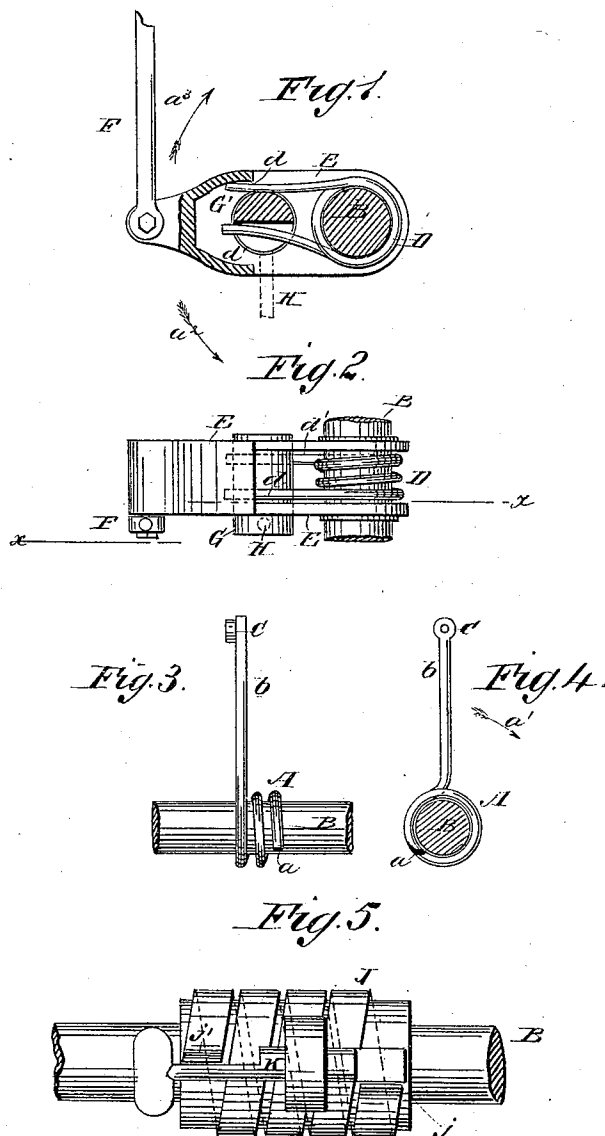


(No Model.)

A. M. ENGLISH.
FRICTION CLUTCH.

No. 255,957.

Patented Apr. 4, 1882.



WITNESSES:

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ANALDO M. ENGLISH, OF PROVIDENCE, RHODE ISLAND, ASSIGNOR OF ONE-FOURTH TO CLARENCE E. CHANDLER, OF MERIDEN, CONNECTICUT.

FRICTION-CLUTCH.

SPECIFICATION forming part of Letters Patent No. 255,957, dated April 4, 1882.

Application filed January 23, 1882. (No model.)

To all whom it may concern:

Be it known that I, ANALDO M. ENGLISH, of Providence, in the county of Providence and State of Rhode Island, have invented a new and useful Improvement in Friction-Clutches, of which the following is a full, clear, and exact description.

The invention consists in a friction-clutch formed of a band or wire coiled around the shaft and provided with a projecting end for the application of power, whereby the coil will be tightened to grasp and rotate the shaft when the end of the projection of the wire or band is rotated in one direction, and the coil will be loosened so as to slide or slip over the shaft when the projection is rotated in the reverse direction.

The invention further consists in the combination, with a wire or band coiled around the shaft and having its end projecting from the shaft, of a shifter or device for adjusting the ends of the coil in such a manner that it can be used to rotate the shaft in one direction or the other, as will be fully described herein-after.

Reference is to be had to the accompanying drawings, forming part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a longitudinal sectional elevation of my improved friction-clutch on the line $x x$, Fig. 2. Fig. 2 is a plan or longitudinal top view of the same. Fig. 3 is a longitudinal elevation of a modification of the same. Fig. 4 is a cross-sectional elevation of the same. Fig. 5 is a longitudinal view of another modification of the same, showing the clutch constructed with a flat or band coil.

The simplest form of my improved clutch is shown in Figs. 3 and 4. A rod or wire, A, is coiled a number of times around the shaft B, but is not attached to the shaft. The end a , which I term the "inner end" of the rod or wire A, rests against the shaft B, and the opposite or outer end, b , projects from the shaft a distance equal to the desired length of the lever of the clutch. The outer end, b , of the wire or rod A is provided with a loop or eye, C, for pivoting a connecting-rod or handle to

this end of the wire. If the projecting end b of the wire A is turned in the direction of the arrow a' , the coil will be tightened on the shaft B, and will grasp the shaft with sufficient pressure to rotate it—that is, the shaft is grasped so firmly that the coil cannot slip on the shaft, and the latter must turn with the coil; but if the projecting end b of the wire is turned in the reverse direction of the arrow a' , the coil will be loosened, and the coil will slip on the shaft A, which remains stationary, and only the coiled wire returns to its original position. The end b is again turned in the direction of the arrow a' , and the shaft is again grasped and rotated. The shaft will thus be rotated by one movement of the end b of the wire, but not during the return movement.

The number of coils of the wire can be varied as circumstances may require, this number increasing with the resistance offered by the shaft; but this clutch can only be used to operate in one direction, whereas the clutch shown in Figs. 1 and 2 can be adjusted to operate in either direction.

The wire or rod D is coiled around the shaft B a number of times, and both ends d and d' of this wire or rod project from the shaft, as shown. The wire D is contained in a casing, E, loosely mounted on the shaft and having a connecting-rod, F, pivoted to its outer end. This casing E is provided with a transverse shaft, G, having half of its thickness cut away at the middle, so as to form a cam, G' , against which the ends $d d'$ of the wire or rod D rest, as shown in Fig. 1. One of the projecting ends of the shaft G is provided with a handle, H, for adjusting this cam-shaft. If the cam-shaft $G G'$ is in the position shown in Fig. 1, and the clutch is turned in the direction of the arrow a^2 , the casing E presses against the end d of the wire D, the coils will be tightened, and the shaft B will be rotated in the direction of the arrow a^2 . During the return movement of the clutch in the direction of the arrow a^3 the coil will be loosened and will slip over the shaft. During this adjustment of the cam-shaft $G G'$ the end d of the wire D is firmly held between the cam-shaft $G G'$ and the casing E, and the rod d' is loose. If the cam-shaft

G G' is turned half a revolution, the end d' of the wire D will be held between the cam-shaft G G' and the casing E, and the end d will be loose. If the clutch is then turned in the direction of the arrow a^3 , the coil will be tightened, and the shaft B will be rotated in the direction of the arrow a^3 . During the return movement of the clutch in the direction of the arrow a^2 the coil will be loosened and will slip over the shaft. By simply turning the cam-shaft or shifter G G' the clutch can be easily adjusted to gripe the shaft during rotation in one direction or the other. In Fig. 5 I have shown a band, J, coiled around the shaft B. The ends $j j'$ of this band project from the shaft and rest against a shifter or cam-shaft, K, which is squared at the ends, the flat or squared part at one end being at right angles to the flat or squared part at the other end. In its operation this clutch is the same as the clutch shown in Figs. 1 and 2, the only difference being that a band is used instead of a rod or wire. This clutch can also be used as a brake or as a clutch between a driven or driving pulley and shaft.

I have described this device as being applied to rotate the shaft by means of the connecting-rod; but it can be used as well to operate the connecting-rod from the rotating shaft.

I have described the rod or band as being coiled around a shaft; but just as well the rod, wire, or band can be coiled in a cylinder, and instead of griping when contracted, it will then gripe when expanded; but this modifica-

tion is based on the same principle as the clutch described, and is only a mere colorable variation.

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

1. An improved friction-clutch consisting of a band or wire coiled around a shaft and having its end or ends projecting from the shaft for receiving the power, substantially as shown and described, whereby, when the said end or ends are turned, the coil is tightened upon the shaft and both coil and shaft are turned together, as set forth.

2. In a friction-clutch, the combination, with a band or wire coiled around a shaft and having its ends projecting from the shaft, of a shifter or device for holding either of the ends of this wire or band, substantially as herein shown and described, and for the purpose of adjusting the clutch to operate in either direction of rotation, as set forth.

3. In a friction-clutch, the combination, with the wire or band D, coiled around a shaft, and having its ends $d d'$ projecting from the shaft, of the casing E, loosely mounted on the shaft, and of a shifter or cam-shaft, G G', in this casing, substantially as herein shown and described, and for the purpose of adjusting the clutch to operate in either direction of rotation, as set forth.

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Witnesses:

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