

(No Model.)

2 Sheets—Sheet 1.

H. B. LARZELERE.

HOISTING APPARATUS.

No. 281,528.

Patented July 17, 1883.

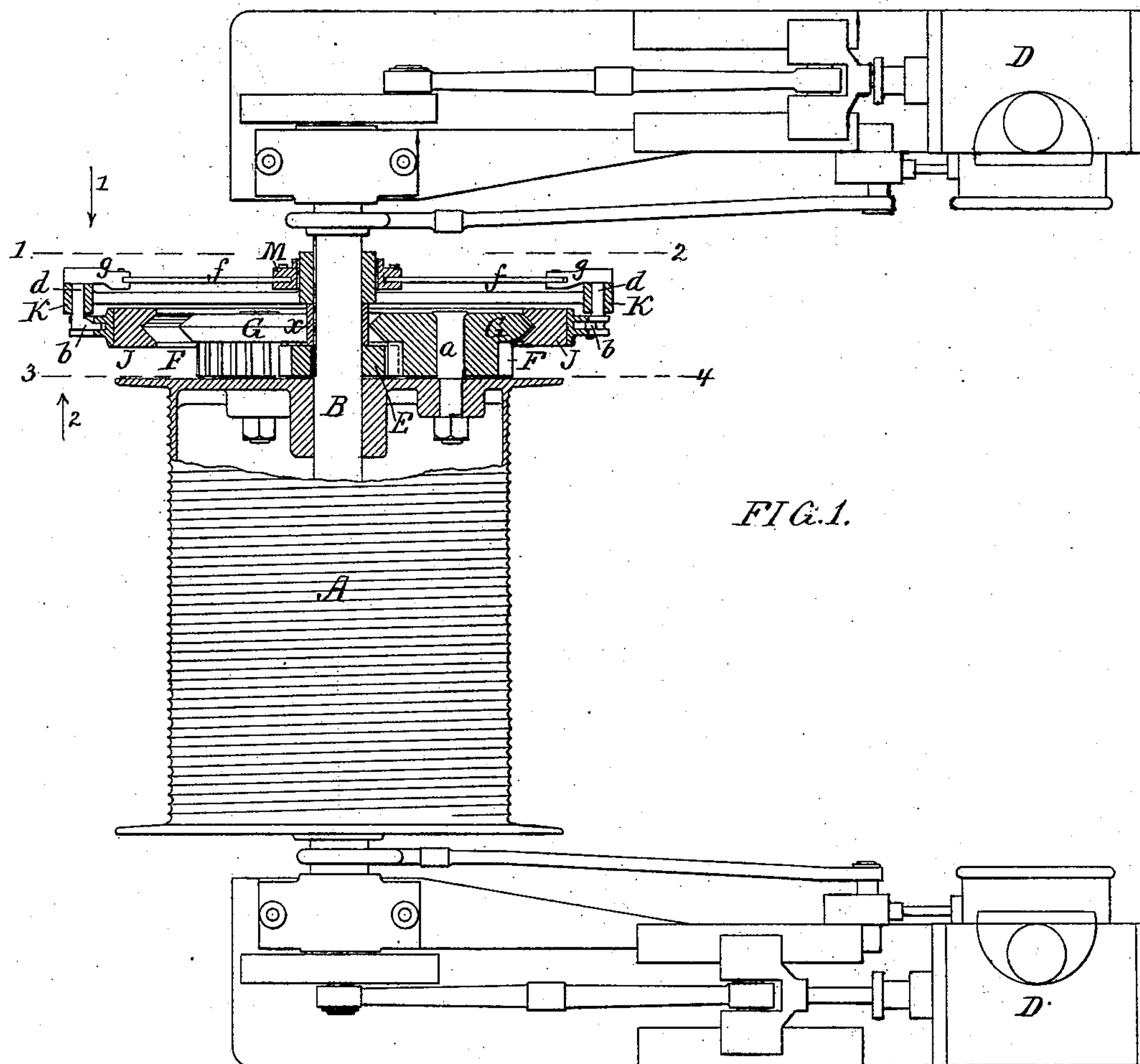


FIG. 1.

WITNESSES:

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Harry L. Achenfeller

INVENTOR:

Henry B. Larzelere
by his Attorneys
Howson & Son

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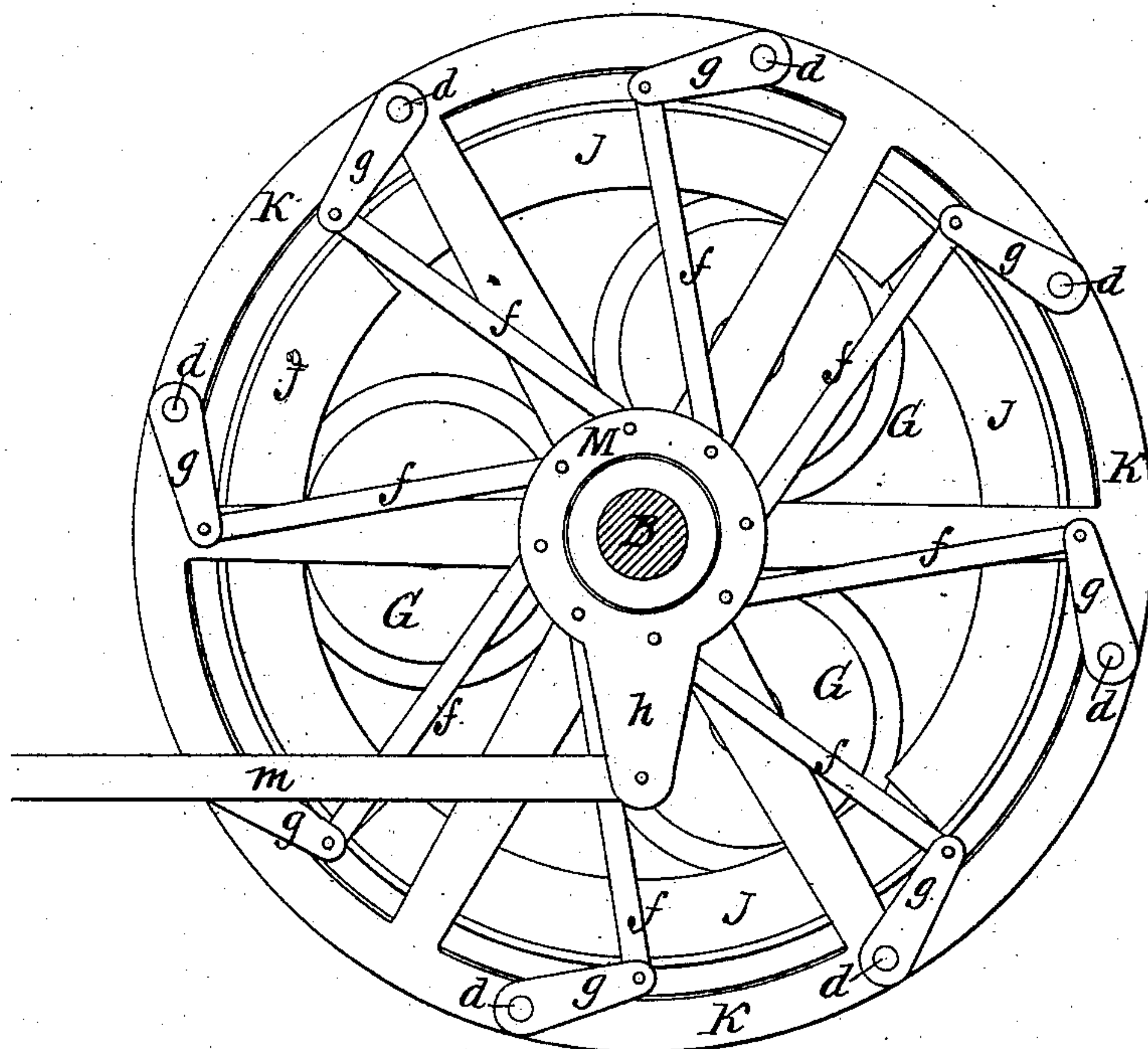


FIG. 2.

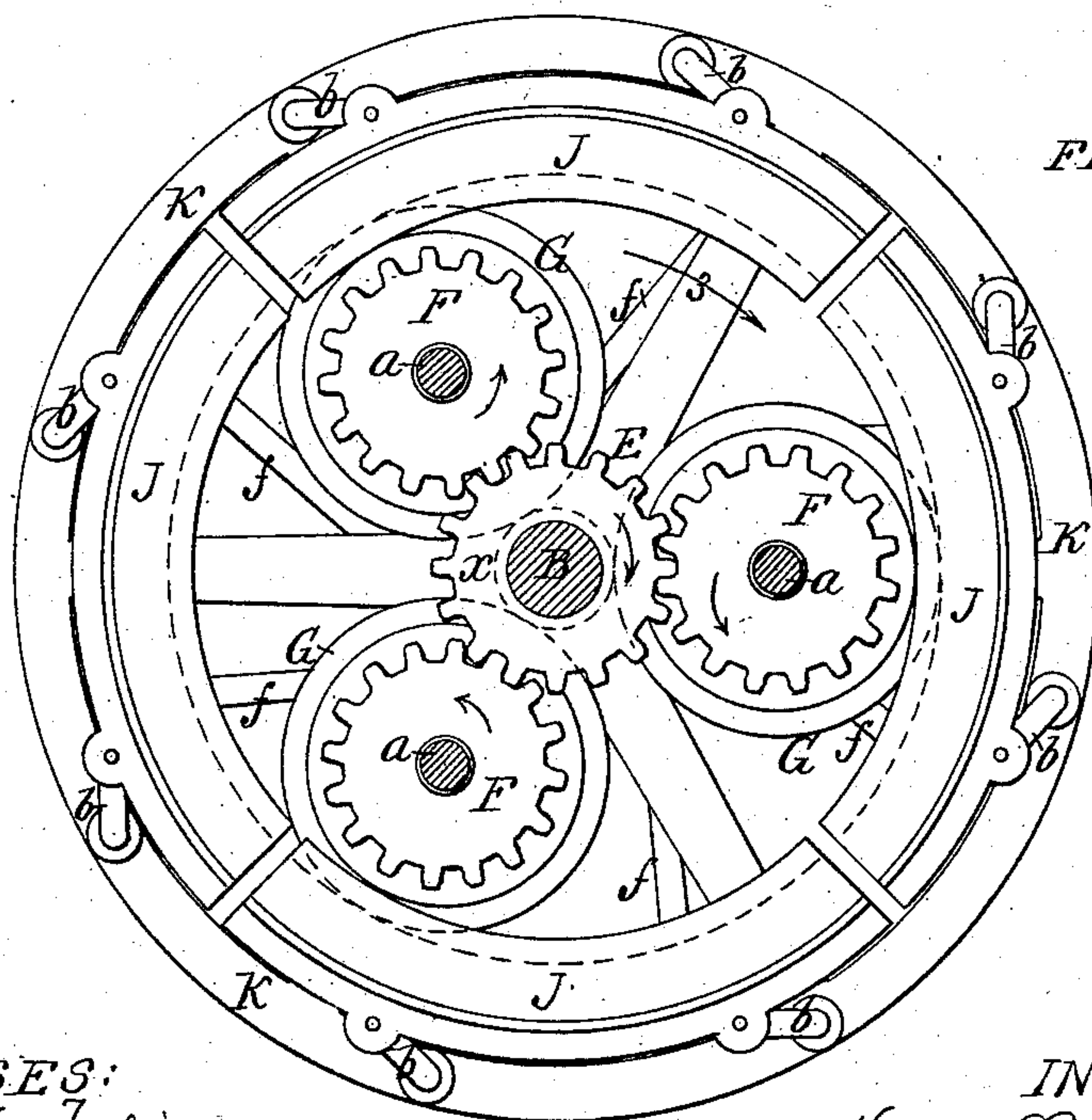


FIG. 3

WITNESSES:
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UNITED STATES PATENT OFFICE.

HENRY B. LARZELERE, OF GREENCASTLE, PENNSYLVANIA.

HOISTING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 281,528, dated July 17, 1883.

Application filed June 1, 1883. (No model.)

To all whom it may concern:

Be it known that I, HENRY B. LARZELERE, a citizen of the United States, and a resident of Greencastle, Franklin county, Pennsylvania, have invented certain Improvements in Hoisting Apparatus, of which the following is a specification.

The object of my invention is to so construct hoisting apparatus that the winding of the rope on the drum may be instantly stopped, and the unwinding of the same at any desired speed permitted without stopping or reversing the driving-shaft, my invention consisting in the combination of the driving-shaft, certain friction-wheels, and a certain track or segments adapted thereto, all as fully described hereinafter.

In the accompanying drawings, Figure 1 is a plan view, partly in section, of my improved hoisting apparatus; Fig. 2, a section on the line 1 2, looking in the direction of the arrow 1; and Fig. 3, a section on the line 3 4, looking in the direction of the arrow 2.

A is the drum for the hoisting-rope, and B the driving-shaft for the same, the latter being connected to the opposite engines, D D, or driven in any other appropriate manner, and the drum being free to turn on the shaft.

Keyed or otherwise secured to the shaft B is a pinion, E, which gears into three spur-wheels, F, the latter being free to turn on studs *a*, bolted to the head of the drum, and each spur-wheel being secured to or forming part of a friction-wheel, G, the periphery of which is preferably V-shaped, for adaptation to grooves of similar shape formed in a series of segments, J. These segments are hung to arms *b* on short rock-shafts *d*, carried by a ring, K, which in the present instance forms part of a wheel loose on the shaft B, a ring, M, being free to turn on the hub of this wheel, and said ring being connected by rods *f* to arms *g* on the rock-shafts *d*. (See Fig. 2.) The ring K is locked in position by any suitable means, and the ring M has an arm, *h*, to which is connected a rod, *m*, by manipulating which the ring may be partially turned in either direction, so as to contract or expand the segments J, the movement being transmitted to said segments through the medium of the arms *b*, rock-shafts *d*, arms *g*, and rods *h*.

In operating the apparatus, the engines and the shaft B turn continuously forward. When it is desired to wind up the rope on the drum A, the segments J are contracted, so as to bind upon the friction-wheels G. The latter, being rotated in the directions of the arrows, Fig. 3, are caused to traverse the segments as a track, and in consequence the drum is caused to turn forward in the same direction as the shaft. (See arrow 3, Fig. 3.) When it is desired to stop the rotation of the drum, the segments are retracted to an extent which so reduces the bite of the same upon the wheels G that the latter are free to turn on their axes without turning the drum—in other words, there is not sufficient friction between the wheels and the segments or track to overcome the resistance to the rotation of the drum; hence the wheels slip and the drum remains stationary. When it is desired to permit the rope to unwind from the drum, the segments are still further retracted, and the friction between the wheels and segments further reduced, so that the drum is free to turn backward, carrying the wheels G with it, the segments acting now simply as a brake to govern the descent of the load.

Instead of relying upon the segments J to hold the drum or govern the descent of the lead, I may provide the drum with a separate friction-brake for this purpose, the segments in this case having but two movements—an inward movement, to cause them to bind on the wheels G, and an outward movement, in order to free the wheels. The same nicety of adjustment is not required in this case as when the segments are relied upon to hold the drum or govern the descent of the load. It will thus be seen that the winding, stopping, and unwinding operations, as well as the speed of the winding and unwinding, are controlled without the necessity of stopping or reversing the engine.

The wheels G may have a number of ribs, and the segments a number of grooves; or the segments and wheels may have plain contact-surfaces, the construction shown, however, being preferred.

Friction-wheels may also in some cases be substituted for the spur-wheels E and F.

In order to relieve the strain on the pivot-

bolts *a*, I use a loose sleeve, *x*, on the shaft B, as shown in Figs. 1 and 2, this sleeve bearing on the wheels G.

If desired, stationary segments or a stationary circular track may be used, and the wheels G may be caused to move radially, so as to bear upon or be free from the track, the movement not being sufficient to unmesh the pinion E and spur-wheels F.

10 I claim as my invention—

1. The combination of the driving-shaft, the loose drum and its friction-wheels, gearing for driving the same from the shaft, the track for said friction-wheels, and means whereby the 15 friction between the wheels and track may be increased or diminished, as set forth.

2. The combination of the driving-shaft and its pinion E, the loose drum and its friction-wheels G, each with a spur-wheel, F, gearing 20 into the pinion E, the track for said friction-wheels, and means whereby the friction between the wheels and track may be increased or diminished, as set forth.

3. The combination of the driving-shaft and

its pinion, the loose drum and its friction- 25 wheels having spur-wheels gearing into the pinion, the friction-segments J, and means for expanding and contracting said segments, as set forth.

4. The combination of the driving-shaft and 30 its pinion, the loose drum, with its friction and spur wheels, the segments J, the ring K, the shafts *d*, with arms *b* and *g*, the ring M, and rods *f*, as set forth.

5. The combination of the driving-shaft and 35 its pinion E, the loose drum having friction-wheels G, each with a spur-wheel gearing into the pinion, the bearing-sleeve *x*, the segments J, and means for contracting and expanding 40 the latter, as set forth.

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

HENRY B. LARZELERE.

Witnesses:

JOHN E. PARKER,
HARRY SMITH.