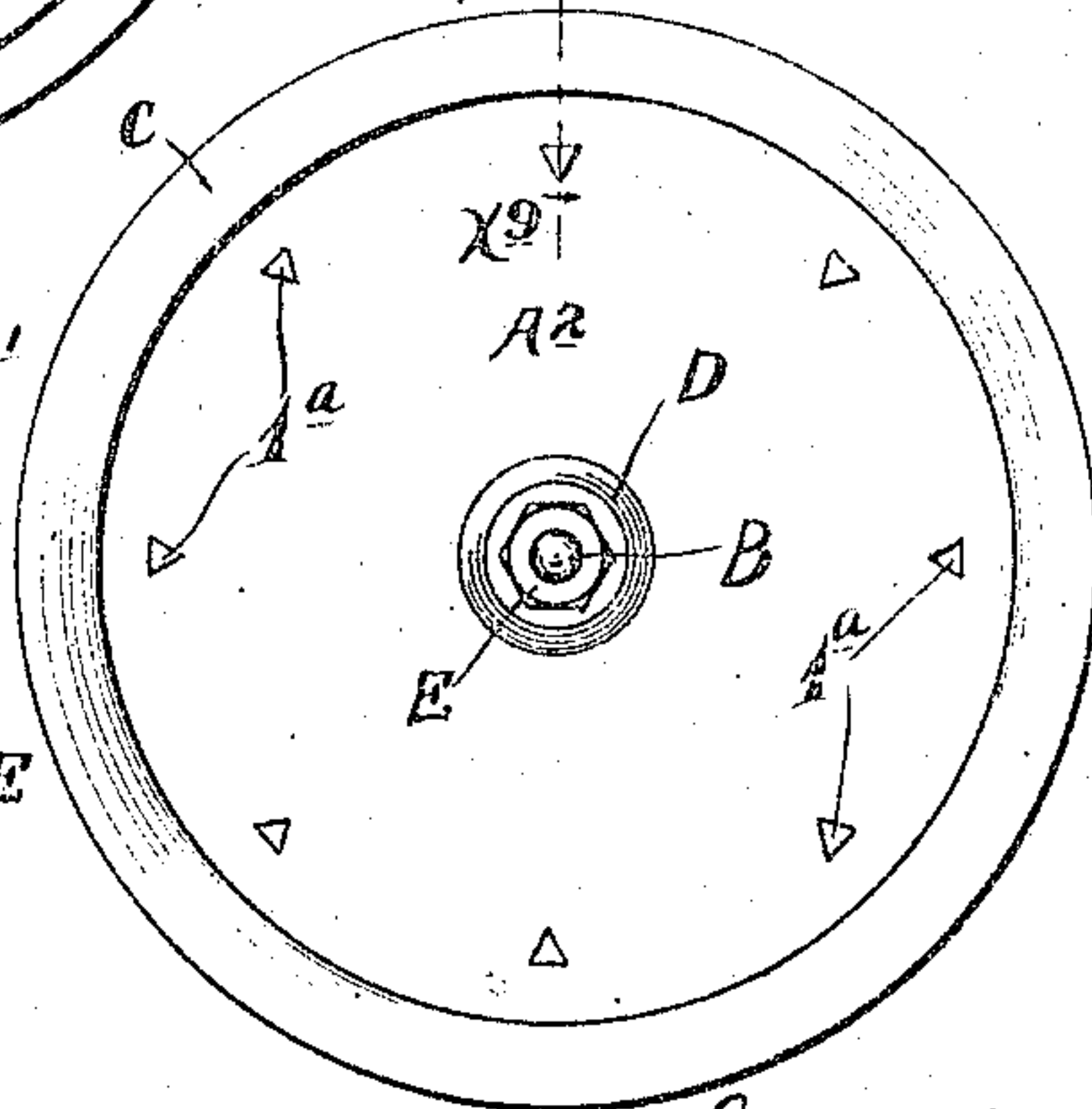
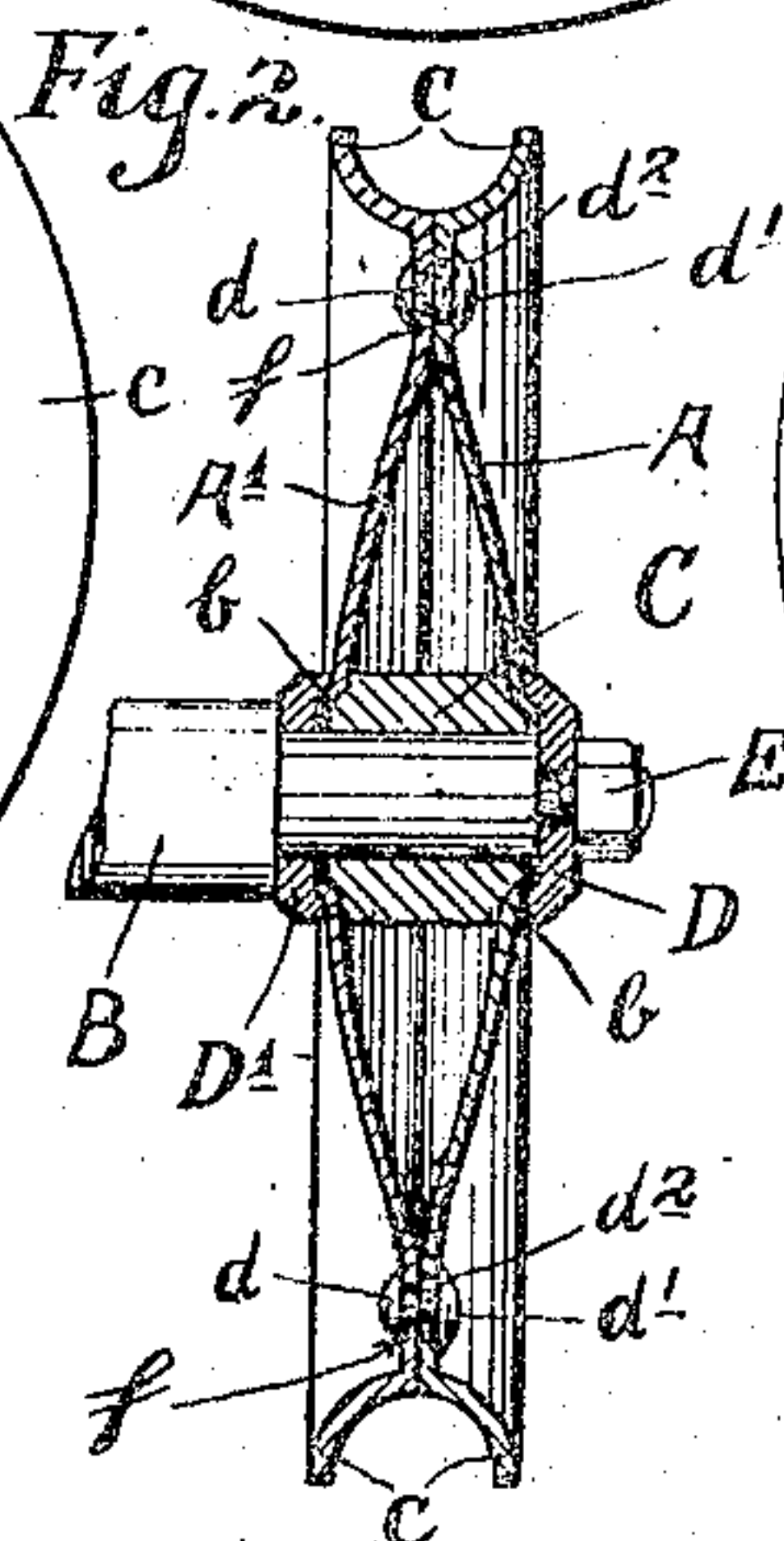
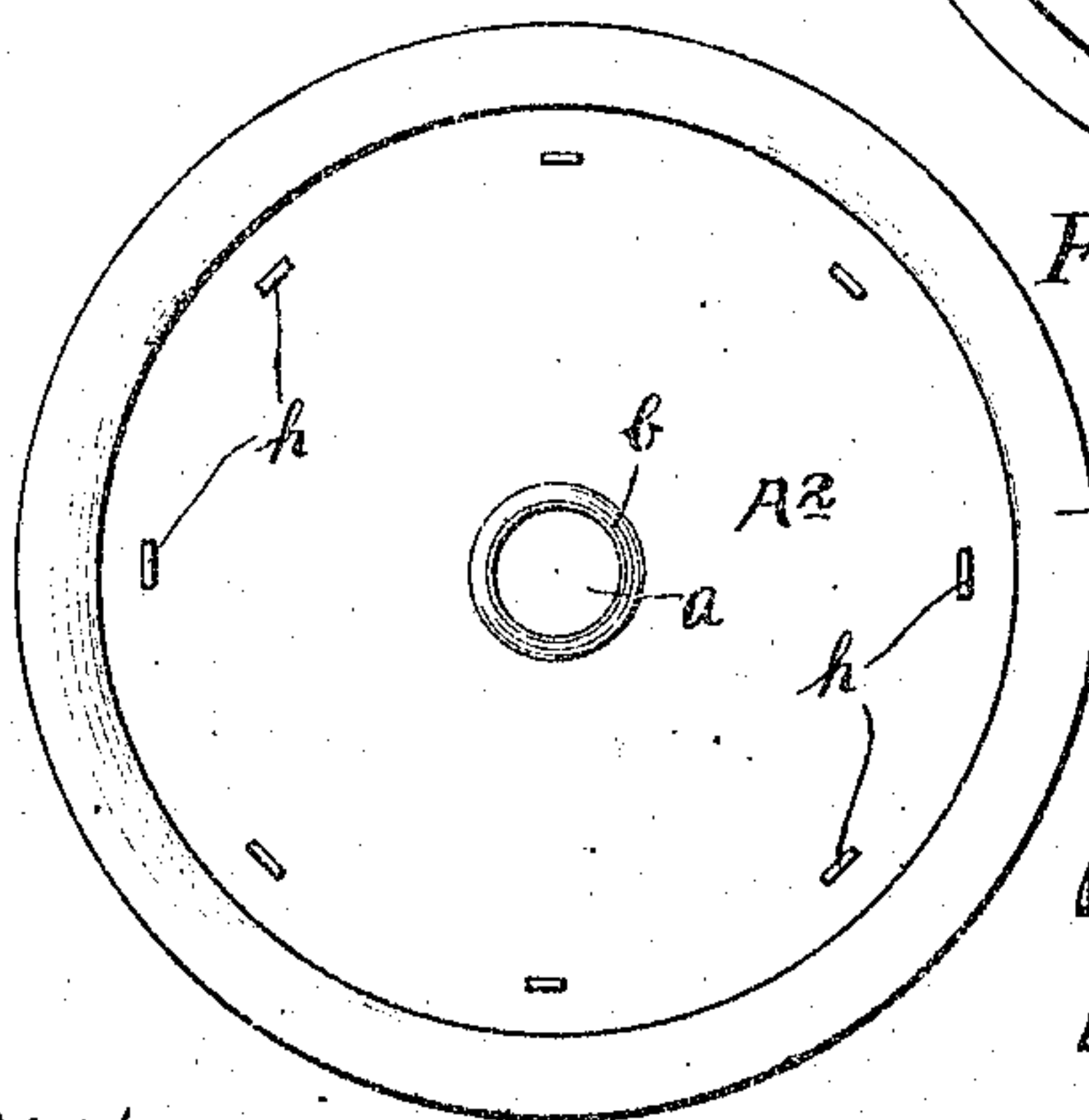
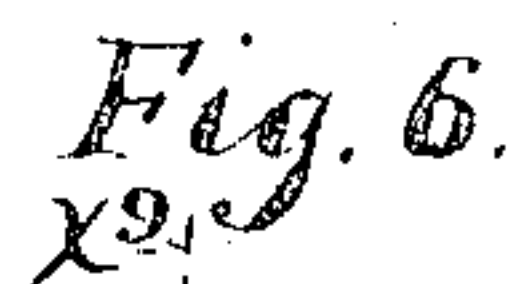
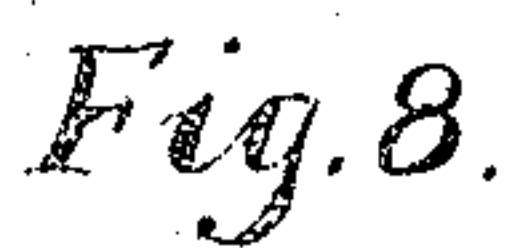
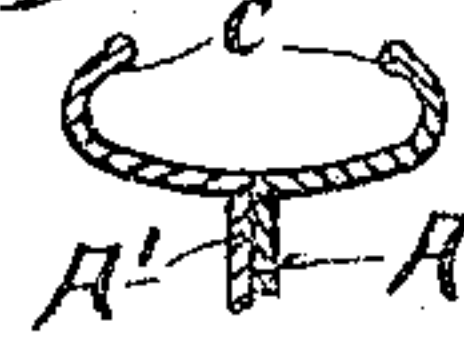
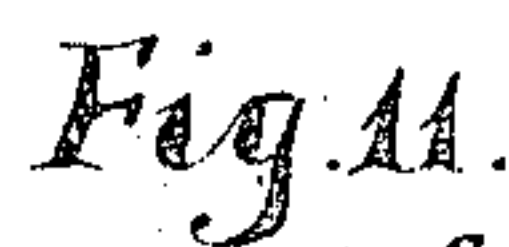
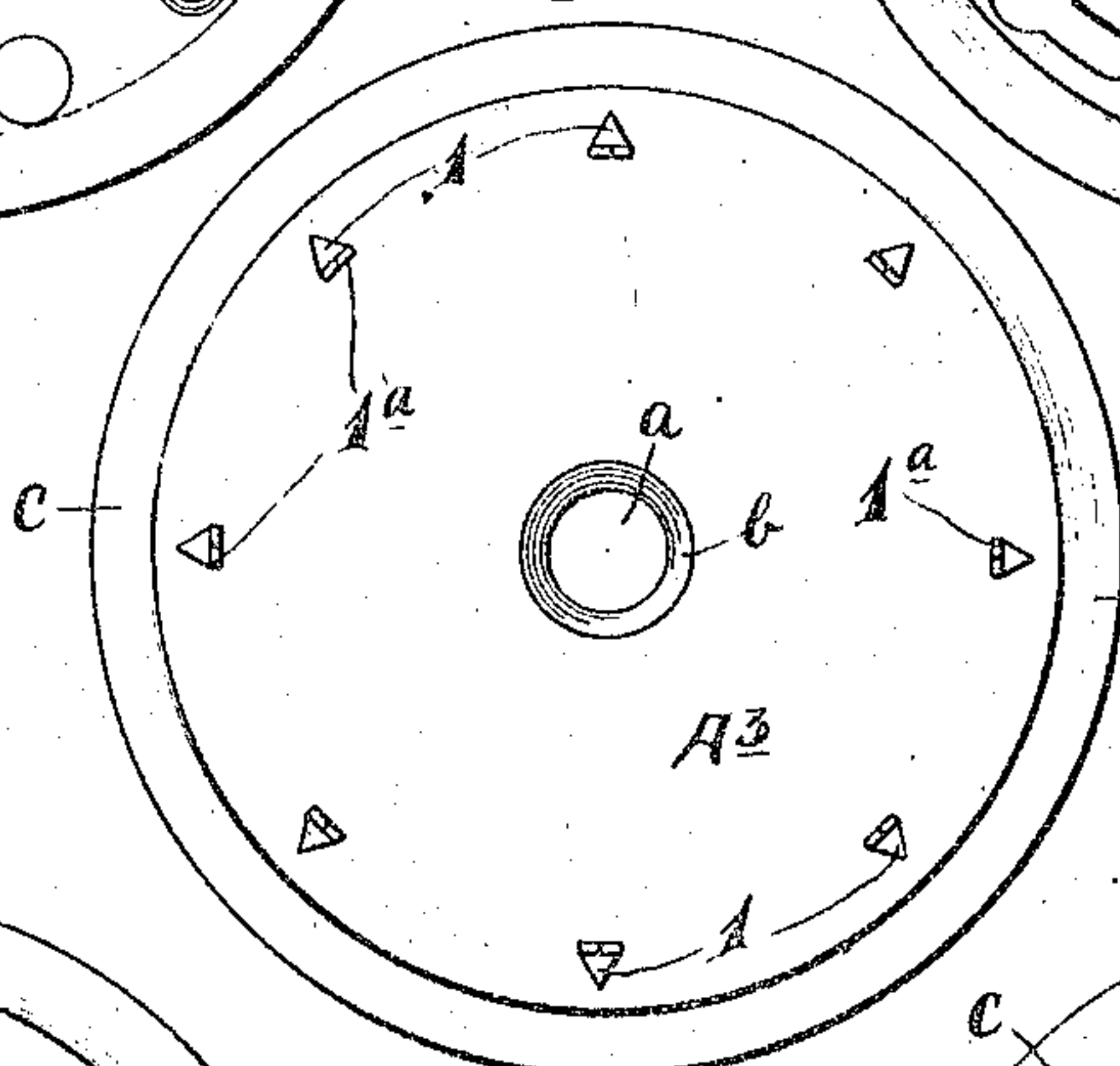
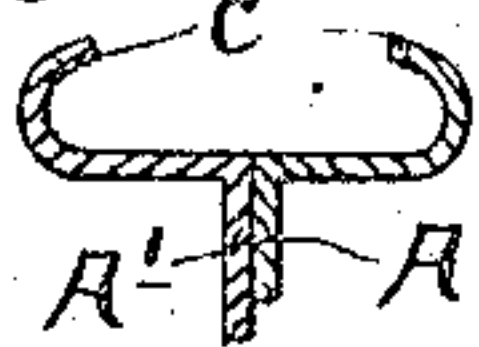
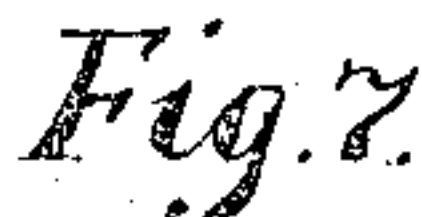
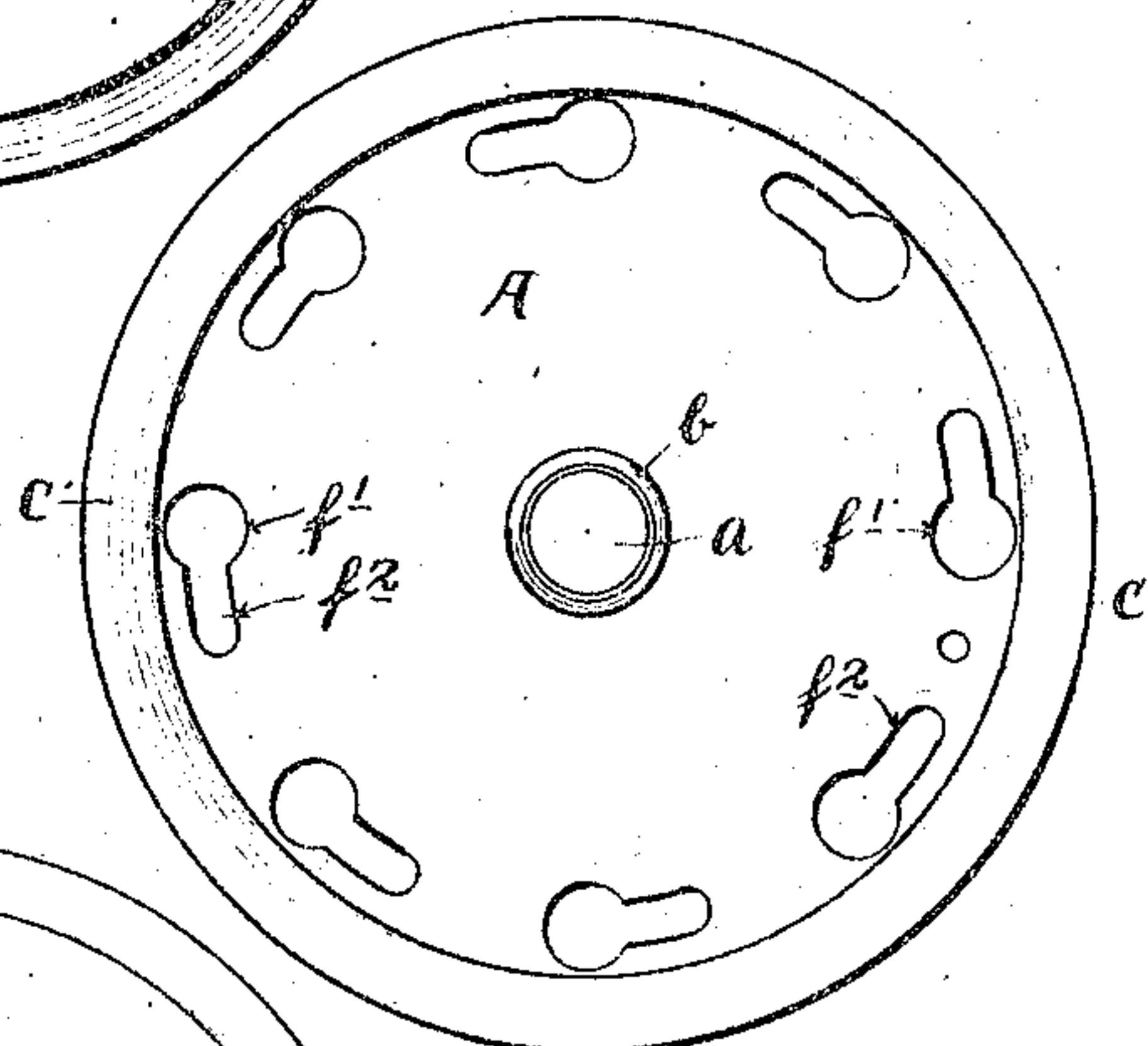
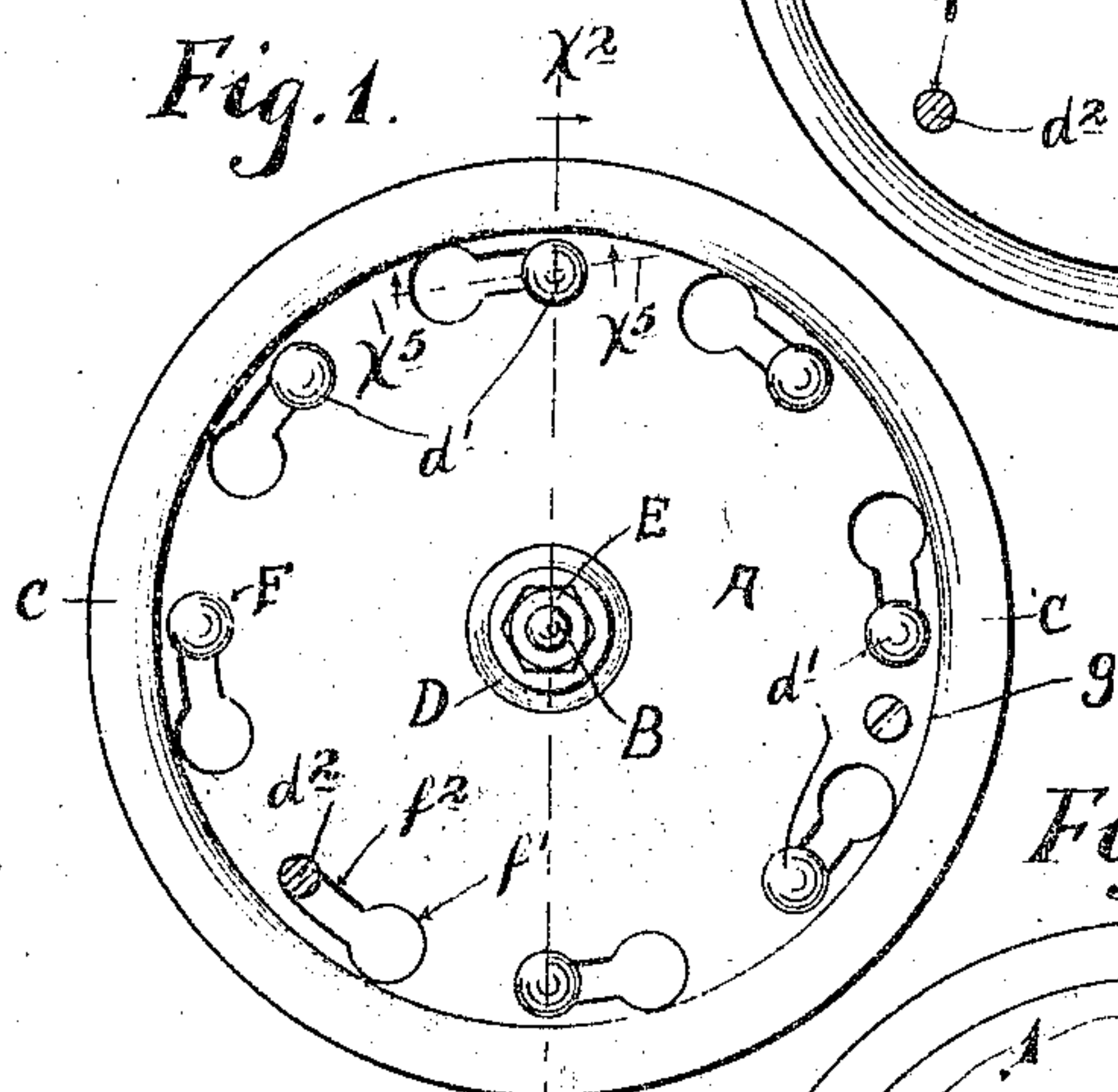
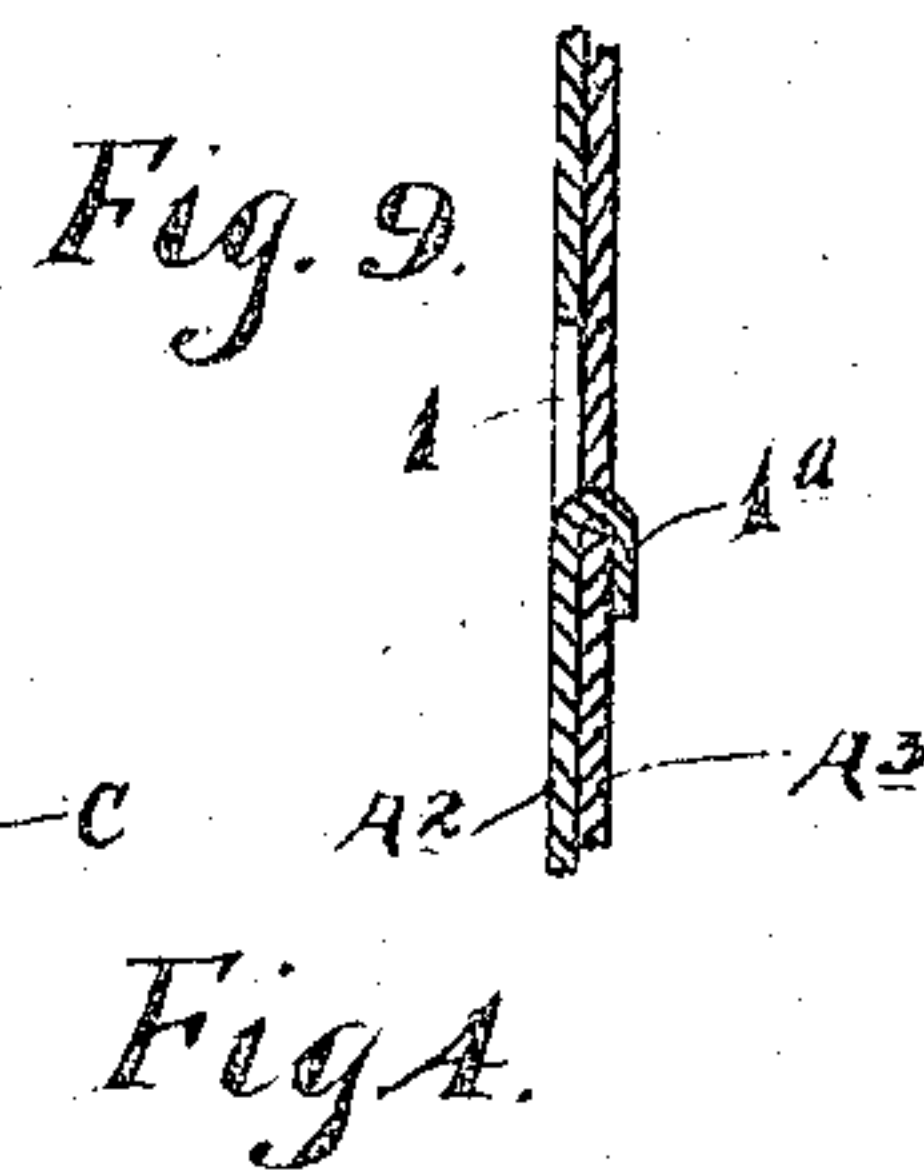
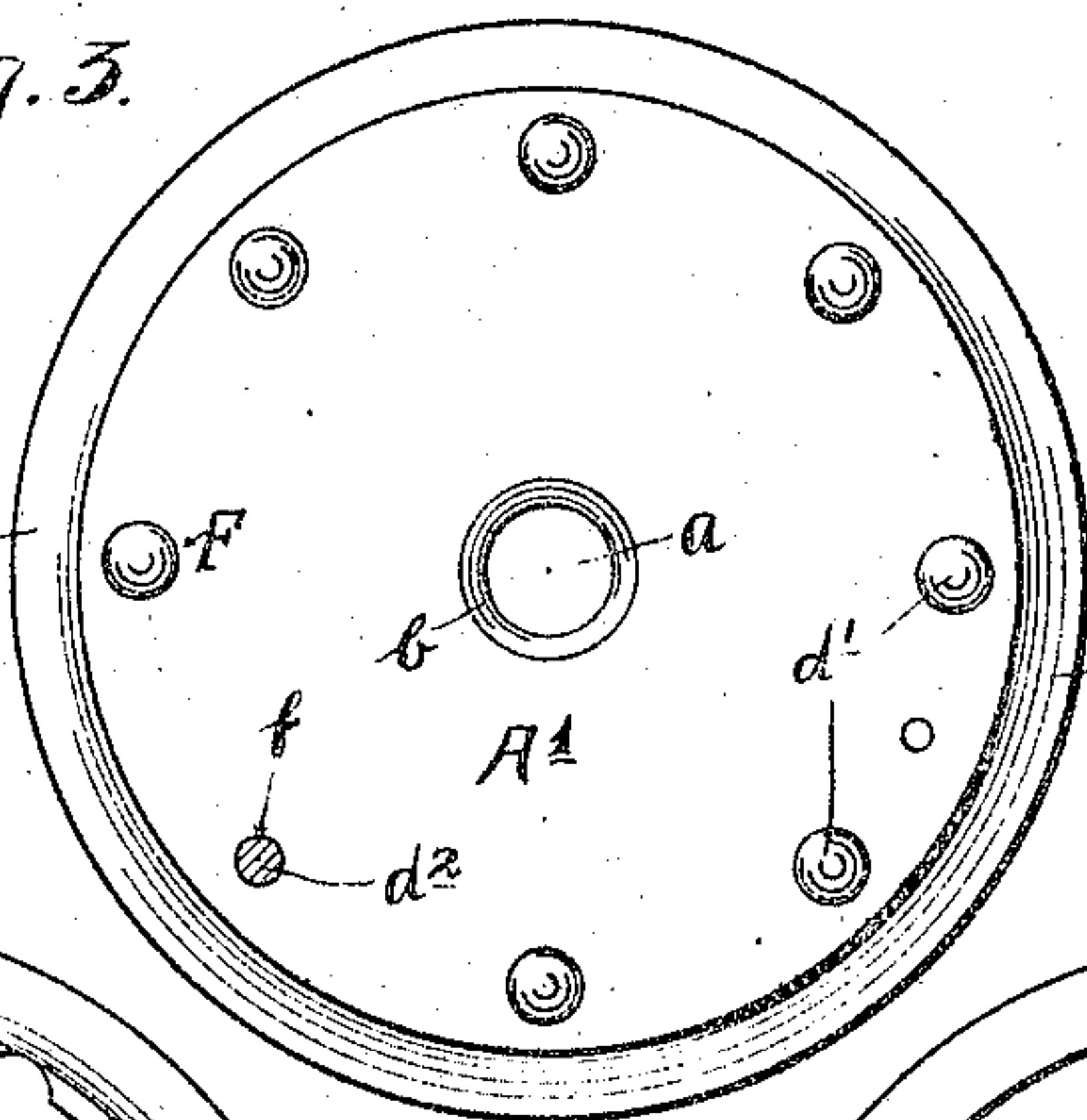
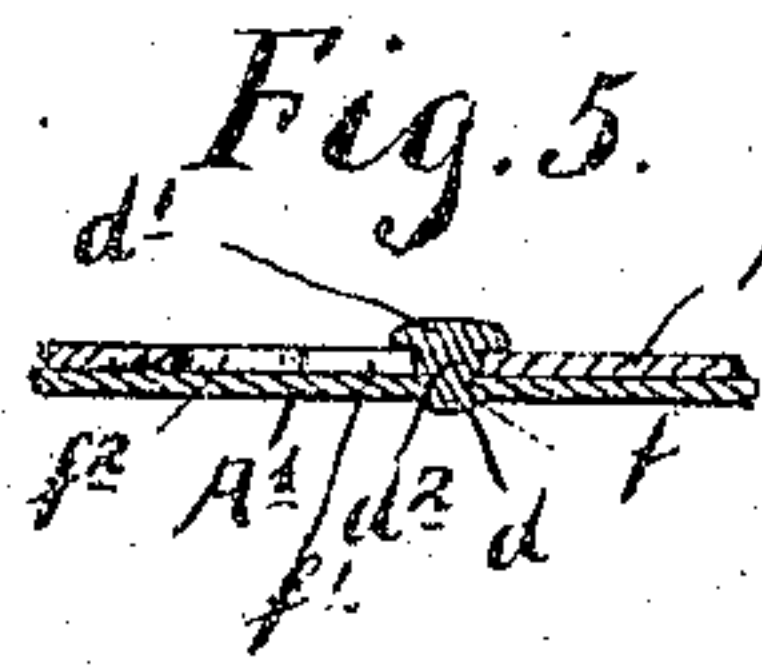


924,334.

Fig. 3.



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UNITED STATES PATENT OFFICE.

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VEHICLE-WHEEL.

No. 924,334.

Specification of Letters Patent.

Patented June 8, 1909.

Application filed February 9, 1905. Serial No. 244,945.

To all whom it may concern:

Be it known that I, JAMES R. FOUCH, of Minneapolis, in the county of Hennepin and State of Minnesota, have invented new and useful Improvements in Vehicle-Wheels, of which the following is a specification.

My invention relates in general to vehicle wheels, in particular to wheels for steam and electric cars, and more particularly to wheels for automobiles, motor cycles and the like.

To these ends, my invention consists of a wheel formed of two concavo-convex disks of sheet metal having their concave faces inwardly turned, means for holding these concavo-convex plates in contact at their peripheries, other means for holding them out of contact at their centers, and still other means whereby the said disks may be disconnected and reunited, and thus providing for removing the tires when necessary, and replacing the same without the aid of mechanics, or without the use of tools other than may be conveniently carried by the operator of the car or motor.

My invention is clearly illustrated in the accompanying drawings, fully described in the following paragraphs of this specification, and particularly referred to in the subjoined claims.

Referring to the drawings; Figure 1 is a view in side elevation, showing my improved wheel, with the tire removed. Fig. 2 is a vertical section, taken on the line $x^2 x^2$ of Fig. 1. Fig. 3 is a view in side elevation, showing the inner face of one of the disks. Fig. 4 is a view in side elevation, showing the outer face of one of the disks. Fig. 5 is a detail view, on an enlarged scale, taken on the line $x^5 x^5$ of Fig. 1. Fig. 6 is a view corresponding to Fig. 1 but illustrating modified means for securing the disks together. Fig. 7 is a view in side elevation, showing the inner face of one of the disks shown in Fig. 6. Fig. 8 is a view in side elevation, showing the outer face of one of the disks shown in Fig. 6. Fig. 9 is a detail view, on an enlarged scale, taken on the line $x^9 x^9$ of Fig. 6; and Figs. 10 and 11 are detail views in section, showing modified forms of rims.

Similar letters refer to similar parts throughout the several views.

Referring first to the construction shown in Figs. 1 to 5, inclusive, A—A¹ indicate the disks, B the shaft or axle, C the sleeve, D—D¹

the concave washers, E the clamping nut, and F the locking bolts.

The disks A—A¹ are spun or stamped from sheet metal, steel being best adapted to the purpose. They are respectively provided at their centers with openings *a*, adapted to receive the shaft or axle B, with which, or upon which they revolve, near their centers, with the outwardly extending conical flanges *b*, and at their peripheries with the outwardly extending flanges *c*, adapted (when the disks are united) to form a groove for the tire, not shown. The shaft or axle B is not unlike those commonly used for a like purpose, and therefore needs no description herein. The sleeve C is adapted to receive the shaft or axle B, with which, or upon which it revolves. It is turned or ground conical at its ends, to fit the concave faces of the conical flanges *b* lying adjacent to and concentric with the opening *a* of the disks A—A¹. The concave washers D—D¹ are adapted to receive the shaft or axle B and are turned or ground concave to fit the convex faces of the conical flanges *b* of the disks.

The clamping nut E is not unlike those commonly used for a like purpose, and therefore needs no description herein.

The locking bolts F are an important feature of my invention. They consist of reduced portions *d* adapted to serve as rivets, with head portions *d*¹ adapted to serve as clamping means and with intermediate portions *d*² adapted to serve as locking bars, all of which will hereinafter be set forth in their order.

The disk A is pierced near its periphery, being provided with a series of holes *f* adapted to receive the reduced portions *d* of the locking bolts F which are securely riveted therein. The disk A¹, in like manner is pierced, being provided with a series of openings, the circular portions *f*¹ of which are adapted to receive the head portions *d*¹ of the locking bolts F and slot portions *f*² which are adapted to receive the intermediate portions *d*² of the locking bolts F.

I put the several parts of my wheel together in the following manner:—I first put the concave washer D¹ upon the shaft or axle B; then put on the disk A¹, having its concave side outward. I next put on the sleeve C; then the tire (not shown), and then the disk A, letting the head portions *d*¹ of the locking

bolts F pass through the circular portions f^1 , when I rotate the said disk A^1 to the left, thus forcing the intermediate portions d^2 , of the locking bolts F, into the narrow slot portions f^2 , thereby firmly binding the disks A and A^1 together; after which I insert the locking screws g , thus preventing the said disks A — A^1 from rotating, one upon the other, and from unintentional separation.

10 I then put on the concave washer D, which washer I secure in place by means of the clamping nut E. Should I at any time desire to remove the tire, I first remove the clamping nut E and the locking screws g , when, by rotating one disk upon the other, I release the locking bolts F from the openings f^1 —when I remove the outer disk A^1 , and thereafter the tire (not shown).

In the modification shown in Figs. 6, 7, 8 and 9, I form slits h in the disk A^2 , as shown in Fig. 8, and triangular slits l in the disk A^3 (as shown in Fig. 7); then I bend the portions lying between these triangular slits l laterally from the concave side, thus forming the clenchers l^a , which clenchers pass through the slits h in the disk A^2 when putting the said disks together; then I bend the said clenchers down upon the disk A^3 (as shown in Figs. 6 and 9), thus permanently binding the two disks together.

The advantages which I claim for my improved wheels are; first, through their construction (a double arch) they are exceedingly strong in proportion to their weight; second, presenting smooth surfaces to the wind, in contradistinction to those having spokes, they therefore offer no wind resistance; and third, through having smooth surfaces, they are easily kept clean.

40 I do not wish to confine myself to the exact construction herein shown and described, for it is apparent that changes may be made therein without departing from the spirit and intent of my invention; as, for instance, the concavo-convex plates may be of identically the same construction, by forming every alternate hole in the series round, and

every alternate one irregular in form, in which case the locking bolts may be riveted into both disks, and be received into both, 55 and still have the disks separable; but I prefer to have them affixed in the one, and to be receivable in the other, as shown.

What I claim as new and desire to secure by Letters Patent is:—

1. In a vehicle wheel, the combination with a suitable shaft or axle, of two centrally oppositely faced disks having their concave sides inwardly faced, said disks being fashioned with conical flanges lying adjacent to 60 and concentric with the said central openings, with outwardly extending peripheral flanges, and with perforations or openings lying between the said conical flanges, a sleeve lying adjacent to the said shaft and 65 between the said concavo-convex disks, said sleeve being conical at its ends and adapted to close contact with the conical faces of the said conical flanges, clamping bolts adapted to be affixed in the perforations in one of the said disks and to engage with the openings in 70 the other one of the said disks, washers or followers adapted to close contact with the faces of the said conical flanges, and a locking nut adapted to engage with the said shaft 75 or axle, and to secure the said disks and sleeve in close contact, substantially as shown and described.

2. In a vehicle wheel, the combination with an axle having clamping collars thereon 80 and having a threaded end portion extending axially beyond the said collars, of centrally pierced concavo convex disks arranged upon said axle and having their concavo convex faces engaged by said collars, a spacing sleeve on said axle between said disks, 85 and a clamping nut on the threaded end portion of said axle, serving to clamp the said disks between said spacing sleeve and clamping collars, substantially as described.

JAMES R. FOULCH.

Witnesses:

F. A. CAMP,
F. G. O'BRIEN.