

No. 762,749.

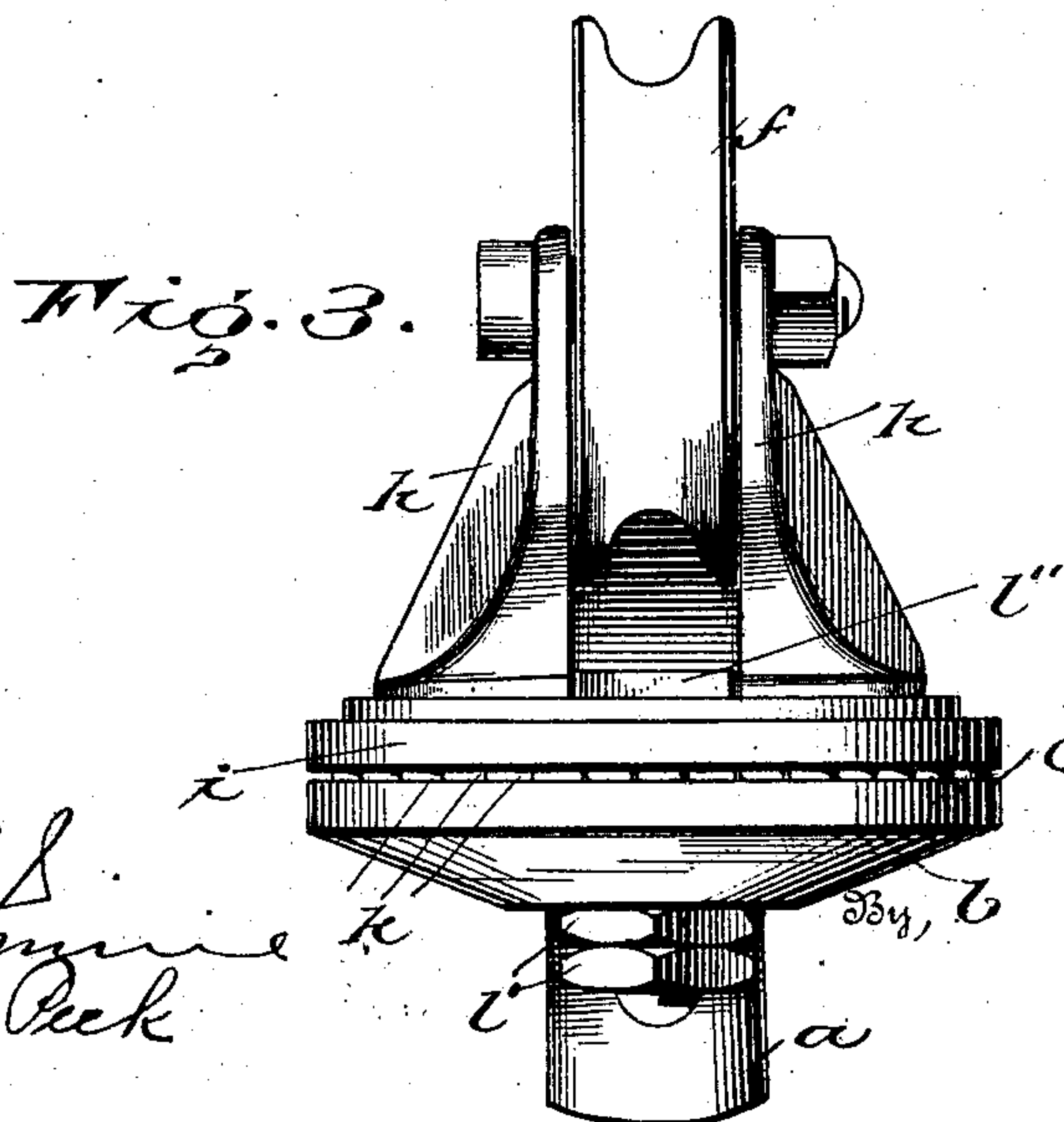
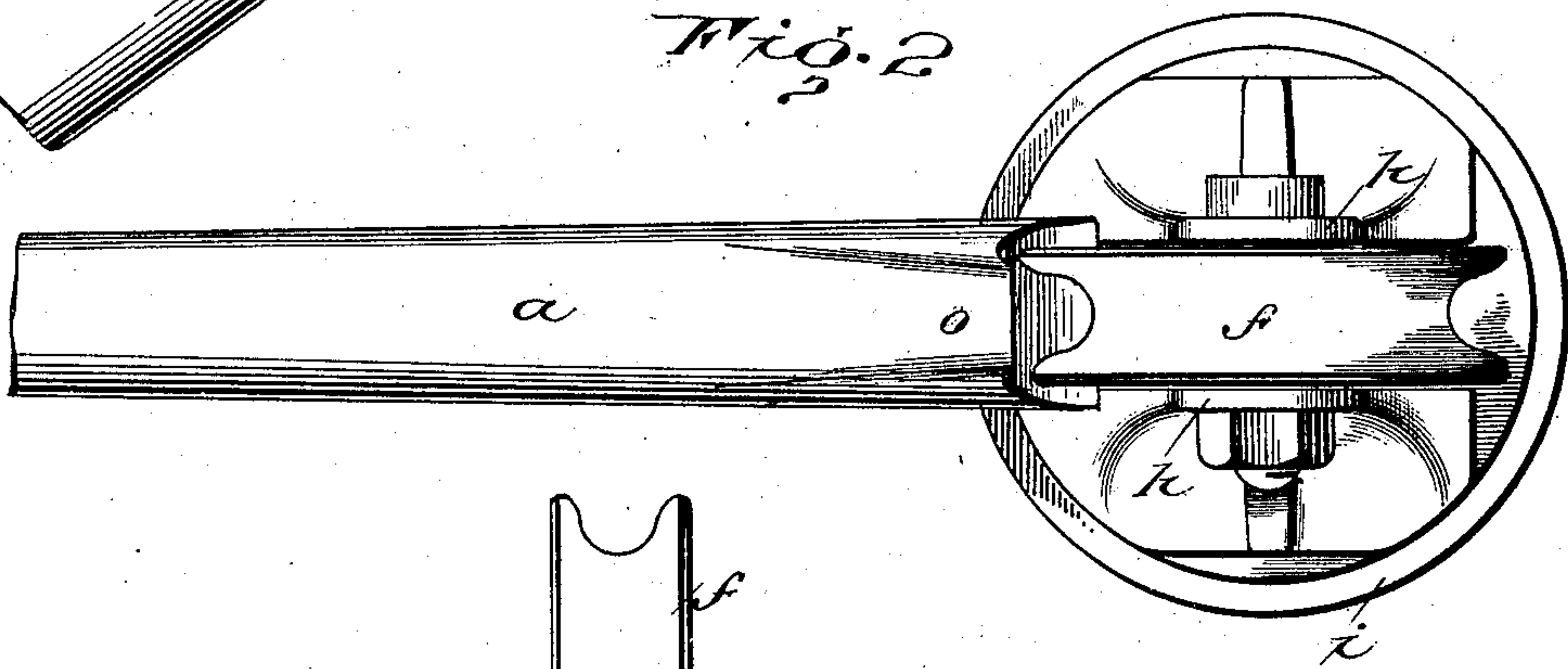
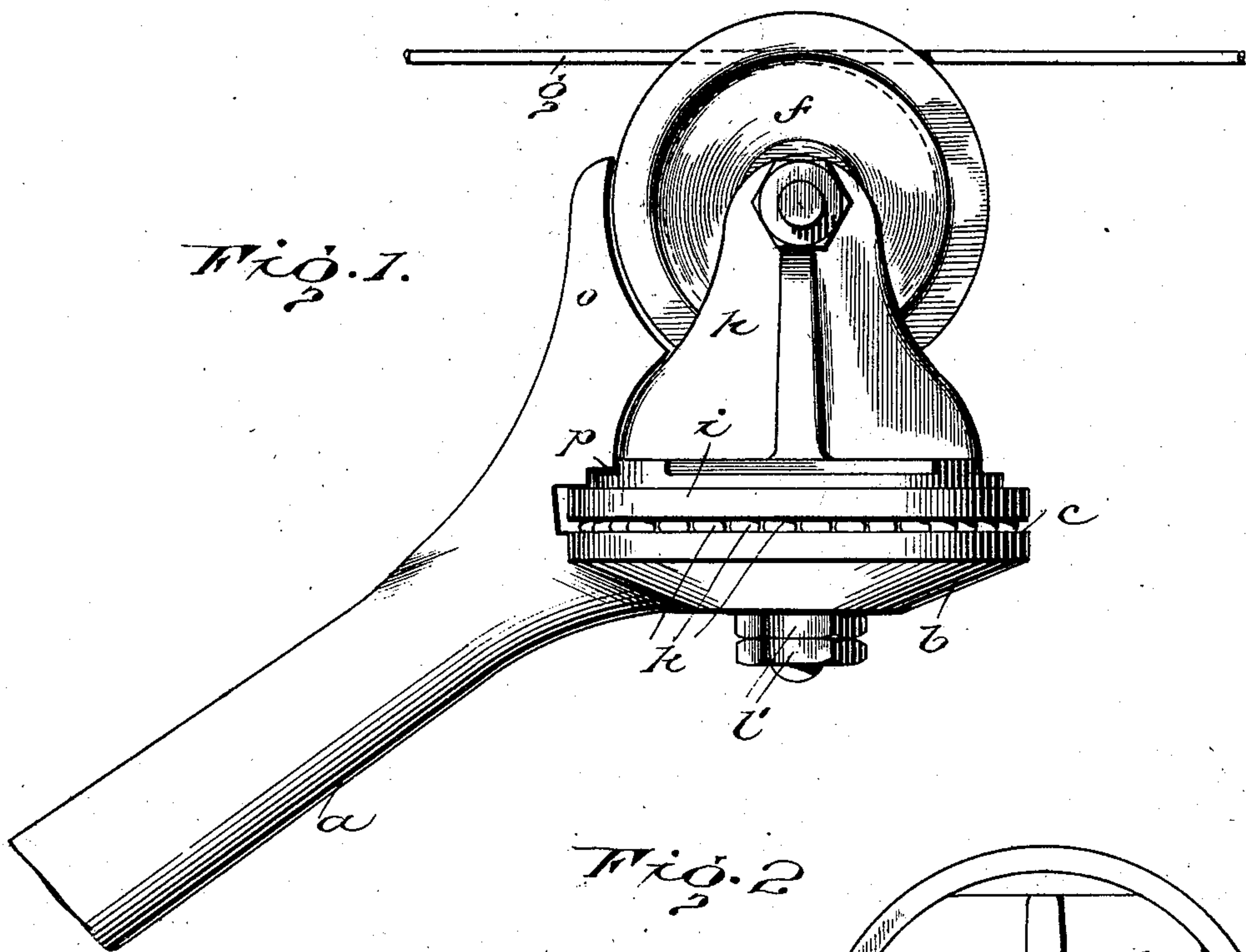
PATENTED JUNE 14, 1904.

R. K. ORTT.
TROLLEY.

APPLICATION FILED NOV. 4, 1903.

NO MODEL.

2 SHEETS—SHEET 1.



Witnesses

For Invention
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Attorney

No. 762,749.

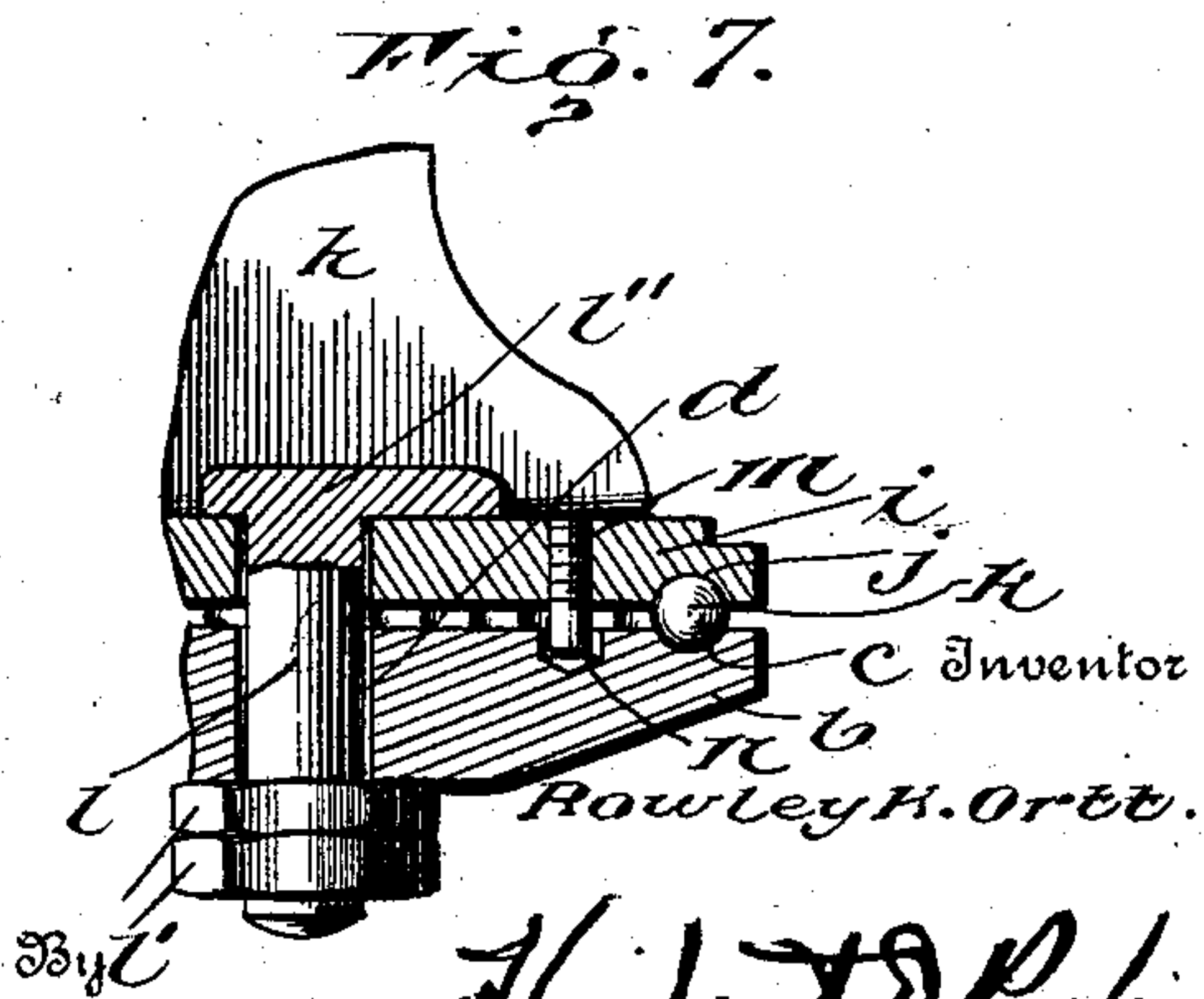
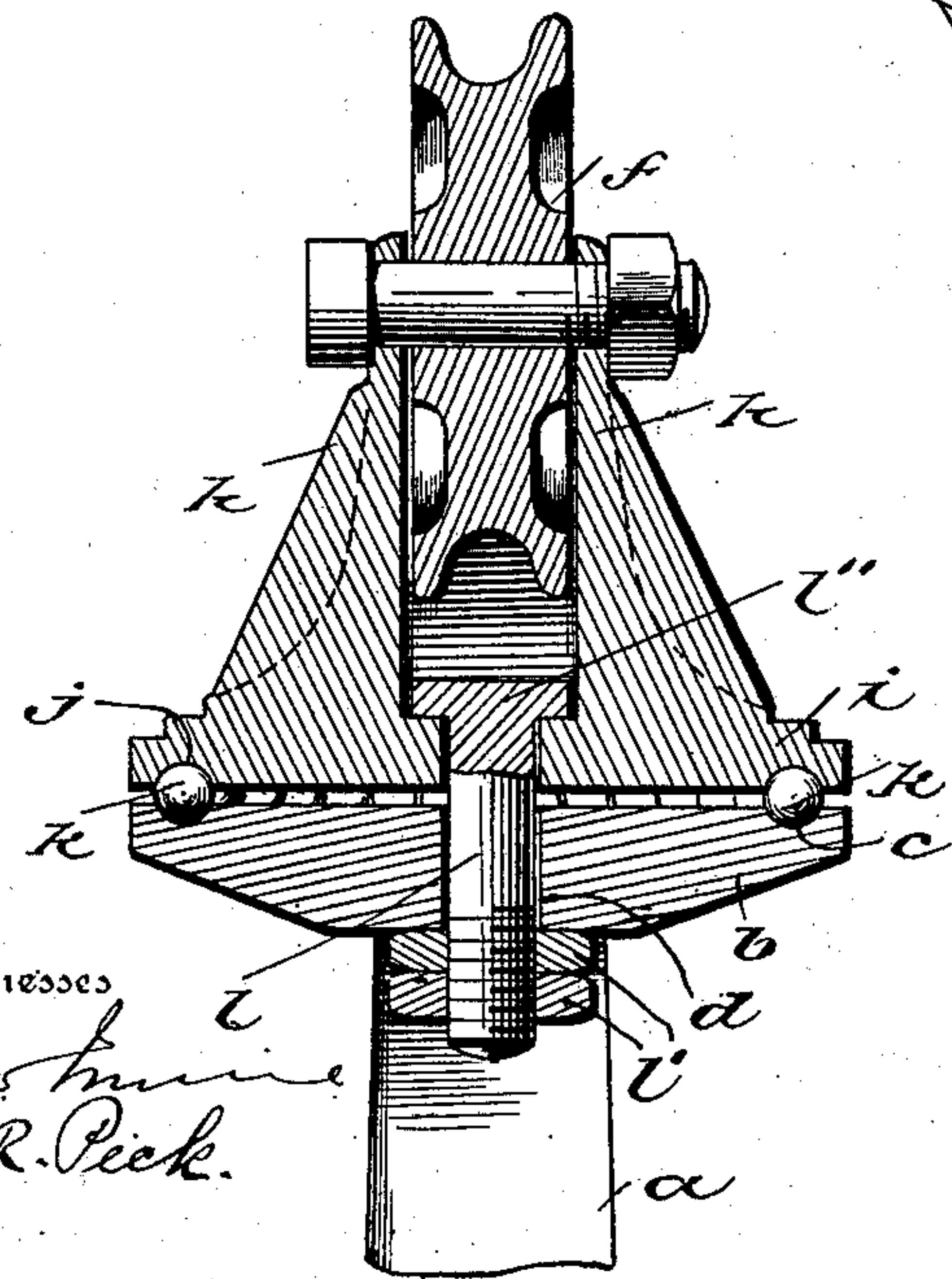
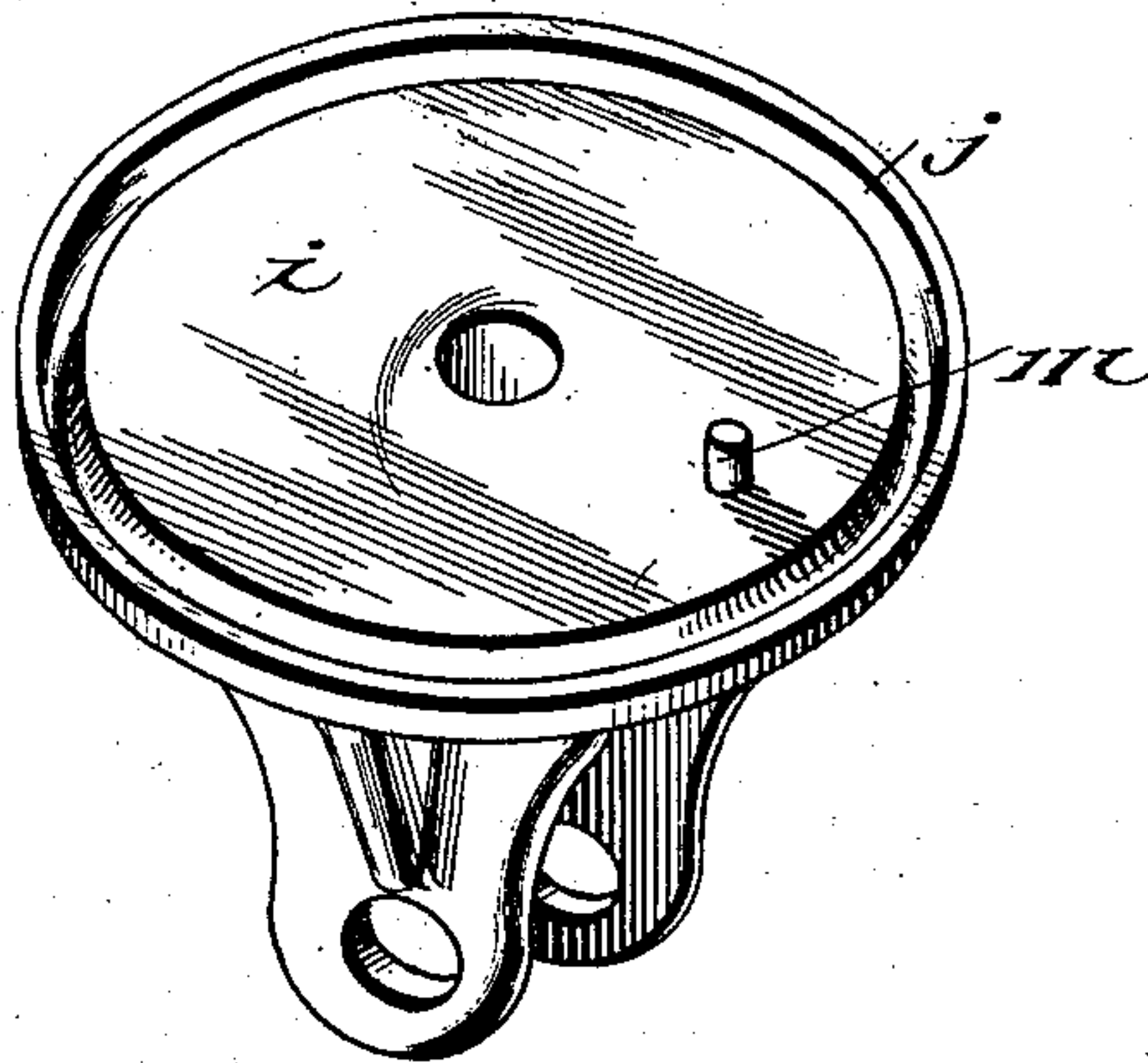
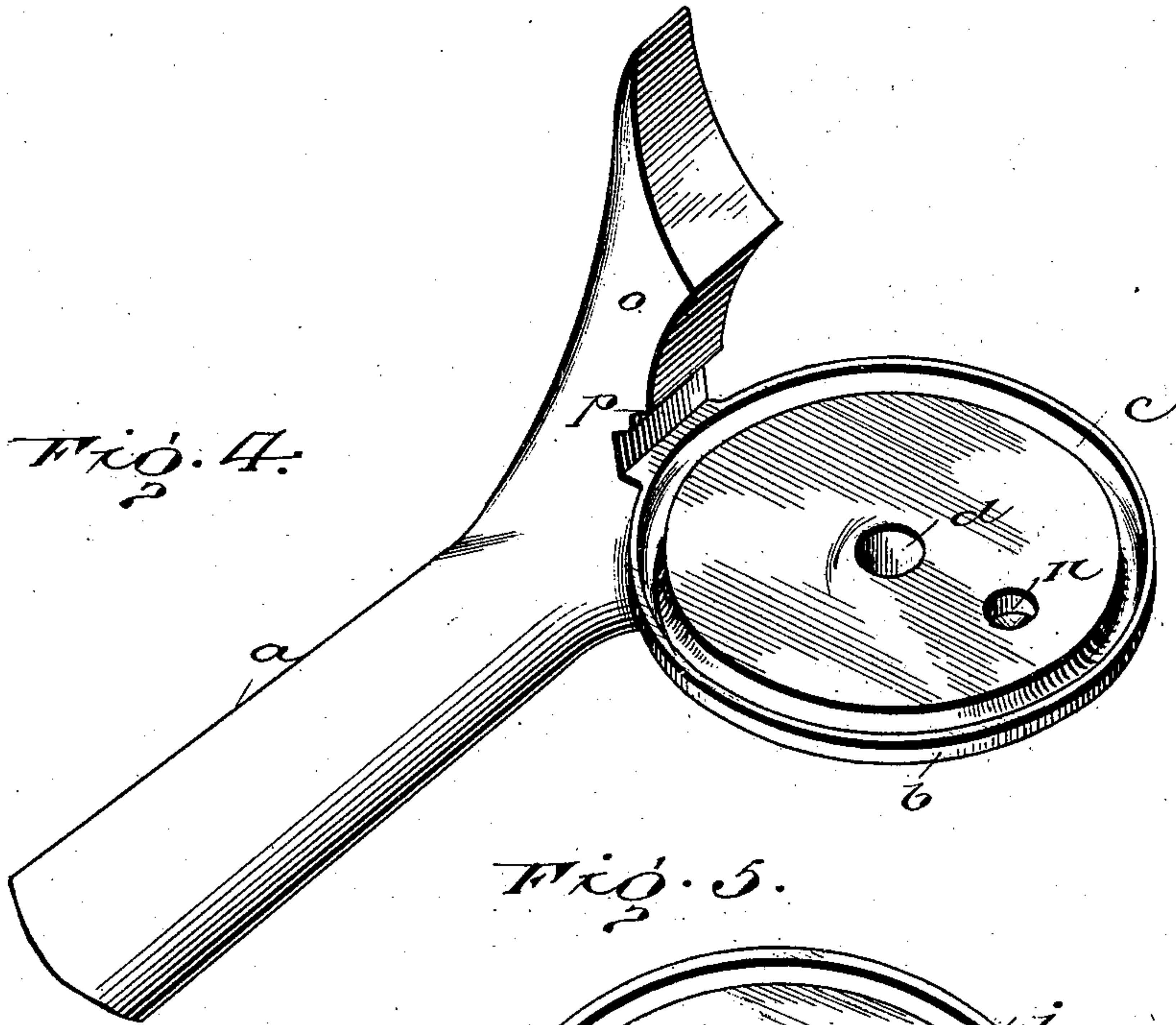
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2 SHEETS—SHEET 2.



Witnesses
for Invention
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UNITED STATES PATENT OFFICE.

ROWLEY K. ORTT, OF READING, PENNSYLVANIA.

TROLLEY.

SPECIFICATION forming part of Letters Patent No. 762,749, dated June 14, 1904.

Application filed November 4, 1903. Serial No. 179,811. (No model.)

To all whom it may concern:

Be it known that I, ROWLEY K. ORTT, a citizen of the United States, residing at Reading, Berks county, State of Pennsylvania, have invented certain new and useful Improvements in Trolleys; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to certain improvements in trolleys for electric cars, and relates more particularly to supports for the trolley-wheels of such trolleys.

An object of the invention is to provide an improved, durable, and exceedingly efficient trolley wherein the trolley-wheel will be free to oscillate on a vertical axis in following the lateral curvature of the line or trolley wire, thereby reducing the liability of the trolley-wheel accidentally leaving or jumping the line-wire at curves or crossings and permitting said wheel to freely follow and adapt its direction of forward movement to the curvatures of or lateral deflections in the line-wire.

Another object of the invention is to provide certain improvements in arrangements and combinations of parts whereby a highly efficient and advantageous trolley will be produced reducing the liability of accidents incident to trolley-wheels accidentally leaving or becoming disengaged from the line-wire and reducing the liability of trolley-wheels disarranging or damaging cross wires and supports when such wheels are disengaged from the line-wires.

The invention consists in certain novel features in construction and in combinations and arrangements of parts, as more fully and particularly pointed out and described hereinafter.

Referring to the accompanying drawings, Figure 1 is a side elevation of the trolley, showing the same in its normal operative relation with respect to the line-wire. Fig. 2 is a top plan view of the trolley. Fig. 3 is a rear elevation of the trolley. Fig. 4 is a detail perspective of the trolley-arm socket or shank provided with the fixed base or bearing

plate and the horn or projection, the balls and the trolley-wheel and its oscillating carrier, stand, or head being removed. Fig. 5 is a detail perspective view of the trolley-wheel stand removed. Fig. 6 is a vertical section through the base, wheel-stand, and wheel of the trolley. Fig. 7 is a detail section taken in a plane at right angles to the plane of the section of Fig. 6.

In the drawings, *a* is the metal socket, sleeve, or shank of the trolley-head and through which the trolley-head is attached to and carried by the trolley-pole. (Not shown.) If the trolley-head is formed with the trolley-pole, said shank *a* can indicate the upper end of the trolley-pole. The rear end of this shank *a* is provided with a horizontally-disposed rearwardly-projecting enlarged preferably circular bearing disk, plate, or platform *b*. On the example shown in the drawings the said comparatively large circular disk is formed integral with the metal shank *a* and projecting rearwardly from the rear end or edge of the shank proper. This disk is usually formed with a flat top face, having at its top face a circular groove or depression *c*, constituting a ball-raceway. This raceway is usually arranged just within the outer edge of the disk *b*, and hence its greatest diameter is almost equal to the diameter of the disk. The disk is usually formed with the central vertical perforation or bearing-opening *d* for the king or pivot bolt *l*, as hereinafter described.

f is the vertically-rotating grooved trolley-wheel formed to travel in engagement with the line-wire *g* and to be yieldingly held upwardly against the under surface thereof, as usual. This wheel *f* can be of any suitable or ordinary construction and is located between the vertical separated pillars or posts *h* *h* and rotates on a horizontal axis arranged transversely of the upper ends of said pillars *h*, which carry said wheel. These pillars are rigid with and extend vertically from the top face of a horizontally-disposed disk or plate *i*, usually of approximately the same diameter as said fixed disk *b* and arranged parallel with and above said fixed disk *b* and carried there-

by. The usually flat under surface of the disk *i* is maintained approximately parallel with the upper face of the fixed disk *b*, and at its under face the disk *i* is preferably formed with a circular groove or depression constituting ball-raceway *j* of the same diameter as and above the raceway of the fixed disk. Antifriction-balls *k* travel and are confined in said raceways to uphold the disk *i* from the fixed disk and permit easy oscillation of the disk *i* on said balls. Any suitable means are provided to confine the disk *i* (which, with its pillars, constitutes a turnable or oscillating head carrying the trolley-wheel) to the fixed disk, so as to permit horizontal oscillation of the trolley-wheel head and at the same time so hold the parts together as to prevent escape of the balls *k*. Various means can be provided for this purpose, although in the drawings I show a king or pivot bolt *l* passing vertically through a central perforation in the disk *i* and through the perforation *d* in the fixed disk. The lower projecting threaded end of this bolt *l* is provided with adjustable stops in the form of nuts *l'*, retaining the parts together and permitting adjustment. The angular head *l''* of said bolt is arranged on the top face of disk *i* and fitted between and in engagement with the adjoining faces of the pillars *h* and beneath the trolley-wheel. The bolt is thus held against axial movement independently of the disk *i*, and the bolt cannot be accidentally displaced from the two disks, as the trolley-wheel limits the independent upward movement of the bolt.

It is desirable that means be provided to limit the horizontal oscillation of the trolley-wheel. As an example of means which can be conveniently employed for this purpose I show a stop-pin *m* rigid with the oscillating disk *i* and depending from the under flat face thereof at a point between the king-bolt and balls into a depression or socket *n*, so that the engagement of said pin with the walls of the socket limits the horizontal oscillation of the trolley-wheel and yet permits the trolley-wheel to oscillate horizontally to the extent necessary in following the lateral deflections or curvatures of the line-wire, and thereby reducing the liability of the trolley-wheel accidentally becoming disengaged from said wire. The oscillating head responds quickly and very easily when a flange of the trolley-wheel strikes the line-wire at a curve or deflection and causes the wheel to follow the wire without jumping therefrom. The wide base on which the said head turns and on which it is carried maintains the parts true and causes a wide even distribution of strain and prevents binding or wedging of the balls, permitting the head to always freely oscillate, and avoids liability of breakage and greatly reduces wear.

The shank *a* is formed with a rigid upwardly and rearwardly projecting guard or guide *o*, which in the present instance is shown integral

with the shank and in the form of a horn projecting up from the shank just in front of the junction between the front edge of the fixed disk *b* and the shank. This guard is preferably arranged closely in front of the oscillating head and trolley-wheel and extends usually up to the horizontal plane of the axis of rotation of the trolley-wheel and at its front or outer edge is usually curved upwardly and rearwardly to deflect any objects or obstructions which might be encountered upwardly over the trolley-wheel. This guard permits the trolley-wheel and parts to slide or slip under cross wires or supports without so catching or hanging in such wires or supports as to tear them down or otherwise disarrange or injure them. The guard throws such obstructions up over the trolley-wheel and does not permit the same to hang or catch under the wheel or on the oscillating head or between such head and the fixed base or disk of the shank. The rear or inner edge of the guard can be shaped to conform to the contour of the trolley-wheel and oscillating head and permit oscillation thereof without engagement with the guard. The lower portion of the guard is shown formed with a rigid shoulder *p* overhanging or projecting above the top surface of the oscillating disk *i*, which is shown rabbeted to enter the notch in the guard forming said shoulder *p*. This shoulder prevents any possibility of upward movement of the oscillating head which would permit escape of the balls or cause other disarrangements of the parts. If, for instance, the nuts should work down or off the lower end of the king-bolt, said stop *p* would still maintain said oscillating head in its proper position on the fixed base or disk.

It is evident that various changes and modifications might be resorted to in the forms, constructions, and arrangements of the parts described without departing from the spirit and scope of my invention. Hence I do not wish to limit myself to the exact constructions shown.

What I claim is—

1. In a trolley, in combination, a shank having a fixed enlarged base formed with a circular ball-raceway in its top face, an oscillating head having an enlarged bottom disk opposing said base and formed in its under face with a corresponding circular ball-raceway, balls in said raceways and upholding said head on said base, a vertically-rotating trolley-wheel mounted in said head, means limiting the oscillation of said head, and means confining the head to the base, said shank having a rigid upwardly-extending guard arranged in front of said base, disk and wheel and above the top face of said disk.

2. In a trolley, in combination, a fixed base having the wide top face and a rigid upwardly-projecting guard extending up from the front portion of said base, a horizontally-oscillating head mounted on and loosely confined to said

base and located in rear of and under a portion of said guard, and a vertically-rotating trolley-wheel mounted in said head and located in the rear of said guard.

5 3. In a trolley, in combination, a shank having a rigid horizontally-disposed enlarged base projecting rearwardly therefrom, and provided with a guard projecting upwardly in advance of said base, said base formed in its
10 top face with an annular ball-raceway, balls therein, a horizontally-oscillating head resting and turning on said balls, means limiting the oscillation of said head, and a vertically-disposed trolley-wheel mounted in and projecting
15 above said head, said guard arranged in advance of and closely adjacent to said head and wheel.

4. In a trolley, in combination, a fixed horizontally-disposed circular base having a central bearing-opening and an annular ball-raceway in its top face and near the outer edge thereof, balls loosely arranged in said raceway, a horizontally-oscillating head having a
20 king-bolt passing through said bearing-opening and comprising a circular disk opposing said base and turning on said balls and vertical pillars, and the vertically-arranged rotating trolley-wheel between and carried by said pillars and a rigid guard extending
25 upwardly from the front of said base and closely in front of said head and trolley-wheel.
30

5. In combination, a shank provided with a horizontally-disposed fixed base, a horizontally-oscillating head mounted on said base
35 and comprising a bottom disk and upright pillars, a king-bolt passing centrally through the disk and base and having an angular head fitted between said pillars and held thereby against independent axial movement and provided with stops on its lower end, a vertically-
40 disposed trolley-wheel between and carried by the pillars, and means limiting the oscillation of said head.

6. In combination, a shank having a fixed
45 base formed in its top face with a socket *n*, a horizontally-oscillating head provided with the vertically-rotating trolley-wheel and mounted and oscillating on said base, and comprising a bottom disk opposing the base and
50 provided with a rigid pin *m* depending into said socket to limit the oscillation of said head and a king-bolt passing centrally through the

head and base and confining the head to the base.

7. A trolley comprising a horizontally-oscillating head provided with the rotating trolley-wheel, and a fixed guard extending up in front of the head and wheel and overlapping the head to limit the upward movement thereof.
60

8. A trolley comprising a horizontally-oscillating head provided with the trolley-wheel, and a rigid guard extending up in front of the head and wheel and having a rearwardly and upwardly inclined front edge and a stop-shoulder above said head.
65

9. A trolley comprising a shank having a fixed rearwardly-extending base and a guard-arm extending upwardly in advance of said base, and a horizontally-oscillating head
70 mounted on said base and provided with the trolley-wheel, said guard-arm overlapping said head.

10. A trolley comprising a shank provided with a base, a horizontally-oscillating head
75 carried by said base and provided with the trolley-wheel, and means confining the head to the base, said shank provided with an upwardly-extending guard-arm in front of and closely adjacent to said head and wheel and
80 with a fixed stop limiting accidental upward movement of the head from the base.

11. In combination, in a trolley, a shank provided with a fixed base, a horizontally-oscillating head provided with the trolley-wheel,
85 balls supporting said head on said base, a king-bolt loosely confining said head to said base, and a rigid shoulder projecting above a portion of said head and limiting upward movement thereof.
90

12. In combination, a shank having a forwardly-extending base and a guard extending up in advance of the base and formed with a stop-shoulder, a horizontally-oscillating head provided with the trolley-wheel and carried
95 by said base, a portion of said head arranged under said stop-shoulder, and means loosely confining said head to said base.

In testimony whereof I affix my signature in presence of two witnesses.

ROWLEY K. ORTT.

Witnesses:

FRANK J. REEDY,
J. MILTON MILLER.