J. W. & F. JACKSON.

AUXILIARY STARTING DEVICE FOR AUTOMOBILES.

APPLICATION FILED DEC. 18, 1908.

921,995. Patented May 18, 1909.

3 SHEETS—SHEET 1.

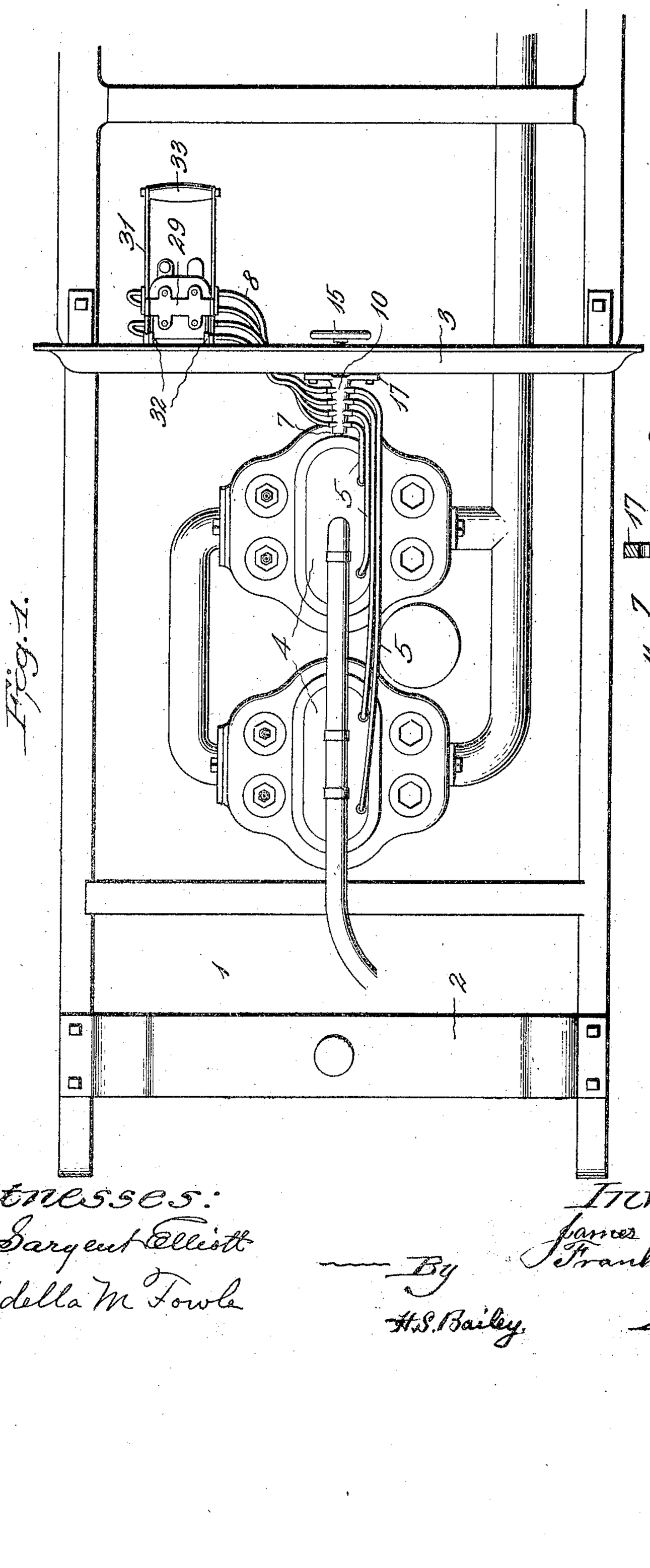

Fig. 1.

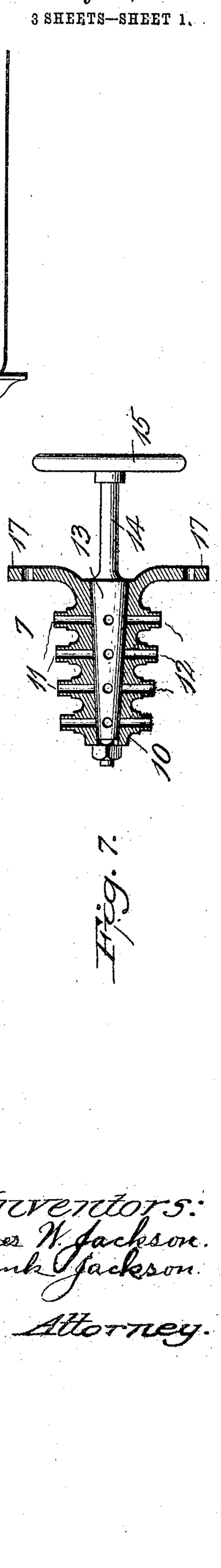

Fig. 7.

Witnesses:
L. Sargent Elliott
Adella M. Towle

Inventors:
James W. Jackson.
Frank Jackson.

By
H. S. Bailey.
Attorney.

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3 SHEETS—SHEET 2.

Fig. 3.

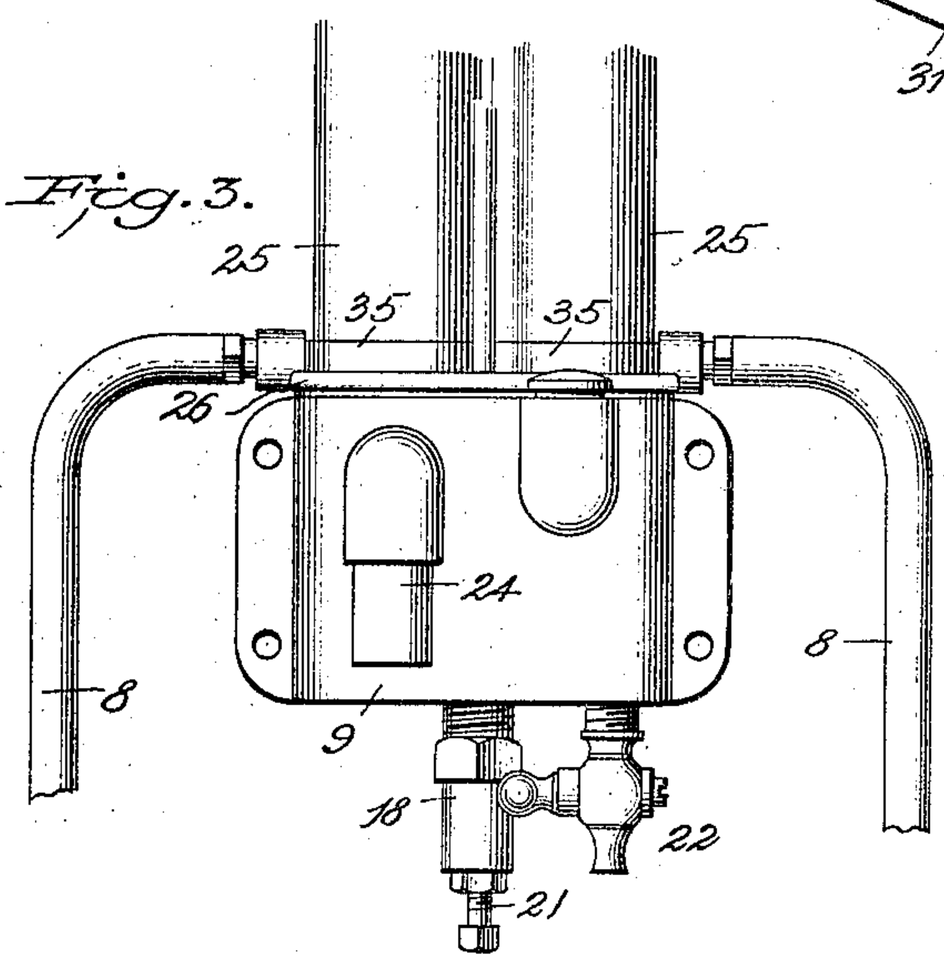

Fig. 2.

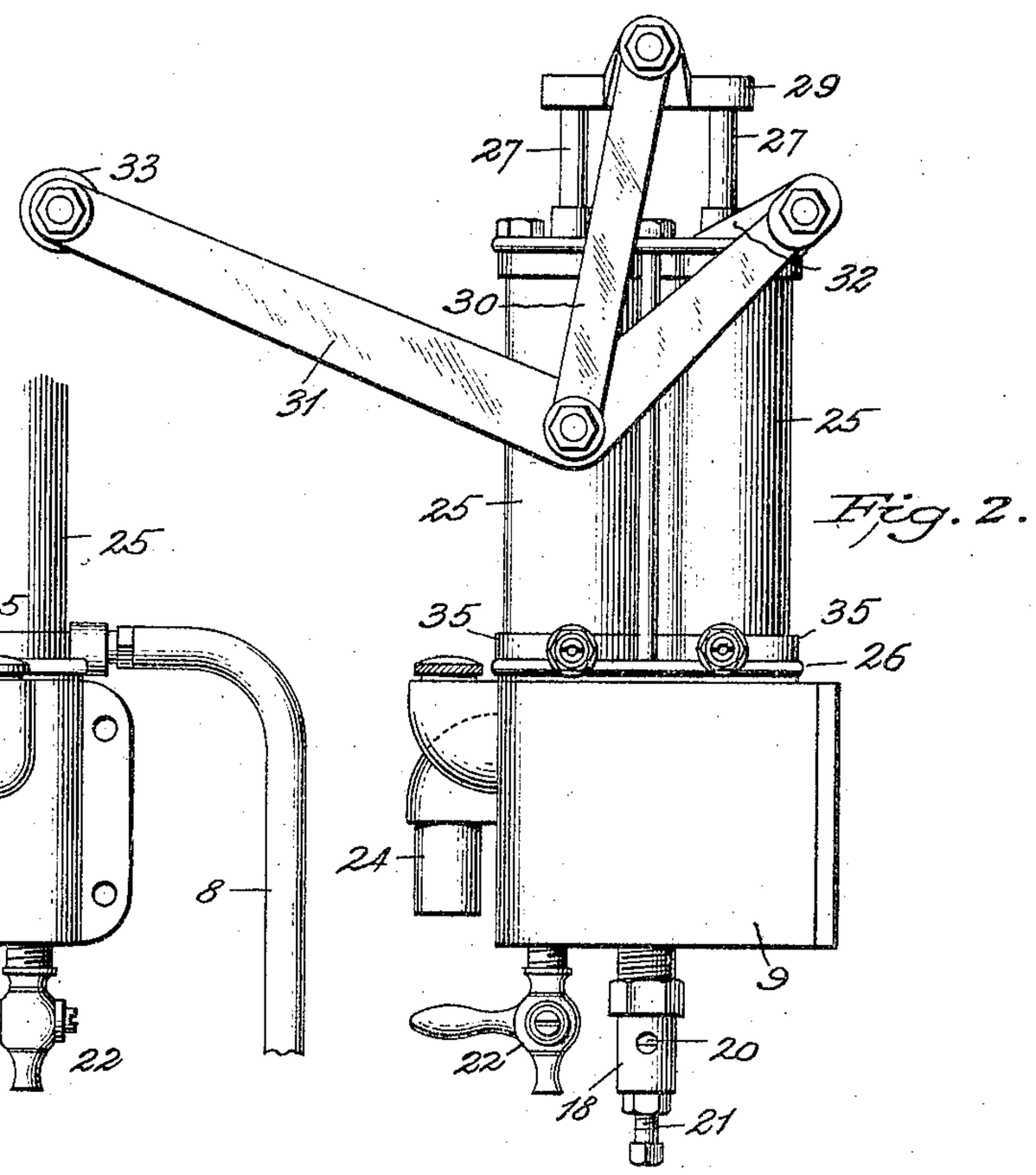

Fig. 8.

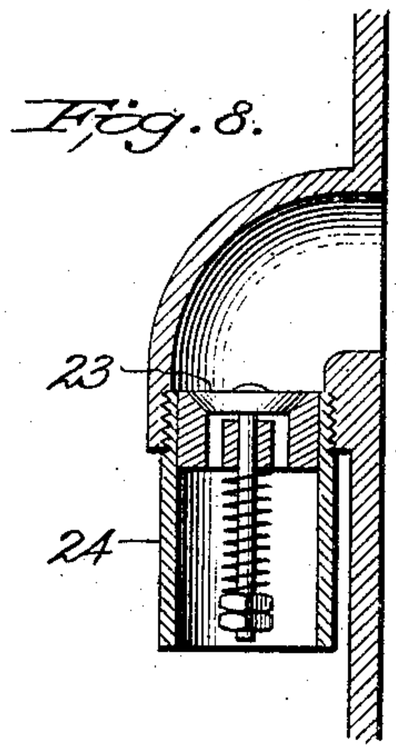

Fig. 4.

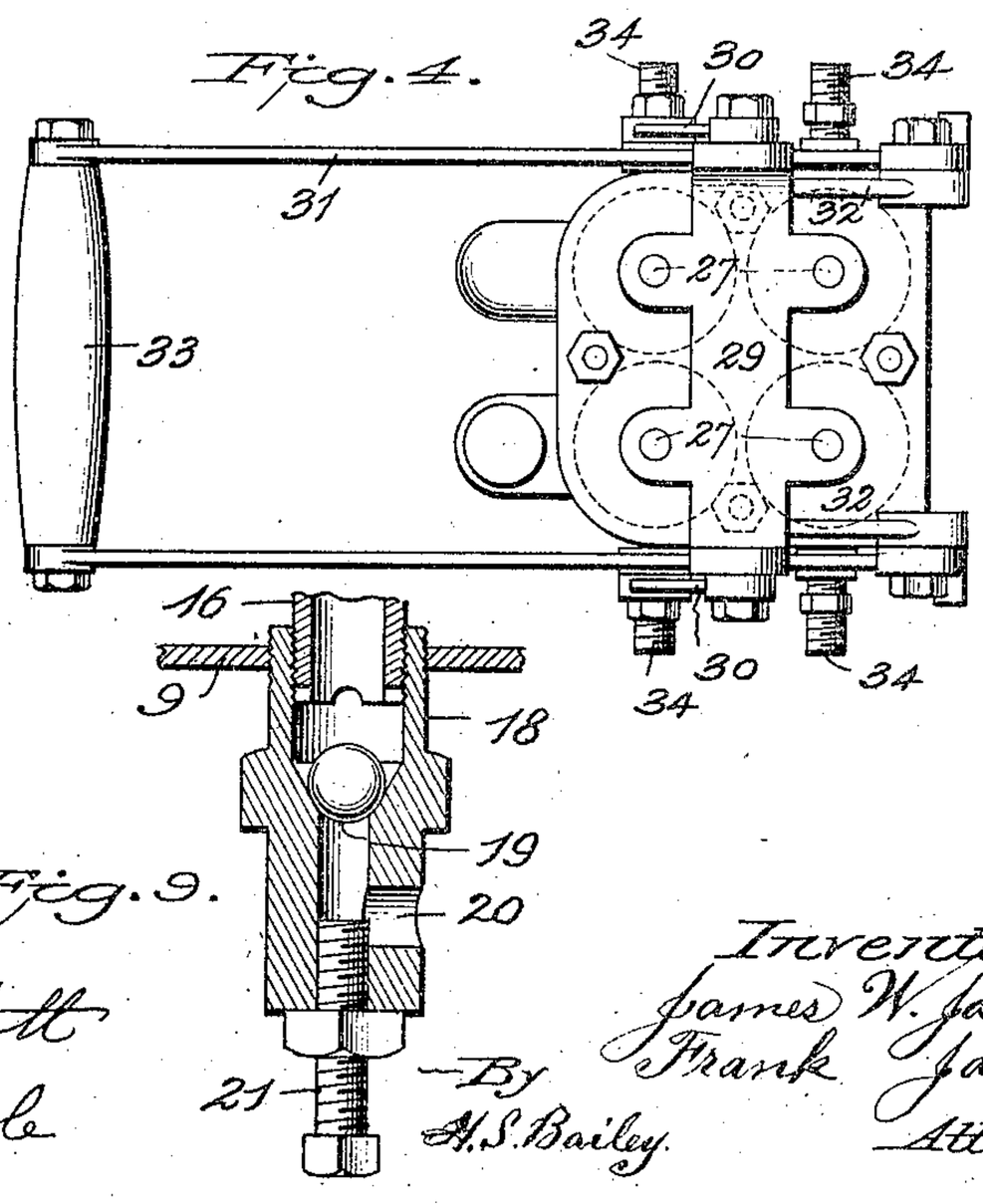

Fig. 9.

Witnesses:

L. Sargent Elliott

Adella M Fowle

Inventors:

James W. Jackson.

Frank Jackson.

By

A. S. Bailey.

Attorney.

J. W. & F. JACKSON.

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3 SHEETS—SHEET 3.

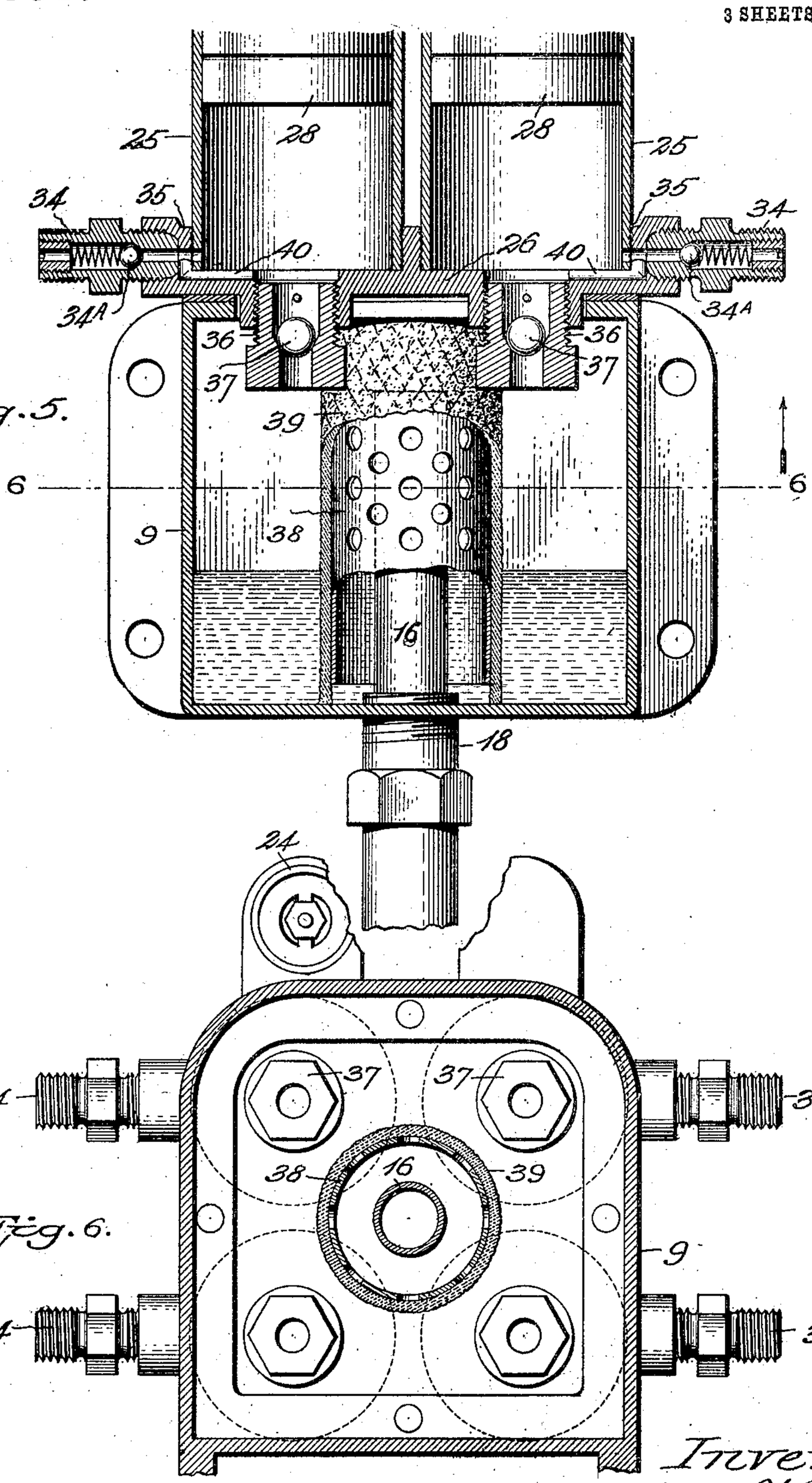

Fig. 5.

Fig. 6.

Witnesses:
G. Sargent Elliott.
Adella M. Fowle

Inventors
James W. Jackson.
Frank Jackson.

By
H. S. Bailey. Attorney

UNITED STATES PATENT OFFICE.

JAMES W. JACKSON AND FRANK JACKSON, OF DENVER, COLORADO.

AUXILIARY STARTING DEVICE FOR AUTOMOBILES.

No. 921,995. Specification of Letters Patent. Patented May 18, 1909.

Application filed December 18, 1903. Serial No. 488,163.

To all whom it may concern:

Be it known that we, JAMES W. JACKSON and FRANK JACKSON, citizens of the United States of America, residing at the city and county of Denver and State of Colorado, have invented a new and useful Auxiliary Starting Device for Automobiles, of which the following is a specification.

Our invention relates to improvements in auxiliary starting devices for automobiles, and the objects of our invention are: First, to provide an automobile engine starting device that will act as an auxiliary aid to the electric spark generating explosive mixture igniting apparatus in common use on automobiles. Second, to provide an auxiliary hydro-carbon starting device for automobile engines, that will provide a supply of explosive hydro-carbon to each and all of the cylinders instantly and at the same time, and that can be operated by the chauffeur from his seat in the automobile. And third, to provide a simple, reliable, positively operating, safe, and durable auxiliary automobile starting device.

We attain these objects by the mechanism illustrated in the accompanying drawings, in which:

Figure 1, is a plan view of the forward portion of an automobile, showing the engines, and the improved auxiliary starter connected therewith. Fig. 2, is a side elevation of the starter, the pipes leading to the engines being omitted. Fig. 3, is a front elevation of a portion of the starter, showing the pipes which lead to the engines. Fig. 4, is a plan view thereof, the said pipes being omitted. Fig. 5, is a vertical sectional view (full size) through the lower ends of two of the starter cylinders and the auxiliary carbureter which forms the lower part of the starter, showing also the check valves between the carbureter and cylinders, and those controlling the outlets to the engine. Fig. 6, is a horizontal, sectional view taken on line 6—6 of Fig. 5 through the auxiliary carbureter, looking in the direction of the arrow. Fig. 7, is a sectional view through the cut-off valve, which opens or closes communication between the starter and the engines. And Figs. 8 and 9, are sectional views of the two check valves which admit air to the auxiliary carbureter.

Similar numerals of reference refer to similar parts throughout the several views.

Referring to the drawings, the numeral 1, designates the front portion of the frame of an automobile; 2, designates the radiator; 3, desigates the dasher of the automobile; and 4, designates the engines.

Our invention is particularly adapted to four and six cylinder automobiles. To each cylinder, preferably to its top cylinder head portion, we connect one end of a small pipe 5; each of these pipes extends to and is connected to a valve 7, which we term the starting valve, containing four independent ports, one for each of the explosive mixture inlet pipes of the cylinders. Each of these ports registers with one of the pipes 5, and this valve is also provided with four pipes 8, that extend to a pump connected with a carbureter 9. We preferably use a plug valve, although any other form of valve may be used if desired. This plug valve 7, comprises a casing 10, which is provided with a set of four inlet ports 11, and also a set of four outlet ports 12. The inlet ports 11, each receive one end of one of the inlet pipes 8, and the outlet ports 12 connect to the pipes 5, that extend to the engines. The valve 13 of this plug valve is tapering, and is provided with a valve stem 14, and with a hand wheel 15, seated in a tapering or conical seat in the casing, and is provided with four ports, which are arranged to register with the ports 11 and 12 of the casing, so that by turning the hand wheel the ports will all be opened or closed simultaneously. The valve 7 is provided with foot lugs 17, by which it is secured to the outside of the dasher.

The carbureter 9 comprises a reservoir portion, which is provided with foot lugs, by which it is secured to the inside of the dasher within easy reach of the chauffeur. To the bottom of this reservoir, we secure one end of a nipple 18, which forms a housing for an air inlet valve 19, preferably using the ball type of air inlet and check valve in common use. This nipple casing is provided with an air inlet 20, through its shell adjacent to its end, and a plug valve 21 is threaded into the end of the casing and is arranged to close or open this air inlet as desired, by turning this plug valve. This nipple also extends through the bottom of the reservoir and up through it to near its upper end. We also attach to the bottom of the reservoir portion of this carbureter 9, a drip faucet 22, and to the side of the reservoir we secure an air inlet valve 23, of a well-known commonly used type. In order to protect this valve 23 from moving objects, we secure a tube 24 over it.

In addition to this reservoir portion, this carbureter consists of a set of four explosive mixture pumping cylinders 25, one for each engine. We preferably arrange these four cylinders to project vertically upward from the top head 26 of the reservoir, which also forms the lower cylinder head of all four cylinders. Each of these cylinders is provided with a piston rod 27, and each piston rod is provided with a piston head 28. The piston rods of all four cylinders project above the upper ends of the cylinders, and to the upper ends of all of them a cross-head 29 is secured. To the opposite sides of this cross-head one of the ends of two connecting rods 30 is pivotally connected. The opposite ends of these connecting rods are pivotally connected to a yoke-shaped rock arm 31, intermediate of its ends, which is arranged to straddle the cylinders, and which is pivotally connected at its ends to lugs 32, formed on the upper cylinder head. The cross-bar portion of this yoke-shaped lever is provided with a handle 33, which is arranged to extend within easy reach of the chauffeur, and which when moved reciprocally operates the cross-head and the pistons of the four cylinders simultaneously.

To the bottom portion of each cylinder, we secure an outlet nipple 34, each of which is provided with a spring-operated check valve 34^A, and to the outer ends of the nipples we secure the ends of the four tubes 8, that are connected to the starting valve 7. The lower ends of these cylinders are attached to the upper head portion 26 of the reservoir, preferably by being threaded to lug rings 35, and through this head 26 into each cylinder an air valve nipple 36 is threaded, each of which is provided with an air inlet valve 37 preferably of the ball type. The explosive gas mixture is drawn into the cylinders through these valves. To the under side of this head plate 26, we secure one end of a tube 38, which depends into the reservoir to close to its bottom end, and surrounds a tubular extension 16, which screws into the upper end of the inlet nipple 18. The upper end of the shell of this tube is provided with a plurality of apertures for the passage of the air that enters the tube 16 through the air valve into the top portion of the reservoir, and over this tube a tubular wick 39 is placed, which engages the surface of the tube. This wick is arranged to depend to and to preferably bear against the bottom of the reservoir, and is adapted to be constantly saturated with the solution that is placed in the reservoir. We use for this ether or gasolene solution, preferably ether, as ether makes an explosive hydro-carbon mixture that is more positive, quicker, and more reliable in its action, and is not rendered so unreliable and slow to ignite in cold weather as is gasolene air gas.

The operation of our auxiliary automobile engine starter is as follows: The reservoir is provided with a supply of ether or gasolene. We preferably fill it about one-third full of either ether or gasolene, and in order to start the engines of the automobile the chauffeur opens the starting valve, which opens all four of the explosive mixture pipes leading from the reservoir to the cylinders, and then grasps the handle of the carbureter, and gives it several reciprocal movements, which reciprocate the pistons in the cylinders and suck air into the reservoir through both air valves 18 and 23; the air entering the valve 23 is drawn directly into the top portion of the reservoir, and the air entering the valve 18 flows into the perforated tube, and is drawn or filtered through the gasolene or ether saturated wick by the suction action of the piston of each cylinder, and this air becomes highly impregnated with the ether or gasolene, and becomes an explosive gas, which is drawn through the air check valves 36 in the head plate of cylinders and of the reservoir, into the cylinder on the up strokes of the pistons, and is held in them by these air check valves and is forced out of the cylinders into the pipes 8 to the starting valve, and flows through this starting valve through the pipes 5 to each of the cylinders. Having pumped the explosive mixture, the chauffeur operates the sparking device of the automobile, which ignites the explosive gas in some one or two of the cylinders, and starts the engines. The cylinder head 26, is provided with grooves or passages 40, which connect the carbureter valves 36 with the cylinder valves 34, and when the pistons 28, are down against the bottoms of the cylinders 25, and the cut-off valve 7 is open, the engines may draw the explosive mixture from the carbureter 9, through these passages 40, thus using the carbureter 9 as an auxiliary, in connection with the regular carbureter.

Our invention is adapted to coöperate with any type of mechanically operated sparking device, and particularly to the Pittsfield and Atwater Kent spark generators.

Our invention is simple and very positive, and always reliable when ether is used as a carbon for the gas.

Having described our invention, what we claim as new and desire to secure by Letters Patent, is:

1. In an auxiliary starter for automobile engines, a reservoir, a pipe leading from said reservoir to each engine, a valve arranged to control all of said pipes; a combustible mixture pumping cylinder for each engine mounted on said reservoir, and means including a lever for operating said combustible mixture pumping cylinders.

2. An auxiliary starting device for the group of hydro-carbon engines of automo-

biles, comprising an operative hydro-carbon carbureter, a group of combustible mixture pumping pumps attached to said carbureter, said group of pumps representing a pump for each engine in said group of engines, and each pump being independent of the other pumps in said group of pumps, an independent pipe extending from each of said pumps to each engine of said group of engines, and a valve connected to all of said pipes and provided with an independent port registering with each pipe, said valve being arranged to open or close all of said pipes simultaneously.

3. In an auxiliary starting device for the engines of automobiles, the combination with an automobile and its engines, of a carbureter mounted on said automobile, comprising a reservoir portion, an air inlet valve in the bottom of said reservoir, provided with a tube portion extending into said reservoir, an air inlet extending into the side of said reservoir adjacent to the upper end of said tube and of said reservoir, an upper head plate to said reservoir, a perforated tube depending from said head plate and surrounding the tubular portion of said reservoir's lower air inlet valve and extending adjacent to the bottom portion of said reservoir, a liquid absorbing fabric fitting over said tube, a plurality of operative combustible mixture pump cylinders and pistons mounted on said head plate, said plurality of pumping cylinders and pistons equaling in number the number of said automobile engines, and provided with combined inlet and check valves extending through said plate into said reservoir, and with combined outlet and check valves, each of said pumping cylinders and pistons being independent of each other, a pipe connected to the outlet valve of each cylinder, and each pipe extending to and connected to some one of the engines of said automobile, a valve connected to each pipe and arranged to open or close each and all of said pipes simultaneously, and means including a hand operating lever connected to the pistons of said pumping cylinders for reciprocating said pistons in said cylinders and pumping an explosive mixture from said reservoir through said pipes and their valve to said engines.

4. In a device as specified, the combination with a plurality of explosive engines, of a pump comprising a number of cylinders corresponding to the number of engines; a carbureter; a check valve in each cylinder communicating with the carbureter; nipples communicating with the cylinders and check valves in said nipples; a cut-off valve having inlets and outlets corresponding to the number of engines; pipes connecting the said nipples with the cut-off valves; and pipes connecting the cut-off valve with the engines.

5. In a device as specified, the combination of a carbureter; a plurality of pumps, and means for operating the pumps simultaneously; check valves connecting the pumps and carbureter; a cut-off valve; nipples on the pumps having check valves; pipes connecting the nipples and cut-off and pipes for connecting the cut-off valve with explosive engines.

6. In a device as specified, a carbureter; a plurality of pumps; check valves connecting the pumps and carbureter; and means for operating the pumps simultaneously; an inlet tube in said carbureter having a check valve; a perforated tube surrounding the inlet tube, and connected to the top of the carbureter; an absorbent fabric surrounding the perforated tubes; a cut-off valve; nipples upon the pumps having check valves; pipes connecting the nipples with the cut-off valve; and pipes leading from the cut-off valve.

7. In a device as specified, a plurality of pumps comprising cylinders, pistons, and piston rods; a cross-head to which the piston rods are attached, and a lever pivotally connected with said cross-head and with a fixed support; a carbureter; check valves connecting the carbureter and pumps; a cut-off valve; pipes connecting the cut-off valve and pumps and check valves for controlling the communication between the pumps and cut-off valve, and pipes extending from the cut-off valve.

8. In a device as specified, the combination with a carbureter, a plurality of pumps; check valves which permit ingress from the carbureter to the pumps; check valves permitting egress from said pumps; and pipes leading from said check valves; of a cut-off valve having inlet and outlet ports corresponding to the number of pumps; said pipes being connected with the inlet ports; pipes leading from the outlet ports; and means to open or close said ports simultaneously.

9. The combination in a device as specified, of a carbureter having a perforated tube extending from its upper end; an air inlet tube extending into said perforated tube, having a check valve; an absorbent fabric surrounding said perforated tube; a plurality of pumps upon the top of the carbureter; check valves forming communication between the carbureter and pumps, and a lever for operating the pumps simultaneously; nipples connected with the lower ends of the pumps and check valves in the nipples, the lower ends of the cylinders having passages which connect the carbureter check valves, and the pump check valves, to permit communication between them, when the pump pistons are at the bottom of the pump cylinders, and pipes leading from the pump check valves.

10. In a device as specified, the combination with a carbureter; a plurality of pumps; check valves connecting the pumps and carbureter; check valves leading from the

pumps; and means for operating the pumps simultaneously; of a cut-off valve comprising a casing having ports extending through the same and corresponding in number to the pumps; pipes connecting the pump check valves with the ports on one side of the cut-off valve casing; pipes leading from the ports on the opposite side of the said valve casing, and an operating plug on said casing having ports adapted to register with the ports in the casing, whereby the ports are opened or closed simultaneously according to the position of the plug.

In testimony whereof we affix our signatures in presence of two witnesses.

JAMES W. JACKSON.
FRANK JACKSON.

Witnesses:
G. SARGENT ELLIOTT,
ADELLA M. FOWLE.