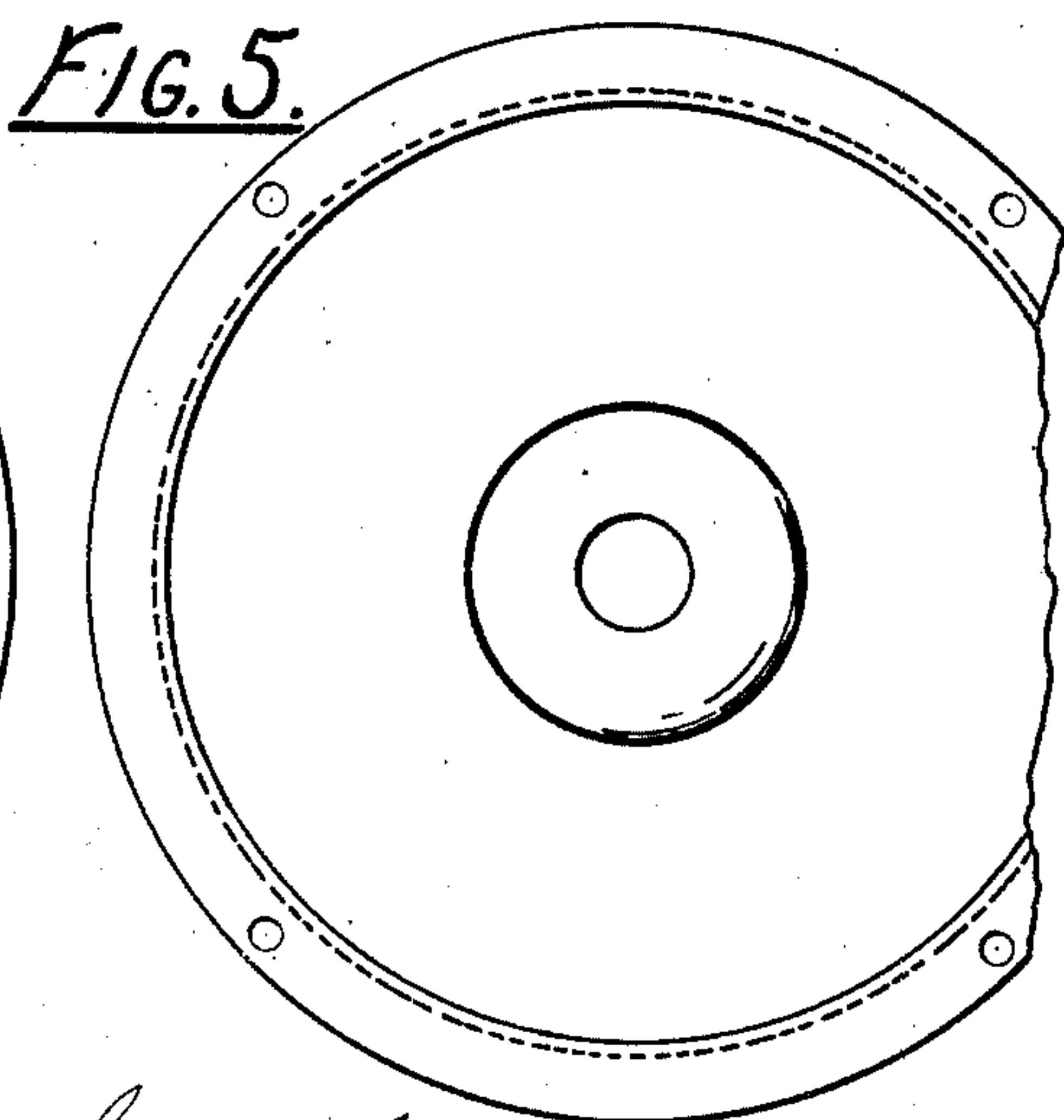
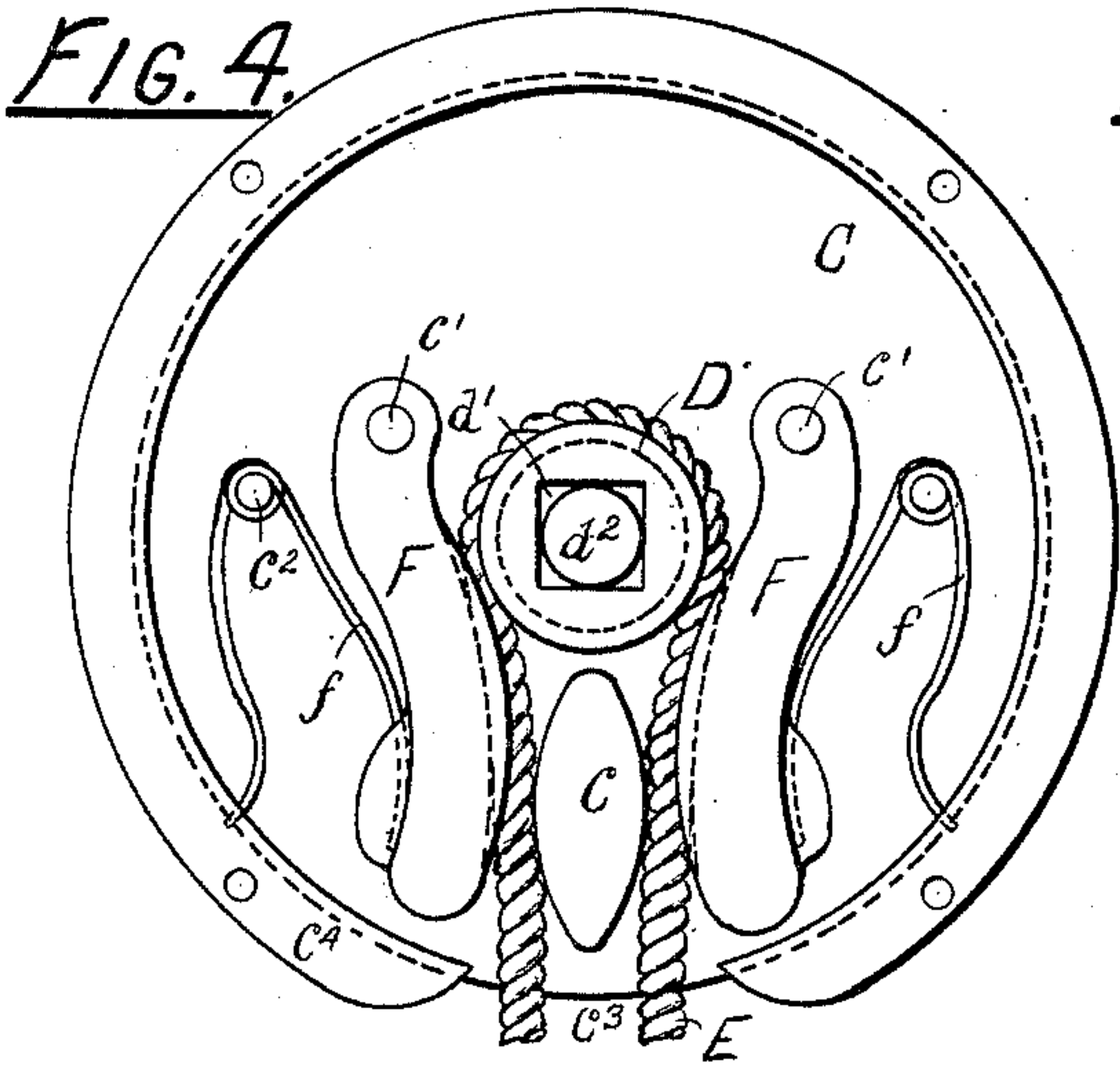
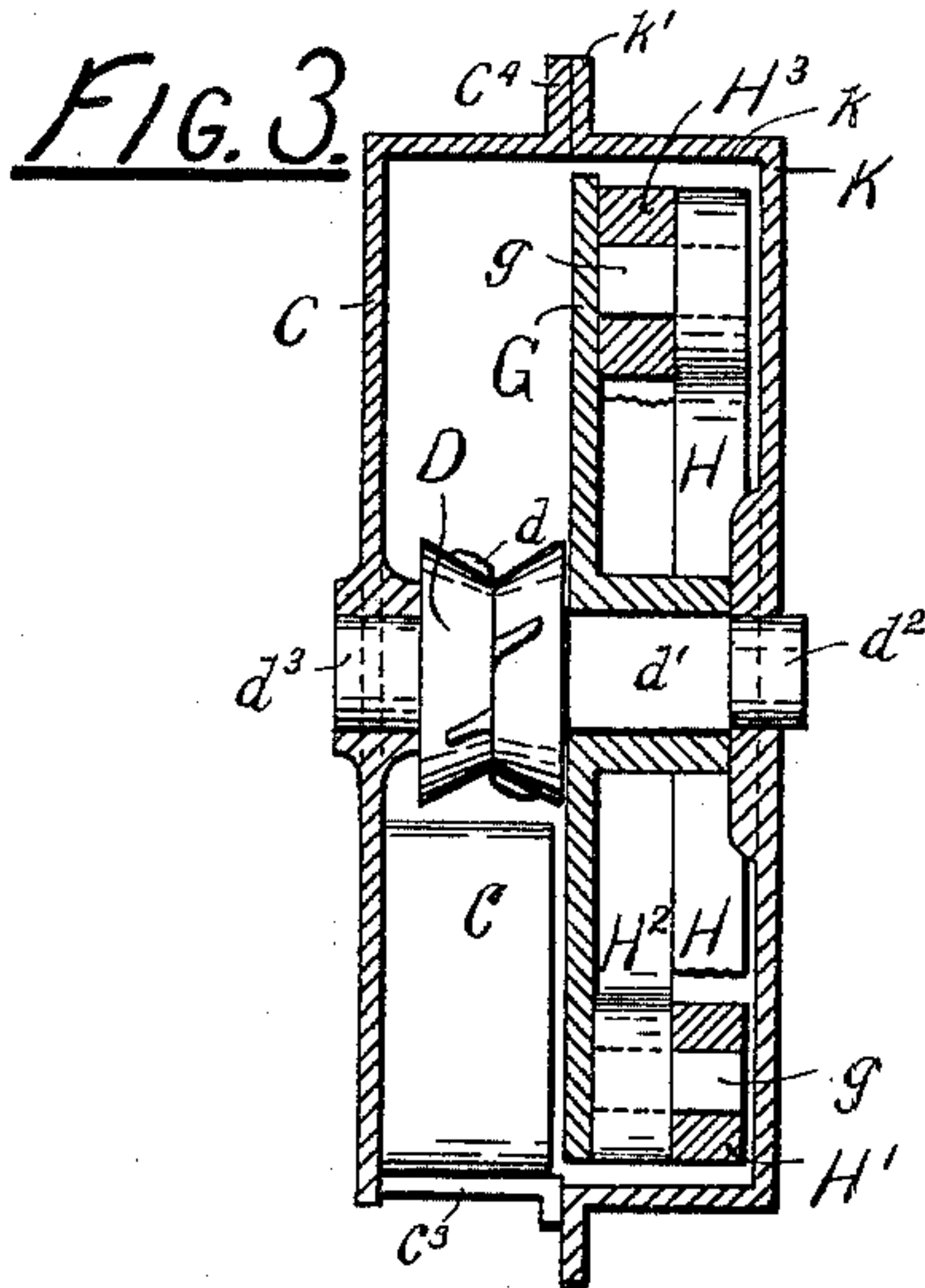
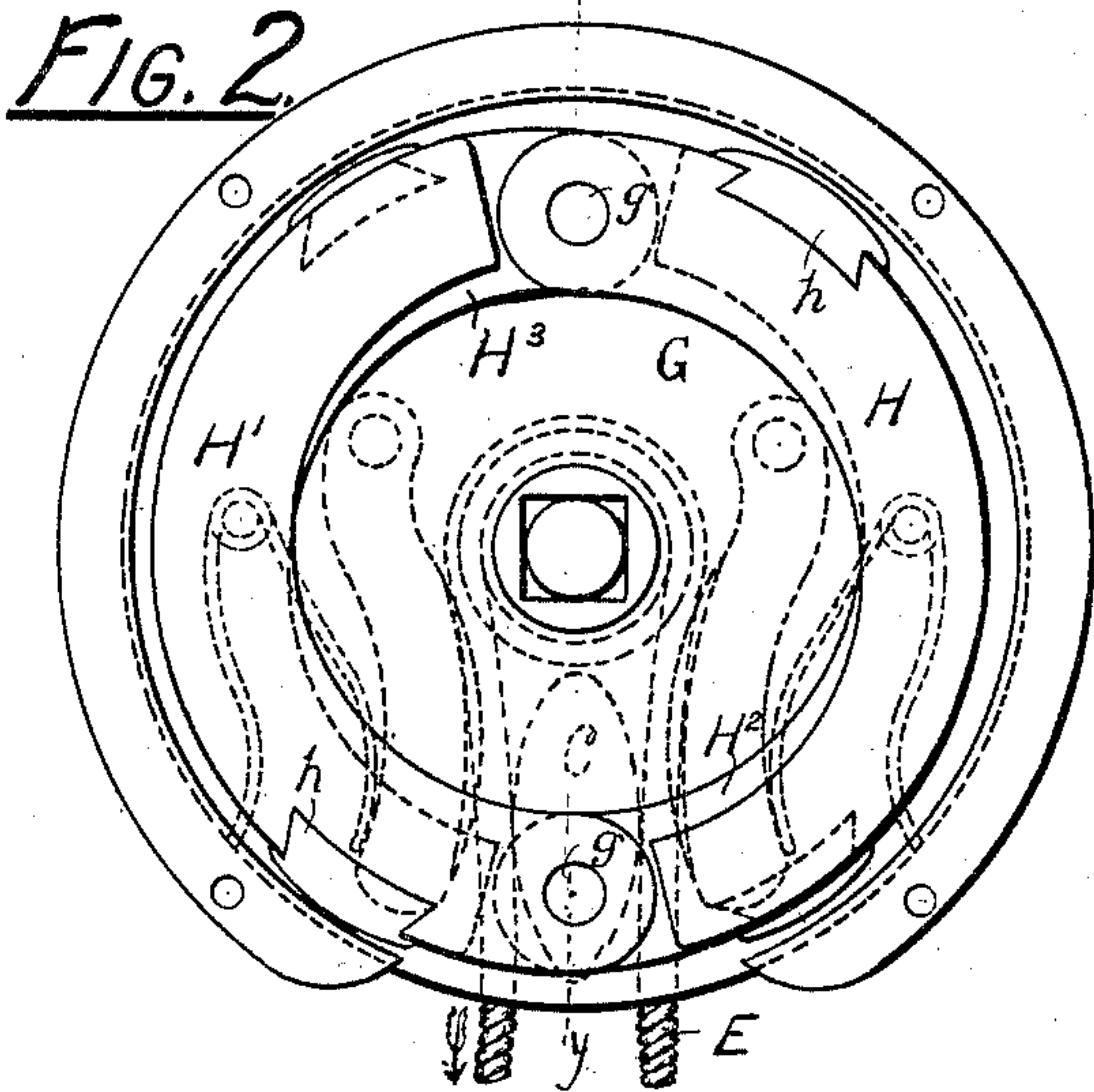
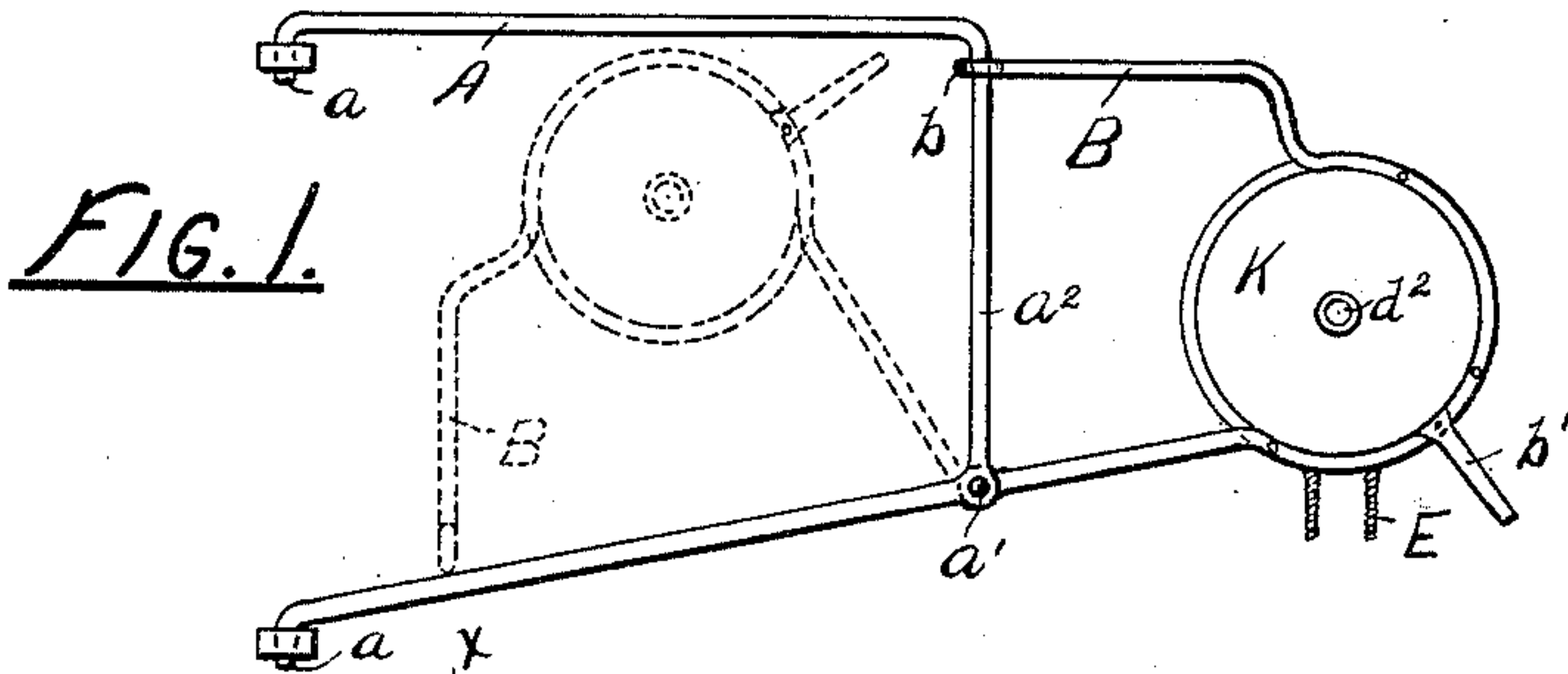


(No Model.)

J. F. HILL.
FIRE ESCAPE.

No. 432,045.

Patented July 15, 1890.



Witnesses

E. A. Kelly
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James F. Hill Inventor

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UNITED STATES PATENT OFFICE.

JAMES F. HILL, OF FLEETWOOD, PENNSYLVANIA.

FIRE-ESCAPE.

SPECIFICATION forming part of Letters Patent No. 432,045, dated July 15, 1890.

Application filed April 17, 1890. Serial No. 348,411. (No model.)

To all whom it may concern:

Be it known that I, JAMES F. HILL, a citizen of the United States, residing at Fleetwood, in the county of Berks, State of Pennsylvania, have invented certain Improvements in Fire-Escapes, of which the following is a specification.

My invention relates to an improved apparatus for quickly and safely lowering weights, whether animate or inanimate, but adapted more especially to be used as a means of escape from high buildings in case of fire. Heretofore apparatus has been designed for this purpose involving the use of ropes, pulleys, and friction devices; but the regulation of the speed under different weights and the general operation have not been thoroughly safe and satisfactory.

The main object of my invention is to provide a simple and convenient apparatus which will lower either a light or heavy weight at a practically uniform speed without any regulation whatever and by means of which women and children may be lowered with perfect safety.

The invention is fully set forth hereinafter in connection with the accompanying drawings, and the features are specifically pointed out in the claims.

Figure 1 is a general view of my apparatus, including the means employed to suspend it. Fig. 2 is an elevation of the main portion of the apparatus, the friction portion of the casing being removed. Fig. 3 is a cross-section through X Y of Fig. 2. Fig. 4 is a view similar to Fig. 2, but with the disk and friction-arms removed. Fig. 5 is a corresponding view of the friction-casing alone.

The main part of my apparatus is inclosed in a cylindrical casing or box, which may be six inches in diameter, more or less, and the two parts of which C and K are bolted together by means of circular flanges c^4 and k' . The same bolts may be used to secure it to the suspension-bracket shown in Fig. 1, which consists of a main bracket A, hinged at the inner ends a to a window-frame or other suitable place, and a supplemental bracket B, which is pivoted at the lower end a' of the vertical arm a^2 , connecting the horizontal arms of the main bracket. This bracket B, to the end of which

the casing is directly bolted, as shown, swings in a vertical plane around the center a' . It is moved to the dotted position when not in service, and when swung out, as shown, is held horizontal by the hooked portion b .

The rope E, which sustains the weight to be lowered, passes over a pulley D, mounted upon a shaft having bearings d^3 and d^2 in the parts C and K of the casing. Ribs d prevent slipping on the pulley. The ends of the rope drop through an opening c^3 in the casing C on either side of a lug c , which projects from its inner face. Friction-arms F F, pivoted at c' and c' to the casing on either side of the center, have their free ends pressed by springs f toward each other, thus tending to press both the ascending and descending portions of the rope against the intermediate lug c and providing a fixed amount of friction against movement in either direction.

In order to provide automatically an additional braking force proportioned to the weight upon the rope, I mount upon the squared portion d' of the shaft a disk G, which is thus rotated with the rope-pulley. From the opposite face of this disk and near its rim project pins g on opposite sides of the shaft-center. Brake-arms H^2 and H^3 , of semicircular form, are pivoted at one end to the pins g , and are provided near these pivotal points with brake-shoes h , of wood or other suitable material. These arms extend in opposite directions and on opposite sides, and the free ends of each reach nearly to the pivoted end of the other, thus limiting their possible inward swing, while the outward swing is stopped by contact of the brake-shoes h with the inner periphery of the casing K, the friction upon which is increased as the speed of rotation increases, owing to the centrifugal movement of the arms. As the brake-arms extend considerably beyond the shoes h , their weight acts as a leverage on the shoes and makes the braking force very effective. In order to make this braking force equal whether the rope and its pulley move in one direction or the other, I employ two series of brake-arms, both of which are pivoted upon the pins g . The arms H^2 and H^3 , already described, are adapted to operate most effectually when the rope E is moved in the direction of the

arrow. The arms of the second series H and H' each extend on opposite sides of the center from the arm of the first series pivoted on the same pin, and are thus adapted to operate most effectually when the rope is moved in the opposite direction from that indicated by the arrow. The movement is thus automatically made equal and uniform whether the weight to be lowered is attached to one end or the other of the rope.

When the apparatus is not in use, the rope is hung upon the post *b'*, which projects from the bracket B, and which is so arranged as to hold it when the bracket is closed to the dotted position, but to drop it when thrown outward to the working position.

The operation of my apparatus has been already clearly indicated. When the bracket B is thrown out, the rope E is a sufficient distance from the wall of the building to clear projections. A number of persons may grasp the descending rope and will be safely lowered, the speed not being increased by additional weight. The ascending end may in turn be made the descending end, as it will operate in exactly the same way in either direction, the regulation of speed being entirely automatic, and thus perfectly safe for the most helpless person.

Having thus fully described my invention, I do not limit myself to the exact construction described, as it may evidently be modified without departing from the spirit of the invention.

What I claim is—

1 In a fire-escape, the combination, with a rope-pulley, of a fixed lug or stop *c*, located

between the depending ends of the rope, and spring-actuated arms arranged to press the ends of the rope against said intermediate lug, substantially as and for the purpose set forth.

2. In a fire-escape, the combination, with a rope-pulley and the spring-actuated arms arranged to press the end of the rope against an intermediate fixed lug *c*, of an automatic brake consisting of a disk mounted on said pulley-shaft, two independent series of brake-arms carried by said disk, and a friction-casing against which said brake-arms are thrown, all substantially as and for the purpose set forth.

3. In a fire-escape apparatus, the bracket A, having two horizontal arms and a vertical portion connecting the same, in combination with a supplemental bracket B, hinged to said vertical portion, adapted to swing in a vertical plane, and provided with a stop, as *b*, all substantially as described.

4. In a fire-escape apparatus, the combination, with the bracket A, having a vertical portion *a*², of a supplemental bracket B, hinged, as at *a'*, to said vertical portion and adapted to swing in a vertical plane, a rope-and-pulley mechanism secured to said supplemental bracket, and a post *b'* projecting therefrom, all substantially as and for the purpose set forth.

In testimony whereof I affix my signature in presence of two witnesses.

JAMES F. HILL.

Witnesses:

JAMES F. DUMN,
MARY A. DUMN.