

J. T. Jones
Friction Driver

No. 75024

Patented March 3 1868

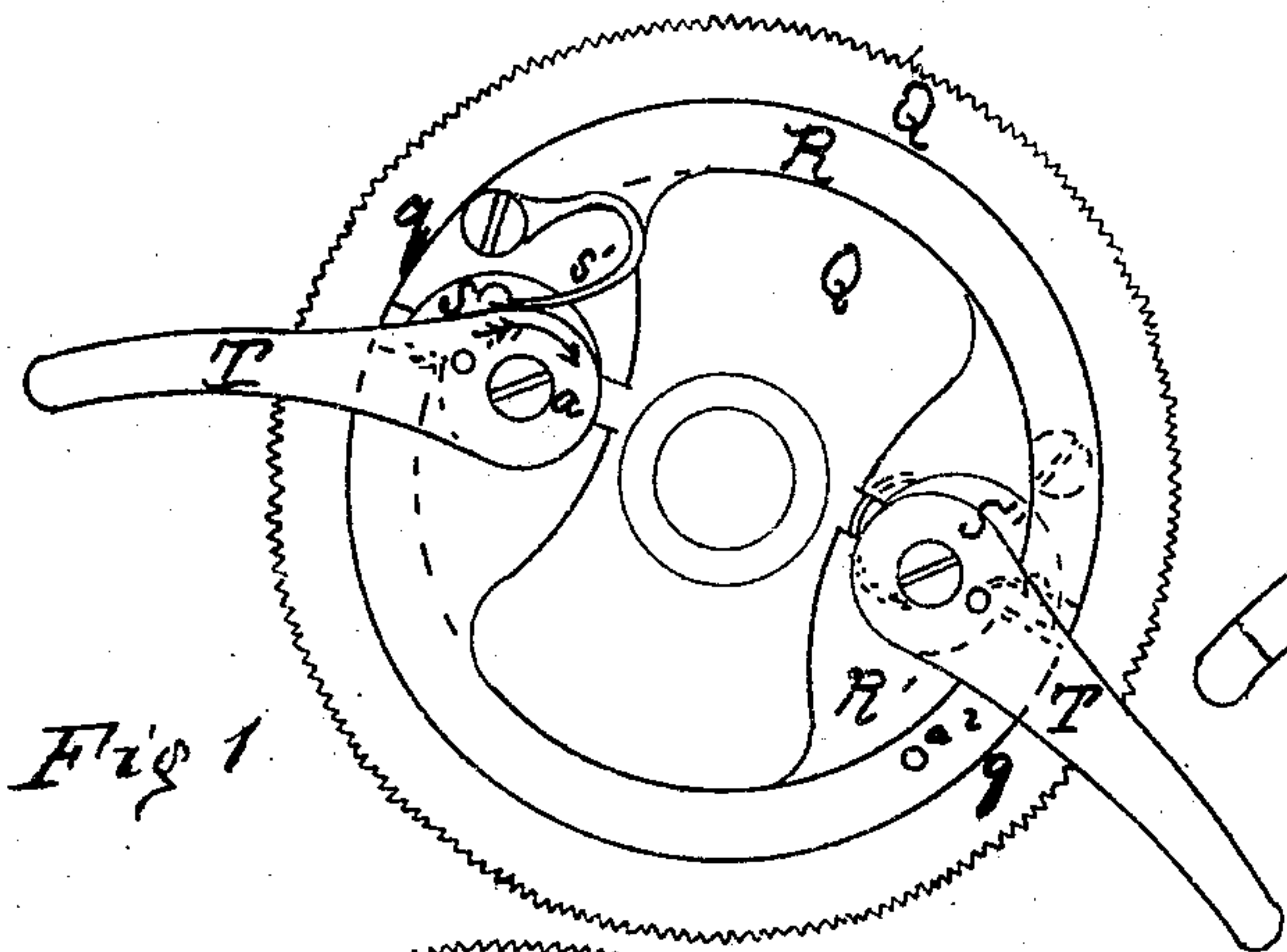


Fig 1

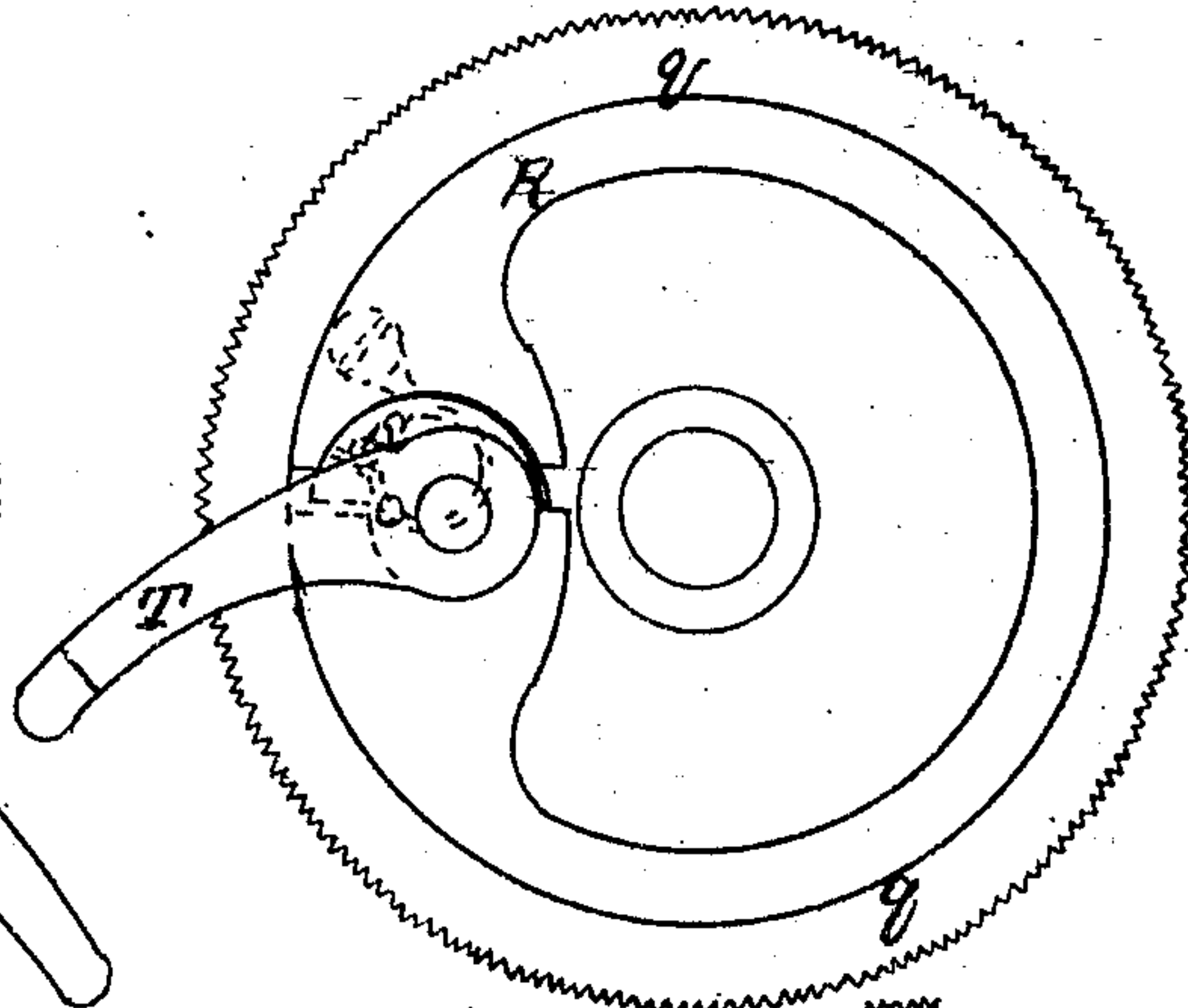


Fig. 4.

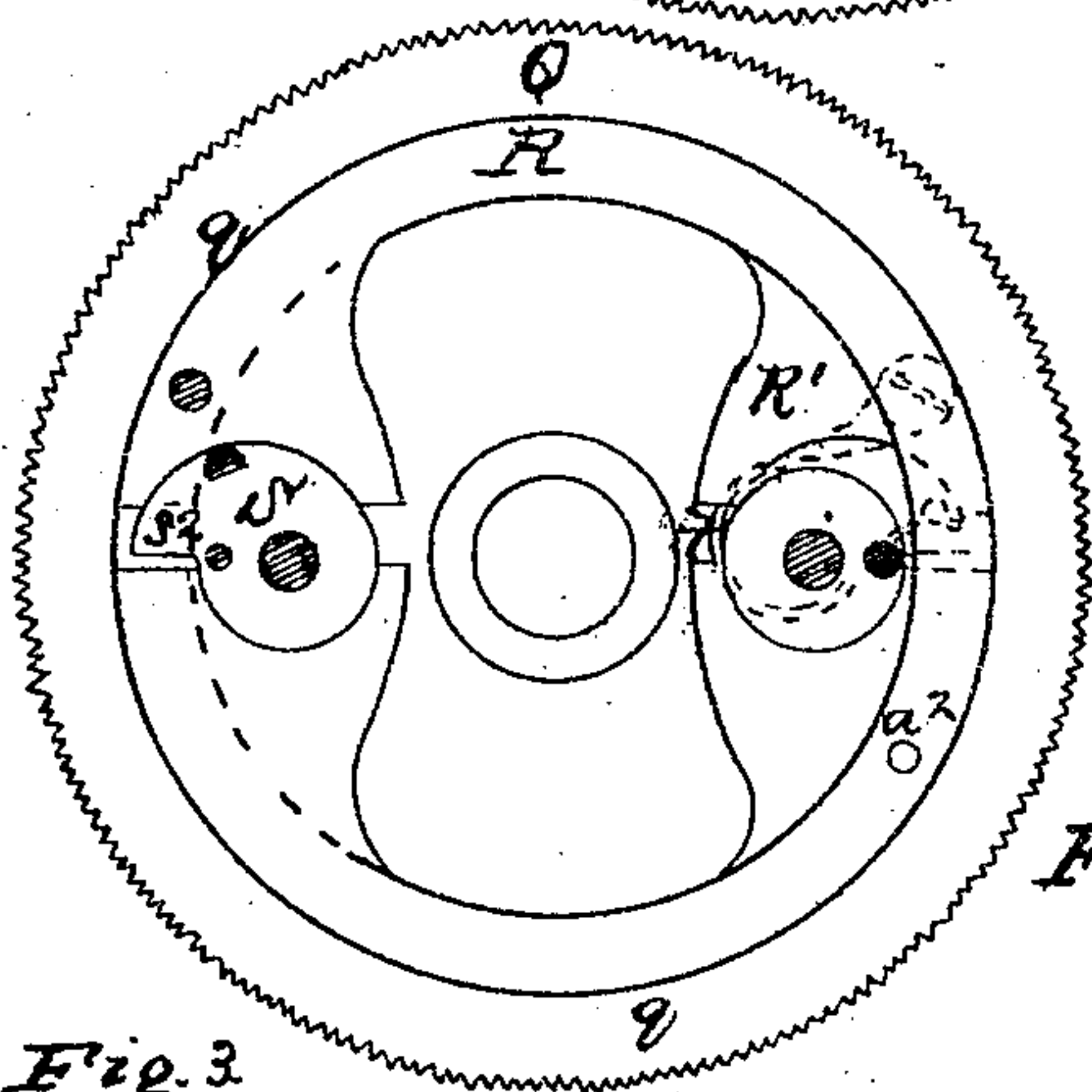


Fig. 2.

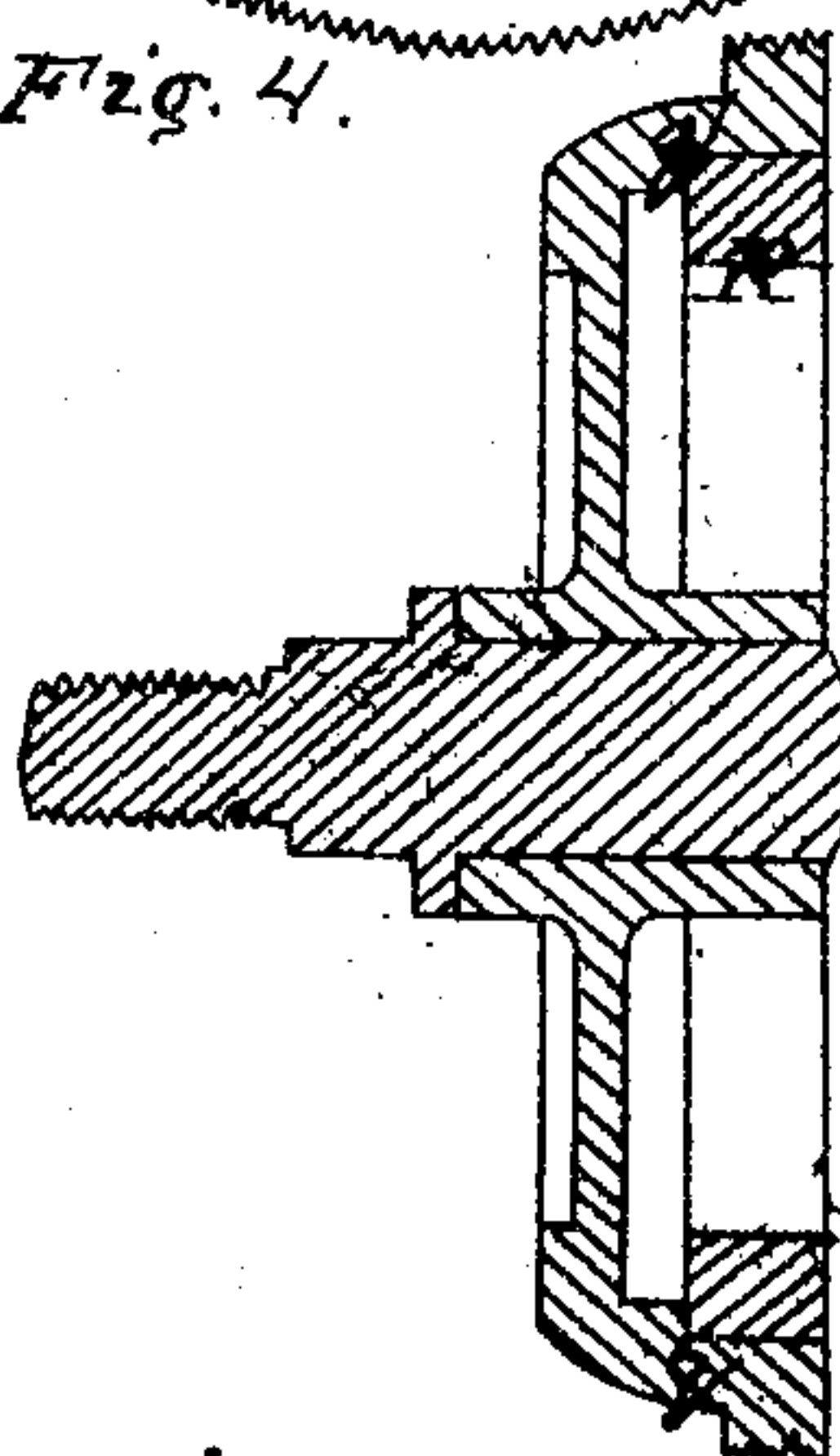


Fig. 5.

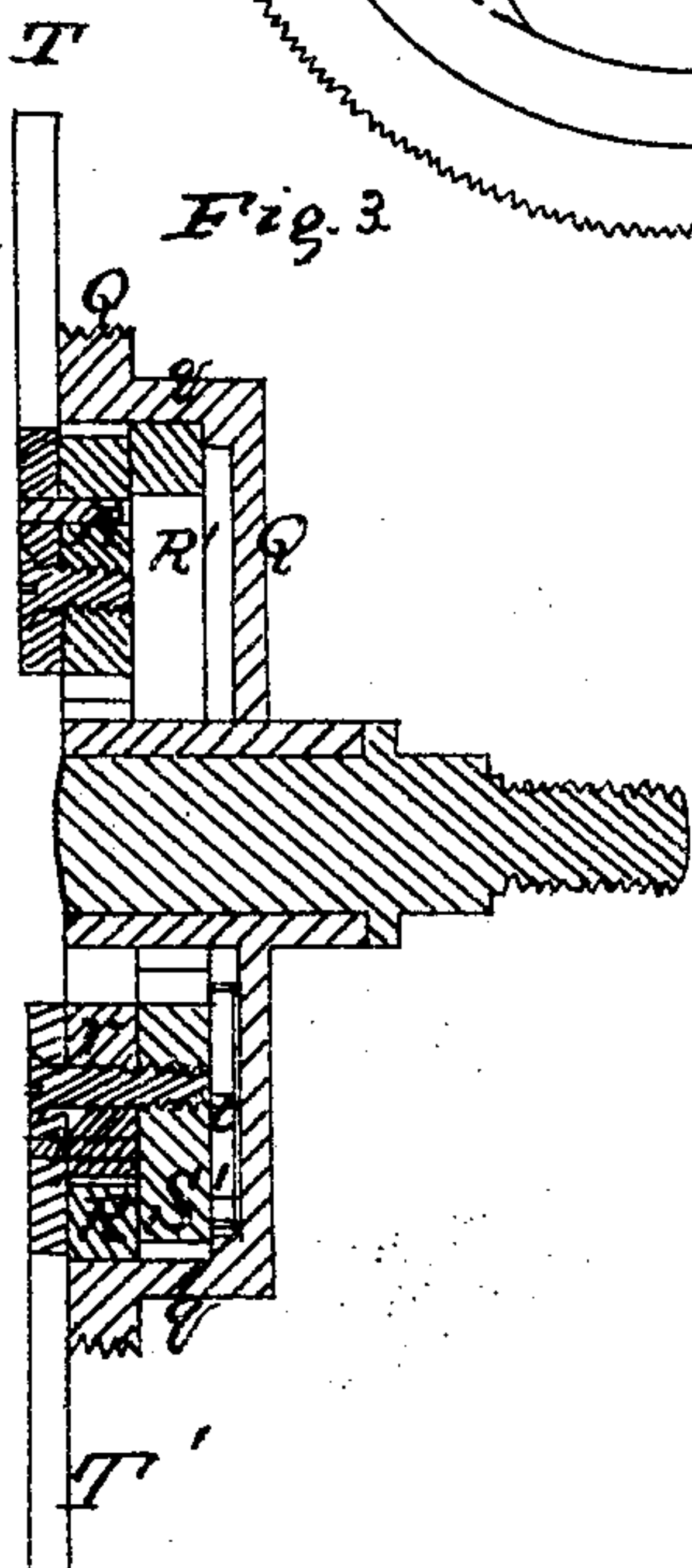


Fig. 3.

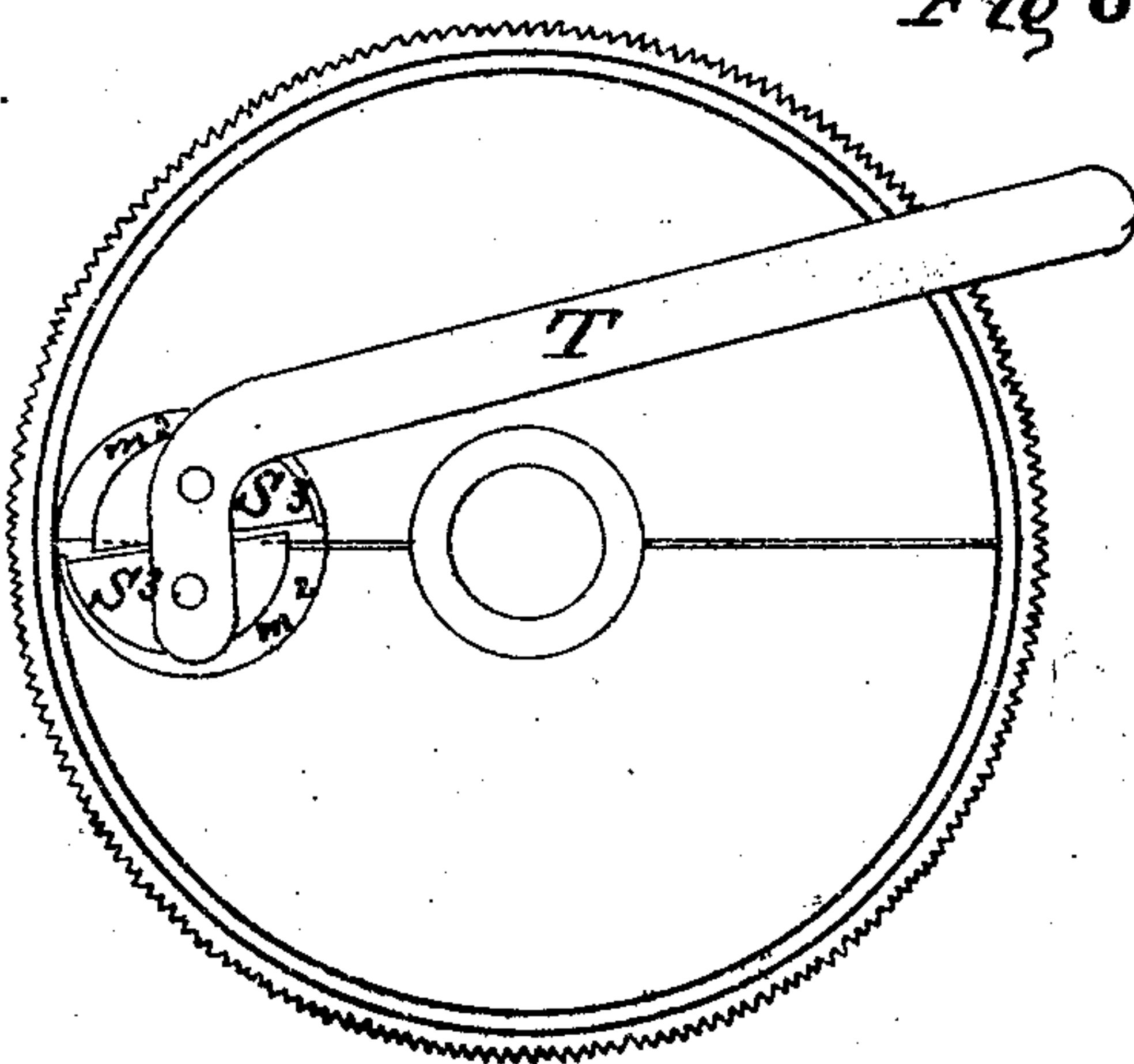


Fig 6

Witnesses
 John Raitbone & J. T. Jones
 Alfred Sheddock by his attorney
 C. S. Kemrick

UNITED STATES PATENT OFFICE.

J. T. JONES, OF NEW YORK, N. Y., ASSIGNOR TO SINGER MANUFACTURING COMPANY, OF SAME PLACE.

IMPROVEMENT IN FRICTION-DRIVERS.

Specification forming part of Letters Patent No. 75,024, dated March 3, 1868.

To all whom it may concern:

Be it known that I, JOHN THOMAS JONES, of the city, county, and State of New York, have invented certain new and useful Improvements in Friction-Drivers for Converting Reciprocating Motion into Rotary Motion; and I do hereby declare that the following is a full, clear, and exact description and specification of my said improvements.

The object of the invention is to impart a rotary motion to the feed-wheels of sewing-machines and to other instruments from a reciprocating rod or other reciprocating driver; and the invention consists, first, of the combination of a hub or rim of the instrument to be driven with a split ring and with a rocking cam, by means of which the ring is caused to grip the hub or rim when moving in one direction and to release it when moving in the opposite direction.

The invention consists, further, of the combination of the said hub or rim-split ring, and rocking cam with a lever-arm, which performs the two functions of rocking the cam on its axis (for the purpose of expanding and contracting the ring) and of imparting the reciprocating movement to the ring.

The invention consists, further, of the combination of the said hub or rim with two sets of friction split rings and rocking cams arranged to operate in alternate succession.

Some of my improvements may be used without the remainder, and in order that the invention may be fully understood I will proceed to describe the several modes in which I have contemplated the application of the principle or characteristic by which it may be distinguished from others; and I will refer to the accompanying drawings, in which—

Figure 1 represents a side view of a feed-wheel of a sewing-machine with all the said improvements applied thereto. Fig. 2 represents the same with the driving-levers removed. Fig. 3 represents a transverse section of the same. Figs. 4 and 5 represent views of a feed-wheel with the first and second parts of my invention applied to it, and Fig. 6 represents a side view of a feed-wheel with a modification of my friction driving apparatus applied to it.

The hub Q of the feed-wheel represented in Figs. 1, 2, and 3 has a hollow rim, q, within

which the friction-ring R is fitted. This ring is turned off of slightly less diameter than the interior of the rim to which it is to be applied, and is slotted through at one side, so that it may be expanded by opening the slot, and be thereby compelled to grip the rim q by frictional contact. The part of the split ring at which the slot is made is broad enough to form bearings for the rim of the cam S, which is arranged to rock in said bearings. Each bearing is circular, so that the rocking cam will turn readily in it; but the two bearings and the corresponding portions of the cam are eccentric to each other, so that when the cam is rocked in the direction indicated by the arrow α the slot is opened and the ring is expanded, while the rocking of the cam in the reverse direction to the arrow α permits the ring to contract and loose its grip upon the rim of the hub. The rocking cam is fitted with a lever-arm, T, by means of which it may be rocked, and the cam is provided with a bill, s^2 , which, coming in contact with the adjacent side of the slot when the cam has been rocked sufficiently to loose the ring, stops the rocking of the cam and causes the ring to move with the cam and with the lever T, that is fast to the cam. In order to insure the rocking of the cam for the purpose of causing the ring to grip, a spring, s' , is provided to rock the cam the moment the movement of the lever T permits, and the spring is arranged to act upon a pin projecting from the face of the cam.

As the feed-wheel represented in Figs. 1, 2, and 3 has the third part of my invention applied to it, the rim q of its hub is fitted with a second split friction-ring, R', which is provided with a rocking cam, S', and operating-lever T', such cam being reversed in position, so that the gripping and releasing are effected by moving it in directions the opposite of those in which the cam of the first ring, R, is moved for the same purposes. Hence, if the two operating-levers T T' be alternately connected with the same reciprocating instrument the hub Q of the wheel will be moved either in one direction or the other, according to which of the two levers is so connected. This result of the combination is advantageous, as it enables the direction in which the wheel is turned to be readily reversed. The second cam, S', is connected with its operating-lever T' through the

intervention of a hub, r' , and a spring, t , similar to that, s' , first described, is applied to insure the rocking of the cam S' on its axis. The operating-levers are conveniently secured to their respective cams by screws and steady-pins; and I find it expedient when two rings are used for the purpose of driving the hub in opposite directions to connect the rings by a pivot, a^2 , so that the one, while moving forward, carries the other with it.

The third part of the invention may be used with advantage in cases in which the wheel is to be driven in the same direction at each movement of the reciprocating instrument by arranging the rocking cams to effect gripping when they are both turned on their axes in the same direction, and by connecting both operating-levers simultaneously with the reciprocating instrument.

The first and third parts of the invention may be used without the second by employing an additional instrument to move the split ring, and using the lever T merely to rock the cam on its axis for gripping and releasing. The first or the first and second parts of the invention may be used without the third by employing only a single split ring with its cam and lever. A representation of such a construction is given at Figs. 4 and 5 of the drawings, wherein the parts correspond with those designated by the same letters in Figs. 1, 2, and 3.

Another mode of constructing the split friction-ring and rocking cam is represented at Fig. 6, where the ring R is split entirely through, and the cam is divided into two parts, $S^3 S^3$, each arranged to turn in an eccentric bearing, m^2 , and each connected by a pivot with the operating-lever T .

Another mode of arranging the split friction-ring and rocking cam is to arrange the split ring to surround the hub of the wheel to be driven, and to construct the cam so as to effect the grip by drawing the adjacent ends

of the split ring together. The rocking cam may be made hollow or as a shell for this purpose, and may be caused to embrace circular projections secured to the adjacent ends of the split ring.

In place of a rocking cam, a wedge operated by a lever of hollow form may be used to expand the ring, the lever being pivoted to one extremity of the ring, and the wedge being connected with the shorter arm of the lever and inserted in the slot of the ring. The rocking of the lever will then force the wedge to and fro in the slot, and the wedge will be the equivalent of the cam before described, as the cam has the form of a wedge wound partially around an axis.

The improvements thus described may be used with advantage for various purposes. Thus, for example, they may be used for the purpose of communicating motion to the rotating shaft of a sewing-machine from the treadle, in which case the shaft will be moved with certainty; and if the third part of the invention be used, or the first part be used in connection with a friction-pawl, (to prevent retrograding,) the shaft will always be started in the proper direction.

What I claim as my invention in friction driving apparatus, and desire to secure by Letters Patent, is—

1. The combination of the hub, split ring, and cam, substantially as before set forth.
2. The combination of the hub, split ring, cam, and operating-lever, substantially as before set forth.
3. The combination of the hub with two sets of split rings and cams, substantially as before set forth.

In testimony whereof I have hereto set my hand this 23d day of December, 1867.

J. T. JONES.

Witnesses:

W. L. BENNEM,
J. RATHBONE, Jr.