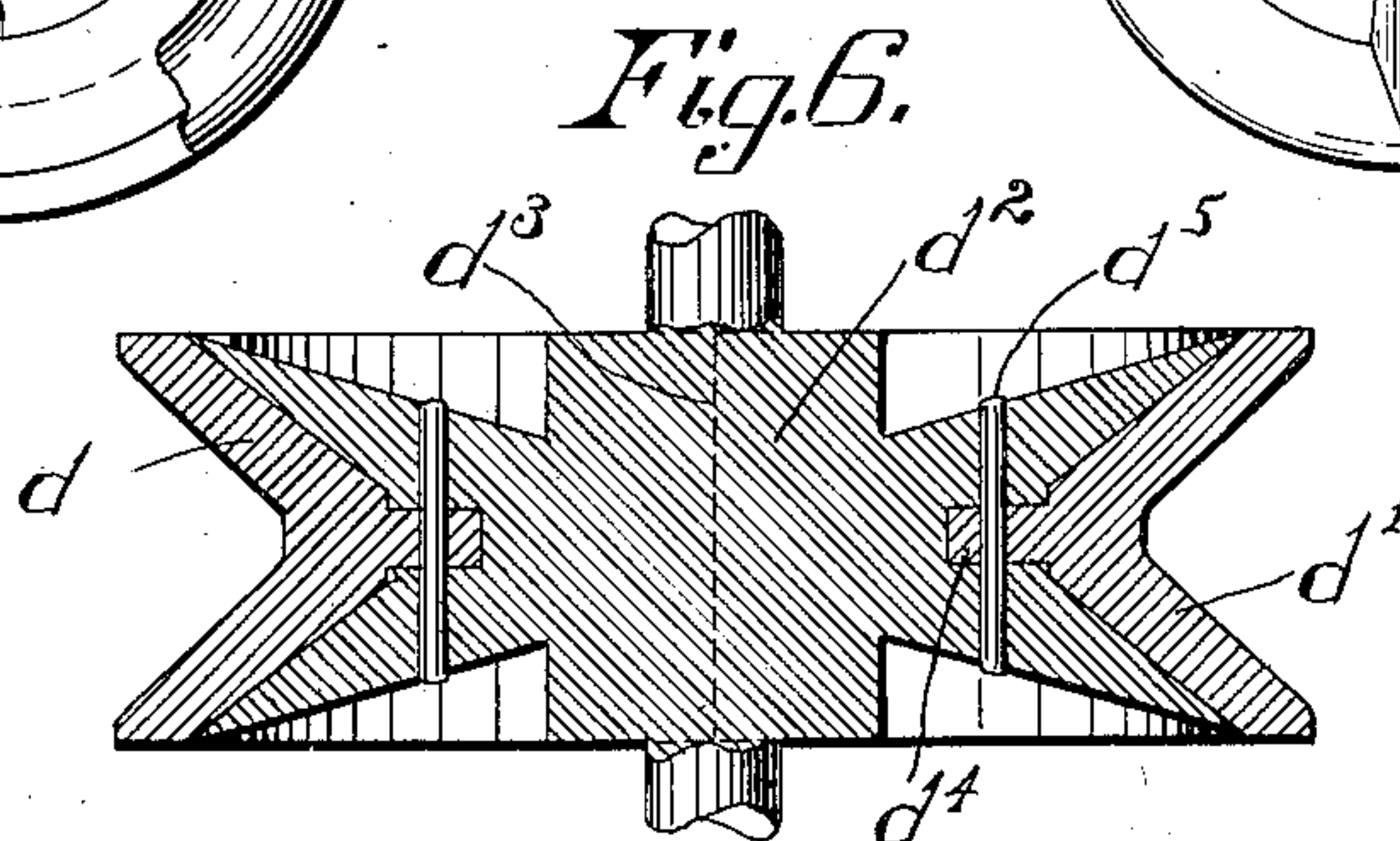
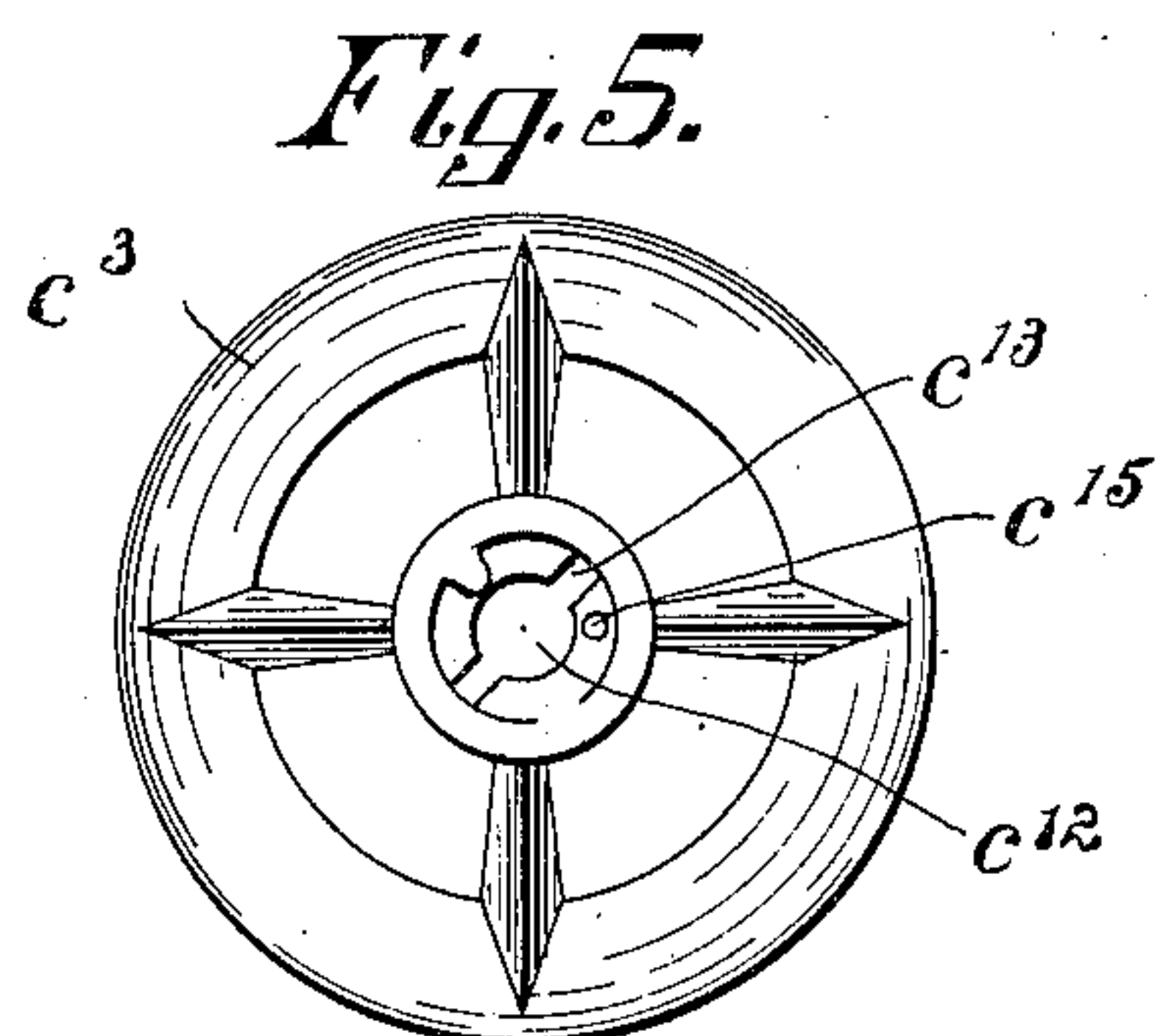
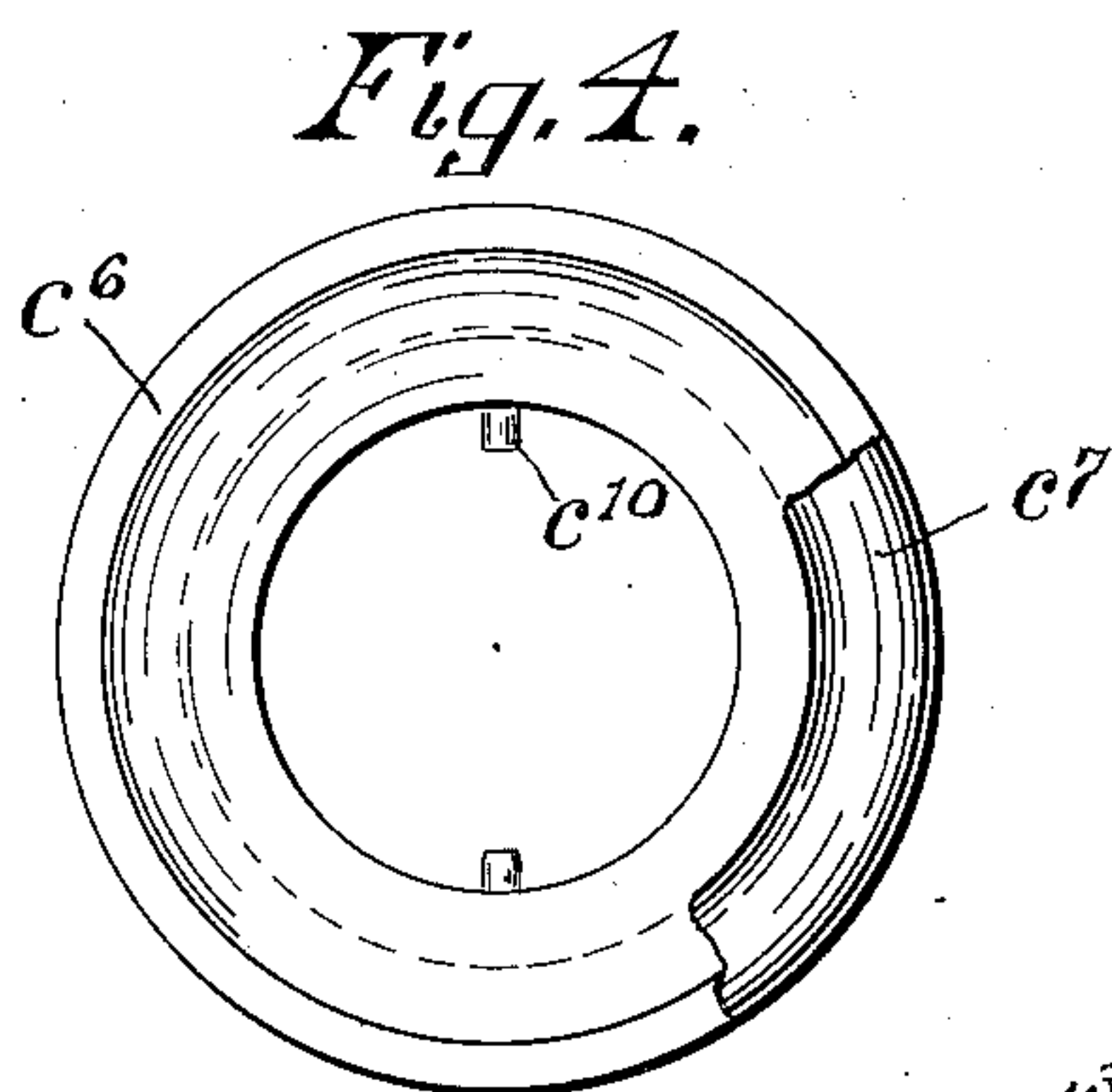
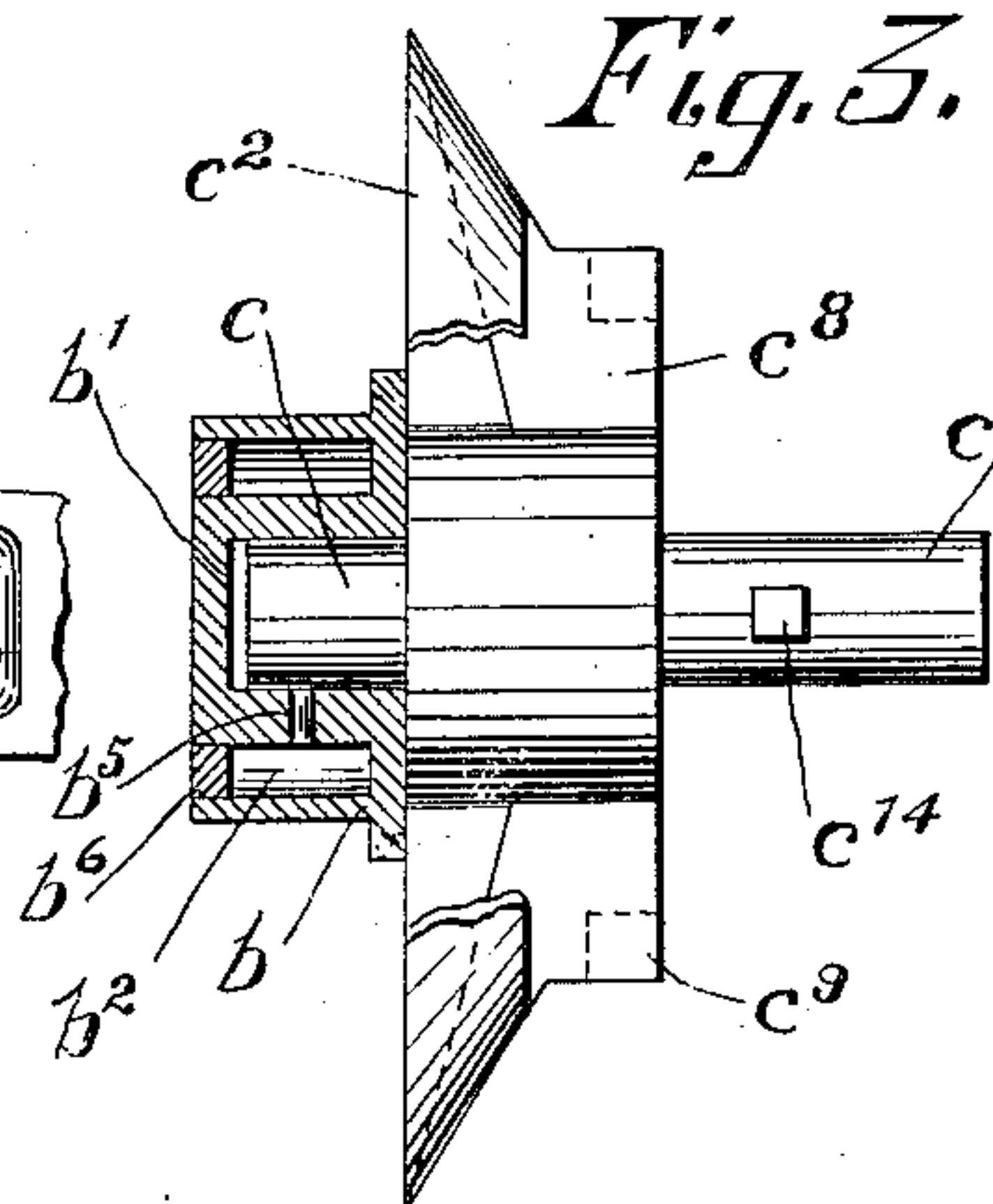
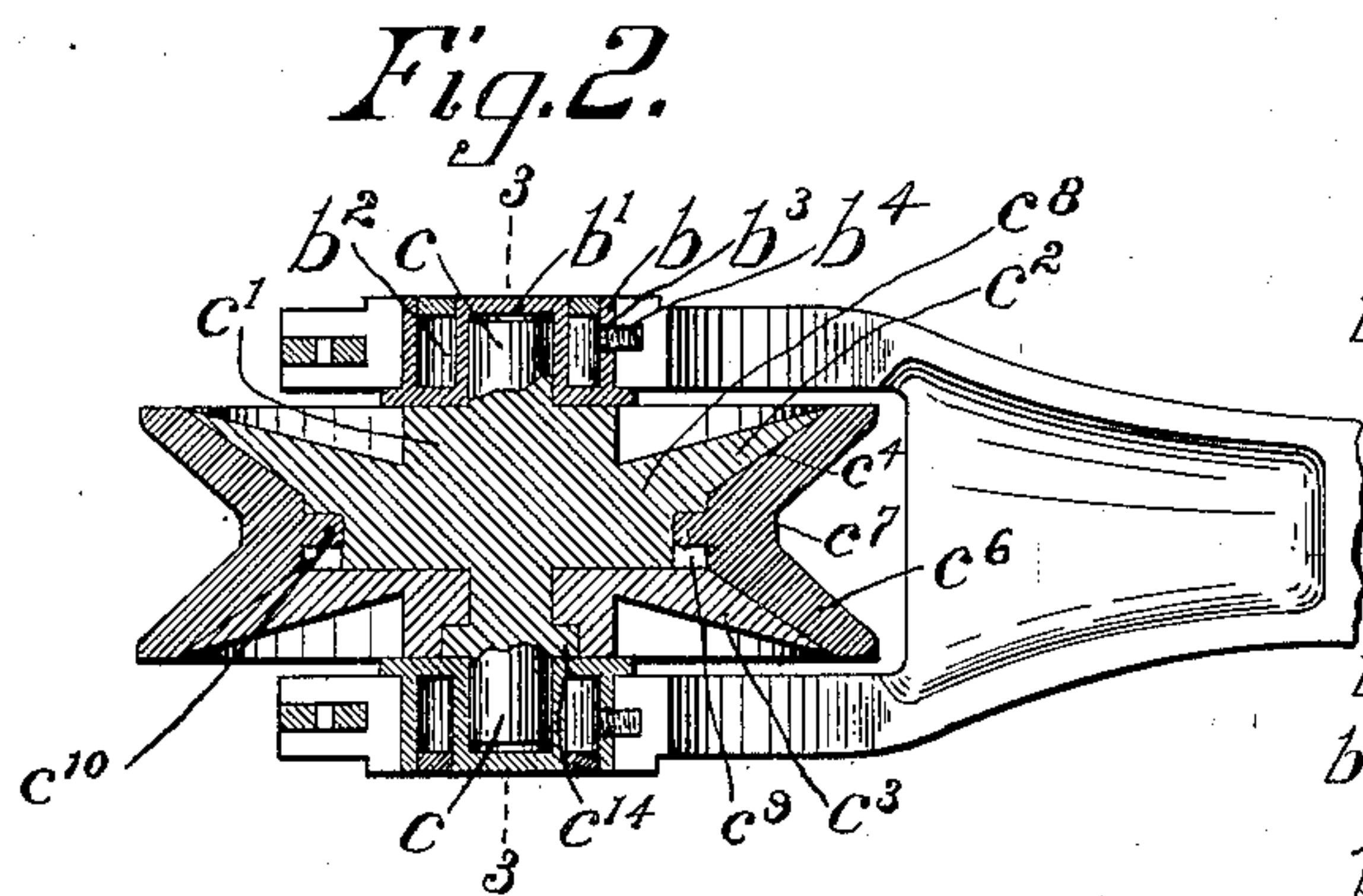
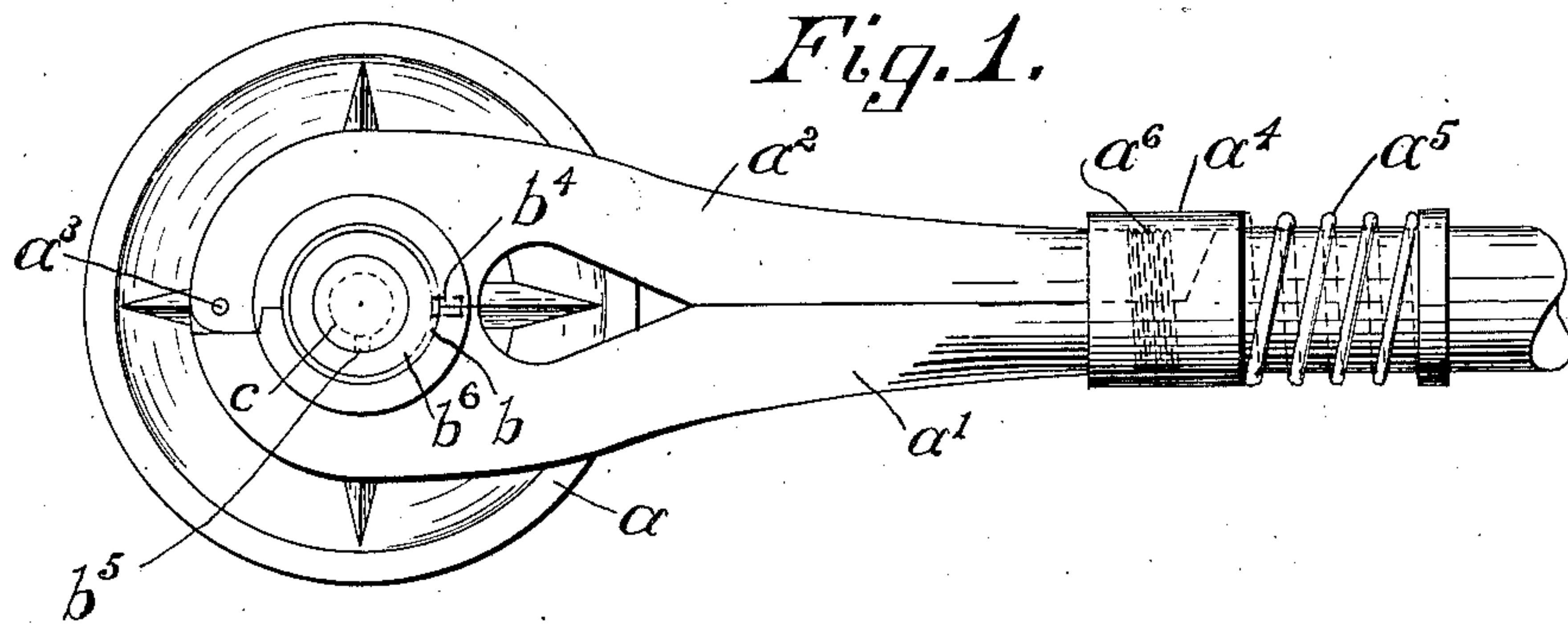


No. 821,719.

PATENTED MAY 29, 1906.

M. H. KASHIAN.
TROLLEY.

APPLICATION FILED SEPT. 26, 1904.



Witnesses.

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TROLLEY.

No. 821,719.

Specification of Letters Patent.

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Application filed September 26, 1904. Serial No. 225,751.

To all whom it may concern:

Be it known that I, MINAS H. KASHIAN, a citizen of the United States, residing in Amesbury, in the county of Norfolk and State of Massachusetts, have invented an Improvement in Trolleys, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

My invention is a trolley for use on electric street-cars.

As is well known, the wear of the ordinary trolley-wheel as it travels rapidly in contact with the trolley-wire is exceedingly destructive, so that the wheels have to be renewed very frequently.

Many devices have been proposed for cheapening the manufacture and increasing the life of the usual trolley-wheel, and my present invention is a further improvement in this direction.

Stated in general terms, my invention resides in forming the axle integrally with the main part of the trolley-wheel and providing in connection therewith cooperating lubricating journal-boxes and a removable wearing-surface for engaging the trolley-wire, all of said parts being independently replaceable and being mounted in a trolley-harp provided with means for enabling said parts to be quickly placed in position or removed therefrom. This construction affords great durability and long life to the main portion or frame part of the trolley-wheel, as it is not only strong in construction, but by having the axle integral therewith and mounted in special bearings, as will presently be described, there is a minimum wear and strain upon this portion of the wheel, and the peripheral or grooved part of the trolley is quickly removable and renewable, being preferably held between two retaining portions of the wheel-frame.

Further advantages of my invention will be pointed out in the course of the following description of the constructional details thereof, and the invention will be more particularly defined in the appended claims, reference being had to the accompanying drawings, in which I have illustrated a preferred embodiment of my invention.

In the drawings, Figure 1 is a side elevation of one form of my invention. Fig. 2 is a central horizontal sectional view thereof. Fig. 3 shows in side elevation one of the separable portions of the trolley, the axle, and in

section on the line 3 3, Fig. 2, one of the bearings. Figs. 4 and 5 are views in side elevation, partly broken away, showing portions of the trolley. Fig. 6 is a sectional view of a modified construction.

My invention relates to the upper portion of the trolley mechanism usually found in overhead electric-railway systems, and accordingly I will confine the description and drawings to that portion of the mechanism.

Referring to Fig. 1, it will be seen that my improved trolley *a* is mounted in a trolley-harp *a'*, whose upper portion *a²* is hinged at *a³* to the lower portion, said parts being retained together by a sliding sleeve *a⁴*, normally held forward by a spring *a⁵* and preferably having a slight threaded engagement at *a⁶* with the harp, so as to lock the part *a²* in closed position. In the opposite sides of the harp *a'* I mount tubular shouldered bearings *b*, each bearing having a central cylindrical opening *b'*, closed at its outer end and forming a bearing-surface for the shaft or axle *c* of the trolley proper. This axle *c* projects rigidly from a hub *c'* of the wheel or trolley and constitutes an important feature of my invention. As shown in Figs. 2 to 5, the preferred form of trolley comprises two separable portions *c²* *c³*, having inclined or conical surfaces *c⁴* arranged to clamp between them a ring or annular wear-plate *c⁶*, grooved at *c⁷* to engage the trolley-wire in usual manner. The part *c²* is provided centrally with a heavy hub *c'*, already mentioned, and projecting radially from the latter are spokes *c⁸*, shouldered at their outer ends and recessed, as indicated at *c⁹*, to receive pins *c¹⁰*, projecting inwardly from the annular wear-plate *c⁶*. The part *c³* is similar in shape to the outer portion of the part *c²*; but instead of having a hub it has an opening *c¹²*, provided with lateral offsets *c¹³*, to receive projections *c¹⁴*, extending from the axle *c*, whereby the part *c³* may be quickly locked in clamping position by a partial rotation thereof with relation to the projections *c¹⁴*, the parts being held against unauthorized relative movement by a pin or other suitable means *c¹⁵*. The cooperating conical surfaces of the parts *c²*, *c³*, and *c⁶* afford a large frictional surface and also facilitate rigid clamping of the parts together, while the bayonet-joint form of lock permits very quick assembling of the parts. Instead of this form of joint threads or any other suitable means may be employed. By having the axle integral with the wheel and the

wearing-surface c^6 quickly replaceable the main portion or part of the wheel is not liable to get out of order, but may be retained in operative condition for a long period of time, 5 and the quickly-destroyed engaging portion c^6 may be readily renewed as often as it wears out. The projecting bearing portions of the axle c are mounted, as stated, in the recesses b' , provided therefor in the journal-boxes, and 10 surrounding said recesses is an annular oil-chamber b^2 , having an opening b^3 , through which said chamber may be completely filled with oil and then closed with a screw b^4 , which normally engages a recess formed therefor in 15 the adjacent portion of the harp a' , whereby the journal-box is held in place and is also held against any tendency to rotate, said box when in said position having a small opening b^5 extending up into the bearing-recess b' for 20 permitting constant lubrication of the axle c on its under side. By having this opening b^5 on the under side it permits not only constant lubrication of the axle, but permits any grit which may possibly get into said bearing 25 to work out. The annular chamber b^2 is closed by an annular cap b^6 , driven into its outer end, as clearly shown in Fig. 3. Instead of having the wear-plate c^6 formed in a continuous annulus, as shown in Fig. 4, it may 30 be split transversely into two parts d d' , in which case the wheel proper is formed of one piece, as shown at d^2 , Fig. 6, said two parts abutting against each other at d^3 and being provided with projections d^4 , entering recesses therefor in the wheel-frame and re- 35 tained by pins d^5 .

The wearing portion which slides and rolls on the trolley-wire is preferably formed of brass. I make no claim to the provision of 40 renewable wearing portions nor to clamping the same between separable parts of a trolley-wheel, my invention residing in the combination of the parts herein shown and described, whereby increased durability and strength 45 are secured, said combination consisting of a wheel having a heavy main portion arranged to receive a detachable wear-plate and provided with an integral axle combined with lubricating journal-boxes removably carried 50 in the trolley-harp. This construction in practice accomplishes the desired results by providing great strength and free running of parts at those portions of the mechanism which it is necessary to preserve intact as 55 long as possible and yet it permits the quick renewal of those parts which necessarily wear out quickly because of their constant frictional engagement with the trolley-wire.

In use if any part gives out the harp is 60 quickly opened simply by giving the sleeve a^4 a turn and then springing it back so as to release the jaw a^2 , (and, if desired, the threads a^6 may be omitted, using simply the spring, or vice versa,) and then the defective part is 65 quickly renewed and the jaw clamped again

in position. If a journal-box breaks it can be simply taken out without disturbing any of the other parts and another put in its place. When the wear-plate c^6 wears out, the part c^3 is simply rotated so as to unlock it from the 70 hub c' , whereupon it is removed from the axle, and then the plate c^6 is similarly removed and another one put in its place, the projections c^{10} being dropped laterally into the recesses c^9 in the spokes c^8 , and then the part 75 c^3 is again engaged by the lugs or projections c^{14} , thereby clamping the wear-plate c^6 rigidly in place.

I have aimed to provide a self-retaining 80 mechanism, and it will be seen that the trolley-wheel, its axle, and its bearings are all held together automatically when placed in the harp. The bearings fit like thimbles or caps over the ends of the axle, thereby retaining the trolley-wheel in lateral adjust- 85 ment as well as in pivotal position, said bearings being held by their shoulders against lateral movement and being held by the screws b^4 in proper fixed upright position, all the parts being locked in operative relation by 90 the closing of the trolley-harp when secured by its ferrule or sleeve a^4 .

Having described my invention, what I claim as new, and desire to secure by Letters Patent of the United States, is— 95

1. A trolley for electric railways, comprising a wheel-frame having a hub provided with an axle projecting at its opposite ends, a supporting-harp, removable lubricating 100 journal-boxes carried by said harp supporting the opposite ends of said axle, and a removable annular wear-plate carried by said wheel-frame, the latter comprising two separable parts provided with means coöperating with said axle for clamping said wear-plate 105 between them.

2. A trolley for electric railways, comprising a wheel-frame provided with a hub, having a fixed axle projecting rigidly therefrom at its opposite ends, and an annular wear- 110 plate peripherally grooved to engage the trolley-wire, said frame comprising two separable parts, one of which is laterally removable from the other endwise of said axle, clamping means carried by said parts, recesses formed 115 in said frame opening laterally, and said wear-plate having projections on its inner side to interlock with said recesses.

3. A trolley for electric railways, comprising a wheel-frame provided with a hub, having a fixed axle projecting rigidly therefrom at its opposite ends, and an annular wear- 120 plate peripherally grooved to engage the trolley-wire, said frame comprising two separable parts, one of which is laterally removable from the other endwise of said axle, clamping means carried by said parts, said separable 125 parts and wear-plate having their coöperating surfaces conical in shape and inclined toward each other for affording strong gripping 130

engagement with each other when clamped together.

4. A trolley for electric railways, comprising a wheel-frame having a hub, provided
5 with an axle projecting at its opposite ends, a supporting-harp composed of horizontally-separable sections, removable lubricating journal-boxes carried by said harp supporting the opposite ends of said axle, said boxes
10 each having a central recess closed at its outer end for surrounding said axle, and a closed annular oil-chamber about said recess provided with a small opening into said recess, and said harp having recesses for removably
15 retaining said boxes when the harp is closed.

5. A trolley for electric railways, comprising a wheel-frame having a hub provided with an axle projecting at its opposite ends, a supporting-harp composed of horizontally-
20 separable sections, removable lubricating journal-boxes carried by said harp supporting the opposite ends of said axle, each of said boxes having a central recess closed at its outer end for receiving the end of said axle,
25 and a closed oil-chamber surrounding said recess and provided with a small opening into said recess on the under side thereof when the box is in working position, and said harp having recesses for removably retaining said
30 boxes when the harp is closed.

6. A trolley for electric railways, comprising a wheel-frame having an axle, a trolley-harp composed of horizontally-separable sections, a removable annular journal-box
35 fitted to a correspondingly-shaped seat in the adjacent faces of the sections of said harp, a central recess in said box for the end of the said axle, a closed oil-chamber surrounding said recess, a filling-opening in the outer peripheral wall of said box, a closing device for

said opening normally projecting therefrom between the sections of said harp for preventing rotation of said box, and a small oil-hole from said chamber into the bottom of said recess.

7. A trolley for electric railways, comprising a trolley-wheel having an axle, opposite journal-boxes containing annular lubricating-chambers fitting over the ends of said axle and removable endwise therefrom, a trolley-
50 harp composed of two parts separable horizontally and having cooperating recesses for removably receiving said boxes, said boxes and harp having means for automatically retaining said wheel, boxes, and harp in proper
55 operative position simply by the placing of said wheel and boxes in said recesses and closing the harp.

8. A trolley for electric railways, comprising a trolley-wheel, having an axle projecting
60 at its opposite ends, cap-like journal-boxes containing annular lubricating-chambers fitting over the ends of said axle and removable therewith, a trolley-harp composed of two parts horizontally pivoted together at their
65 outer ends, and containing recesses for clamping between them said journal-boxes, the latter containing means for automatically holding them in proper operative position when the trolley-harp is closed, said harp at the
70 inner end of its said parts having a sleeve held in yielding engagement with said parts for locking the harp closed.

In testimony whereof I have signed my name to this specification in the presence of
75 two subscribing witnesses.

MINAS H. KASHIAN.

Witnesses:

GEO. H. MAXWELL,
F. AUSTIN TARR.