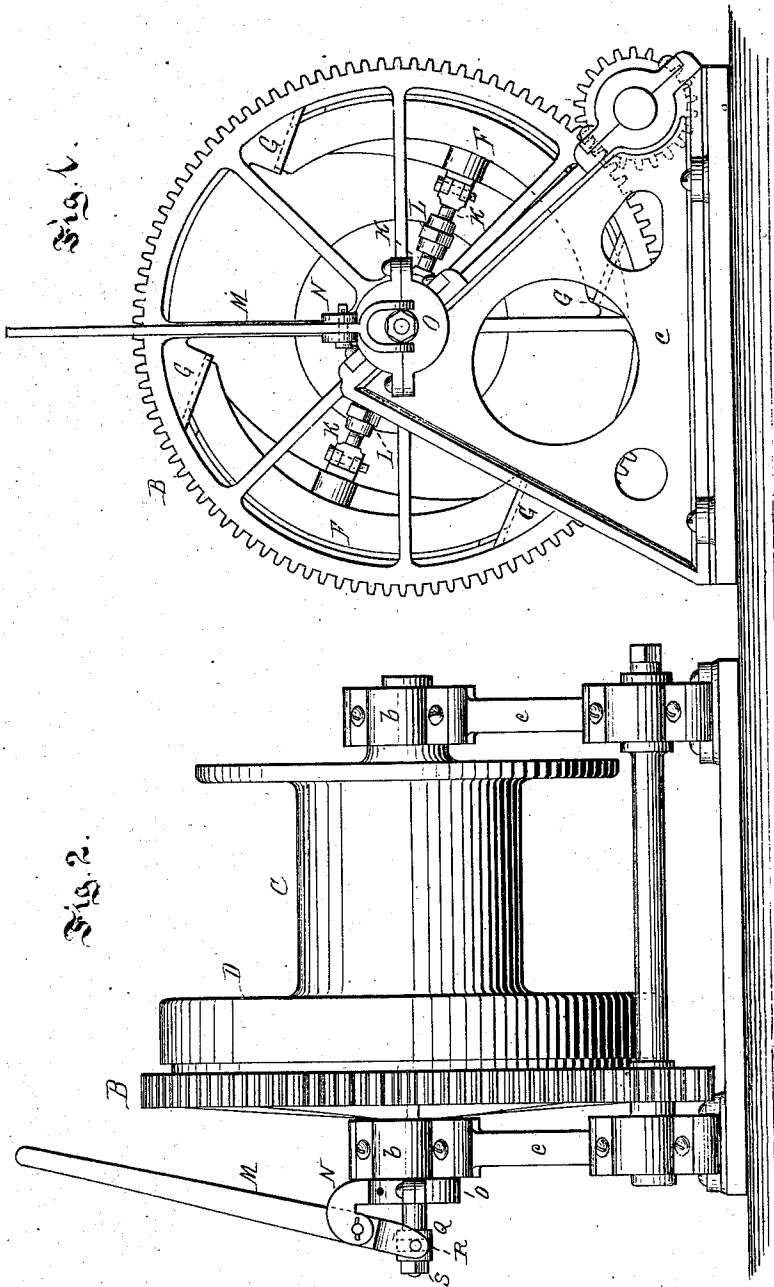


G. H. STARBUCK.
Friction-Clutch.

No. 159,464.

Patented Feb. 2, 1875.



Witnesses:

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Fig. 3.

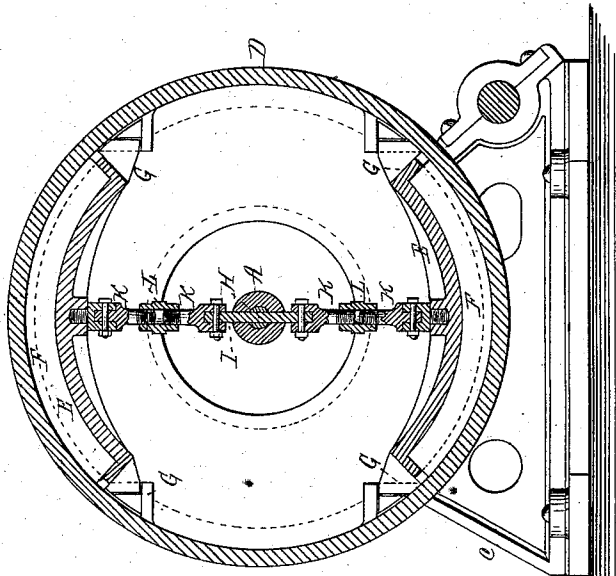
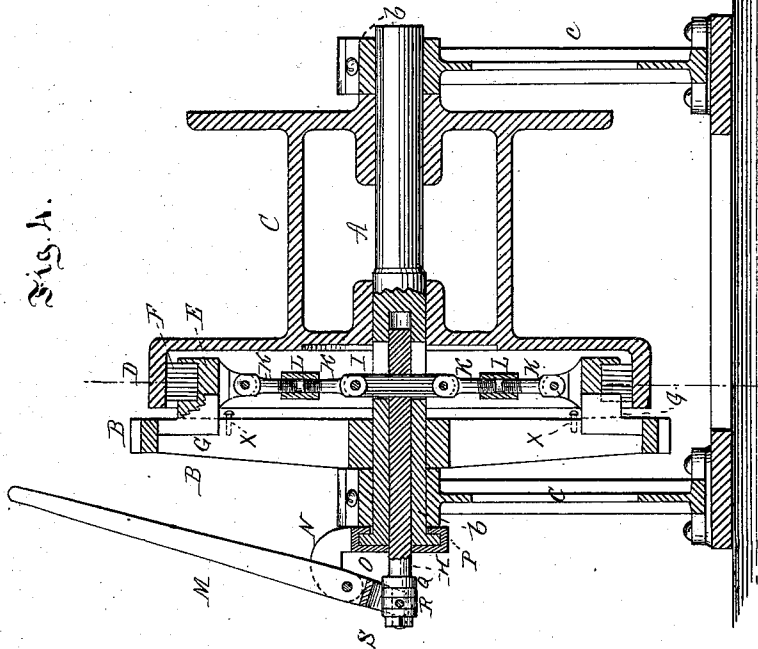


Fig. 1.



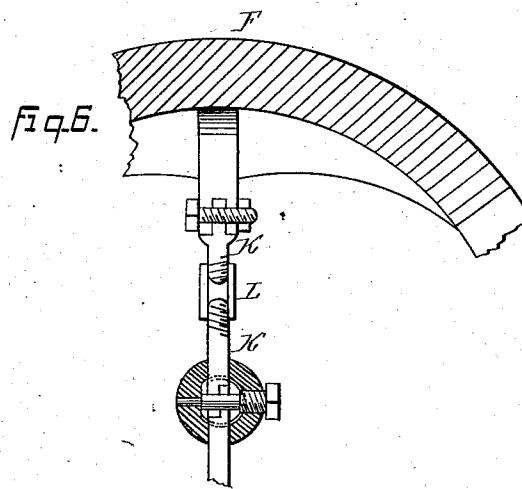
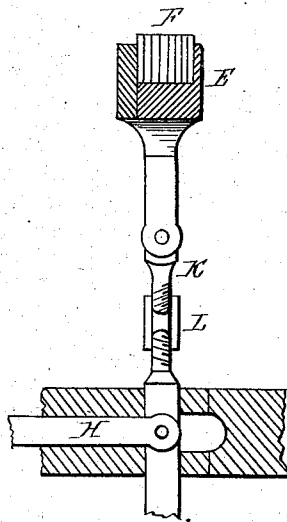
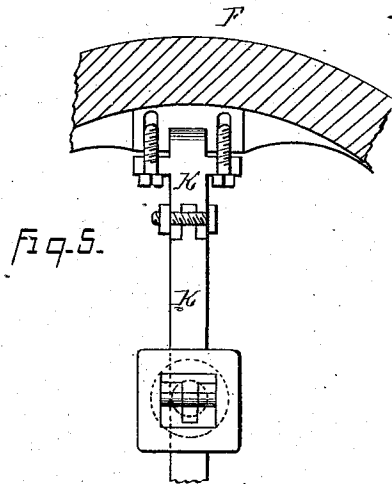
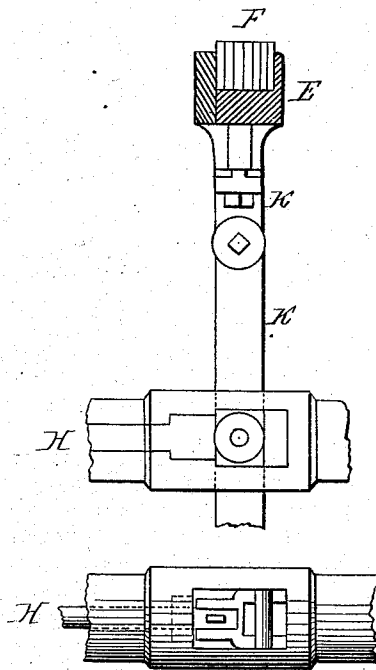
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UNITED STATES PATENT OFFICE.

GEORGE H. STARBUCK, OF TROY, NEW YORK.

IMPROVEMENT IN FRICTION-CLUTCHES.

Specification forming part of Letters Patent No. **159,464**, dated February 2, 1875; application filed January 18, 1875.

To all whom it may concern:

Be it known that I, GEORGE H. STARBUCK, of Troy, in the county of Rensselaer and State of New York, have invented certain new and useful Improvements in Friction-Clutches, of which the following is a specification:

The object of the present invention is to provide a simple and effective friction-brake, to be used in connection with hoisting mechanism or driving pulleys or wheels, which are designed to be connected to or disconnected from a driving-shaft.

The invention consists, first, in an improved combination and arrangement of devices for forcing segmental friction blocks or surfaces against the converge friction-rim of a hoisting drum or pulley, by which an equal strain is brought to bear on both inner sides of the rim, the devices for operating the friction-blocks consisting of arms of an equal or unequal length, which are pivoted to the block at their outer ends, and to a cross-key, carried by a sliding rod or bolt, at their inner ends, the arms so arranged forming a knuckle-joint, and the cross-key projecting through and moving in a longitudinal slot forward in the drum or pulley-shaft.

The invention further consists in the employment of guides for the movable friction-blocks, said guides being located or attached near the periphery of the driving wheel or pulley, so as to cause the friction-blocks to be forced against the friction-rim without torsion or strain on the shaft, said wheel being provided with stops for limiting the inward motion of the friction-blocks, said stops being so located on the driving wheel or pulley as to prevent the drawback all coming on one segment in case of adhesion of either segment to the rim, and equalizing the distance the segments are carried from the friction-rim.

The invention further consists in attaching the friction-block or segment-shifting lever to an arm, which is formed with or attached to a swiveled sleeve or yoke fitted on a collar on the drum-shaft, the end of the lever being secured to a sleeve fitted loosely between collars on the rod or bolt which forms the connection with the knuckle-joint devices.

In the accompanying drawings, Figure 1 is an end elevation of a hoisting-drum and driv-

ing-wheel having my invention applied thereto. Fig. 2 is a side view of the same. Fig. 3 is a transverse section taken through the friction-rim of the hoisting-drum. Fig. 4 is a longitudinal section of the entire apparatus. Figs. 5 and 6 illustrate modifications of devices for operating the friction-blocks or segments.

A designates a shaft, with journals at each end, which are fitted in suitable boxes *b* of the frame-work *c*. A large spur-wheel, B, or plain driving-pulley, is mounted on said shaft A, and is secured thereto by a set-screw, or by a key, as may be preferred. An ordinary hoisting-drum, C, is also fitted loosely on the shaft, and it is provided with a friction-rim, D, at the end adjoining the driving wheel or pulley, against which rim the friction-blocks or segments E are forced when it is desired to clutch the drum and wheel together. The friction-blocks are of a segmental form, and are provided with peripheral seats for the reception of a filling, F, of wood, leather, or soft metal, forming a surface to come in frictional contact with the rim D. The segments or friction-blocks are guided and held from moving away from the driving-wheel B by means of guides G, cast with and forming part of the wheel. These guides are located near the periphery of the wheel, and they are grooved for the reception of the reduced ends of the segments or friction-blocks. The shaft A is provided with a central bore, which terminates at or about the inner end of the friction-rim of the hoisting-drum, said bore being designed for the reception of a pin or bolt, H, which is slotted at its inner end to allow the passage through it of a cross-key, I, moving in a slot or elongated centrally-located opening, J, in the shaft A. To each end of the cross-key there is jointed an arm, K, the other end of the arm being jointed to the segment. The arms K are made in two parts, connected and made continuous by the nut L, which has a right-hand thread at one end, and a left-hand thread at the other end, by which the arms may be lengthened or shortened, as desired. The segment or clutch shifting or operating lever M is pivoted to a curved arm, N, which projects from a sleeve or swiveled yoke, O, encircling a collar, P, on the end of the shaft

A. Said yoke or lever-holder is made in two parts, joined together by flanges and bolts, and it is loose on the shaft, so as to permit the same to turn without carrying the lever around. Q R are collars fitting on the projecting end of the pin or bolt H, the inner one, Q, being secured to and forming part of the pin, and the outer collar, R, being loose, but prevented from moving endwise by a nut, S, applied to the screw-threaded end of the pin. The inner bifurcated end of the lever is journaled to the loose collar R, so as to enable it to be turned to the right or left.

Rotating motion is imparted to the driving spur-wheel or pulley, as the case may be, and when the clutch-lever is in the position shown in the drawings—that is, thrown in an inward direction—the friction-clutches are held tightly against the friction-rim of the hoisting-drum, thus causing the same to be rotated with the shaft. By moving the lever forward or outward, the jointed arms or knuckle-joints are caused to assume an oblique position, and the friction-surfaces removed from contact with the rim of the drum. To secure an equal movement of the segments in an inward direction, pins *x x* are inserted in, or stops may be applied to, the arms of the driving-wheel, which stops, by coming in contact with the friction-blocks, will limit the movement of the same.

The principal object attained by the present invention is the dispensal of a sleeve or thimble sliding on the drum-shaft, and forming part of the clutch-block-operating mechanism, this being rendered possible by the provision of the toggle or knuckle jointed arm connected directly with a cross-key on a sliding bolt or pin connected with the shifting-lever, said key moving in a slot in the shaft, so as to allow a continuous or connected joint from one rim to the other.

Another point of advantage derived by my invention is the positive motion of the clutch mechanism toward or from the friction-rim of the drum, a spring for releasing the clutch being dispensed with.

Several modifications of the invention, as above described, will readily suggest themselves, as, for example, the driving wheel or pulley may be made to run loosely upon the

shaft, and the rim for the adjustable segments to bear against may be cast on said wheel. The hoisting drum or pulley is in this instance fastened to the shaft, and the driving-guides affixed to it, and used for the same purpose as when applied to the driving-wheel.

Another modification consists in pivoting the connecting-arms K K together at the central point of the shaft, as shown in Figs. 5 and 6, connecting the sliding-bolt H directly to the same.

It will be observed that the cross-key I is capable of a movement endwise, whereby it is only necessary to tighten up the nut L on one of the arms, which will make that arm a trifle longer than the one on the opposite side; consequently it is not essential to operate all the arms together, and hence much time is saved in adjusting the parts.

I claim as my invention—

1. A friction-clutch having a cross-key, I, forming a link-connection between the knuckle-joints or arms K K, carrying the friction-blocks E, in combination with the slotted and axially-bored shaft of the hoisting-drum, sliding rod H, lever M, and collar N, substantially as described.

2. The hoisting-drum C, having friction-rim D and a slotted and axially-bored shaft, in combination with a gear-wheel, B, having the guides G, and with friction-blocks E, sliding rod, and a lever connected therewith, substantially as described.

3. The driving-wheel constructed with guides G and stops X, for guiding and limiting the motion of the clutch and friction-blocks as the clutch mechanism is brought in and out of gear, substantially as described.

4. In combination with the hoisting-drum and slotted and axially-bored shaft, the lever M, pivoted upon the divided collar through its yoke, and connected with the end of the sliding rod, for operating the arms carrying the friction-blocks, substantially as described.

In testimony that I claim the foregoing I have hereunto set my hand.

GEORGE H. STARBUCK.

Witnesses:

GEO. A. STONE,
CHARLES S. ANDREWS.