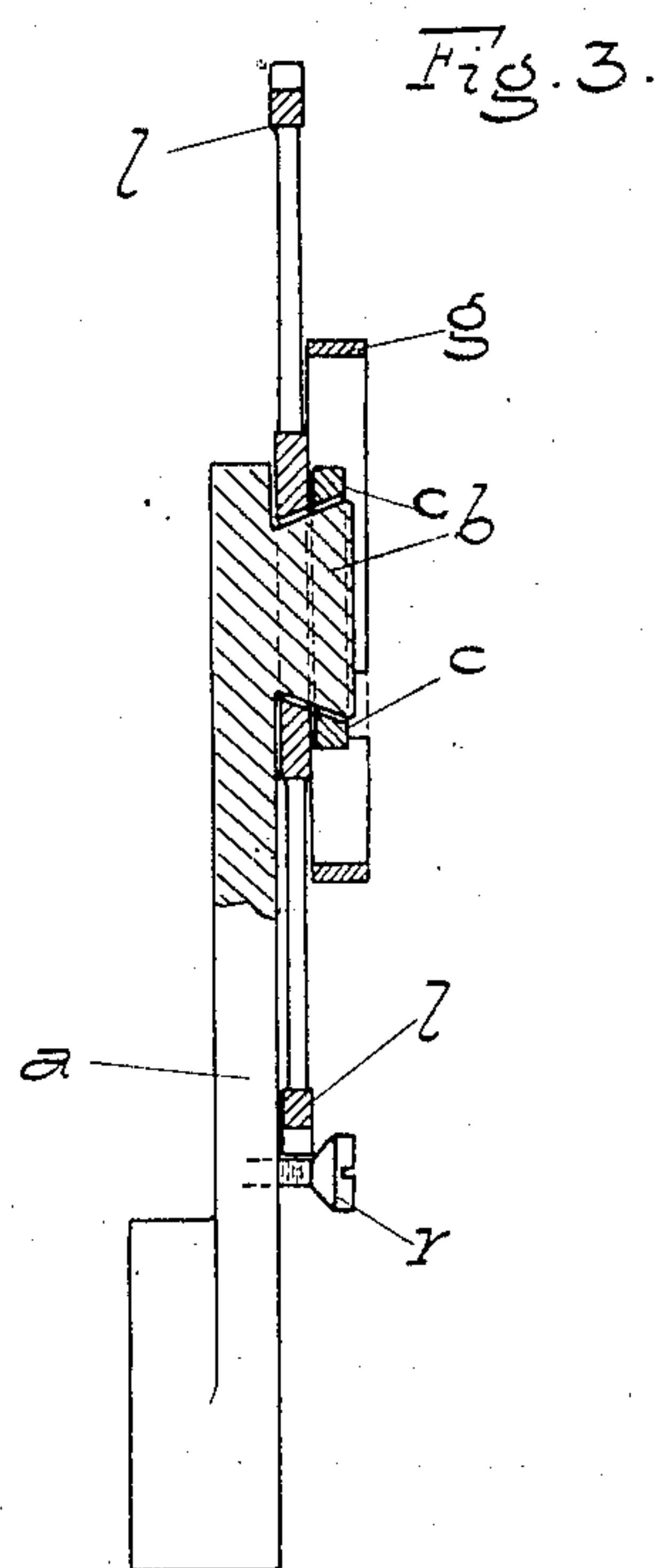
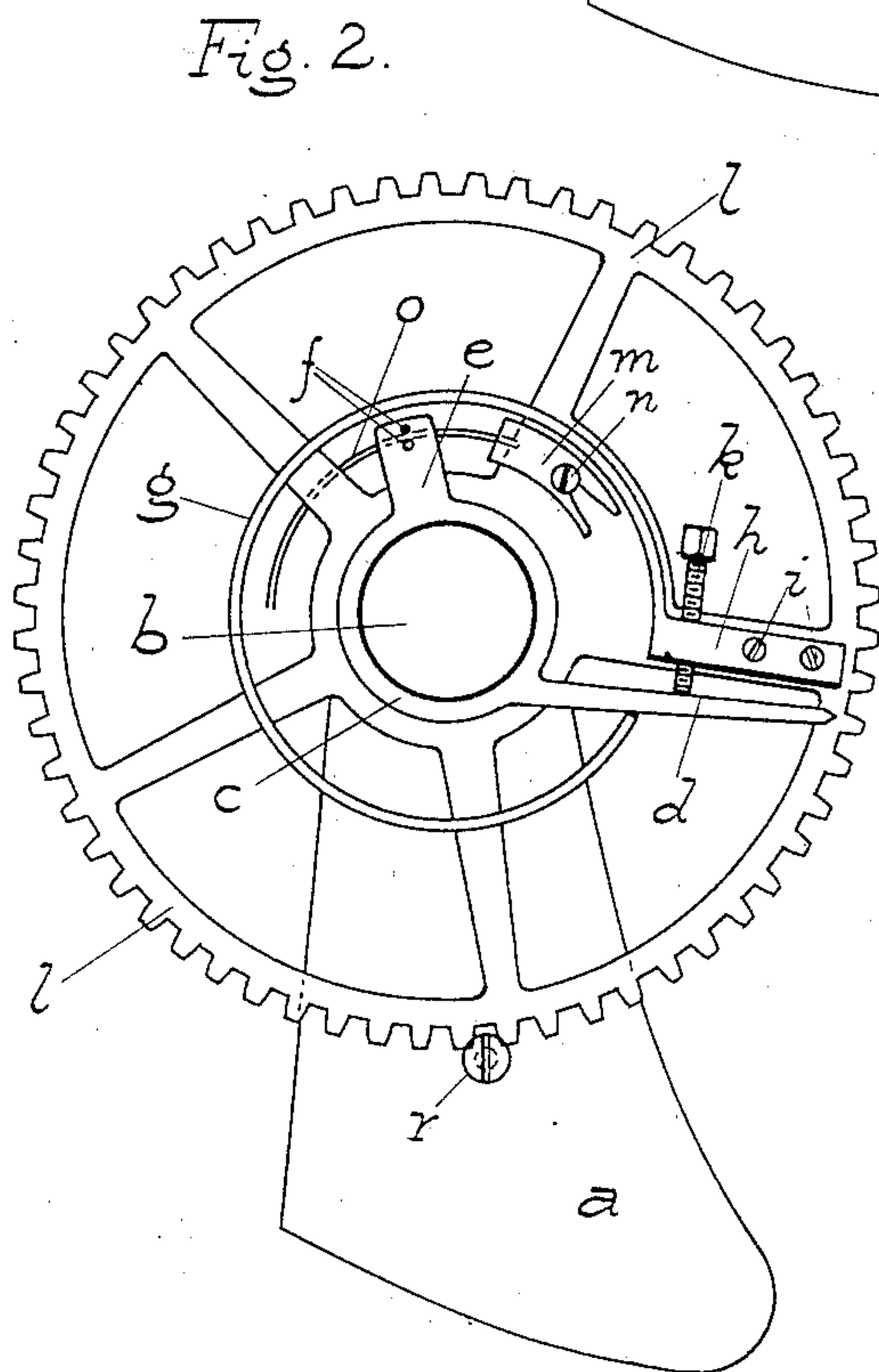
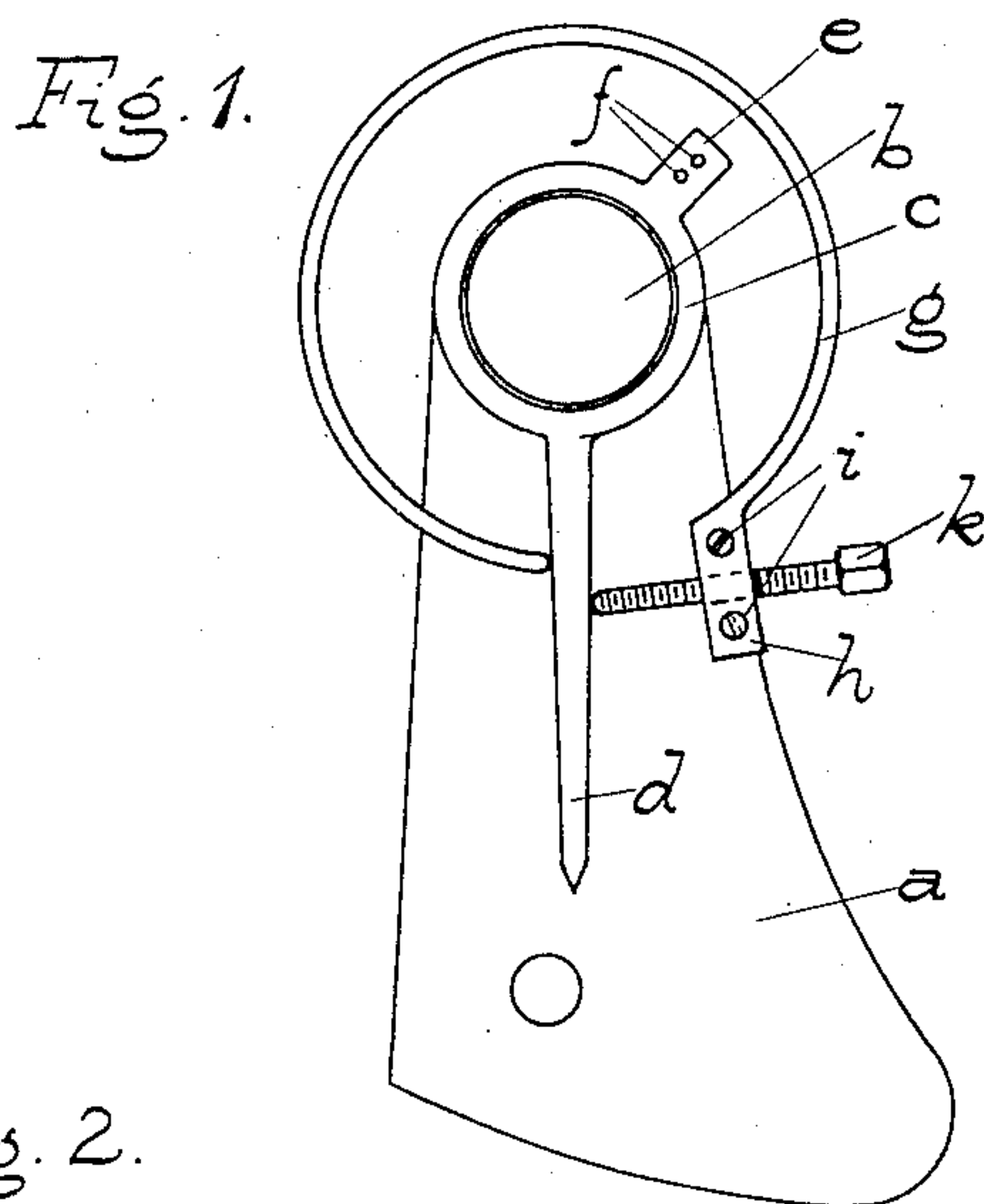


R. LANGE.  
WATCH REGULATOR.  
APPLICATION FILED DEC. 13, 1902.

NO MODEL.



Witnesses

C. H. Schilling  
Paul Arras.

Inventor  
Richard Lange  
by Paul E. Schilling  
his attorney.

## UNITED STATES PATENT OFFICE.

RICHARD LANGE, OF GLASHÜTTE, GERMANY.

## WATCH-REGULATOR.

SPECIFICATION forming part of Letters Patent No. 736,117, dated August 11, 1903.

Application filed December 13, 1902. Serial No. 135,143. (No model.)

*To all whom it may concern:*

Be it known that I, RICHARD LANGE, a subject of the King of Saxony, residing at Glashütte, Saxony, Germany, have invented certain new and useful Improvements in Watch-Regulating Mechanism, of which the following is a specification.

The present invention has reference to a mechanism for regulating watches, and relates more especially to means for regulating or adjusting the hair-spring of pocket-timepieces for the purpose of compensating the variations in the three vertical positions; and the object of the invention is to provide an adjusting and regulating mechanism which can be manufactured cheaply, but will be of the same accuracy as those now only found in high-priced timepieces.

With this object in view the invention consists of the construction and combination of the various parts to be hereinafter described with reference to the attached sheet of drawings, of which—

Figure 1 represents a plan view of the balance-cock with the pointer, circular spring, and set-screw. Fig. 2 is a plan view of the balance-cock and pointer-regulating device in connection with the regulating mechanism for the stud receiving the outer end of the hair-spring. Fig. 3 is a sectional elevation through Fig. 2.

Referring to the drawings, *a* is the balance-cock; *b*, the conical center part or head thereon.

*c* is the pointer-ring sprung upon the cone *b*, *d* the pointer, and *e* a lug on the pointer-ring carrying two pins *f f*, between which the hair-spring is held.

*g* denotes a circular spring with bent-off enlargement *h*, fastened by means of screw *i* to the balance-cock. A set-screw *k*, with slotted or square head, threads through this enlargement and bears against the pointer *d*, while the free end of the circular spring bears against the other side of the pointer. Behind the pointer-ring *c* is sprung upon the conical head *b* of cock *a* the hub of the toothed wheel *l*, upon which is secured, by means of a screw *n*, the stud *m* for receiving the outer end of the hair-spring *o*. In this construction the circular spring *g* is secured upon the toothed wheel *l* and not, as in the construction shown

by Fig. 1, upon the balance-cock *a*. The screw *r*, with beveled head threading into the balance-cock, serves to secure the toothed wheel against inadvertent rotation. By loosening the screw *r* enough to raise the head above the teeth the wheel *l* can be turned either way, displacing correspondingly the stud *m*, for the purpose of compensating the variations in the rate upon the watch being placed in one of the three vertical positions.

In order to compensate for the difference of one second a day, the wheel *l* must be shifted three or four teeth. When the adjustment has taken place by this means, the screw *r* is tightened and the wheel *l* thereby rigidly secured upon the cock *a*. Further variations in the rate are then regulated by means of the pointer-ring by actuating the set-screw *k*. The spring *g* by reason of its circular shape is relatively long and of high elasticity. It may be stamped out of sheet brass, nickel, or the like, as may also be the toothed wheel, so that the cost of manufacture of this double regulating device is so low that even the cheapest-grade watches may be provided therewith.

What I claim is—

In watch-regulating mechanism, the combination of the balance-cock, the pointer arrangement journaled upon the said balance-cock comprising a pointer-ring with hair-spring-regulator pins and the pointer, a toothed wheel journaled upon the said balance-cock below the said pointer arrangement, means for temporarily securing the toothed wheel against rotation, a circular spring, an enlargement forming one end of the said circular spring, means for securing the said circular spring upon the said toothed wheel concentric to the said pointer-ring, means for counteracting the pressure of the said circular spring upon the said pointer, and the hair-spring stud secured upon the said toothed wheel, substantially as and for the purpose set forth.

In testimony that I claim the foregoing as my invention I have signed my name in presence of two subscribing witnesses.

RICHARD LANGE.

Witnesses:

RUDOLPH SCHMIDT,  
PAUL E. SCHILLING.