

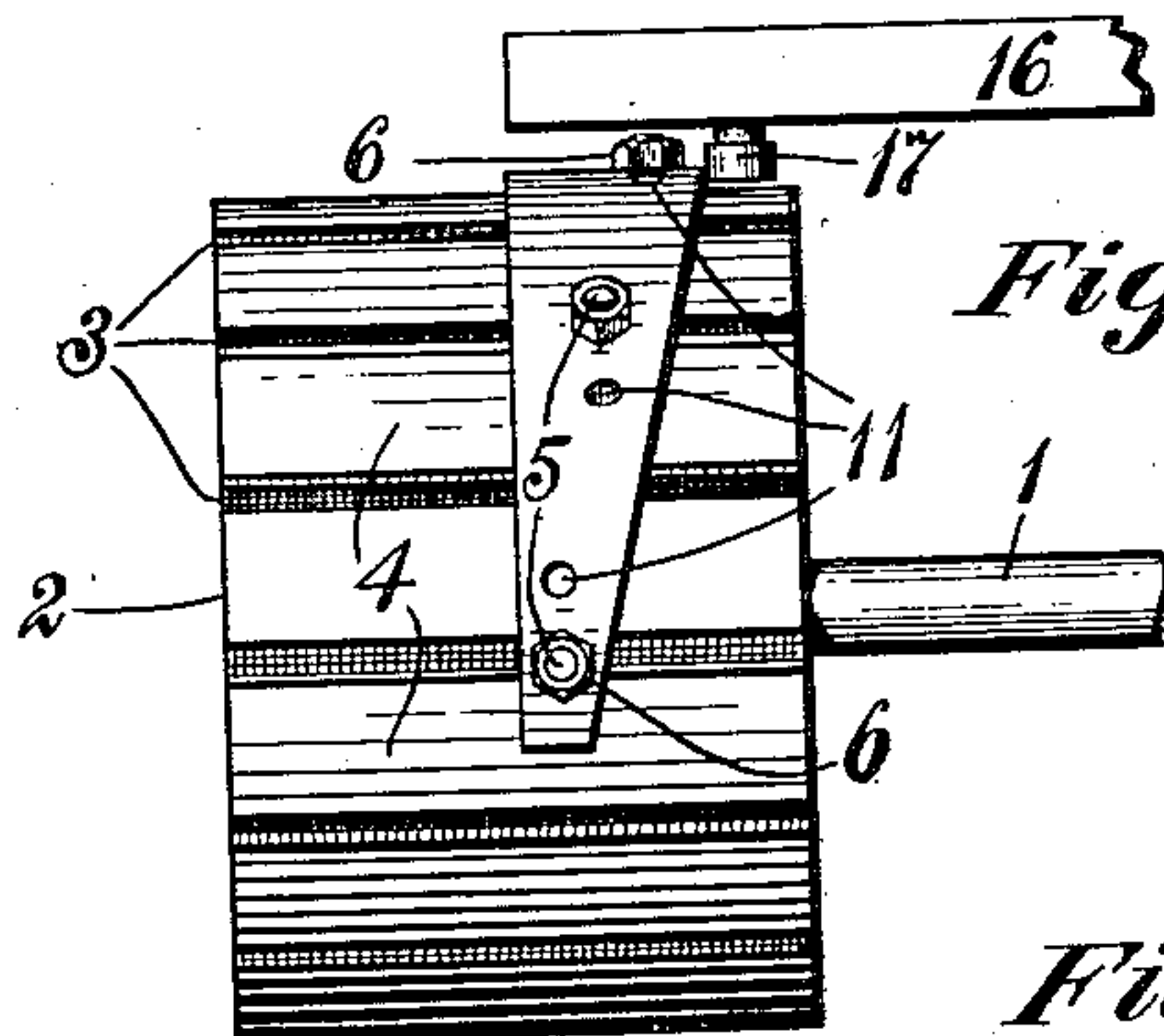
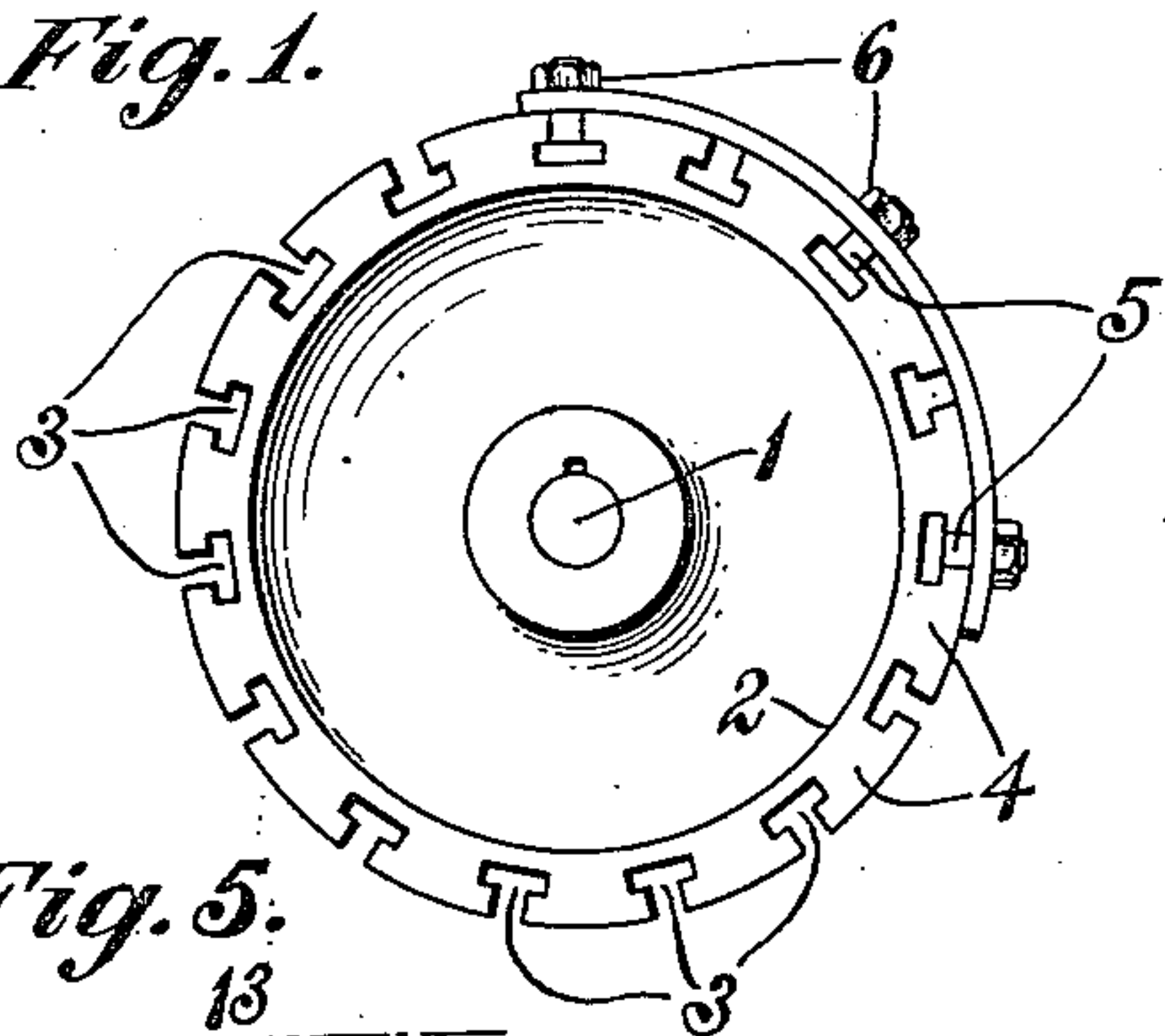
No. 855,773.

PATENTED JUNE 4, 1907.

B. M. W. HANSON.  
CAM.

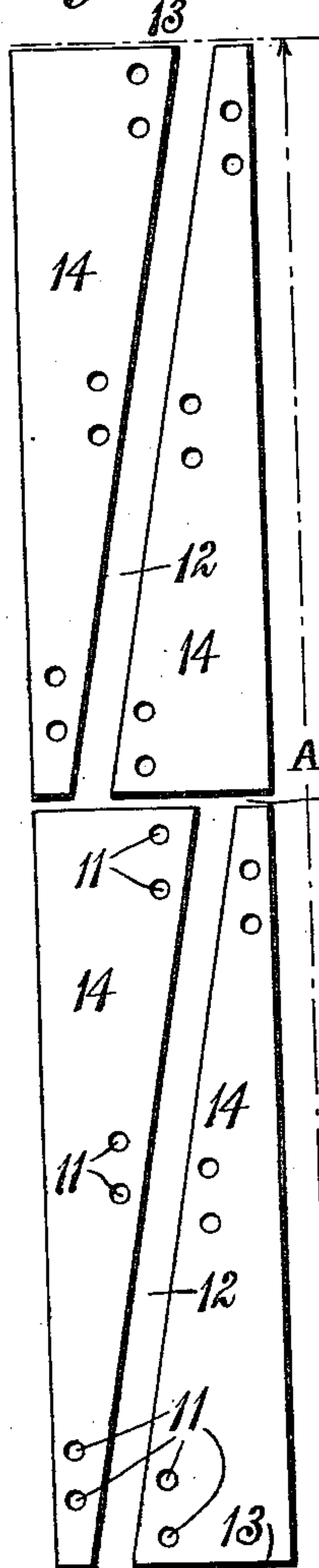
APPLICATION FILED APR. 25, 1906.

*Fig. 1.*

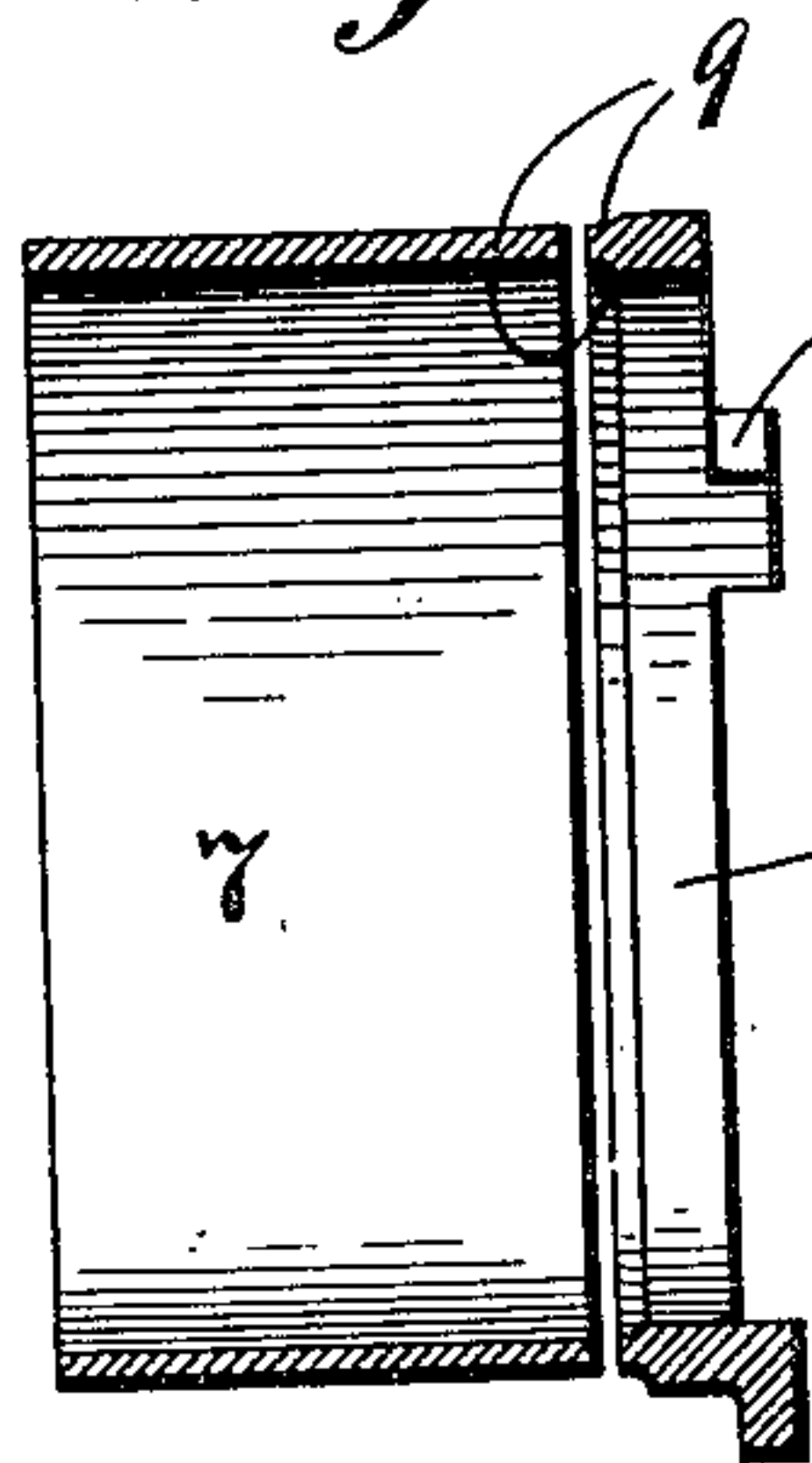


*Fig. 2.*

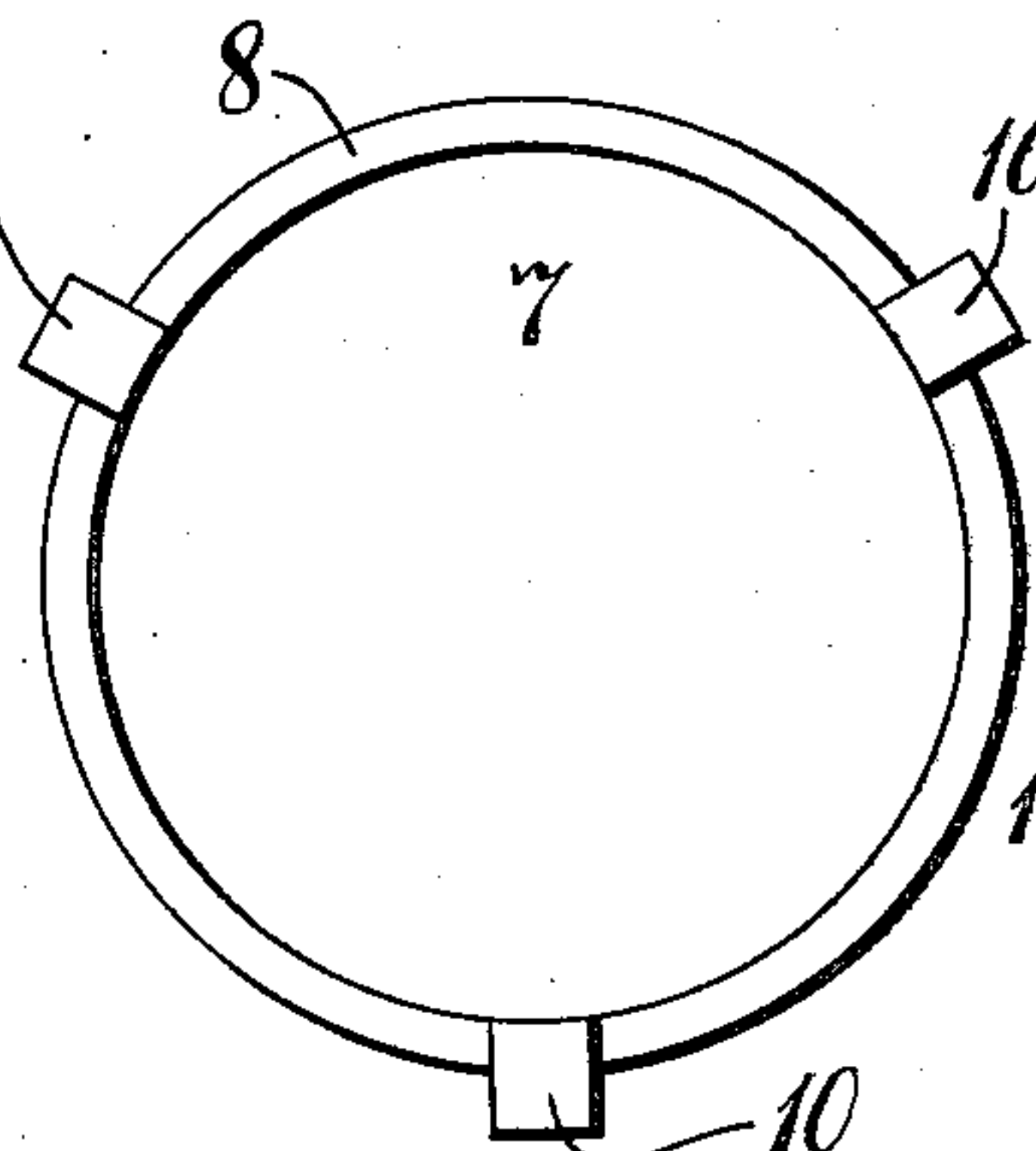
*Fig. 5.*



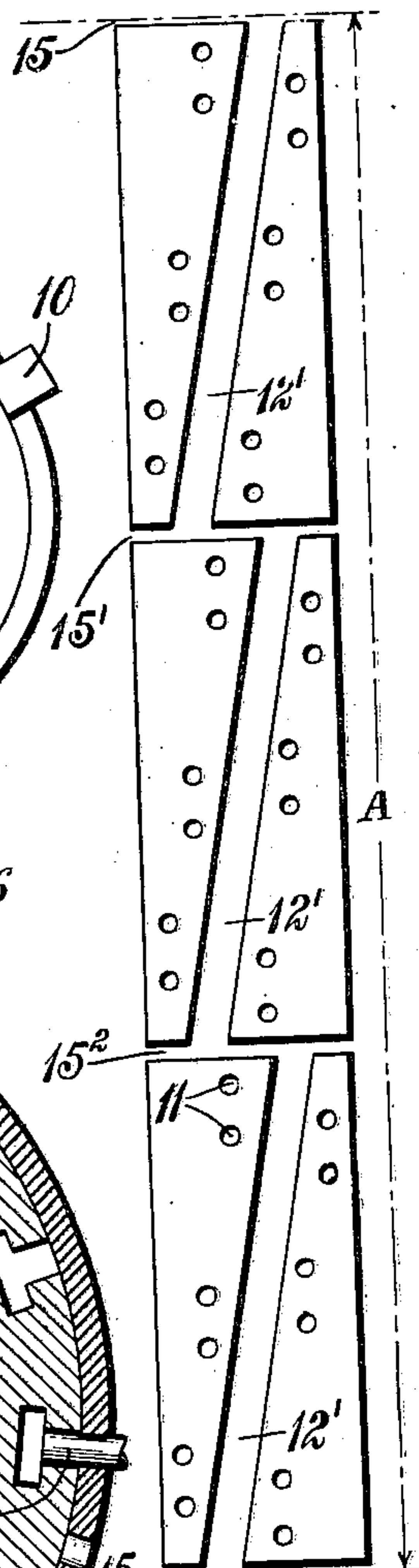
*Fig. 3.*



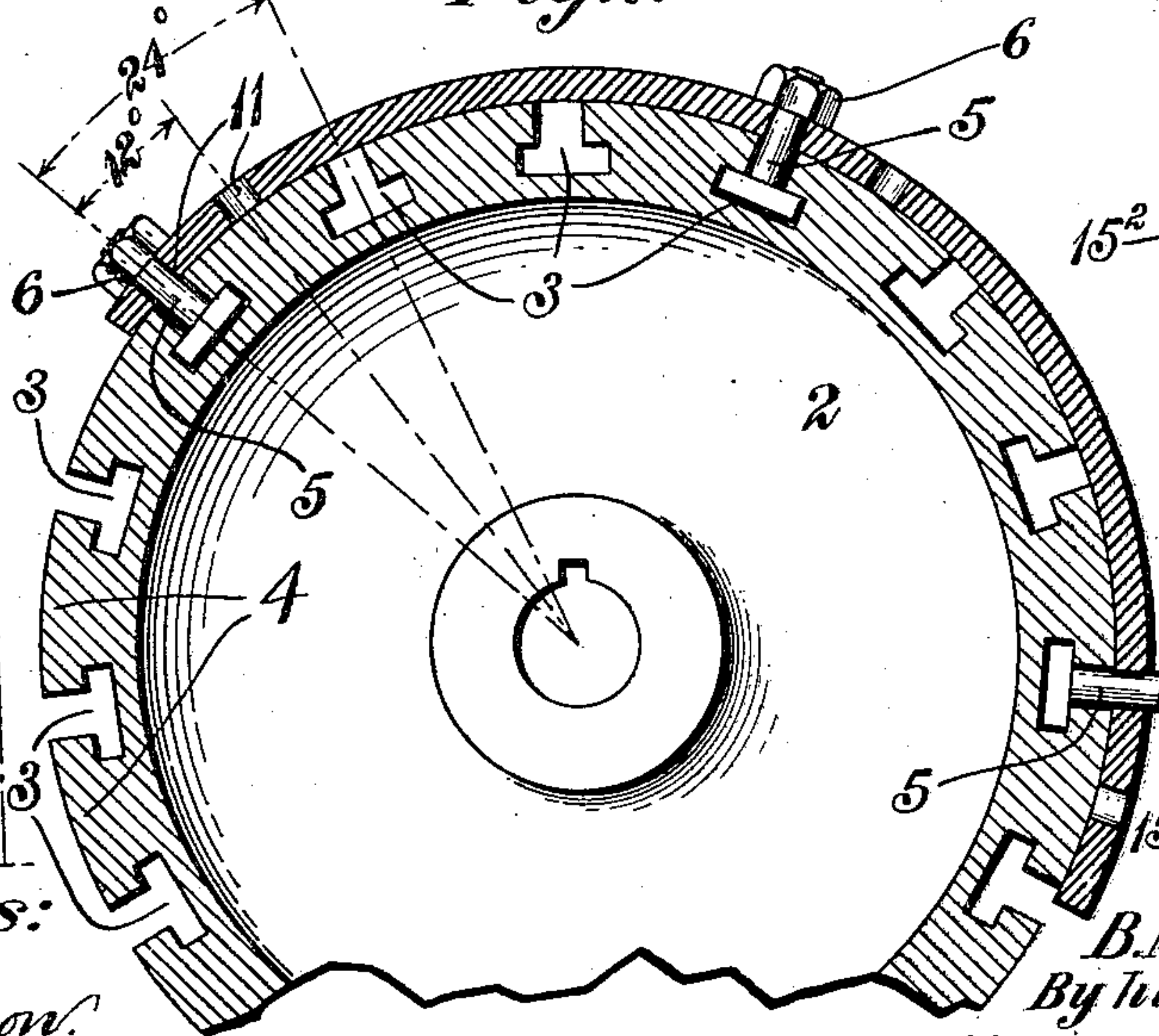
*Fig. 4.*



*Fig. 6.*



*Fig. 7.*



Witnesses:

*J. E. Anderson.*  
*S. S. Grotta.*

*Inventor:*  
*B. M. W. Hanson*  
*By his Attorney,*  
*Wm. H. Grotta*



# UNITED STATES PATENT OFFICE.

BENGT M. W. HANSON, OF HARTFORD, CONNECTICUT, ASSIGNOR TO PRATT & WHITNEY COMPANY, OF HARTFORD, CONNECTICUT, A CORPORATION OF NEW JERSEY.

## CAM.

No. 855,773.

Specification of Letters Patent.

Patented June 4, 1907.

Application filed April 25, 1906. Serial No. 313,537.

*To all whom it may concern:*

Be it known that I, BENGT M. W. HANSON, a citizen of Sweden, having declared my intention of becoming a citizen of the United States, residing at Hartford, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Cams, of which the following is a specification.

This invention relates to cams more especially designed for employment in connection with the turret-slides of metal-working machines, although not limited to any specific use, nor to any particular art.

One of the principal objects of the invention is the provision in connection with a carrier having parallel slots, of a cam having a series of openings which due to their arrangement afford means whereby a maximum number of adjustments upon the circumference of said carrier may be readily accomplished. In the device shown this result is accomplished by providing the cam with a series of sets of perforations, each set composed of two holes, although any suitable number of holes may be employed.

A further object of the invention is the provision of a cam manufactured in a peculiar manner from a tube or hollow cylinder, as will be hereinafter explained.

Other objects of the invention will be set forth in the following description.

In the accompanying drawings, Figure 1 is an end view of a cam-drum and cam embodying the present invention. Fig. 2 is a side elevation, parts being broken away. Fig. 3 is a longitudinal vertical section of the tube or cylinder from which the cams are formed, the part by which the cylinder is driven from the face-plate of a lathe while undergoing the finishing process being removed. Fig. 4 is a right-hand end view of Fig. 3. Fig. 5 is a diagram showing the manner in which the two pairs of cam-plates are formed from a cylinder. Fig. 6 is a similar view illustrating the manner of producing three sets of cam-plates from a cylinder of the same diameter as that shown in dotted lines, Fig. 5; Fig. 7 is an enlarged transverse section of Fig. 2, illustrating by dot-and-dash lines the manner in which the cam is adjusted on its carrier or drum.

Like numerals designate similar parts throughout the several views.

Referring to the drawings, the numeral 1 designates a shaft to which is keyed or otherwise secured a carrier or drum 2, having a series of parallel T-slots 3 extending longitudinally of its periphery, and separated by lands 4, said slots being in the exemplification given twenty-four degrees apart. In the slots the T-bolts 5 are placed, the stem of each bolt being threaded to receive a nut 6.

Referring now to Fig. 3 the numeral 7 designates a cylinder from which the cam hereinafter described is formed. This cylinder is preferably of cast-metal and at one end 8 is reinforced externally and internally at 9, and provided with lugs or projections 10 by which it may be secured to the face-plate of a lathe for the finishing or machining operation, the end 8 being removed and discarded after said operation. After the cylinder 7 has been machined it is placed in a jig, and a series of sets of perforations 11 consisting of two to each set, are formed therein at the desired distance apart, and the cylinder is then removed from said jig and secured to a fixture by bolts passing through said perforations 11. While held by said fixture the blank is slotted at 12 on spiral lines of the desired angle and is subsequently severed transversely as at 13 according to the number of sets of cam-plates 14 desired of any length required.

In Figs. 5 and 6 illustrations are given showing how the cylindrical blank 7 may be divided into any desired number of cam-plates. Referring to Fig. 5 the dimension indicated by the dot-and-dash line A is equal to the circumference of the cylinder and the blank is drilled to form sets of pairs of holes 11, the distance between each hole of each pair being, for instance, twelve degrees (12°) of the circumference of the blank, (or a multiple of said twelve degrees) and the distance between one set of holes and another set of holes being in said illustration twenty-four degrees (24°) or a multiple thereof. With a cylinder of the dimensions indicated by said line A two sets of cam-plates each of an arc of about one hundred and eighty degrees (180°) will be formed when the blank is slotted in the manner described and is divided as at 13 and these plates may be further divided transversely to form other cams of less length if desired. In Fig. 6 the dot-and-dash line A again indicates the circumference of



the cylindrical blank, and in this instance said blank is slotted in a similar manner as in Fig. 5, but has a series of three slots 12', and is divided at 15, 15' and 15<sup>2</sup> into three  
 5 sets of like cam-plates 14 each having an arc of about one hundred-and twenty degrees (120°).

As the longitudinal T-slots of the drum 2 are about twenty-four degrees apart, and as  
 10 the heads of the bolts 5 are seated therein, it will be evident that by the arrangement of holes 11 described it is possible to lift the cam-plates from the stems of said bolts and to place them back thereon by inserting said  
 15 stems through the other holes of the series, and thus to obtain an adjustment of the cam-plate upon the drum of twelve degrees (12°) without removing the said bolts from the slots. By sliding said bolts out of the slots  
 20 and inserting them in other slots any desired location of the cam-plate upon the drum may be obtained.

Variation in the number and location of the holes 11 may be made thereby making  
 25 finer adjustment of the cam possible, without departure from the invention.

Designated by 16 is a slide having a roller-stud 17 adapted to be engaged by the cam-plate and said slide may carry a turret or  
 30 other device. Various devices may, however, be substituted for the slide without departure from the invention.

Changes may be made in various details of the invention which is not limited specifically  
 35 to the precise subject-matter and details described.

Having thus described my invention, what I claim is:

1. A cam having sets of openings, combined with a carrier, and securing-devices on  
 40 said carrier adapted to be passed through

corresponding members of any of said sets of openings.

2. A cam having sets of openings, the perforations of each set being spaced a certain  
 45 number of degrees apart, combined with a carrier having guides, each pair of guides being spaced apart, to a multiple of the degree between the cam-openings of each set; and securing-devices mounted in the guides of  
 50 the carrier.

3. A cam having sets of openings, the openings of each set spaced a certain number of  
 55 degrees apart, combined with a carrier having slots, each pair of which is spaced a certain number of degrees apart to constitute a multiple of the degrees between the openings of each set; bolts seated in the slots, and the stems of which will enter any opening of each  
 60 slot in the cam; and means applied to said bolts for securing the cam in place.

4. The combination, with a carrier having T-slots, of bolts having heads adapted to enter said T-slots; a cam fitted to the carrier, and having separated sets of openings  
 65 through any of which the stems of the bolts may pass; and devices applied to the bolts for securing the cam to said carrier.

5. The combination, with a drum having T-slots, of T-headed bolts fitted adjustably  
 70 in said slots, and each having a threaded stem; a cam having separated sets of openings, two to each set; and nuts threaded upon the bolts and bearing against said cam.

In testimony whereof I affix my signature  
 75 in presence of two witnesses, at Hartford, Ct. this 12th day of April, 1906.

BENGT M. W. HANSON.

Witnesses:

S. E. DAVIS,

H. L. HUNTINGTON.