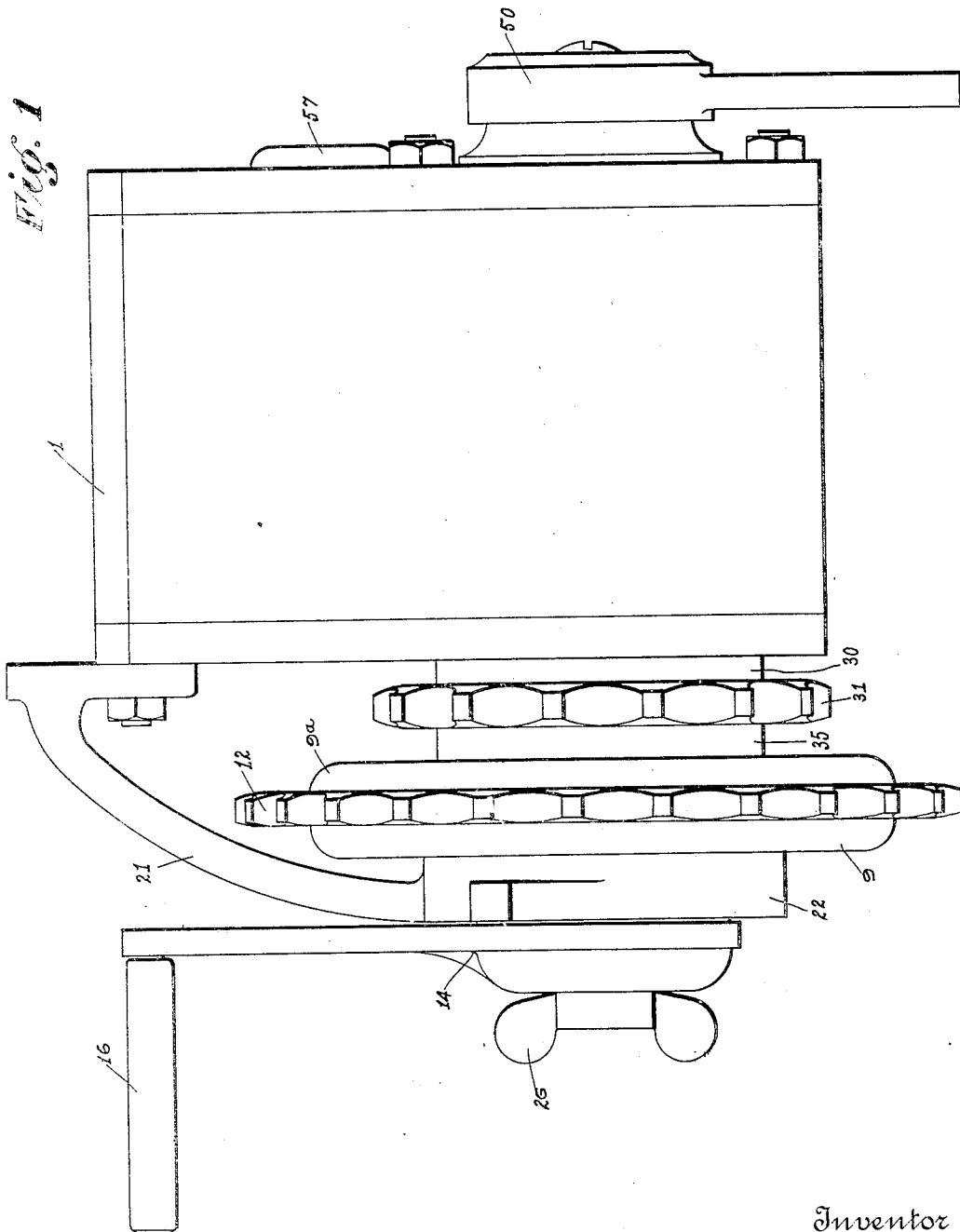


J. PARCO.
CHANGE GEARING FOR MOTOR CYCLES.
APPLICATION FILED APR. 23, 1912.

1,056,209.

Patented Mar. 18, 1913.

4 SHEETS—SHEET 1.



Witnesses

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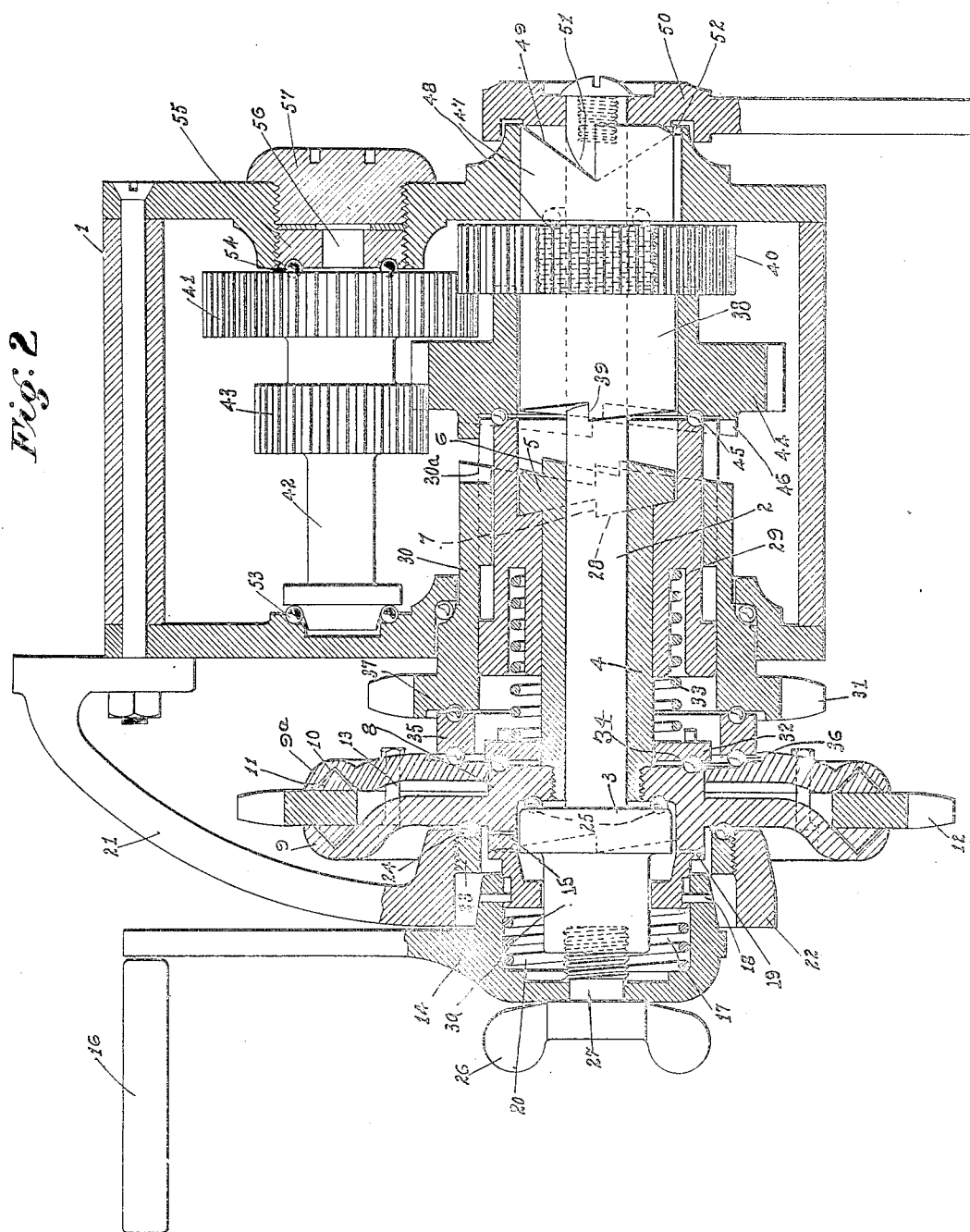


Fig. 2

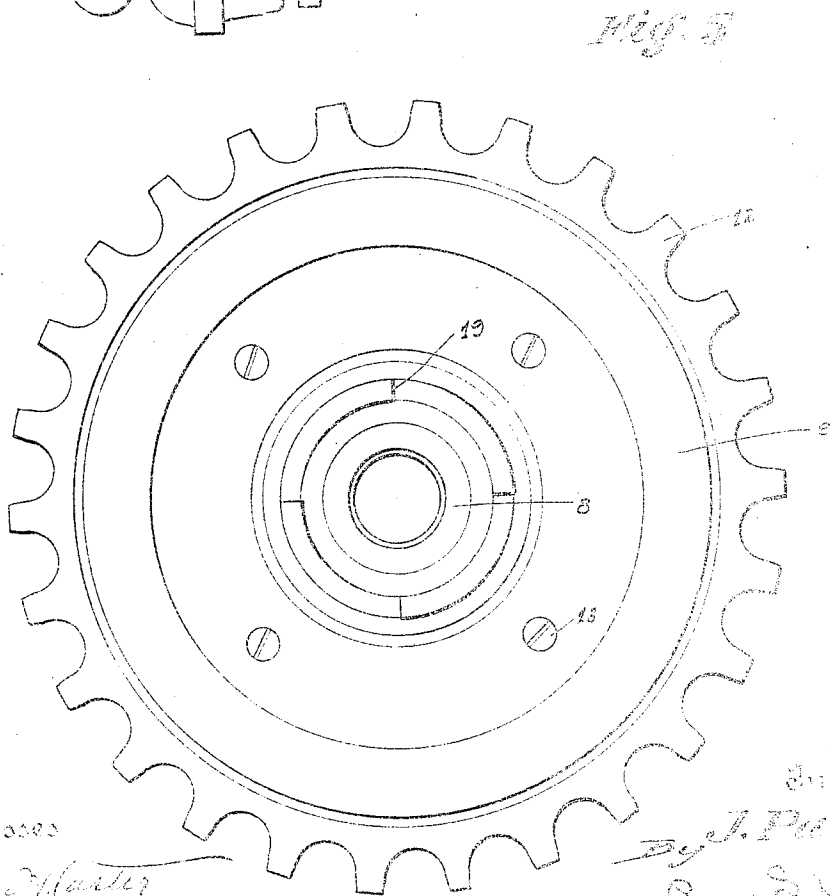
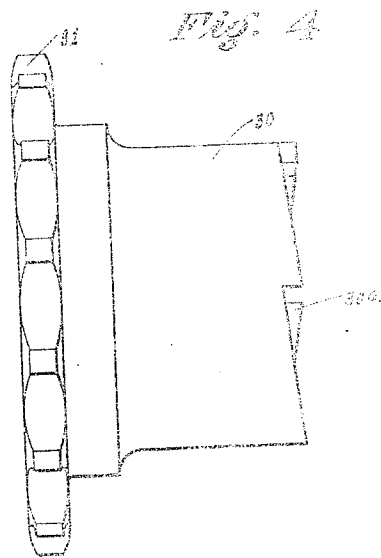
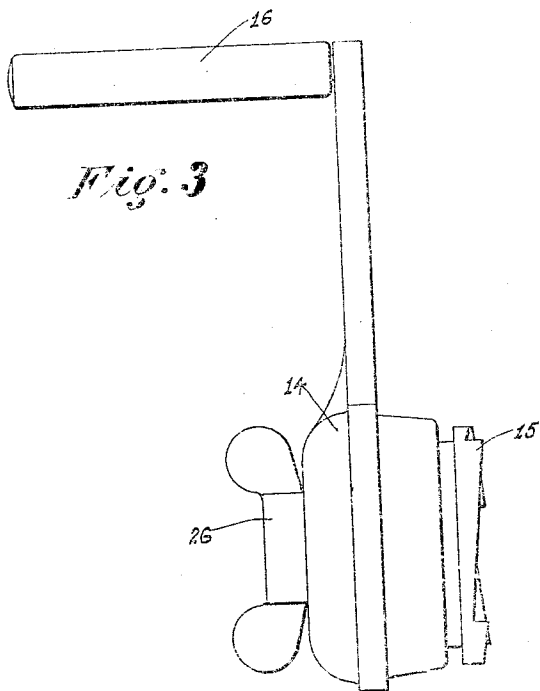
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4 SHEETS-SHEET 3.

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4 SHEETS—SHEET 4.

Fig. 6

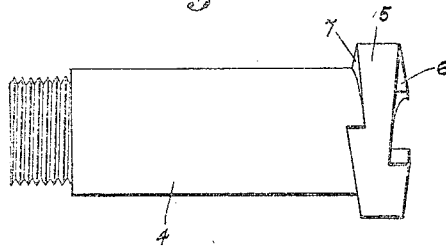


Fig. 7

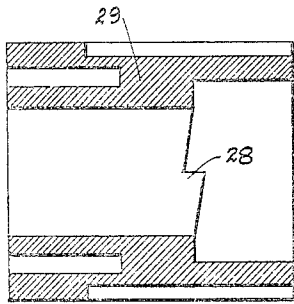


Fig. 8

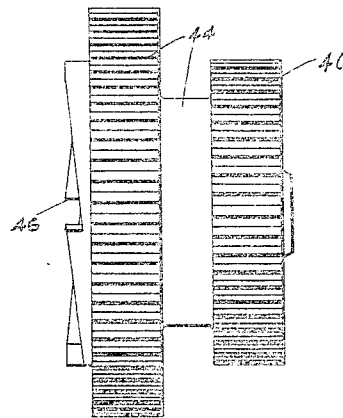


Fig. 9

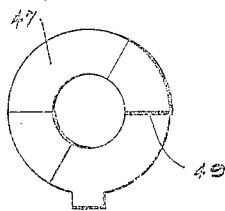
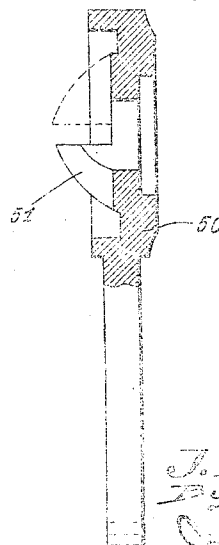


Fig. 10



Witnesses

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UNITED STATES PATENT OFFICE.

JACK PARCO, OF JAMESTOWN, CALIFORNIA.

CHANGE-GEARING FOR MOTOR-CYCLES.

1,056,209.

Specification of Letters Patent.

Patented Mar. 18, 1913.

Application filed April 23, 1912. Serial No. 692,571.

To all whom it may concern:

Be it known that I, JACK PARCO, a citizen of the United States, residing at Jamestown, in the county of Tuolumne, State of California, have invented certain new and useful Improvements in Change-Gearing for Motor-Cycles; and I do declare the following to be a full, clear, and exact description of the same, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the characters of reference marked thereon, which form a part of this application.

This invention relates to improvements in gearing and particularly to gearing for motor cycles, the object of the invention being to produce a gearing in which the engine of the motor cycle can be started independently of any connection with the driving wheel and thereafter can be thrown into connection with such driving wheel in order to give a slow speed and a low gearing for the purpose of starting the motor cycles or for doing heavy work such as traveling over hills or through sand or similar places, which low gearing may be shifted to permit of a high speed or drive from the engine to the drive wheel of the motor cycle.

A further object of the invention is to produce a simple and inexpensive device and yet one which will be exceedingly effective for the purposes for which it is designed.

These objects, I accomplish by means of such structure and relative arrangement of parts as will fully appear by a perusal of the following specification and claims.

In the drawings similar characters of reference indicate corresponding parts in the several views.

Figure 1 is a side elevation of my complete gearing. Fig. 2 is a sectional view of the same. Fig. 3 is a side elevation of a starting crank. Fig. 4 is a side elevation of a gear and clutch member. Fig. 5 is an end view of a gear and clutch mechanism. Fig. 6 is a side view of a drive pin and clutch mechanism. Fig. 7 is a sectional view of a sleeve and clutch mechanism. Fig. 8 is a side view of a gear and clutch mechanism. Fig. 9 is an end view of a clutch. Fig. 10 is a sectional view of a shaft lever and clutch.

Referring now more particularly to the

characters of reference on the drawing, the numeral 1 designates a gear casing which would be suitably mounted on the motor cycle at any desired point of the frame. Disposed through said gear casing 1 is the main supporting shaft 2 having an enlarged shoulder 3 at one end.

Mounted on the shaft 2 and projecting into the casing 1 is a sleeve 4 having a shoulder 5 at its inner end provided with a clutch 6 on one side and a clutch 7 on the other side. On the other end of said sleeve 4 is a screw mounted shoulder 8 formed on which is a gear wheel comprising two side plates 9 and 9^a having V-shaped recesses 10 adapted to receive lugs 11 on a sprocket wheel 12, such sprocket wheel 12 being held between said side plates 9 by means of bolts or other securing means 13. The side plate 9 is formed as a part of the shoulder 8 while the plate 9^a is an independent member.

Disposed over the outer end of the shaft 2 is a clutch member 14 having clutch members 15 on its inner end such clutch member being provided with an operating handle 16 and an inner recess 17; such member 15 is slidable over pins 18 mounted in the member 14 and is held in position with a clutch 19 upon the gear wheel supporting member 8 by means of a spring 20 interposed between the bottom of the recess 17 and said clutch member 15. The sprocket wheel 12 is adapted to be connected by a suitable chain with the engine of the motor cycle.

A projecting arm 21 is bolted to the casing 1 and carries a collar 22 on its lower end in which collar is screwed another collar 23, there being ball-bearings 24 interposed between said collar 23 and one of the plates 9. To keep this ball-bearing 24 always in close contact against the plate 9 and also to keep the parts all closely connected regardless of wear as will appear, the collar 23 may be screwed up by means of any ordinary tool. Interposed between the shoulder 3 and the member 8 are ball-bearings 25 and the shoulder 3 may be kept close against said ball-bearings by means of a wing nut 26 having a pin 27 projecting through the member 14 and adapted to screw into an enlarged end 3^a on the shaft 2, hence by turning said wing nut 26 this will move the collar 23 against the balls 25 to take up any wear which may occur.

Mounted over the sleeve 4 and having a clutch member 28 normally engaging the

clutch member 7 is a sleeve 29 and provided with a sprocket wheel 31 on its outer end. Interposed between the sleeve 29 and a plate 32 is a spring 33 which normally holds the clutch 28 in connection with the clutch 27. There are ball-bearings 34 interposed between the plate 32 and the member 8.

The numeral 35 designates a ring there being ball bearings 36 interposed between such ring 35 and the member 9^a and ball-bearings 37 interposed between the member 35 and the sleeve 30 all of which ball-bearings are held in close contact by means of screwing up the members 8 and 23 as will readily appear by a perusal of the drawings. Turnably mounted on the shaft 2 is a sleeve 38 having a clutch member 39 on its inner end adapted to engage the clutch member 6 as will appear. On the outer end of said sleeve 38 is a pinion 40 adapted to intermesh with the smaller sized pinion 41 mounted on a shaft 42 journaled in the casing 1 in a manner as will hereinafter appear. Screwed to said shaft 42 is a pinion 43 of smaller dimensions than the pinion 41 which pinion 43 intermeshes with a larger pinion 44 turnably disposed over the sleeve 38 and interposed between the gear 40 and the sleeve 29, there being roller bearings 45 interposed between said gear 44 and said sleeve 29. On the inner end of the gear 44 is a clutch member 46 adapted to engage a clutch member 30^a on the end of the sleeve 30 in a manner as will appear. Slidable over the end of the shaft 2 is a collar 47 there being roller bearings 48 interposed between said collar and the sleeve 39. The end of said collar is provided with two inclined recesses 49 while the numeral 50 designates the lever turnably mounted on the end of the shaft 2 and having curved cams 51 capable of moving over the inclined sides of the recesses 49 to move said collar 47 inwardly. In practice, operating the handle 16 cranks the engine and starts the same by means of the clutch mechanism as described, and this operation turns the gear 12 and its connecting sleeve 4 and when the mechanism is connected this drives the sleeve 29 by means of the clutch members 7 and 28 and this drives the sleeve 30 by means of the slidable key interposed between such sleeve 29 and such sleeve 30. With these connections just described there is a direct drive from the engine to the sprocket 31 which is connected with the drive wheel of the motor cycle. To disconnect this direct drive the lever 50 is operated causing the cam 51 to move over the inclined surface of the recesses 49 which moves the collar 47 against the sleeve 38 which causes the gear 40 to move against the gear 44 which moves the sleeve 29 backward disengaging the clutch 28 from the clutch 7 and allowing the sleeve 4 to run freely without driving the

gear 31. In this position the cam 51 would be seated against a shoulder 52 set into the end of the collar 47.

In order to throw the driving mechanism of the engine into driving connection with the motor cycle with a low gear the lever 50 would be operated to bring the cam 51 out against the end of the collar 47 which would drive the members 38, 40 and 44 to disengage the clutch 28 from the clutch 7 as described and to then further drive the members 38 and 44 until the clutch 39 engaged the clutch 6 and the clutch 46 engaged the clutch 30^a. When this was done the drive of the sprocket wheel 12 would then turn the sleeve 4, the sleeve 38, the gear 40, the gear 41, the shaft 2, the gear 43, the gear 44 and the sleeve 30 and hence the sprocket 31 would throw the motor cycle into a low geared drive as is necessary for hill work or a slow start or driving through rough and sandy roads. The shaft 42 is set against the side of the casing at one end with ball-bearings 53 and at the other end with ball-bearings 54, the wear on the same being adapted to be taken up by a screw collar 55 having a square central recess 56 there being a screw cap 57 to keep the dust and dirt out of the casing 1.

From the foregoing description it will readily appear that I have produced such a device for motor cycles as will permit the engine to be cranked independently of any driving connection with the motor cycle, the gear mechanism then being capable of being thrown into low gear or direct drive as may be required.

From the foregoing description it will be readily seen that I have produced such a device as substantially fulfils the object of the invention as set forth herein.

While this specification sets forth in detail the present and preferred construction of the device, still in practice such deviations from such detail may be resorted to as do not form a departure from the spirit of the invention.

Having thus described my invention what I claim as new and useful and desire to secure by Letters Patent is:—

1. A device of the character described comprising a gear casing, a shaft mounted in said gear casing, a gear mounted on the outer end of said shaft, means for turning said gear, a sleeve on said gear turnably mounted on said shaft and provided with a shoulder on its inner end provided with a clutch member on each side, a driven gear and means for operatively connecting said driven gear with the clutch members on said shoulder, the engagement with one of said clutch members being adapted to drive said last named gear at a greater speed than the engagement with the other of said clutch members, as described.

2. A device of the character described comprising a combination with a shaft of a gear having a sleeve turnable on said shaft and having a clutch member on its end, means 5 for turning said gear, another sleeve turnable on said first named sleeve and having a clutch member adapted to engage said first named clutch member, another sleeve slidably keyed to said second named sleeve, a 10 gear on said last named sleeve and means for disconnecting said second named sleeve from engagement with said clutch member, as described.

3. A device of the character described 15 comprising a shaft, a sleeve turnable on said shaft and provided with a clutch member on its inner end, means for turning said sleeve, another sleeve slidable over said shaft and adapted to engage said 20 first named clutch member, a gear on said second named sleeve, a driven sleeve, and means operatively connected with said gear on the said driven sleeve whereby such driven sleeve will be rotated when said 25 clutch members are moved into engagement with each other, as described.

4. A device of the character described comprising a shaft, a sleeve mounted on said shaft, such sleeve being provided with 30 a shoulder on one end, such shoulder having a clutch member on its inner face, a gear mounted at the other end of said sleeve, another sleeve mounted on said first named sleeve and being provided with a clutch 35 member engaging said first named clutch member, a spring interposed between said gear and said second named sleeve, another sleeve slidably keyed to said second named sleeve, and a gear on said last named sleeve, 40 as described.

5. A device of the character described comprising a shaft, a sleeve mounted on said shaft and provided with a clutch member on its outer end, a gear on said sleeve, 45 another sleeve slidable over said shaft, and having a clutch member adapted to engage

said first named clutch member, a third sleeve slidable over said shaft and adapted to impinge against said second named sleeve, a cam adapted to operate against said third 50 named sleeve to move the clutch member on said second named sleeve into engagement with the clutch member on said first named sleeve, a driven gear, and means operatively 55 connecting said second named sleeve with said driven gear, as described.

6. A device of the character described comprising a shaft, a sleeve mounted on said shaft and having a shoulder on one end, such 60 shoulder being provided with a clutch member on each side, a gear on the other end of said sleeve, another sleeve mounted on said first named sleeve, and having a clutch member adapted to engage the clutch member on 65 the inner end of said shoulder, another sleeve slidably keyed to said second named sleeve, a gear on one end of said third named sleeve, and a clutch member on the other end, another sleeve mounted on said shaft and hav- 70 ing a clutch member adapted to engage the clutch member on the outer end of said shoulder, a gear turnably mounted on said fourth named sleeve, a clutch member on 75 said gear adapted to engage the clutch member on said third named sleeve, said last named gear normally abutting against the end of said second named sleeve, a chain of gears interposed between said fourth named sleeve and said last named gear, and means 80 for engaging said fourth named sleeve with the clutch member on the outer end of said shoulder and for engaging the clutch member on said last named gear with the clutch member on said third named sleeve, as described. 85

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

JACK PARCO.

Witnesses:

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PERCY S. WEBSTER.