No. 740,659. PATENTED OCT. 6, 1903.

A. M. JENKINS.

TRANSMISSION GEAR FOR AUTOMOBILES.

APPLICATION FILED MAR. 25, 1903.

NO MODEL.

Fig. 2

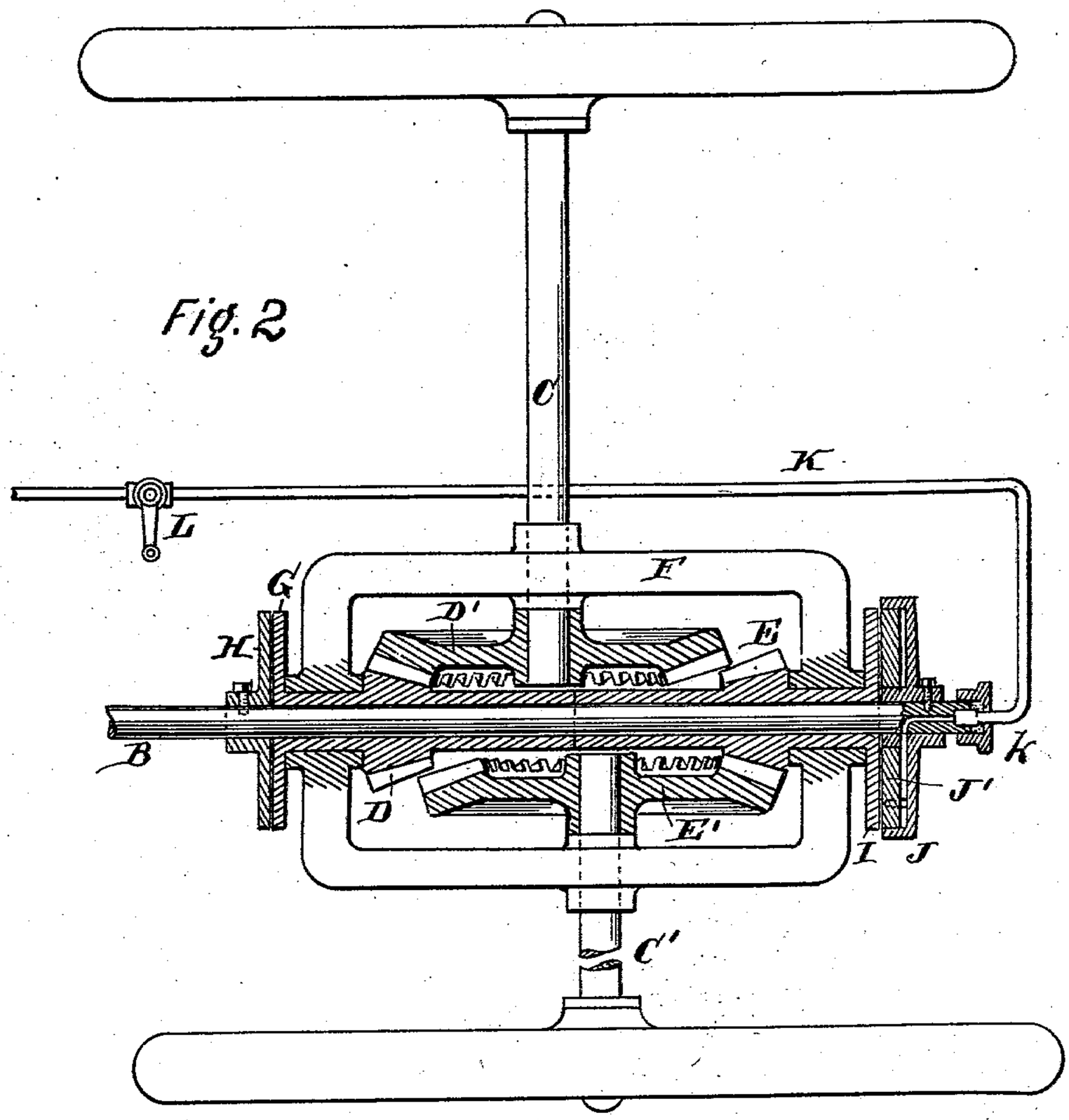


Fig. 1

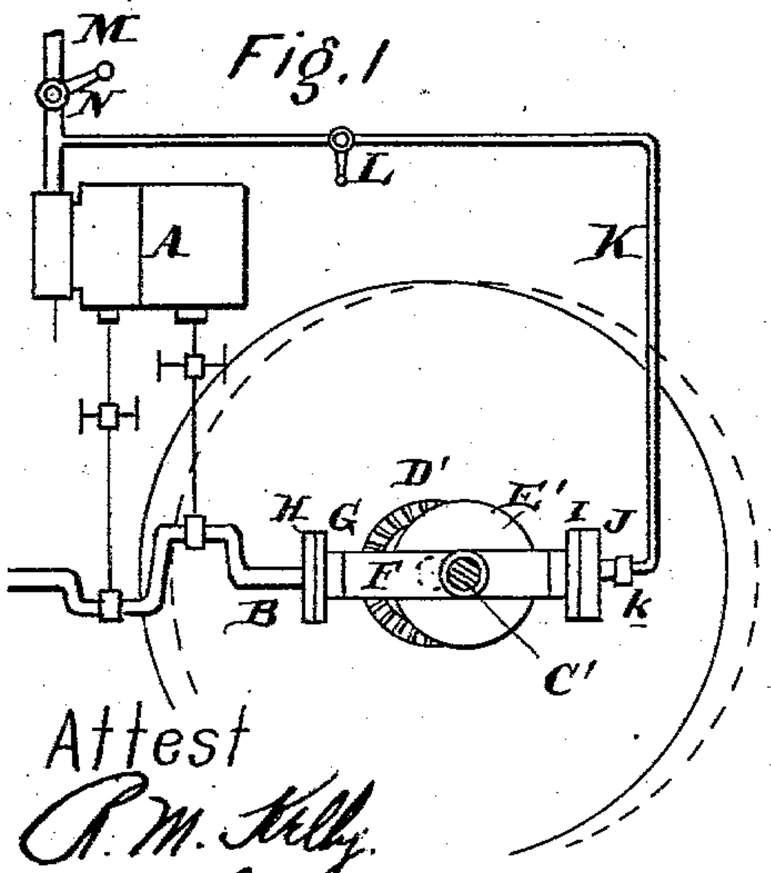
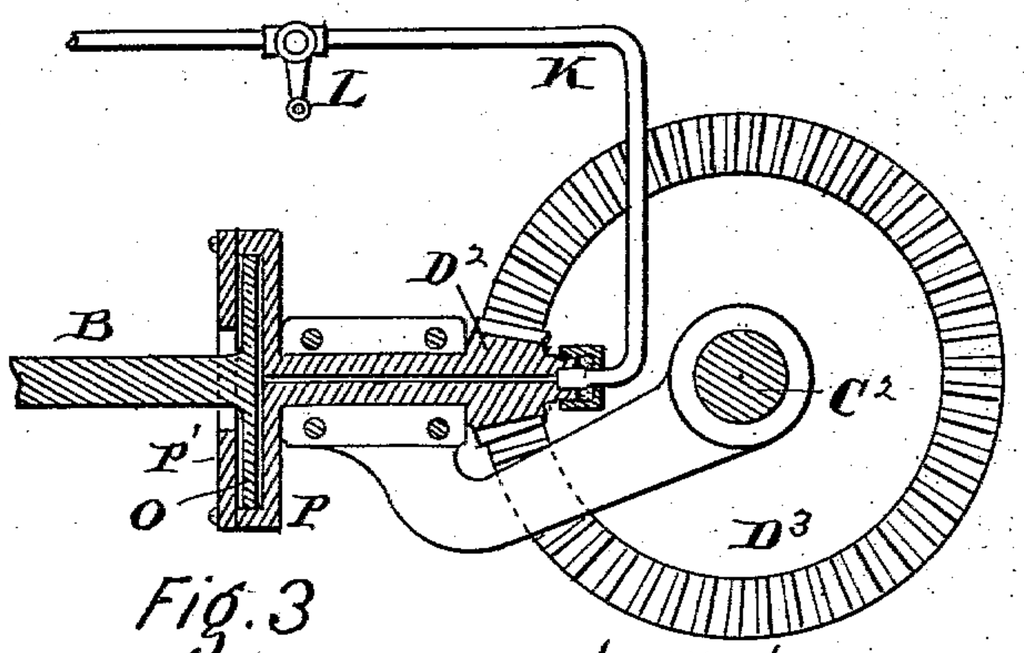


Fig. 3



Attest
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No. 740,659. Patented October 6, 1903.

UNITED STATES PATENT OFFICE.

ARTHUR M. JENKINS, OF NORRISTOWN, PENNSYLVANIA.

TRANSMISSION-GEAR FOR AUTOMOBILES.

SPECIFICATION forming part of Letters Patent No. 740,659, dated October 6, 1903.

Application filed March 25, 1903. Serial No. 149,423. (No model.)

To all whom it may concern:

Be it known that I, ARTHUR M. JENKINS, of Norristown, Montgomery county, Pennsylvania, have invented an Improvement in Transmission-Gear for Automobiles, of which the following is a specification.

My invention has reference to transmission-gear for automobiles and other purposes; and it consists of certain improvements which are fully set forth in the following specification and shown in the accompanying drawings, which form a part thereof.

The object of my invention is to provide a construction of transmission-gear which shall enable the engine to be in constant geared connection with the axles or wheels and be capable of driving said axles or wheels or allow them to remain at rest; further, to cause the geared connection between the engine and axles or wheels to be made positive for driving by the simple act of turning on the steam or other motive power; further, to enable the transmission-gearing to so operate in conjunction with suitable friction-clutches that all necessary compensation between the wheels and axles is accomplished, thereby obviating the necessity for the usual additional compensating gearing.

My invention comprehends devices for accomplishing the above objects and will be readily understood by reference to the accompanying drawings, in which—

Figure 1 is an elevation of an engine and transmission-gear embodying my invention. Fig. 2 is a sectional plan view of my improved transmission-gear, and Fig. 3 is a sectional side view of a modification of my improved transmission-gearing.

A is a steam-engine, preferably of the compound type, and drives the power-shaft B. Sleeved upon the power-shaft B are oppositely-directed bevel-pinions D and E, which respectively mesh with the bevel-gears D′ and E′. The gear D′ is secured to one of the axles, C, and the gear E′ is secured to the other axle, C′. The frame F has bearings in which the axles C C′ and the pinions D E are journaled. The engine or power shaft B is also, in effect, journaled in this frame F, as it is carried by the pinions D E.

The pinion D is provided with a disk G, adapted to press upon a disk H, secured to the power-shaft B. The pinion E is also provided with a disk I, directed in an opposite direction to the disk G. J is an annular cylinder secured to the end of the power shaft B and has an annular piston J′, adapted to be forced against the disk I of the pinion E. When this action takes place, the shaft B is slightly moved, so as to press the disk H tightly against the disk G and thereby create a friction both between the disks H G and disk I and piston J′. The result of this is that the pinions D E are driven by the engine or power shaft B. The pinions D E, through the bevel-gears D′ E′, respectively drive the axles C C′.

The operation of the piston-clutch J′ is accomplished by admitting or exhausting steam or other motor fluid to the cylinder J by a pipe K, which connects with the rotating cylinder by a packed joint *k* of any suitable construction. The pipe K connects with the steam-supply pipe M between the control-valve N and engine A or may connect with any part of the engine itself where it can receive the effect of the steam-pressure admitted to the engine, as it is wholly immaterial from what immediate source of supply the steam or motive fluid is derived provided that it is of a force corresponding with that utilized in operating the engine, and thereby is supplied or cut off at the same time the engine is supplied or shut off, as the case may be. In this way the shaft B is disconnected from the gears D E except when the engine is operating. Moreover, the amount of friction or clutching action is proportional to the power of the engine, being greater when the engine is receiving a full supply of steam than when the steam-supply is throttled.

As it frequently is necessary to run the engine for pumping and in starting (when of a compound type) without the load being on, I provide a valve L in the pipe K, which may

be closed at such times, and thereby throw the clutch devices out of operation for the time being.

While this device is excellently adapted for transmission of power, it also has the additional capacity for compensating to meet the variable rotary effect of the two axles and wheels, as in turning. It enables the usual compensating gearing to be wholly dispensed with, because the friction between the parts H G and J' I is so proportioned that while amply sufficient to properly propel the load it is not sufficient to prevent relative slippage to compensate for relative differential action in the rotation of the axle parts C C'.

In the modifications shown in Fig. 3 the end of the engine-shaft B is provided with a disk O, which plays within a case P, having the outer friction-surface P'. The case P is secured to and rotates with the pinion D^2, which in turn meshes with the bevel-gear D^3, secured to the axle C^2. Steam is supplied to the case P by pipe K, as in the instance of the construction shown in Figs. 1 and 2. In operation when the valve L is closed the engine may run free; but when the valve L is open and the steam turned on to the engine then the clutch action between the parts O and P' takes place and the gearing is operated by the engine or power shaft B. This modification of my invention does not have the advantage of the compensating capacity, and consequently in this case it would be necessary to provide some of the usual forms of compensating gearing to the axle intermediate of the two driving-wheels.

While I prefer the construction shown as being excellently adapted to the purposes of my invention, I do not confine myself to the details of construction, as these may be modified in various ways without departing from the spirit of the invention.

Having now described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In power-transmission devices for automobiles, the combination of the motor and its power-shaft, two driving-wheels, independent gearing intermediate of each driving-wheel and power-shaft, friction-clutches between each set of gearing and the power-shaft, and means for supplying motive fluid to the motor and friction-clutches whereby the latter are put into operation simultaneously with the motor.

2. In power-transmission devices for automobiles, the combination of the motor and its power-shaft, two driving-wheels, independent gearing intermediate of each driving-wheel and power-shaft, friction-clutches between each set of gearing and the power-shaft, means for supplying motive fluid to the motor and friction-clutches whereby the latter are put into operation simultaneously with the motor, and independent controlling means for controlling the motive fluid to the clutches whereby they may be thrown out of action when the motor is operating its power-shaft.

3. In power-transmission devices, the combination of a driven rotary part such as a shaft, a motor, a friction-clutch for connecting the driven rotary part with the motor, means for supplying motive fluid to the motor and friction-clutch whereby they operate simultaneously to put the motor into operative connection with the driven rotary part, and independent controlling means for controlling the motive fluid to the clutch whereby it may be thrown out of action when the motor is running.

4. In power-transmission devices, the combination of a motor and motor-shaft, two pinions sleeved upon said shaft, two driven shafts, provided with gears respectively meshing with the pinions, friction-clutch devices for connecting the two pinions to the motor-shaft, and fluid-pressure devices for putting the clutches into clutching operation controlled by the supply of motive fluid to the motor.

5. In power-transmission devices, the combination of a motor and motor-shaft, two pinions sleeved upon said shaft, two driven shafts provided with gears respectively meshing with the pinions, friction-clutch devices for connecting the two pinions to the motor-shaft, fluid-pressure devices for putting the clutches into clutching operation controlled by the supply of motive fluid to the motor, and means for keeping the friction-clutches out of operation when the motor is running.

6. In power-transmission devices, the combination of a power-shaft, gearing carried by the shaft for operating the driven rotary parts such as wheels and axles, and two friction-clutches between the power-shaft and the gearing one part of the clutches being respectively secured to independent portions of the gearing and the remaining portions of the clutches being secured to the power-shaft.

7. In power-transmission devices, the combination of a power-shaft and operating devices, gearing carried by the shaft for operating the driven rotary parts such as wheels and axles, two friction-clutches between the power-shaft and the gearing one part of the clutches being respectively secured to independent portions of the gearing and the remaining portions of the clutches being secured to the power-shaft, and means under the control of the motor-shaft and its operating devices to put the clutches into operation when the motor-shaft is rotating.

8. In power-transmission devices, the combination of a motor and motor-shaft, two driven wheels, gearing between the motor-shaft and the wheels, friction-clutches between the motor-shaft and gearing, and fluid-pressure devices for controlling the clutches whereby they operate to drive the gearing

and also allow for compensation thereof as set out.

9. In power-transmission devices, the combination of a motor and motor-shaft, two driven wheels, gearing between the motor-shaft and the wheels, friction-clutches between the motor-shaft and gearing, and fluid-pressure devices common to both clutches for controlling the clutches whereby they operate to drive the gearing and also allow for compensation thereof as set out.

In testimony of which invention I have hereunto set my hand.

A. M. JENKINS.

Witnesses:
R. M. HUNTER,
R. M. KELLY.