

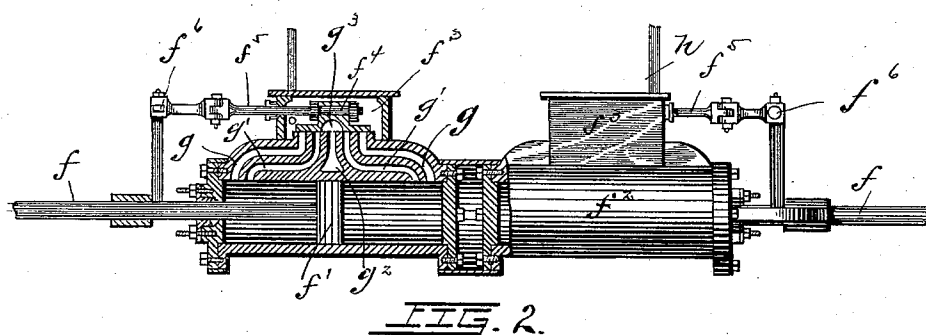
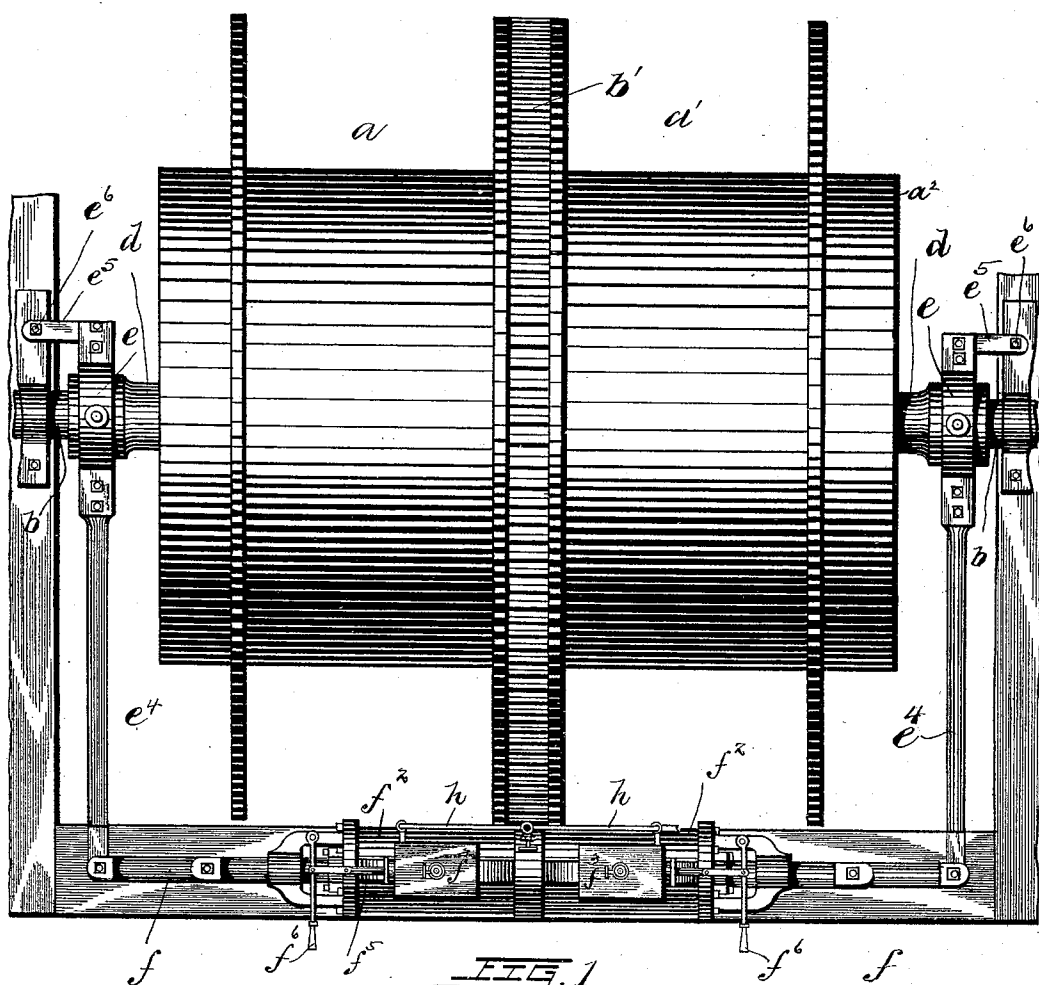
(No Model.)

2 Sheets—Sheet 1.

W. H. McCONNELL.
CLUTCH.

No. 484,224.

Patented Oct. 11, 1892.



Witnesses
H. B. Bradshaw
J. H. Traveh

Inventor
William H. McConnell
By his Attorneys
Stacy & Shepherd

(No Model.)

2 Sheets—Sheet 2.

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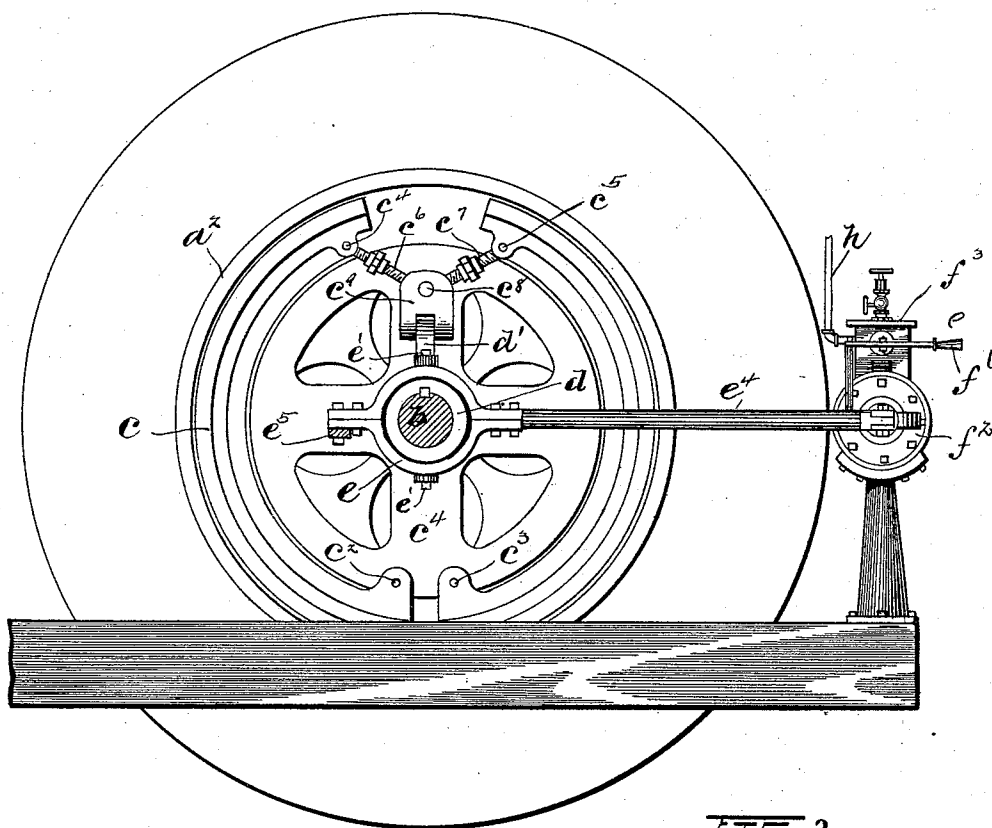


FIG. 3.

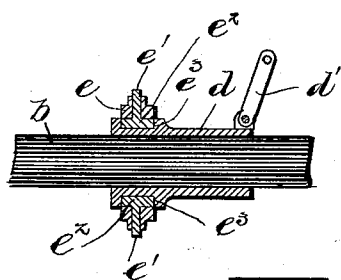


FIG. 4.

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UNITED STATES PATENT OFFICE.

WILLIAM H. McCONNELL, OF WILSONVILLE, OHIO.

CLUTCH.

SPECIFICATION forming part of Letters Patent No. 484,224, dated October 11, 1892.

Application filed September 21, 1891. Serial No. 406,374. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM H. McCONNELL, a citizen of the United States, residing at Wilsonville, in the county of Athens and State of Ohio, have invented a certain new and useful Improvement in Friction-Clutches, of which the following is a specification.

My invention relates to the improvement of friction-clutches; and it especially relates to clutches adapted for use with hoisting machinery.

The object of my invention is to provide an improved clutch which will be rapid and positive in its action, the construction of the clutch and its operating mechanism being such that it is caused to engage or disengage without the aid of manual labor.

A further object of my invention is to provide improvements upon the clutch devices set forth in my former patent, No. 428,568, dated May 20, 1890, for a friction-clutch. I attain these objects by the construction shown in the accompanying drawings, in which—

Figure 1 is a plan of a pair of revolving or hoisting drums, to which my improved clutch and its mechanism is shown attached. Fig. 2 is a detail view, partly in section, of the clutch-operating devices. Fig. 3 is an end elevation, partly in section, of the hoisting-drum, showing the application of the clutches thereto. Fig. 4 is a detail view, partly in section, showing a portion of the main shaft and the clutch-operating ring and sleeve.

Like parts are indicated by similar letters of reference throughout the several views.

In the accompanying drawings, a and a' represent, respectively, hoisting-drums, each of which is mounted loosely on a main shaft b , to which is rigidly secured a driving-wheel b' , adapted to receive power from a suitable intermeshing gear or pinion on a main engine-shaft or from any other convenient source of supply. Each of the drums a and a' is provided at its outer extremity with an annular flange a^2 , within which is located a pair of brake or clutch shoes c and c' , pivoted at c^2 c^3 to a hub or spider c^4 , secured rigidly to the main shaft b . The clutch or brake shoe c preferably extends within the flange a^2 for a distance slightly less than a semi-circumference, the pivot-points c^2 c^3 being located near one extremity of said shoes, said

shoes being pivoted at their other extremities at c^4 c^5 to pivoted adjustable arms c^6 c^7 , which arms are pivoted at a common point c^8 to a movable block c^9 , forming a toggle-joint, whose center is at the pivotal point c^8 in said block, all of the said parts being arranged as described in my prior patent referred to. Mounted on the main axle b is a sleeve d , adapted to slide longitudinally on said shaft, but connected thereto by a spline connection, which causes said sleeve to revolve with said shaft, and therefore with the spider and the brake-shoes. Extending from this sleeve is a projecting arm d' , pivotally connected at its extremities to said sleeve and to the head-block c^9 , respectively, as indicated in Figs. 3 and 4, the said arm d' to normally stand at an angle to the perpendicular, so that as the sleeve is moved inwardly the arm is straightened, forcing the block c^9 outwardly, thus extending the toggle-jointed arms, so as to force the clutch or brake shoes c and c' into engagement with the flange a^2 .

To provide for operating the sleeve d rapidly and positively, I employ a pivoted yoke e , which encircles said sleeve and is connected thereto by projecting pins e' , passing through suitable bearings in said yoke and provided at their inner ends with bearing-heads e^2 , adapted to fit in an annular groove e^3 in the sleeve d . This yoke e is preferably formed in two parts, so as to be readily assembled about the sleeve d , one of the parts being formed rigid with the extending rod or lever e^4 , pivoted at one end to a link e^5 , which link is pivotally connected at its other end at e^6 to the main frame or bearing for the main axle b . The respective levers e^4 (there being one for each clutch-flange at opposite ends of the respective drums) are each extended outwardly beyond the peripheries of said drums and their driving-gear and pivoted to a piston rod f , connected to a piston f' in an operating-cylinder f^2 . Each of the operating-cylinders f^2 is provided with a steam-chest f^3 and slide-valve f^4 , controlled through a suitable stem f^5 by a hand-lever f^6 . Leading from the seat of the valve f^4 to each end of each of said cylinders is a supply-port g and an exhaust-pipe g' , the respective exhaust-ports being adapted to be brought into communication with the main exhaust g^2 by a connecting-cavity g^3 in the slide-valve in a

well-known manner. In the normal position the slide-valve is adapted to cover both exhaust and entrance ports, as shown in Fig. 1. By moving the valve in either direction the steam-chest is placed in communication with the cylinder through one of the supply-ports. Steam is supplied to the steam-chest through a pipe h , so that by moving the valve in either direction the steam is caused to enter the cylinder f^2 , and thus move the piston, and through the connection hereinbefore described to operate the clutch connected to the piston of said cylinder. When the supply-port at one end of the cylinder is open, the exhaust-port at the opposite cylinder is also open, so that steam contained in the opposite end of the cylinder is exhausted. The respective supply and exhaust ports, however, communicate with the cylinders at different points in the length thereof, so that as the piston approaches the end of its stroke the exhaust-port at that end of the piston is closed by the piston travel, leaving a small quantity of steam in the end of the cylinder, which acts as a cushion for said piston.

It will be seen that by the construction described the operator has complete control of the friction-clutches through the medium of the hand-levers f^6 , the respective clutches and their operating mechanism being duplicates one of the other.

The use of the operating-cylinders controlled by the hand-levers, as described, provides a means by which the clutches may be rapidly and positively operated without the aid of manual labor other than moving the valve. The respective cylinders are preferably mounted side by side, so that each of the controlling-levers is in convenient reach of the operator.

Having now fully described my invention,

what I claim, and desire to secure by Letters Patent, is—

1. The combination, with a main shaft, a loosely-mounted wheel having an annular flange thereon, pivoted clutch-shoes connected to said shaft and adapted to be moved to or from said clutch-ring and to contact therewith, a toggle-jointed connection between said clutch-shoes, a sliding sleeve on said main shaft, a peripheral groove in said sleeve, a two-part yoke adapted to embrace said sleeve, loose connecting-pins having projecting ends which fit in bearings in said yoke and extended heads to fit in said groove, an extended lever on said yoke, a pivoted link from one end of said lever to a stationary support, and a pivoted link connection from the opposite end of said lever to a moving piston, substantially as specified.

2. The combination, with a main shaft, an annular clutch-flange, and pivoted shoes, as described, mounted within said flange, of pivoted adjustable links connected to said shoes and to a common moving block, and a sliding sleeve on the main shaft, to which said shoes are connected, a peripheral groove on said sleeve, a pivoted arm from said sleeve to said block, an operating-lever pivoted at one end by a link connection to a stationary support and at the other end to the piston of a steam-cylinder, and said operating-lever being provided with a divided yoke adapted to embrace said sleeve, and connecting-pins having enlarged heads to fit in said groove and reduced extremities to pivotally connect to said yoke, substantially as specified.

WILLIAM H. McCONNELL.

In presence of—

J. I. PRITCHARD,
W. C. HICKMAN.