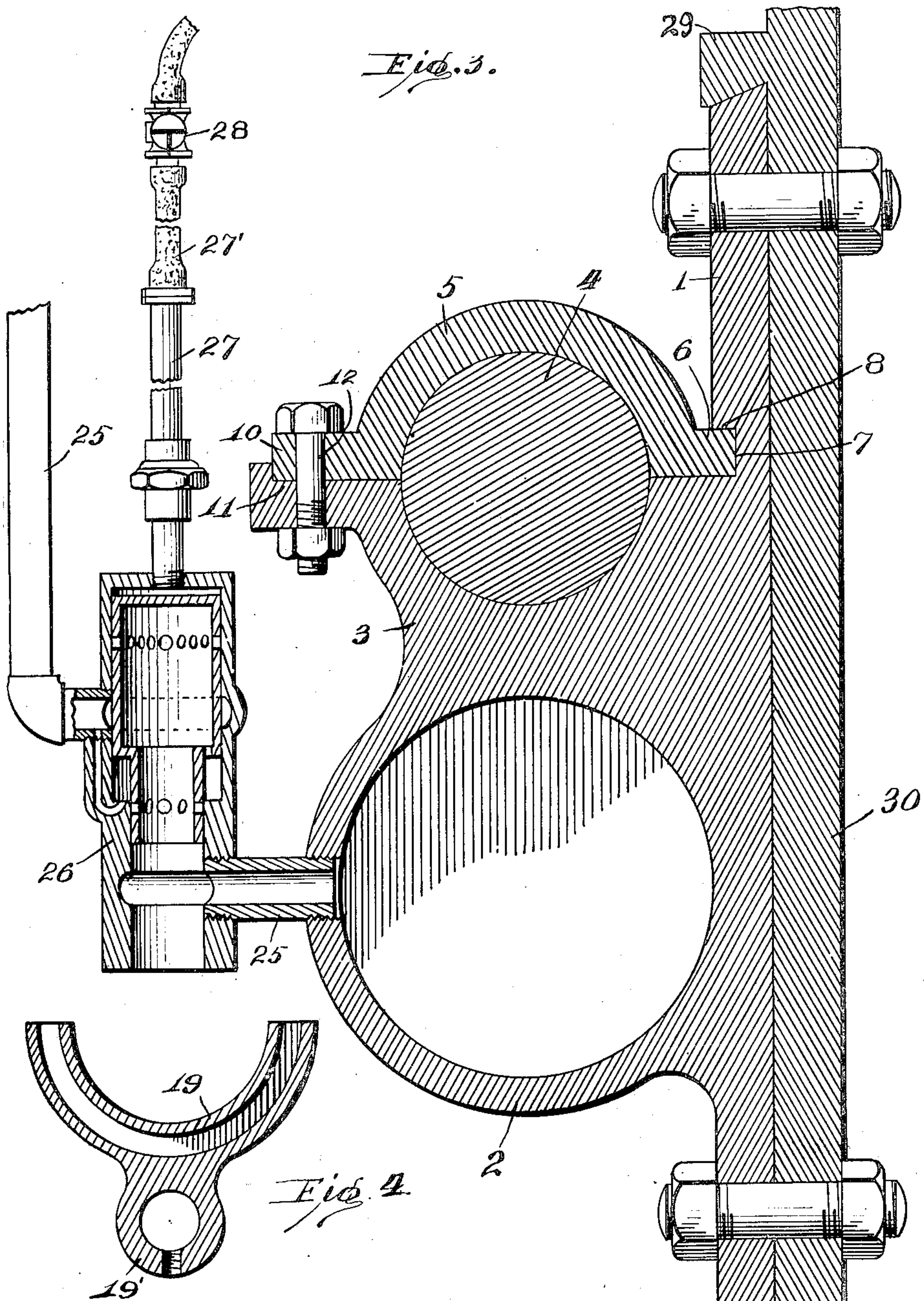
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3 SHEETS—SHEET 3.



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UNITED STATES PATENT OFFICE.

JAMES G. WESTBROOK, OF OGDENSBURG, NEW YORK.

CLUTCH-THROWING MECHANISM.

No. 897,330.

Specification of Letters Patent.

Patented Sept. 1, 1908.

Application filed January 20, 1908. Serial No. 411,846.

To all whom it may concern:

Be it known that I, JAMES G. WESTBROOK, a citizen of the United States, residing at Ogdensburg, in the county of St. Lawrence and State of New York, have invented certain new and useful Improvements in Clutch-Throwing Mechanism; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to improvements in power controlling apparatus, and particularly to clutch throwing mechanism and means for controlling the same at a distance.

One of the objects in view is the throwing of a clutch actuating sleeve by a fluid pressure actuated piston controlled at a distance while the parts are maintained in accurate alinement by the employment of a bearing box for the shaft on which the shiftable sleeve is mounted, which bearing box is formed integral with the cylinder of the piston employed for actuating the sleeve, the longitudinal axes of said cylinder and bearing box being parallel.

With this and further objects in view, the invention comprises certain novel constructions, combinations and arrangements of parts as will be hereinafter fully described and claimed.

In the accompanying drawings:—Figure 1 is a perspective view of a structure embodying the features of the present invention. Fig. 2 is a longitudinal, vertical, central section therethrough. Fig. 3 is a transverse, vertical section taken on the plane indicated by line 3, 3 of Fig. 2, and looking in the direction indicated by the arrow, the power wheel in the rear being omitted for the sake of clearness. Fig. 4 is a vertical section taken through the shifting yoke and its connecting sleeve.

It has heretofore been proposed, as indicated for instance in my own prior patents, to shift clutch mechanism by the employment of a fluid pressure actuated piston controlled at a distance, but difficulty has been experienced in preventing lateral or twisting strains and the maintenance of the parts in proper alinement relative to each other.

Apparatus such as has heretofore been known in the art has been found to involve

comparatively great initial expense for installation, as well as a relatively large expense of maintenance, and to overcome both of these difficulties as well as to attain other desirable results, which will become in part obvious and will in part be set forth in detail hereinafter, I cast a base or bracket plate 1 integral with a cylinder 2 and the main or lower portion of the bearing box 3, the said bearing box and cylinder being also cast integral with each other. Journalled in the bearing box 3 is a drive shaft 4 which is retained in position against upward movement by the bearing cap 5, which cap is formed with a horizontal, laterally projecting flange 6 at one side adapted in operation to be slid longitudinally into a transverse groove 7 in the bracket plate 1 in position for engaging the shoulder 8 formed by said groove. The opposite side of the cap 5 is provided with a horizontal flange 10 which rests within a suitable seat 11, formed integral with the box 3, and the cap is securely retained in place by bolts 12, 12 passed through the flange 10 and the seat 11. Any suitable oil cup 5' of course may be provided on the cap 5.

The shaft 4 receives its power from any suitable driver 13 keyed to the shaft at one side of the journal box 3 and at the other side thereof the shaft supports a winding drum 14 loosely mounted on the shaft and adapted to be connected therewith by a friction band clutch 15, the said clutch being adapted to be thrown into operative relation to the parts by means of a clutch throwing sleeve 16 and a suitable chain of links and lever power transmitting devices 17. For the purpose of this invention, the clutch and devices 17 for actuating the same may be of any preferred type. The sleeve 16 is slidingly mounted on the shaft 4 and is formed with an annular groove 18 into which extends a yoke 19 fixed to and carried by a piston rod 20 which extends into the cylinder 2 and is therein provided with a piston head 21. If desired, a spring 22 may be disposed for engaging the piston head 21 for insuring release movement of the clutch 15 when the piston head 21 is not subject to fluid pressure.

It is to be observed that the longitudinal axes of the bearing box and cylinder are parallel and the piston and clutch throwing sleeve will thus be readily maintained in condition for moving in exact alinement. In order to adjust the yoke 19 to the desired

relative position with respect both to the piston and the shifting sleeve, a suitable set screw 23 is passed through the collar 19' of said yoke which surrounds the piston rod 5 into engagement with said piston rod. Any suitable bushing 24 may be provided on the piston rod 20 between the said collar 19' and the contiguous head of cylinder 2 for limiting the movement of the piston under the action 10 of spring 22.

In order to control the action of the piston, the fluid pressure is supplied through a pipe 25 from any suitable source and intermediate the length of the pipe 25 is interposed a differential pressure valve 26 of any well known 15 type such for instance as is fully set forth and described in my Patent No. 785,646, dated March 21, 1905. The valve 26 is controlled in its operation by a controlling pressure pipe 20 27 which may extend to any desired source of fluid pressure supply and in the length of which may be provided a flexible section as at 27', if desired, for enabling control by the operator who may be required to move about. 25 At a point in the length of the pipe 27', said pipe is provided with any ordinary three-way valve 28 which is adapted to be turned to one of its positions for admitting pressure through pipe 27 and to the other of its positions for exhausting pressure from the said 30 pipe 27 so that the valve 26 may be manipulated by the operator at the point of valve 28, and when pressure is admitted through pipe 27 the valve 26 will establish communication 35 between the sections of pipe 25 and thus admit fluid under pressure to the cylinder 2 in the rear of piston head 21 whereby the piston will be moved outwardly and the sleeve 16 correspondingly moved for throwing on the 40 clutch 15. When it is desired to release the clutch, it is only necessary to turn the valve 28 to the exhaust position, and as soon as the pressure is drained from the rear of the valve 26 the by-pass pressure will throw said 45 valve to its closed position and will thus open the section of pipe 25 communicating with cylinder 2 to the atmosphere and permit exhausting of the pressure in cylinder 2 whereby the parts are free to be returned by spring 50 22 to the released condition.

The yoke 19, as seen best in Fig. 4, is provided with hollow arms, and in fact is preferably made hollow throughout all that portion which lies in operation in the groove 18 55 so that if through rapid revolution of sleeve 16 the parts tend to become heated by friction, the heat radiating surface presented by the hollow interior of the yoke will insure sufficient distribution of the heat for preventing any appreciable expansion of the 60 parts, so that any tendency on the part of the yoke to bind against the walls of the groove 18 is obviated. It is to be observed, of course, that the set screw 23 enables a 65 ready adjustment of the yoke along the

length of the piston rod 20 so that in case of wear of the chain of transmitting gear 17 or other parts of the clutch a compensation for the excess movement may be had by the adjustment of the yoke longitudinally of the 70 piston rod 20, and it is obvious of course that the piston will accommodate itself to any required amount of movement, the piston head 21 moving outwardly under fluid pressure to whatever extent may be permitted by the 75 clutch 15.

The plate 1 is preferably beveled outwardly at its ends so that the said ends will fit snugly within the under-cut grooves of beads 29, 29 formed integral with the beam 80 or supporting wall 30 and positioned to engage the ends of the plate 1 when the plate is slid edgewise between the beads.

What I claim is:—

1. In mechanism of the class described, 85 the combination with a power shaft, a clutch for transmitting movement therefrom, and a sleeve slidably mounted to move longitudinally of said shaft for throwing said clutch, of a bearing for said shaft, a cylinder formed 90 integral with said bearing and having its longitudinal axis parallel to the longitudinal axis of the shaft, a piston within said cylinder connected with said sleeve for actuating the same, and means for supplying pressure 95 to the cylinder for operating the piston.

2. In mechanism of the class described, the combination with a support having spaced beads formed with under-cut grooves, of a base plate beveled outwardly and adapted 100 to have its beveled portions fit snugly within said under-cut grooves, a shaft bearing carried by said plate, a power shaft mounted in said bearing, a cylinder carried 105 by said plate in position for having its longitudinal axis parallel to the longitudinal axis of the shaft, a clutch for transmitting movement from the shaft, a piston in said cylinder adapted to actuate the clutch, and 110 means for supplying pressure to the cylinder for actuating the piston.

3. In mechanism of the class described, the combination with a power shaft, of a bearing therefor, a base plate supporting 115 said bearing and formed with an overhanging portion or shoulder, a cap for said bearing having a portion projecting beneath said shoulder at one side, means for securing the opposite side of the cap in position, a cylinder carried by said base plate and arranged 120 with its longitudinal axis parallel to the longitudinal axis of the shaft, a clutch for transmitting movement from the shaft, a piston within said cylinder adapted to actuate said clutch, and means for supplying pressure 125 to the cylinder for operating the piston.

4. In mechanism of the class described, the combination with a power shaft, of a journal bearing therefor, a plate formed integral with said bearing and provided with a 130

groove extending longitudinally of the bearing, a cap for said bearing having a flange at one side extending into said groove, means at the opposite side of the cap for securing
5 the same against movement, a cylinder connected with said bearing with its axis parallel to the axis of the bearing, a clutch for transmitting movement from the shaft, a piston in said cylinder for actuating the clutch,

and means for supplying pressure to the cylinder for operating the piston. 10

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

JAMES G. WESTBROOK.

Witnesses:

SIMON JACOBSEN,
WM. A. WITHMAR.