

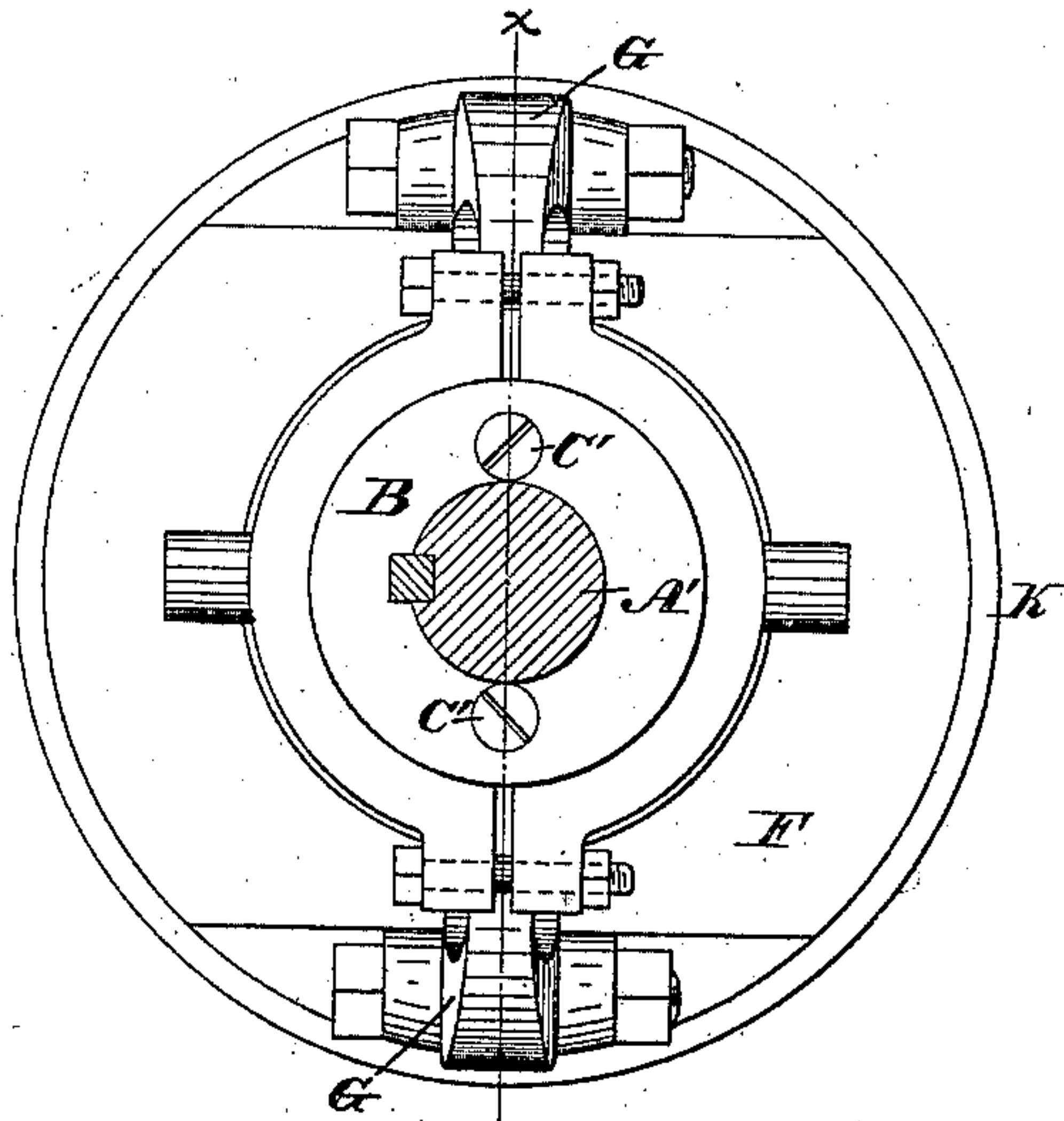
(No Model.)

I. N. FORRESTER.

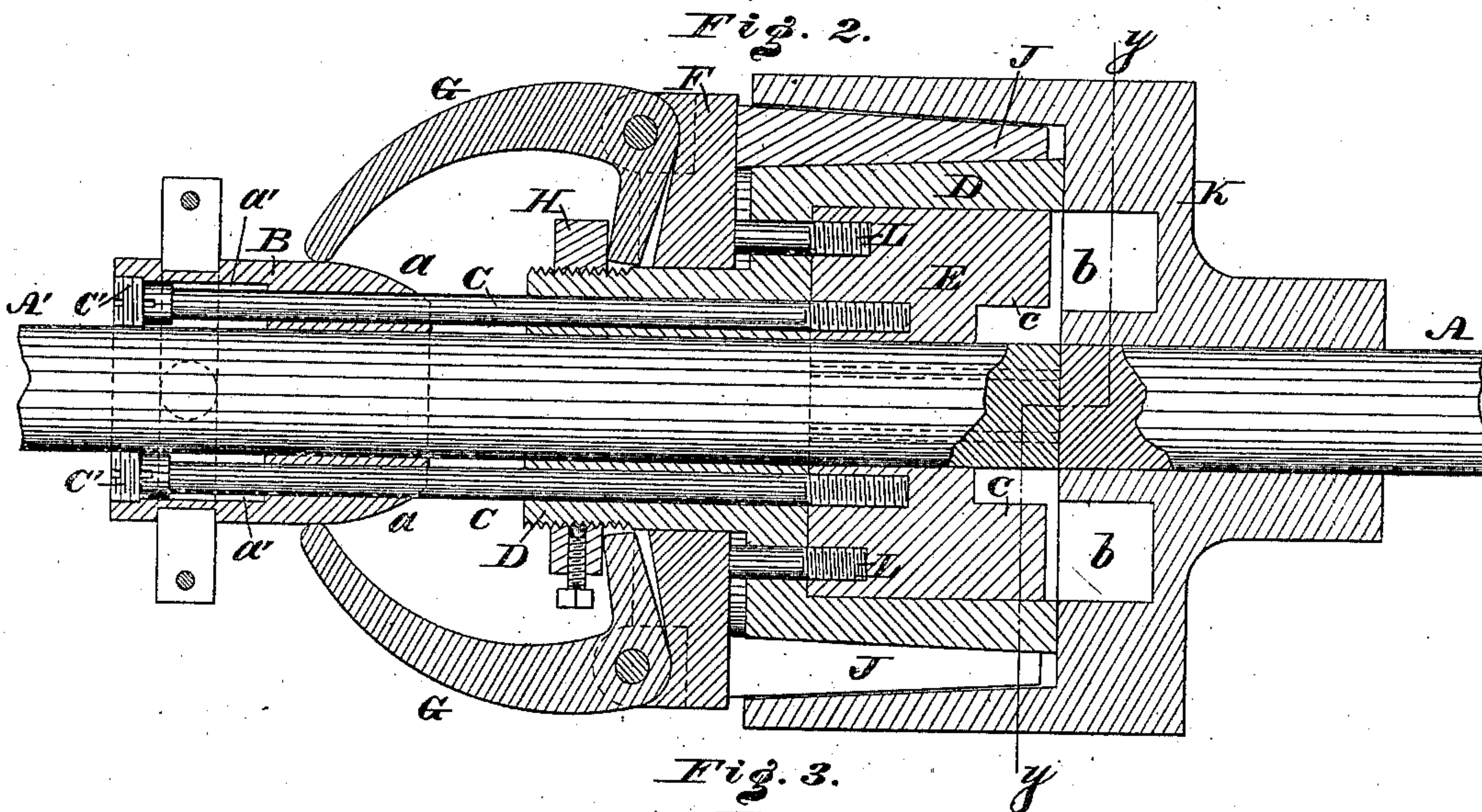
CLUTCH.

No. 283,993.

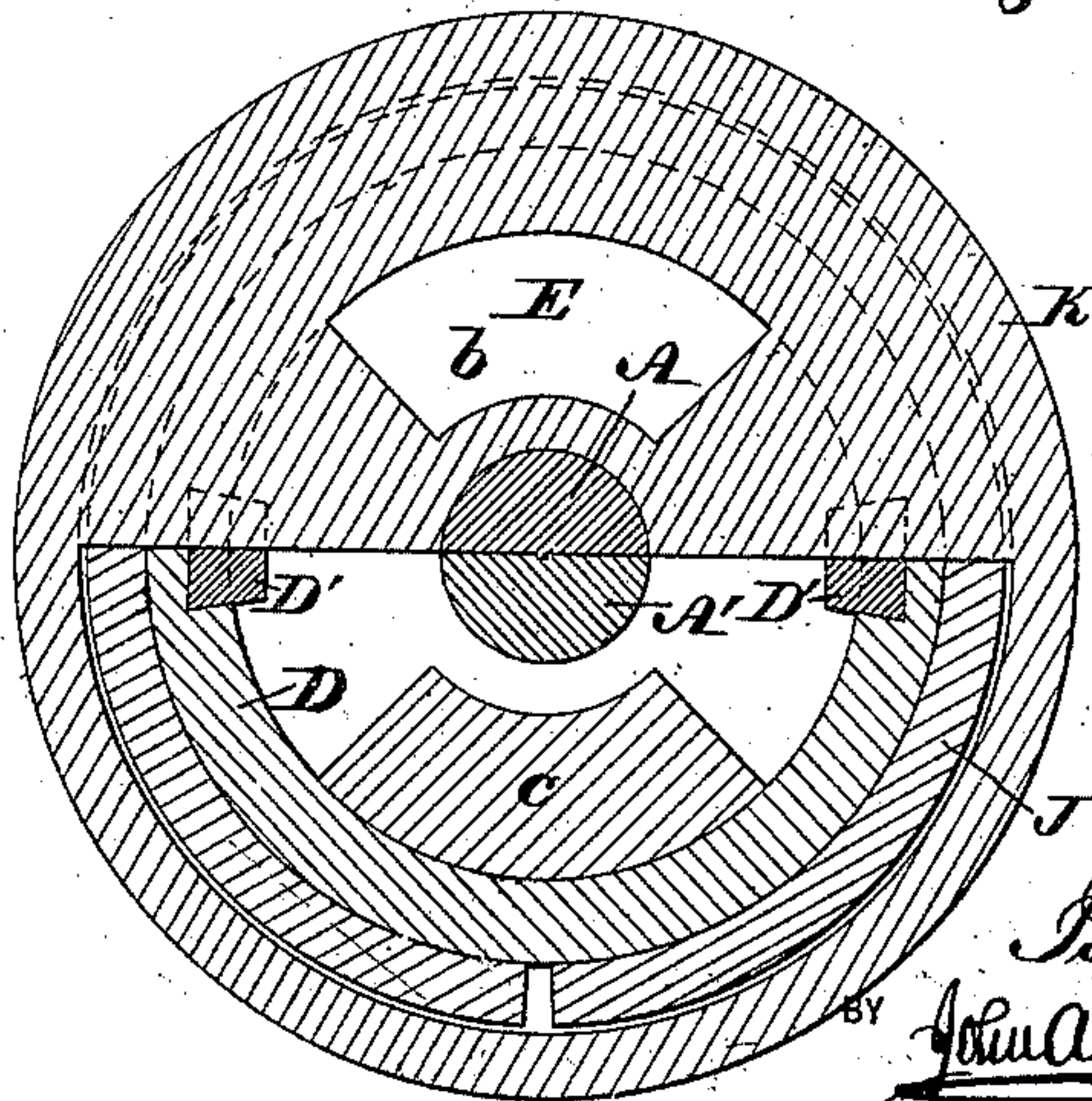
*Fig. 1* Patented Aug. 28, 1883.



*Fig. 2.*



*Fig. 3.*



WITNESSES:

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# UNITED STATES PATENT OFFICE.

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## CLUTCH.

SPECIFICATION forming part of Letters Patent No. 283,993, dated August 28, 1883.

Application filed April 9, 1883. (No model.)

*To all whom it may concern:*

Be it known that I, ISAAC N. FORRESTER, a citizen of the United States, residing in the city and county of Camden, State of New Jersey, have invented a new and useful Improvement in Clutches, which improvement is fully set forth in the following specification and accompanying drawings, in which—

Figure 1 is an end view of a clutch embodying my invention. Fig. 2 is a longitudinal section thereof in line *x x*, Fig. 1. Fig. 3 is a transverse section in line *y y*, Fig. 2.

Similar letters of reference indicate corresponding parts in the several figures.

My invention consists of a clutch the parts of which are held both by friction and positive interlocking, the construction being substantially as hereinafter described and claimed.

Referring to the drawings; A A' represent the two lengths of the shafts to be coupled.

B represents the shipper-sleeve, which is fitted to the shaft A' and has its exterior at one end of rounded and reduced form, as at *a*. Through the sleeve are passed loosely the bolts C, which extend parallel with the shafts A A', and their heads are adapted to play in recesses *a' a'*, which communicate with the openings through which the bolts are passed, said heads being covered by screw-plugs C', which are fitted to the outer ends of the walls of the recesses *a*. The bolts C also pass loosely through a hollow hub, D, which is firmly secured to the shaft A', and have their ends secured to the clutch-block E, which is fitted on the shaft A' and connected with the hub D by a feather, D', so as to rotate therewith and permit longitudinal sliding motions of the box on said hub and shaft, it being seen that the block E is within the rim of the hub D. Encircling the neck of the hub D is a collar, F, to which are pivoted at opposite places the elbow-levers G, the outer limbs whereof project toward the sleeve B, so as to come in contact therewith. The inner limbs of the levers bear against a sleeve, H, which is secured the neck of the hub D, and is preferably made adjustable to adjust the throw of said levers. Secured to and projecting from the collar F on the side opposite to the levers G is a tapering ring, J, which is adapted to circumscribe the rim of the hub D and be circumscribed by the rim of

the clutch box or shell K, the latter being securely connected with the shaft A. Through the hub D are passed loosely pins L, one end of each of which is secured to the block E, and the other end is adapted to strike the collar F, as clearly shown in Fig. 2. The inner face of the box K has segmental recesses or slots *b* to receive the segmental lugs *c* on the adjacent face of the block E.

The operation is as follows: When the clutch is disconnected, the sleeve B is moved toward the hub D. The bolts C remain stationary, owing to their heads being within the recesses *a'*. The levers G ride up the end *a* of the sleeve, and thus force the tapering ring J in between the hub D and rim of the box K, thus primarily clutching said parts by friction, whereby the power of the shaft A is immediately imparted to the shaft A'. The sleeve B continues its advancing motion, and when the plugs C' reach the heads of the bolts the latter are advanced so that the block E is moved toward the box K, the lugs *c* entering the recesses or slots *b*, thus positively interlocking the block E and box K, or opposite parts of the clutch. To separate the clutch, the sleeve B is moved in the reverse direction, thus clearing the levers G, which, now being uncontrolled, are permitted to drop, and thereby draw the tapering ring J from its frictional contact with the hub D and shell K, after which, as the sleeve continues its motion, the block E is withdrawn from the box K, the lugs *c* emerging from the slots *b*, and thus the box and block of the clutch are disconnected. Should the ring J stick at any point, when the pins L reach the collar F they strike thereagainst and relieve said ring, thus insuring the disconnection of the same from the hub D and box K.

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

1. A friction-clutch and positive interlocking devices for the ends of two shaft-sections, in combination with a shifting sleeve which is separate from said devices, but arranged to operate all of them, substantially as set forth.

2. A fixed hollow hub encircling a sliding clutch-block and encircled and fitted upon by a tapering sliding ring, in combination with a



fixed clutch-block encircling said tapering ring, the said hub, tapering ring, and fixed clutch-block primarily coming in contact, and the two blocks subsequently engaging, thus  
5 producing a clutch the opposite parts of which are held both by friction and positively interlocking, substantially as described.

3. In a clutch, a fixed clutch-block and the shipper-sleeve, provided with recesses *a*, in  
10 combination with a sliding clutch-block and bolts which connect the latter block with said sleeve, the bolts being loosely fitted to the shipper and slipping in said recesses, substantially as and for the purpose set forth.

15 4. A shipper-sleeve beveled or tapered, as shown at *a*, in combination with a movable tapering ring and operating-levers, the latter being in contact with the beveled or tapered part *a* of said shipper-sleeve, a bearing-sleeve,  
20 a hollow hub, a sliding clutch-box, a fixed clutch-box, and slipping rods connecting said sliding clutch-box and shipper-sleeve, substantially as and for the purpose set forth.

5. In a clutch, a fixed clutch-box and tapering ring, in combination with a sliding clutch-  
25 box provided with knock-off pins adapted to strike the head or collar of said tapering ring, substantially as and for the purpose set forth.

6. A hollow hub encircled by the tapering ring, the operating-levers and their support-  
30 collar, and the bearing-sleeve for said levers, and having passed through it the rods which connect the sliding clutch-box and shipper-sleeve, and the knock-off pins of the tapering ring, substantially as and for the purpose set  
35 forth.

7. In a clutch, the perforated shipper-sleeve with recesses *a' a'*, in combination with the headed bolts *C* and the closing and abutment  
40 plugs *C'*, substantially as and for the purpose set forth.

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