

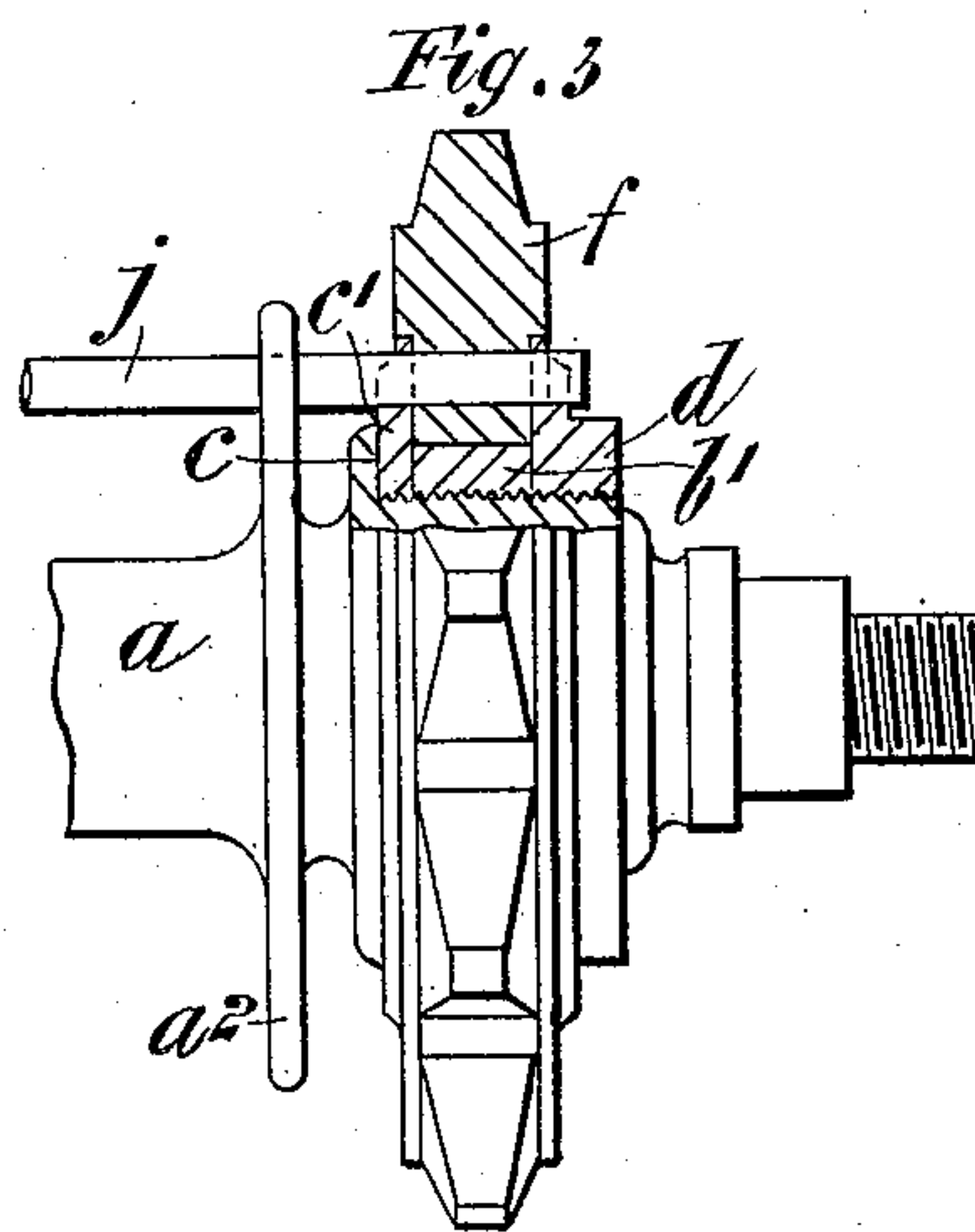
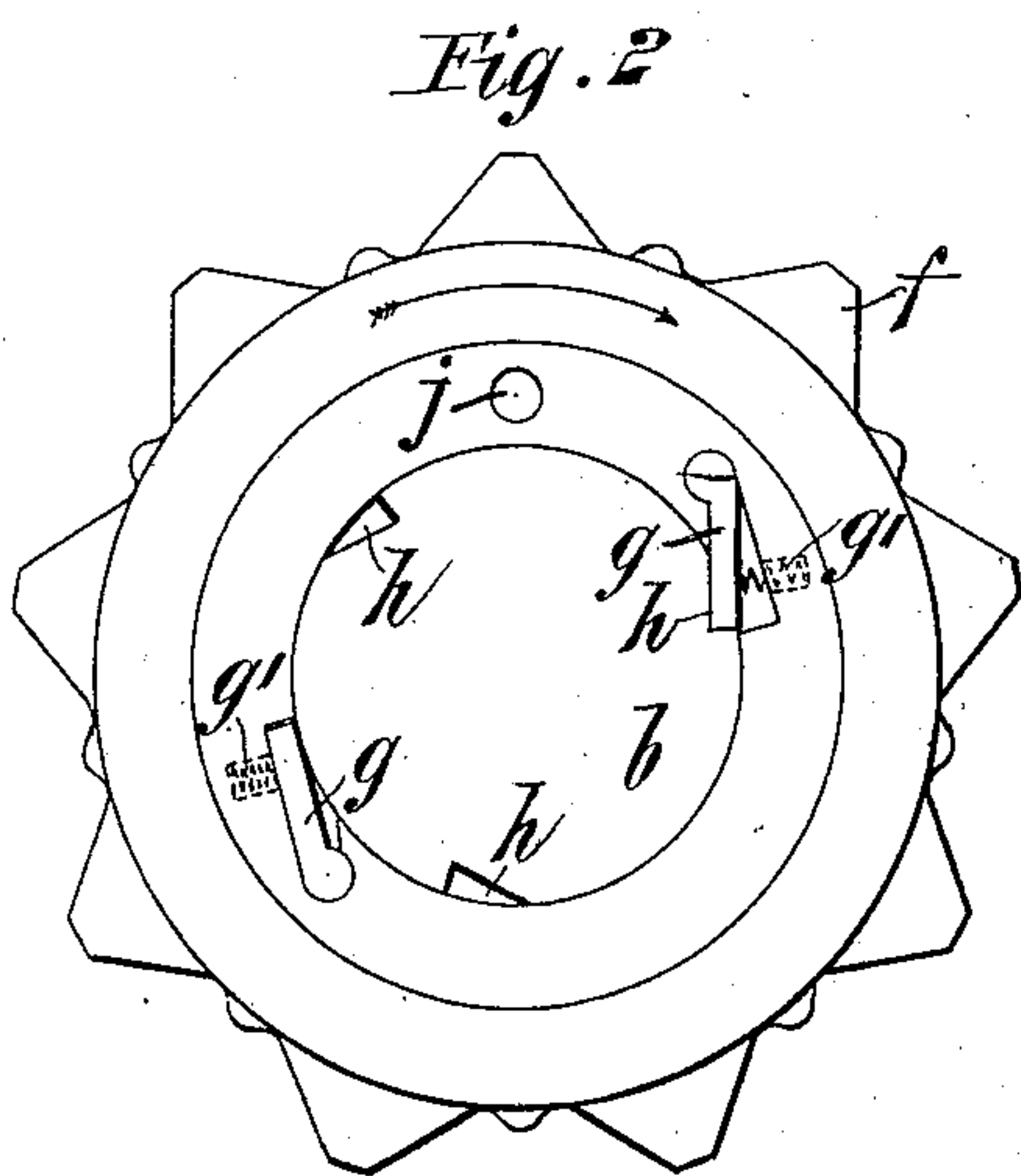
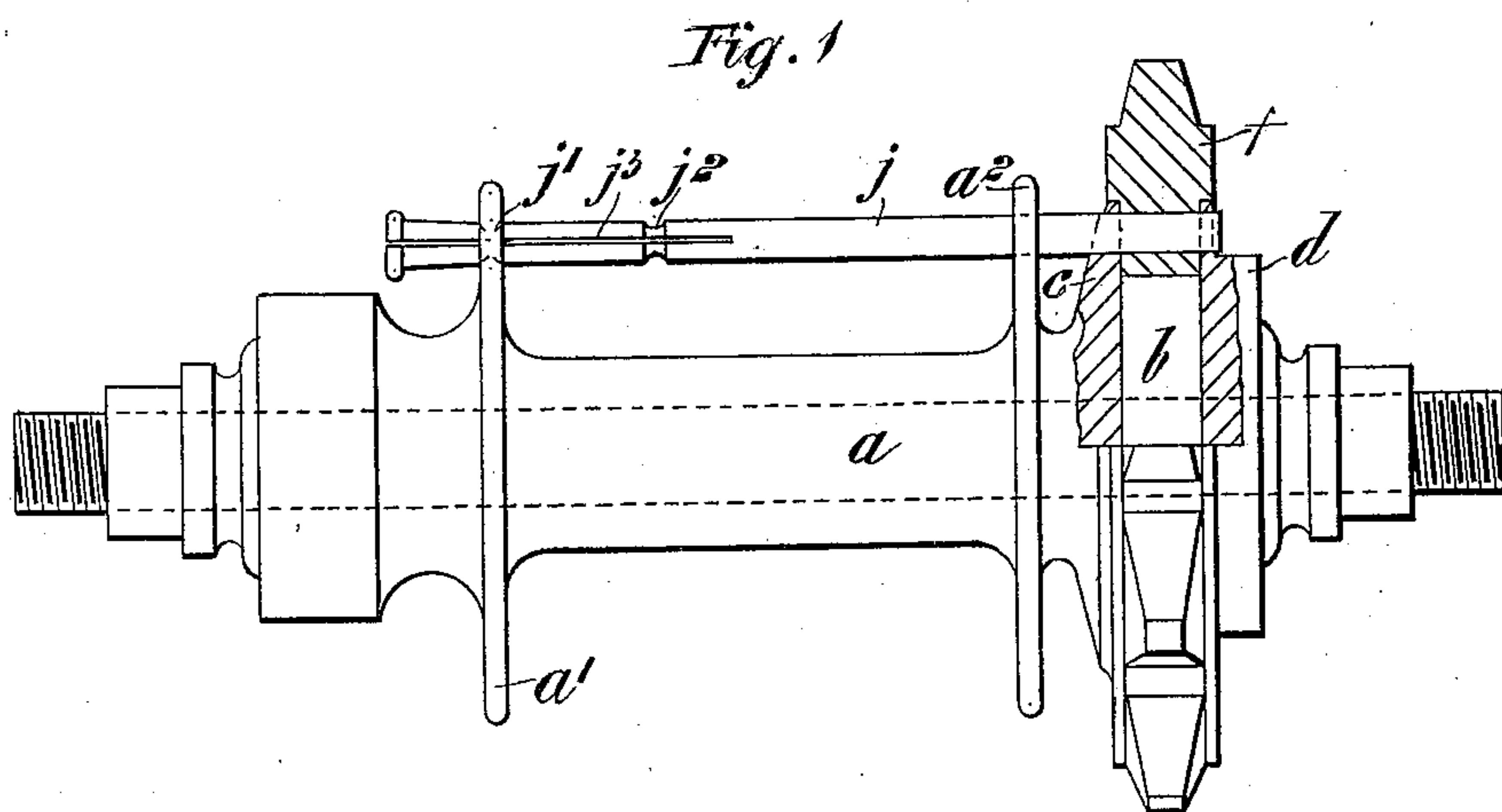
(No Model.)

2 Sheets—Sheet 1.

J. & H. M. COPELAND.
SPROCKET WHEEL CLUTCH.

No. 589,338.

Patented Aug. 31, 1897.



Inventors:

James Copeland
Henry Montgomery Copeland

Witnesses

E. B. Bolton

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By

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(No Model.)

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Fig. 4

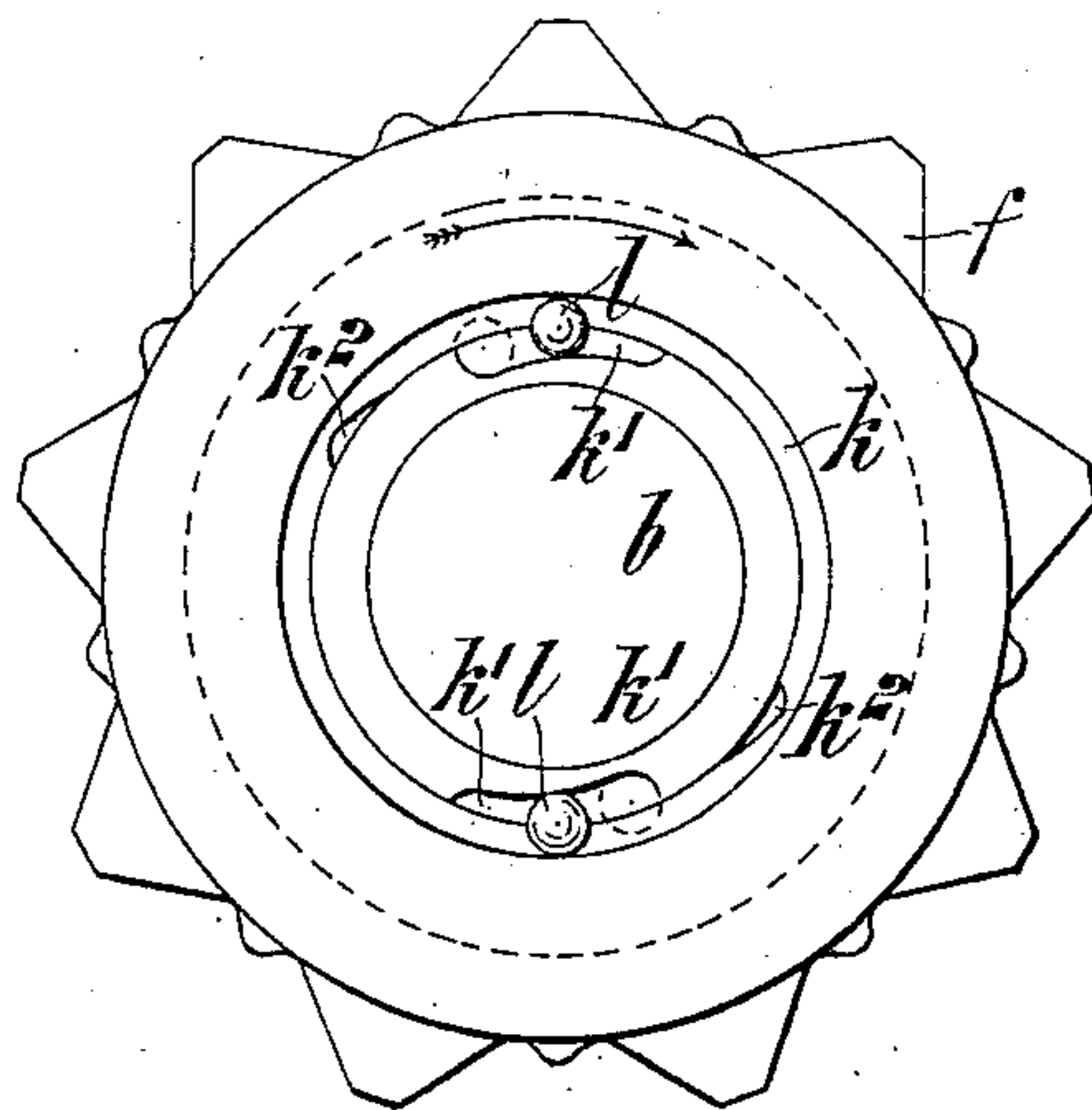
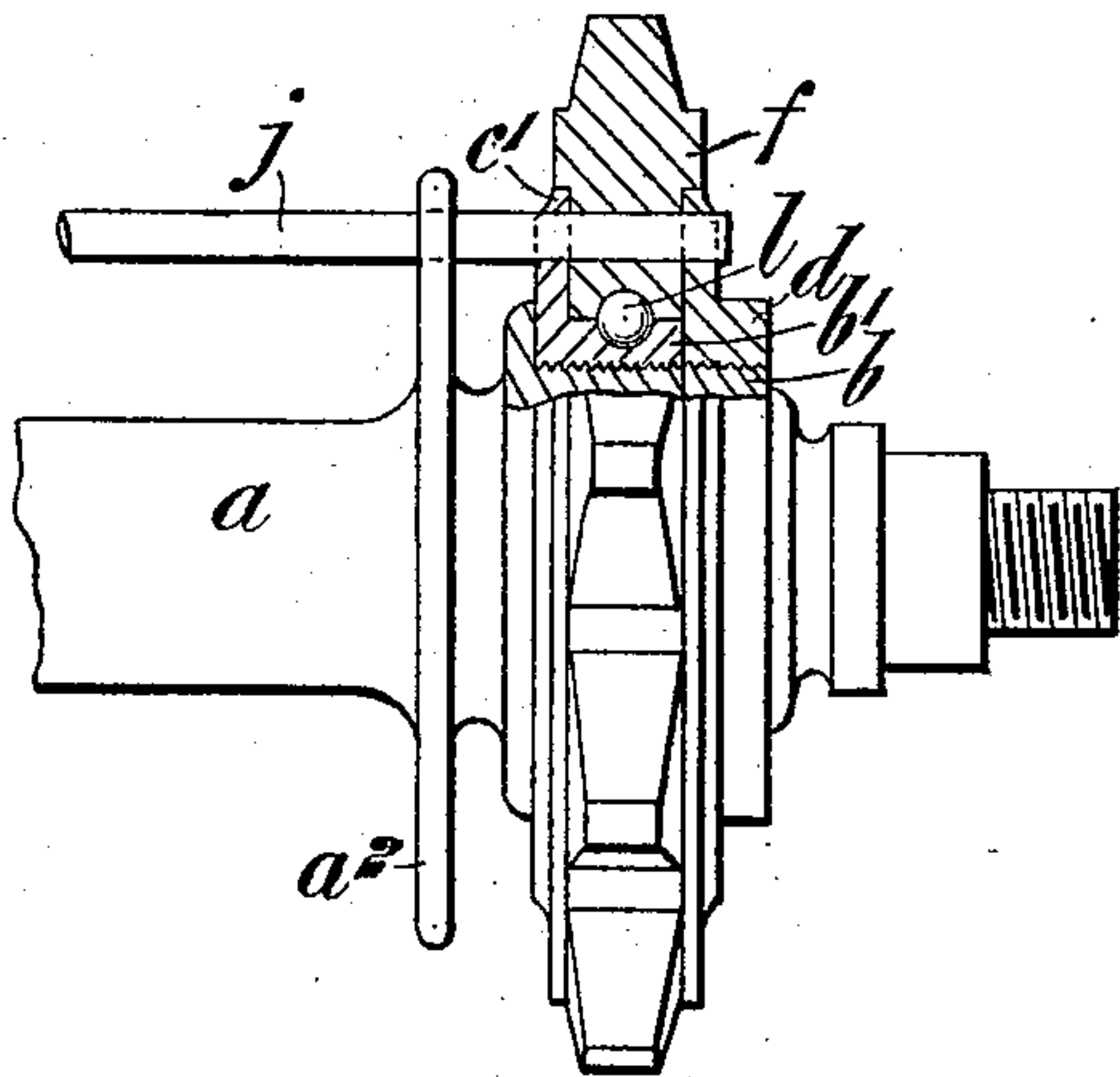


Fig. 5



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UNITED STATES PATENT OFFICE.

JAMES COPELAND AND HENRY MONTGOMERY COPELAND, OF BRUNSWICK
LINE, NEW ZEALAND.

SPROCKET-WHEEL CLUTCH.

SPECIFICATION forming part of Letters Patent No. 589,338, dated August 31, 1897.

Application filed March 5, 1897. Serial No. 626,066. (No model.)

To all whom it may concern:

Be it known that we, JAMES COPELAND and HENRY MONTGOMERY COPELAND, subjects of the Queen of Great Britain, and residents of Brunswick Line, near Wanganui, in the provincial district of Wellington, in the Colony of New Zealand, have invented an Improved Pedal-Action for Velocipedes and Bicycles, of which the following is a specification.

The object of this invention is to provide mechanism whereby riders of velocipedes may keep their feet at rest upon the pedals and thus hold the pedals and driving-chain from revolving while the machine continues its progress, or at will fix the driving-gear so that it operates as an ordinary machine.

The object of the invention is carried into effect by making the hub of the driven or rear wheel somewhat similar to existing forms. The sprocket-wheel, however, which fits upon this hub is made to revolve upon a boss, and indentations are cut in the boss, and pawls are pivoted in the sprocket-wheel to engage with the indentations. When traveling in one direction, the pawls engage with the indentations to drive the machine, when the sprocket-wheel and hub will revolve together. When the rider desires, he may cease pedaling and, resting his feet upon the pedals, may keep them from revolving. Similarly the driving-chain and sprocket-wheels, both driving and driven, will be held at rest. In such latter case the pawls merely slide up the inclined faces of the indentations without affecting the progress of the machine.

The pawls are held down to their work by springs let into suitable recesses.

In a modification to the gear balls are substituted for pawls and are so arranged upon inclined recesses that they grip the hub and sprocket-wheel together when driven by the pedals, but fall out of gear when the pedals are held at rest and the machine is traveling by its own impetus. By means of a sliding pin the sprocket-wheel and hub may be locked together, so that the machine may be worked as an ordinary machine.

In order that the invention may be most easily understood, a description will now be given in detail, reference being made to the accompanying drawings.

Figure 1 is a side view of a hub and driven sprocket-wheel fitted with pawls and indentations and a locking-pin and shown partly in section. Fig. 2 is an end view of the same. Fig. 3 is a view showing another method of fitting the sprocket-wheel upon the hub. Fig. 4 is an end view showing the hub and driven sprocket-wheel fitted with balls and channels. Fig. 5 is a side view of the same, partly in section, and shows another method of fitting the sprocket-wheel upon the hub.

Similar letters refer to similar parts.

Referring to Figs. 1 and 2 upon the drawings, *a* is the hub of the rear or driven wheel of any ordinary form of velocipede, having a boss *b*, collar *c*, and flanged nut *d* so fitted together that when in position they form a groove wherein sprocket-wheel *f* may revolve. Pawls *g* are pivoted in sprocket-wheel *f* and may engage with indentations *h*, cut in boss *b*, springs *g'* being provided to insure the operation of the pawls.

When the sprocket-wheel is revolving in the direction shown by the arrow and driving the machine, one of pawls *g* will engage with one of indentations *h*, which are preferably so spaced in relation to each other that the total number of times the pawls may engage with the indentations is equal to twice the number of indentations.

Sometimes a rider may desire to make the sprocket-wheel practically solid with the hub, so that the machine may be driven like an ordinary velocipede, and this requirement may be accomplished by shooting pin or bolt *j* as shown in Fig. 1, where it will be seen that the pin is grooved at *j'* and *j''* and is split at *j'''*. With the pin shot into the position shown on Fig. 1 the collar *c*, sprocket-wheel *f*, and nut *d* will be locked together. To release the mechanism, the pin is nipped to close the slit *j'''*, which is made to spring open, and is then withdrawn until groove *j''* engages with the hole in flange *a'*.

Fig. 3 shows a modification where the parts are built up for purposes of ready renewal in case of wear. The nut *d* and a modification of collar *c* are retained, but a collar *c'* is introduced and screwed upon boss *b* to take the lateral wear and a bed *b'* similarly screwed upon the boss to take the internal wear.

Figs. 4 and 5 show a modification where balls replace pawls for gripping the parts together and driving the machine. A semicircular recess k is formed around the internal 5 periphery of sprocket-wheel f to receive balls l , and similar semicircular recesses k' are formed in boss b . These latter recesses k' , however, extend for a short distance only, and the curve formed by their lowest depth 10 is struck from a point which is eccentric in relation to the center from which the recess k is struck. Thus it results that when the sprocket-wheel is revolved in the direction shown by the arrow, Fig. 4, the balls will be 15 caught and carried up the narrowing space formed by the recesses k and k' until they are gripped, as shown, and the machine driven, but when the hub revolves more quickly than the sprocket-wheel the balls will fall back, as 20 shown by dotted lines, and the parts left free to operate independently. Lateral openings k^2 are made in the sprocket-wheel, so that balls l may be inserted in recess k .

On Fig. 5 is shown a further modification, 25 where collar c' and bed b' are made solid and screwed upon boss b .

We have shown such forms of our invention as are necessary for purposes of description, but we do not wish it to be understood 30 that we confine ourselves to the details hereinbefore described, and these are such as are preferable and do not exhaust the methods of giving effect to our invention—as, for example, the number of pawls or balls may be altered to suit different requirements, and the 35 position of the pawls and indentations may be reversed by pivoting the pawls upon the hub and cutting indentations in the sprocket-wheel, and the precise method by which the

pin j is held may be varied without departing 40 from the principle of our invention.

What we do claim as our invention, and desire to secure by Letters Patent, is—

1. In combination the hub having a circular bed, and side flanges and having two spoke- 45 flanges, a sprocket-wheel rotatably mounted upon said bed between the flanges and having a clutch connection therewith, and the locking-pin passing through said flanges and sprocket-wheel, the said locking-pin passing 50 also through the spoke-flange, substantially as described.

2. In combination the hub having the usual spoke-flanges, the sprocket-wheel rotatably 55 mounted thereon and having a clutch connection with said hub, the longitudinally-movable pin passing through openings in the spoke-flanges and adapted to be moved to engage or disengage said sprocket, and means 60 for holding said pin in its locking or unlocking position, substantially as described.

3. In combination the hub having the usual spoke-flanges, the sprocket rotatably mounted upon the hub and having a clutch connection therewith, and means for locking said 65 sprocket-wheel to the hub comprising a longitudinally-movable pin passing through openings in the spoke-flanges and adapted to engage the sprocket, said pin having a split end provided with notches adapted to engage 70 the edge of the opening in the spoke-flange to hold the pin in its locking or unlocking position, substantially as described.

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