

No. 671,527.

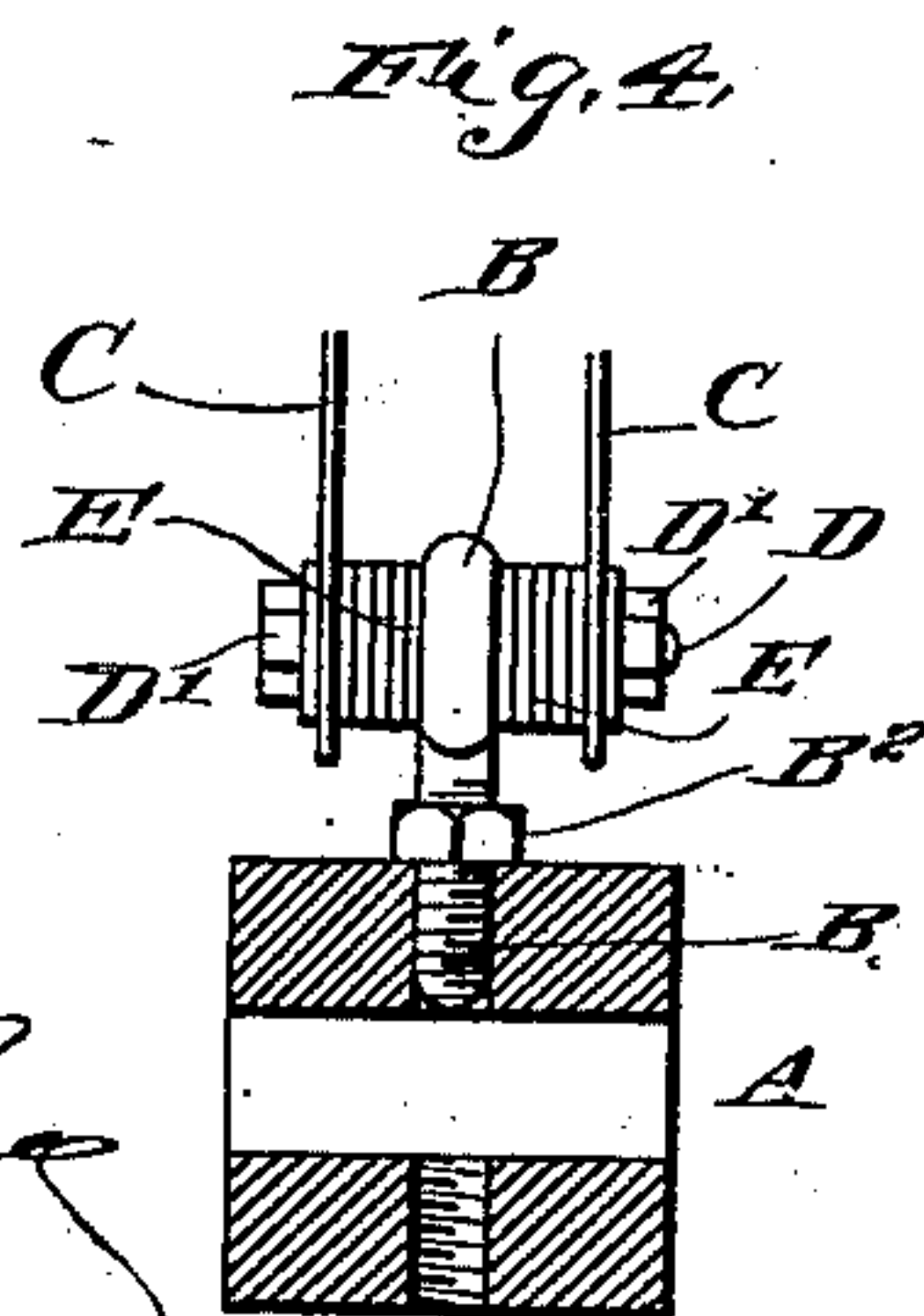
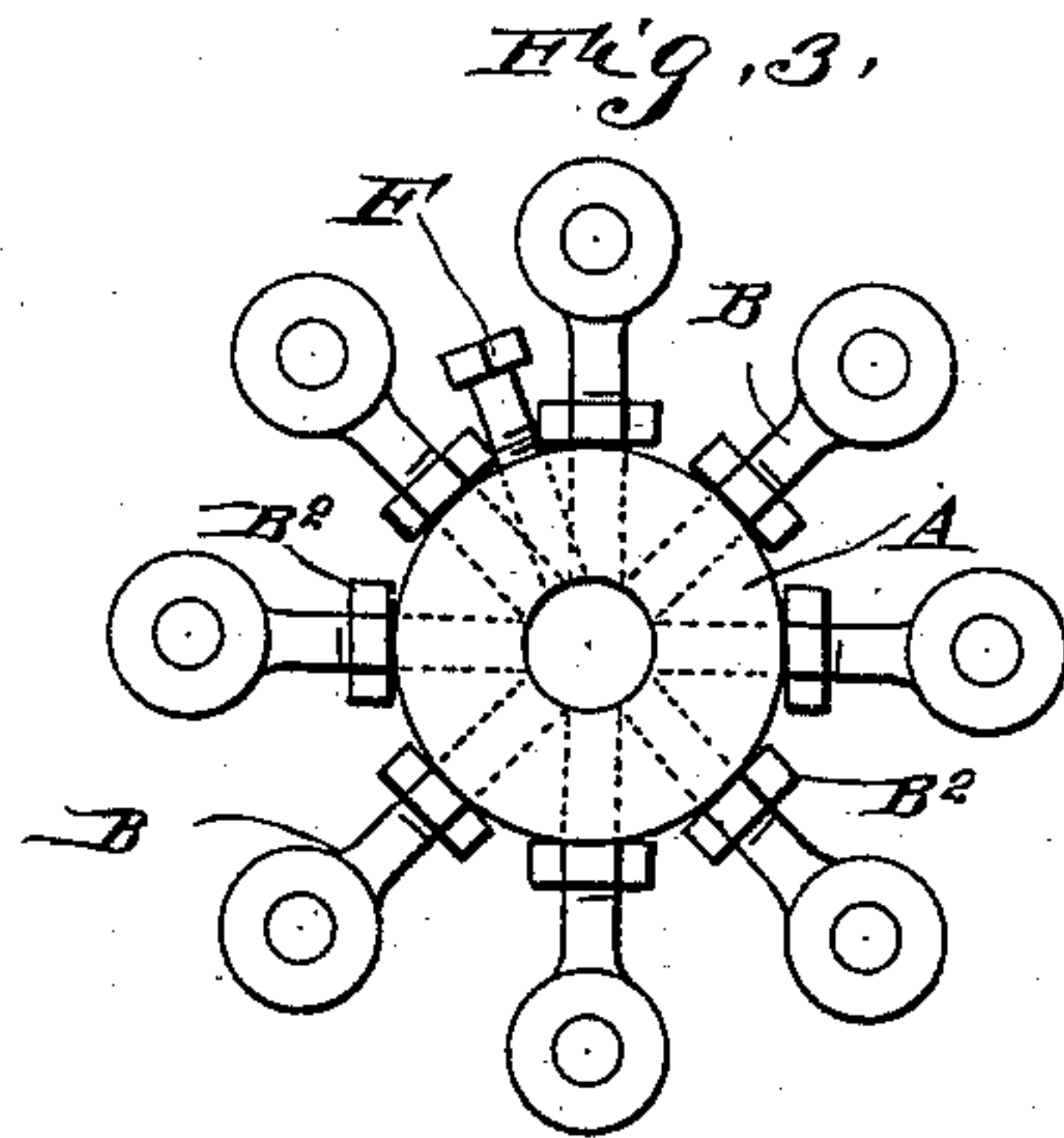
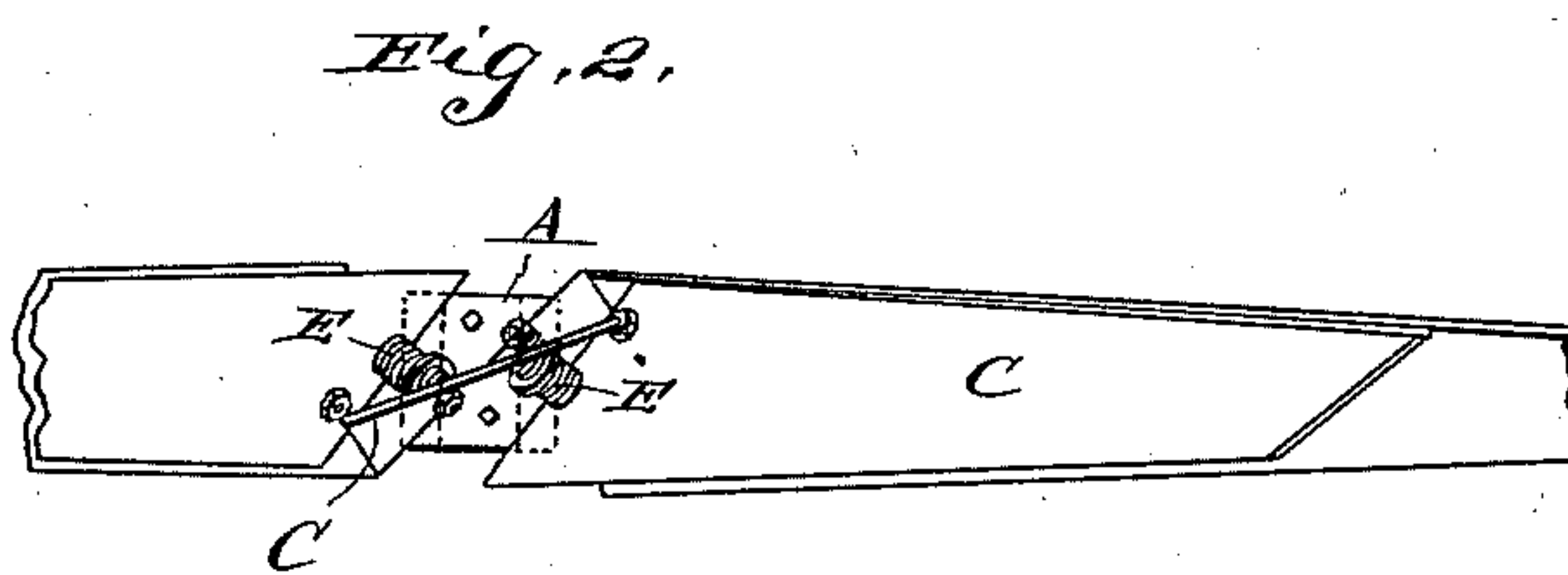
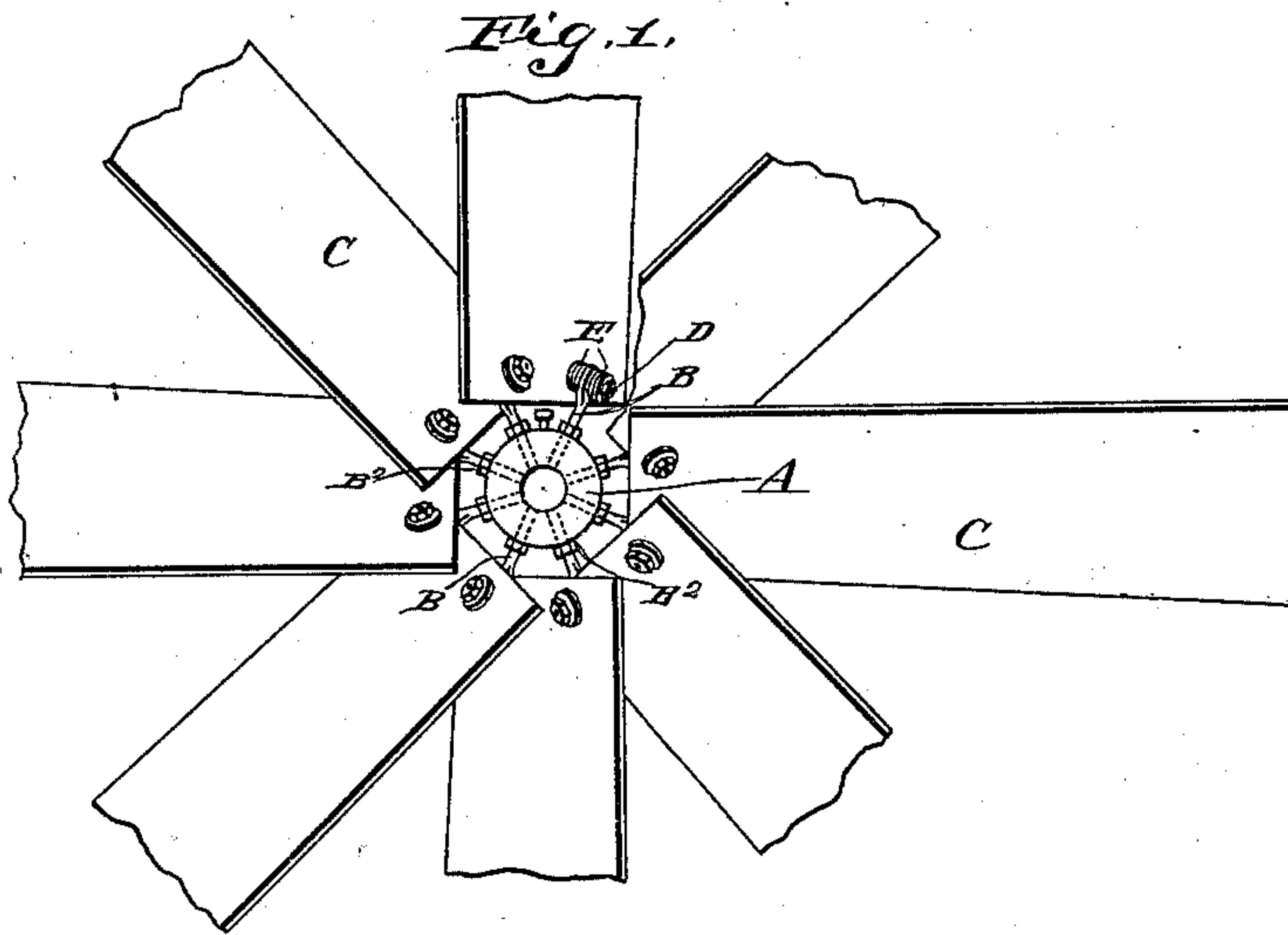
S. G. PHILLIPS.

Patented Apr. 9, 1901.

FAN.

(Application filed Sept. 27, 1899. Renewed July 30, 1900.)

(No Model.)



Witnesses:

*Alex. Scott*  
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*Simon G. Phillips*  
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# UNITED STATES PATENT OFFICE.

SIMEON G. PHILLIPS, OF RAHWAY, NEW JERSEY.

## FAN.

SPECIFICATION forming part of Letters Patent No. 671,527, dated April 9, 1901.

Application filed September 27, 1899. Renewed July 30, 1900. Serial No. 25,339. (No model.)

*To all whom it may concern:*

Be it known that I, SIMEON G. PHILLIPS, a citizen of the United States, residing at Rahway, Union county, in the State of New Jersey, have invented a certain new and useful Improvement in Fans, of which the following is a specification.

The invention relates to fans of the propeller-blade or screw type; and its object is to simplify the construction and correspondingly reduce the cost of manufacture, while allowing the blades to be easily set and held securely at the desired angle.

The invention consists of a hub carrying a series of eyes set radially therein and a series of blades held by bolts passing through the eyes and engaging two adjacent blades. Each bolt secures the rear edge of one blade and the advancing edge of the next near the hub, and by means of removable washers carried on the bolt the two edges may be separated as desired, thus producing a corresponding change in the pitch of the screw.

The accompanying drawings form a part of this specification and show the invention as I have carried it out.

Figure 1 is a face view of a fan constructed in accordance with the invention, and Fig. 2 is a corresponding edge view. Fig. 3 is a face view of a portion on a larger scale. Fig. 4 is a vertical section corresponding in part to the preceding figure.

Similar letters of reference indicate the same parts in all the figures.

A is a central boss or hub, in which is secured a circumferentially-arranged single series of radial eyes B, having screw-threaded shanks B' and check-nuts B<sup>2</sup>, to which are secured the blades C, of sheet-steel or other material, preferably of sufficient pliability to allow bending when in position. Each eye receives a bolt D, passing through two adjacent blades near the advance edge of one and rear edge of the other, as shown, and holds

them securely but separated to the desired distance by means of the removable washers E. Each blade is secured in an inclined position between two adjacent eyes and may be adjusted to any desired angle relatively to the axis of the hub by simply turning the eyes and making the necessary addition or subtraction in the number of washers before the check-nuts B<sup>2</sup> are set and the nuts D' tightened. Thus all the blades are bound to each other and to the hub.

F F are set-screws tapped through the boss and serving to secure the latter to a shaft. (Not shown.)

Modifications may be made in the forms and proportions within wide limits in adapting the invention to the varying conditions under which it may be called upon to serve.

I claim—

1. In a fan adapted to induce an air-current, a hub or boss having a single series of eyes arranged circumferentially thereon, and means for adjusting and holding them angularly relatively to the axis of said hub, a series of fan-blades arranged at an angle each in advance of the next, bolts extending through said blades, and the pair of eyes adjacent thereto, all combined and arranged to serve substantially as herein specified.

2. The hub A, eyes B thereon and fastening means B', B<sup>2</sup>, in combination with blades C and bolts D extending through the latter and adjacent eyes, and the washers E on said bolts whereby the angle of the blades may be determined, all substantially as herein specified.

In testimony that I claim the invention above set forth I affix my signature in presence of two witnesses.

SIMEON G. PHILLIPS.

Witnesses:

CHARLES R. SEARLE,  
GEO. W. CASE, Jr.