

(No Model.)

2 Sheets—Sheet 1.

A. P. KJOLLER.
FRICTION CLUTCH PULLEY.

No. 384,915.

Patented June 19, 1888.

Fig. 2

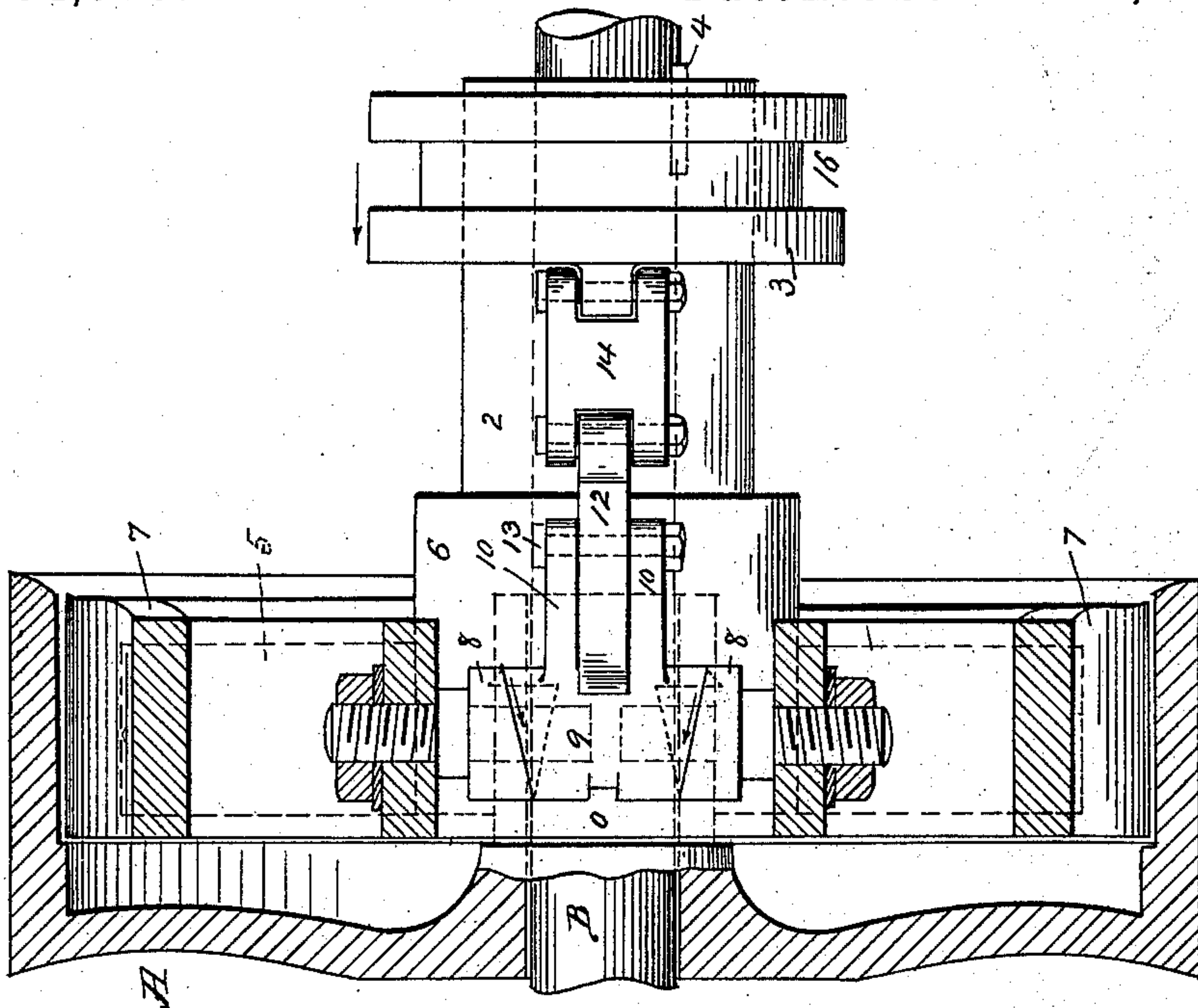
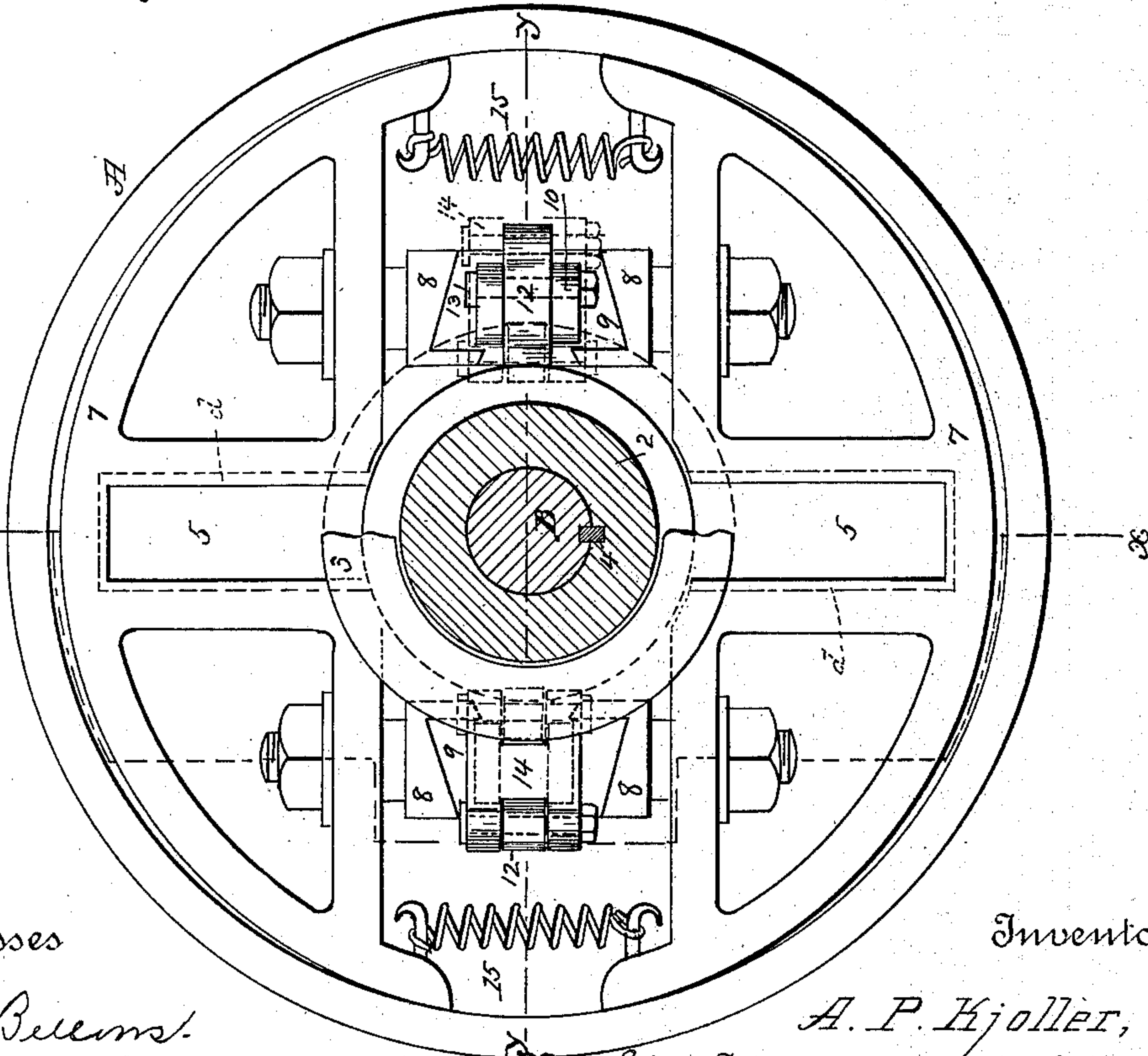


Fig. 1.



Witnesses

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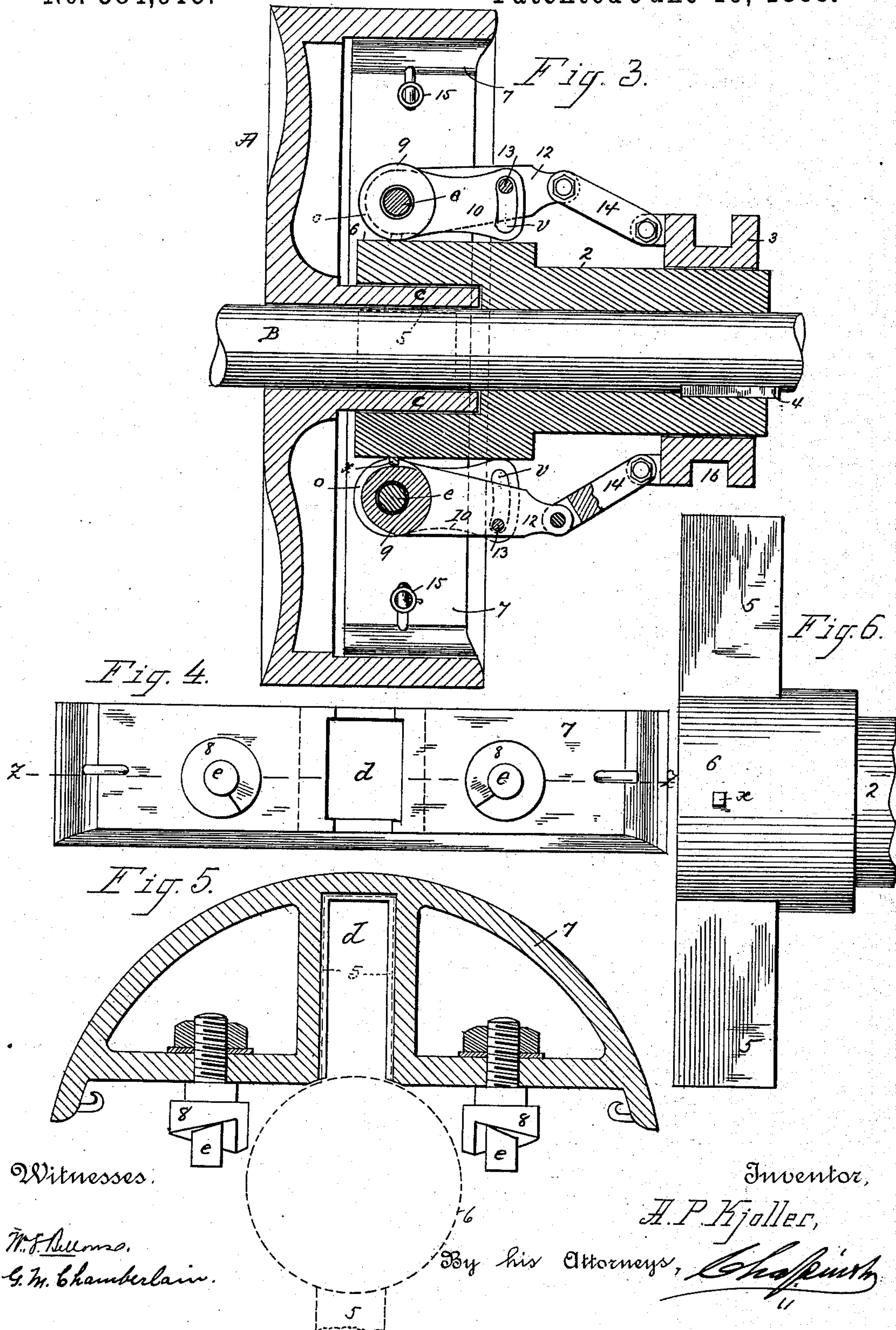
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UNITED STATES PATENT OFFICE.

ANDERS P. KJOLLER, OF HOLYOKE, MASSACHUSETTS.

FRICION-CLUTCH PULLEY.

SPECIFICATION forming part of Letters Patent No. 384,915, dated June 19, 1888.

Application filed March 7, 1888. Serial No. 266,443. (No model.)

To all whom it may concern:

Be it known that I, ANDERS P. KJOLLER, a citizen of the United States, residing at Holyoke, in the county of Hampden and State of Massachusetts, have invented new and useful Improvements in Friction-Clutch Pulleys, of which the following is a specification.

This invention relates to friction-clutch pulleys, and pertains to that class thereof having within the driving-pulley friction-segments capable of engagement with the interior of said pulley; and the invention consists in the peculiar construction and arrangement of the various parts of the device, all as hereinafter fully described, and pointed out in the claims.

In the drawings forming part of this specification, Figure 1 is an elevation of the open side of the driving-pulley having applied thereto friction-clutch devices embodying my improvements, said figure showing the central shaft and an inclosing-sleeve in section, and a collar on said sleeve, partly broken away. Fig. 2 is a side elevation showing a portion of the central shaft, the driving-pulley, and the friction-segments in vertical section, and the devices on one side of the shaft which operate said segments, said sectional indications of this figure being about on line *x x*, Fig. 1. Fig. 3 is a sectional view on line *y y*, Fig. 1. Fig. 4 is a plan view of the inner face of one of the friction-segments and of the ends of two cams connected thereto. Fig. 5 is a sectional view of said segment, Fig. 4, on the line *z z*. Fig. 6 is a side elevation of one end of a sleeve forming a part of said friction-clutch device, as hereinafter fully described.

In the drawings, B indicates a shaft on which said friction-clutch pulley is mounted and which is rotated thereby.

A is the driving-pulley, having a hollow hub, *c*, through which said shaft B passes and which constitutes a pulley-bearing, said pulley running loosely on said shaft and being open on one side, as shown, to receive the frictionally-engaging segments below described.

A sleeve, 2, having a head, 6, of cylindrical form and having projecting laterally on the opposite sides thereof two arms, 5, is secured on shaft B by a key, 4, and the head thereof incloses the said hub *c* of the pulley A, as

shown in Fig. 3. A collar, 3, is fitted to slide on the smaller end of said sleeve 2, and has in its periphery an annular groove, 16, to receive the bifurcated end of a suitable shipper-lever, whereby said collar is given said sliding motion on sleeve 2.

Two segments, 7, are fitted into the driving-pulley A on opposite sides of the shaft B, said segments being capable of frictional engagement with the interior of said driving-pulley A and of being disengaged therefrom by means of the following mechanism: Each of said segments is provided with a recess, *d*, extending at right angles to the shaft B, which recesses receive the arms 5 on the head of the sleeve 2, whereby the rotating force which is imparted to said segments by reason of the frictional engagement of the latter with the pulley A is imparted to said sleeve, and through the latter to the shaft B, to which said sleeve is keyed. The said segments are given each a movement outwardly from the shaft B, so that their peripheries are brought into frictional engagement with the interior of the driving-pulley A by means of two cams, 8, attached to each segment, as shown clearly in Figs. 1, 2, 4, and 5, and two intermediate cams, 9, the ends of which engage with the ends of said cams 8 and receive within them the studs *e* on the outer ends of said cams 8, said studs *e* constituting the bearings or journals on which said intermediate cams have a reciprocating rotary motion. Each of said intermediate cams, 9, has a bifurcated arm, 10, in which are slots *v*, slightly curved, as shown in Fig. 3, and on the rear side of the cylindrical portion of said intermediate cam is a groove, *o*, extending partly around said cylindrical portion. The said grooves *o* in the intermediate cams, 9, engage with a short stud, *x*, (see Fig. 3,) whereby said intermediate cams are prevented from endwise motion when operated. Each of said arms 10 of the intermediate cams, 9, is provided with an auxiliary arm or lever, 12, the inner end of which bears against the cylindrical portion of said cam between the parts of its bifurcated arm 10, and said lever 12 is adjustably connected with the bifurcated arm 10 by a bolt, 13, (see Fig. 2,) which passes through the aforesaid curved slots *v* and said lever, whereby

means are provided for changing the position of the end of said lever relative to the adjoining side of the sleeve 2, so that, should the faces of the said cams 8 and 9 become worn, and thereby the requisite lateral movement of the segments 7 be interfered with, the ends of the levers 12 may be adjusted toward the sleeve 2 in order to increase their swinging motion when connected to the operating devices below described.

If preferred, the intermediate cams, 9, may be constructed each with a rigid arm thereon, substantially like said arm 12, and not possessing the means of adjustment above described to take up for the wear of said cams.

On the smaller end of sleeve 2, as aforesaid, is placed said annularly-grooved collar 3, to the inner side of which are pivotally connected two links, 14, (see Figs. 2 and 3,) said links having a pivotal connection with the ends of the aforesaid levers 12 on the intermediate cams, 9. Each of said segments 7 is provided with two hooks or other similar devices, (see Fig. 1,) which provide means for connecting two retracting-springs, 15, between said segments, whereby they are drawn together or toward each other, when free to do so, by the proper operation of said intermediate cams, 9.

The operation of the above-described improvements is as follows: The driving-pulley A is actuated by any suitable belt applied thereto, whereby it is given a continuous rotary motion, which motion it may be desirable to impart continuously or intermittently to the shaft B, the latter being either what is ordinarily termed a "driving" or a "counter" shaft, said pulley, as aforesaid, when not engaged by the segments of the friction-clutch devices, rotating freely on said shaft. The aforesaid shipper-lever with which the grooved collar 3 is adapted to engage ordinarily is suspended in a pending position under the shaft B, having one end engaging with the annular groove 16 in said collar, whereby, when the shipper-lever is swung, said collar is given a longitudinally-sliding movement on the sleeve 2. The position of the parts in Fig. 3 is that which they occupy when the friction-segments 7 occupy a position nearest to shaft B, and consequently they are not in engagement with the interior of said driving-pulley; but when by the operation of said shipper-lever the collar 3 is moved toward the pulley A the cams 9 between the cams 8 on the said friction-segments are given more or less of a rotary motion by reason of their above-described connection with said collar 3 and the said rotary motion of the cams 9 causes a simultaneous lateral movement of the two segments 7 in opposite directions against the inner side of the pulley A, with which said cams thereby become frictionally engaged, so that said segments, the sleeve 2, with whose arms 5 they engage, and the shaft B, to which said sleeve is keyed, are given a rotary motion correspond-

ing to that of the pulley A so long as said collar 3 is held in a certain position on sleeve 2. To stop the rotary motion of the shaft B, said collar 3 is moved in a direction away from the driving-pulley A, thereby permitting said friction-segments to be withdrawn from their contact with the inner side of said driving-pulley by the action of the retracting springs 15.

The above-described friction-clutch pulley embodies a construction which is comparatively simple and such a combination of levers and cams between the collar 3 and the friction-segments 7 as enables the operator to bring said segments into operative relation to the driving-pulley by the expenditure of a very slight force to actuate said collar, and the connection, consisting of the sleeve 2, having the arms 5 thereon, between the friction-segments and the shaft to be driven is an essentially strong and durable one.

What I claim as my invention is—

1. A friction-clutch consisting of a cylindrical sleeve having laterally-extending arms 5, two friction-segments engaging with said arms and capable of lateral movements thereon, two cams, 8, oppositely secured to each of said segments, two intermediate cams, 9, engaging with said cams 8, each having a laterally-extending arm, a collar, 3, capable of a longitudinal motion on said sleeve, and links 14, pivotally connected between said collar and the arms on said cams 9, a driving-pulley, A, inclosing said segments, and retracting-springs between the latter, substantially as set forth.

2. A friction-clutch consisting of a cylindrical sleeve having laterally-extending arms 5, two friction-segments engaging with said arms and capable of lateral movements thereon, two cams, 8, oppositely secured to each of said segments, two intermediate cams, 9, engaging with said cams 8, each having a laterally-extending arm adjustably connected thereto, a collar, 3, capable of a longitudinal motion on said sleeve, and links 14, pivotally connected between said collar and the arms on said cams 9, a driving-pulley, A, inclosing said segments, and retracting-springs between the latter, substantially as set forth.

3. The driving-pulley A, the friction-segments 7, each having two oppositely-secured cams, 8, thereon, two intermediate cams, 9, engaging with said cams 8, said cams 9 each having a groove, 6, therein, combined with the sleeve 2, having studs thereon engaging in said grooves, a collar, 3, having a longitudinal movement on said sleeve, and link-and-arm connections, as described, between said collar and intermediate cams, substantially as set forth.

ANDERS P. KJOLLER.

Witnesses:

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