

No. 659,956.

Patented Oct. 16, 1900.

L. & A. CHAPELLE.
MOTOR CYCLE.

Application filed Jan. 17, 1900.)

(No Model.)

4 Sheets—Sheet 1.

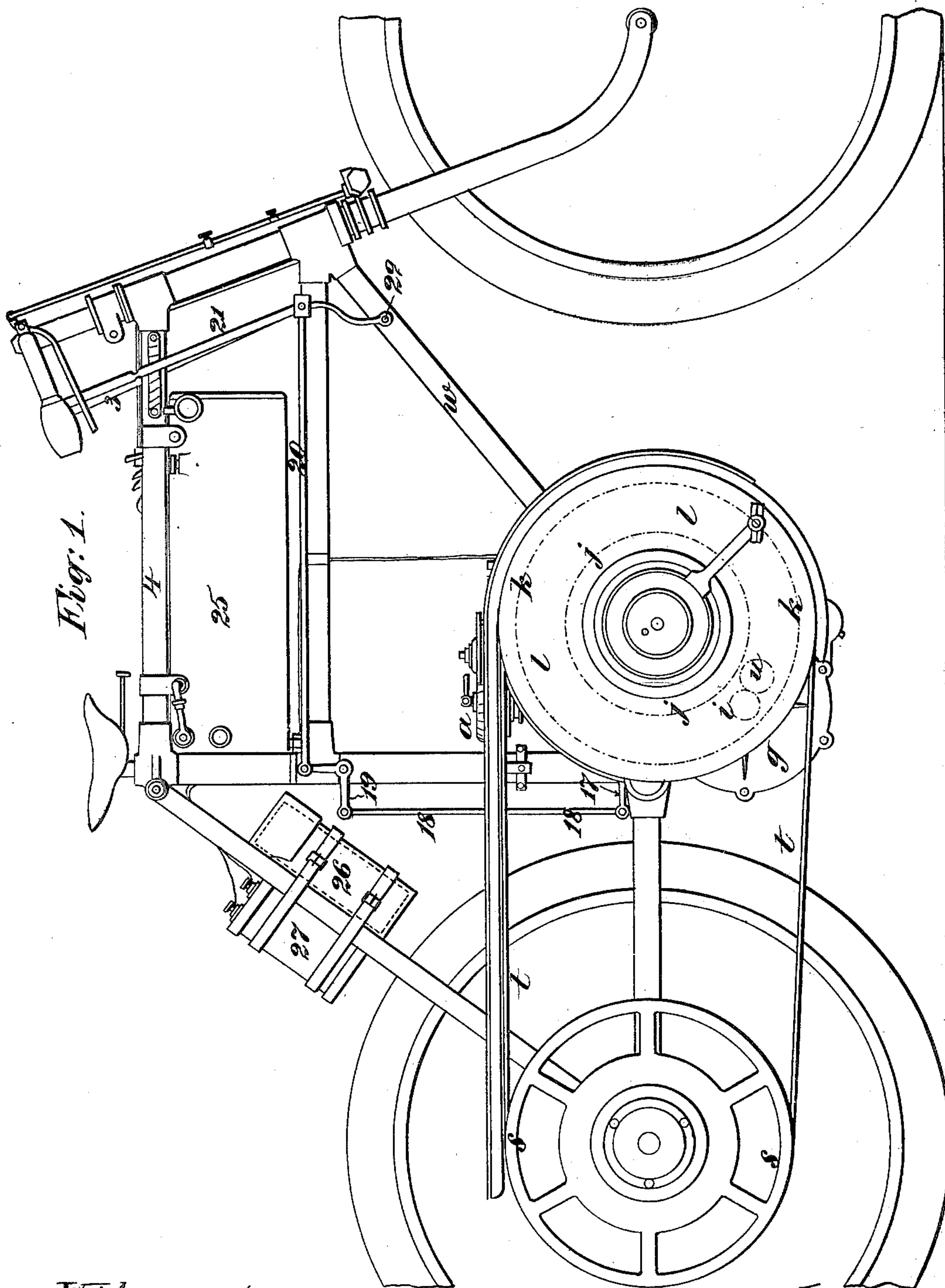


Fig. 1.

Witnesses:
J. W. H. H. H.
Peter S. Ross.

Inventors:
Louis Chapelle
Auguste Chapelle
by Henry H. H.

No. 659,956.

Patented Oct. 16, 1900.

L. & A. CHAPELLE.

MOTOR CYCLE.

(Application filed Jan. 17, 1900.)

(No Model.)

4 Sheets—Sheet 2.

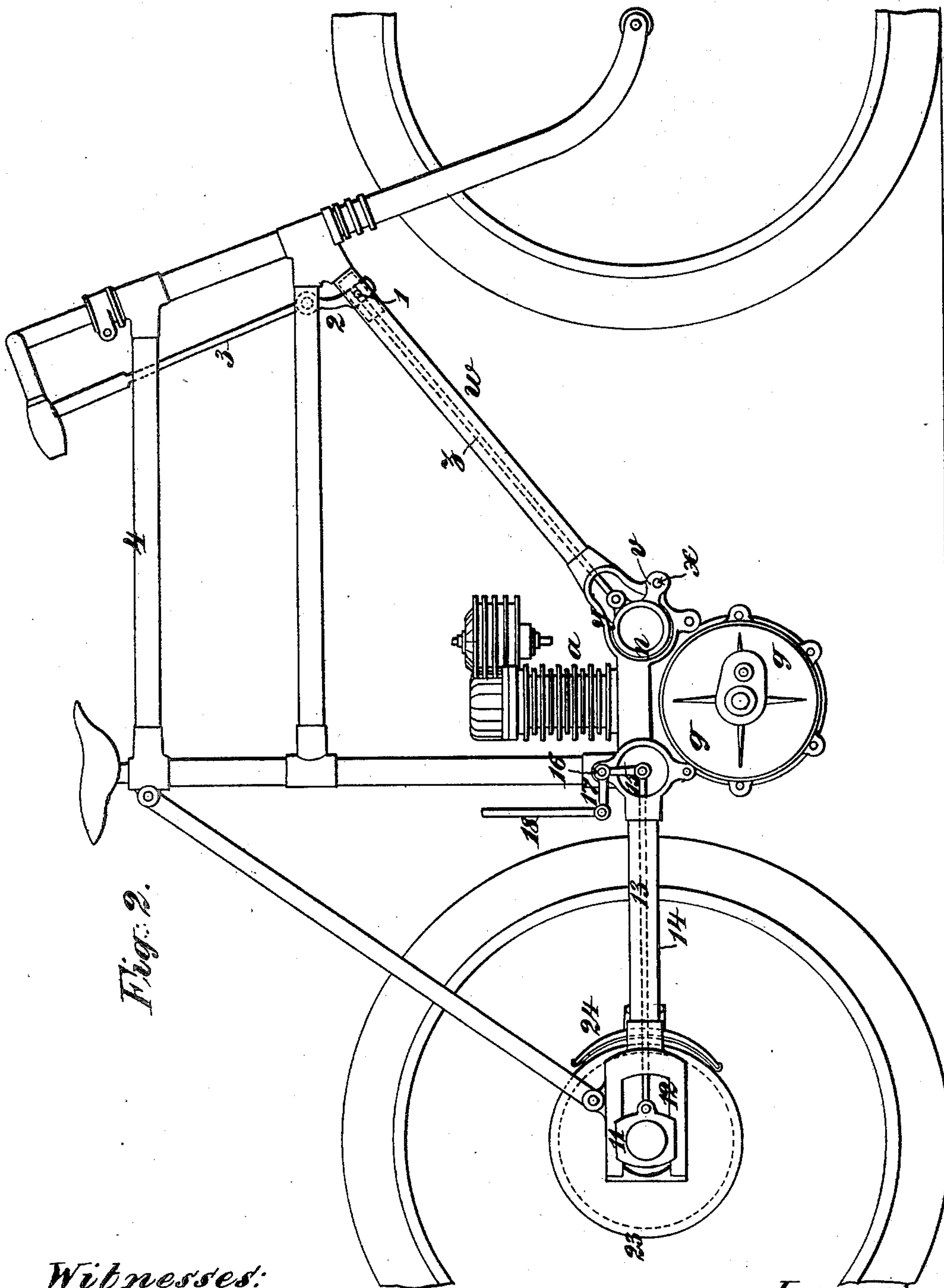


Fig. 2.

Witnesses:

J. H. H. H. H.
Peter A. Ross

Inventors

Louis Chapelle
Auguste Chapelle
by Henry G. G. G.
Attorney

No. 659,956.

Patented Oct. 16, 1900.

L. & A. CHAPELLE.
MOTOR CYCLE.

(Application filed Jan. 17, 1900.)

(No Model.)

4 Sheets—Sheet 3.

Fig. 3.

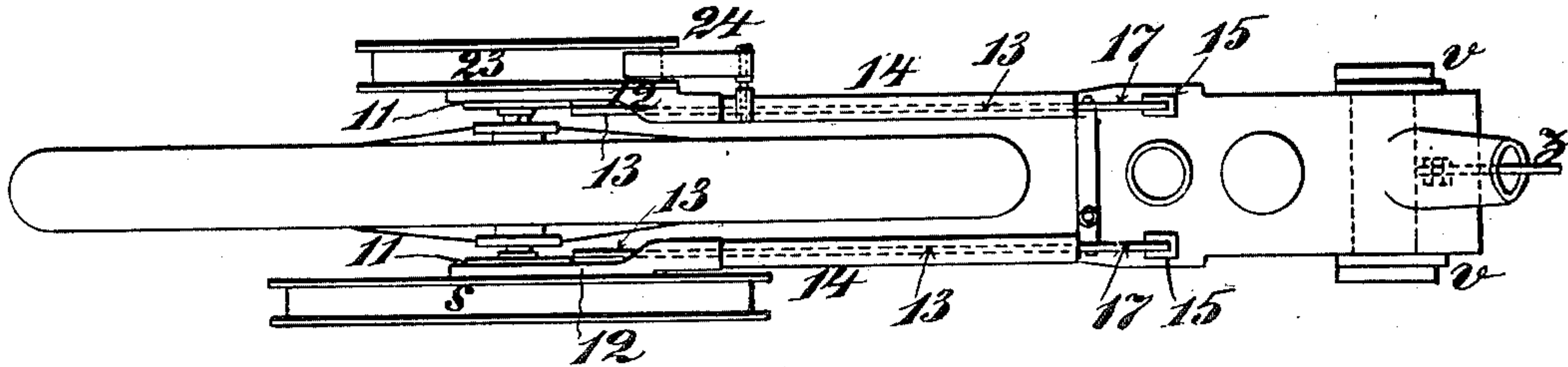


Fig. 4.

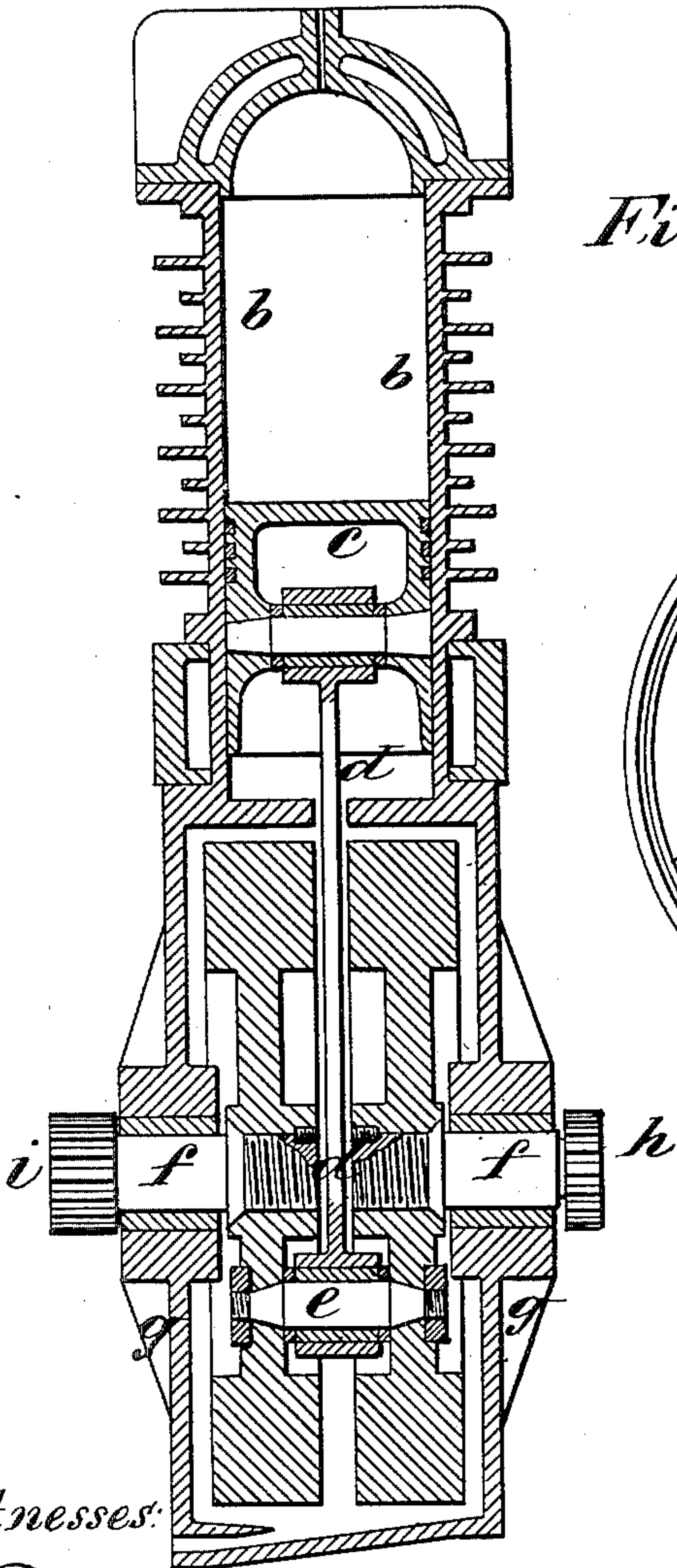
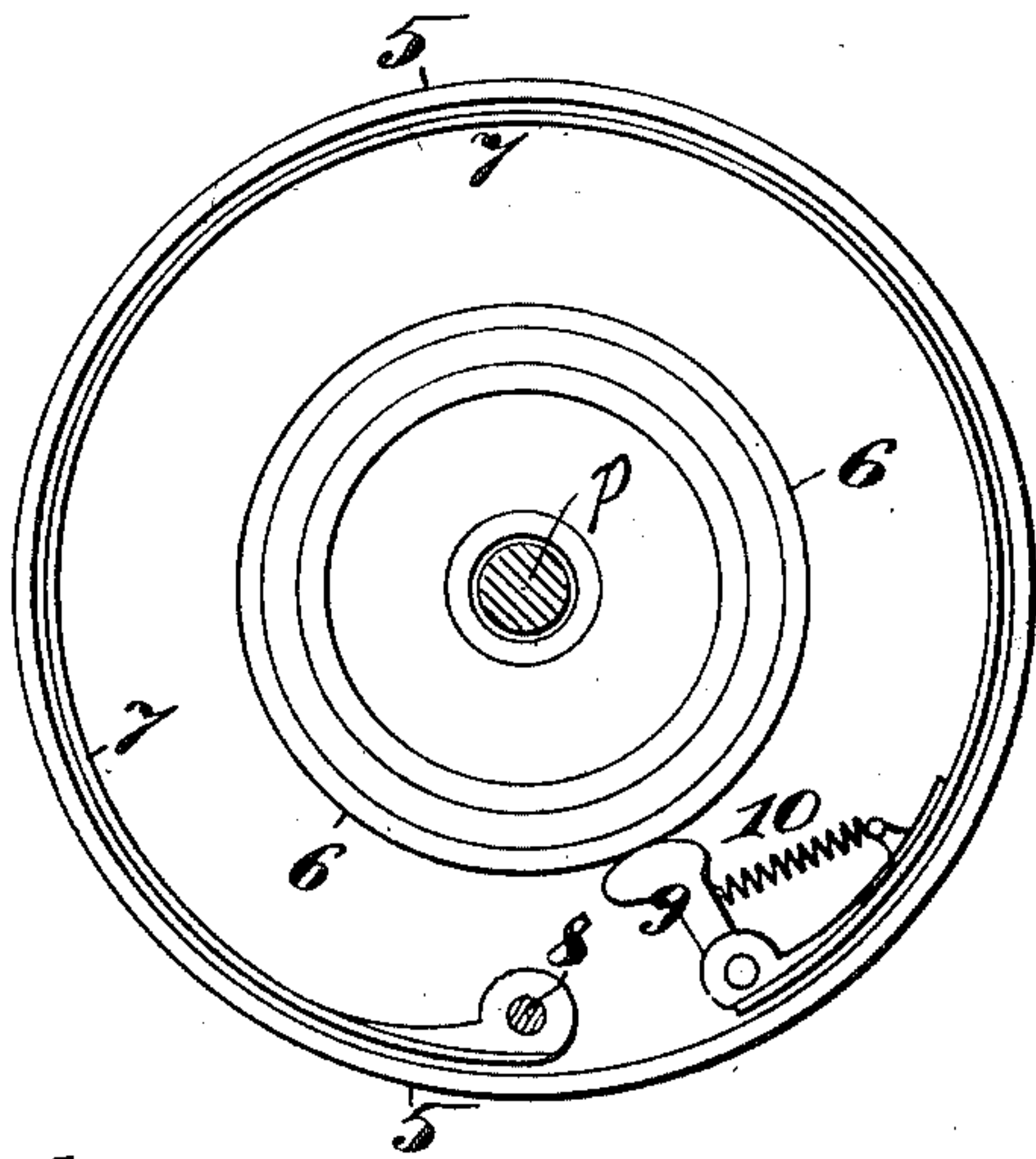


Fig. 5.



Witnesses:

J. H. Kliman
Peter A. Ross.

Inventors:

Louis Chapelle
Auguste Chapelle
by Henry Combes
Attorney

No. 659,956.

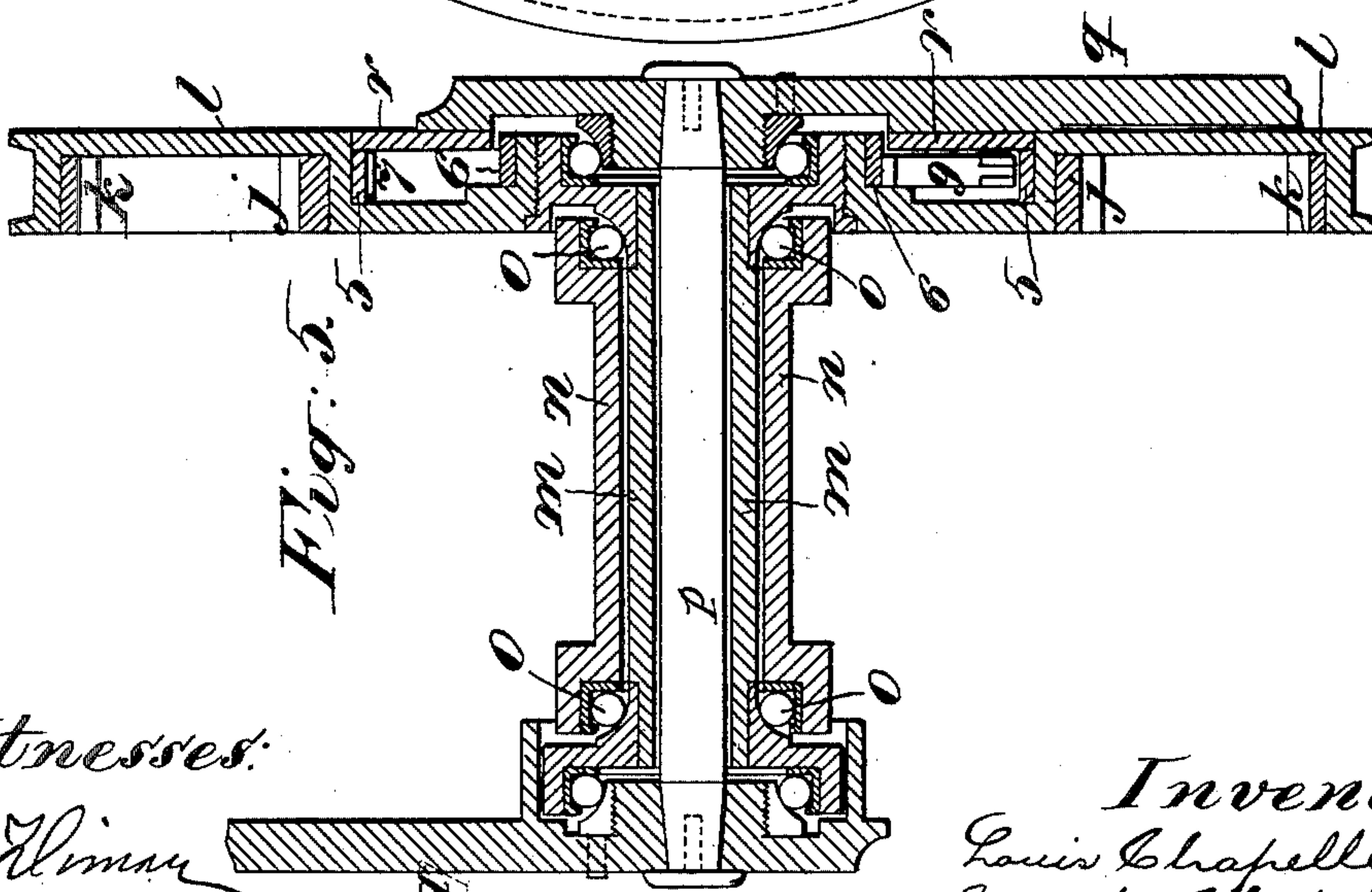
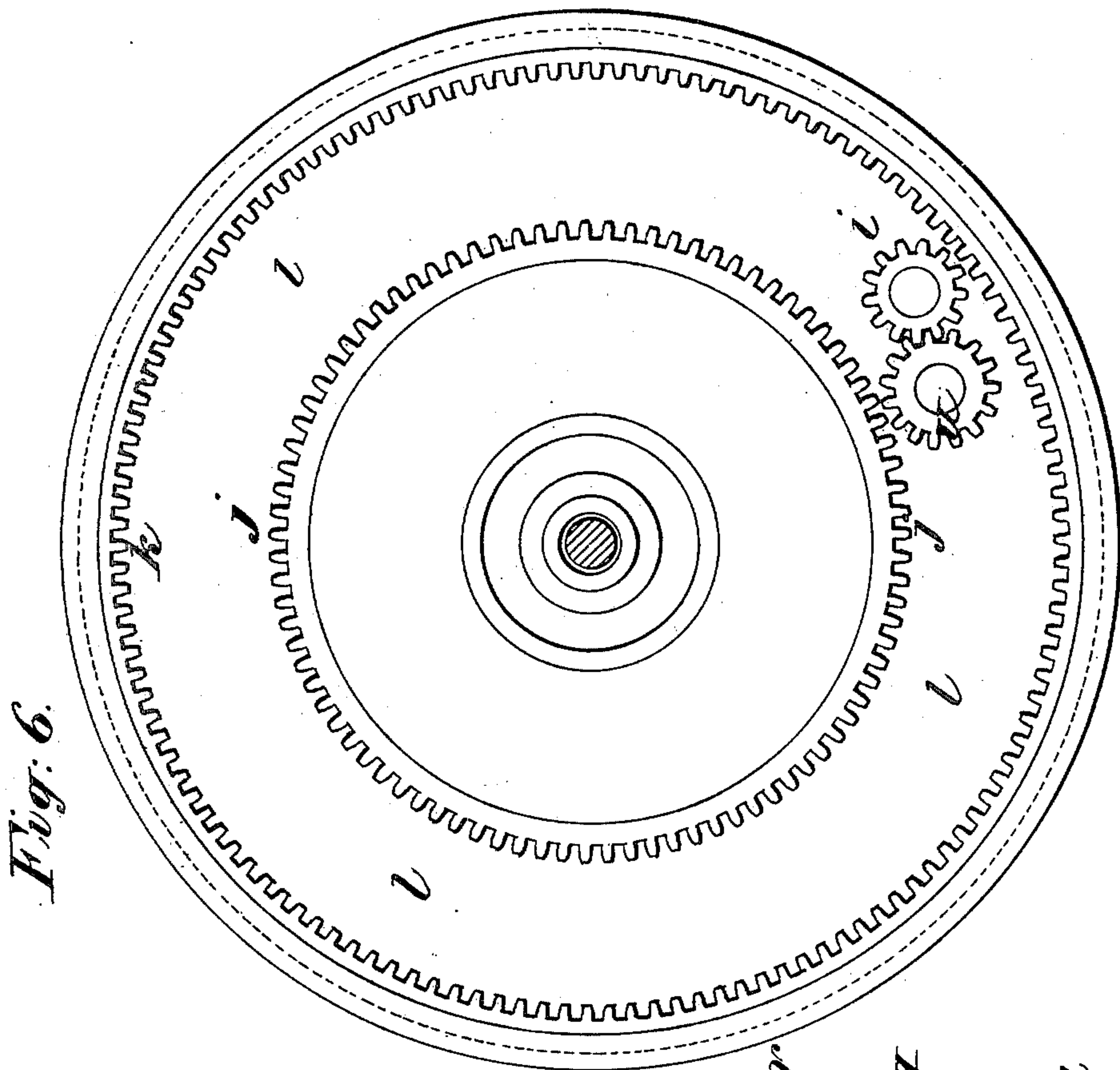
Patented Oct. 16, 1900.

L. & A. CHAPELLE.
MOTOR CYCLE.

(Application filed Jan. 17, 1900.)

(No Model.)

4 Sheets—Sheet 4.



Witnesses:
F. W. H. H. H.
Osier A. Ross

Inventors:
Louis Chapelle
Auguste Chapelle
by Henry Comstock
Attorney

UNITED STATES PATENT OFFICE.

LOUIS CHAPELLE AND AUGUSTE CHAPELLE, OF ST. OZEN L'AUMÔNE,
FRANCE.

MOTOR-CYCLE.

SPECIFICATION forming part of Letters Patent No. 659,956, dated October 16, 1900.

Application filed January 17, 1900. Serial No. 1,733. (No model.)

To all whom it may concern:

Be it known that we, LOUIS CHAPELLE and AUGUSTE CHAPELLE, citizens of the French Republic, residing at St. Ozen l'Aumône, Seine-et-Oise, France, have jointly invented certain new and useful Improvements in Motor-Cycles, of which the following is a specification.

This invention relates to what are known as "motor-bicycles;" and the object of the invention is to provide a cycle which shall not be materially longer or more cumbersome than an ordinary bicycle and which may be driven at will by either the motor or the feet of the rider, which may be readily stopped, and which has means for shifting the gear so that the normal speed can be changed.

In the accompanying drawings, which illustrate an embodiment of the invention, Figure 1 is an elevation of the right-hand side of the cycle. Fig. 2 is a similar view with the gearing at the right-hand side removed, so as to disclose the parts beyond; and Fig. 3 is a plan of the rear portion of the cycle. Fig. 4 is a sectional elevation of the motor on a larger scale than the principal views. Fig. 5 is an axial section through the crank-hanger and the gears. Fig. 6 is a face view of the gear-wheels as seen from the left in Fig. 5; and Fig. 7 is a view of the outer face of the pulley-wheel *l*, showing the annular recess therein and the friction-clutch devices.

The frame of the cycle is constructed so as to insure rigidity, and the motor *a* is set as low in the frame as practicable in order to lower the center of gravity of the structure and secure stability.

The motor, which does not contain any specially novel features, is shown detached in Fig. 4. It has a flanged or circularly-ribbed cylinder *b*, in which works a piston *c*, the rod *d* of which is coupled to a crank *e* in the motor-shaft *f*. At one end the shaft *f* carries a pinion *h*, which actuates the distributing and igniting mechanisms, and at its other end it carries a pinion *i*, which is the motor-wheel of the cycle. This pinion is adapted to drive the main wheel *l* by gearing either with a circular set of teeth *j* or a set of teeth *k*, Fig. 6, on the same. The wheel *l*, which constitutes one of the essential features of the invention,

is fixed on a tubular shaft *m*, which extends through and rotates on ball-bearings *o* in the adjustable crank-hanger *n*. Through this tubular shaft extends an axle *p*, carrying the two pedal-cranks *q*. The crank *q* situated on the same side of the frame with the wheel *l* is integral with a flat annulus *r*, which fits in an annular recess in the outer face of the wheel *l*. The manner in which the annulus and wheel may be connected for driving will be hereinafter explained. The wheel *l* has a groove in its periphery to receive a belt *t*, which connects it for driving with a similarly-grooved pulley *s* on the axle of the rear cycle-wheel. This belt *t* may be a strip of steel covered with leather, and it should be non-stretching.

As before stated, the driving-pinion *i* may engage with either of the sets of teeth *j* or *k*; but, more strictly speaking, it may gear directly with the teeth *k* when the pulley-wheel *l* is elevated sufficiently, and when the said wheel is depressed the teeth *j* are made to gear with those of an intermediate pinion *u*, with which the pinion *i* is always in gear. The pinion *u* turns loosely on its journal and its use, as described, causes the pinion *i* to drive the wheel *l* always in one direction, whether it drives through the teeth *j* or the teeth *k*. The radial distance between the rows of teeth *j* and *k* is such that both of the pinions *i* and *u* may be out of gear when the wheel *l* is at its mean elevation. In this case the motor will be out of gear with the driving-wheel of the cycle.

The raising and lowering of the wheel *l* are effected by shifting the crank-hanger *n*. To this end the hanger is provided with two lugs *v*, Fig. 2, which enable it to swing about a pivotal point or axis *x* on the frame. The hanger *n* has a lug *y*, to which is coupled a rod *z*, which extends through the tubular member *w* of the frame, and this rod *z* has at its upper end a pin *1*, which engages the short arm *2* of an operating-lever *3*, fulcrumed in the frame. This lever plays along the left-hand side of the upper bar *4* of the frame and may be made to engage notches in or on this bar in order to hold the lever in either of its three positions. By means of this lever the rider may raise or lower the

crank-hanger *n*, so as to throw the motor out of gear or set the gear for high or low speed at will.

It has been stated that there is an annular recess in the outer face of the pulley-wheel *l* and concentric therewith, Figs. 5 and 7, and the outer and inner walls of this recess are lined with hard-metal wearing-rings, respectively, 5 and 6, as the pulley-wheel will be, by preference, made of aluminium for the sake of lightness. The flat annulus or ring disk *r*, carried by the crank at that side, fits into said recess flush, as seen in Fig. 5. Within the said recess is a curved clutch-spring 7, which lies normally quite close to the outer wall 5, Fig. 7, and is secured at one end to the annulus *r* by a pin or rivet 8, and at its other or free end it has pivotally coupled to it a friction pawl or toggle 9, the free end of which bears on the inner wall 6, being held up in its nearly-radial position by a light spring 10.

When the annulus *r* is rotated in the direction indicated by the arrow in Fig. 7, it carries the clutch-spring 7 with it, the toggle 9 bites on the wall or surface 6, and this causes the spring 7 to bear frictionally on the wall 5 all around, and thus form a clutch to compel the wheel *l* to rotate with the cranks.

When the rider wishes to start and for this purpose mounts and applies his feet to the pedals, this latter sets the friction-clutch, above described, and connects the crank-shaft to the wheel *l* for driving. This latter wheel, through the teeth *j* or *k* and the pinion *i*, sets the motor *a* in motion, and when the latter begins to work it in turn drives the wheel *l*. The rider then ceases to operate the pedals and the pedal-shaft remains at rest, the spring 7 is released from pressure on the inner face of the wall 5, and the spring 7 by its own resiliency draws out of contact with the surface of the wall 5.

Means now to be described are provided for putting tension on the belt *t*. The journals of the rear wheel of the cycle have bearings in slide-blocks 11, mounted in guides 12 in the frame, and each block 11 is coupled by a rod 13, which extend forward through the tubular branches 14 of the rear fork and are coupled each to one arm of a bell-crank 15, these cranks being fixed on a cross-shaft 16. An arm 17 of each crank is coupled by a rod 18 to a bell-crank 19, Fig. 1, from the other arm of which a rod 20 extends forward to an operating-lever 21, fulcrumed at 22 on the member or bar *w* of the frame. By means of the lever 21 the rider may at will move the blocks 11 forward or back, and thus by shifting the pulley *s* tighten or slacken the belt *t*. If the belt be slackened sufficiently, it will slip and the motor cease to drive the cycle. On the rear wheel of the latter is secured a brake-pulley 23, Figs. 2 and 3, which when the axle of the rear wheel is drawn forward comes into peripheral contact with a brake-shoe 24, fixed on the cycle-frame, so

that simultaneously with the slackening of the belt *t* a brake is set, tending to stop the cycle.

It will be understood that when the pinions *i* and *u* are both out of gear, as in Fig. 6, the cycle may be driven by the feet of the rider through the pedals and cranks in the usual way.

Although here shown as applied to a bicycle, it will be obvious that the novel features of the invention may be applied as well by any one skilled in the art to motor-vehicles generally—such as tricycles and quadricycles, for example.

Where the motor is of the gas-engine type, the latter may be set in motion before mounting to see that all is right. This may be done by slackening the belt *t* and putting the pinion *u* in gear with the teeth *j* for high speed. The rider will then be assured that the carbureting devices are properly regulated before starting. It will not be necessary to describe the carbureting devices. (Seen at 25 in Fig. 1, which figure also shows the accumulator 26 and the igniting-coil 27.)

Having thus described our invention, we claim—

1. A motor-vehicle having a laterally-shiftable crank-hanger, means operatable by the rider for shifting said hanger, a main driving-shaft and gear-wheel, and a gear-wheel rotatable on said hanger and shiftable therewith and adapted to be put into and out of gear with the main driving-shaft by shifting said hanger.

2. A motor-vehicle having a laterally-shiftable crank-hanger, means operatable by the rider for shifting said hanger, a main gear-wheel rotatable with a shaft having bearings in said hanger and having two concentric sets of gear-teeth, *j* and *k*, a pinion *i* on the motor-shaft and adapted to be moved into and out of gear with the teeth *k* by the shifting of the said hanger, and an intermediate pinion *u*, always in gear with the pinion *i*, and adapted to be put into and out of gear with the shifting of the hanger, substantially as set forth.

3. In a motor-cycle, the combination with the wheel *l* and its tubular shaft, said wheel having an annular, concentric recess in its face, the crank-shaft extending through said tubular shaft, the cranks thereon, and the annulus fixed to one of the cranks and occupying said recess, of the clutch-spring 7 carried by the annulus and also occupying said recess, and the spring-toggle 9 carried by the free end of said spring, substantially as and for the purposes set forth.

In witness whereof we have hereunto signed our names, this 4th day of January, 1900, in the presence of two subscribing witnesses.

LOUIS CHAPELLE.
AUGUSTE CHAPELLE.

Witnesses:

EDWARD P. MACLEAN,
AUGUSTE MATHIEU.