

2 Sheets—Sheet 1.

No. 407,748.

Patented July 23, 1889.



Inventor,

William B. Tatro
by Simonds & Burdett,
attys

(No Model.)

2 Sheets—Sheet 2.

W. B. TATRO.
FRICTION CLUTCH.

No. 407,748.

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Fig. 3

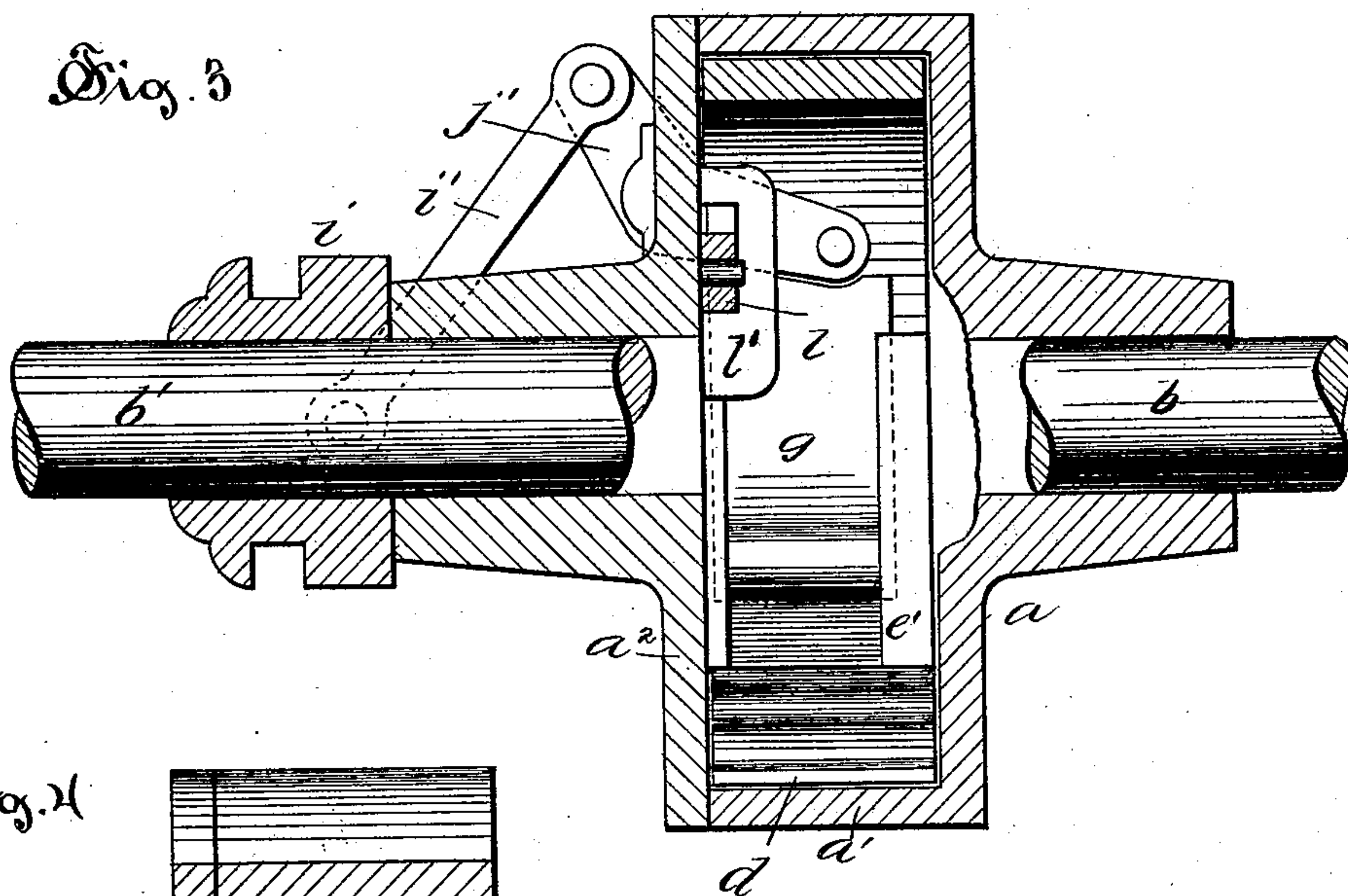


Fig. 4

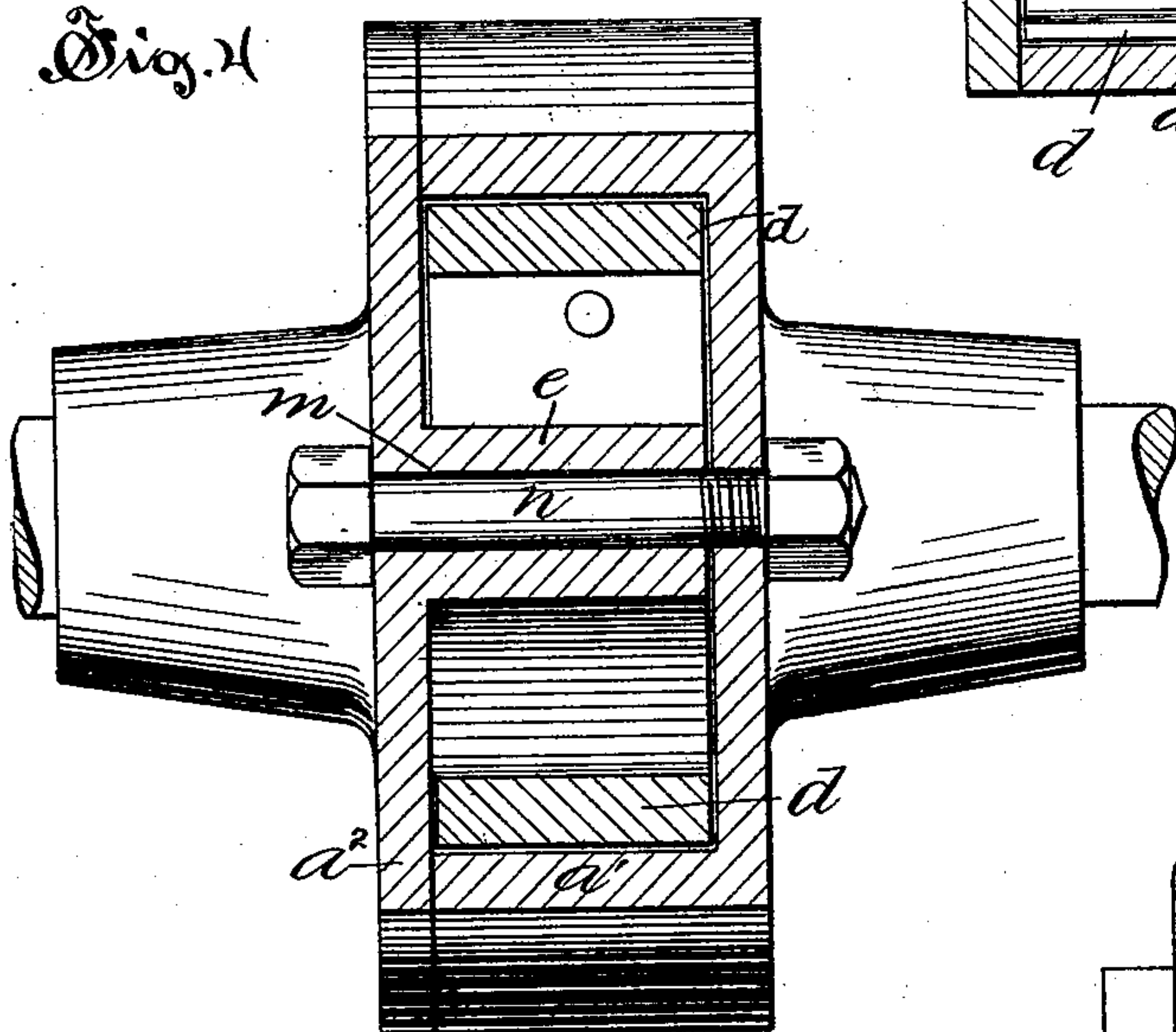
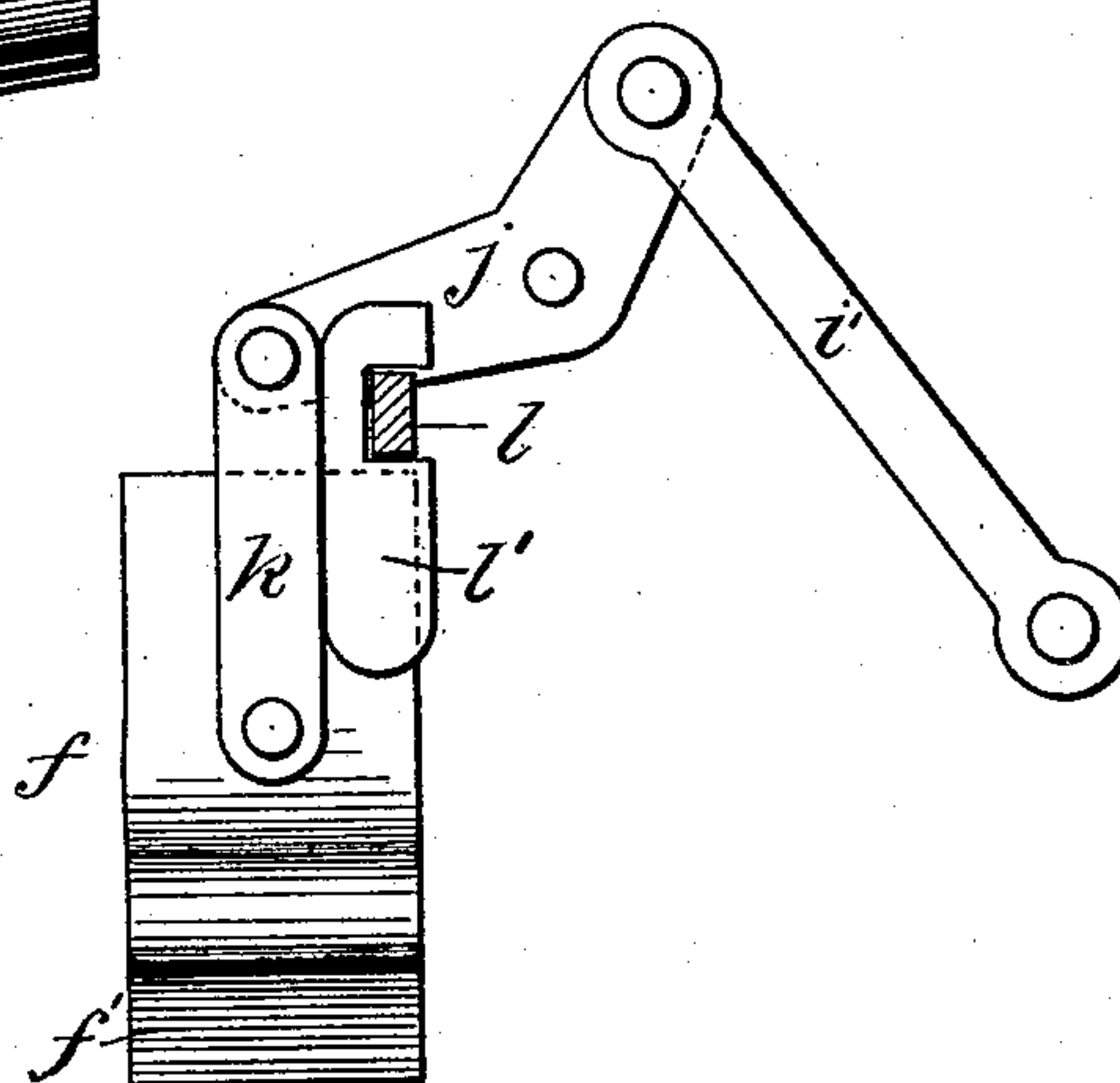


Fig. 5



Witnesses:

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UNITED STATES PATENT OFFICE.

WILLIAM B. TATRO, OF HARTFORD, CONNECTICUT, ASSIGNOR TO WILLIAM J. PIERCE, OF SAME PLACE.

FRICITION-CLUTCH.

SPECIFICATION forming part of Letters Patent No. 407,748, dated July 23, 1889.

Application filed August 27, 1888. Serial No. 283,923. (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
5 useful Improvements in Friction-Clutches, of which the following is a full, clear, and exact description, whereby any one skilled in the art can make and use the same.

The object of my present invention is to
10 produce a friction-clutch that is reversible as to the devices for expanding the divided ring and interchangeable as to the clamp-operating parts, and one in which the action of the ring-operating lever shall be positive both in
15 clamping and unclamping the parts.

To this end my invention consists in the combination of a clutch-section, an expanding ring, a tilting lever, with one end located between the ends of the ring, and the lever-
20 tilting devices.

It further consists in the combination of the clutch-section, the divided ring having a shoulder adjacent to the tilting lever, and a ring-engaging arm borne on the tilting-lever-
25 operating slide; and it further consists in the details of the several parts making up the clutch and in their combination, as more particularly hereinafter described, and pointed out in the claims.

Referring to the drawings, Figure 1 is a side view of a clutch embodying my improvements, with part of the clutch-body cut away in section to show the interior. Fig. 2 is a detail view, in cross-section, through the parts at
30 right angles to the axes of the shaft. Fig. 3 is a detail view, in central longitudinal section, through the clutch-body, showing the parts beyond. Fig. 4 is a detail side view of the clutch-body cut away in section on plane
35 denoted by line xx of Fig. 2. Fig. 5 is a detail diagram of the lever-operating slide.

In the accompanying drawings, the letter a denotes the driving clutch-section of the clutch-body that is fastened to the shaft b by
45 any convenient device, as by means of the key c , and this driving clutch-section a has a peripheral flange a' , forming a cylindrical box, within which the divided ring d and a part of the ring-operating mechanism are lo-
50 cated. The driven clutch-section a^2 is secured to a shaft b' , that is axially in align-

ment with the shaft b , and this part a^2 forms a cover or complementary part of the part a' , and it bears the slide-blocks $e e'$, the cam-
55 slide f , the stop-slide g , and other parts of the operating mechanism to expand the divided ring. The cam-slide f and the stop-slide g are supported in ways or grooves in the slide-blocks $e e'$, that are fast to the driven clutch-section a^2 , the two slides being arranged on
60 opposite sides of the shafts $b b'$ and the axis of the clutch and movable in lines that are substantially parallel. The divided ring d has the broadened ends d' , that have a socket between their adjacent faces, the said socket
65 being rounded in outline and holding between these ends of the ring the rounded and enlarged head h' of the tilting lever h . This tilting lever has a sloping face h^2 , in sliding
70 contact with which is the projecting lug f'' of the cam-slide f , so that as the latter is moved toward or away from the periphery of the clutch-body this lever will be tilted back and forth, rocking upon the end that is held be-
75 tween the ends of the divided ring.

The cam-slide f bears upon its end a projecting arm f' , that is adapted to engage the shoulder d^2 , that is formed near the tilting-lever socket in the ring d . When the lug f'' is in the position shown in Fig. 2 of the draw-
80 ings, the parts are unclamped and the ring will turn freely within the body part a , and in this position the arm f' engages the shoulder d^2 , so as to insure the prompt releasing of the grip of the expanding divided ring. The
85 arm f' engages the ring upon the inner surface of the flange a' at a point near the dividing-point, and in such a manner as to be practically in line in a direction of the circumference of the ring. When in this posi-
90 tion, the lug g' , that projects from the stop-slide g , is brought opposite the toe h^3 of the lever, and the latter is held between this lug g' on the stop g and the lug f'' on the cam-block f against any swinging or tilting move-
95 ment. When the ring is to be operated to clutch the parts, the sliding collar i is moved away from the clutch-body, tilting the bent lever j by means of the communicating rod i' , and this rocking movement of the bent lever
100 j is communicated to the cam-slide f through the medium of the link k . A lever l , pivoted

to the clutch-body part a^2 , and also pivotally connected to the bent lever j by the hooked arm l' , is connected to the stop-slide g by means of the link g' , so that as the cam-slide 5 moves away from the periphery of the clutch-body the stop-slide moves toward it on the opposite side of the tilting lever h and allows the lever to be tilted over, so as to clamp the parts. A movement of the collar i in the opposite direction serves to unclamp the ring and release the parts.

Upon the side of the shaft b' , opposite to the lever j , is arranged a similar lever j' , to which the cam-slide may be connected, the 15 cam-slide and the stop-slide being reversible in their respective guide-blocks e and e' , so as to enable the clutch-body to be adapted to shafts rotating either to the right or to the left, thus making the clutch adaptable as a right-hand or left-hand friction-clutch.

In order to provide for any accident, bolt-holes m are arranged that extend completely through both body parts, and in them the bolts n may be secured until a duplicate of 25 that part of the clutch-body broken or worn can be procured and the part renewed or replaced.

I claim as my invention—

1. In a friction-clutch, in combination, a 30 driving clutch-section, the divided ring located in said section and having the lever-socket with rounded surfaces formed between the adjacent ends of the ring, the tilting lever radially arranged and having the enlarged 35 rounded head supported between the ends of the ring, and the cam-slide having a projecting lug in sliding contact with one side of the tilting lever, all substantially as described.

2. In combination, in a friction-clutch, the 40 driving clutch-section, the driven clutch-section, the tilting lever with one end held between the ends of the divided ring and radially arranged, the divided ring having the shoulder

on the inner side and adjacent to the tilting-lever socket, and the cam-slide having a projecting lug adapted to engage the said shoulder on the divided ring, all substantially as described. 45

3. In combination, in a friction-clutch, the divided ring having the tilting-lever socket 50 with rounded surfaces formed between the adjacent ends of the ring, the tilting lever, with one end held in the lever-socket in the divided ring, the cam-slide borne in the guide-block upon one side of said tilting lever, and 55 the stop-slide borne in a guide-block upon the opposite side of said tilting lever, and the within-described slide-operating mechanism, all substantially as described.

4. In combination, in a friction-clutch, the 60 divided ring, with the lever-socket and the shoulders upon opposite sides of the socket, the guide-blocks arranged upon opposite sides of the axis of the clutch-body, the cam-slide, with its projecting arm borne in one of the 65 said guide-blocks, the stop-slide borne in the opposite block and interchangeable each with the other, the sliding collar, and the connected levers and links, whereby the sliding movement of the collar is imparted to the several 70 cam-slides, all substantially as described.

5. In a friction-clutch, in combination, the driving clutch-section provided with bolt-holes, the driven clutch-section provided with corresponding bolt-holes, the two shafts ap- 75 purtenant to said sections, respectively, the tilting lever held in the socket between the ends of the ring, the within-described tilting-lever-operating mechanism, and the bolts whereby the parts may be positively con- 80 nected, all substantially as described.

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Witnesses:

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