A. GUILD & F. B. CLARK.

Counter-Shaft with Reverse Motion.

No. 200,715. Patented Feb. 26, 1878.

Fig 1

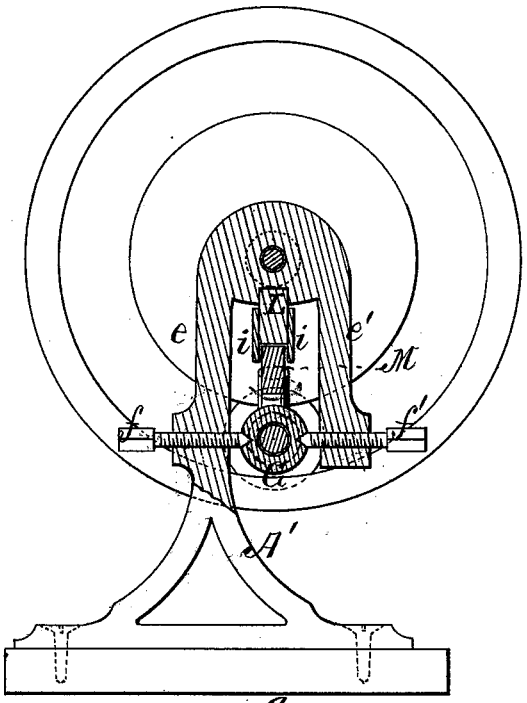
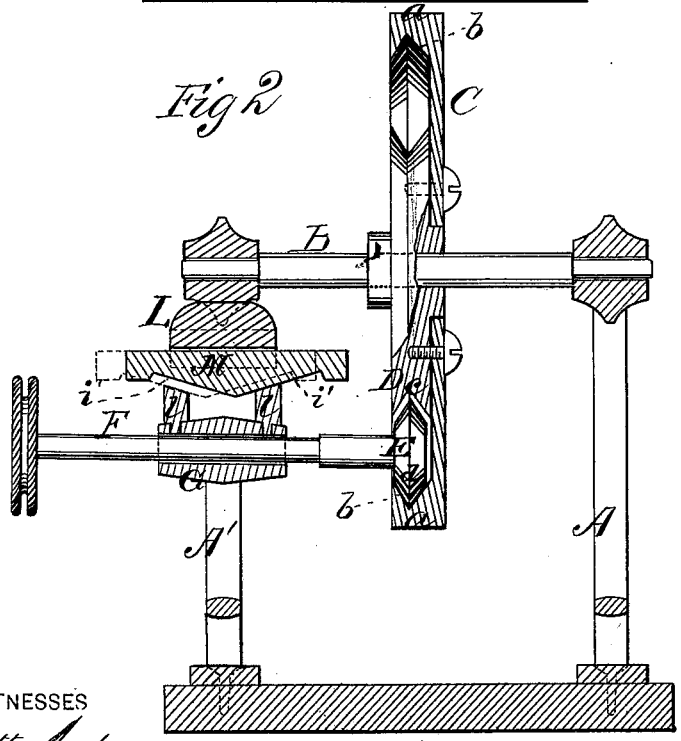


Fig 2



WITNESSES

Villette Anderson.

F. J. Allasi

INVENTORS

Augustus Guild

Frederick B. Clark

by E. W. Anderson

ATTORNEY

UNITED STATES PATENT OFFICE.

AUGUSTUS GUILD AND FREDERICK B. CLARK, OF MIDDLETOWN, CONN.

IMPROVEMENT IN COUNTER-SHAFTS WITH REVERSE MOTIONS.

Specification forming part of Letters Patent No. **200,715**, dated February 26, 1878; application filed December 15, 1877.

To all whom it may concern:

Be it known that we, AUGUSTUS GUILD and FREDERICK B. CLARK, both of Middletown, in the county of Middlesex and State of Connecticut, have invented a new and valuable Improvement in Counter-Shafts with Reverse Motion; and we do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, making a part of this specification, and to the letters and figures of reference marked thereon.

Figure 1 of the drawings is a representation of a longitudinal central section of our invention, and Fig. 2 is a vertical cross-section of the same.

This invention has relation to improvements in means for reversing the motion of the driving-pulleys of various mechanisms.

The nature of the invention will be readily understood from the following description and the claims appended thereto.

In the annexed drawings, the letters A A′ designate two spaced standards or pillow-blocks, affording bearings for a counter-shaft, B, upon which is secured, in any known way, a pulley-wheel, C. This pulley is provided upon one of its sides with an annular flange, *a*, having upon its inner surface a V-shaped groove, *b*, and with a concentric hub, D, removably secured thereto, and provided with a V-shaped groove, *c*, upon its perimeter.

Between the hub and flange aforesaid a pulley, E, having a V-shaped perimeter, *d*, corresponding to the grooves *b c* of the pulley and hub, is arranged, which pulley is of less diameter than the distance between the bottoms of the said grooves, and consequently has some play without being ever disengaged from the flange and hub.

Pulley E is keyed or otherwise secured upon the end of a shaft, F, rotating in a metallic sleeve, G, having a rocking bearing on the upright A′.

The upright A′, at its upper end, is of the form of an inverted U, and the branches *e e′*, composing this bend, are oppositely perforated and screw-tapped for the reception of the threaded bolts *f f′*, the ends of which are conical and received in corresponding recesses upon opposite sides of the bearing-sleeve G aforesaid, which sleeve is thus allowed a rocking movement on the journal-bolts *f f′*, for the purpose of thrusting the perimeter of the pulley E against the flange *a* of the pulley C, or against its hub D. When the said pulley E bears against the hub the direction of rotation of the pulley C is the reverse of that which occurs when it bears against the flange.

These changes are readily accomplished by means of the following mechanism: An oblong metallic block, L, having a straight lower edge and edge flanges *i*, forming a groove, *j*, is rigidly secured to or cast on the standard A′ at a point between the branches of the U-bend, directly over and in the same plane with the shafts B F.

In the space between the flanges *i* of block L a sliding key, M, is placed, having a double-inclined lower edge, the inclines *i′* of which rest upon upwardly-projecting spurs *l* upon the sleeve G, at each side of the pivotal point of the same. These spurs have oppositely-beveled ends, corresponding to the inclination of slide. By drawing the slide forcibly outward from the pulley C, the slide-key presses against the outer spur *l* of sleeve G, and forces the pulley E against the hub, thereby imparting, through its frictional contact therewith, rotary motion to the pulley C. If the said slide be thrust inward toward pulley C, it presses against the inner spur *l* of the sleeve, and forces pulley E against the flange of pulley C, thereby reversing the movement of the said pulley.

What we claim as new, and desire to secure by Letters Patent, is—

The combination, with the pulley C, having the grooved hub D and flange *a*, the friction-pulley E, and its shaft F, of the rocking journal G, having beveled spurs *l*, one at each side of its axis, and the slide M, having inclined lower edge *i′*, substantially as specified.

In testimony that we claim the above we have hereunto subscribed our names in the presence of two witnesses.

AUGUSTUS GUILD.
FREDERICK B. CLARK.

Witnesses:
ELDON B. BIRDSEY,
E. C. DOUGLAS.