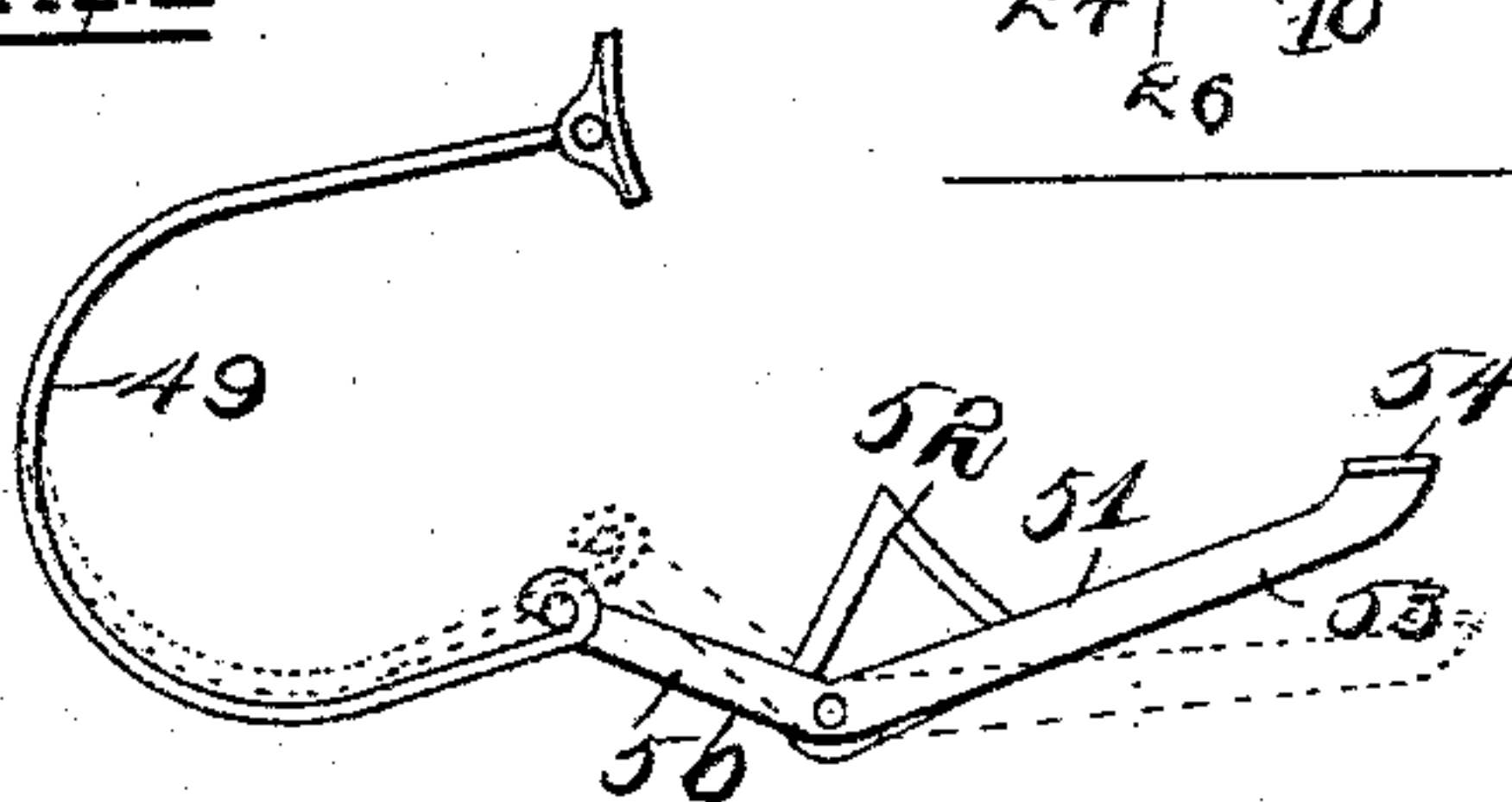
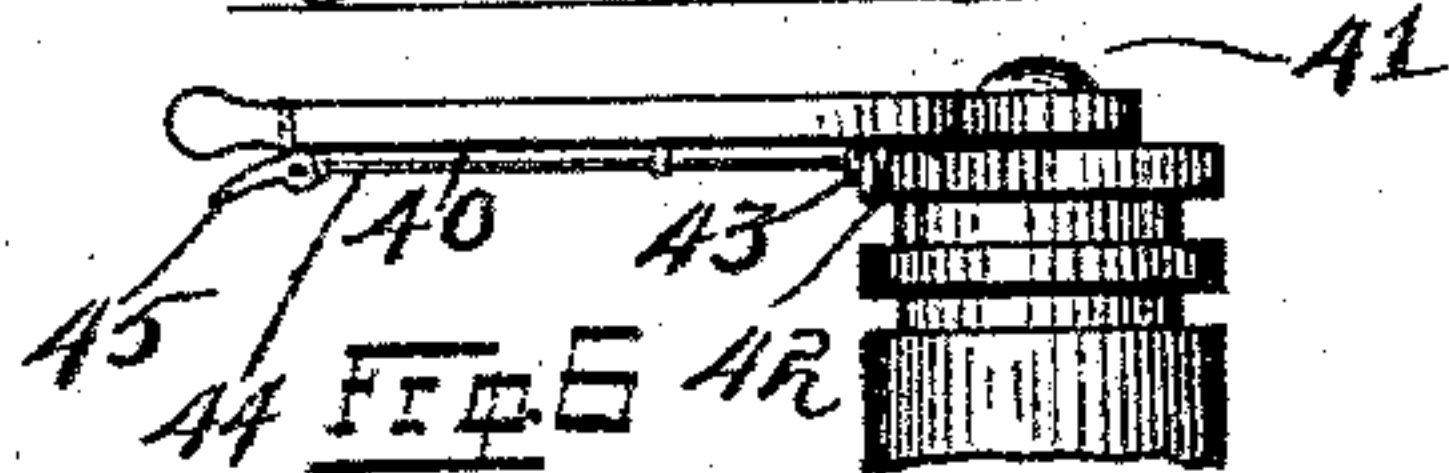
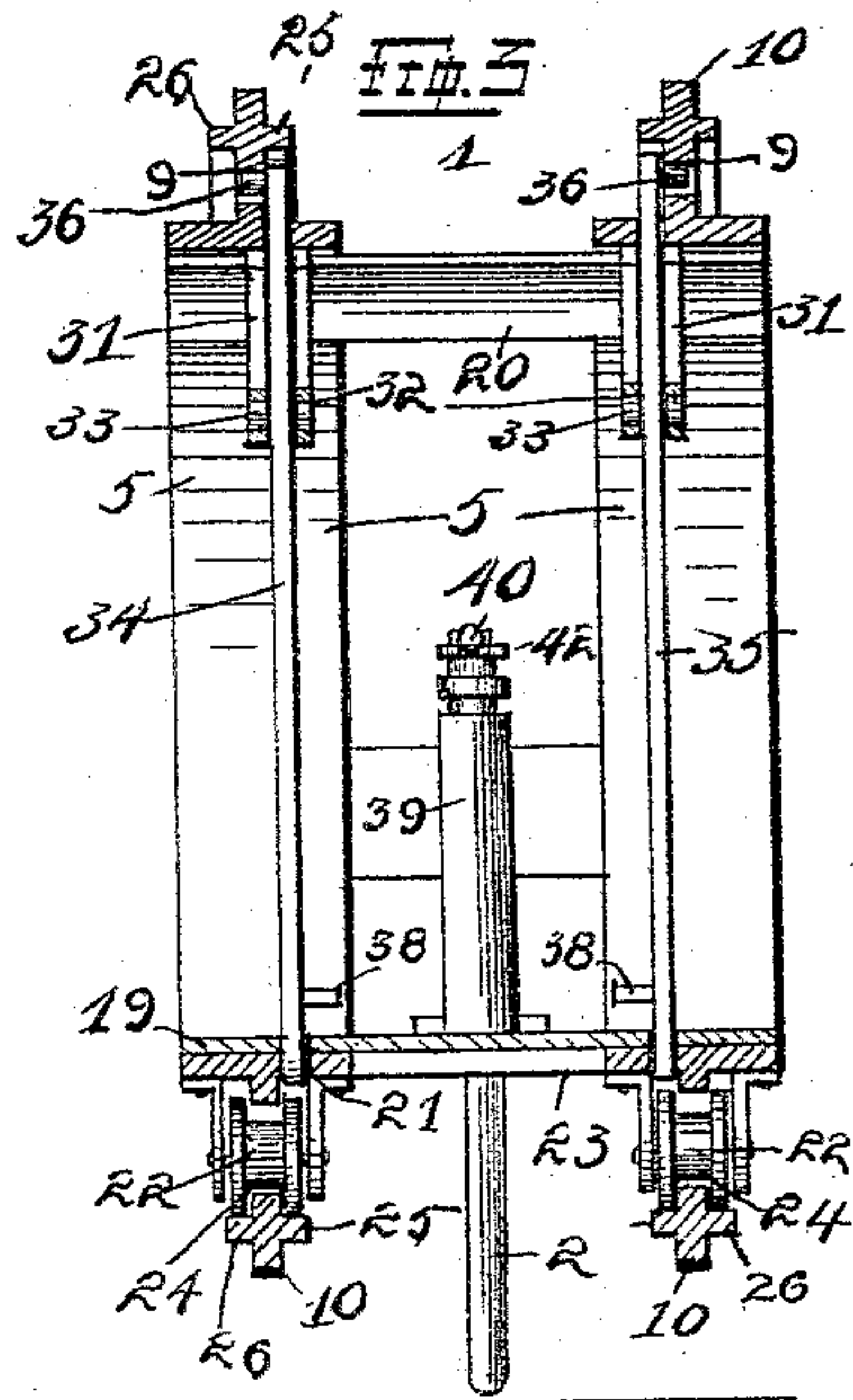
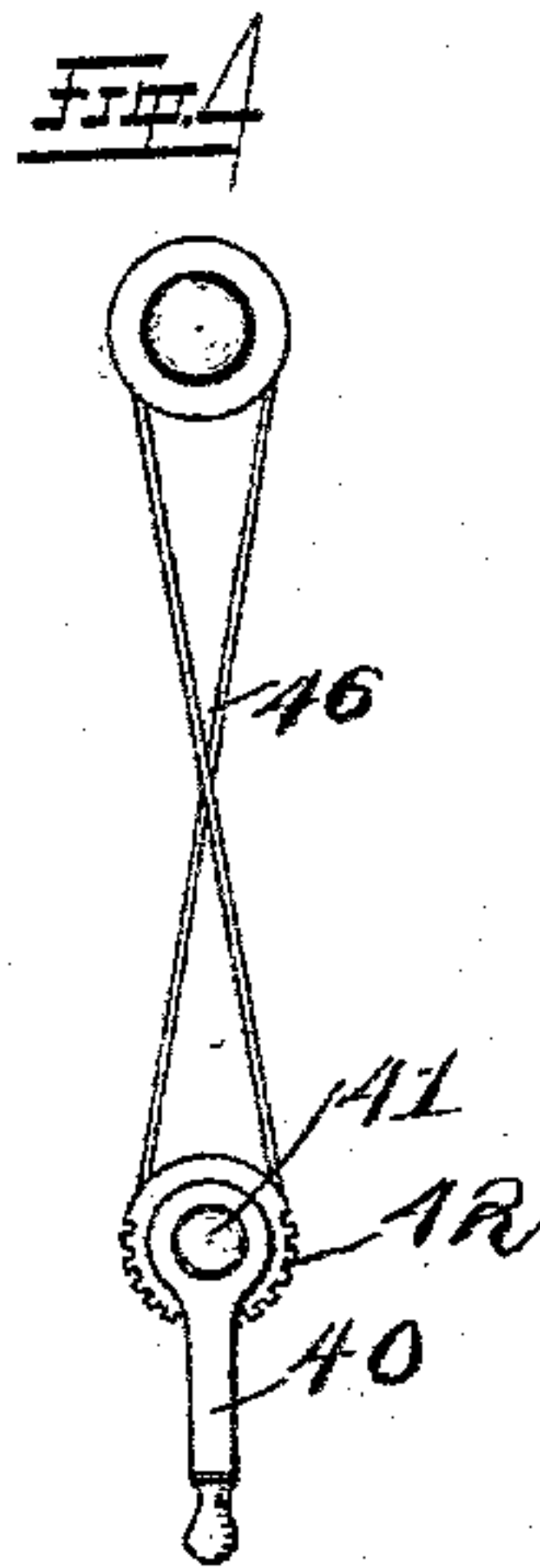
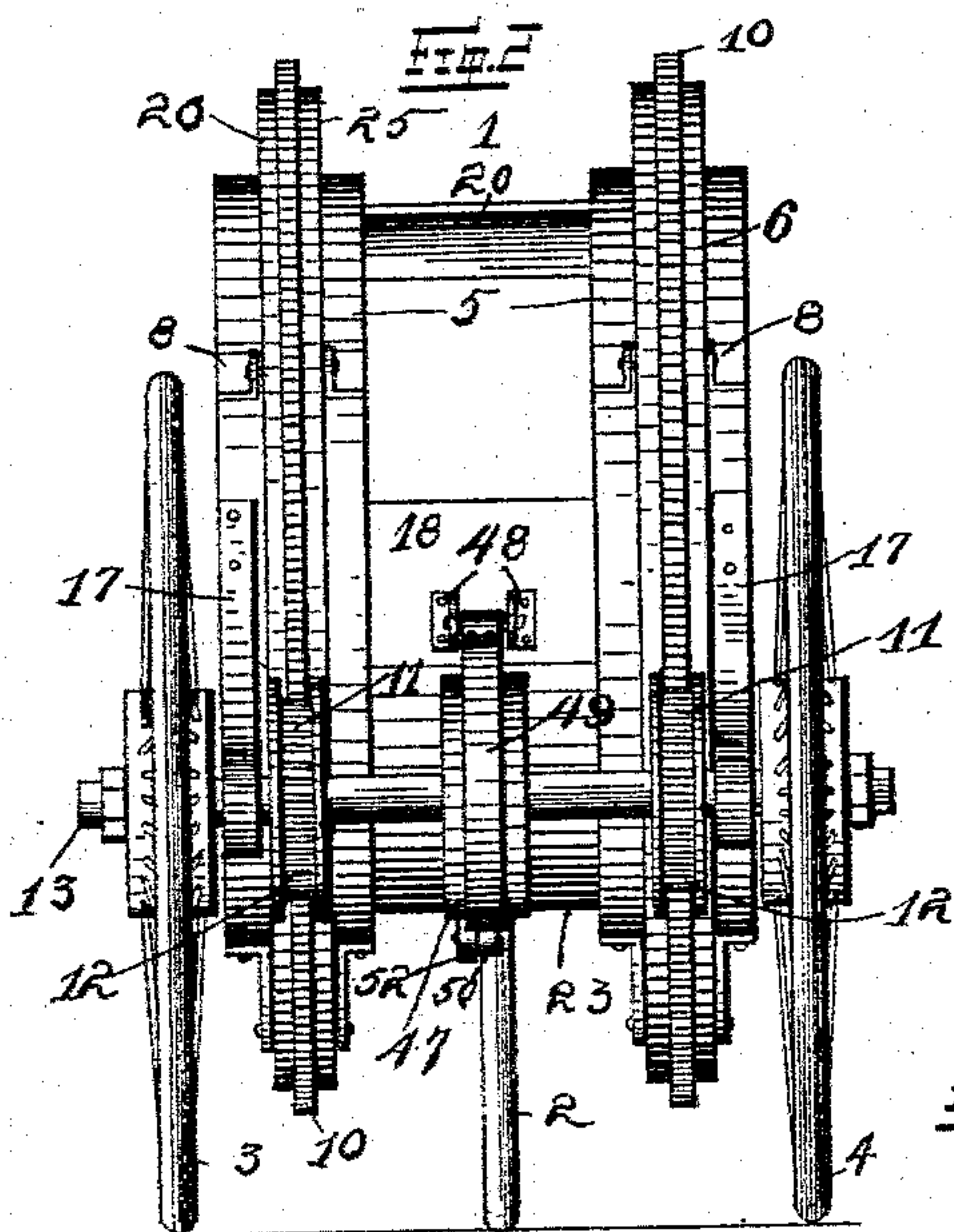
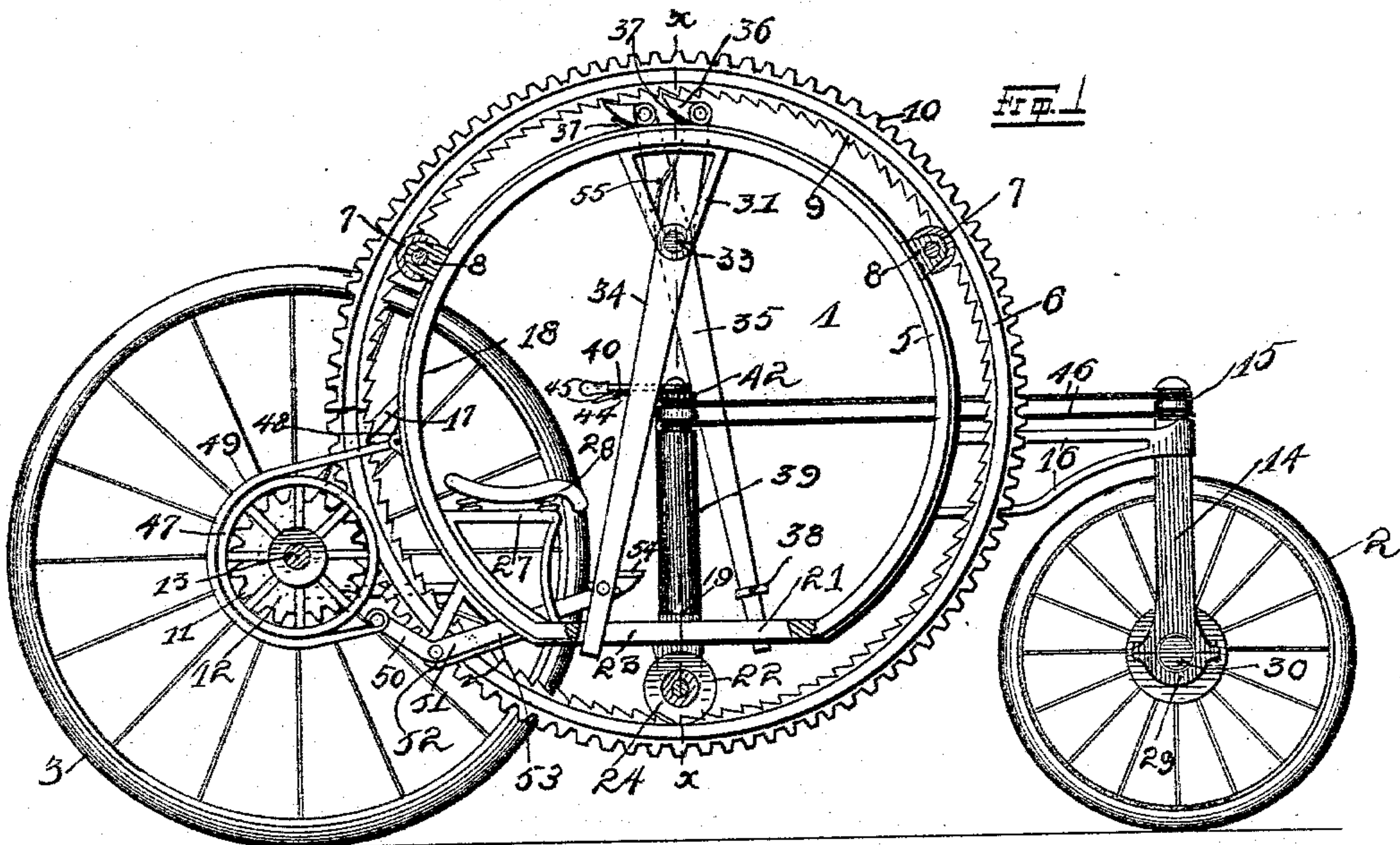


(No Model.)

G. LANGER.
VELOCIPEDE.

No. 494,870.

Patented Apr. 4, 1893.



Witnesses
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VELOCIPEDÉ.

SPECIFICATION forming part of Letters Patent No. 494,870, dated April 4, 1893.

Application filed August 8, 1892. Serial No. 442,481. (No model.)

To all whom it may concern:

Be it known that I, GOTTHOLD LANGER, of the city of St. Louis and State of Missouri, have invented certain new and useful Improvements in Velocipedes, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part hereof.

My invention relates to improvements in "velocipedes," and consists in the novel arrangement and combination of parts, as will be more fully hereinafter described and set forth in the claims.

The object of my invention is to construct a traction velocipede which carries parts intended in operation to facilitate the movement and increase the speed of the machine. It comprises three ordinary traction-wheels, which are so connected with other parts that motion is imparted thereto by said other parts.

The construction of this class of velocipedes which are in use at the present time is well known and therefore need not be further detailed by me in my description.

In the drawings: Figure 1 is a side elevation of my complete invention with one of the rear traction-wheels removed and other parts broken away shown in section. Fig. 2 is a rear elevation of the same showing the velocipede complete. Fig. 3 is a vertical section taken on a line *xx* of Fig. 1. Fig. 4 is a detail top plan view of the steering-lever and its connection with the steering-head. Fig. 5 is a detail side elevation of the brake-mechanism showing in dotted lines its alternate position in operation. Fig. 6 is an enlarged side elevation of the steering-lever and its connection with the stand.

Referring to the drawings: 1 represents my complete invention, provided with a forward steering-wheel 2 and rear guide traction-wheels 3 and 4. A fixed ring-frame 5 is located upon each side of the machine inside of and adjacent to the rear traction-wheels 3 and 4. Revolving geared ring-frames 6 revolve at a relative distance from said fixed ring-frames 5 and are held in an aligned position therefrom by flanged wheels 7 secured revolvably in standard bearings 8 upon said ring-frames 5. The revolving rings 6 are provided upon their inner periphery with ratchet teeth

9 and upon their outer periphery with gear-teeth 10, constructed to engage in gear-teeth 11 upon gear-wheels 12 keyed to the axle 13.

Before proceeding further I had best state the manner in which the fixed rings 5 and parts carried thereby are supported above the surface upon which the velocipede is intended to operate.

The guide-wheel 2 has an upwardly projecting fork 14 terminating in a steering-head 15, which operates in a manner more fully hereinafter described. A bracket or brace 16 extends from the fork 14 which is revolvably mounted therein, outwardly to the two fixed rings 5 thereby supporting the forward part of the mechanism, as best shown in Fig. 1 of the illustrations. The rear portion is supported by braces 17 which are practically V-shaped in cross-section and in the convex portion of same provide bearings which fit over the axle 13 between the gear-wheels 12 and the traction-wheels 3 and 4. The free ends of the braces are secured to the outer periphery of the fixed ring-frames 5.

As shown in Fig. 2, the fixed ring-frames and revolving ring-frames are in definite horizontal and vertical alignment with each other and the fixed rings 5 are held in such position by various braces. A back-rest 18, a plate 19 and a plate 20 connect and secure together the fixed rings 5. The lower portion of the fixed ring-frames 5 are truncated and provided with slots 21 which limit the movement of the levers as hereinafter described. There may be any number of the wheels 7 which control the movement of the revolving ring 6 in alignment with the fixed rings 5. One of these wheels designated by the numeral 22, is larger in diameter than the others to provide for the space between the flat portion 23 of said fixed frames 5 and the revolving rings 6. Said wheels 7 and 22 are provided with annular grooves 24 in their periphery to fit over the ratchets 9 upon the inner periphery of the revolving rings 6. As shown in Fig. 3, there is no frictional contact between said teeth 9 and the wheel 7 except upon the sides of said teeth. Therefore it will be seen that the contact between the wheels and the revolving rings is maintained between the flanges upon said wheel 7 and

the inner periphery of the flanges 25 and 26 formed by the construction of the revolving rings 6. It will be seen that in cross-section the revolving rings are practically cross-shaped. The gear teeth 10 the ratchet-teeth 9, and the flanges 25 and 26 complete this construction of the revolving rings 6. A suitable supporting casting 27 is secured to each of the rear portions of the fixed rings 5 and form a support for the seat 28 which extends across and connects the two rims 5. The bearing portion of the forks 14 is separable so that the lower portion 29 is adjustable over the shaft 30 upon which the steering-wheel 2 revolves.

I will now describe the construction of the operating mechanism. Depending triangular shaped castings 31 are secured upon the inner side of the upper portion of the ring-frames 5. Said castings are skeleton in construction and the lower end of same provides a perforation 32 in which suitable shafts 33 fit. There are two of these depending castings 31 upon each of the rims 5 and between said castings 31 and upon the shafts 33 are mounted oscillating lever bars 34 and 35, the upper ends of which project upwardly and engage the ratchet-teeth 9 with pawls 36 controlled by springs 37 secured to the ends of said rods 34 and 35. These pawls are secured upon the outer sides of said levers, instead of upon their ends, to allow of their free operation. As before stated, the lower ends of said levers 34 and 35 have their movements in slots 21 and are controlled by the length of said slots. Immediately above the plate 19 and secured upon said levers 34 and 35 are pedals 38 secured upon the inner sides of said levers, and by means of which they are operated.

I will now describe the manner of steering the vehicle and the parts necessary for its operation. An upright vertical stand 39 is secured between the two rims 5, upon the plate 19 and has upon its upper end an oscillating lever 40 the movement of which is in a horizontal plane. Secured to said lever 40 and depending downwardly into and having a bearing in the stand 39 is a shaft 41 which revolves or oscillates with the movement of said lever 40. Immovably secured to said stand is a tooth-segment 42 between the teeth of which fits the pawl 43 upon the end of a spring actuated rod 44 held by staples immediately under the lever 40 and having a handle 45 to operate in unison with the handle of the lever 40. Connecting said shaft 41 with the steering-head 13 of the fork 14 are bands of metal or metallic cables 46 which are in relative alignment with each other horizontally and which cross at a slight angle. Said cables 46 are immovably secured to both steering-head 15 and shaft 41.

The steering-wheel 2 and the rear traction-wheels 3 and 4, are built after the ordinary method of construction and as shown in the drawings are provided with rubber tires to facilitate the ready movement of the machine

and compensate for the jars and knocks necessarily caused by the unevenness of the road. In this connection it would be well to state that the steering-head connection with the fork may be of the ordinary or any preferred construction.

It is of course necessary to provide a machine of this kind with a suitable brake, and in following out this idea I have tried to provide a brake which is simple in construction and operation and as repairs to the brake mechanism are often necessary, in places where no provision is made for the same, it will readily be seen that this feature is an essential one. A pulley 47 is irrevolubly mounted upon the center of the axle 13. A broad band of metal with one end properly secured in bearings 48 secured upon the back plate or rest 18, is indicated by the numeral 49. Said bearings 48 are located slightly above the upper edge of the pulley 47 in order to give the band of metal 49 a slight pull. The other end of said band of metal 49 is suitably secured to the end of an arm 50 of a bell-crank-lever 51, which is pivoted at its elbow to a casting 52 which is secured upon the back rest 18. The other arm 53 of said bell-crank-lever projects inwardly to a point near the center of the machine, and is provided upon its ends with a treadle 54 by means of which it is operated.

Having fully described my invention, I will now proceed with its operation.

With the complete machine ready for operation, the operator seats himself upon the seat 28 and places one foot upon each of the pedals 38. The normal position of the levers 34 and 35 are with their ends opposite and apart. We will first take the lever 34 in its position as shown in Fig. 1 and when the same is pushed forward by the foot upon the pedal 38 the pawl 36 engages in the ratchet teeth 9 and revolves the ring upon the right-hand side of the machine. When the lever has reached the length of its stroke as determined by the slot 21 it is returned to its normal position by a spring 55 which is secured inside of the castings 31. In the return movement the foot is allowed to rest lightly upon the pedal 38 so as not to retard the operation of same. The operation of both of the levers is exactly similar.

To steer the machine the operator takes hold of the handle 40 compresses the handle 45 against same so that the pawl 43 will be free from the teeth 42 and turns the handle in whichever direction he desires the machine to run, the cables 46 necessitating a similar movement of the steering-head with that of the shaft 41 although by reason of the crossing of said cables the direction in which the steering-head 15 turns, is directly the opposite. When it is desired to diminish the speed or entirely stop the machine the foot is applied to the treadle 54 upon the arm 53 of the lever 51, thus bringing up the arm 50 to which the band 49 is fastened and draws the

band 49 taut upon the pulley 47, and thus regulates the speed of the machine. The positions of the lever 51 and the band of metal 49 are shown by the strong and dotted lines in Fig. 5. When motion is imparted to the revolving ring 6 by the operation of the levers 34 and 35, the same is applied to the gear wheels 12 upon the axle 13 thus causing the rear traction-wheels 3 and 4 keyed thereon to revolve.

The machine is high enough in construction in order that a person may be readily seated in the same without any personal inconvenience and the machine is wide enough in case two persons wish to ride.

Having fully described my invention, what I claim is—

1. An improved velocipede, having traction-wheels, revolving ring-frames for operating the latter, fixed ring-frames within said revolving ring-frames, oscillating levers pivoted near their upper ends in said fixed ring-frames and means provided for revolving said ring-frames through the medium of said levers, substantially as set forth.

2. An improved velocipede, having an axle, traction-wheels and pinions fixed thereon, revolving geared ring-frames meshing with said pinions, fixed ring-frames within said revolving ring-frames, levers pivoted near their upper ends to depending brackets, secured to the upper portion of said fixed rings, said levers having a reciprocating, oscillating movement in a vertical plane, and means for imparting rotation to said revolving ring frames through the medium of said oscillating levers, substantially as set forth.

3. An improved velocipede having an axle, traction-wheels and pinions fixed thereon, revolving geared ring-frames meshing with said pinions, and provided with internal ratchet-teeth, fixed ring-frames, oscillating levers pivoted to brackets secured to said fixed rings, pedals secured near the lower ends of said

levers and upon same, pawls pivoted to the extreme upper ends of said levers, tension springs controlling said pawls, tension springs controlling the levers, and said pawls engaging the ratchet-teeth upon the inner peripheries, of the revolving ring-frames, substantially as set forth.

4. An improved velocipede having traction-wheels two revolving ring frames 6 for operating the latter, two fixed ring-frames 5 held at a relative distance within said revolving ring-frames 6 by rollers 7, oscillating levers 34 and 35 adapted for rotating said ring-frames 6, a plate 19 connecting the lower truncated portions 23 of the ring-frames 5, and said plate 19 and truncated portions 23 having coinciding slots 21 to control the length of movement of said oscillating levers 34 and 35, substantially as set forth.

5. An improved velocipede having an axle, traction-wheels and pinions 12 fixed thereon, two revolving ring-frames substantially cross-shaped in cross-section, the outer projecting flange in the form of gear teeth 10, meshing with said pinions the inner flange in the form of ratchet teeth 9, two fixed ring-frames within the said revolving ring-frames, said ring-frames provided with annular extending flanges upon their peripheries, a number of wheels 7 and 22, revolving upon a pivot in brackets 8, secured to said fixed ring-frames, said wheels revolving in contact with the flanges 25 and 26, upon said revolving rings 6, oscillating levers 34 and 35, and spring-held pawls 36 carried by the upper ends of said levers and adapted to engage the ratchet-teeth 9 to rotate said revolving ring-frames substantially as set forth.

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

GOTTHOLD LANGER.

Witnesses:

ED. E. LONGAN,
ALFRED A. EICKS.