

No. 808,965.

PATENTED JAN. 2, 1906.

R. L. WOODARD.
CLUTCH.

APPLICATION FILED JAN. 31, 1905.

2 SHEETS—SHEET 1.

Fig. 2.

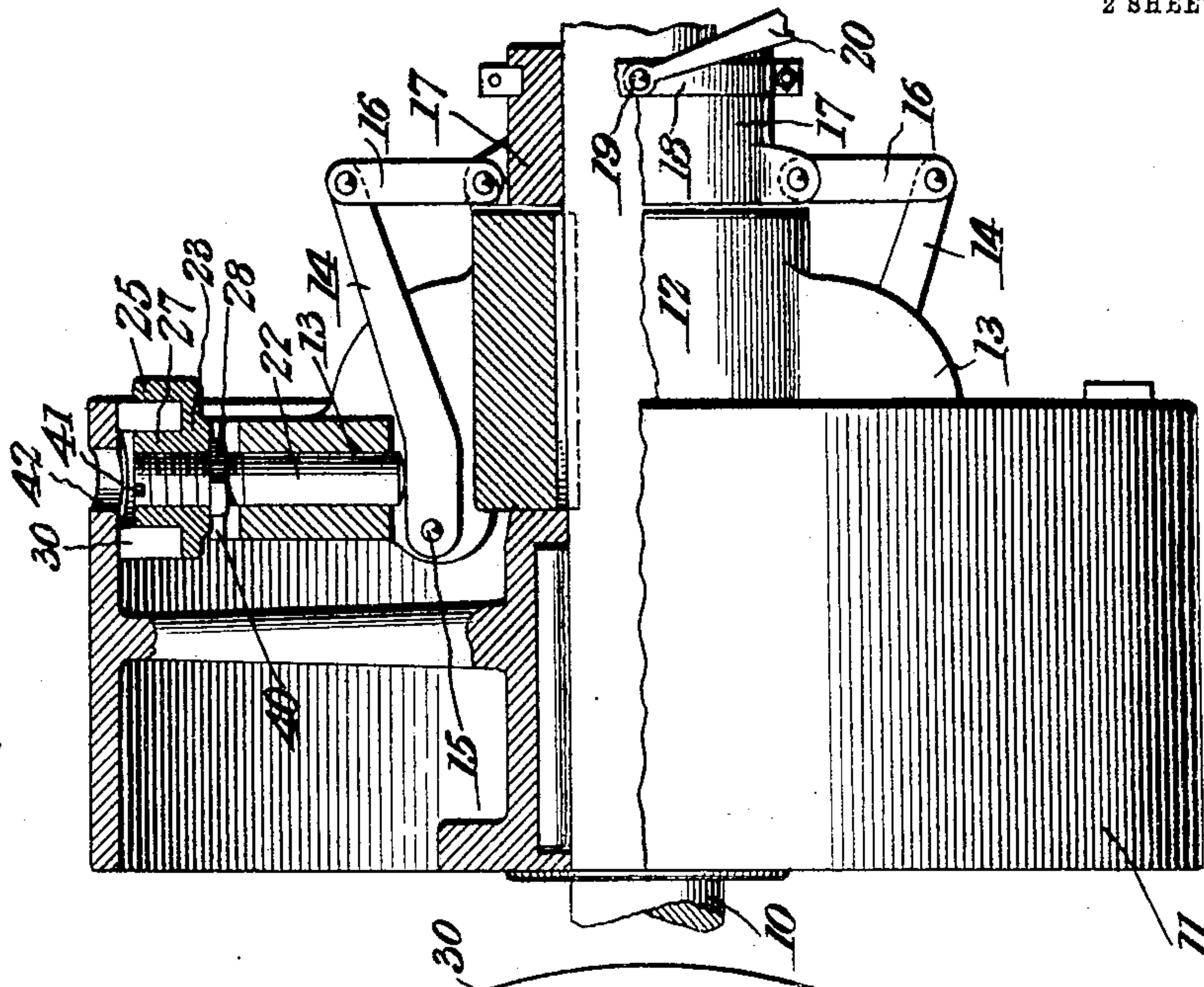
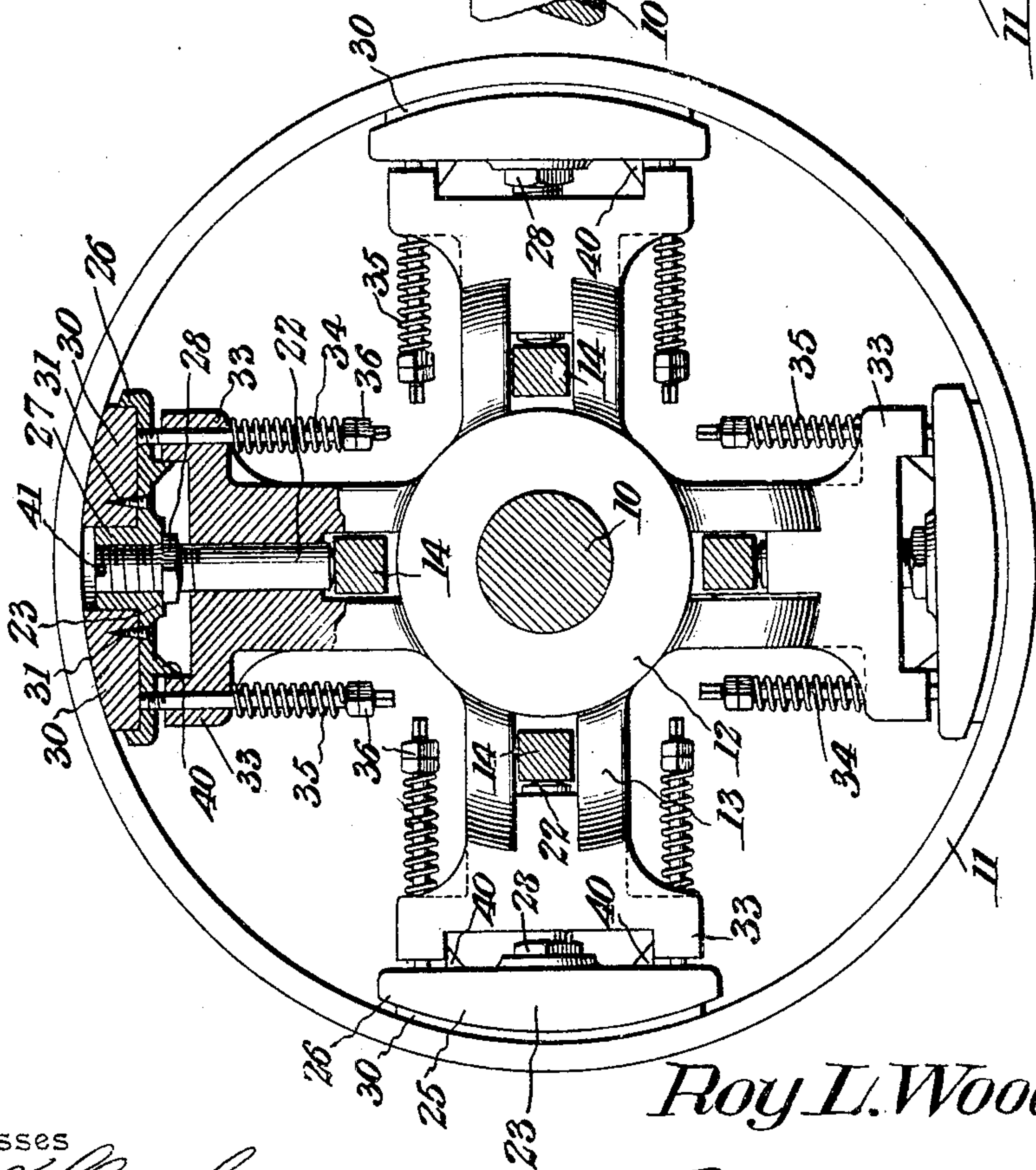


Fig. 1.



Witnesses

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2 SHEETS—SHEET 2.

Fig. 3.

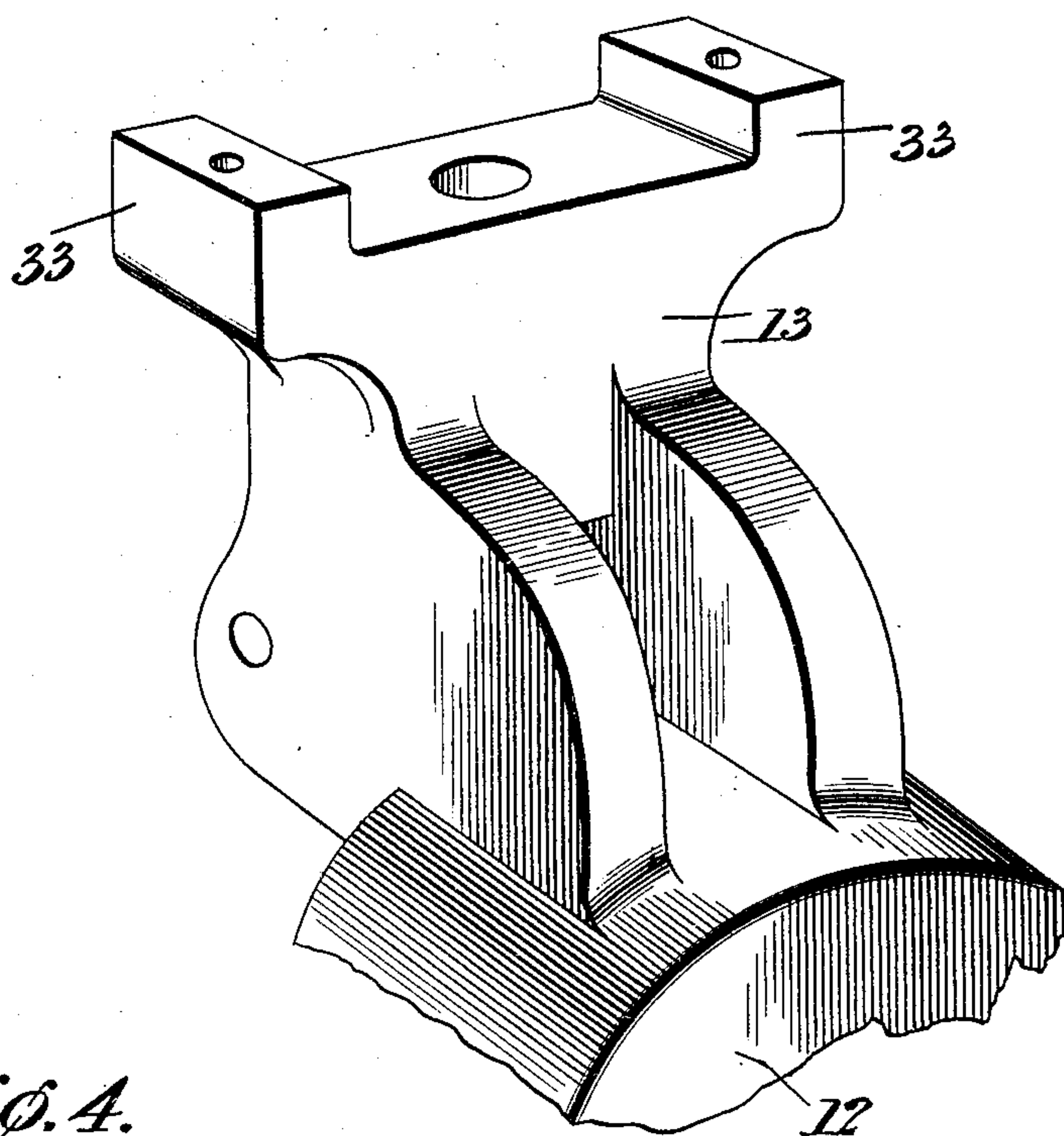


Fig. 4.

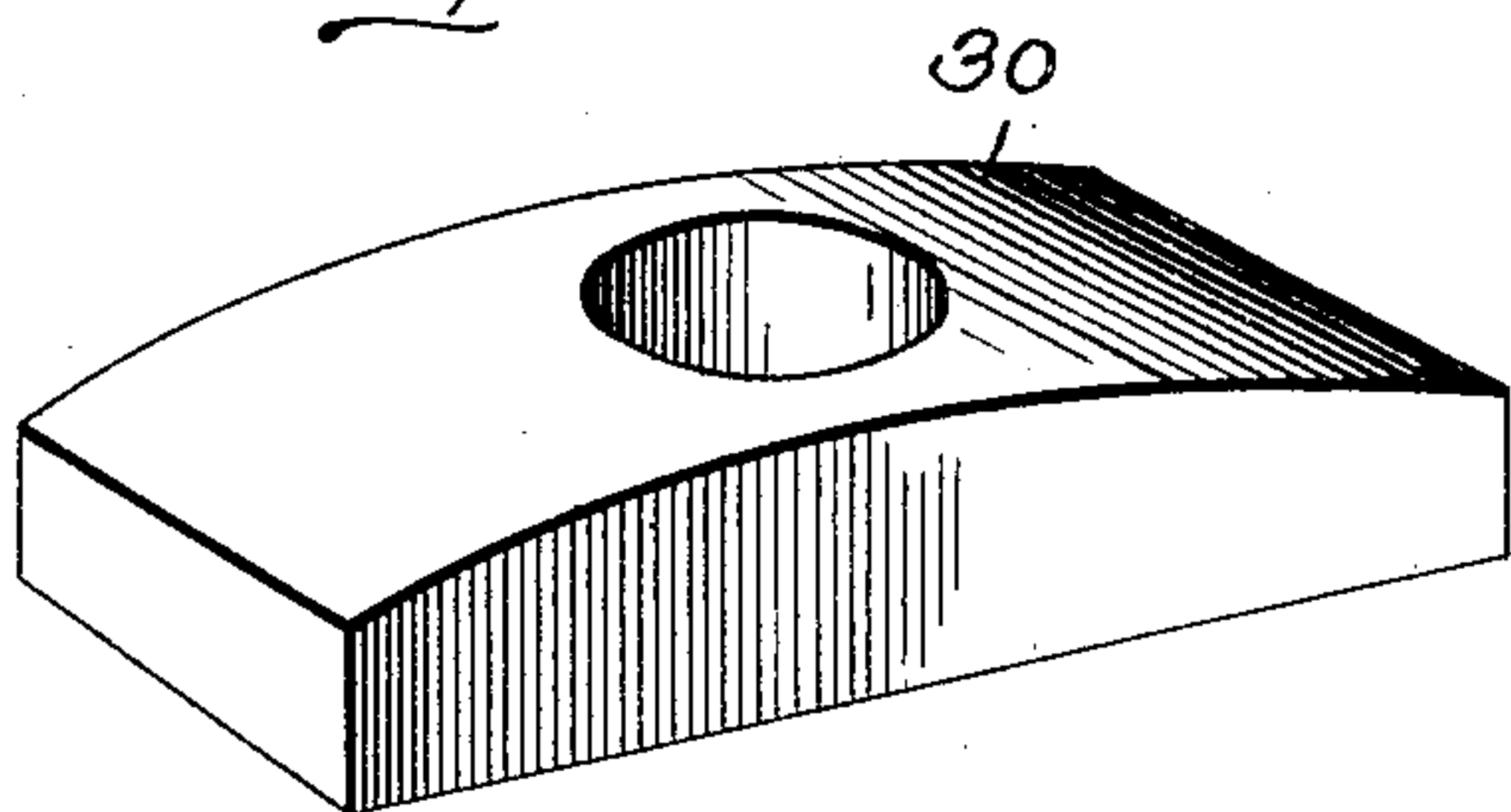
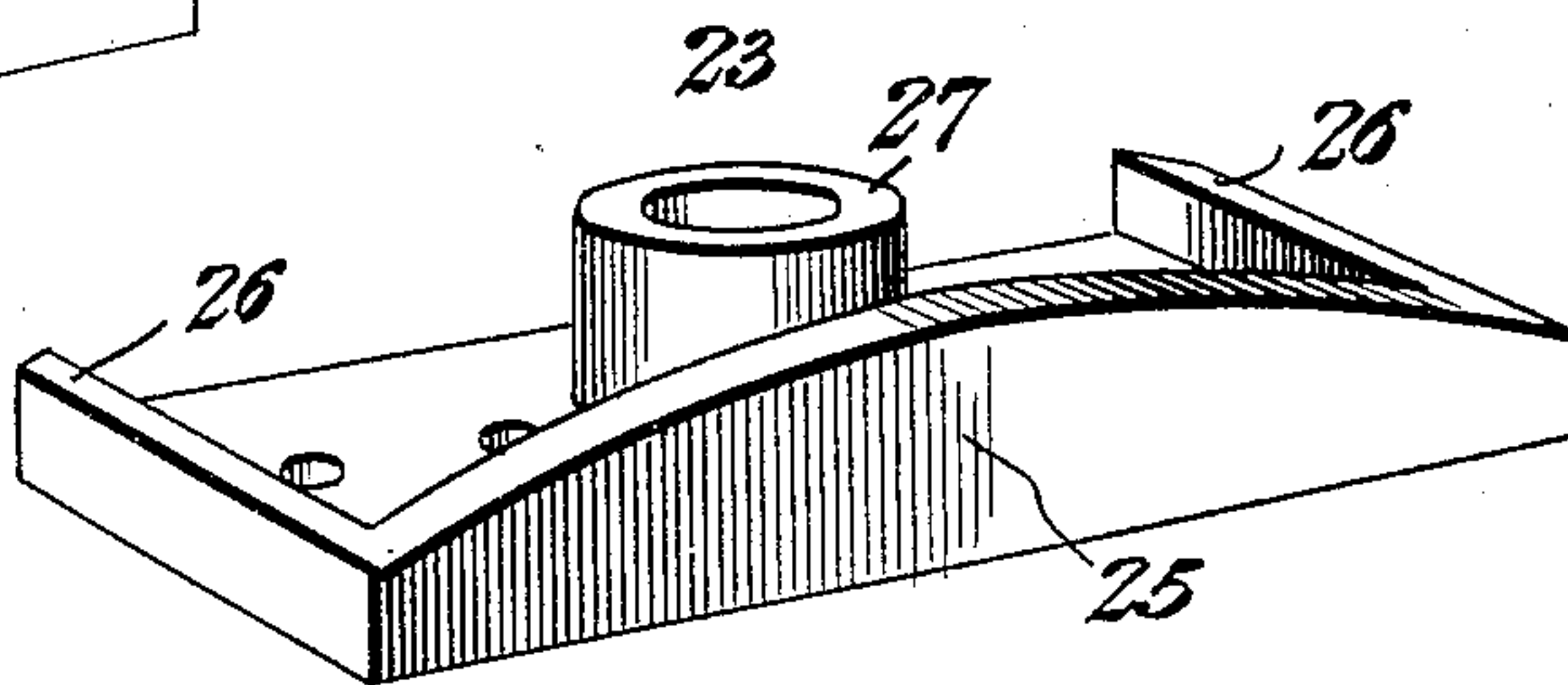


Fig. 5.



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UNITED STATES PATENT OFFICE.

ROY LEON WOODARD, OF RICHBURG, NEW YORK.

CLUTCH.

No. 808,965.

Specification of Letters Patent.

Patented Jan. 2, 1906.

Application filed January 31, 1905. Serial No. 243,523.

To all whom it may concern:

Be it known that I, ROY LEON WOODARD, a citizen of the United States, residing at Richburg, in the county of Allegany and State of New York, have invented a new and useful Clutch, of which the following is a specification.

This invention relates to friction-clutches, and has for its principal object to provide a readily-operated powerful clutch especially adapted for heavy work and in which all of the parts when adjusted to clutching position will be in the best position to receive thrust and withstand the strain of operation.

A further object of the invention is to provide a novel form of clutching mechanism of the radially-movable shoe type in which the movable shoes are arranged very close to the inner surface of the annular rim with which they are to engage, and thus are placed in the best position to resist strain.

A still further object of the invention is to provide a novel form of clutching mechanism in which the clutch-shoes may be readily removed when it becomes necessary to repair or replace the friction members.

A still further object of the invention is to provide a clutching means in which the movable clutching members may be accurately adjusted after being placed in approximately correct position in their supports.

With these and other objects in view, as will more fully hereinafter appear, the invention consists in certain novel features of construction and arrangement of parts hereinafter fully described, illustrated in the accompanying drawings, and particularly pointed out in the appended claims, it being understood that various changes in the form, proportions, size, and minor details of the structure may be made without departing from the spirit or sacrificing any of the advantages of the invention.

In the accompanying drawings, Figure 1 is an elevation, partly in section, of a clutch constructed in accordance with the invention. Fig. 2 is a view, partly in transverse section and partly in elevation, of the clutch. Fig. 3 is a detail perspective view of a portion of the clutch detached. Fig. 4 is a similar view of the friction-block. Fig. 5 is a detail perspective view of one of the block-holding shoes.

Similar numerals of reference are employed to indicate corresponding parts throughout the several figures of the drawings.

The shaft 10 is revolved from any suitable source of power, and mounted on roller-bearings on the shaft is a belt-wheel 11, said wheel being normally loose and free to rotate independently of the shaft.

Secured rigidly to the shaft is a collar 12, that is held from independent longitudinal and rotative movement and is provided with a plurality of radially-disposed arms 13, four of which are shown in the present instance, although the number may be increased or diminished, in accordance with the diameter of the pulley 11. These arms 13 are provided with radially-disposed recesses, in which are guided levers 14, that are pivoted at their inner ends on transverse pins 15. The outer ends of said levers are connected by links 16 to pivot-ears on a collar 17, that is feathered to the shaft. This collar is provided with an annular groove for the reception of a ring 18, and from the ring extend pins 19, that are connected to the bifurcated arms of an operating-lever 20, the latter being operated by hand or automatically in the usual manner.

The radial arms 13 are each provided with radial openings, in which are guided radially-movable pins 22, the inner ends of said pins bearing against the outer faces of the levers 14 and being slightly rounded to facilitate movement of the latter. The outer ends of the pins are threaded and screw into threaded openings formed in shoes 23 of the construction best shown in Fig. 5. Each shoe includes a flange 25, following approximately the curvature of the pulley, and at each end is a short flange 26. At the central portion of the shoe is a boss 27, having a threaded opening for the threaded portion of the pin 22, and when the latter has been screwed into place it may be firmly locked by means of a jam-nut 28. The shoe serves as a support for a pair of blocks 30, preferably formed of wood or some similar material that may be readily renewed when worn, the blocks conforming to the shape of that portion of the shoe bounded by the flanges and being held in place by small wood-screws 31.

From each of the radial arms 13 extends a pair of integral brackets 33, having openings for the passage of pins 34, the upper threaded ends of which screw into threaded openings in the base of the shoe. The lower ends of the pins carry helical compression-springs 35, that bear at one end against the lower faces of the brackets 33 and at the opposite end against adjusting-nuts 36, carried by the

lower portions of the pins. These springs serve to return the shoe to unclutching position when the collar 17 is moved outward from the pulley.

5 The inner faces of the two brackets 33 form guides for pendent lugs or flanges 40, carried by the shoe, and lateral displacement is thus guarded against. In the outer end of each of the pins is a recess 41 of non-circular
10 form for the reception of a suitable tool, which may be inserted through an opening 42, formed in the rim of the pulley, and by turning this tool the pin may be turned in order to adjust the position of the shoe, and
15 when adjusted the nut 28 is turned to lock said shoe in place.

In the operation of the device the sleeve 17 is moved in the usual manner toward the pulley, and the link 16 moves from an inclined
20 position to a position at a right angle to the axis of the shaft. This causes outward movement of the levers 14 to the position shown in Fig. 2, and the pins 22 are thrust outward, carrying with them the shoes, and
25 friction-blocks supported by the latter are pressed into engagement with the inner surface of the pulley-rim, thus clutching the latter to the shaft. Movement of the collar in the reverse direction allows the springs 35 to
30 withdraw the shoe and force the levers 14 inward in the direction of the shaft. When it becomes necessary to remove one of the shoes for repairs to the friction-block or for the renewal of the same, the lever 14 is removed
35 and the turning-tool inserted in the recess 41 at the end of the pin, the latter being turned down out of the shoe, while nut 28 is held by a similar wrench. The pins 34 are then unscrewed from the shoe, and the latter may be
40 freely removed for renewal or repair of any of the parts.

Having thus described the invention, what is claimed is—

45 1. The combination in a clutch, of a shaft, a loose pulley mounted thereon and having a perforated rib, a collar rigidly secured to the shaft, a plurality of arms projecting from the collar and provided with laterally-extended

brackets, radially-movable pins guided by the arms and provided at their outer ends
50 with tool-engaging surfaces accessible through the perforations of the pulley-rim, said pins being provided with peripheral threads, clutching-shoes having threaded openings
55 for the reception of the threaded portions of the pins and provided with lugs engaging said brackets to prevent independent turning movement of the shoes, said pins being
60 independently adjustable with relation to the shoes to which they are attached, clamping-nuts mounted on the pins for holding the shoes in adjusted position, friction-blocks carried by the shoes, and means for operating the pins.

2. The combination in a clutch, of a shaft, 65 a pulley loose on the shaft, a collar rigid with the shaft, an arm projecting from said collar and provided with a guiding-slot, an operating-lever disposed within the slot and pivoted to the arm, a radially-movable pin supported
70 by the arm and engaging the lever, said pin having a recessed outer end, a clutching-shoe having edge flanges and provided with a central boss having a threaded opening for the reception of the threaded outer end of the pin,
75 there being an opening in the pulley-rim for the insertion of a tool into the recess of said rim, a jam-nut carried by the threaded portion of the pin, brackets extending laterally
80 from the arm and provided with guiding-openings, lugs or flanges depending from the shoe and held between said brackets, pins extending through the guiding-opening of the brackets and having a threaded connection
85 with the shoes, compression-springs mounted on said pins, and nuts carried by the inner threaded ends of said pins for adjusting the stress of the springs.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in
90 the presence of two witnesses.

ROY LEON WOODARD.

Witnesses:

GEO. L. WOODARD,
F. M. STONE.