

W. STEELE.
 AUXILIARY STARTING DEVICE FOR INTERNAL COMBUSTION ENGINES.
 APPLICATION FILED NOV. 25, 1907.

992,920.

Patented May 23, 1911.

Fig. 1.

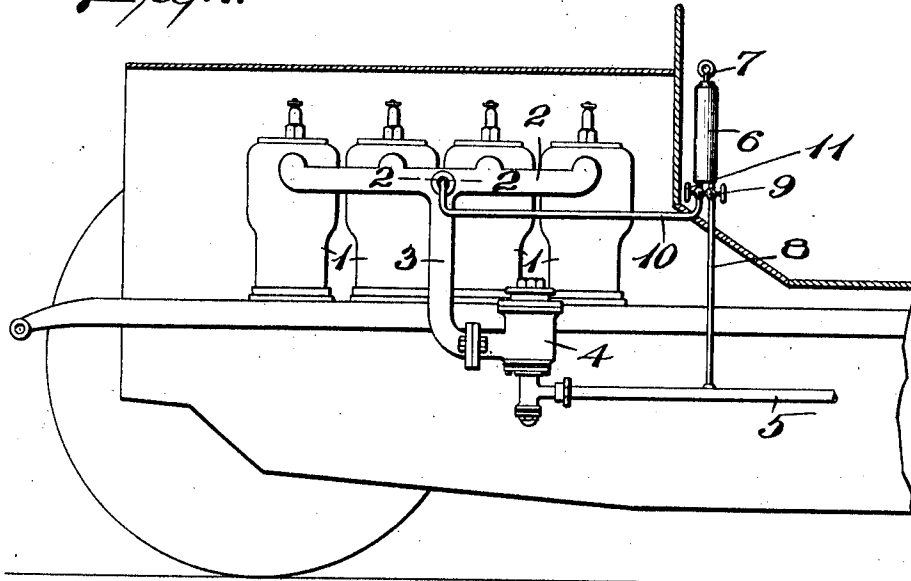


Fig. 2.

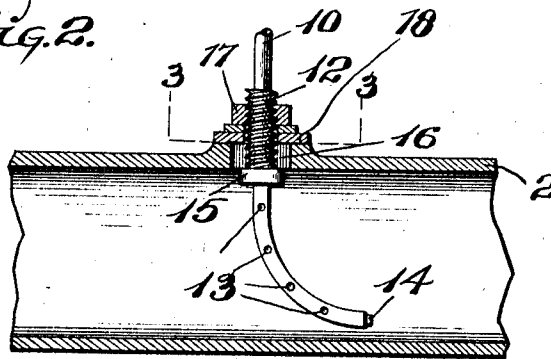
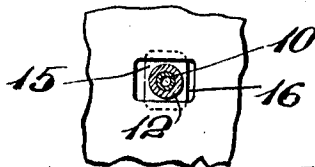


Fig. 3.



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UNITED STATES PATENT OFFICE.

WENTWORTH STEELE, OF ST. LOUIS, MISSOURI.

AUXILIARY STARTING DEVICE FOR INTERNAL-COMBUSTION ENGINES.

992,920.

Specification of Letters Patent.

Patented May 23, 1911.

Application filed November 25, 1907. Serial No. 403,639.

To all whom it may concern:

Be it known that I, WENTWORTH STEELE, a citizen of the United States, and resident of St. Louis, Missouri, have invented certain new and useful Improvements in Auxiliary Starting Devices for Internal-Combustion Engines, of which the following is a specification containing a full, clear, and exact description, reference being had to the accompanying drawings, forming a part hereof.

My invention relates to an auxiliary starting device for internal combustion engines, my object being to provide means whereby an explosive vapor is delivered to the intake pipe or pipes of an engine or a series of engines immediately adjacent the cylinders, in order that said vapor may be readily drawn into the cylinders by a partial rotation of the crank shaft.

In starting internal combustion engines such as are generally used on automobiles, it is necessary to rotate the crank shaft of the engines a number of times in order to create the necessary suction through the carbureter to draw the explosive mixture into the engine cylinders, and this operation of the engine shaft, which is known as "cranking," involves considerable time and labor; and it is the purpose of my invention to obviate these disadvantages by delivering an explosive vapor into the intake pipe immediately adjacent the engine cylinders, and a considerable distance in front of the carbureter.

To the above purposes, my invention consists in certain novel features of construction and arrangement of parts, which will be hereinafter more fully set forth, pointed out in the claim, and illustrated in the accompanying drawings, in which:—

Figure 1 is an elevation of a series of internal combustion engines such as are used in propelling a motor vehicle, and with the auxiliary starting device applied for use; Fig. 2 is an enlarged detail section taken on the line 2—2 of Fig. 1; Fig. 3 is a horizontal section taken on the line 3—3 of Fig. 2.

Referring by numerals to the accompanying drawings:—1 designates the engine cylinders, 2 the intake pipe, by means of which the explosive vapor is delivered to the interior of the cylinders, 3 the tubular connection which conveys the explosive mixture to the intake tube from the carbureter 4, and which carbureter receives liquid hydrocarbon through the supply pipe 5. All of these

parts are of ordinary well known construction, and form no part of my invention.

6 designates a simple pump, comprising a cylinder, in which operates a piston carried by a piston rod operating through the top of the cylinder, and provided on its upper end with an operating handle or ring 7. Leading from the liquid hydrocarbon supply pipe 5 to the lower end of the pump 6 is a small pipe 8, in which is located an ordinary cut-off valve 9. Leading from the lower end of the pump 6 is a small tube 10, in which is located an ordinary cut-off valve 11, and the opposite end of this pipe passes through a screw plug 12, which is detachably positioned in the front wall of the intake pipe 2, at a point adjacent the center thereof; and the end of the tube 10 which extends into the intake pipe is provided with a series of minute apertures 13, and the end of said tube within the intake tube being closed by means of a plug 14, or similar device.

The screw plug 12 is provided on its lower end with an elongated plate 15, which passes through an aperture 16 when the device is assembled, after which the screw plug is given a quarter of a turn to bring the ends of the plate into position beneath the side edges of the opening 16, after which a nut 17 is located on the outer end of the screw plug, and there being a suitable packing ring 18 located between said nut and the intake pipe.

The operation of the device is as follows: When it is desired to start the engine, the valve 11 is closed and the valve 9 opened, and by means of the handle 7, the piston is drawn upward through the cylinder of the pump 6, and thus by suction draws a quantity of liquid hydrocarbon into the pump cylinder through the tube 8. The valve 9 is now closed and the valve 11 opened, after which the handle 7 is moved downward, thus expelling the liquid hydrocarbon from the pump cylinder and causing it to pass through the pipe 10, and to be discharged in minute jets through the apertures 13; and the friction of the vapor thus discharging through said apertures causes the liquid hydrocarbon to become vaporized, thus filling the intake pipe 2 immediately adjacent the engine cylinders with an explosive charge. A partial rotative movement is now imparted to the crank shaft, which movement is sufficient to draw the explosive vapor from

the intake pipe 2 into the engine cylinders, where said vapor is ignited in the usual manner; and thus the engines are started with very little effort incident to the "cranking" operation, and without the delay occasioned by the suction through the carbureter to vaporize the liquid hydrocarbon, and the suction of the same through the connecting pipe 3.

10 A device of my improved construction is simple and inexpensive, can be easily connected and attached to engines already in use, and is applicable for all forms of internal combustion engines.

15 I claim:—

20 An auxiliary engine-starting device, comprising a branch pipe 8—10 leading from the pipe which supplies liquid hydrocarbon to the carbureter to the intake pipe of the engine, a pump located in the first men-

tioned pipe, valves located in said pipe adjacent the pump, the screw-plug 12 on one end of said branch pipe, a locking-plate 15 at the end of said screw-plug, the intake pipe having an aperture 16 through which the said locking plate is inserted within the intake pipe, and the nut 17 threaded upon the screw-plug exterior of said intake-pipe, all arranged for detachably clamping said screw-plug within said aperture of the intake pipe, in combination with the curved and perforated pipe section within said intake pipe.

In testimony whereof, I have signed my name to this specification, in presence of two subscribing witnesses.

WENTWORTH STEELE.

Witnesses:

M. P. SMITH,
E. L. WALLACE.