(No Model.)

J. R. BACK.

FRICTION CLUTCH.

No. 253,175. Patented Feb. 7, 1882.

Fig. 1

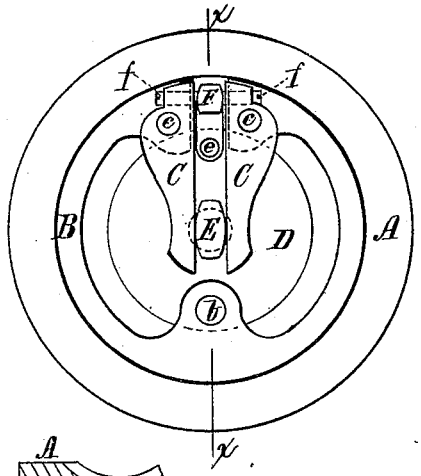


Fig. 2

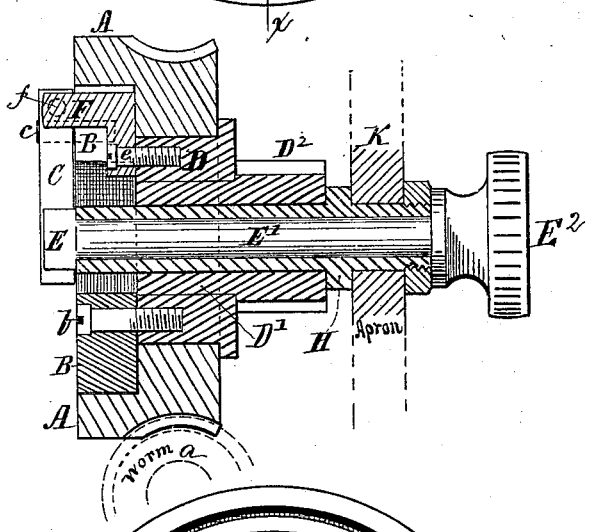
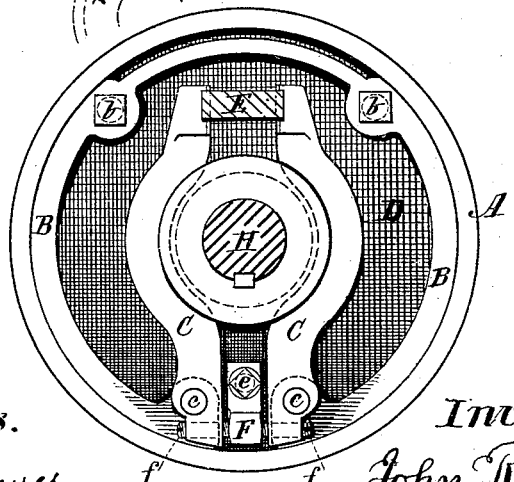


Fig. 3



Witnesses.

John Howes

Frank Stone

Inventor.

John R. Back

per Chas. H. Burleigh

Atty.

UNITED STATES PATENT OFFICE.

JOHN R. BACK, OF WORCESTER, MASSACHUSETTS, ASSIGNOR OF ONE-HALF TO FREDERICK E. REED, OF SAME PLACE.

FRICTION-CLUTCH.

SPECIFICATION forming part of Letters Patent No. 253,175, dated February 7, 1882.

Application filed September 3, 1881. (No model.)

To all whom it may concern:

Be it known that I, JOHN R. BACK, of Worcester, in the county of Worcester and State of Massachusetts, have invented certain new and useful Improvements in Friction-Clutch Mechanisms; and I declare the following to be a description of my said invention sufficiently full, clear, and exact to enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification.

The objects of my invention are to provide a simple, efficient, and durable friction-clutch mechanism adapted for use in the horizontal feed mechanism of engine-lathes, in counter-shaft pulleys, and for other similar purposes; also, to provide means for insuring the uniform action of the clutch-surfaces at opposite sides of the rim-circle, and to afford facilities for adjustment to give proper pressure in contact, and to compensate for wear. These objects I attain by the mechanism shown in the drawings and hereinafter described.

In the drawings, Figure 1 is a side view of my improved friction-clutch mechanism as constructed for use in an engine-lathe feed. Fig. 2 is a sectional view of the same at line *x x*, Fig. 1. Fig. 3 is a side view, showing a slight modification of the devices or a construction adapted for counter-shaft pulleys.

In reference to the drawings, A denotes an outer circular wheel or rim with an internal friction-surface—in the present instance the worm-wheel of an engine-lathe feed of ordinary construction.

B indicates an inner rim or band with external friction pads or surface, which fits within the rim A. Said band is divided at one side, and is reduced in thickness so that its sides will be flexible or movable in a degree sufficient to permit the expansion and contraction necessary for connecting and releasing the frictional gripe between the parts. The band B is secured to the central disk, D, as at *b*, and said disk D is fastened to the pinion-sleeve D′ or hub, which is supported on the stud or shaft H. The rim or wheel A is arranged to run free around the disk D, except when the clutch is in action.

C indicates the expanding-levers, for forcing the friction-surfaces into contact. Said levers are respectively pivoted on the ends of the band B, as at *c*, with their longer arms extending past the central part of the wheel or to a convenient position for engagement with a suitable actuating device, E, controlled by the operator and adapted for forcing apart the levers C by their longer arms. In the lathe-feed mechanism said device E consists of a cam or oval button on the end of the hand-knob spindle E′, for acting by rotative movement between said levers when the hand-knob E^2 is turned.

F indicates a stud or bearing-piece that serves as a fulcrum for the short arms of the levers C. Said piece F is located between the ends of the band B, and is pivoted, as at *e*, or otherwise secured to the disk D in such manner as will permit movement of its bearing end to make it automatically adjustable by the pressure of the levers C to insure a uniform contact and pressure at both sides of the circle, or so that any inequality in the action of the respective levers C C will be counteracted by a movement of the fulcrum point or piece F, respondent to any excess of pressure brought against either of its sides. This automatic adjustment of the fulcrum-point is an important feature of my invention.

f f indicate adjusting-screws arranged in the short ends of the levers, near the periphery of the band, and with their points resting against the piece F, which screws serve for regulating the throw of the levers and for taking up looseness occasioned by wear. By arranging these screws *f* at the position shown but little movement is required for effecting the adjustment, and short screws can be used.

The pinion D^2 and sleeve D′, which are mounted on the hollow stud H, fastened to the lathe-apron K, operate the feed mechanism of the lathe in the ordinary manner, the worm-wheel A being actuated by the ordinary feed-shaft and worm *a*. The various parts being old and well known are not herein shown.

This friction-clutch is very efficient in its operation and quite convenient for use on the lathe-feed, as a quarter-turn of the hand-knob E^2 is sufficient to throw the feed into or out of action. If desired, the clutch mechanism may

be made without the piece F, the ends of the screws *f* or suitable projecting portions on the ends of the levers being worked directly against each other.

I am aware that contractible friction-bands operated by levers have heretofore been employed in friction mechanism; but such devices are different in construction and manner of operation from the improved mechanism herein shown and described, and I do not claim the use of such bands, nor the employment of levers for operating a friction mechanism irrespective of the construction and arrangement of the parts.

What I claim as of my invention, and desire to secure by Letters Patent, is—

1. An automatically-adjustable pin or movable fulcrum-bearing sustaining the operating-levers in a friction-clutch device, substantially as set forth.

2. The combination, substantially as described, of the wheel-rim with internal friction-surface, the divided friction-band arranged within said rim, the levers pivoted on the ends of said band, the automatically-adjustable fulcrum-piece arranged between the short arms of said levers, and means for forcing apart the long arms of said levers, substantially as hereinbefore set forth.

3. The combination, with the worm-wheel A, feed-pinion D^2, and hand-knob E^2, of the friction-band B, fixed on the feed-pinion disk D, the expanding-levers C C, pivoted on the ends of said friction-band, and the eccentric button or cam E, fixed on the end of the hand-knob spindle E', substantially as and for the purposes set forth.

Witness my hand this 30th day of August, A. D. 1881.

JOHN R. BACK.

Witnesses:
CHAS. H. BURLEIGH,
F. E. REED.