

No. 775,806.

PATENTED NOV. 22, 1904.

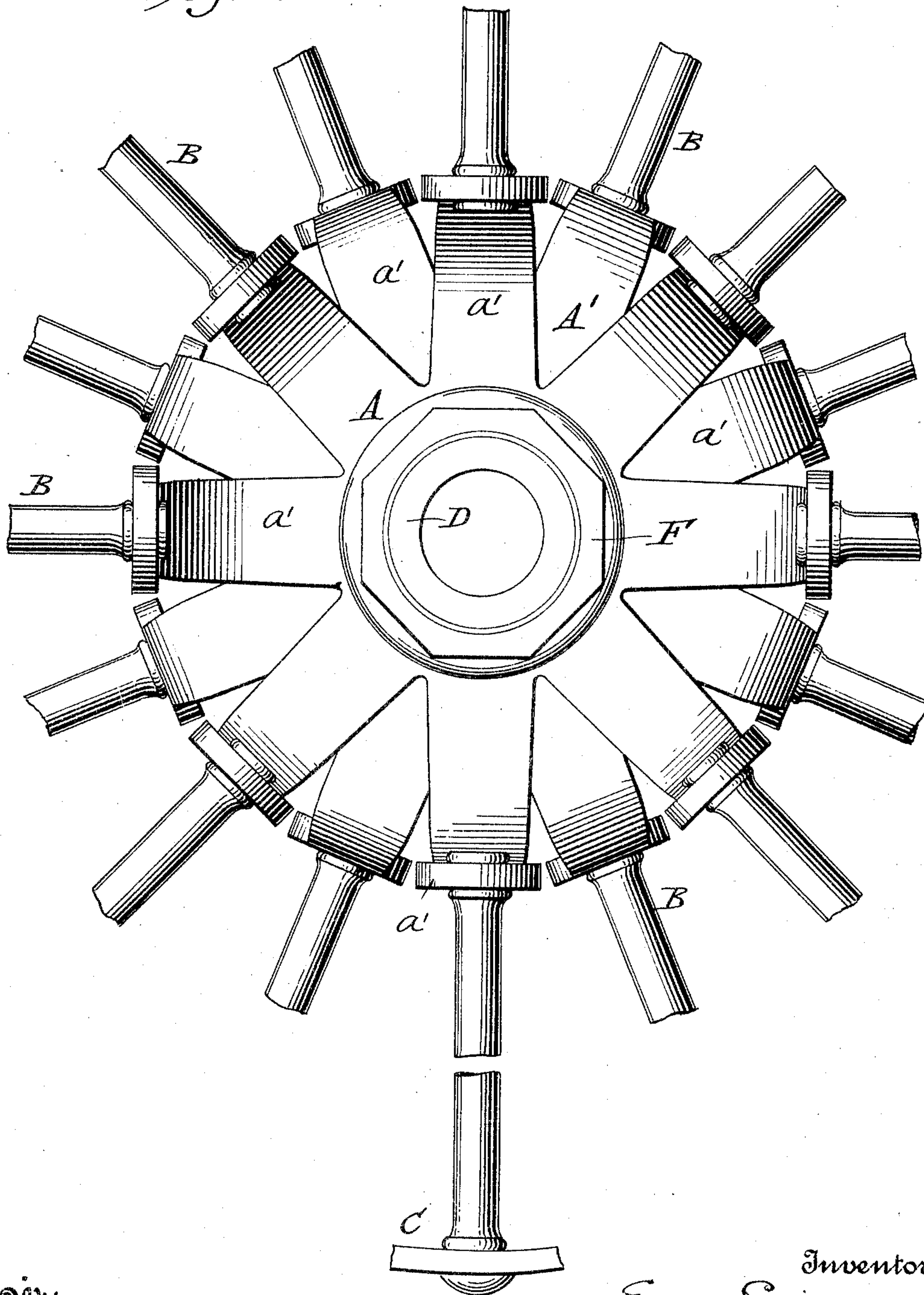
E. EINFELDT.  
SPRING WHEEL.

APPLICATION FILED MAY 18, 1904.

NO MODEL.

3 SHEETS—SHEET 1.

*Fig. 1.*



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3 SHEETS—SHEET 2.

Fig. 3.

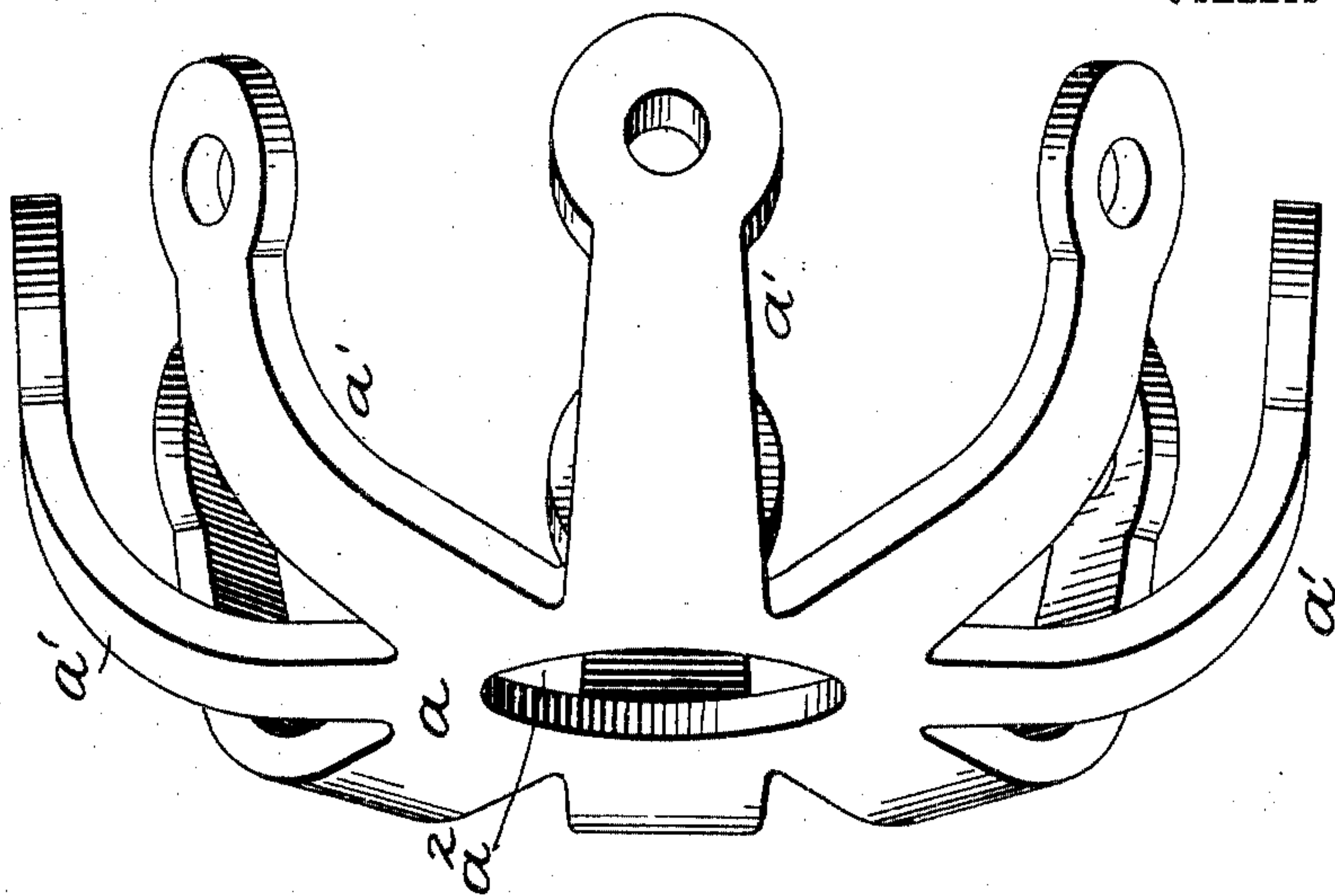
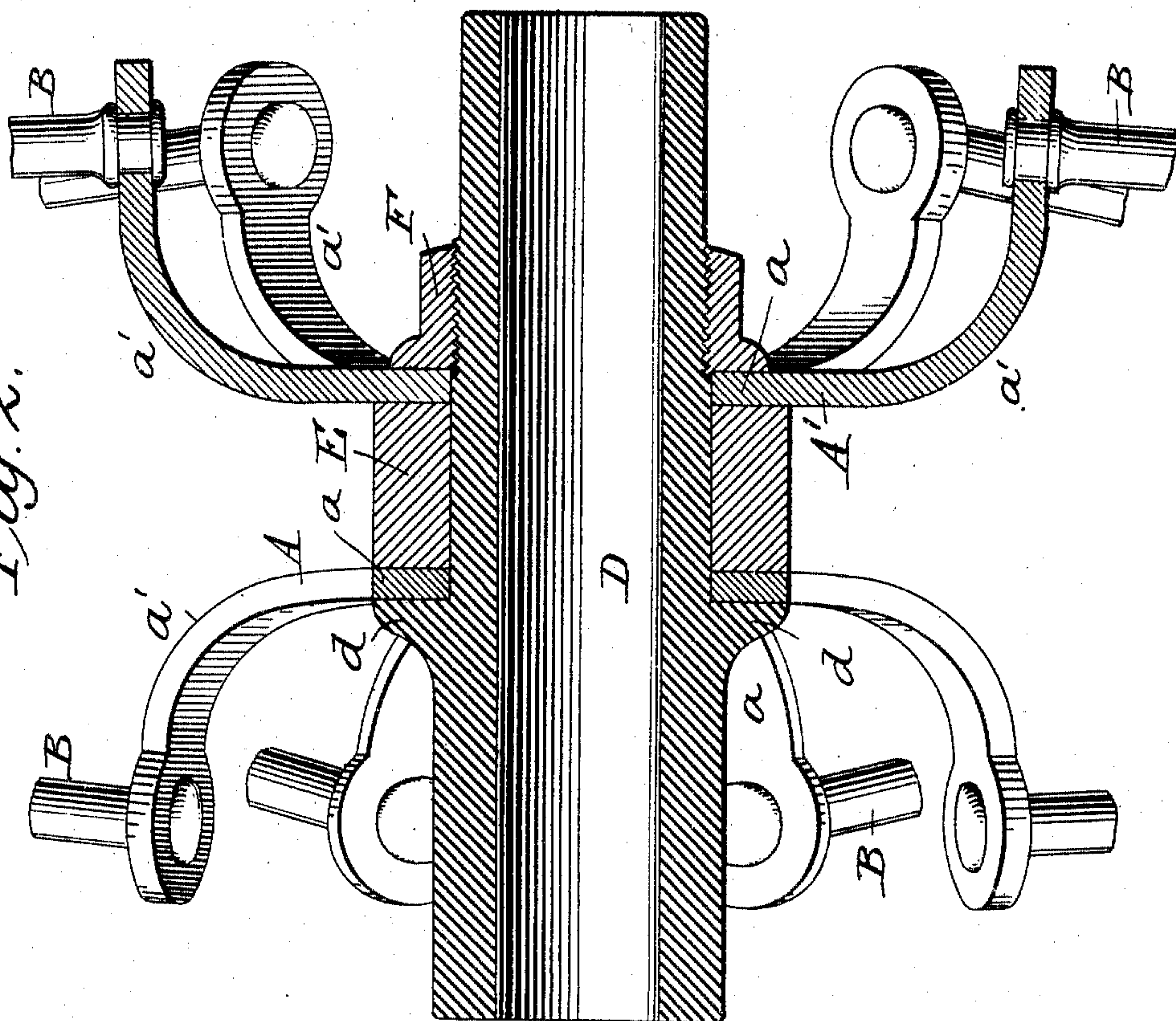


Fig. 2.



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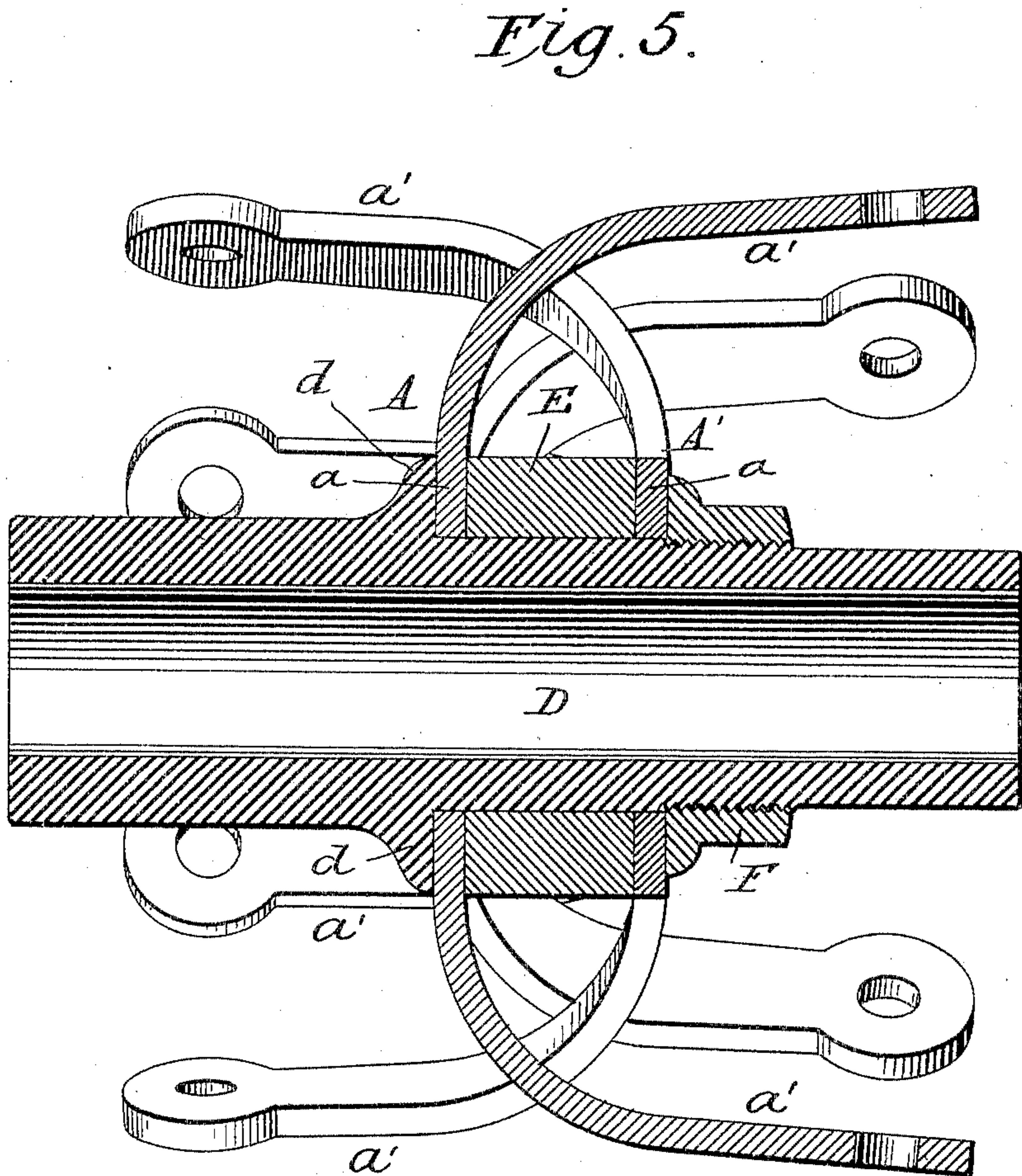
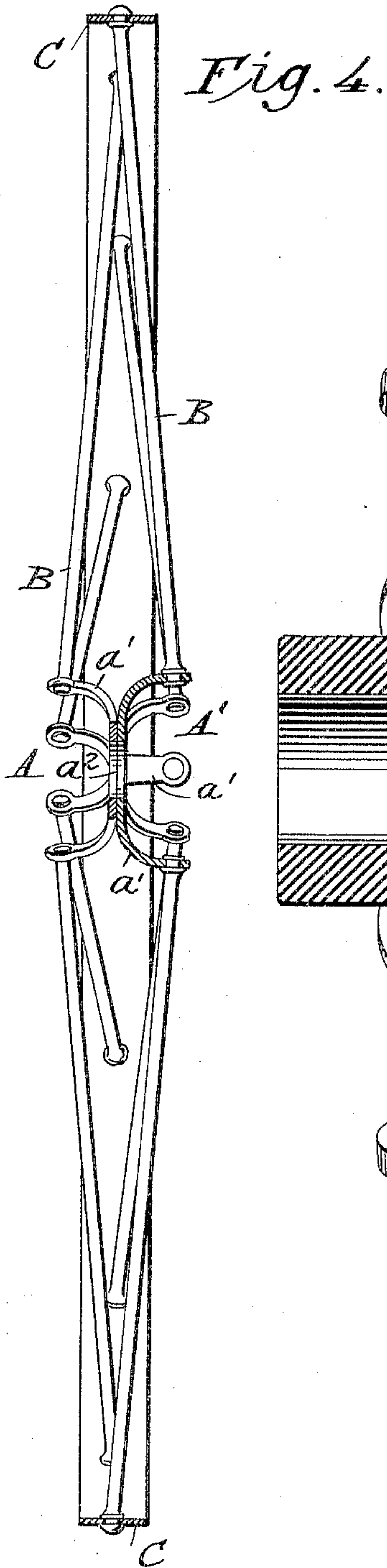
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3 SHEETS—SHEET 3.



Witnesses  
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# UNITED STATES PATENT OFFICE.

EMIL EINFELDT, OF DAVENPORT, IOWA, ASSIGNOR TO BETTENDORF METAL WHEEL COMPANY, A CORPORATION OF IOWA.

## SPRING-WHEEL.

SPECIFICATION forming part of Letters Patent No. 775,806, dated November 22, 1904.

Application filed May 18, 1904. Serial No. 208,525. (No model.)

*To all whom it may concern:*

Be it known that I, EMIL EINFELDT, of Davenport, county of Scott, and State of Iowa, have invented a new and useful Improvement in Spring-Wheels, of which the following is a specification.

The object of this invention is to produce a metal wheel of the type known in the art as "spring-wheel," which while possessing a marked degree of springiness will be light, strong, and of extreme durability.

With these ends in view the invention consists of a wheel in which the hub is formed of complementary hub members or spiders provided each with a series of radiating spring-arms, to which the inner ends of the spokes are attached.

The invention also consists in a hub member or spider comprising a plate or body having an opening to receive the axle-box and a series of spring-arms radiating from said body and formed integral therewith and disposed at their outer free ends so as to overhang the axle-box.

The invention consists also in the details of construction and combination of parts hereinafter described and claimed.

In the accompanying drawings, Figure 1 is a side elevation of my improved wheel in its preferred form. Fig. 2 is a longitudinal central sectional elevation of the same. Fig. 3 is a perspective view of the hub-spider. Fig. 4 is a view in the nature of a diagram, showing the position of the members of the wheel before being finally assembled in operative relations. Fig. 5 is a longitudinal sectional view of a modified form of the wheel.

Referring to the drawings, particularly to Figs. 1, 2, and 3, which illustrate the preferred form of my invention, A A' represent two hub members each of which, as shown particularly in Fig. 3, consists of a plate or body portion  $a$ , to which are integrally connected a series of radiating spring-arms  $a'$ , curved so as to extend at their outer free ends in planes at right angles, or substantially so, to the plane of the body, the arrangement being such that when the two hub members are assembled in operative relations

side by side, as shown in Fig. 2, the ends of the spring-arms will overhang the longitudinal axis of the hub and will constitute spring-supports for the inner ends of the spokes B, which are firmly attached thereto in any suitable manner and which have their outer ends secured to the rim C of the wheel.

The two hub-spiders are held and maintained in operative relations by an axle-box D, extending through openings  $a^2$  in the centers of the spiders, which are spaced apart by a spacing-collar E, encircling the box between the two spiders and affording bearings at its opposite ends for the adjacent faces of the said spiders. These parts are held firmly and fixedly in their proper relations by means of a nut F, screwed onto the box at the outer side of the spider A' and acting to bind the parts together and force the spider A tightly against an annular shoulder  $d$  on the axle-box at the outer side of the spider A. When the parts of the hub are assembled in these relations, with the inner ends of the spokes connected with the spring-arms and their outer ends with the rim, the wheel is under tension—that is to say, there is a uniform strain on the respective arms and spokes—the degree of which depends on the extent to which the two hub-spiders are held apart by the spacing-collar E. This tension is preferably produced by first securing the spokes to the rim and spring-arms in such manner that the two spiders will be drawn together face to face, as shown in Fig. 4, the result being that when they are separated to admit the spacing-collar between them the arms and spokes will be placed under considerable tension, distributed evenly and uniformly throughout the structure.

In its preferred form the two spiders are so disposed relatively that the arms of one will be opposite the spaces between the arms of the other, which arms will extend in opposite directions away from each other, as shown in Fig. 2, each spider being thus wholly on one side of the plane of the rim. I may, however, adopt the arrangement illustrated in Fig. 5, where it will be seen that the arms of the two spiders are extended in opposite directions to-



ward each other, those of one spider being arranged in the spaces between the arms of the other, the result being that they overlap each other, so that the inner ends of the arms lie  
5 on one side of the plane of the rim of the wheel, while their outer ends lie on the opposite side of said plane.

Having thus described my invention, what I claim is—

10 1. In a wheel, a hub comprising complementary members spaced apart in the direction of the axis of the wheel and provided each with spring-arms, in combination with spokes secured to said arms.

15 2. In a wheel, a hub comprising two spiders consisting of a body portion or plate arranged in planes transverse to the longitudinal axis of the hub, and provided with radiating spring-arms extending at their extremities in  
20 planes parallel or substantially so with the longitudinal axis of the hub, in combination with spokes secured to the extremities of said arms.

25 3. In a wheel, the combination of an axle-box, two plates mounted thereon and extending in planes transverse to the axis of the wheel with a space between them, means for holding the plates fixedly in position, spring-arms radiating from said plates, and spokes  
30 secured to the ends of said spring-arms.

4. In a wheel, a hub embracing complementary independent spiders consisting each of a body portion arranged in a plane transverse to the axis of the wheel and integral radiating  
spring-arms connected with said plates, in 35 combination with spokes secured to said arms.

5. In a spring-wheel, a hub comprising two spiders, each consisting of a plate and radiating spring-arms, in combination with an axle-box on which said plates are mounted, a 40 spacing device on the box between the plates, means for maintaining said parts in fixed relations, and spokes secured to the free ends of the spring-arms.

6. A hub-spider consisting of a plate or body 45 portion adapted to be secured to the axle-box in a plane transverse to the axis of the wheel, and spring-arms radiating from said plate and adapted to have the spokes fastened to them.

7. A hub-spider consisting of a flat plate 50 formed with an opening to receive the axle-box, and integral radiating spring-arms adapted to have the spokes secured thereto.

In testimony whereof I hereunto set my hand, this 30th day of April, 1904, in the pres- 55 ence of two attesting witnesses.

EMIL EINFELDT.

Witnesses:

A. NEILSON,

M. LOUISE DODGE.