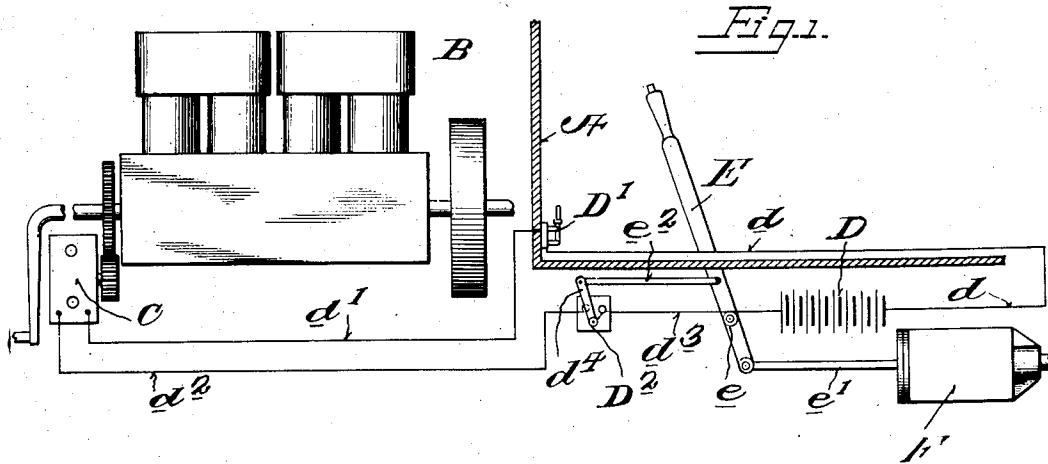
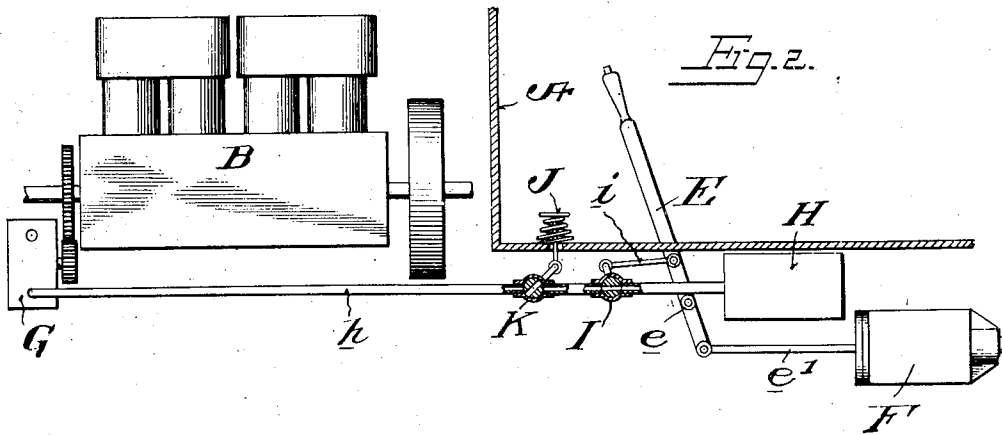


C. E. KELLS, JR.
ENGINE STARTER.
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CHARLES EDMUND KELLS, JR., OF NEW ORLEANS, LOUISIANA.

ENGINE-STARTER.

1,086,773.

Specification of Letters Patent.

Patented Feb. 10, 1914.

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To all whom it may concern:

Be it known that I, CHARLES EDMUND KELLS, Jr., a citizen of the United States, residing in New Orleans, in the parish of Orleans and State of Louisiana, have invented certain new and useful Improvements in Engine-Starters, of which the following is a specification.

My invention relates to starting devices for engines, and particularly to the automatic starting mechanism of internal combustion engines commonly used in automobiles.

Ordinarily the propelling engine of an automobile is started either by hand or by automatic mechanism, comprising an auxiliary motor either electrically or fluid operated. In some cases air or gas is admitted directly to the propelling engine and is used to start it. In any case, it is important that the propelling engine shall be started while it is disconnected from the driving wheels of the vehicle or similar parts to be operated, and it is the practice to employ transmission gears which may be connected and disconnected at will whereby the propelling engine may be started while it is disconnected from the driving wheels or similar parts.

It is obvious that if by some oversight the transmission gears should be so related when the starter is operated that the driving wheels are operatively connected with the propelling engine the vehicle will be prematurely started and accidents may result.

The object of this invention is to provide improved means for preventing the operation of the starter while the transmission gears are in mesh or so related that the propelling engine is operatively connected with the wheels.

My invention consists in combining with the controller of the transmission gears an improved device which regulates the supply of power to the starter and which is so constructed that the supply of power is always shut off when the transmission gears are in mesh and thus prevents the operation of the starter, but which when the transmission gears are separated opens the power supply and renders it available for use in the starter, the starter being put into communication with the source of power by

other devices which are not effective except when the controller is in neutral position.

My invention may be embodied in mechanism, comprising a starter operated either by electricity or by fluid pressure or power, and I have shown in the accompanying drawings some of the ways in which my invention may be used.

Figure 1 is a diagram, showing how an electrically operated starter constructed in accordance with my invention may be combined with an internal combustion engine. Fig. 2 is a diagram, showing how a fluid-operated starter, embodying my improvements, may be used in combination with a similar engine.

In Fig. 1 A indicates a part of the frame of an automobile, and B an internal combustion engine of ordinary construction. C indicates an electric motor, geared with the engine B. D indicates a source of supply of electric energy, one pole of which is connected by a wire d to a hand-operated switch D' which is connected by a wire d' with the motor C which motor is also connected by wire d^2 with a switch D^2 , in turn connected by a wire d^3 with the other pole of the battery. E indicates a controller for the transmission gearing F. In this instance the controller is in the form of a lever pivoted at e to any part of the frame and connected by a rod e' with the transmission gears which may be of any suitable construction and by means of which the engine is operatively connected with the driving wheels of the vehicle or with any other suitable part to be driven. The controller E is connected by a link e^2 with the switch arm d^4 which passes over the contacts shown.

Fig. 1 shows the parts so arranged that the electrical supply source D is connected with the starter C. At this time the transmission gears at F are out of gear. If the lever be moved to the right, as viewed in Fig. 1, so as to throw the gears F into mesh and thus connect the propelling engine with the driving axle the electric circuit will be broken at D^2 and the source of electrical supply will be shut off. That is to say, whenever the controller E is in such position as to operatively connect the engine B with the driving axle the power supply for the starter C is shut off, and the starter can

never be operated when the engine is connected with the driving axle. When the controller is in position to disconnect the transmission gears the source of power is available but not necessarily connected with the starter, but it may be so connected by means of the switch D', but unless the transmission gears are disconnected the starter cannot be operated by the switch D'.

10 In Fig. 2, the frame A and engine B are similar to those shown in Fig. 1. In this case the starter G is fluid-operated and it is geared to the engine B as indicated. H indicates a source of fluid supply under pressure such as compressed air, and this is connected by a pipe h with the starter G. F indicates the transmission gears and E the controller therefor which is pivoted to the frame at e and connected with the gears by the rod e'. I indicates a valve in the pipe h which controls the passage of fluid from the source H and this valve is connected by a rod i with the controller E. The parts are so related that when the controller is in position to connect the gears F the valve I will be closed, but when the lever is turned to the proper position to disconnect the transmission gears the valve I will be opened, as shown in the drawings. J indicates a foot-operated device connected with the valve K in the pipe h interposed between the starter G and the valve I. The operation of this device J does not necessarily connect the source of power H with the starter G, but only so connects these two parts when the controller E is in such position as to disconnect the transmission gears at F so that the vehicle cannot be accidentally started because whenever the starter is in condition to be operated the transmission gears must be disconnected.

Other modifications of the invention might be illustrated but those shown are considered sufficient to indicate how my invention may be practically used. In all cases it will be observed that when the controller is in position to connect the transmission

gears the source of power, whether electrical, fluid or otherwise, is shut off, but when the controller is in position to disconnect said transmission gears the source of power is made available or is released and may be admitted to the starter at will by the operation of the device D' or J.

I claim as my invention:—

1. The combination with a propelling engine and transmission gears, of a starter for the engine, a source of power therefor, a controller for the transmission gears, means operated by the controller for shutting off the power supply from the starter when the transmission gears are in mesh and for rendering said source of power available for starting purposes without admitting power to the motor when the transmission gears are out of mesh, and devices for then completing communication between the starter and the source of power.

2. The combination with a propelling engine and transmission gears, of a starter for the engine, a source of power therefor, a connection between the source of power and the starter which is opened and closed at two points, a controller for the transmission gears, and means operated by the controller for shutting off the power supply at one of said points when the transmission gears are in mesh and for opening said connection at said point when the transmission gears are out of mesh and another device for opening and closing the connection at said other point in said connection whereby when the transmission gears are out of mesh and the connection between the starter and the source of power is opened by the controller the connection between the source of power and the starter may be completed by said device.

In testimony whereof, I have hereunto subscribed my name.

CHARLES EDMUND KELLS, JR.

Witnesses:

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SAMUEL H. McAFEE.