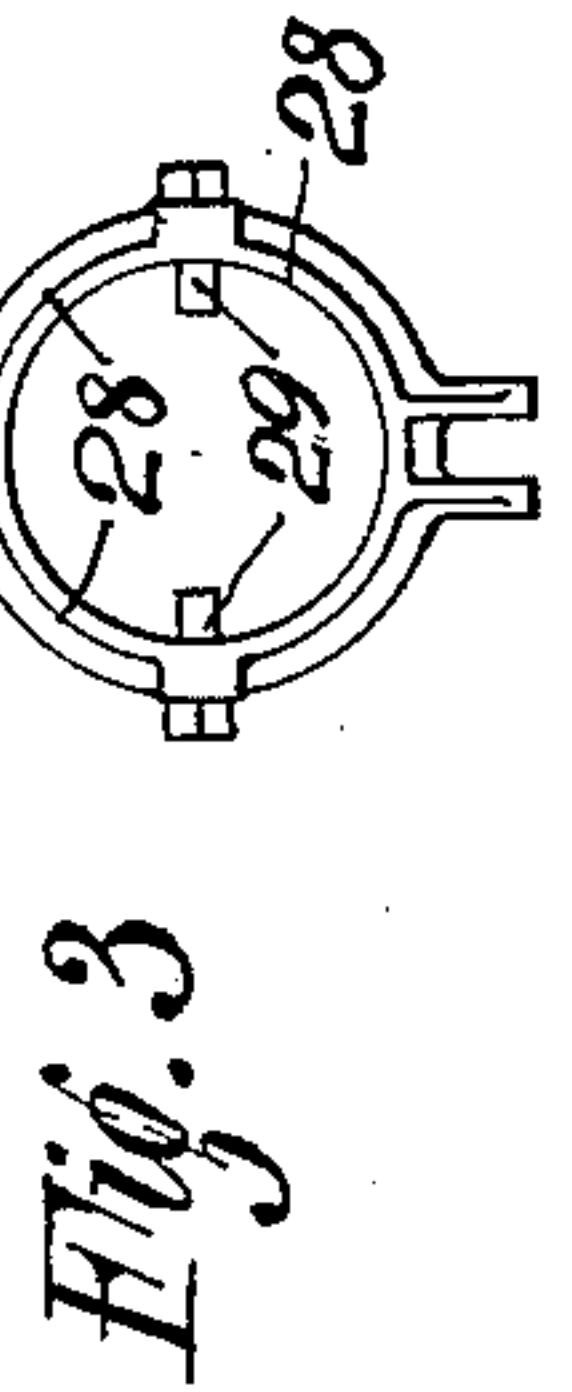
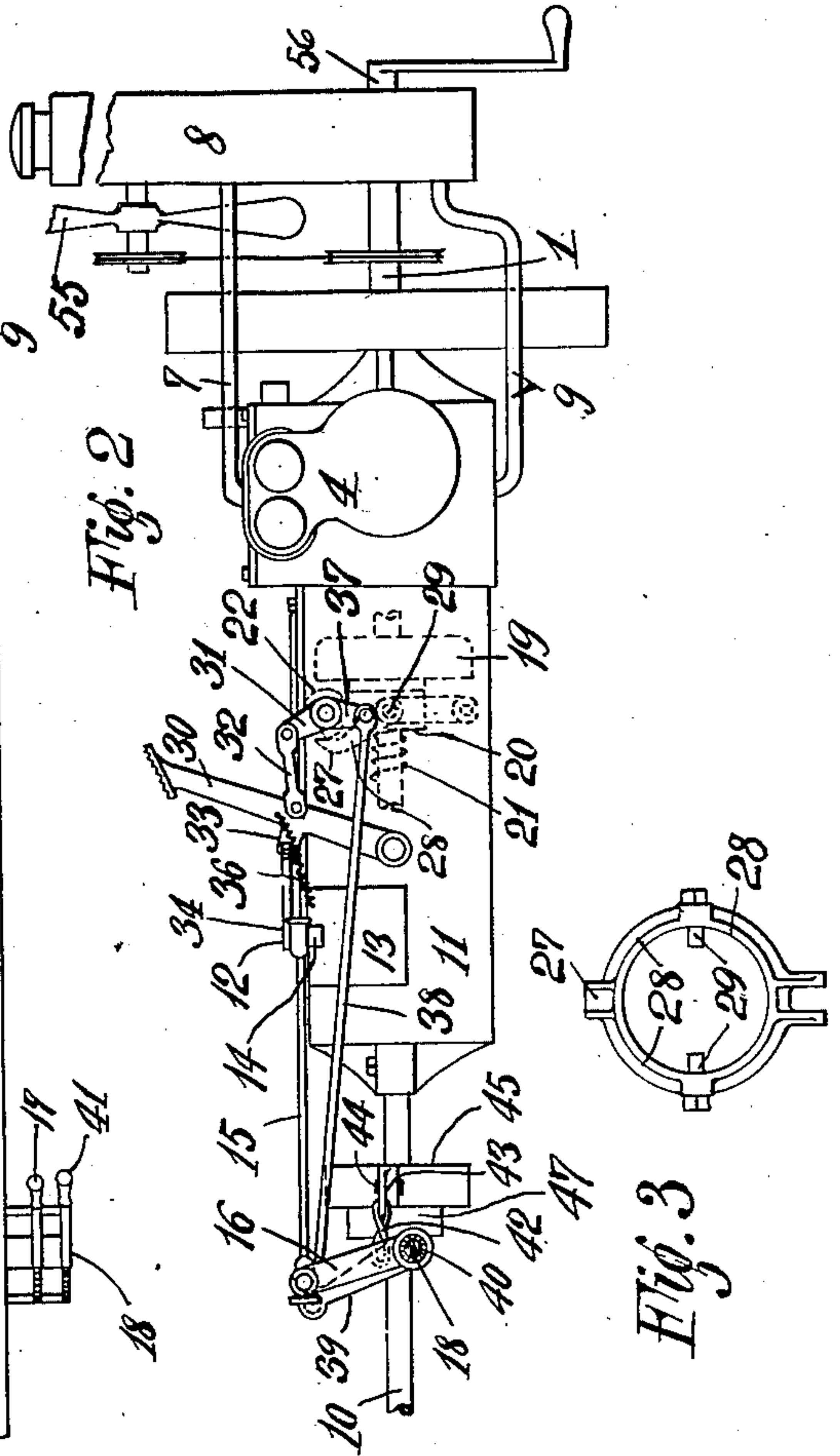
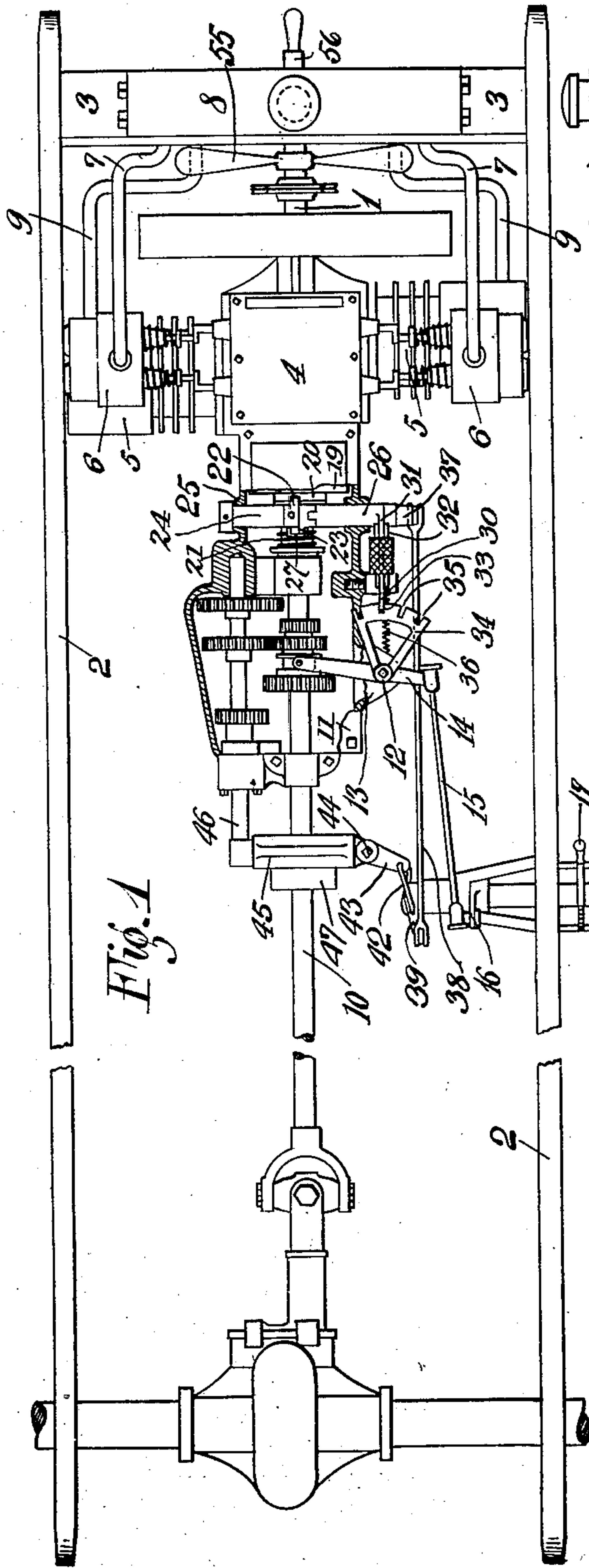


No. 864,015.

PATENTED AUG. 20, 1907.

J. D. MAXWELL.
TRANSMISSION GEARING.
APPLICATION FILED DEC. 31, 1904.

2 SHEETS—SHEET 1.



Witnesses
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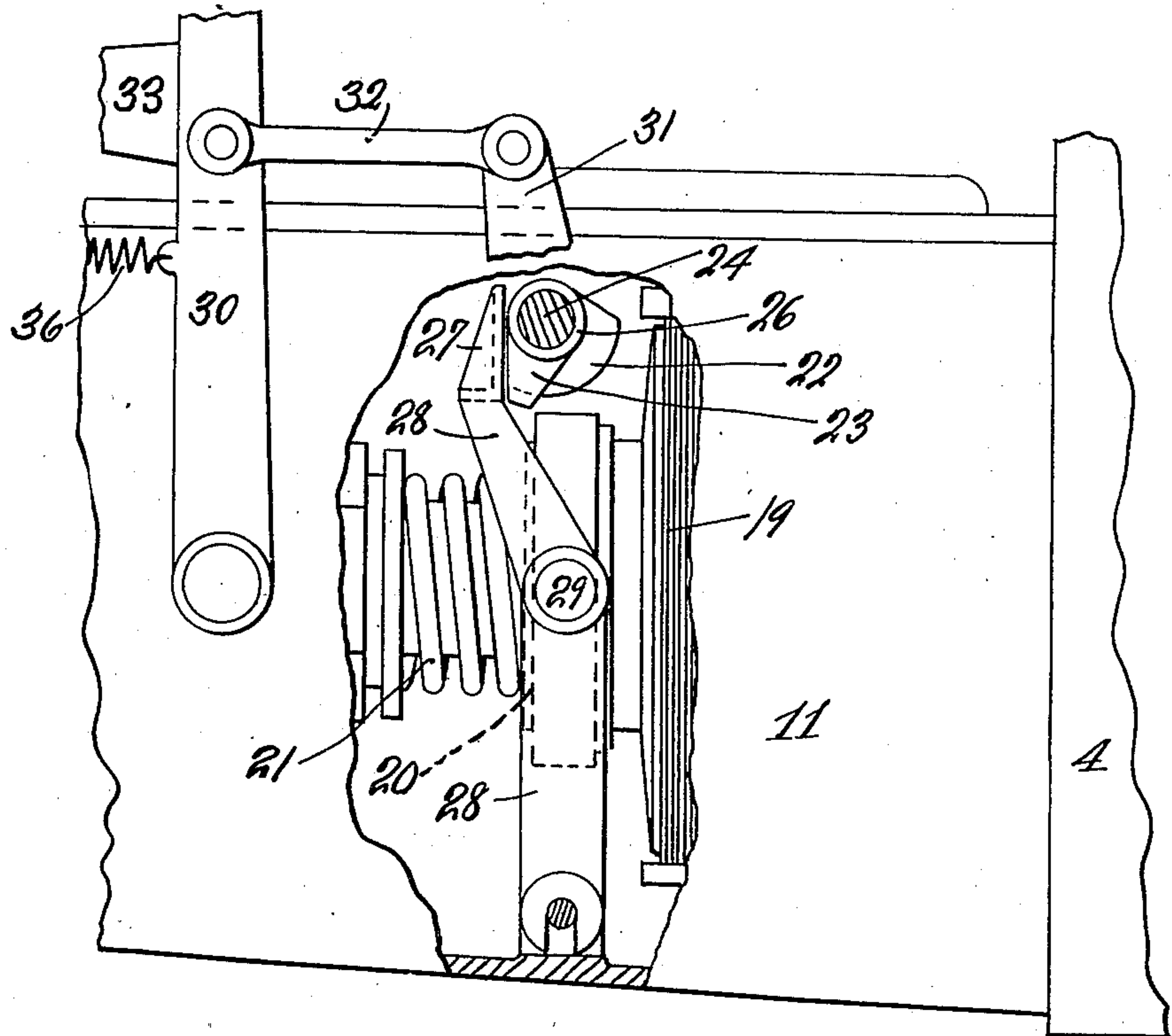
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2 SHEETS—SHEET 2.

Fig. 4



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UNITED STATES PATENT OFFICE.

JONATHAN D. MAXWELL, OF TARRYTOWN, NEW YORK, ASSIGNOR TO MAXWELL BRISCOE MOTOR COMPANY, OF NORTH TARRYTOWN, NEW YORK, A CORPORATION OF NEW YORK.

TRANSMISSION-GEARING.

No. 864,015.

Specification of Letters Patent.

Patented Aug. 20, 1907.

Application filed December 31, 1904. Serial No. 239,160.

To all whom it may concern:

Be it known that I, JONATHAN D. MAXWELL, of Tarrytown, New York, have invented certain Improvements in Transmission-Gearing, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings designating like parts.

This invention relates to automobiles and has for its object certain improvements by which the number of parts is reduced, greater coöperation effected and the mode of operation simplified, a notable feature of my invention being found in the provision for direct interlocking of the clutch controlling mechanism with the mechanism for operation of the gear changing devices.

The various features of my invention will be illustrated and described fully in the accompanying drawings and specification and pointed out in the claims.

In the drawings, Figure 1 illustrates in plan view the chassis of an automobile with the operating mechanism in view, parts being broken away for the sake of clearness; Fig. 2 illustrates in side elevation the engine and its operating levers, the supporting frame being omitted for the sake of clearness; Fig. 3 is a detail of the clutch operating mechanism to which reference will be made hereinafter; Fig. 4 is a separate view on a larger scale of the clutch, yoke and cams, etc.

In the embodiment of my invention selected for description and illustration as a convenient form to enable ready and complete understanding of my improvements, the part designated by the reference numeral 1 is the power shaft of an automobile supported in a suitable frame comprising side members 2 and end members 3 of any convenient and suitable construction, the shaft being actuated by an engine 4, which in the instance illustrated takes the form of a well-known type of explosion engine having cylinders 5 provided with jackets 6 from which lead siphon ducts 7 conveying the heated water to the radiator 8, the construction of which forms the subject matter of my divisional application for Letters Patent Serial No. 280,451, and from which the cooled water passes through ducts 9 back to the lower portions of the jackets.

The reference numeral 10 designates the driven member of the power shaft, between which and the shaft portion 1 are interposed power transmitting and speed changing devices of any suitable and convenient form, contained in the casing 11, and which need not be described herein but which are operated through the medium of a vertical rock shaft 12 mounted in bearings 13 of the gear case and controlled through a system of levers 14 15 and 16 manually operated through the hand lever 17 and rock shaft 18.

The reference numeral 19 designates a clutch which may be of any suitable construction to enable the power shaft to be dissociated at will from the driven portions of the transmitting device including the speed changing mechanism, and in the instance illustrated this clutch takes the form of a plate clutch of the type forming the subject matter of my application for Letters Patent Ser. No. 239,161 filed on the 31st day of December, 1904, the construction whereof it will not be necessary to detail herein, it being sufficient for the understanding of my present invention to say that the member 20 of the clutch is held in normal engagement with the member 19 by means of a spring 21, during which engagement the power transmitting gears are ready for actuation by the shaft member 1.

To withdraw the member 20 from operative engagement with the member 19 a plurality of cams 22, 23, mounted respectively upon a shaft 24 pivoted in bearings 25 in the gear case and a hollow shaft 26 surrounding the shaft 24 are arranged, upon rotation of the members carrying them to be brought against a plate 27 forked to present arms 28 with pins 29 engaging the periphery of the clutch member 20, these parts being illustrated in Figs. 1 and 2 in a position in which the clutch members 19 and 20 are in engagement and the gears in operative connection with the driving shaft 1.

In accordance with my invention the foot lever 30 by which the shaft 26 is operated through the medium of a crank arm 31 and link 32 or other suitable connections, has a projection or arm 33 which in the illustrated position of the parts projects within the boundary of a locking plate or member 34 fastened upon the vertical rock shaft 12 which controls the speed changing device, and presenting notches 35 corresponding to various speeds at which the gear may be set, the projection 33 being shown as lying within one of these notches and locking the plate so that no change of the gearing can be effected. When it is desired to effect a change of gears, the foot lever 30 must be thrust forward and the member 33 thereby withdrawn from the notch 35, the shaft 26 being rotated by the same movement and the clutch member 20 withdrawn from the member 19 through the action of the cam 23 upon the plate 27, the gearing being thereby released from operative connection with the power shaft 1. Thereupon the lever 17 may be operated to rock the shaft 12 through the medium of the connections 14, 15, 16 and 17 but until the plate 34 has been rotated until one of the notches 35 comes opposite the member 33, which can only be accomplished when the gears within the case are fully engaged at the desired speed position, the member 33 will be prevented from rearward movement by the plate portion intermediate the notches 35, and the shaft 26 can not be rotated to permit the clutch member 20 to engage the

clutch member 19. When however such position is reached and the lever 30 released by the foot a spring member 36 serves to throw the lever 30 back to normal inoperative position and the spring 21 throws the member 20 into normal engagement with the member 19.

I provide means to enable the disengagement of the clutch members 19 and 20 through the medium of the cam 22 and shaft 24, controlled by a system of levers 37, 38 and 39, a rock shaft 40 and a hand lever 41 so that at will, without disturbing the gear changing and interlocking devices the clutch members may be disassociated while coasting or for an emergency stop, or for a regular permanent stop. By a link 42 actuated by the lever 39, further movement of the lever, in the same direction, will operate a lever 43 and cam 44, to compress a brake-band 45 carried by a post 46 from the gear case, and acting upon a drum 47 upon the driven shaft 10.

The reference numeral 55 designates a fan to create a forced draft through the radiator, and the numeral 56 designates a crank shaft starter.

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

1. Power transmitting and controlling mechanism for automobiles and the like, comprising a gear-case having a plurality of chambers; an engine having a driving crank-shaft and connecting rods in one of said chambers, and a clutch device, speed-changing devices and a driven shaft in another of said chambers, substantially as described.

2. Power transmitting and controlling mechanism for automobiles and the like, comprising power-transmitting and speed changing devices, a clutch device, and means to render operations of said clutch device and speed changing devices mutually exclusive, said means comprising a controlling member to effect change of speed and having a locking plate, and a manually controlled clutch actuating member having a portion arranged to engage directly and be locked by said plate at times, substantially as described.

3. Power transmitting apparatus, including speed changing devices and a clutch device interposed between said speed changing devices and the source of power, a rotatable speed controlling member provided with a notched locking sector or plate, and a clutch controlling foot lever having an integral portion arranged to enter the path of said plate when said clutch is thrown into operation, such entrance being possible only when one of said notches is opposite said entering portion, and said notches corresponding to operative positions of said power transmitting apparatus at its respective speeds, substantially as described.

4. Power transmitting apparatus, comprising cooperating clutch and speed-changing devices, a rotating member provided with means to operate said speed-changing

devices and having a notched locking sector, a cam to operate said clutch, and a foot lever to control said cam, said foot lever having a portion to interlock with said notched sector, substantially in the manner and for the purpose set forth.

5. Transmission gearing for automobiles and the like, comprising a driving shaft, a driven shaft, a clutch device intermediate said shafts and a brake (on said driven shaft); in combination with a controlling lever connected with said clutch and brake, respectively, and operable to open said clutch and dissociate said shafts, thereby to permit said automobile to "coast", and operable further in the same direction to set said brake while said clutch is open, speed-changing devices, and means to hold said speed-changing devices in adjusted position during said coasting, substantially as described.

6. Transmission gearing for automobiles and the like, comprising a driving shaft, a driven shaft, clutch and speed changing devices cooperating to connect said shafts at times, a hand lever to effect change of speeds and an interlocking foot lever to insure dissociation of said shafts during said changes of speed, a brake and an independent hand lever to open said clutch and provided with means to operate said brake to enable control of said automobile regardless of the position of said speed changing devices and the operation of said driving shaft, substantially as described.

7. Transmission gearing for automobiles and the like, comprising a gear case, and speed changing gears, a clutch, and clutch controlling mechanism contained in said gear case, said mechanism comprising a clutch engaging member, and a plurality of independently operable cams to actuate said clutch-engaging member; connections between one of said cams and said speed changing gears to insure cooperation thereof, and means to operate the other cam independently, substantially as described.

8. Transmission gearing for automobiles and the like, comprising a gear case, a shaft, and speed-changing gears, a clutch, and clutch controlling mechanism comprising a collar connected with one of the clutch members, a yoke mounted pivotally upon the inner wall of said gear case, divided centrally and having pins to engage and operate said collar and having a plate to be engaged by a cam; and mechanism to actuate said yoke, consisting of a shaft mounted in bearings in the walls of said gear case, traversing the same adjacent said clutch, and having a cam to engage and actuate said yoke plate, and a hollow shaft surrounding said cam shaft and also provided with a cam to engage and actuate said plate independently, substantially as described.

Signed at 25 Broad st., New York city in the county of New York and State of New York this twenty-ninth day of December A. D. 1904.

JONATHAN D. MAXWELL.

Witnesses:

ALEXANDER C. PROUDFIT,
ROBT. G. JEFFERY.