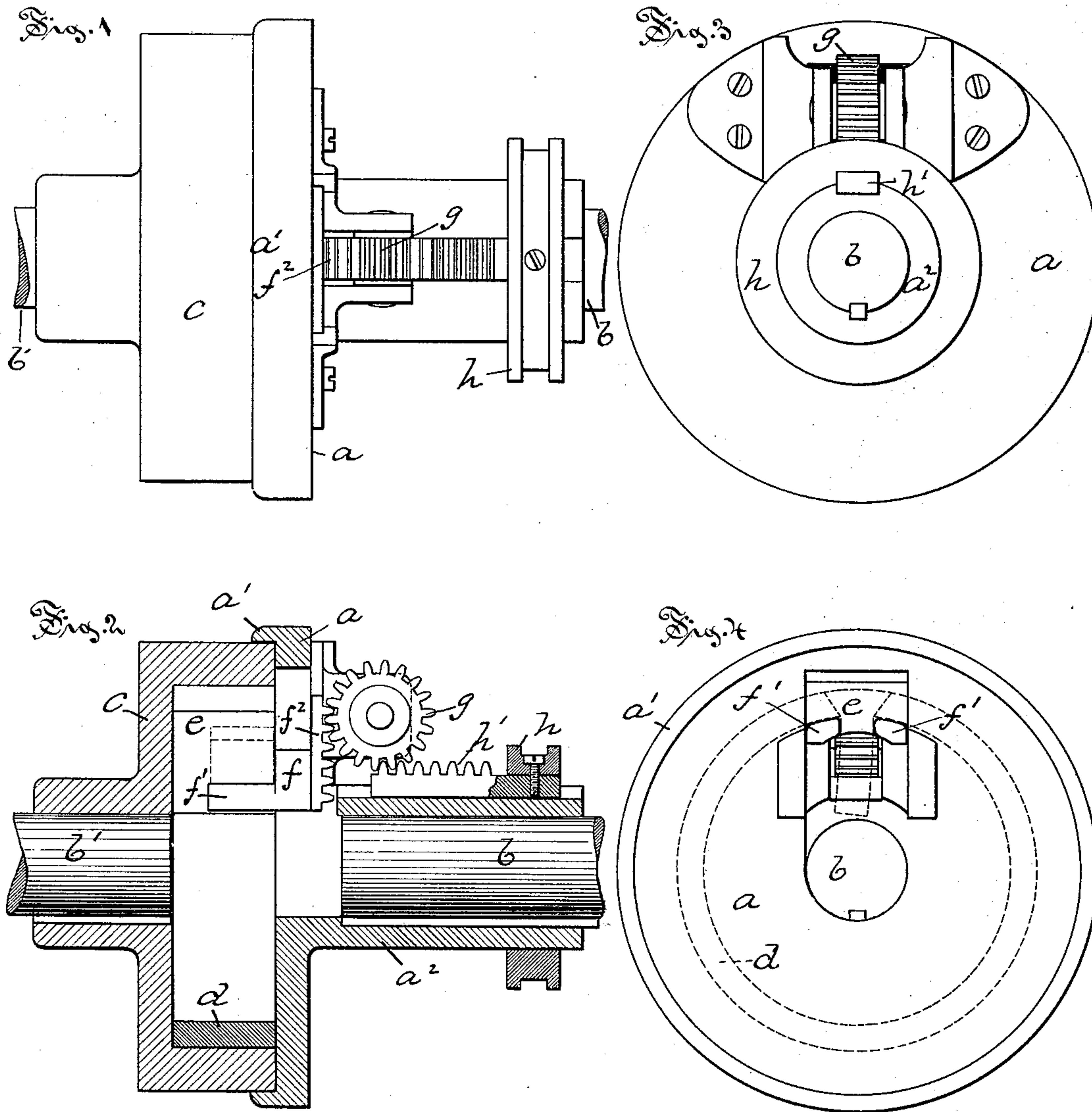


(No Model.)

W. B. TATRO.
FRICTION CLUTCH.

No. 329,866.

Patented Nov. 3, 1885.



Witnesses:
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UNITED STATES PATENT OFFICE.

WILLIAM B. TATRO, OF HARTFORD, CONNECTICUT.

FRICTION-CLUTCH.

SPECIFICATION forming part of Letters Patent No. 329,866, dated November 3, 1885.

Application filed July 13, 1885. Serial No. 171,431. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM B. TATRO, of Hartford, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Friction-Clutches, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, and to the letters of reference marked thereon, where—

10 Figure 1 is a top view of a clutch embodying my improvement shown as coupling the ends of two shafts which are in alignment and with parts clutched. Fig. 2 is a view showing part of the clutch in central vertical section and other parts in side view and in the same relative position as shown in Fig. 1. Fig. 3 is a view in elevation of the outside of one face of the clutch, showing the block-operating mechanism with the parts in the same relative position as shown in Fig. 1. Fig. 4 is a view in elevation of the reverse or inner side of the body parts of the clutch shown in Fig. 3, with the divided ring and expanding-lever shown in dotted outline, and the lever-operating block raised to unclutch the body parts.

My within-described invention relates to and is an improvement on the clutch which forms the subject-matter of the United States Letters Patent granted to me June 27, 1882, and numbered 260,253.

40 The object of my present improvement is to produce a clutch of the class described in my said patent that shall be more sensitive and gradual in its action; and to this end my invention consists in the use of a ring-operating lever having an inclined bearing-surface in its combination with the radially-adjustable lever-operating pins and in details of the device, as more particularly hereinafter described.

45 In the accompanying drawings, the letter *a* denotes one part of the clutch-body, that is fastened to the shaft *b* in any convenient manner, as by means of a key, and having on its outward edge the laterally-projecting flange *a'*, which overlaps the body part *c* of the clutch, which latter part is secured to another shaft, *b'*, which is in alignment with the shaft *b*, as by means of a key seated in the usual manner.

50 Within the body part *c*, which has a recessed or socketed face, *c'*, is fitted the divided

ring *d*, holding between its ends the lever *e*, which extends inward toward the center of the clutch. Through the bottom wall of the body part *a* there is a radial slot or opening, in which is held a block, *f*, in such manner as to allow it a movement radially only to and from the center of the clutch, and this block bears the studs or pins *f'*, that, projecting into the recess at the body part *c*, are arranged one upon each side of the lever *e*, so as to slide in contact with the opposite sides of the lever. The back of the block *f* is provided with a rack, *f''*, and the cog-wheel *g* is supported in bearings on the rear of the body part *a* in position to mesh into the rack. On the hub *a''* is fitted the sliding collar *h*, fast to which is a rod, *h'*, which slides in a groove in the hub *a''*, and has a rack also in mesh with the cog-wheel *g*.

70 In Figs. 1, 2, and 3 the collar or shifter *h* is shown as moved backward or away from the body part, on the hub of which it is supported, and the result of its movement to this position is to draw the block *f*, with the lever-operating pins, inward or toward the center of the clutch, and if this is done when the shaft *b* is rotating the lever *e* will be tilted or pushed to one side, and the ends of the divided ring sprung apart by means of this tilting of the lever. The result is that the body parts are clutched or held so as to rotate together by this backward movement or withdrawal of the shifter or collar *h* with the rack-bar *h'*, and the reverse movement of this shifter evidently causes the block to move outward to the position indicated in Fig. 4, and the parts are thereby unclutched. The sides of the lever that are engaged by the moving pins *f'* are preferably inclined out of line with the radius or the line of movement of the said pins, so that the lever begins to tilt or is pushed to one side, so as to spring the ring outward at the moment when the inward movement of the block and pins begins, and the result of this is that the grasp of the clutch is made very gradual, and the power of such grasp is aided by the action of the pins on this sloping surface of the lever as well as by the leverage gained by the removal of the point of application of the tilting-power to a point farther away from the ring.

This peculiar feature of my invention makes

the clutch extremely sensitive, gradual in its operation, and almost instantaneous, thus adapting it for the most delicate work.

The within-described improvements are clearly applicable to a clutch used on fast and loose pulleys or in the other positions where such a device is used as well as a coupling for shafts, as herein described.

I claim as my invention—

10 1. In combination, in a friction-clutch, a partible body, one part containing a divided ring with the radially-arranged lever held between the ends of the ring, and the other supporting the sliding block bearing the lever-engaging pins, all substantially as described.

15 2. In combination, in a friction-clutch, the partible body with one part bearing a divided ring and a radial lever, with one end held between the ends of the ring and the other part bearing the sliding block, and having projecting pins or studs that engage the lever, and bearing a rack in mesh with a cog-wheel journaled on the body part, and also in mesh with a rack on the sliding shifter, all substantially as described.

25 3. In combination with the operating-lever with its ends arranged to spread the divided

ring against the wall of the clutch and having the inclined bearing side, the radially-moving block bearing the lever-engaging pins or studs, all substantially as described. 30

4. In combination, in a friction-clutch of the within-described class, the body part bearing the divided ring and the radially-arranged operating-lever, and the body part bearing the reciprocating block with the lever-engaging pins or studs, and having the cheek-pieces backing up the pins along the extent of their play, all substantially as described. 35

5. In combination, in a friction-clutch, the partible body with one part having a flange overhanging the periphery of the other part, the divided ring with the radial lever having one end held between the ends of the ring, the reciprocating block bearing the lever-engaging pins or studs, the cog-wheel in mesh with the rack on the block and with the rack on the sliding shifter, and the shifter, all substantially as described. 40 45

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