

No. 752,867.

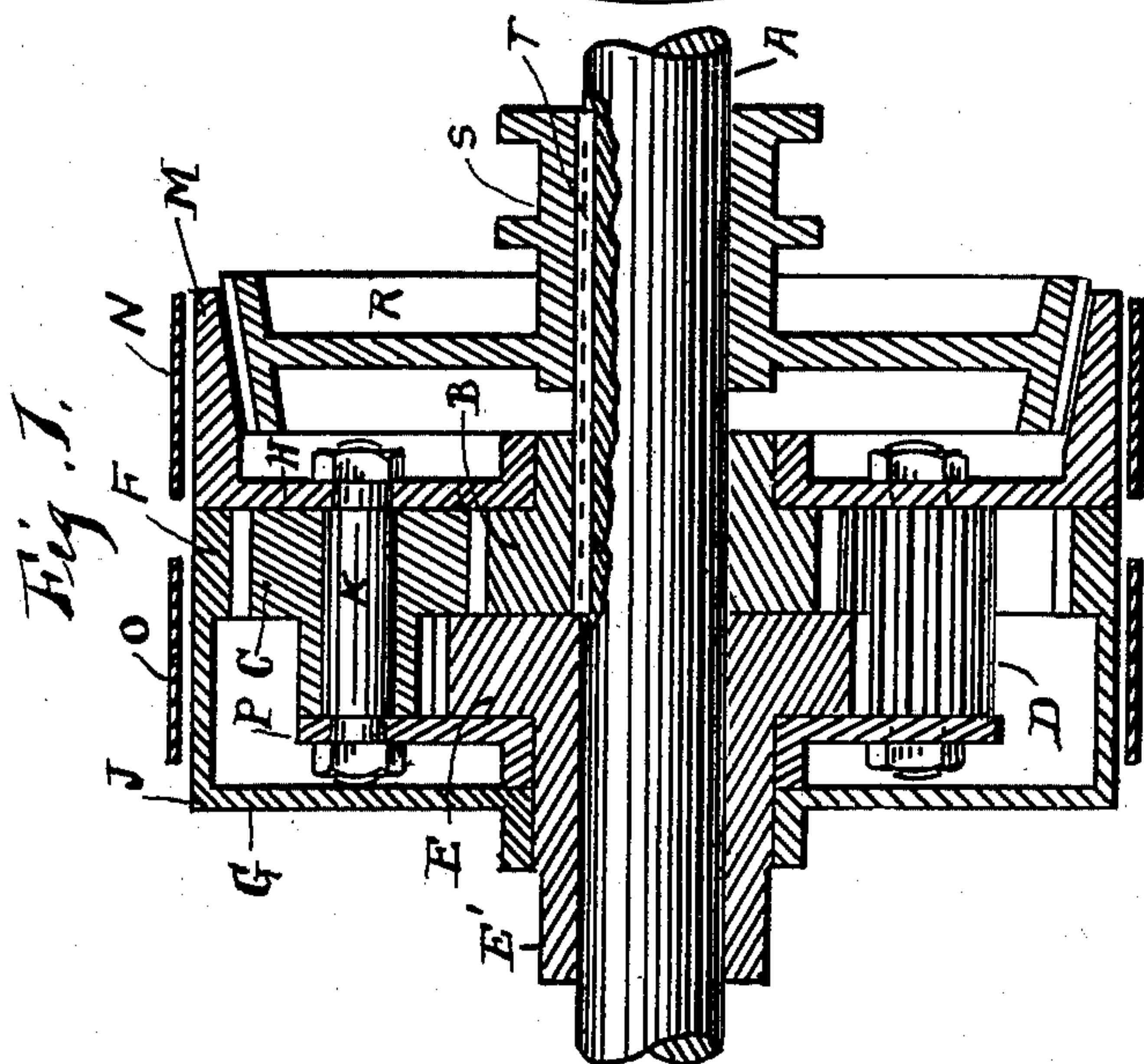
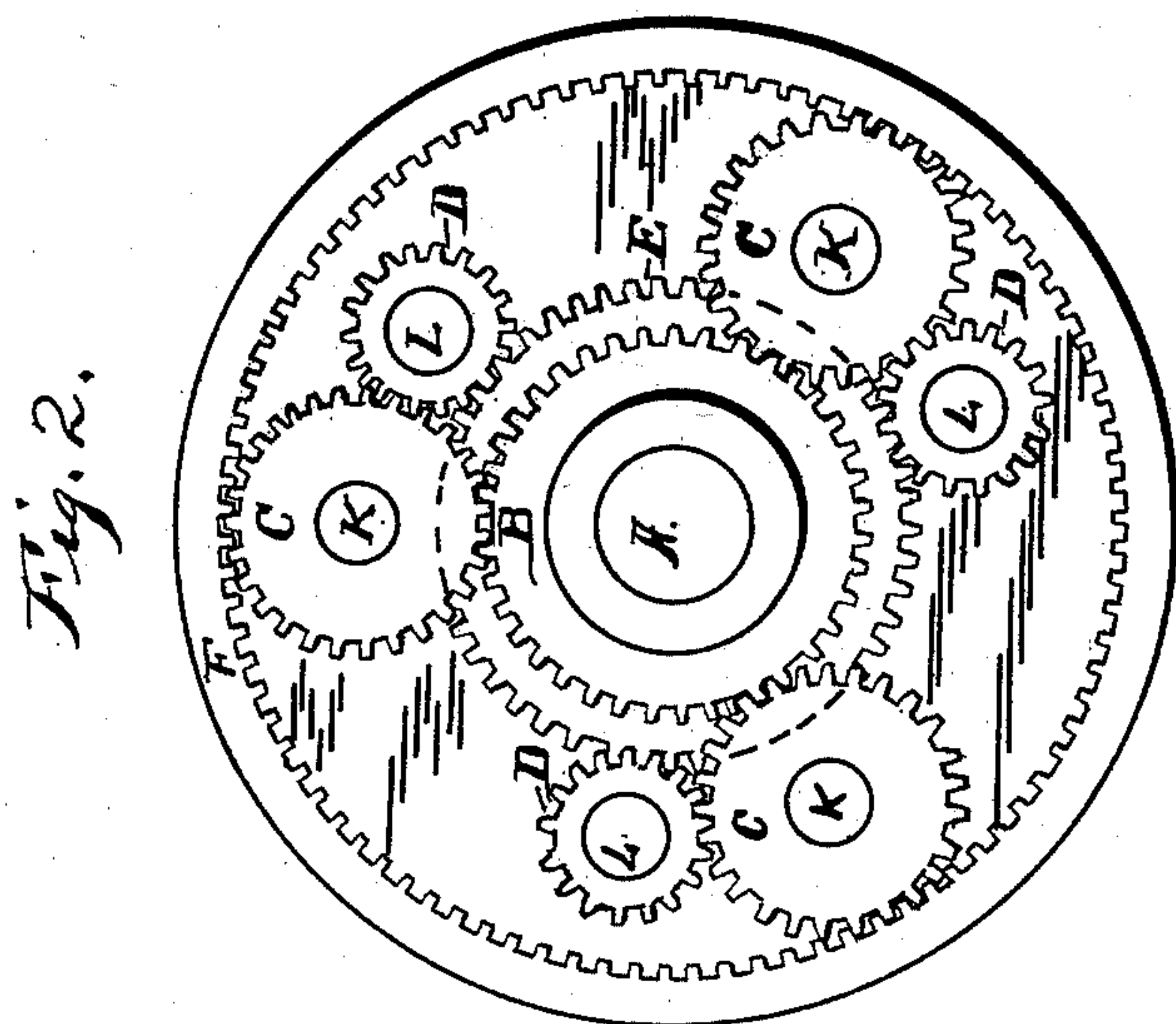
PATENTED FEB. 23, 1904.

C. SINTZ.
POWER TRANSMITTING GEAR.

APPLICATION FILED FEB. 8, 1902.

NO MODEL.

2 SHEETS—SHEET 1.



WITNESSES

Harry J. Perkins.

Jules Parigot.

INVENTOR,

Clark Sintz

BY *his* ATTORNEY,

Edward Jaggart

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2 SHEETS—SHEET 2.

Fig. 4.

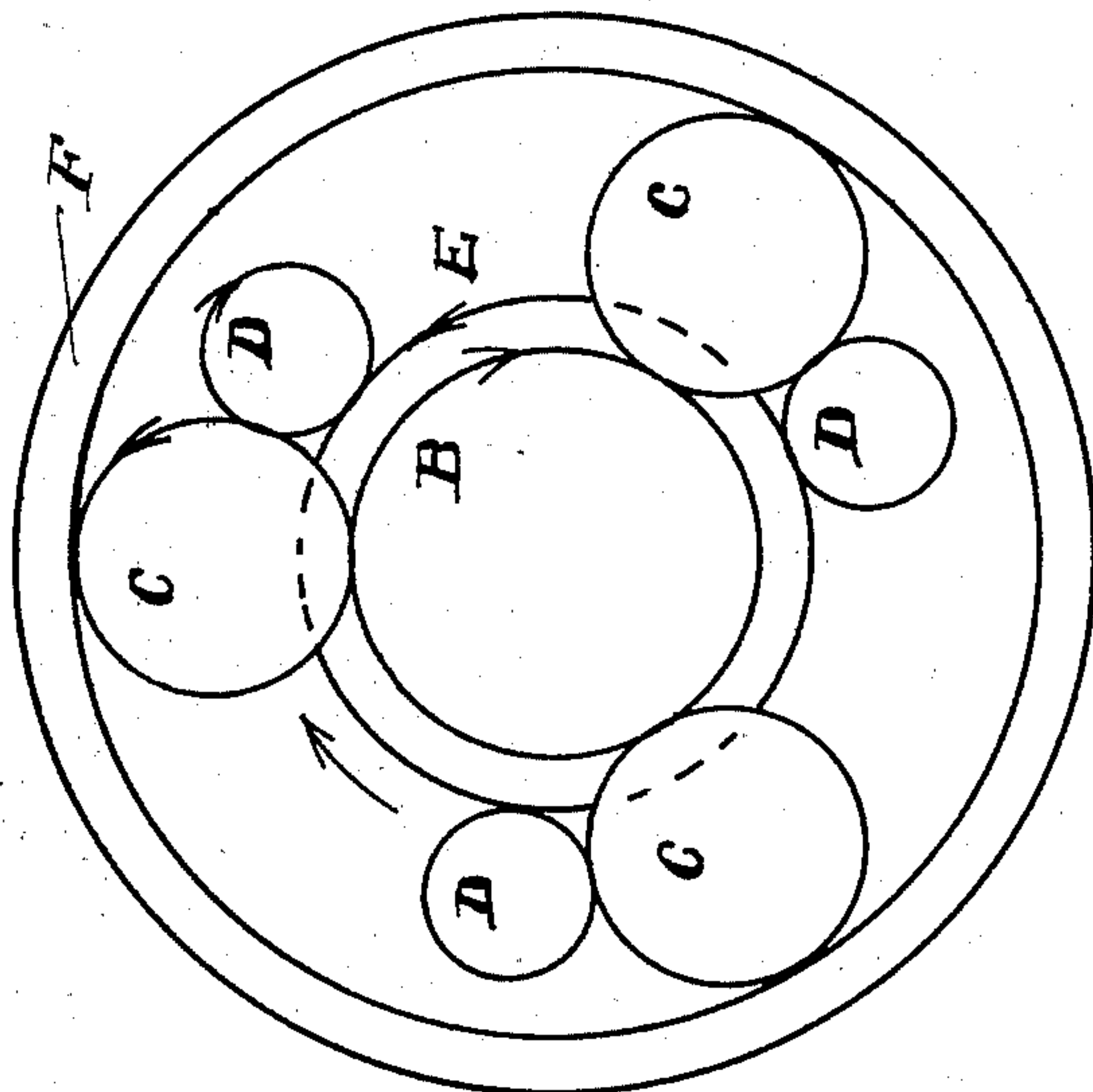
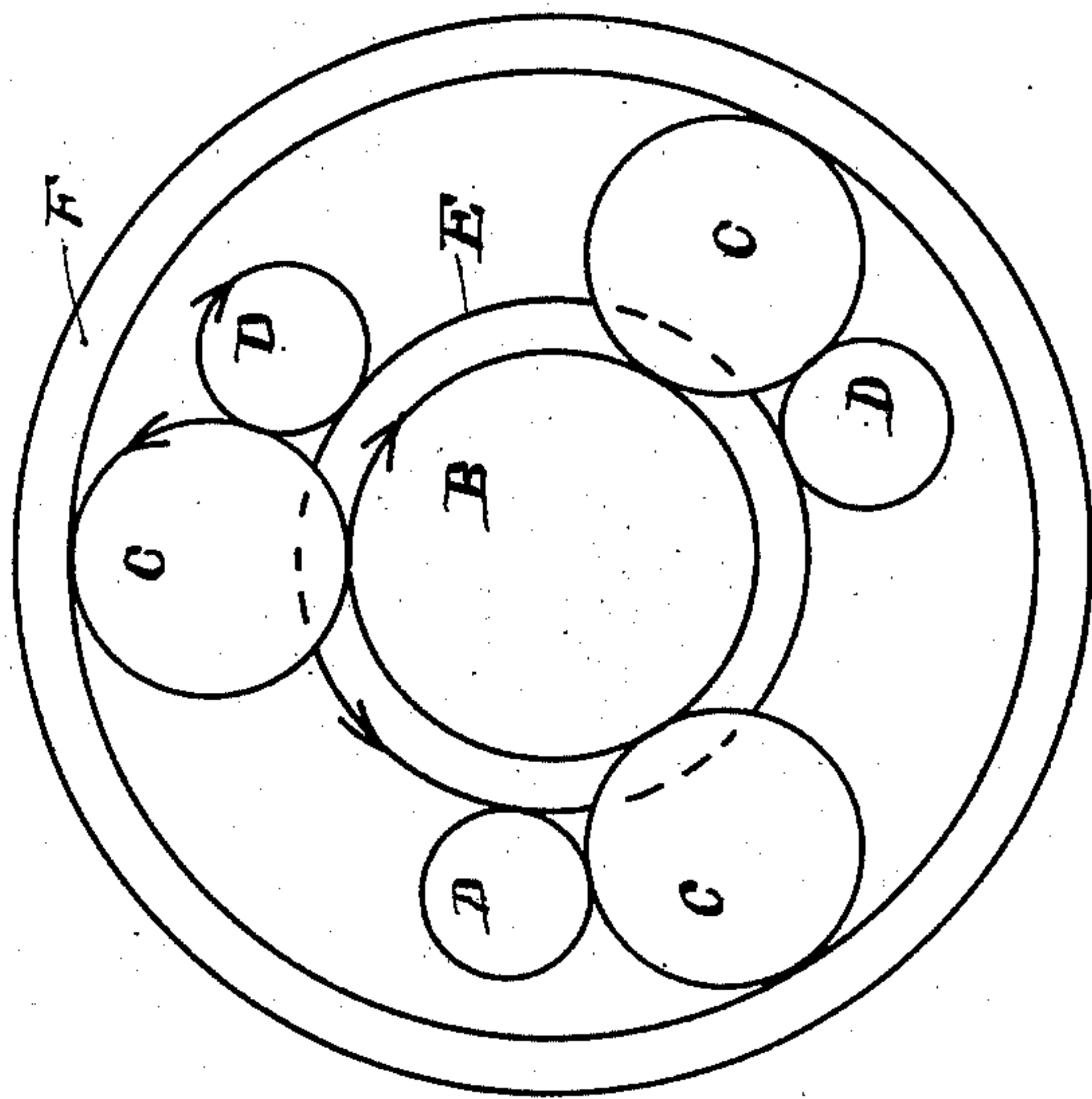


Fig. 3.



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UNITED STATES PATENT OFFICE.

CLARK SINTZ, OF GRAND RAPIDS, MICHIGAN, ASSIGNOR TO FREDERIC J. BALL, OF BROOKLYN, NEW YORK.

POWER-TRANSMITTING GEAR.

SPECIFICATION forming part of Letters Patent No. 752,867, dated February 23, 1904.

Application filed February 8, 1902. Serial No. 93,234. (No model.)

To all whom it may concern:

Be it known that I, CLARK SINTZ, a citizen of the United States, residing at Grand Rapids, in the county of Kent and State of Michigan, have invented new and useful Improvements in Power-Transmitting Gear, of which the following is a specification.

This invention relates to a new and useful power-transmitting gear peculiarly adapted for use in automobiles and other like purposes.

The invention consists in the combination of parts hereinafter fully described and claimed; and the objects of the invention are to furnish a cheap and efficient means for transmitting power from a shaft to other moving mechanisms, as hereinafter more fully described. It is also used for producing variable speeds, also for reversing the driven parts without reversing the driver, also other objects hereinafter pointed out.

Figure 1 shows a longitudinal sectional view on a line with the shaft which supports the gear-transmitting mechanism and illustrating the arrangement and construction of such gear. Fig. 2 shows an end view with the parts R and H removed in order to illustrate more fully the position of the pinions, shaft, and gearing. Fig. 3 is a diagrammatical view showing the movement of the driven parts when running in a direction reverse from the movement of the shaft. Fig. 4 shows also a diagrammatical view when the movement of the driven parts is in the same direction as the movement of the shaft, but at a slower speed.

Similar letters refer to similar parts throughout the several views.

A shows the rotary driving-shaft, which may be either the main shaft or a counter-shaft.

B shows a cog-gear keyed to the shaft A and adapted to engage with the pinions C C C. The pinions C C C mesh into the cog-wheel B, the pinions D D D, and the internal gear-wheel F. The pinions D D D are long pinions and engage with the pinions C C C and also with the cog-wheel E. The cog-wheel E is provided with cogs meshing with the pinions D D D, and said cog-wheel E runs freely upon the shaft A, and it is provided with an extension or hub E'. Upon this hub E' there

may be geared or keyed a sprocket-wheel or any other suitable device for conveying power.

F is an internal gear-wheel meshing with the pinions C C C, and the internal gear-wheel F forms a part of the casing or closed drum G. The cog-gear B, the pinions C D, gear-wheel F, and cog-wheel E form a chain of gearing, which is located within the closed drum G. The gear-wheel F and the casing G may be made in one piece or may be made in two pieces secured together in any suitable manner. G is the casing or closed drum mounted upon the hub E'. It has an outer face J, which engages, as hereinafter described, the brake O.

H is a flanged collar or ring which carries one end of the spindles K K K and also one end of the spindles L L L. On the outer or flat edge of H there is a surface (shown by M) with which engages the brake, (shown by N.)

J is the face on the casing for the brake O.

K K K are spindles carrying the pinions C C C.

L L L are spindles carrying the pinions D D D.

P is a flanged collar, which carries one end of the spindles K K K and the spindles L L L.

R is a clutch, which may be constructed in any suitable manner, but which in the example of my invention shown in the drawings is a cone friction-clutch. The clutch R engages with the inner face of the open drum H and is slidingly keyed to the shaft A.

S is a grooved part of the hub of the friction-clutch R, the object of such groove being to furnish means, by means of a lever or otherwise, for moving the clutch into an outer position.

T is a key or spline connecting the cog-wheel B and the pinion R to the shaft, compelling them to revolve with the shaft.

The power is transferred from E' to the parts to be driven by any suitable mechanism.

When the clutch R and the brakes N and O are not engaged, the shaft A can revolve, and the gear E and hub E' can remain stationary. The reason the gear E can remain stationary is because the internal gear F is free to turn, and this allows the pinions C C C and the

pinions D D D and gear B to revolve together with the shaft, while the gear E need not revolve. When the clutch R is engaged with the drum H, the whole revolving parts
5 are locked together and all revolve with the driving-shaft.

The locking of the brake O on the face J causes the pinions C C C to revolve in the direction of the shaft A, but at a reduced speed.
10 This reduces the speed of the gear E and the hub E'. The locking of said internal gear-wheel F, so that it cannot revolve, causes the pinions C C C to travel around the shaft A, and the gear F being larger than the gear B
15 it is revolved in the same direction, but more slowly. This is the motion illustrated in Fig. 4.

The locking of the brake N on the face M prevents the open drum H and collar P from
20 revolving, thereby causing the pinions C C C and the pinions D D D to revolve on stationary spindles. The movement is illustrated in Fig. 3, in which B revolves with the shaft. E revolves in an opposite direction from the
25 shaft and at reduced speed.

In the above description and in the drawings I have shown the gear-wheels B and E of different diameters, and I have also shown the pinions C and D of different diameters.

I do not wish, however, to limit myself to 30 wheels of different diameters. I have also shown a plurality of pinions C and a plurality of pinions D; but the device will operate with a single pinion C and a single pinion D, although I prefer to use three of each kind of 35 pinion.

Having thus described my invention, what I claim to have invented, and desire to secure by Letters Patent, is—

In combination, a rotary driving-shaft, a 40 power-transmitting sleeve, a closed drum, an open drum, a train of gearing composed of a combination of externally and internally toothed gears intermeshing with each other located entirely within the closed drum for 45 connecting the shaft, drums and sleeve, brakes arranged to engage the peripheral walls of the said drums for arresting one or the other of the said drums and a clutch for engaging the inner face of the peripheral wall of the open 50 drum.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

CLARK SINTZ.

Witnesses:

EDWARD TAGGART,
A. C. DENISON.