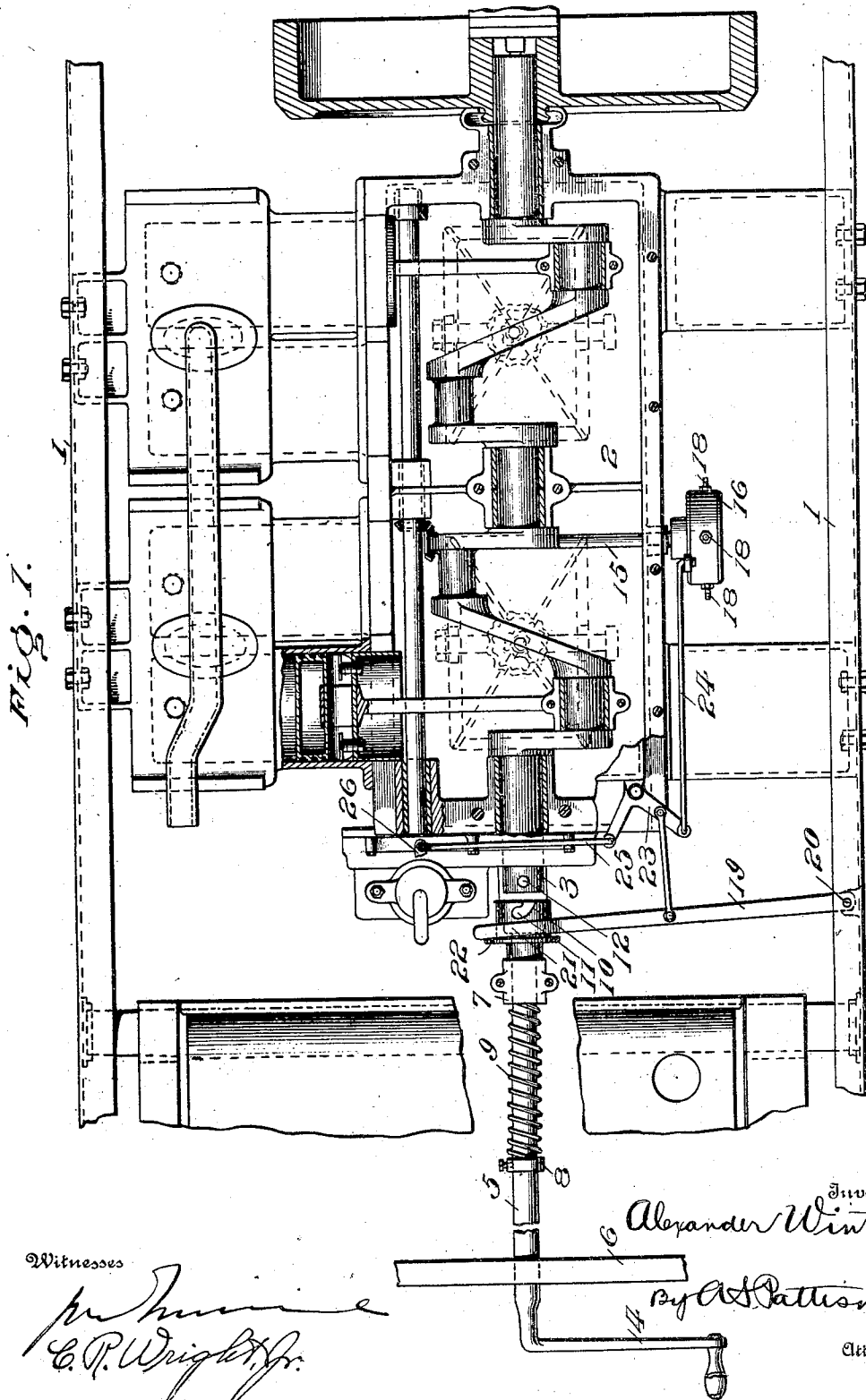


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SAFETY STARTING AND IGNITING MECHANISM.
APPLICATION FILED SEPT. 20, 1904.

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2 SHEETS—SHEET 1.



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Fig. 2.

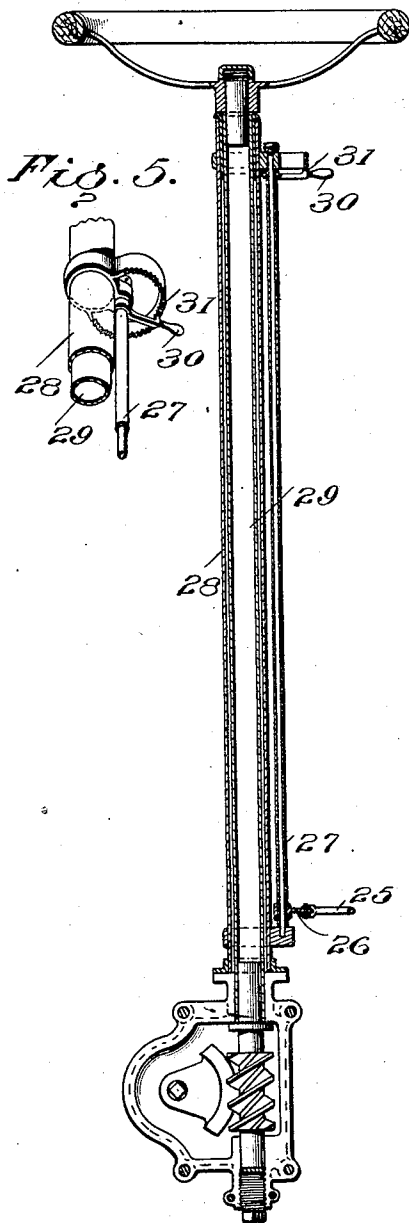


Fig. 5.

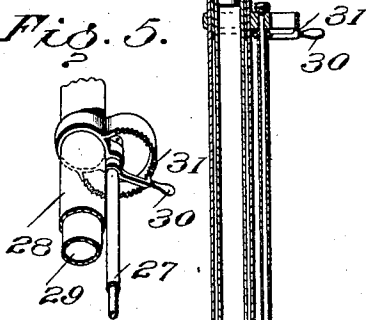


Fig. 3.

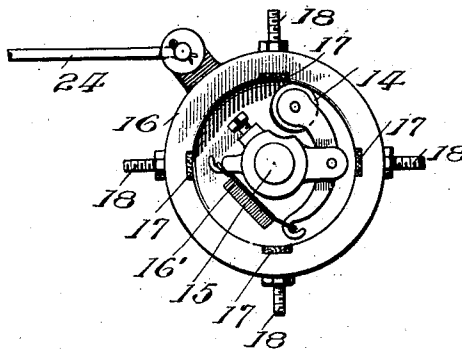
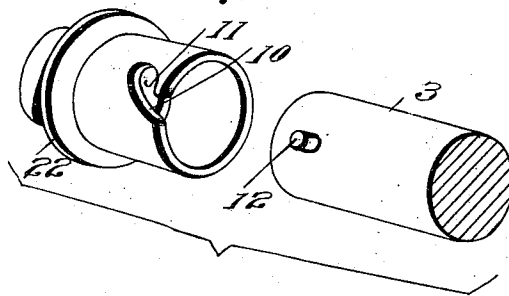


Fig. 4.



Witnesses

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SAFETY STARTING AND IGNITING MECHANISM.

1,011,693.

Specification of Letters Patent.

Patented Dec. 12, 1911.

Application filed September 20, 1904. Serial No. 225,205.

To all whom it may concern:

Be it known that I, ALEXANDER WINTON, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Safety Starting and Igniting Mechanism, of which the following is a specification, reference being had therein to the accompanying drawing.

This invention relates to safety starting and igniting mechanism, for explosive engines, in which a hand-controlled ignition lead is used, and the primary object of the invention is to so arrange the ignition lead mechanism and the starting mechanism, that when the starting member is applied, the ignition lead and the hand-controlled member therefor are both carried thereby to the position for effecting a late sparking in the cycle of the cylinder or cylinders of the engine, and thus prevent a reverse motion of the engine which in large engines is very dangerous, and is known as "kicking back."

The present invention is especially intended for use in connection with motor-driven vehicles using explosive engines as the motive power.

In the accompanying drawings, Figure 1, is a top plan view of a portion of the frame of a motor vehicle, its motor, and my invention applied thereto. Fig. 2, is a longitudinal sectional view of the steering post and its coöperating parts. Fig. 3, is a detached view showing a variable make-and-break circuit closer for an electric ignition system. Fig. 4, is a detail of the starting crank socket. Fig. 5, is a detached inverted perspective view of the ratchet segment and the controlling lever.

A portion of the side bars of the vehicle frame are designated by 1 and 2 is a four-cylinder, four-cycle explosive engine, the construction and operation of which is immaterial to the present invention, and is so well understood by those skilled in the art that an explanation thereof is unnecessary.

As here shown, the crank-shaft of the engine extends in a direction longitudinal the vehicle, and its front end 3 projects and forms a starting member for the starting crank or handle 4. As here shown, the stem 5 of the starting handle is supported by a cross-bar 6 at its outer end, and its inner end by a bearing 7 suitably supported. A collar 8 is rigidly attached to the stem 5, and an expanding spring 9 is placed be-

tween the collar and the bearing 7, and serves to normally hold the starting handle in an outward position as shown in Fig. 1.

The inner end of the stem 5 of the starting handle is provided with a socket 10 having a spirally-arranged slot or slots 11 adapted to engage a pin 12 upon the shaft 13, when the starting handle is forced inward in engagement therewith. Owing to the spiral arrangement of the slots 11, when the crank is forced inward and given a partial turn, there is a sufficient locking action to hold it there as long as it is being turned, thus relieving the necessity for further inward pressure. When, however, the engine starts, the spiral grooves force the socket out of engagement with the pins 12, and the spring 9 will carry the socket outward and entirely away from the shaft 3, and out of the way of the lever 19 which is connected with the ignition lead, as will be fully explained hereinafter. This arrangement prevents the necessity of any ball or other form of ratchet device for operatively connecting and disconnecting the starting handle or crank with the starting member of the engine.

Any suitable form of variable ignition lead may be used, but the form here shown is that illustrated in Fig. 3, in which there is a traveling electric conductor 14 connected with a shaft 15 suitably geared to the engine shaft (not shown) so that it rotates. The conductor is held normally against the inner side of an oscillating ring 16 by a suitable spring 16'. Carried at the inner side of the ring and flush therewith are the electrical contacts 17, one for each cylinder, and they are provided with projecting stems 18 as shown. The stems 18 and the traveling contact or conductor 14 are placed within an electric circuit (not shown) and which is well understood by those skilled in this art. By oscillating the ring 16 which carries the contacts 17, the time of ignition in the cycle of the engine can be regulated, as is well known and understood.

The lever 19 has its outer end pivoted at the point 20, and has its inner swinging end extending in the path of a shoulder or flange 22 formed on the stem of the starting handle or crank, and as here shown adjacent its inner end. A bell crank lever 23 is intermediately pivoted, and has one end connected by a rod 24 with the oscillating contact ring 16, and its opposite end connected

by a rod 25 with a crank arm 26 at the lower end of a vertically-arranged oscillating rod 27. This rod 27 is journaled to or supported by a standard or tube 28 through which the steering rod 29 passes. The upper end of the rod is provided with a controlling handle 30, by means of which the rod can be oscillated, and through the connections just described, the contact ring 16 oscillated for regulating and controlling the ignition lead of the engine at the will of the driver.

It is necessary that some means be provided for holding the ignition lead at the adjusted point, and this may be varied. The manner here shown is that preferred by me, and it consists of a ratchet segment 31 extending from the upper end of the tube or standard 28, and at a point to be engaged by the said controlling handle 30.

The operation of my invention is as follows: Referring to Figs. 1 and 3, the parts are shown with the ignition lead advanced to the extreme, and it will be seen that all the parts are in such a position that the ignition lead can be freely adjusted to any point in the opposite direction for delaying the ignition lead in respect to the cycle of the engine at the will of the driver. With the lead in the position just referred to it is not possible to start the engine by hand, and it is necessary that the lead be carried to the opposite adjustment to delay ignition until the engine crank has reached or passed center. In the construction here shown, this is accomplished automatically when the starting handle 5 is carried into operative engagement with the starting member 3 of the engine, because the shoulder or sleeve 22 engages the lever 19 and forces it, and by its connections, moves the contact ring 16 to delayed ignition, and also forces the controlling lever 30 against the holding means to the position of delayed ignition. That is to say, when the starting handle is carried to interlock with the engine shaft, it moves the lever 19, and by the intermediate connec-

tion, moves the controlling lever 30 over the ratchet teeth of the segment 31, which it engages lightly. The size of the teeth of the segment 31 are here shown exaggerated for the purposes of illustration. The engine being started, the starting crank stem is carried out of the way of the parts by the spring 9, and the operator can then adjust the lead to any desired advanced point within the radius of its limit of adjustment.

By the means here shown it is impossible for an operator to be injured by a "kick-back" because the very act of placing the parts in position to start the engine, automatically places the ignition mechanism at "delayed ignition".

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

In an automobile, the combination of an explosive engine, a variable sparking mechanism, a vertically arranged steering post, a vertically-arranged oscillating member supported by the post and carrying an operating handle at its upper end, and a crank at its lower end, a bell-crank lever located between the variable sparking mechanism and the said crank, a connection between one end of the bell-crank lever and said crank, a connection between the other end of said bell-crank lever and the sparking mechanism, a starting member adapted by endwise movement to interlock with the engine for rotating the latter, a movable member located in the endwise movable path of the starting member to be moved thereby and a connection between the movable member and said bell-crank lever to throw the sparking mechanism for a late spark in the cycle of the engine.

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

ALEXANDER WINTON.

Witnesses:

HAROLD B. ANDERSON,
CHAS. B. SHANKS.