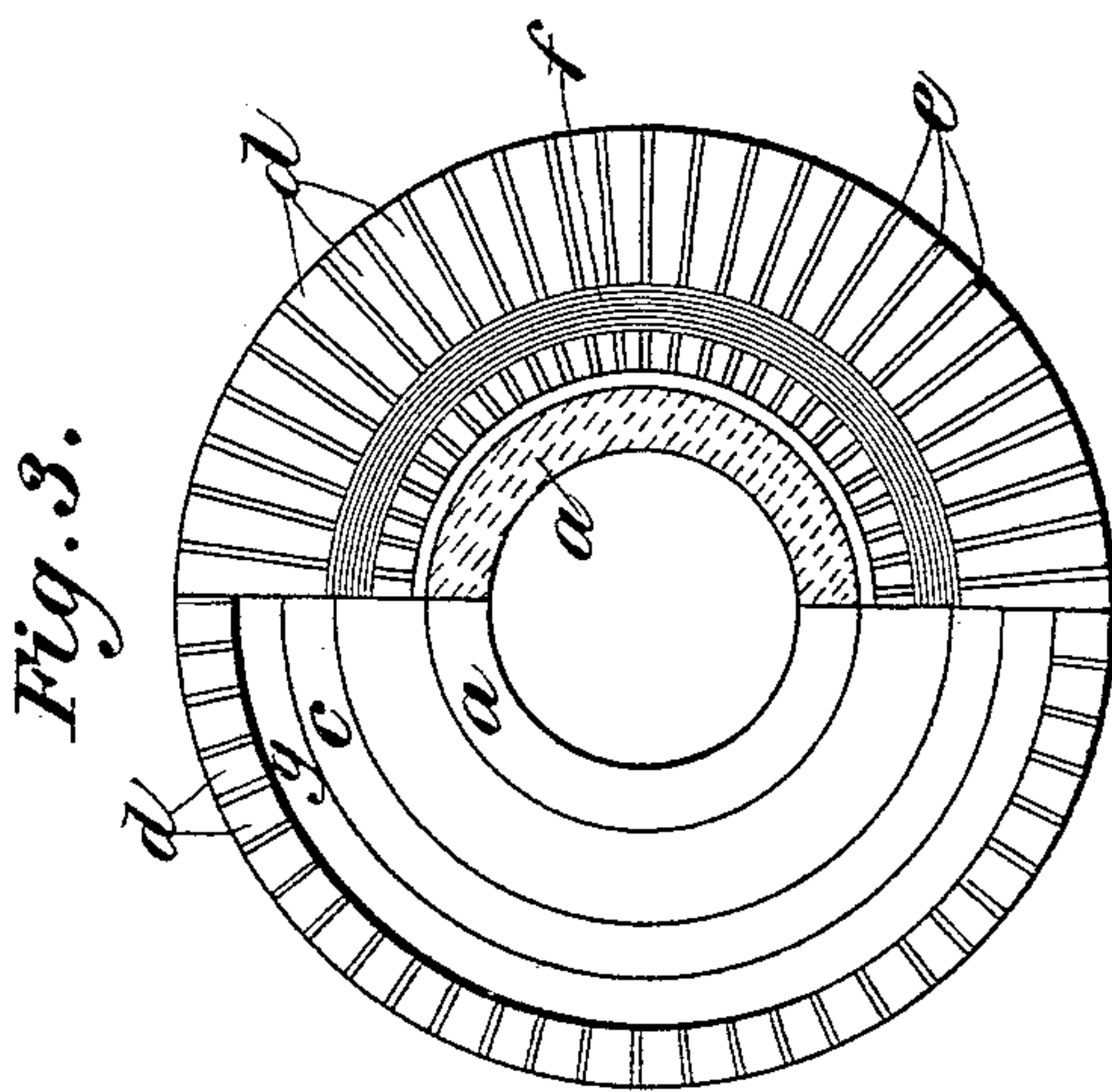
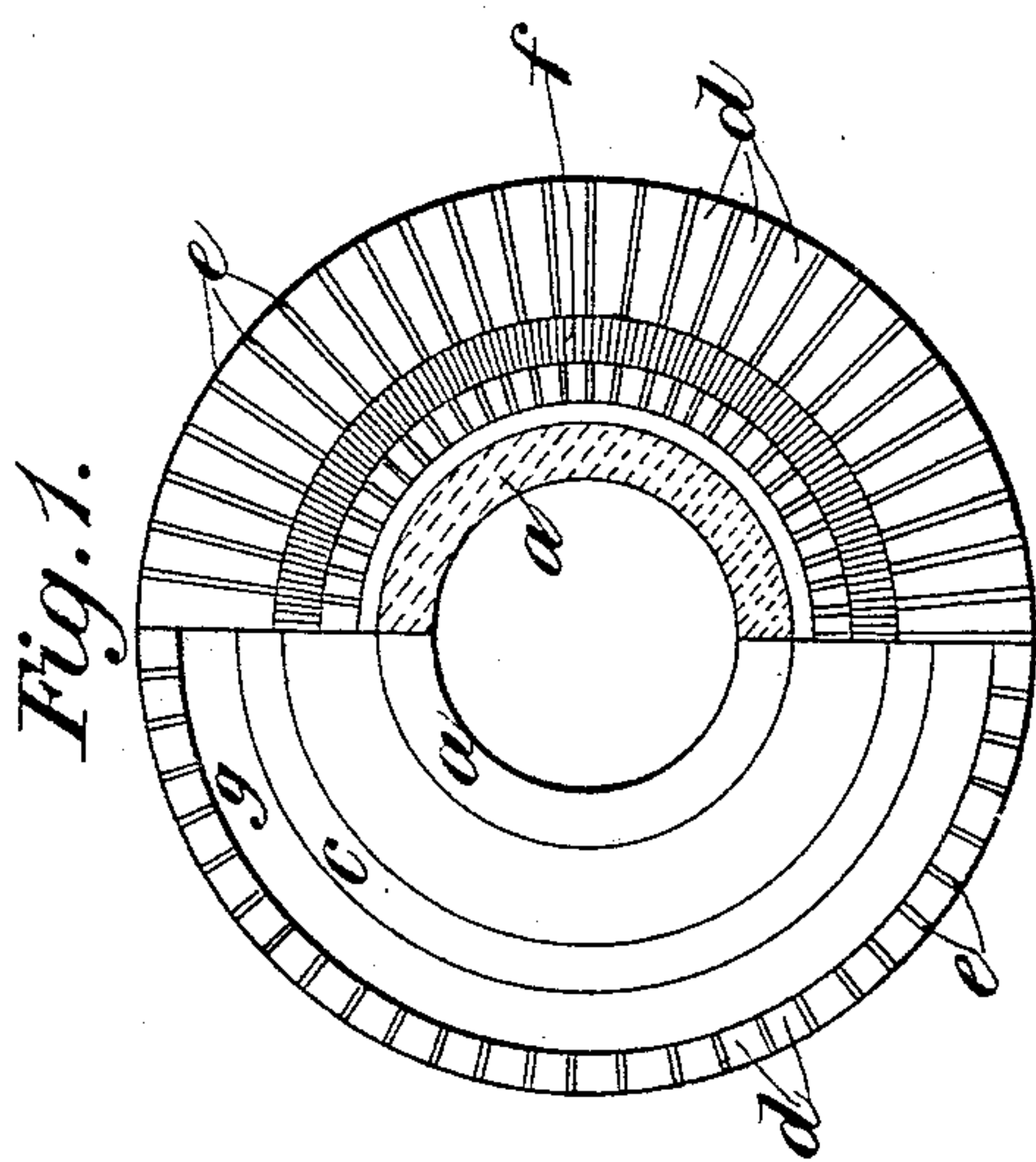
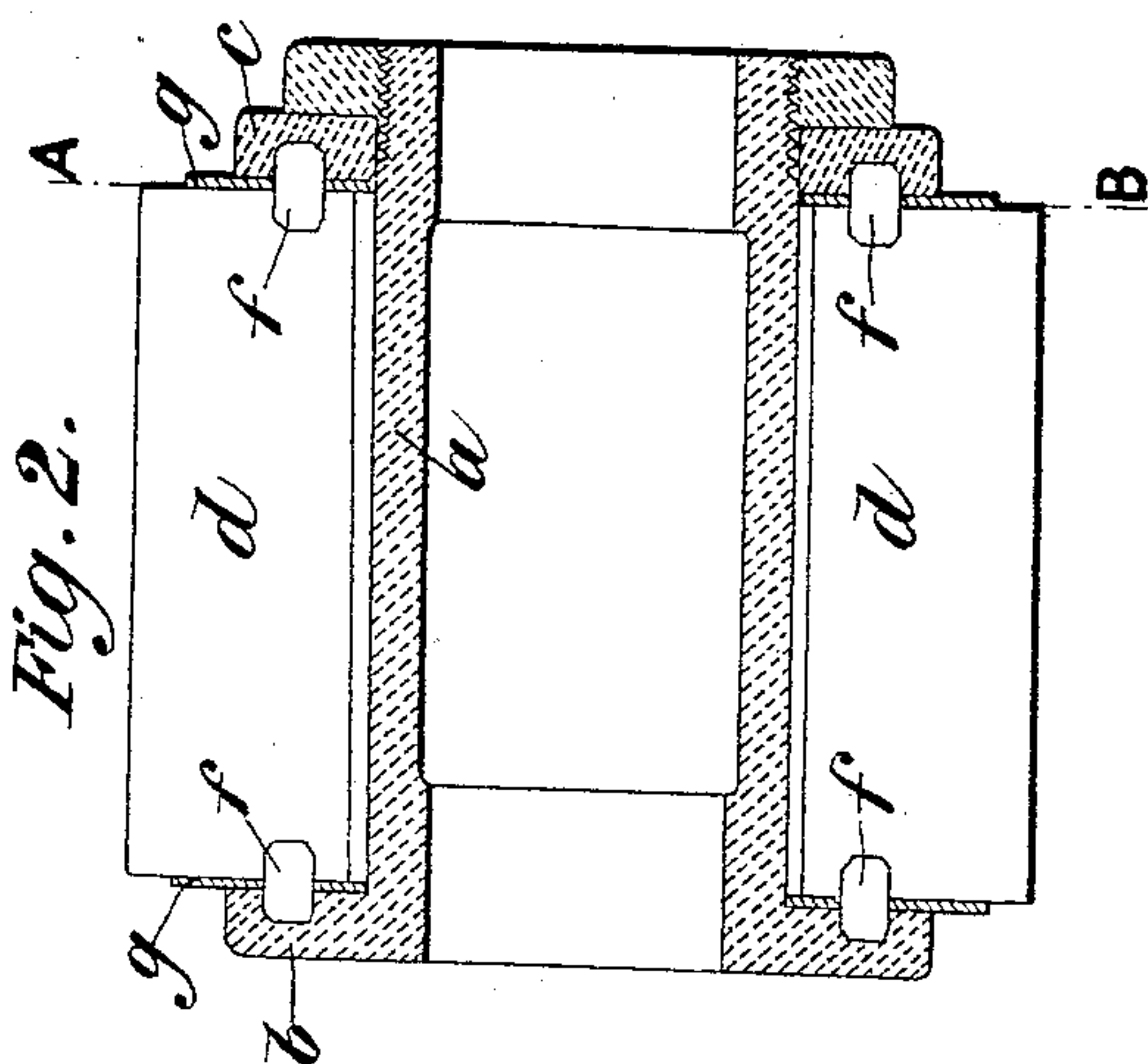


(No Model.)

B. S. PATERSON.  
COMMUTATOR FOR DYNAMO ELECTRIC MACHINES OR MOTORS.  
No. 495,561.

Patented Apr. 18, 1893.



Witnesses  
W. C. Pinckney  
W. A. Cunningham

Inventor  
B. S. Paterson  
By Wm. A. Behrens  
Attorneys



# UNITED STATES PATENT OFFICE.

BUCHANAN STEWART PATERSON, OF GATESHEAD, ENGLAND, ASSIGNOR TO  
CLARKE, CHAPMAN & CO., OF SAME PLACE.

## COMMUTATOR FOR DYNAMO-ELECTRIC MACHINES OR MOTORS.

SPECIFICATION forming part of Letters Patent No. 495,561, dated April 18, 1893.

Application filed August 16, 1892. Serial No. 443,277. (No model.) Patented in England April 14, 1892, No. 7,237, and in France August 13, 1892, No. 225,066.

*To all whom it may concern:*

Be it known that I, BUCHANAN STEWART PATERSON, a subject of the Queen of Great Britain and Ireland, residing at Gateshead-on-Tyne, in the county of Durham, England, have invented Improvements in Commutators for Dynamo-Electric Machines or Motors, (for which Letters Patent of Great Britain, No. 7,237, dated April 14, 1892, and of France, No. 225,066, dated August 13, 1892, were granted to me and John Brokenshire Furneaux,) of which the following is a specification.

My invention has reference to the construction of commutators for dynamo electric machines. The strips of mica now commonly employed to insulate longitudinally the metal strips of commutators are usually keyed together by lipped flanges and rings, between which and the various strips there are interposed layers of comparatively soft material such as asbestos, boxwood, vulcanized fiber, or compressed paper; consequently any sections of the commutator receiving an accidental blow have been liable to become sunk below the circumference of the commutator. This has been found to occur for instance when putting armatures into machines where no proper lifting means have existed; if under these circumstances the armature has happened to be slung by the commutator, the great weight of the core has sometimes been sufficient to force the segments out of truth. Furthermore the materials ordinarily employed as above set forth are all liable to change form and to contract by heating; consequently, although by proper baking in an oven the insulation resistance could be made very high, it would drop enormously as the result of exposure to moisture.

Now in order to obviate the evils above indicated according to my invention annular grooves are formed in the flange and ring on the commutator core or body between which the metal strips and insulating strips of the commutator are arranged; in the ends of the annulus of strips corresponding grooves are formed, and in these grooves are inserted keys made of mica; and in order that others skilled in the art to which my invention pertains may

be enabled to make and use the same I proceed to explain the manner of carrying it into practical effect by reference to the accompanying drawings, wherein—

Figure 1 is a view half in end elevation and half in cross section of a commutator according to my invention. Fig. 2 is a part central longitudinal section of same. Fig. 3 is a view corresponding to Fig. 1, but illustrating a modification in which the mica key is composed of strips arranged circumferentially.

*a* is the commutator core or body; *b* the flange thereof, formed with an annular groove in its inner face as shown.

*c* is the ring formed with a like annular groove.

*d d* are the metal strips and *e e* the insulating strips arranged on the commutator body; the ends of the compound annulus composed of these strips being formed as shown each with an annular groove so as to form with the grooves in the flange and ring key ways to receive the mica keys *f f*. In Figs. 1 and 2 they are shown composed of rectangular pieces of mica placed radially in the key ways; but a key may be made of strips of mica placed circumferentially as in Fig. 3. Between the ends of the commutator strips (metal and mica) and the flange and ring are interposed washers *g* that are also made of mica.

Commutators constructed with mica keys as described will be found exceedingly strong and even able to resist blows without the solidity of the mica being seriously affected; furthermore the construction described presents manufacturing facilities and affords high insulation resistance even when the commutator is damp.

What I claim is—

1. A commutator, for dynamo electric machines or motors, constructed with key ways and with keys of mica arranged within said key ways, substantially as described.

2. A commutator for a dynamo electric machine or motor constructed with key ways and with keys composed of pieces of mica placed radially within said key ways.

3. A commutator for a dynamo electric machine or motor comprising a flange and a ring on the commutator core body both formed

with annular grooves metal strips and insulating strips arranged between said flange and ring and made with corresponding grooves, thus forming key ways, and annular keys  
5 composed of pieces of mica placed radially within said key ways substantially as described for the purpose specified.

In testimony whereof I have signed my

name to this specification in the presence of two subscribing witnesses.

BUCHANAN STEWART PATERSON.

Witnesses:

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