(No Model.)

E. E. CLARK.

FRICTION CLUTCH.

No. 477,244. Patented June 21, 1892.

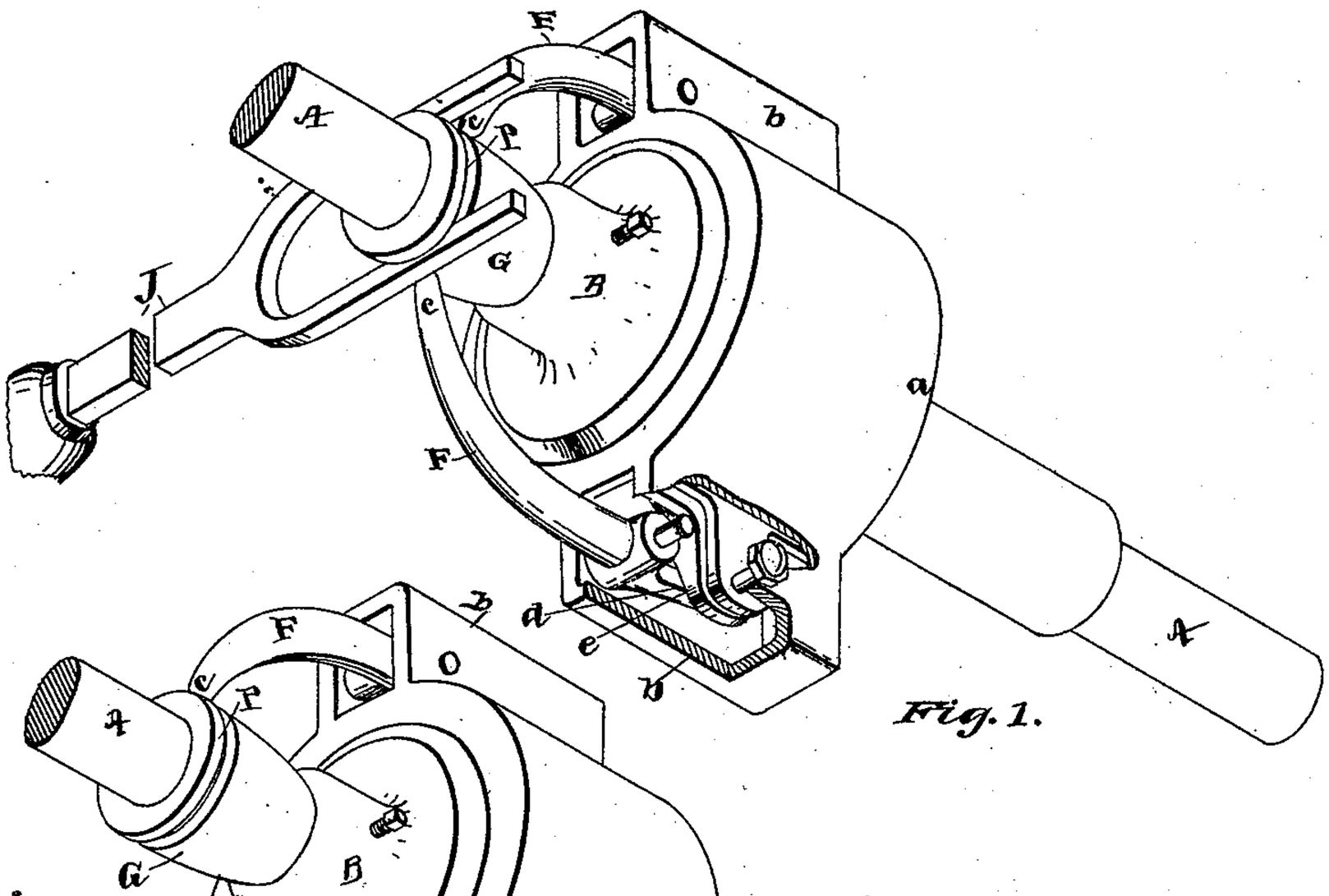

Fig. 1.

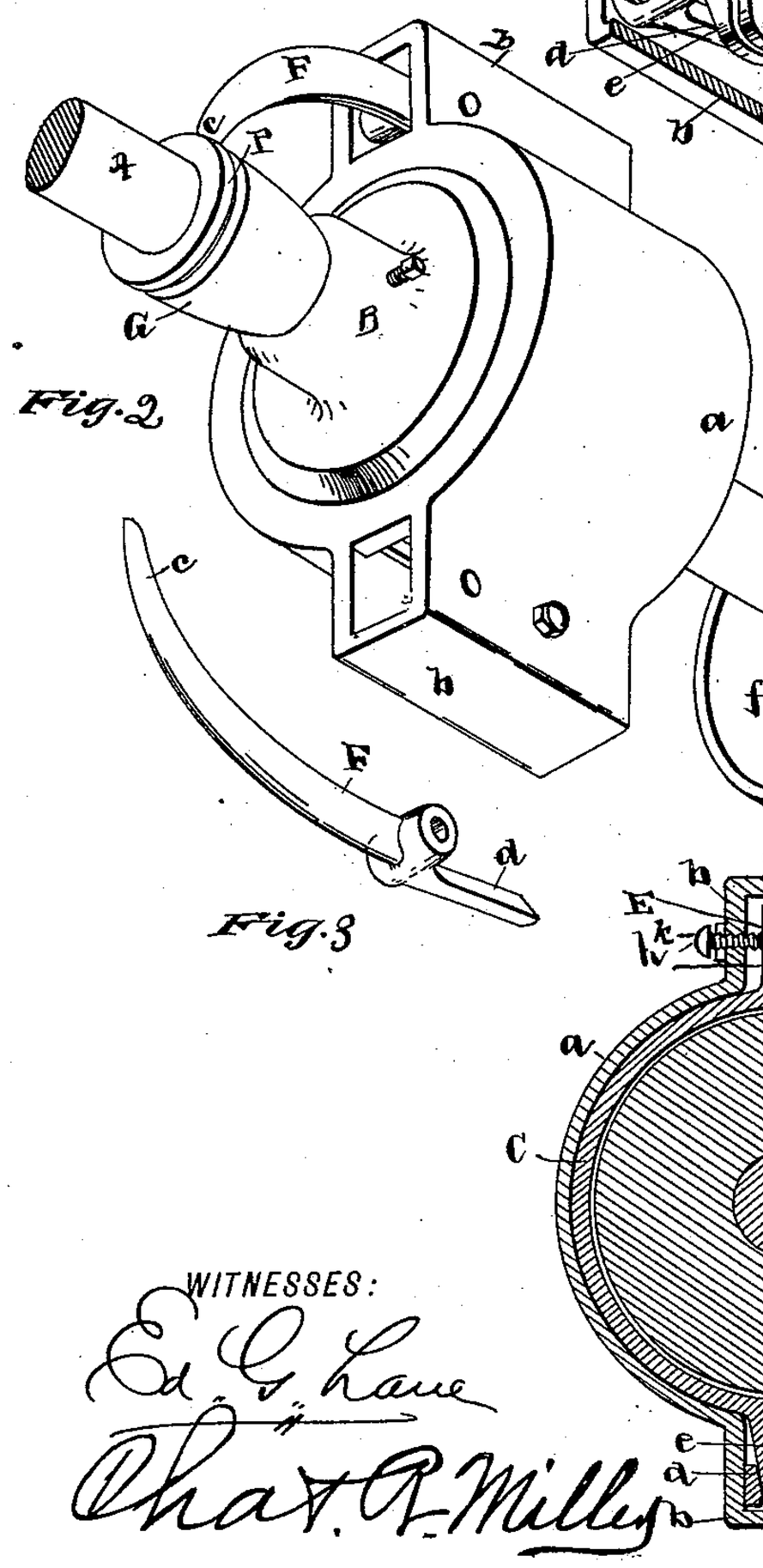

Fig. 2

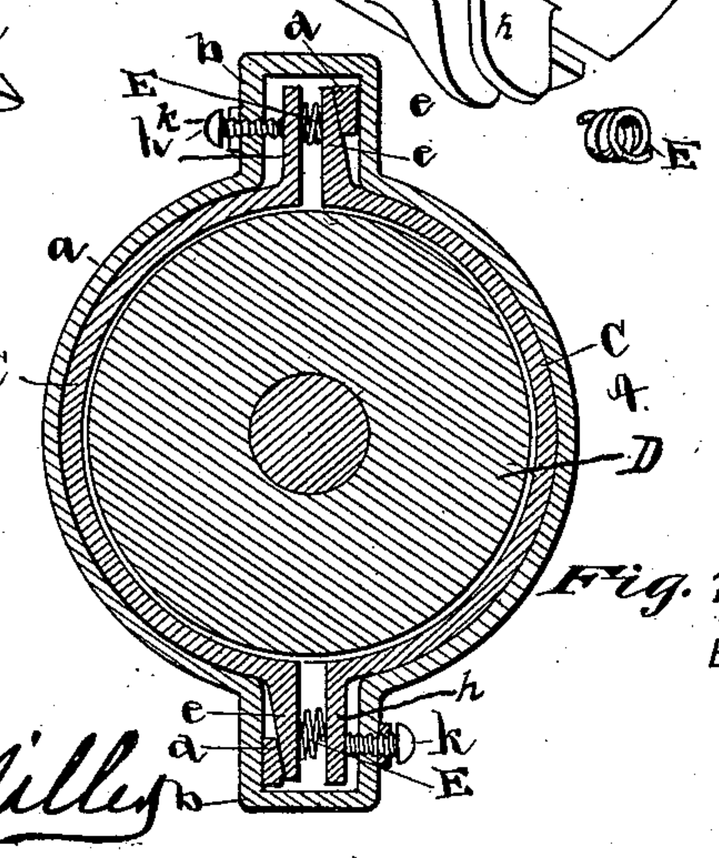

Fig. 4

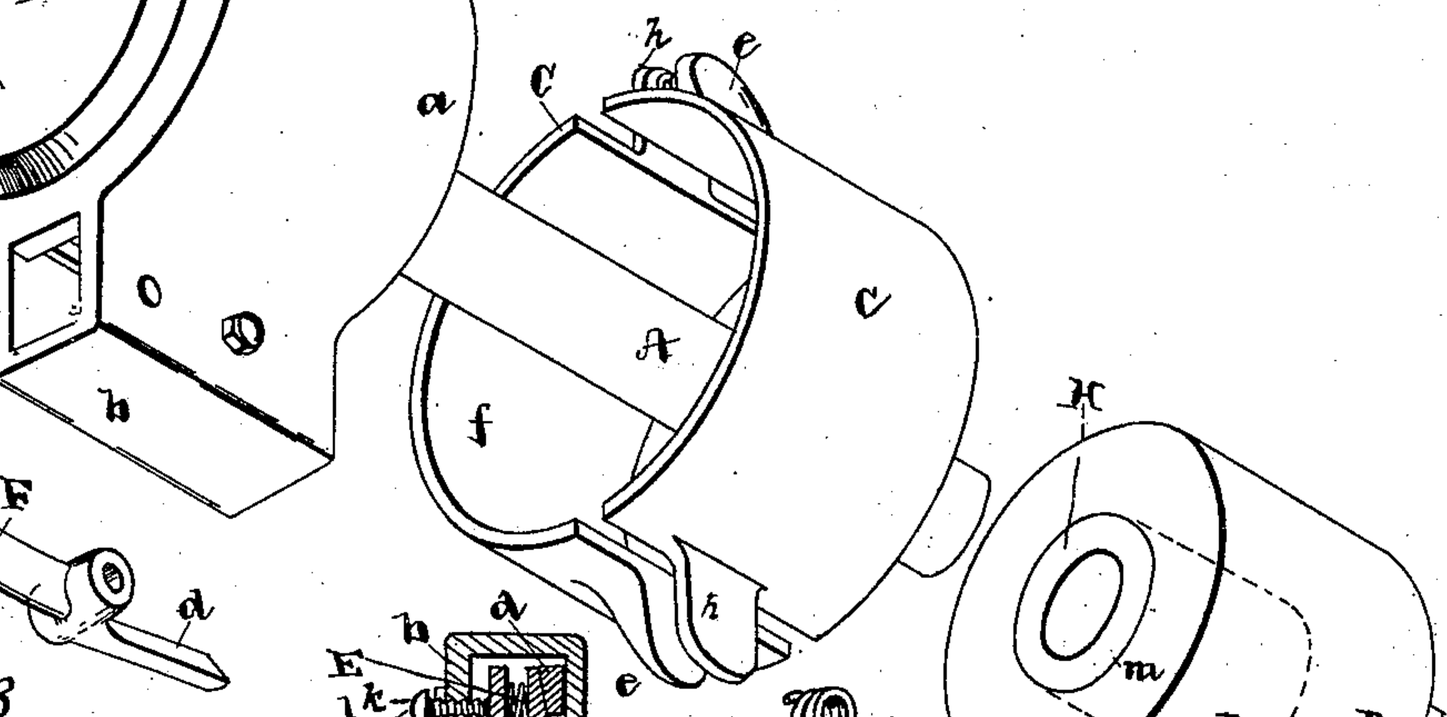

Fig. 3

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EARL E. CLARK, OF CANTON, OHIO.

FRICTION-CLUTCH.

SPECIFICATION forming part of Letters Patent No. 477,244, dated June 21, 1892.

Application filed October 5, 1891. Serial No. 407,794. (No model.)

To all whom it may concern:

Be it known that I, EARL E. CLARK, a citizen of the United States, and a resident of Canton, county of Stark, State of Ohio, have invented a new and useful Improvement in Friction-Clutches, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, making part of this specification.

My invention relates to improvements in friction-clutches, the object of which is to provide an effective quick-operating clutch at a greatly-reduced initial cost.

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

Figure 1 of the accompanying drawings is a view in perspective of a friction-clutch, illustrating my invention; Fig. 2, a similar view showing the parts separated. A is the shaft; B, the false hub; C, the friction-shoes; D, the hub, and E a coil-spring. Fig. 3 is a similar view of the shoe-actuating lever; Fig. 4, a transverse section through the central portion of the clutch.

Similar letters of reference indicate corresponding parts in all of the figures of the drawings.

The hub B, secured to the shaft A, is provided with an overhung or flanged-out portion *a*, having outwardly-projected hollow or skeleton lugs *b*, diametrically opposite, in which are pivotally secured, as shown, the shoe-actuating levers F, each of said levers having its outer end portion *c* bent or curved inwardly toward the shaft A and adapted to engage the cone G, and the inner end portion *d* graded or beveled off on one side to correspond with the grade or bevel of the beveled lugs *e* on the friction-shoes C. The shoes C are cast integral or in the form of a ring and the inner face *f* turned out to conform to the face of the hub D, after which the ring is separated by a cut through between the lugs *e* (hereinbefore mentioned) and the lugs *h*, with which the shoes are provided. The shoes thus formed are placed in the chamber formed by the overhung portion of the hub B and the lugs *e* and *h* in the hollow lug *b*, the lug *h* resting against the lug *b*, or, if preferred, against an adjusting-screw *k*, and the lug *e* against the beveled face of the end portion *d* of the lever F. The hub D is then passed into or between the shoes.

The hub D may represent the hub of a loose pulley or a shaft-coupler. In the latter case the hub will be counterbored, as shown by the lines *m n*, in which counterbore is placed an anti-friction bushing H. When so used, the hub will be secured to the end portion of one shaft, the end of the shaft to be coupled thereto, to pass into the bushing H, and to rotate therein when not secured against rotation by the application of the shoes C to the hub D.

To operate the clutch-actuating levers, a slide-cone G is placed on the shaft A, provided with an annular groove P, in which is placed the prongs of a shipping-lever J. To bring the friction-surface of the shoes in contact with the hub D, the lever J is moved to slide the cone G toward the hub B, engaging and carrying outwardly the outer ends *c* of the shoe-actuating levers F, which operation throws the inner ends *d* of the levers inwardly against the lugs *e* of the shoes. The beveled or wedge-shaped portion of the lever pressing against the beveled face of the lug *e* serves to force the opposite ends of the shoes in opposite directions, thereby closing the shoes in upon the hub D. The bite or grip of the shoes may be regulated by the use of the set-screws *k*. By a reverse movement of the cone the levers F will be released and the shoes cast from the hub by the expanding action of the spring E, placed between the ears *e* and *h*. The advantage of this form of construction over those heretofore made is that with the same grade on the cone G and on the lugs *e* and the end *d* of the lever F the shoes may be more quickly thrown into and out of engagement with the hub D by throwing on or off at two points or the grades on the cone the lugs *e*, and the end *d* of the lever may be reduced so as to increase the force of the shoes on the hub D, and yet the parts will have the requisite movement to engage and release the hub D instantly, the spring E serving to throw off the shoes as soon as released by the lever.

The advantage of the anti-friction bushing H in the hub D when the clutch is used as a coupler will be apparent to all persons operating lines of shafting where it is desirable to stop one section and allow the other or engag-

ing section to continue to rotate. The bushing with its central aperture, in which the end of the shaft is placed, serves to center and form a journal-support for the end of the rotating shaft.

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

The combination, in a friction-clutch, of the hub B, having an overhung annular flange provided with hollow lugs projecting therefrom at diametrical points on its periphery, clutch-operating levers F, fulcrumed in said hollow lugs and provided with fulcrum ends *d*, beveled on one face, semicircular shoes C, having at one of their ends the plain lugs *h* and at the other ends the operating-lugs *e*, provided with one outer beveled face each, the interposed springs E between the plain faces of the lugs *h* and *e*, and the set-screw *k* for regulating the bite or grip of the shoes C upon the hub, substantially as specified.

In testimony whereof I have hereunto set my hand this 23d day of September, A. D. 1891.

EARL E. CLARK.

Witnesses:

W. K. MILLER,

CHAS. R. MILLER.