

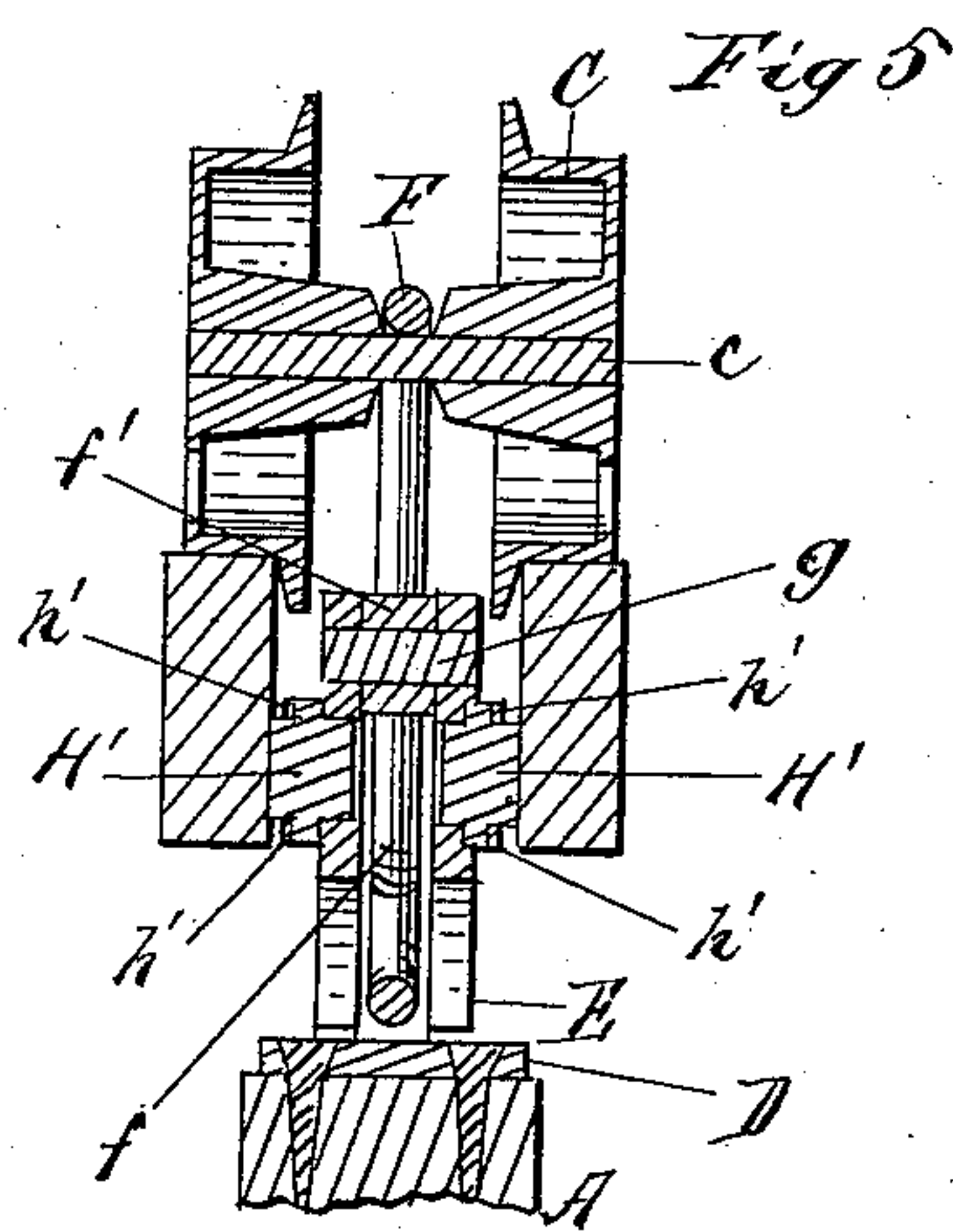
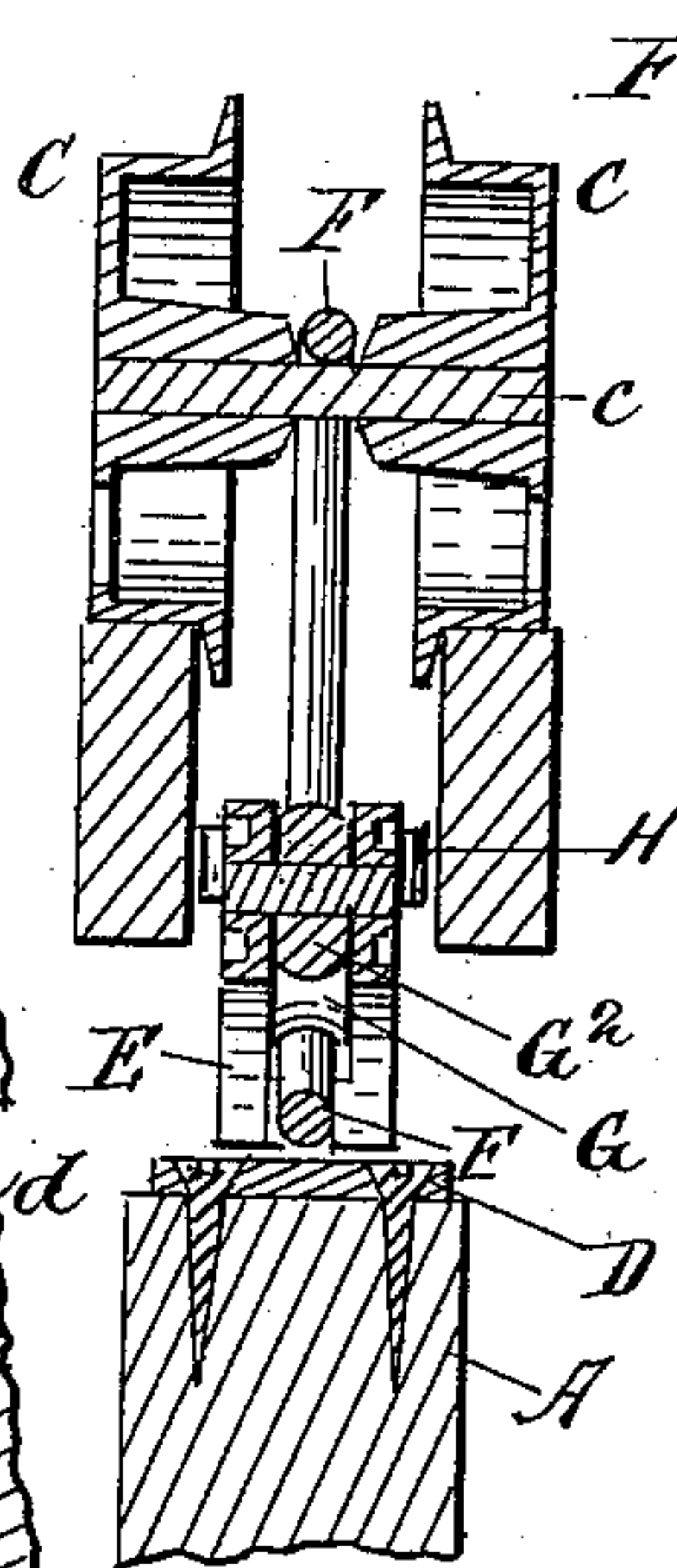
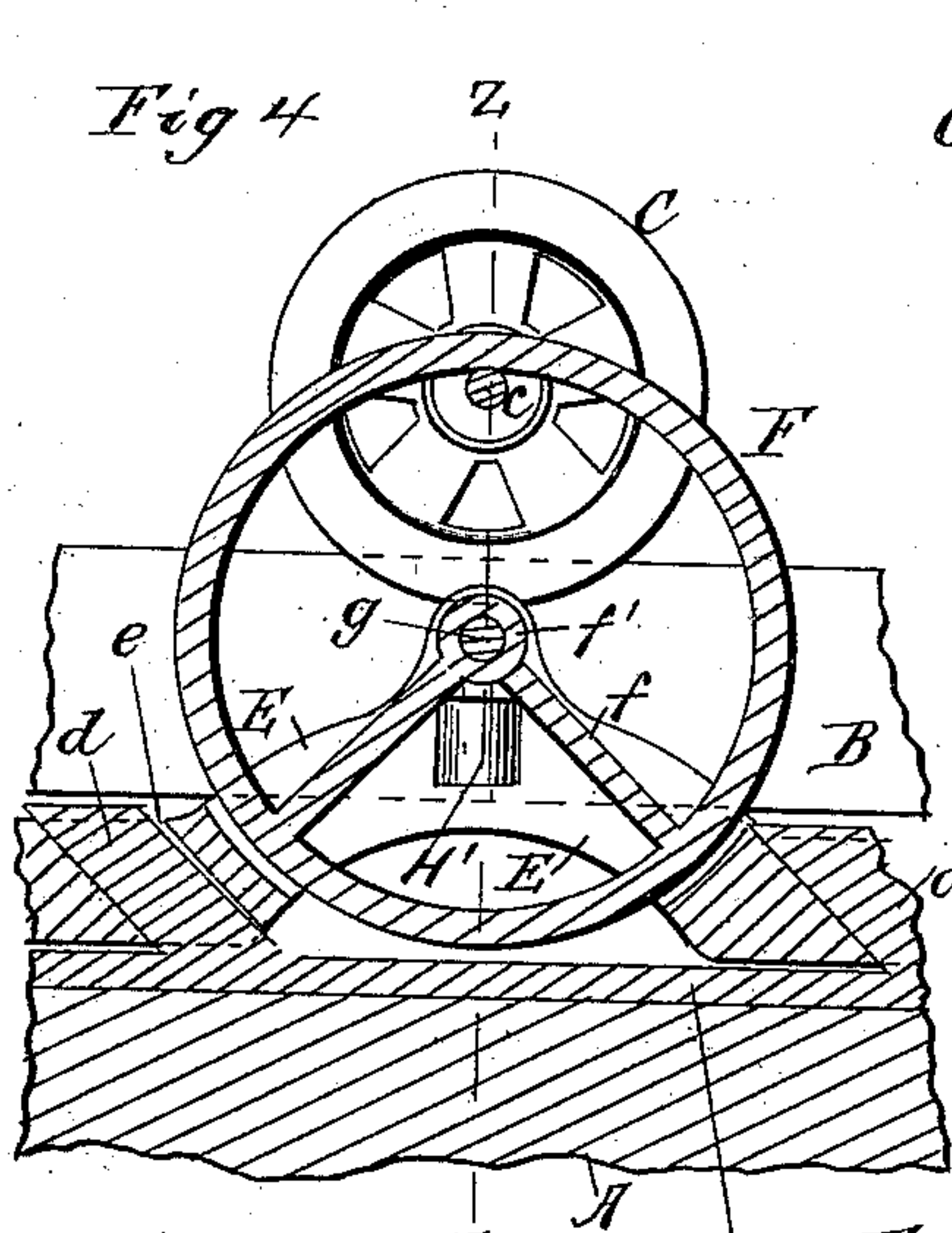
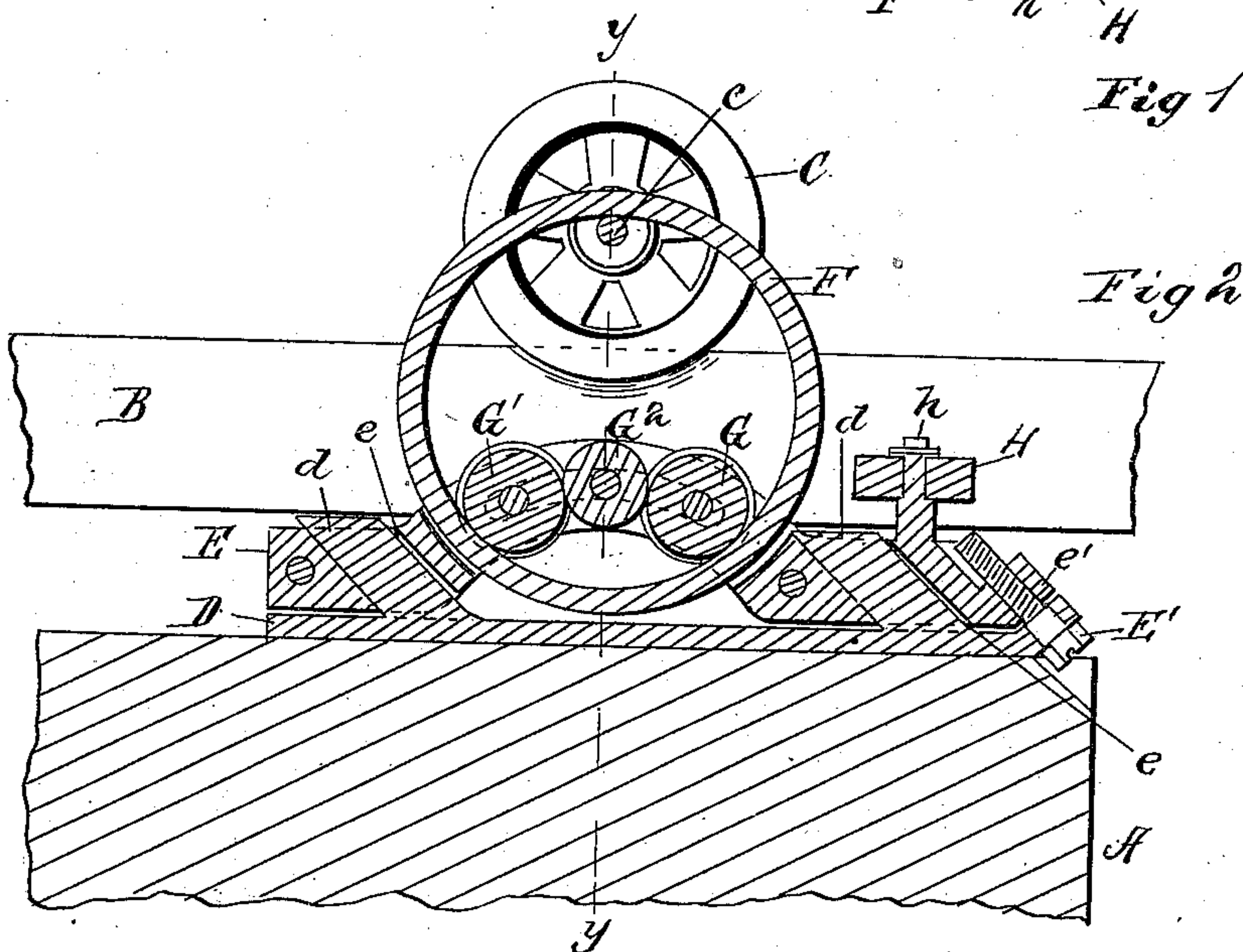
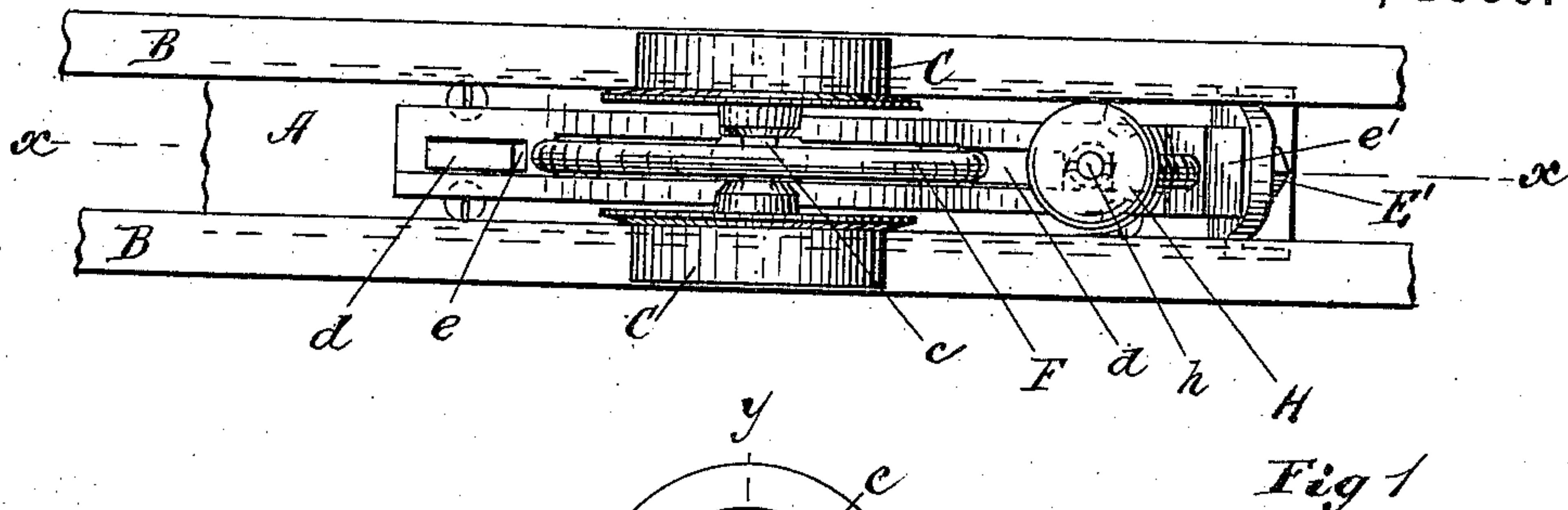
(Model.)

C. W. BULLARD.

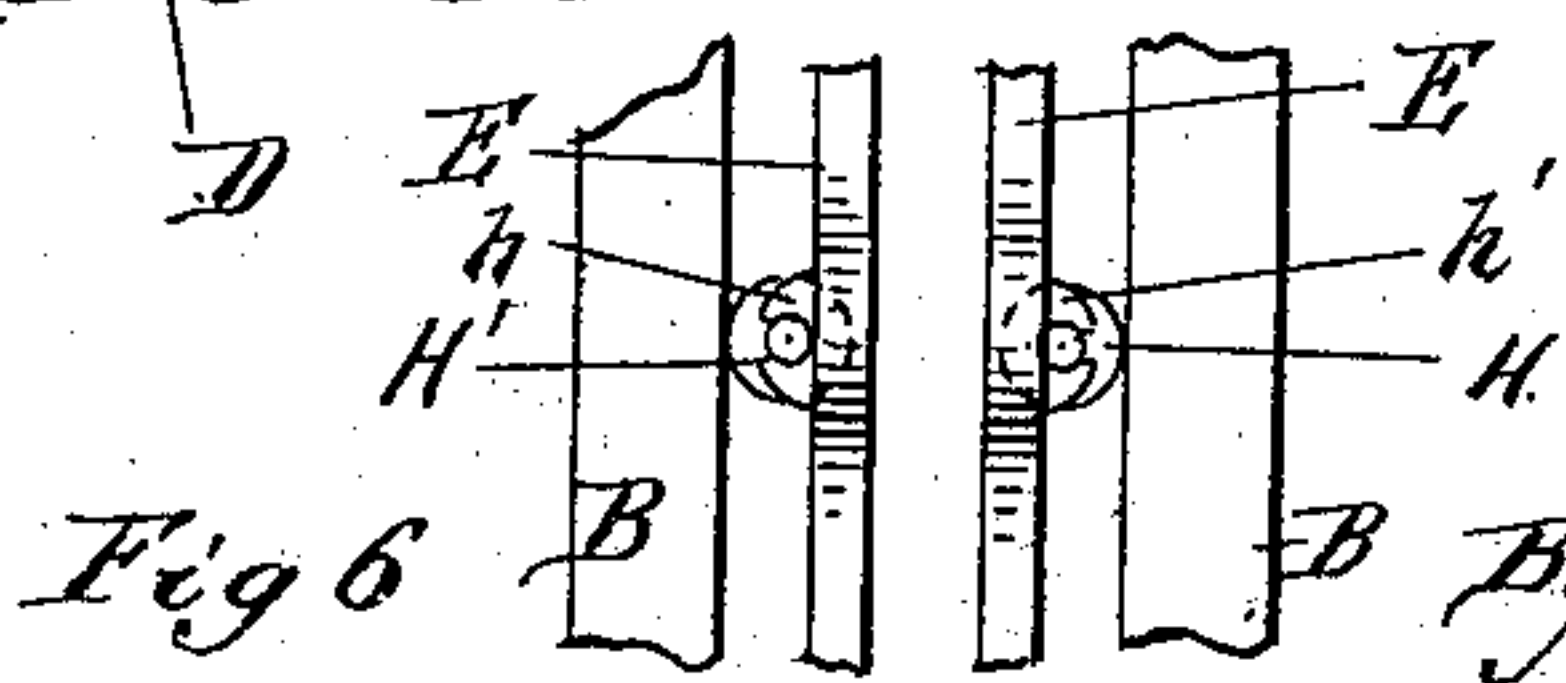
DOOR HANGER.

No. 334,344.

Patented Jan. 12, 1886.



Witnesses  
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# UNITED STATES PATENT OFFICE.

CHARLES W. BULLARD, OF CHICAGO, ILLINOIS.

## DOOR-HANGER.

SPECIFICATION forming part of Letters Patent No. 334,344, dated January 12, 1886.

Application filed March 11, 1885. Serial No. 158,489. (Model.)

*To all whom it may concern:*

Be it known that I, CHARLES W. BULLARD, a citizen of the United States, and residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Door-Hangers, which are fully set forth in the following specification, reference being had to the accompanying drawings, in which—

10 Figure 1 is a plan view of a door-hanger embodying my invention; Fig. 2, a sectional view of the same on the line *x x* of Fig. 1; Fig. 3, a sectional view on the line *y y* of Fig. 2; Fig. 4, a central longitudinal section of a modified form of my invention; Fig. 5, a transverse vertical section of the same on the line *z z* of Fig. 4, and Fig. 6 a detail plan view of a portion of the same.

Like letters refer to like parts in all the figures of the drawings.

My invention relates to door-hangers for supporting sliding doors, its object being to produce a device that will be cheap and simple in construction and effective in operation; and to these ends my invention consists in certain novel features, which I will now proceed to describe, and then specifically point out in the claims.

30 In Figs. 1, 2, and 3 of the drawings I have shown one form of my invention, in which A represents the door, and B the track or ways upon which are mounted the wheels C, upon the axle *c* of which the door is supported, as hereinafter described. Upon the upper edge of the door is secured, by means of screws or equivalent fastenings, a plate, D, provided with inclined upwardly-projecting lugs *d*, two of these lugs being shown in the present instance, though more or less than this number may be employed. These lugs *d* project through correspondingly-inclined slots *e* in a yoke, E, arranged above the plate and adapted to support the ring which supports the door upon the wheels C. Upon that end of the yoke E which is nearest the end of the door is formed an inclined lug, *e'*, which is threaded to receive an adjusting-screw, E', which passes through a corresponding lug on the end of the plate D, against the under side of which its head rests or bears when the device is in operative position.

F indicates a ring, of cast or wrought metal,

which passes over and rests upon the axle *c* of the wheels C, its lower end passing down between the upwardly-extended sides of the yoke E, and being supported by means of one or more rollers mounted in said yoke and bearing against the inner surface of the ring. In the present instance three of these rollers are shown, being provided with axles, the projecting ends of which fit within bearings on the side plates of the yoke E, these bearings being shown as consisting of simple slots cut through the said plates. The outer rollers, G and G', bear against the inner surface of the ring F, while the middle roller, G<sup>2</sup>, is arranged to bear against the two other rollers and hold them in position against the ring. The ring F being shown as circular in cross-section in the present instance, the rollers G and G' are constructed with their peripheries correspondingly grooved, while the intermediate roller, G<sup>2</sup>, has a convex periphery to correspond with the concavity of the periphery of the other two.

Upon an upright stem, *h*, projecting from the yoke E, is mounted a roller, H, of sufficient diameter to almost fill the space between the ways B. This roller will prevent any lateral canting of the door by reason of its contact with that one of the ways toward which the door tends to move, and will thereby steady it in its movement backward or forward.

In the construction shown in Figs. 4 and 5 of the drawings the ring F, instead of being supported upon a series of rollers mounted in the yoke, is provided with two inwardly-extending radial arms, *f*, having at their point of conjunction a bearing, *f'*, mounted upon a transverse axis or support, *g*, carried by the yoke E. A single radial arm, *f*, may be employed instead of two arms, as shown, or a greater number of arms than two may be used, it being understood that a segment of the ring between two of the said arms, of sufficient length to allow the door to move the whole extent of its travel, will be left unprovided with the said arms. In the construction shown, in which two of these arms are employed, the smaller segment of the ring F between the extremities of the arms may be omitted, if desired, since its presence does not affect the operation of the device.

Instead of employing a single roller, H, as



shown in Figs. 1, 2, and 3 of the drawings, I may use two small upright rollers, H', one of these rollers being located on the outside of each side piece of the yoke E, each roller having gudgeons projecting from its ends and being supported in bearings h', attached to or forming a part of the yoke. These rollers H' will be so located as to bear against the ways B, to which they are respectively adjacent, and will thereby prevent any lateral canting of the door in an obvious manner. When a single roller is employed, it cannot be arranged so as to be in contact with both of the ways B at the same time, for if it were so arranged it could not rotate, and consequently a small space must be left between its periphery and the ways, which allows of some canting of the door before the roller comes in contact with the way to check it. When two rollers are employed, they may both bear continuously against the ways and steady the door much more effectually.

The operation of my device will be readily understood from the foregoing description. One of the above-described hangers is attached to each end of the door, the door being leveled up by screwing up or unscrewing the adjusting-screw E', thereby allowing the lugs d to slide through the slots e in the yoke E, which yoke supports the door upon the ring F by means of the connection between itself and the said ring, and by means of the inclined projections d and screw E'. Upon imparting motion to the door the wheels C are caused to advance along the ways B, by reason of the ring F being mounted on their axle, the ring in the meanwhile rotating very slowly upon its support in the yoke, so that a very small segment, comparatively, of the ring will pass over the said axle during the movement of several feet of the door, while at the same time the frictional resistance is reduced to a minimum, owing to the nature of the connection between the wheels C and the door.

It is obvious that various modifications may be made in the details of construction without departing from the principle of my invention. For instance, I do not wish to be understood as limiting myself to the particular connection shown between the ring F and the

yoke E, as any approved form of rolling support may be used, the essence of my invention being a ring or a segment of a ring resting on the axle of the supporting-wheels and supported in the yoke E, so as to be capable of rotation. Although I have shown the yoke in which the ring is mounted as adjustably connected to the door, and deem this construction preferable, still it is obvious that the yoke may be mounted upon the door itself without any intermediate adjustment, or, in other words, that the door may be suspended immediately from the ring by means of proper bearings connected to the door in any suitable manner.

I am aware of Letters Patent No. 241,882, granted to F. E. Richards, May 24, 1881. I am also aware of Letters Patent No. 289,961, granted to F. Birmingham, December 11, 1883, and No. 301,389, granted to E. T. Prindle, July 1, 1884. I therefore do not wish to be understood as claiming anything set forth in the Letters Patent above specified.

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

1. In a door-hanger, the combination, with the door and carrying-wheels, of a ring or segment of a ring mounted to rotate upon a suitable support attached to the door, and suspended upon the axle of the carrying-wheels, substantially as and for the purposes specified.

2. In a door-hanger, the combination, with the door and carrying-wheels, of a ring or segment of a ring resting upon the axle of the said wheels, and mounted to rotate on a suitable support in a yoke adjustably connected to the door, substantially as and for the purposes specified.

3. The combination, with the wheels C, of the ring F, supported on their axle and having one or more radial arms, f, carrying the bearing f', mounted on an axis, e, in a yoke, E, connected with the door, substantially as and for the purposes specified.

CHARLES W. BULLARD.

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