No. 815,168. PATENTED MAR. 13, 1906.

F. F. HOEHNE & A. DENZER.

FRICTION CLUTCH.

APPLICATION FILED JULY 17, 1905.

2 SHEETS—SHEET 1.

Fig. 1.

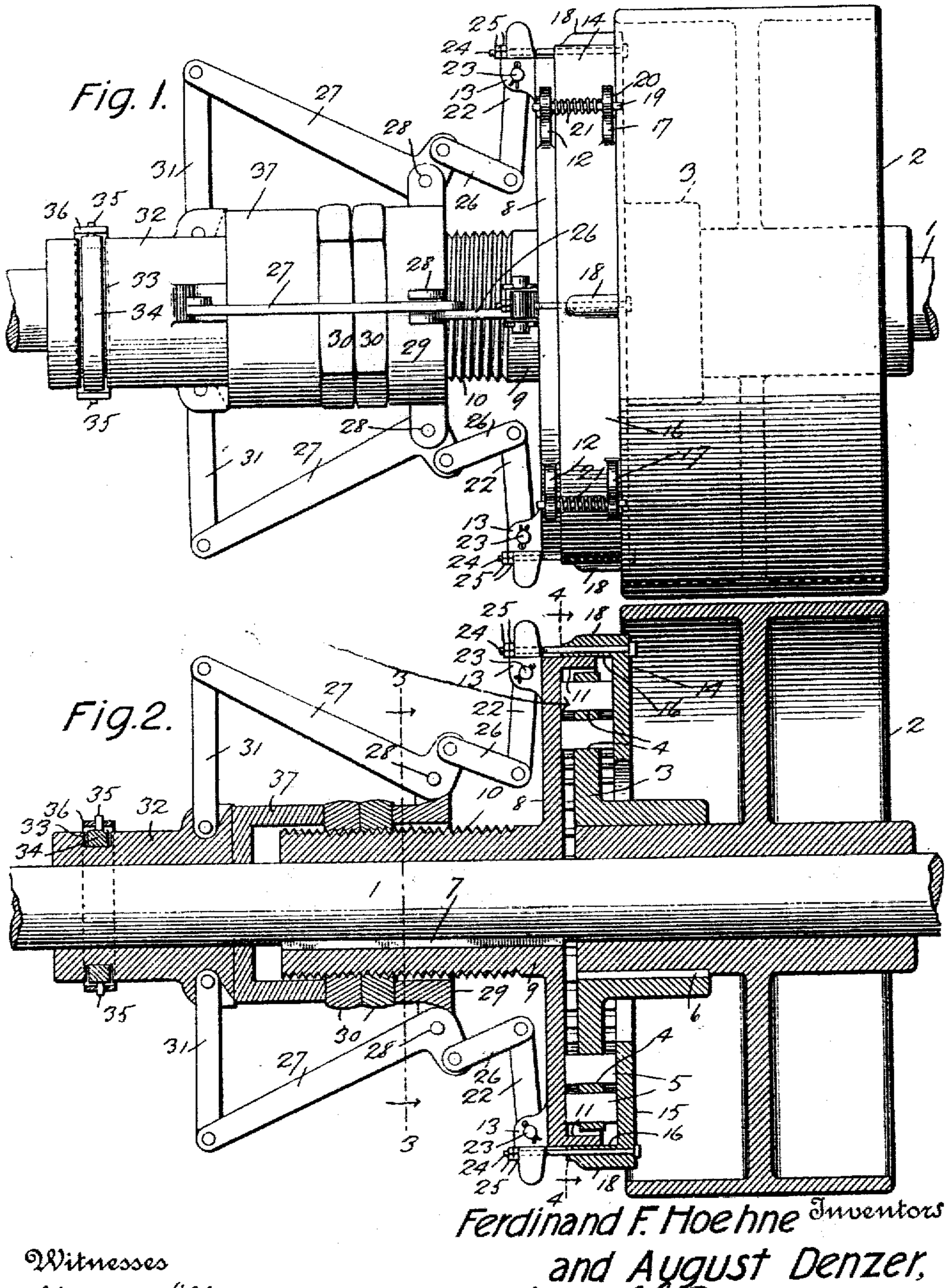

Fig. 2.

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2 SHEETS—SHEET 2.

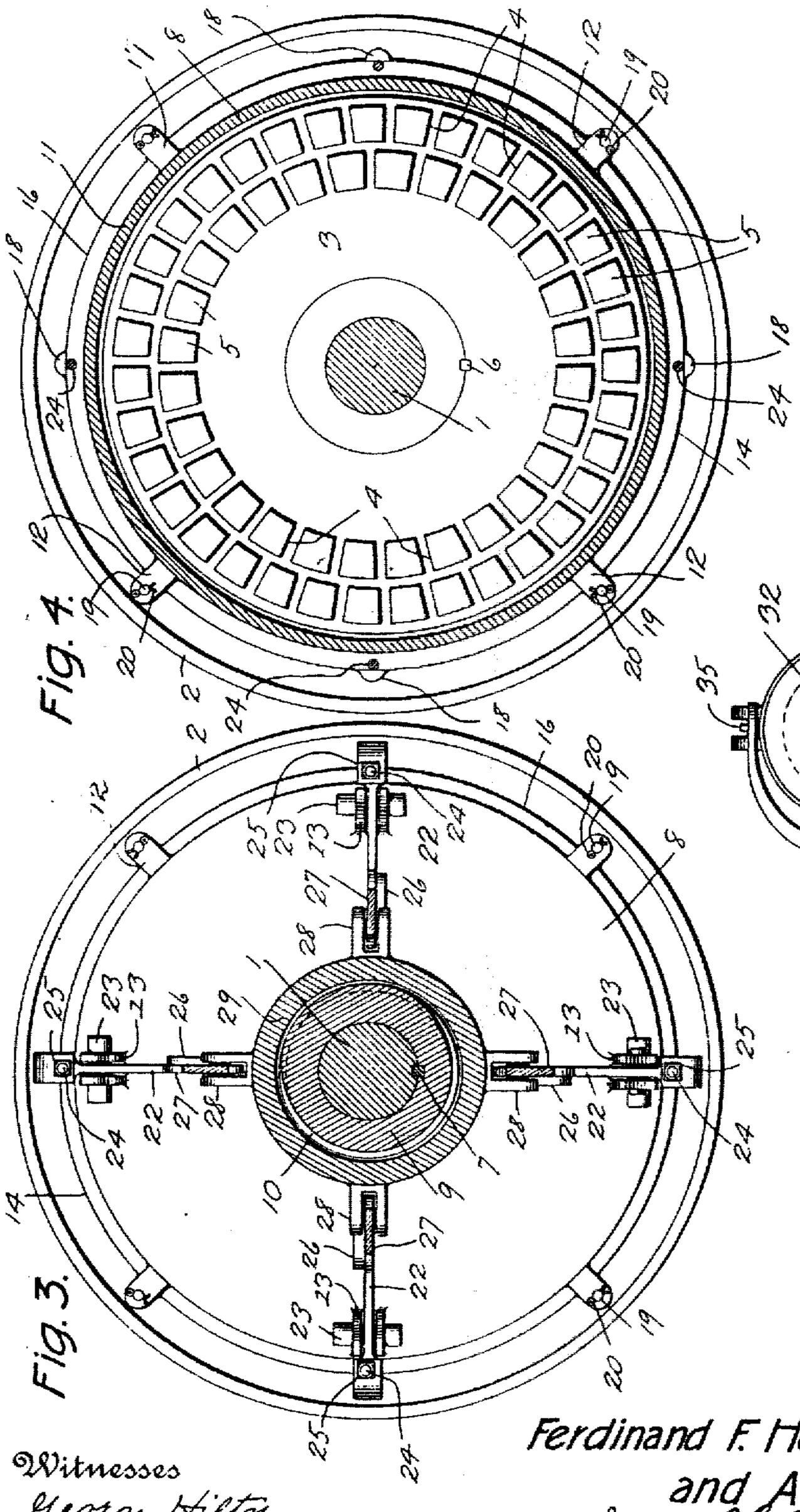

Fig. 4.

Fig. 3.

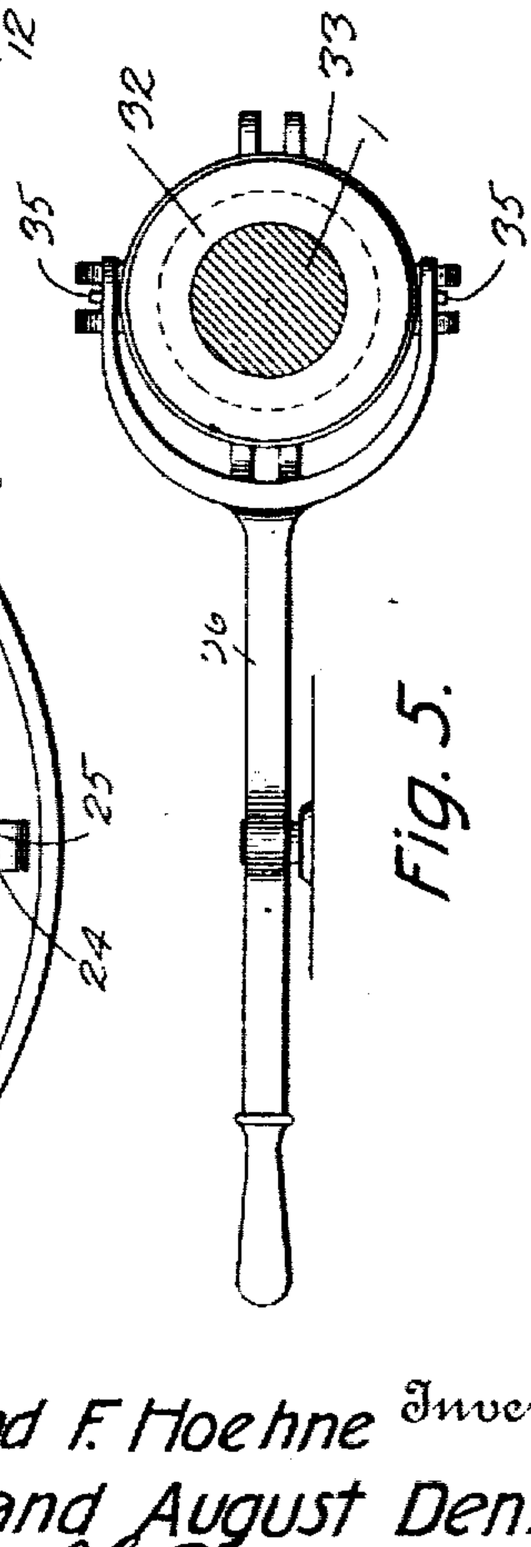

Fig. 5.

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UNITED STATES PATENT OFFICE.

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FRICTION-CLUTCH.

No. 815,168. Specification of Letters Patent. Patented March 13, 1906.

Application filed July 17, 1905. Serial No. 270,023.

To all whom it may concern:

Be it known that we, FERDINAND F. HOEHNE and AUGUST DENZER, citizens of the United States, residing at Kaukauna, in the county of Outagamie and State of Wisconsin, have invented certain new and useful Improvements in Friction-Clutches; and we do 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.

Our invention relates to improvements in friction-clutches; and it consists in the novel construction, combination, and arrangement of devices herein shown and described.

The object of the invention is to improve and simplify the construction and operation of devices of this character, and thereby render the same more powerful and efficient in use and less expensive to manufacture.

The above and other objects, which will appear as the nature of our invention is better understood, are accomplished by means of the construction illustrated in the accompanying drawings, in which—

Figure 1 is a side elevation of our improved friction-clutch. Fig. 2 is a vertical longitudinal sectional view through the same. Fig. 3 is a vertical transverse sectional view taken on the line 3 3 in Fig. 2. Fig. 4 is a similar sectional view taken on the line 4 4 in Fig. 2, and Fig. 5 is a detail view of the sliding collar.

Referring to the drawings by numeral, 1 denotes the shaft upon which is loosely mounted a pulley or similar rotary element 2. Secured to the pulley 2 is a disk 3, which projects radially and has adjacent to its periphery transversely-extending slots or openings 4, in which blocks of wood 5 or other friction elements are slidably mounted. The disk 3, as shown, is secured to the pulley 2, so as to rotate therewith, by keying its hub to the hub of the latter, as shown at 6. Keyed upon the shaft 1, as shown at 7, is a second disk 8, which projects radially and is disposed adjacent to the outer face of the disk 3. The disk 8 is formed with an extended hub 9, which is externally screw-threaded, as shown at 10, and around its periphery with a laterally-projecting annular flange 11, which projects over the periphery of the disk 3, as clearly shown in Fig. 2 of the drawings. Said disk 8 has also formed on its periphery, at suitable intervals, apertured lugs 12 and upon its outer face pairs of apertured lugs 13, which are preferably arranged midway between the lugs 12, as clearly shown in Fig. 3 of the drawings. The friction blocks or elements 5, which slide laterally in the disk 3, are adapted to be forced into frictional contact with the inner face of the disk 8, so as to lock the same to rotate together, by a ring or clamping element 14, which is slidably mounted upon the disk 8. Said ring 14 is substantially right angular in form and has its radially-extending portion 15 disposed upon the inner side of the disk 3 and its laterally-extending portion 16 overlapping the annular flange 11 upon the disk 8. Said ring 14 has formed upon its periphery apertured lugs 17 and 18, which are arranged alternately at suitable intervals, as clearly shown in Fig. 4 of the drawings. The ring 14 is slidable toward and from the disk 8 by providing guide bolts or rods 19, which are passed through the apertured lugs 12 and 17 and which are retained therein by split keys or the like 20. Surrounding the bolts or rods 19 are coil-springs 21, which are adapted to force the disk 8 and ring 14 apart and hold them in their normal or unclamped position, in which either the pulley or shaft may be rotated without imparting its motion to the other.

In order to move the ring 14 laterally so as to clamp the friction blocks or elements 5 between it and the disk 8, levers 22 are pivoted, as shown at 23, between the apertured lugs 13, and their apertured outer ends are adapted to receive bolts or rods 24, which pass through the apertured lugs 18 upon the ring 14. The outer ends of the bolts or rods 24 are screw-threaded and provided with adjusting-nuts 25, so that the ring 14 may be adjusted to regulate its clamping action when operated by the levers 22. The latter have their inner ends loosely connected by links 26 to the short ends of bell-cranks 27, which are pivoted, as shown at 28, between apertured lugs upon a collar or annular band 29. This collar 29 is adapted to slide freely upon the threaded hub 9 of the disk 8 and is adjusted longitudinally by a pair of nuts 30, which are engaged with the screw-threads 10 of said hub. The outer long arms of the bell-cranks 27 are loosely connected by links 31 to a collar or sleeve 32, which is adapted to

slide upon the shaft 1. The said collar may be shifted longitudinally in order to operate the clutch by any suitable means. As shown, the same is formed with an annular groove 33 to receive a ring 34, carrying trunnions 35, which project into said threaded apertures in the forked or bifurcated end of an operating-lever 36. The inward sliding movement of the sleeve or collar 32 is limited by a loose sleeve 37, which has one end slidably engaged with the outer end of the hub 9 and its opposite end apertured or bored to receive the shaft 1, as clearly shown in Fig. 2 of the drawings.

The construction, operation, and advantages of this invention will be readily understood from the foregoing description, taken in connection with the accompanying drawings. It will be seen that when either the shaft 1 or the pulley 2 is rotated, when the parts are in the position shown in Fig. 2 of the drawings, motion of the one will be imparted to the other owing to the frictional engagement of the disk 8 and ring 14 with the opposite ends of the sliding friction blocks or elements 5. To disconnect the shaft and pulley, the sleeve 32 is moved outwardly by the operating-lever 36, so that the outer ends of the bell-cranks 27 will be moved inwardly to cause their inner ends to swing the inner ends of the levers 22 outwardly. This movement of the levers 22 throws their outer ends toward the pulley 22, thereby releasing the ring 14 and permitting the springs 21 to move the same inwardly or out of engagement with the friction-blocks 5. By adjusting the nuts 30 upon the threaded hub 9 of the disk 8 it will be seen that the clamping action of the ring 14 upon the blocks 5 may be varied as desired to render the clutch more or less powerful.

While we have shown and described the preferred embodiment of our invention, it will be understood that we do not wish to be limited to the precise construction herein set forth, since various changes in the form, proportion, and the minor details of construction may be resorted to without departing from the principle or sacrificing any of the advantages of this invention.

Having thus described our invention, what we claim as new, and desire to secure by Letters Patent, is—

The combination of a shaft, a pulley loosely mounted thereon, a disk keyed to said pulley and formed with apertures, sliding friction blocks or elements in said apertures, a second disk keyed to said shaft and formed with a screw-threaded hub, a flanged clamping-ring, guide-rods for slidably connecting the latter to the second-mentioned disk, springs upon said rod for forcing said ring and said disk apart, threaded rods carried by said ring, levers pivoted upon the second-mentioned disk and formed with apertures to receive said rods, adjusting-nuts upon the threaded ends of said rods, a collar upon said threaded hub, adjusting-nuts upon said threaded hub to limit the movement of said collar, bell-cranks pivoted to said collar, links connecting said bell-cranks and levers, a stop-collar surrounding said shaft and said hub, a sliding sleeve upon said shaft, links connecting said sleeve and said bell-cranks, and a lever for shifting said sleeve, substantially as described.

In testimony whereof we have hereunto set our hands in presence of two subscribing witnesses.

FERDINAND F. HOEHNE.
AUGUST DENZER.

Witnesses:
C. H. L. HAMER,
S. C. GATSHEZ.