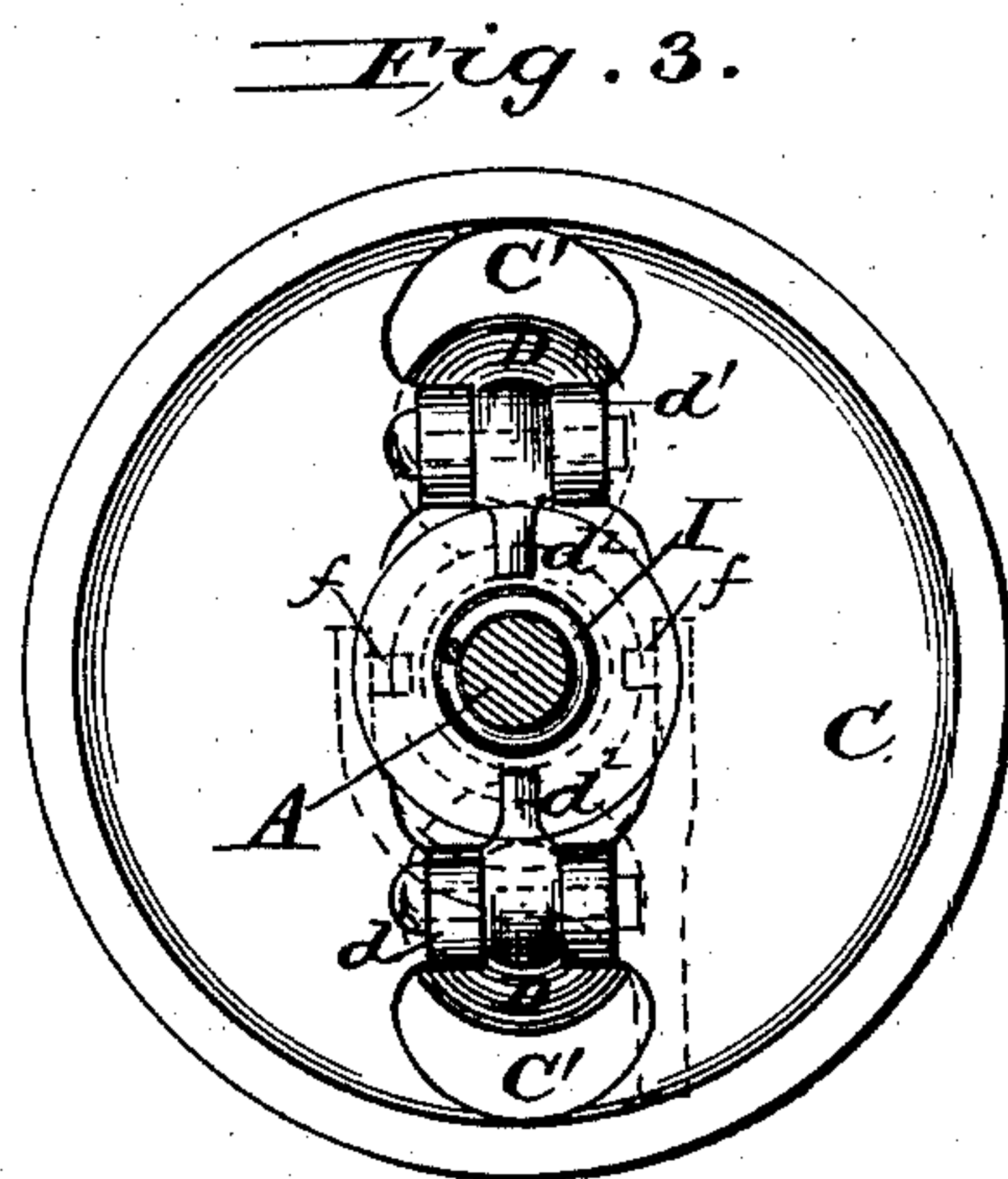
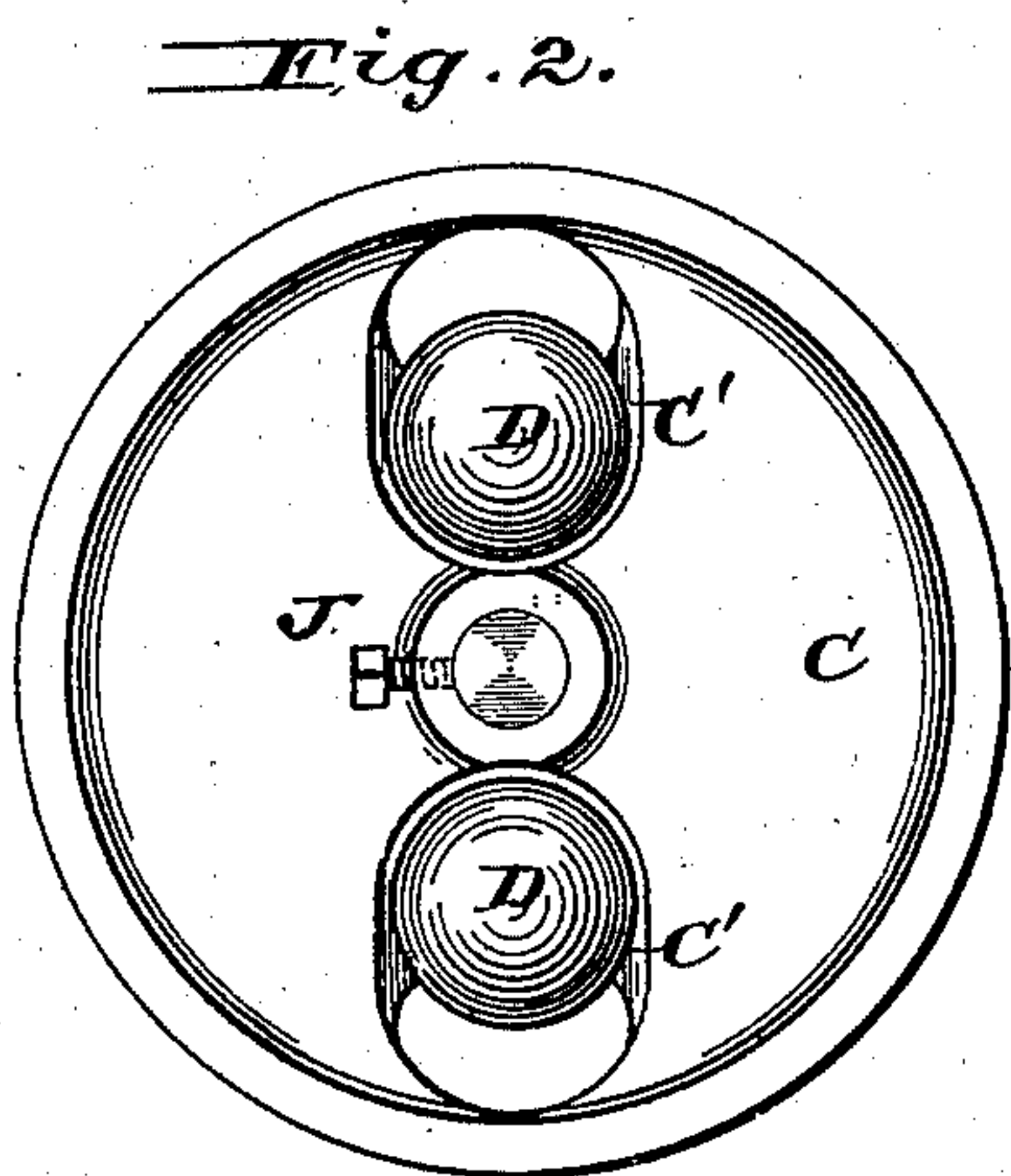
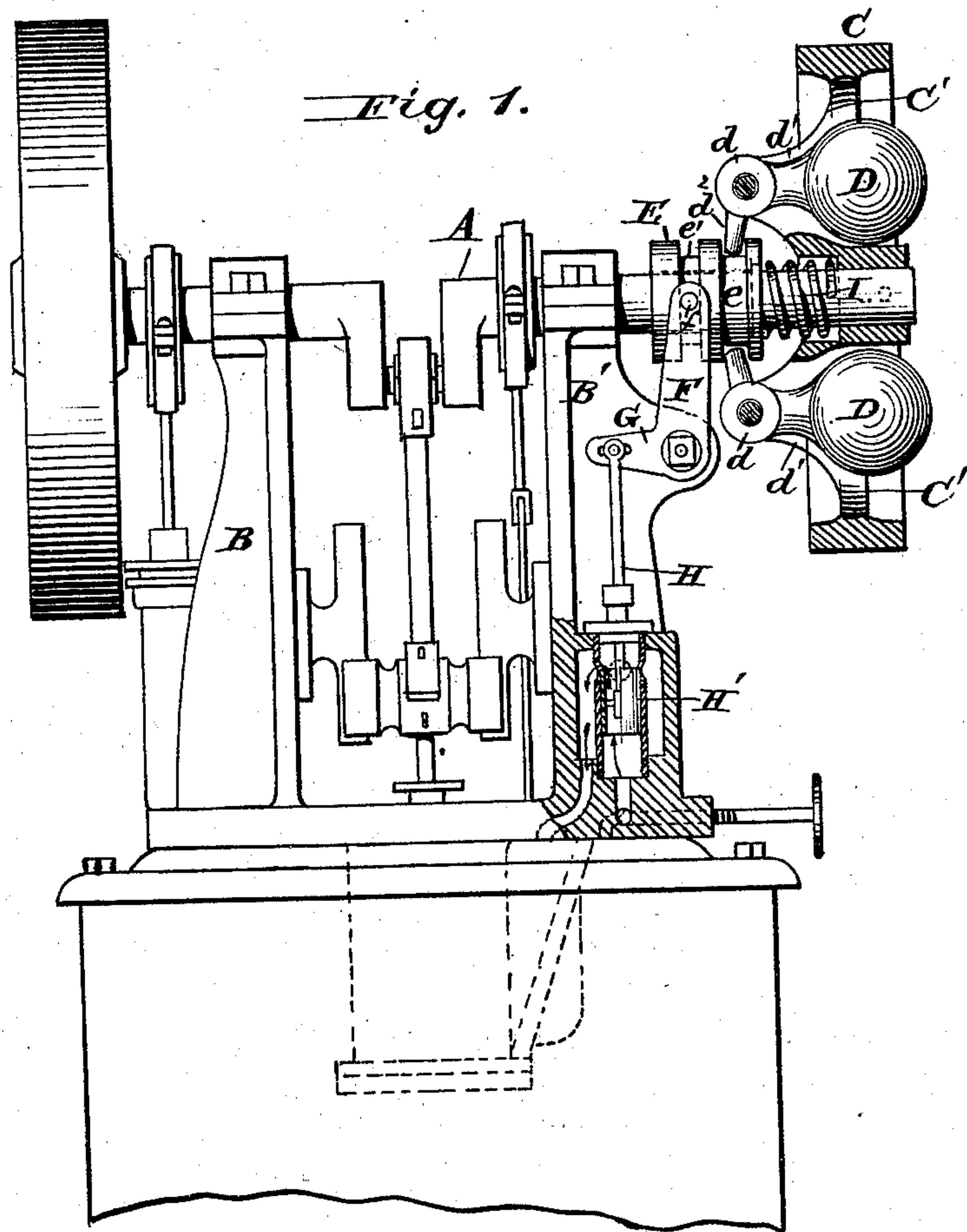


G. E. BANNER.
Governors.

No. 203,699.

Patented May 14, 1878.



Attest:
H. D. Perrine
H. B. Koff

Inventor:
George Edward Banner.
By H. A. Babcock *Atty.*

UNITED STATES PATENT OFFICE.

GEORGE E. BANNER, OF NEWARK, NEW JERSEY, ASSIGNOR OF ONE-HALF HIS RIGHT TO ANNA GRAY FALES, OF HARTFORD, CONNECTICUT.

IMPROVEMENT IN GOVERNORS.

Specification forming part of Letters Patent No. 203,699, dated May 14, 1878; application filed May 2, 1878.

To all whom it may concern:

Be it known that I, GEORGE EDWARD BANNER, of Newark, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Governors for Steam-Engines; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

This invention relates to that class of governors which operate by drawing a sliding collar connected by cranks and rods to the governor-valve.

It consists in the construction, combination, and arrangement of the sliding collar, replacing-spring, and device for regulating the tension of the latter, as hereinafter particularly set forth and claimed.

In the accompanying drawings, Figure 1 represents a vertical section of my improved governor and its attachments, and Figs. 2 and 3 represent detail views of the parts thereof.

A designates the crank-shaft of an engine, turning in bearings on standards B B'. Said shaft carries at one end a wheel, C, recessed at C' C' to allow and guide the vibration of governor-balls D D, formed on the outer ends of short elbowed arms *d d*, which are pivoted to lugs *d¹ d¹* on the back of said wheel. The rear or lower ends of said arms *d* are provided with knobs *d²*, which set into an annular groove, *e*, of a collar, E, which slides on shaft A. Said collar has also another annular groove, *e'*, which receives inwardly-extending pins or studs *f f* of a yoke, F, which is pivoted at its lower end to a lug on standard B', and

forms a bell-crank lever, with a rod or arm, G, that is jointed to valve-rod H.

I designates an expanding-spring, which is interposed between collar E and wheel C. J designates a set-screw, which binds, through the hub of said wheel, against shaft A, and by means of which said shaft may be adjusted and clamped, so as to regulate the resistance of said spring.

When the centrifugal action of the said governor-balls draws the said collar outward, the governor-valve H' is raised, so as to close the port through which the steam passes from the boiler to the cylinder.

The upward pressure of the steam against the valve-rod aids in closing the said steam-ports, and hence a high pressure tends to neutralize itself. Thus excessive rapidity of running is prevented and more equable action insured.

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

1. The combination of double-grooved collar E with valve-operating yoke F, having pins or studs *f f*, spring I, and governor-balls D, provided with knobs or pins *d²* for engaging with said collar, substantially as set forth.

2. The combination of shaft A, collar E, spring I, and wheel C with set-screw J, operating through the hub of said wheel against said shaft to adjust the tension of said spring, substantially as set forth.

In testimony that I claim the foregoing as my own I affix my signature in presence of two witnesses.

GEORGE EDWARD BANNER.

Witnesses:

W. J. BABCOCK,
W. H. BABCOCK.