H. FUCHS,

Clutching Device.

No. 201,105. Patented March 12, 1878.

FIG. 2.

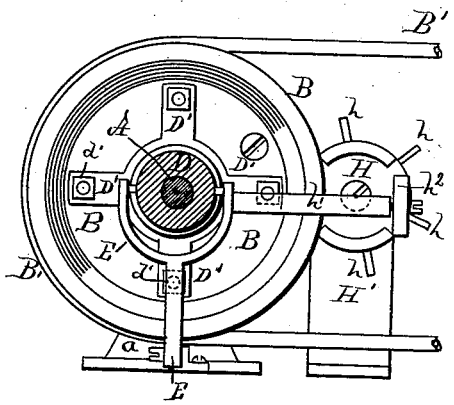


FIG. 4.

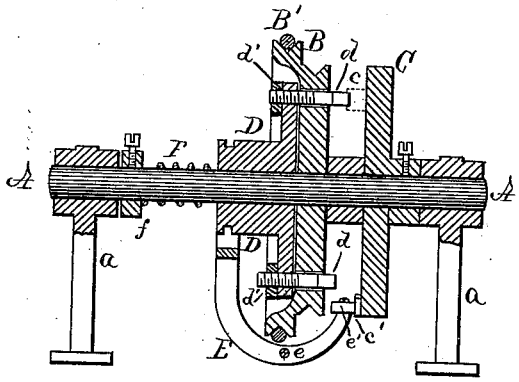


FIG. 3.

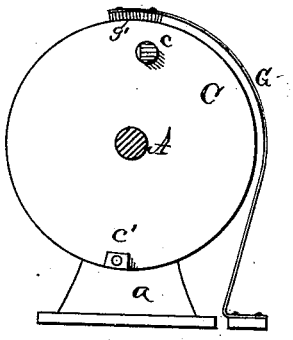
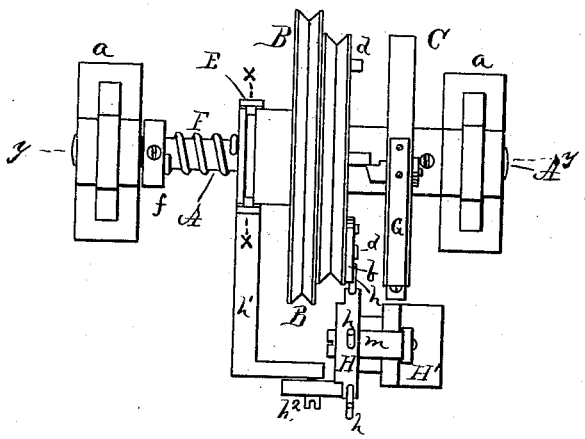


FIG. 1.



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UNITED STATES PATENT OFFICE.

HENRY FUCHS, OF CHICAGO, ILLINOIS, ASSIGNOR TO ARTHUR M. BARNHART, GEORGE W. BARNHART, ALSON E. BARNHART, AND CHAS. E. SPINDLER, OF SAME PLACE.

IMPROVEMENT IN CLUTCHING DEVICES.

Specification forming part of Letters Patent No. **201,105**, dated March 12, 1878; application filed December 31, 1877.

To all whom it may concern:

Be it known that I, HENRY FUCHS, of Chicago, in the county of Cook and State of Illinois, have invented certain Improvements in Clutching Devices, of which the following is a specification:

This invention relates to the same class of devices as the invention disclosed by the Letters Patent No. 189,210, dated April 3, 1877, and issued to my assignees, and is an improvement on the invention therein described, and is intended for the same object—viz., the converting of continuous rotary motion into intermittent rotary motion.

In the former invention the drive-pulley was shifted into and out of engagement with the other part of the clutch; but I have found it desirable to retain that part of the clutch in the same position at all times, and this I am enabled to do by making the shifting part separate from the pulley, and putting the catches upon the former and extending them through the pulley, as will be fully understood from what follows.

There are other changes in my invention, which will be more specifically described below.

The accompanying drawing shows at Figure 1 a plan view of the invention as it appears when the star-wheel is employed. Fig. 2 is a cross-section upon the line *x x* of Fig. 1. Fig. 3 represents the face of the clutch-wheel, and Fig. 4 is a longitudinal section upon the line *y y* of Fig. 1.

Like parts are designated by like letters.

In said drawing, A represents the shaft whereon the clutch is mounted, and to which the intermittent motion is intended to be given. It is provided, of course, with suitable supports *a*. Revolving upon this shaft is the belt or driving-pulley B, which may be a cone-pulley, as shown, and which is rotated by the band B′. C is the clutch-wheel, which is secured upon the shaft, and rotates the same. It is provided with a catch, *c*, for locking it with the shifting part of the clutch, and a cam-faced projection, *c′*, for actuating the bent lever which moves such shifting part.

Upon the opposite side of the drive-pulley, and mounted loosely upon the said shaft, is a shifting collar, D, to which are cast four radiating arms, D′, from each of which a catch, *d*, projects through and out upon the opposite side of the drive-pulley, suitable openings being provided in the pulley to permit this. The catches are screw-threaded for a portion of their length, and are adjustable in the openings in the arms by reason of the openings being correspondingly threaded. This adjustability permits the catches to be set out far enough to engage the catch upon the clutch-wheel, as shown in the case of the upper one in Fig. 4, and also allows them to be withdrawn sufficiently to prevent such contact, as in the case of the lower one in said figure. The nuts *d′* are employed to secure the catches when once adjusted.

E is a bent lever, pivoted at the bottom *e*, one end whereof carries a roller, *e′*, which receives the impact of the projection or cam *c′* upon the wheel C. The other end terminates in a shifter, which actuates or slides the collar D in and out, thereby bringing about the contact between the parts of the clutch, and ending such contact.

F is a spiral spring coiled about the shaft A, and confined thereon between the sliding collar and a stationary stop, *f*, which may be a collar or other suitable device for retaining the spring, and causing it to press upon the sliding collar.

A brake composed of a flat metal spring, G, and bearing-surface *g′* is shown as acting upon the clutch-wheel to steady the movement of the latter, and to stop its motion as soon as the clutch is opened.

The operation of these parts of my device is very simple. Motion being given to the driving-pulley, it revolves, and causes the sliding collar to do likewise. When that one of the catches *d* which is set out, as shown in Fig. 4, meets the catch *c* upon the clutch-wheel, the latter and the shaft are revolved until the cam *c′* strikes the bent lever and causes it to shift the shifting collar away from and out of contact with the clutch-wheel. The period of rest of the shaft may be varied by employing one or more of the other catches *d*, as will be

readily understood by those familiar with the art.

When it is desired to lengthen the period of the rest beyond that permitted by the parts above specified, a star-wheel, H, mounted upon a standard, H′, is employed to keep the clutch open, such star-wheel being rotated by a dog, *b*, upon the drive-wheel, which strikes the radiating arms *h*, and the action of the wheel being communicated to the shifter by an arm, h^1, bolted to the shifter, and a pulley, h^2, upon the end of the arm. The face of the star-wheel is made of alternate depressions and projections, which, in the construction shown, are each two in number, and are formed by giving the wheel a peripheral flange upon opposite sides thereof, each flange being one-quarter of the circumference in length, and the spaces between the flanges being of the same length.

The star-wheel has six arms, *h*, and is consequently given one complete revolution to every six revolutions of the drive-pulley, and in each revolution it permits contact of the parts of the clutch twice. It follows, therefore, that the shaft is rotated with the drive-pulley at every third revolution of the latter.

It will be understood that the period of the rest of the shaft may be varied indefinitely by changing the number of radiating arms upon the star-wheel, and also by having a different number of depressions and projections upon that wheel, or by giving those depressions and projections different lengths, and by varying their relative lengths.

A spring-brake, *m*, is preferably applied to the hub of the star-wheel, and secured in any appropriate manner.

I claim as new—

1. The combination, in a clutch, of the drive-pulley and a shifting collar, loosely mounted upon the same shaft, and carrying a catch or catches which project through openings in the pulley, substantially as specified, whereby the necessity for shifting the pulley is obviated.

2. The clutch consisting of the non-shifting drive-pulley, the shifting collar carrying the catch or catches, the clutch-wheel carrying a catch, and a suitable device for shifting the collar, substantially as set forth.

3. The clutch for automatically converting motion, consisting of the non-shifting drive-pulley, the shifting collar carrying the catch or catches, the clutch-wheel carrying a catch, a device for shifting the collar, and a spring acting to close the clutch, substantially as set forth.

4. The clutch consisting of a non-shifting drive-pulley, a shifting collar carrying the catch, the clutch-wheel carrying a catch, a device for shifting the collar, and a star-wheel connected with the collar, having projections upon its face which prevent contact of the parts of the clutch during a portion of its revolution, and rotated by a dog upon the drive-pulley, and a spring whose pressure is exerted to force the shifting collar into engagement with the clutch-wheel, substantially as set forth.

5. The star-wheel having the uniform radiating arms and the alternating depressions and projections upon its side, substantially as specified.

HENRY FUCHS.

Witnesses:
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