

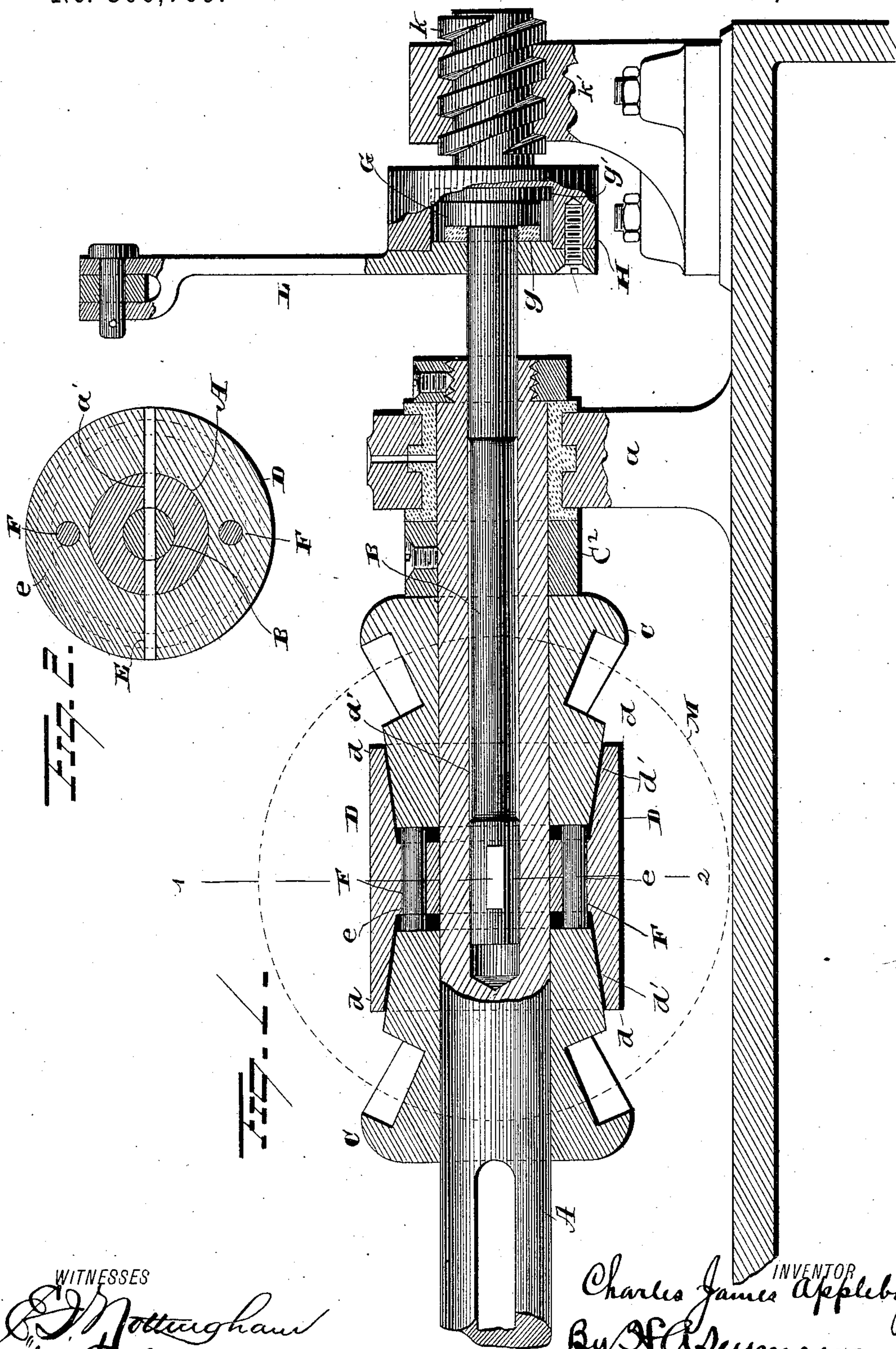
(No Model.)

C. J. APPLEBY.

CLUTCH.

No. 306,709.

Patented Oct. 21, 1884.



WITNESSES

Edinburgh
Geo. Downing.

Charles James Appleby
By H. A. Seymour
INVENTOR
ATTORNEY

UNITED STATES PATENT OFFICE.

CHARLES JAMES APPLEBY, OF LONDON, COUNTY OF MIDDLESEX, ENGLAND.

CLUTCH.

SPECIFICATION forming part of Letters Patent No. 306,709, dated October 21, 1884.

Application filed July 14, 1884. (No model.)

To all whom it may concern:

Be it known that I, CHARLES JAMES APPLEBY, of London, in the county of Middlesex and Kingdom of Great Britain, have invented certain new and useful Improvements in Clutches; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to an improvement in clutches, the object of the same being to obtain a backward and forward motion of the coupling-sleeve concentrically with the shaft which carries it, a further object being to reduce the wear on the disks when operating the clutch-sleeve, a further object being to cause the clutch to remain in gear until it is released by the attendant.

With these ends in view my invention consists in certain features of construction and combinations of parts, as will be described hereinafter, and pointed out in the claims.

In the accompanying drawings, Figure 1 is a longitudinal sectional view of my improved clutch and operating mechanism, and Fig. 2 is a transverse section through the lines 1 2 of Fig. 1.

A represents a shaft, either the engine-shaft or a shaft in gear with or otherwise driven by the engine-shaft, journaled in suitable bearings, *a*. The shaft A is provided with a central bore, *a'*, from one end to the point where the clutch is attached, and a pin, B, is adapted to fit and slide in said bore. Two bevel gear-wheels, C, are loosely mounted on the shaft A, with their hubs toward each other, separated by a clutch-sleeve, D, loosely embracing hubs of the wheels and the shaft, said sleeve being provided with annular flanges *d* on each end, forming conical-shaped recesses *d'*, which closely engage the conical ends of either wheel C, as the sleeve D is moved toward that wheel. The sleeve D is keyed to the pin B and shaft A by means of a transverse perforation, E, passing diametrically through the sleeve, shaft, and pin, said perforation being elongated where it passes through the shaft, to allow the key a limited sliding motion therein. The wheels C are held against lateral outward play on the shaft by rigid collars C², secured to the shaft or in any other convenient manner. The sleeve

D is further provided with two longitudinal diametrically-opposite perforations *e*, in which distance-pins F are loosely fitted, said pins projecting a short distance beyond the ends of the perforations *e* when the sleeve D is midway between the wheels C, and serving to hold the wheels against lateral inward play on the shaft. The outer end of the pin B is provided with an annular flange, G, having a gun-metal washer, *g*, on one side and a gun-metal disk, *g'*, on the other, secured in a suitable box, H, in such a manner as to allow the shaft a free rotary motion, but hold it against lateral play therein. The box H is preferably provided with a male-threaded stem, *k*, which works in a nut, *k'*, suitably supported opposite the end of the shaft A. The box H is further provided with an operating-arm, L, adapted to be connected to an operating-lever leading to any desired position. A beveled pinion, M, on a shaft at right angles to the shaft A, gears with the wheels C. It will be observed that a slight turn of the box H in one direction will slide the pin B outward and cause the clutch-sleeve D to engage the cone on the right, and thereby turn the pinion M, while a slight turn of the box H in the opposite direction will throw the pin B to the left and cause the clutch-sleeve D to engage the cone on the left, thereby reversing the motion of the pinion M.

The gun-metal washer and disk within the box H form durable and light friction-bearings, while the gradual and positive motion imparted to the pin and clutch-sleeve by the screw serve to make this construction effective, durable, and convenient.

I do not wish to limit myself strictly to the construction herein set forth, as it is evident that slight changes may be made in the construction and arrangements of the several parts without departing from the spirit and scope of my invention.

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

1. The combination, with two wheels loosely mounted on a shaft, a clutch located between said wheels, and distance-pins secured in said clutch, of an actuating-pin located within the shaft, and a key for securing together the clutch-shaft and actuating-pin.

2. The combination, with a clutch-sleeve op-

erated by a pin sliding in the bore of a shaft, of a box embracing the head of the pin, the box being provided with a screw-threaded stem adapted to engage a stationary nut, and
5 means for rotating the box, and thereby sliding the pin, substantially as set forth.

3. The combination, with a clutch-sleeve operated by a sliding rotating pin and a box embracing the head of the pin, of a metal washer and a metal disk interposed between the head of the pin and the box, substantially as set forth.

4. The combination, with two cone-shaped wheels loosely mounted on a shaft, and a clutch-

sleeve keyed to the shaft between the wheels, of distance-pins secured in longitudinal perforations in the clutch-sleeve, said pins being adapted to hold the cone-shaped wheels against lateral displacement, substantially as set forth. 15

In testimony whereof I have signed this specification in the presence of two subscribing witnesses. 20

CHARLES JAMES APPLEBY.

Witnesses:

CHARLES HENRY NEWTON,
ALEXANDER HENRY MATTHEWS.