

T. SYMONDS.  
Friction-Clutches.

No. 150,103.

Patented April 21, 1874.

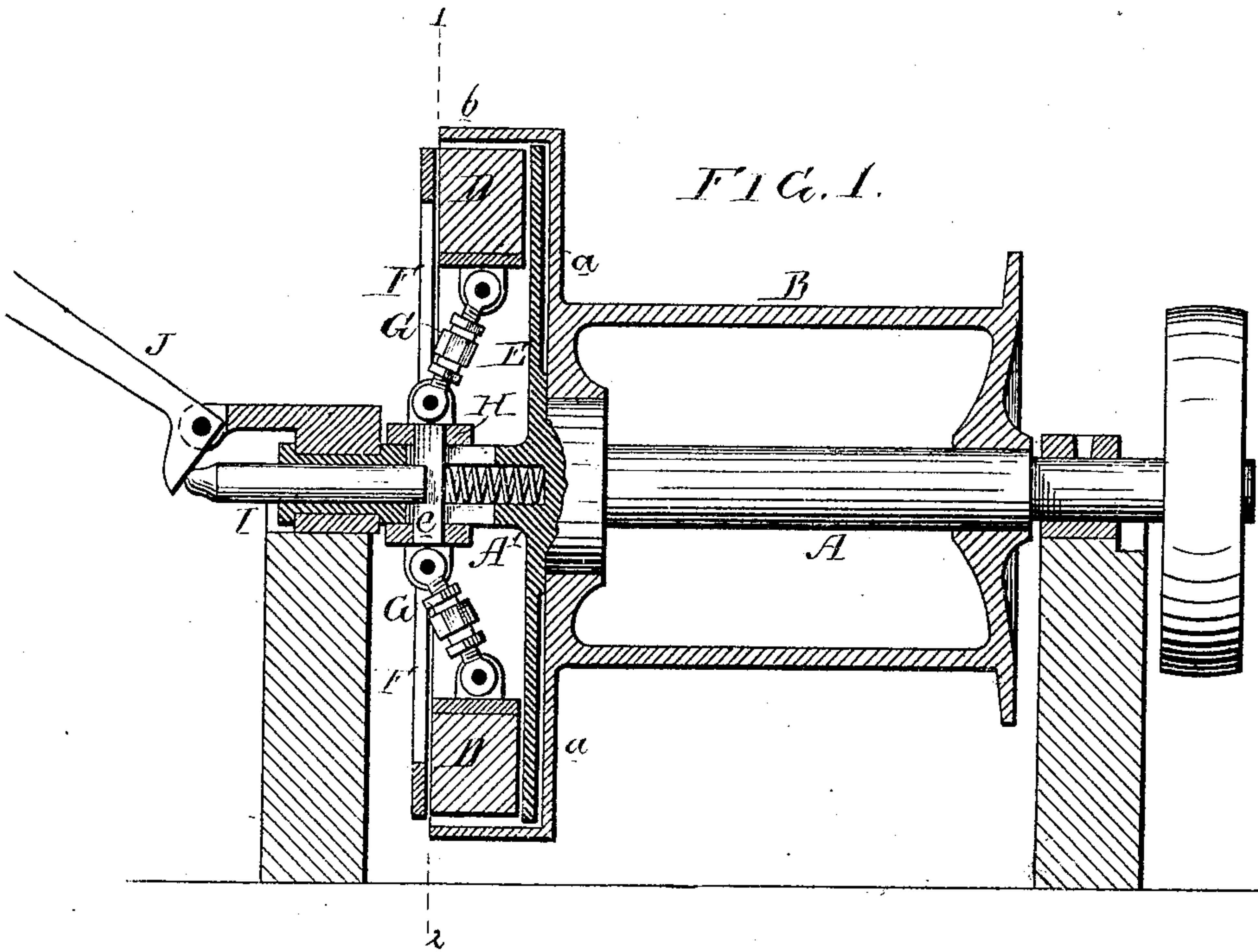


FIG. 2

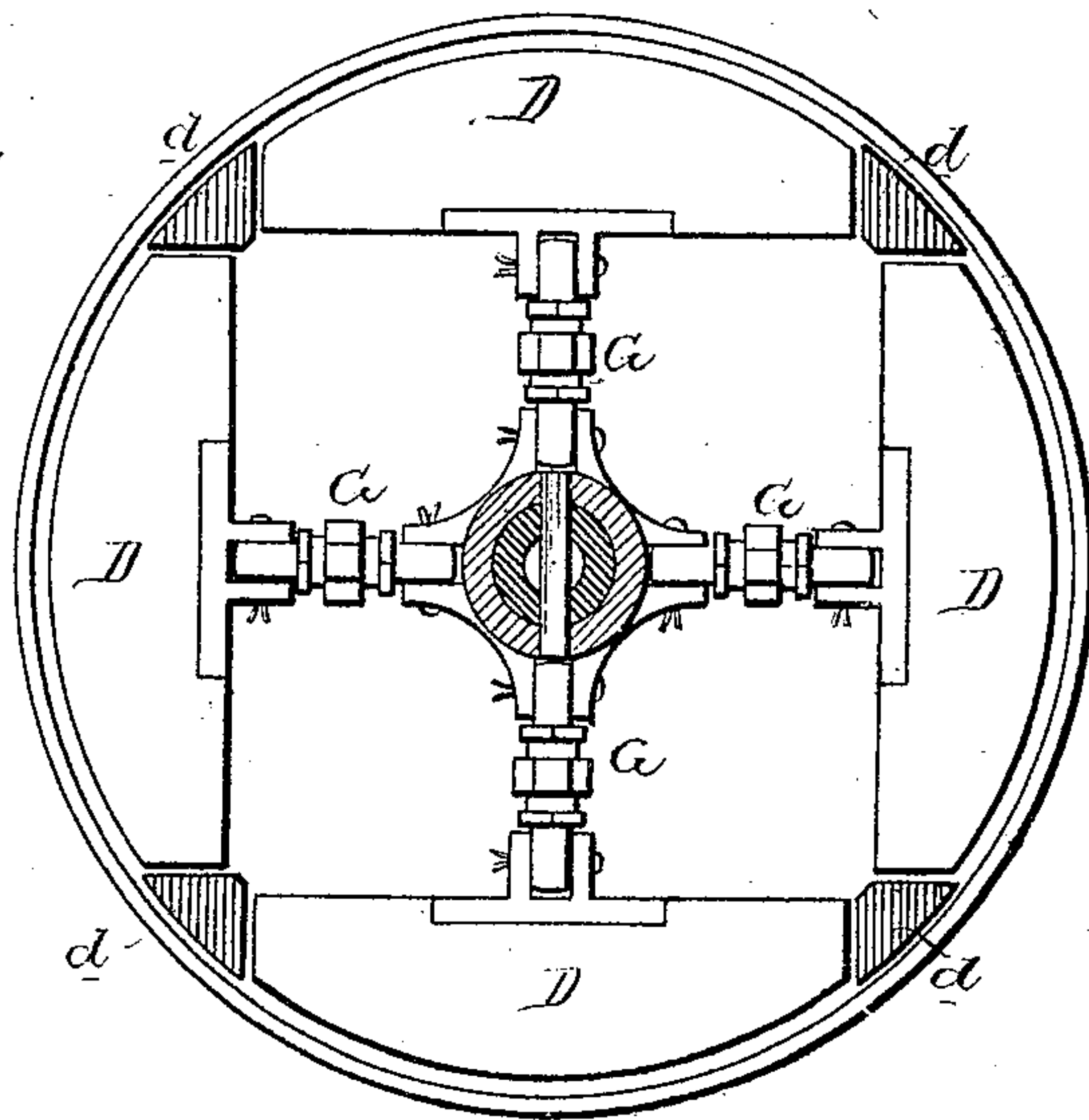


FIG. 3.

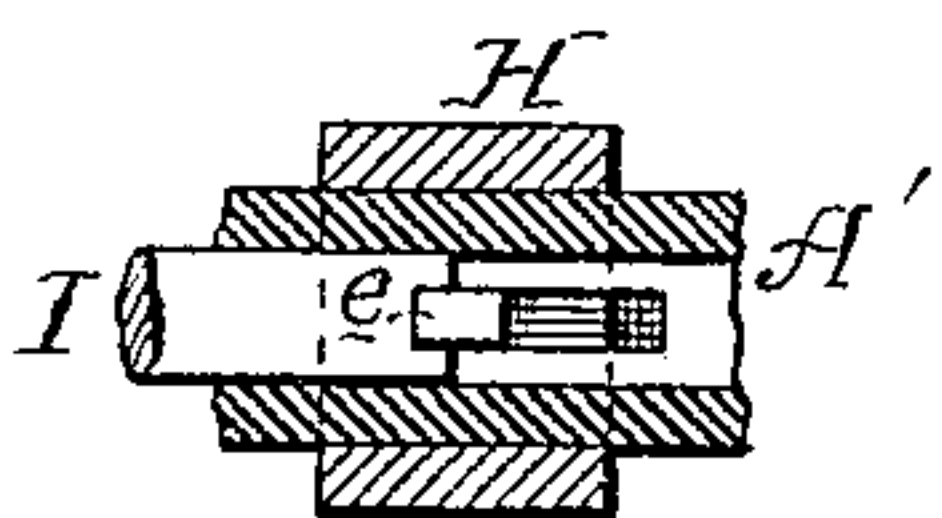
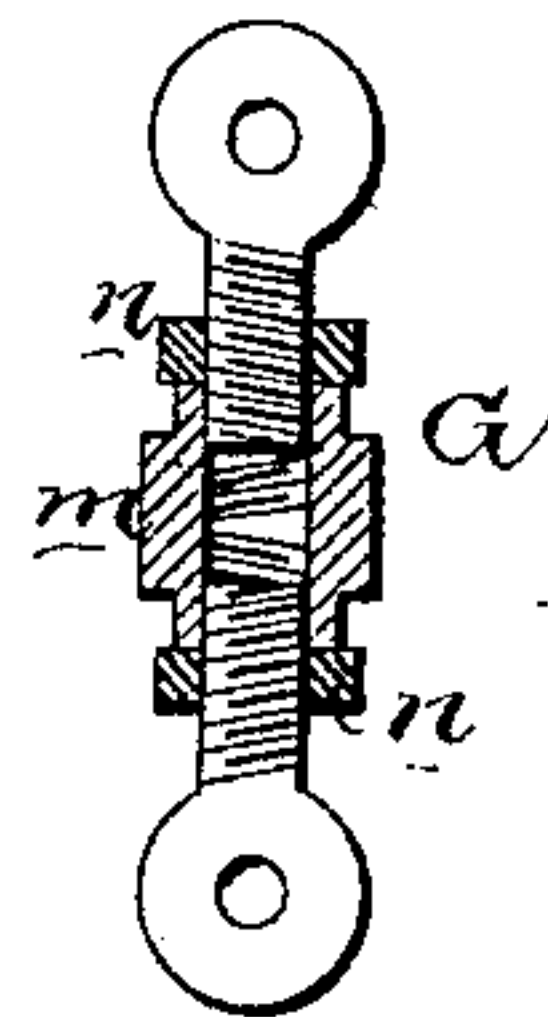


FIG. 4.



Witnesses, Harry Smith  
Thomas McLean

Thomas Symonds  
by his attys.  
Howe and Son



# UNITED STATES PATENT OFFICE.

THOMAS SYMONDS, OF CAMDEN, NEW JERSEY.

## IMPROVEMENT IN FRICTION-CLUTCHES.

Specification forming part of Letters Patent No. **150,103**, dated April 21, 1874; application filed March 10, 1874.

*To all whom it may concern:*

Be it known that I, THOMAS SYMONDS, of Camden, New Jersey, have invented an Improvement in Friction-Brakes, of which the following is a specification:

The object of my invention is the construction of a simple and effective friction-brake to be used in connection with hoisting mechanism or driving pulleys or wheels which have to be connected to or disconnected from a driving-shaft; and this object I attain in the manner which I will now proceed to describe, reference being had to the accompanying drawing, in which—

Figure 1 represents a vertical section of the friction-brake, Fig. 2 being a transverse section on the line 1 2, and Fig. 3 a detached view of one of the links.

A is the driving-shaft, on which the barrel B of hoisting mechanism is arranged to revolve freely, one end of the barrel having a disk, *a*, forming part of a flange or rim, *b*, the interior of which presents a surface adapted to brake or friction blocks D, of which there are four in the present instance, as shown in Fig. 2. These blocks are confined between a disk, E, secured to or forming part of the driving-shaft A, and a ring, F, attached to the said disk, and are guided laterally by projections *d* on the said disk, as shown in Fig. 2. Each block D is connected by a link, G, a sectional view of which is shown in Fig. 3, to a collar, H, so adapted to the tubular portion A' of the driving-shaft which projects beyond the disk E that it can slide freely thereon. A key, *e*, passes through the collar H, and through a slot in the tubular portion A' of the shaft, and within the latter is a spiral spring, against which the key bears. A pin, I, is fitted into the end of the shaft, and is slotted at the inner end, so as to embrace the key and bear against the same. (See Figs. 1 and 4.) In the present instance, a bell-crank lever, J, is hinged to one of the bearings of the driving-shaft, its short arm bearing against the end of the pin I, so that by depressing the long arm of the lever, the pin I can be forced inward. Any other suitable device may, however, be employed for operating the pin.

The shaft A, disk E, collar H, brake-blocks D, links G, and pin I all revolve together, and as long as the brake-blocks, links, and collar are in the position shown in Figs. 1 and

2, these parts must revolve independently of the barrel; but on forcing the pin I, and with it the collar H, inward, all the brake-blocks D must be necessarily forced outward and against the interior of the rim *b*, when the barrel B must necessarily revolve with the driving-shaft.

The guides *d* are important elements when viewed in connection with the collar, links, and brake-blocks, for the moment the blocks come in contact with the rim *b*, they would be displaced laterally, and the links would be subjected to violent strains but for the presence of these guides.

It will be seen, on reference to Fig. 3, that each link is composed of two parts connected together by a screw-coupling, *m*, and secured by tightening nuts *n n*, so that the length of the link may be increased or diminished at pleasure. The most delicate adjustment of the blocks, so that all may act simultaneously on the rim, may be thus accomplished through the adjustment of the links.

As a simple and effective device, through the medium of which the brake-blocks can be operated, the central pin I forms a special feature of my invention.

It will be evident that the rim *b* may be secured to or form a part of a driving-wheel or driving-pulley hung loosely to the driving-shaft, in place of the barrel B.

I claim as my invention—

1. The combination of the disk E on the driving-shaft and its guides *d* with brake-blocks D, operated through the medium of devices substantially as described, and with the rim *b* of a barrel or driving wheel or pulley hung loosely to the said shaft.

2. The sliding collar H, connected to the brake-blocks, and arranged to slide on but turn with the driving-shaft, in combination with a central pin, I, adapted to the tubular portion of the shaft, and to the key *e* of the slide, all substantially as set forth.

3. The combination of the sliding collar H, the adjustable links G, and brake-blocks D.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

THOMAS SYMONDS.

Witnesses:

WM. A. STEEL,  
HARRY SMITH.