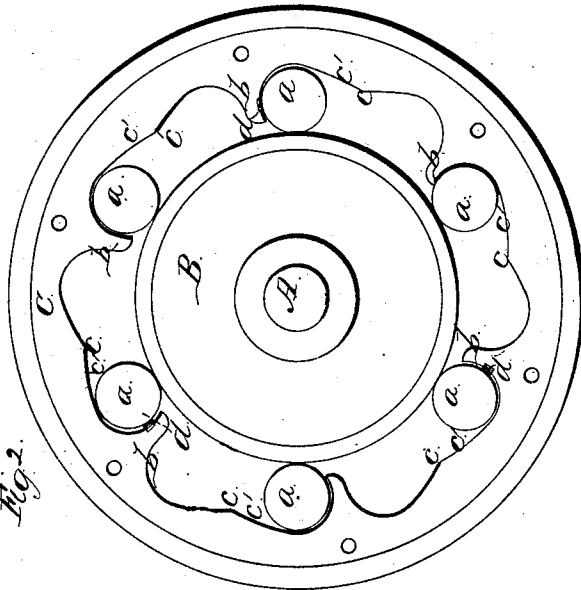


*Johnson & Birch,*

*Friction Clutch.*

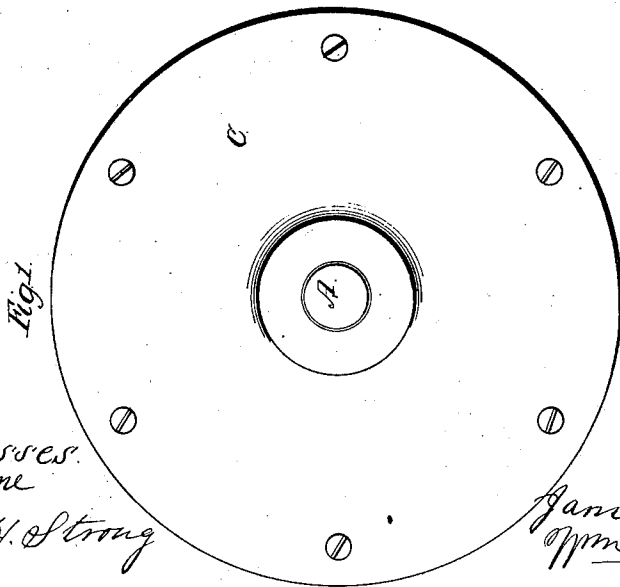
*N<sup>o</sup> 76,328.*

*Patented April, 1868.*



*Fig. 2.*

*Fig. 3.*  
↑  
*d*



*Fig. 1.*

*Witnesses.*  
*J. L. Bome*  
*Geo. H. Strong*

*Inventor*  
*James B. Johnson*  
*Oppm - H. Birch*

# United States Patent Office.

JAMES B. JOHNSON AND WILLIAM H. BIRCH, OF SAN FRANCISCO, CALIFORNIA.

Letters Patent No. 76,328, dated April 7, 1868.

## IMPROVEMENT IN FRICTION-CLUTCH.

The Schedule referred to in these Letters Patent and making part of the same.

### TO ALL WHOM IT MAY CONCERN:

Be it known that we, JAMES B. JOHNSON and WILLIAM H. BIRCH, of San Francisco, county of San Francisco, State of California, have invented an Improved Roller-Friction Clutch; and we do hereby declare the following description and accompanying drawings are sufficient to enable any person skilled in the art or science to which it most nearly appertains to make and use our said invention or improvements without further invention or experiment.

The object of our invention is to provide an improved clutch, to be used upon hoisting-apparatus, pulleys, ratchet-drills, or in any place where a free motion about the axle is desired in one direction, while it is desirable to have the whole mechanism move together in the other.

Our apparatus is designed to take the place of the pawl and ratchet, and consists of an axle, having keyed to it a pulley or roller of any desired size. Outside of this roller is a case, which encloses it, and turns loosely upon the same axle. The inner circumference of this case is formed so that a series of small rollers can be placed between the outside of the tight pulley and the inside of the case, and when the axle is turned in one direction these rollers move easily between the case and the pulley, and allow the case and its connections to remain stationary while the axle revolves, but when moved in the other direction, the rollers immediately bind on the pulley, as the inner face of the case forms inclined planes, making a narrowing space in that direction, which effectually checks and holds the two together, so that they move as one pulley.

To more fully explain our invention, reference is had to the accompanying drawings, forming part of this specification, of which—

Figure 1 is an end view.

Figure 2 is an end sectional view.

Similar letters of reference in each of the figures indicate like parts.

A is an axle having keyed to it a roller or pulley, B, so that the two move together. The case, C, encloses this pulley, and turns loosely on the axle A. The inner circumference of the case is so made as to form curved spaces, within which the rollers *a a a* turn loosely, being prevented from getting out of place by the projections *b b b*. The case projects inward slightly in the opposite direction from the roller towards the point *c*, so as to form a sort of inclined plane *c'*, making a continually narrowing space, so that, when the axle and the attached pulley B are revolved in that direction, the rollers *a a* immediately bind between the outer circumference of the pulley and the inclined plane *c'*, thus causing both it and the case to move as one, but when turned in the opposite direction, the rollers *a a* move into the spaces, so far as to allow a free motion of either the case or axle, while the other remains quiet. To insure a prompt action of the rollers *a a*, a small spring, *d*, of any convenient form, is inserted in the projection *b*, so that the rollers move easily in one direction, but bind promptly in the other.

By this apparatus we are enabled to make as short a motion as desired, as in the use of a ratchet-drill, while the combined motion in the opposite direction is secured instantly, without losing the length of a tooth, as is the case of the pawl and pinion, while it can be constructed much cheaper and more durable than any other form.

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

1. The axle A with its fast pulley B, and enclosing case C with its inclined planes *c' c'*, together with the rollers *a a a*, the whole constructed and operating substantially as and for the purpose described.
2. We claim the spring *d* attached to the projection *b*, or its equivalent, when used in the clutch for insuring a prompt action of the rollers *a a*, substantially as described.

In witness whereof, we have hereunto set our hands and seals.

JAMES B. JOHNSON. [L. s.]  
WM. H. BIRCH. [L. s.]

Witnesses:

J. L. BOONE,  
GEO. H. STRONG.