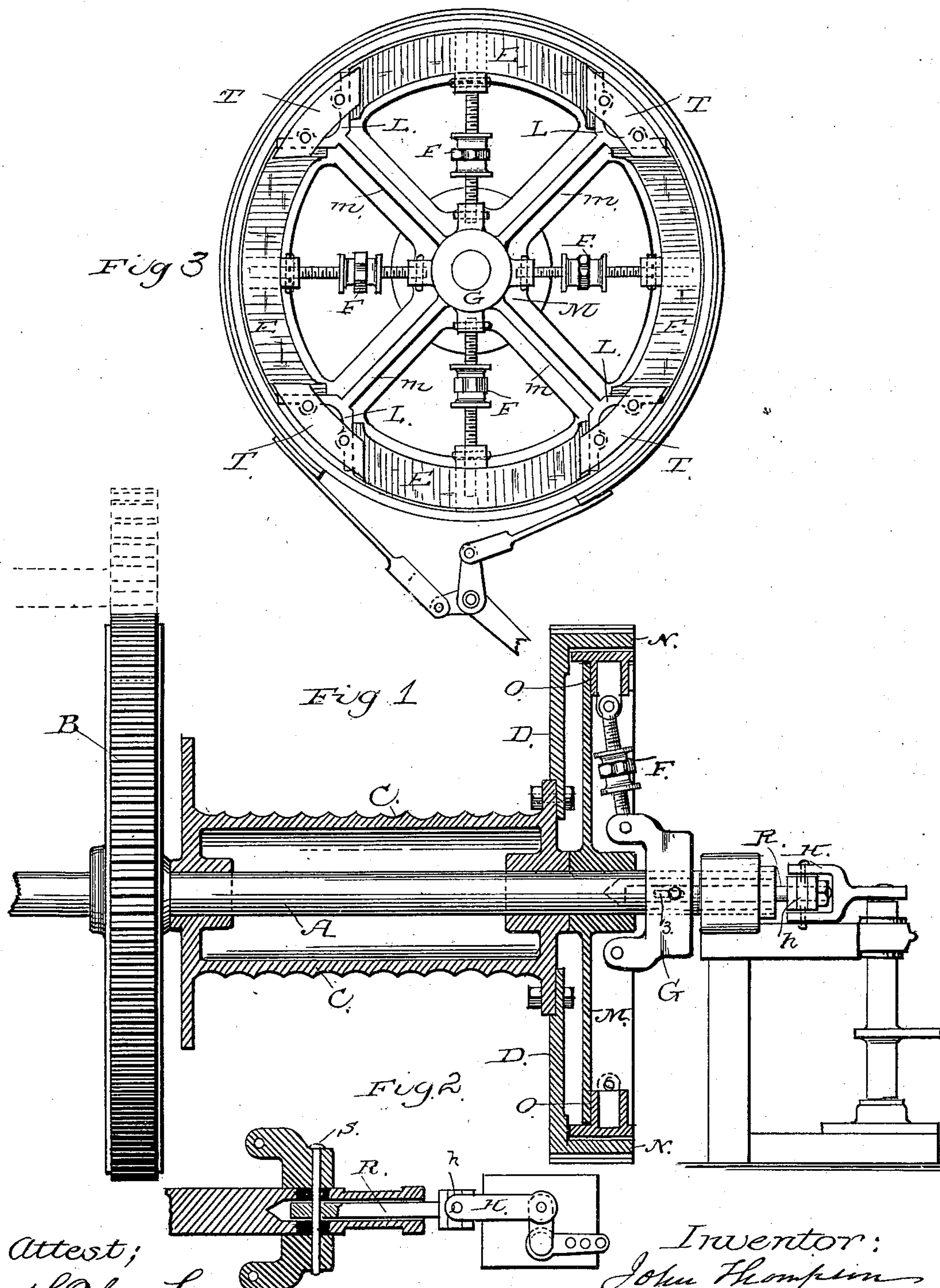


(No Model.)

J. THOMPSON.
FRICTION CLUTCH.

No. 316,200.

Patented Apr. 21, 1885.



Attest;
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UNITED STATES PATENT OFFICE.

JOHN THOMPSON, OF BUCYRUS, OHIO, ASSIGNOR TO THE BUCYRUS FOUNDRY
AND MANUFACTURING COMPANY, OF SAME PLACE.

FRICTION-CLUTCH.

SPECIFICATION forming part of Letters Patent No. 316,200, dated April 21, 1885.

Application filed September 24, 1884. (No model.)

To all whom it may concern:

Be it known that I, JOHN THOMPSON, of Bucyrus, in the county of Crawford and State of Ohio, have invented a new and useful Improvement in Friction-Clutches; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 represents the side elevation of a friction-clutch with my improvements attached. Fig. 2 is a horizontal section through the hollow shaft and clutch-head. Fig. 3 is an end view of the friction device.

The object of my invention is to secure a device for hoisting and swinging purposes at once simple in its construction and efficient in its working. That class of hoisting and swinging appliances in which the wheel or belt runs loose on the shaft and the hub is necessarily short is open to the fatal objection that in a short time it develops a large amount of lost motion, and where gearing is used it soon begins to oscillate on the shaft and does not present a true surface at the pitch-line. In my device the gear-wheel is keyed or pressed tight on the shaft, and the drum or drums run loose on the shaft until the extension-jaws come in contact with the friction-surface, when it rotates with the shaft. The segments are held in position by the turn-buckles and by guides formed by the castings, while the bearing-surfaces are on the outside ends. These segments, with the supporting-castings, are secured fast to the shaft. By this arrangement the turn-buckles are rendered more easy of access for adjustment.

Referring to the drawings, the clutch mechanism is arranged on the shaft with spur-wheel and drum to perform the act of hoisting. I have not considered it necessary to illustrate the arrangement of drums, &c., for swinging, but will describe that operation farther on.

The clutch mechanism for operating the drum so as to perform the act of hoisting is carried out as follows: A pinion on the driving-shaft, (not shown,) said driving-shaft being operated by the engines in the usual manner, engages the spur-wheel B on the shaft A, this shaft being supported by bracketed bearings, and the said spur-wheel being fastened

tightly on the shaft A. Revolving loosely on shaft A is the drum C, to which is firmly bolted the annular addition D, with projecting flange or housing N. As the shaft A revolves in its bearings it carries with it not only the spur-wheel B, but the casting M, which is attached to the shaft A. The casting M divides from its center into four arms, *m m m m*, which are provided on their outer faces with raised ribs terminating in raised angle-pieces L. These angle-pieces L have on their outside surfaces guards T T T T, which hold the friction-shoes E E E E in place and act with the back of the casting as guides, on which the friction-shoes E E E E move back and forth. These movable friction-shoes E E E E, which may have on their outside surfaces frictional linings, which linings may preferably be made of vulcanized fiber, are pivoted to the ends of the turn-buckles F F F F, which are in their turn pivoted to the movable clutch-head G. The movable clutch-head, as shown in Fig. 2, has a longitudinal movement on the shaft A, but rotates with it.

The manner of operating the clutch-head is as follows: The shaft A is bored out to the requisite depth and size, and at the necessary distance from the end a slot, 3, is cut from the outside into this hole. A rod, R, is then inserted, which is secured to the clutch-head by a bolt or key, S, which moves back and forth in the slot cut in the shaft, allowing the clutch-head to move longitudinally. Pivoted to the other end of this rod R is a yoke, H, with a loose collar, *h*, which is secured to its place on the rod by collars and nuts, which allow the rod to rotate freely with the shaft A, but prevent its longitudinal motion except as the yoke is moved by the standard and rocker-arms attached.

The mode of applying the friction is as follows: When the rod R is moved forward in the shaft A, the clutch-head G attached is also thrown forward, straightening out the turn-buckles F F F F and forcing the friction-shoes E E E E, working in the guides O O O O, against the inner periphery of the rim or housing N. An even bearing on the friction-surface N being thus obtained, the annular addition D revolves with the shaft A, carrying with it the drum, to which it is attached. The chain is

wound around the drum and the act of hoisting is performed.

To reverse the process, the rod R and the clutch-head G are moved back in the shaft, the pressure of the friction-shoes E E E E on the friction-surface N is relieved, and the drum C and addition D revolve loose on the shaft, as before.

It is evident that the annular addition D may be either bolted onto the drum or be cast solid with it.

The act of hoisting having been illustrated and explained, it will be seen that the matter of swinging is simply a question of arrangement of drums, shafting, &c., and that my friction-clutch is attached to the swinging drums in substantially the same way as to the hoisting-drum and operates in the same manner.

To perform the act of swinging, I attach a spur-wheel tightly to the shaft, (said shaft being operated from the engines in the usual manner,) and on this shaft place two drums revolving loosely. Each of these drums is provided with my friction-clutch, as before described, and has a place on its outer periphery for a friction-belt, if desired. By throwing in the friction-clutch on one or the other of these drums the chain or rope is wound around the drum and the act of swinging is performed. It is evident that as the chain or rope is being wound around one drum the other is releasing its chain or rope. It can readily be seen that though I have here specified my invention as applicable to hoisting and swinging purposes, it can be and is intended to be used wherever a chain or rope is

wound around a drum by machinery for any purpose whatever.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is —

1. An improvement in devices for winding purposes, consisting of spur-wheel B, secured to shaft A, and drum C, running loose upon said shaft and provided with addition D, in combination with the casting M, provided with arms *m*, angle-pieces L, guides T, and shoes E, working between the guides, substantially as and for the purpose set forth.

2. The drum C, having the addition D, provided with the housing N, in combination with the shoes E, castings M, provided with the arms *m*, and angle-pieces L, formed therewith, turn-buckles F, and the clutch-head G, substantially as and for the purpose herein specified.

3. The drum C, having the addition D, provided with the housing N, in combination with the shoes E, castings M, provided with the arms *m*, and the angle-pieces L, turn-buckles F, clutch-head G, slotted shaft A, and suitable mechanism for operating the same, substantially as herein described, and for the purpose set forth.

4. The casting M, provided with the arms *m*, and angle-pieces L, in combination with the guides T, turn-buckles F, and clutch-head G, all constructed to operate substantially as and for the purpose set forth.

JOHN THOMPSON.

Witnesses:

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JACOB SCROGGS.