

C. B. WILCOX.
 AUTOMOBILE STARTING DEVICE.
 APPLICATION FILED JUNE 10, 1910.

989,678.

Patented Apr. 18, 1911.

Fig. 1.

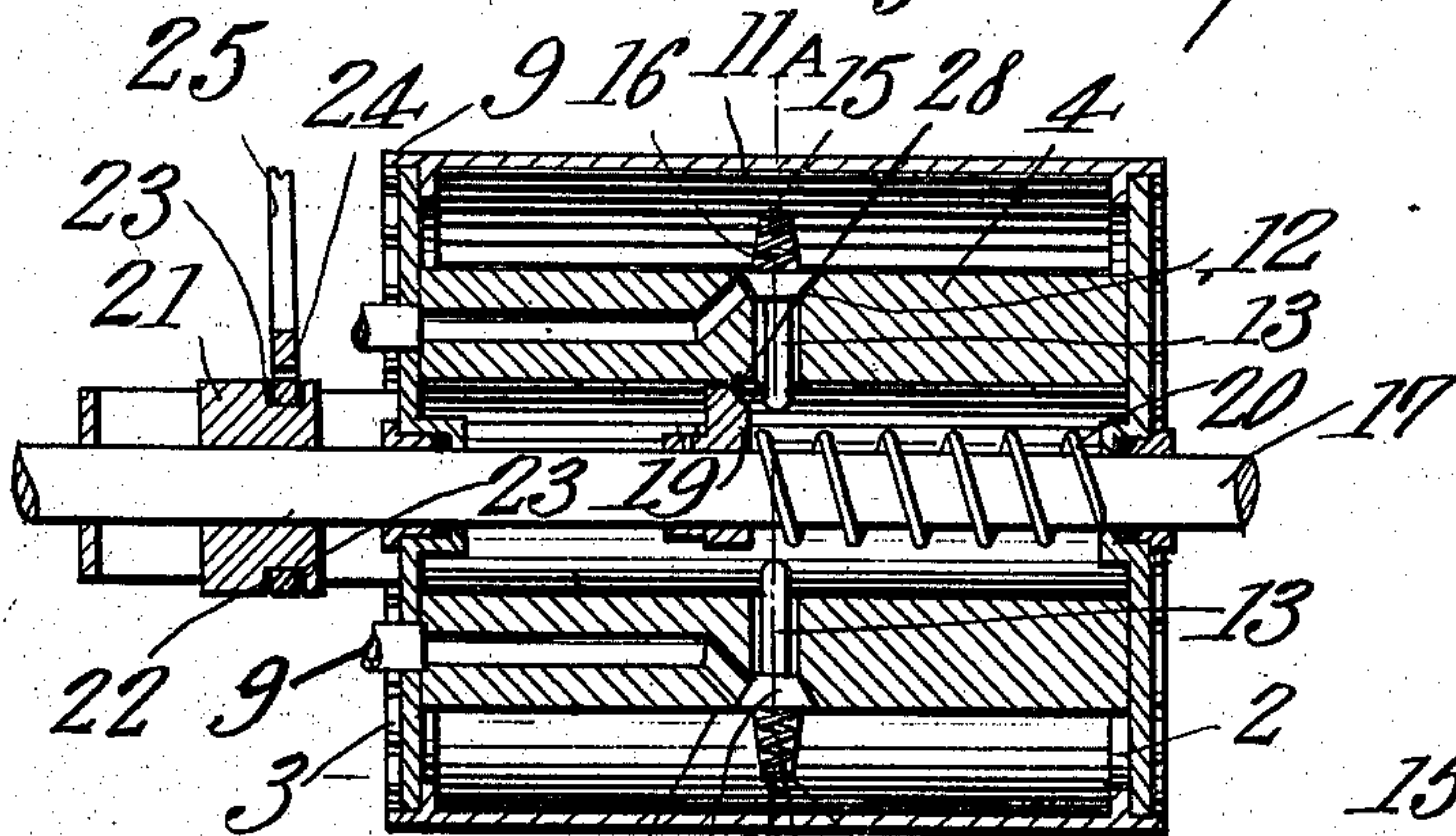
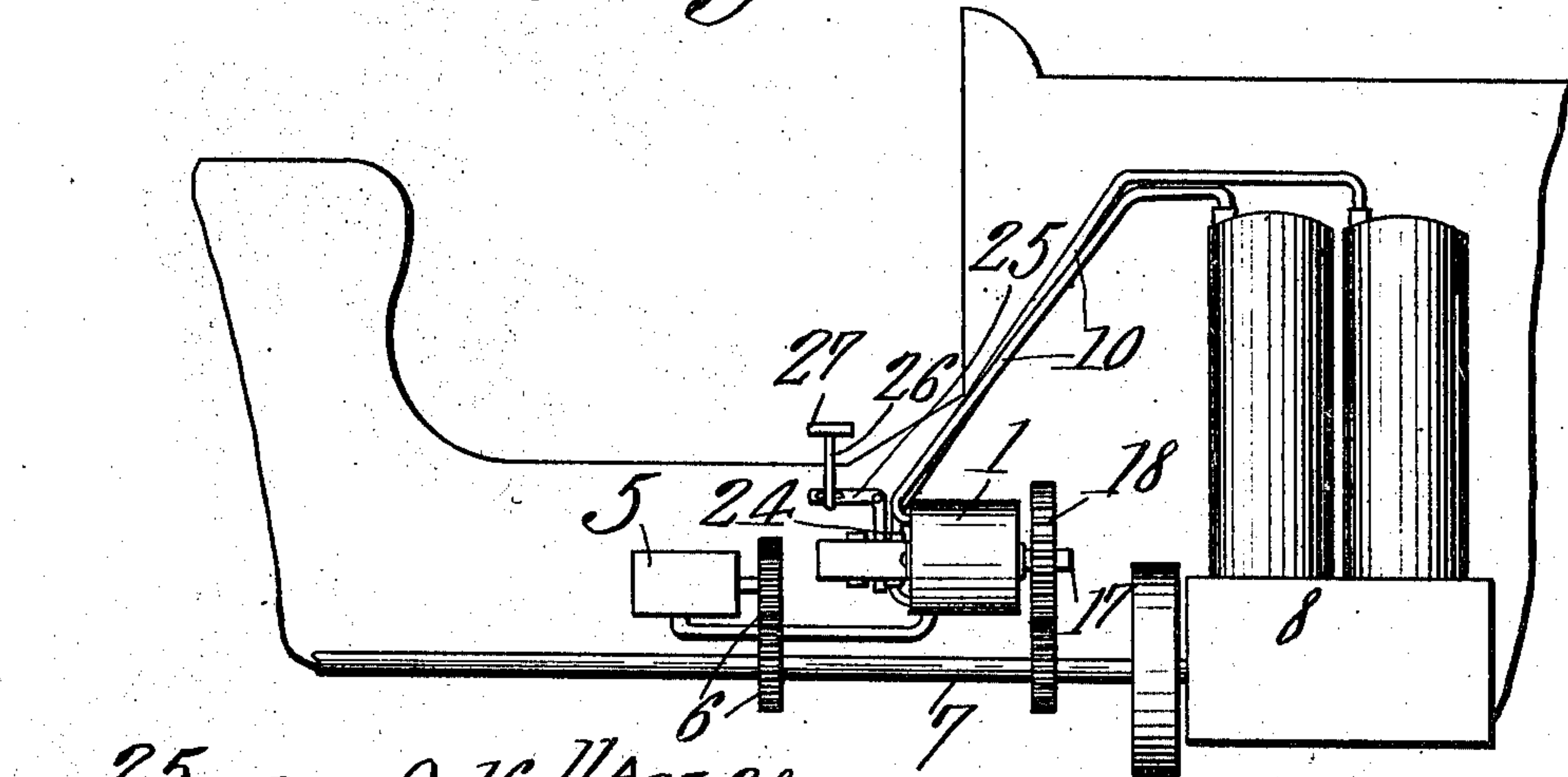


Fig. 2.

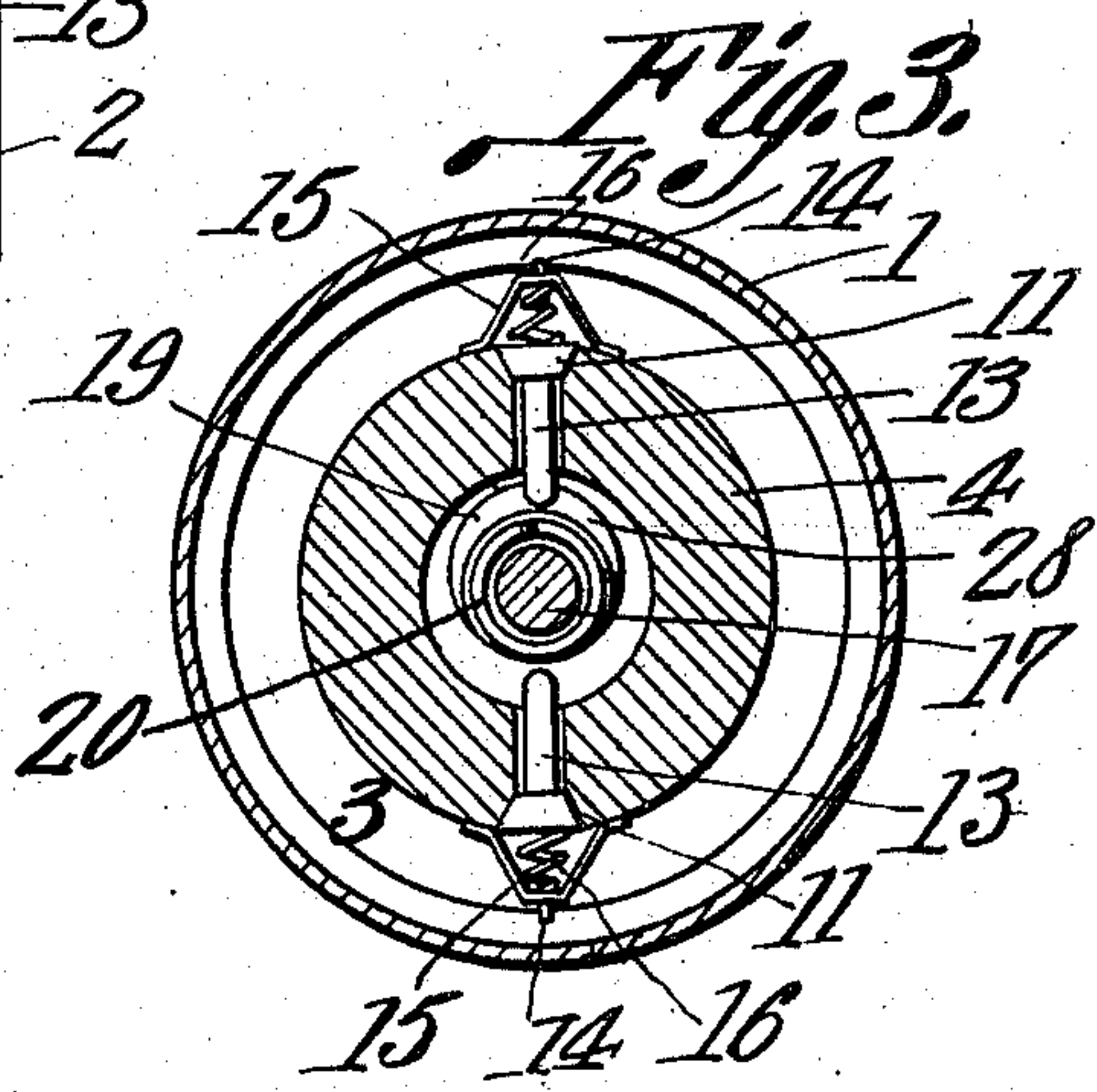


Fig. 3.

Witnesses
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UNITED STATES PATENT OFFICE.

CLARK B. WILCOX, OF UNION CITY, MICHIGAN.

AUTOMOBILE STARTING DEVICE.

989,678.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, CLARK B. WILCOX, a citizen of the United States, residing at Union City, in the county of Branch and State of Michigan, have invented a new and useful Automobile Starting Device, of which the following is a specification.

This invention relates to starting devices for explosive engines such as used ordinarily for operating motor vehicles and one of the objects of the invention is to provide means whereby air under pressure may be utilized for the purpose of giving the initial impulse to the engine.

Another object is to provide starting mechanism which is durable and compact in construction and can be readily applied to different forms of explosive engines.

A further object is to provide a starting device which can be readily controlled by the operator.

With these and other objects in view the invention consists of certain novel details of construction and combinations of parts hereinafter more fully described and pointed out in the claims.

In the accompanying drawings the preferred form of the invention has been shown.

In said drawings:—Figure 1 is a side elevation of the mechanism, its connections with the motor, pump and reservoir being shown diagrammatically. Fig. 2 is an enlarged central longitudinal section through the controlling device. Fig. 3 is a section on line A—B Fig. 2.

Referring to the figures by characters of reference 1 designates a casing, preferably cylindrical and closed at its ends by heads 2 and 3, there being a concentric distributing drum 4 secured within the casing and closed at its ends by the heads.

That portion of the structure between the casing 1 and the drum 4 constitutes a storage reservoir in which air is adapted to be compressed by a pump 5 operated through gears 6 or the like by the drive shaft 7 of the engine 8. Ports 9 are formed in the head 3 and are equal in number to the number of the cylinders of the engine, each of these ports being connected to one of the cylinders by means of a pipe 10. Each port 9 extends longitudinally within the drum 4 and opens into a valve seat 11 formed in the peripheral portion of the drum, one of these valve seats being provided for each cylinder of the

engine 8 and each seat having a valve 12 normally bearing thereon. A stem 13 projects from each valve and into the interior of the drum 4 and another stem 14 projects outwardly from each valve and is mounted within a guide strip 15, there being a spring 16 upon the stem 14 for holding the valve 12 normally upon its seat, the valve when thus seated, closing the port 9 which opens into the said seat. The valve stems 13 are all disposed in the same transverse plane, and a shaft 17 extends between these stems and is journaled in the centers of the heads 2 and 3, this shaft being adapted to receive motion through gears 18, sprockets or other suitable elements from the shaft 7, the power transmitting elements being preferably so proportioned as to drive the shaft 17 at one half the speed of the shaft 7. This shaft 17 is mounted for sliding movement as well as for rotation, it being understood that the gear thereon is feathered so as to permit such sliding movement. A cam 19 is secured upon the shaft 17 at a point within the drum 4 and is adapted, when said shaft is rotated, to successively contact with the stems 13 and unseat them. A spring 20 surrounds a portion of the shaft and bears at one end against the cam 19 and at its other end against the head 2, this spring thus serving to hold the cam normally removed from the stems 13 so that the cam can rotate without unseating the valve.

A collar 21 is secured to the shaft 17 and has an annular groove 22 in which is loosely mounted a ring 23 having the forked end 24 of a bell crank lever 25 pivotally connected to it. This bell crank lever has its upper arm connected to a stem 26, the head 27 of which may be depressed either by hand or by foot.

As has heretofore been stated, the number of ports 9 and valves 12 equal the number of cylinders of the engine, and these valves are so arranged as to be opened or unseated in proper succession by the cam 19 and in the order that their cylinders take compression. Under ordinary conditions the shaft 17 rotates without causing the cam to unseat the valve. However when it is desired to start the engine, the bell crank lever 25 is shifted by means of the stem 26 and the shaft 17 is thus shifted longitudinally so as to bring the cam 19 into position between the stems 13. As the shaft rotates it will shift stem 13 to successively unseat the

valves 12. The air which has been compressed within the outer casing 1 by the pump 5 will then rush through the open port and into the proper cylinder of the engine so as to start the engine. In order that the cam may not hang upon stem 13 when it is shifted with the shaft 17, the advancing face of the cam is preferably beveled as clearly indicated at 28 in Fig. 2.

Although in the drawings only two valves and two cylinders have been shown it is to be understood that any desired number of valves may be employed, this depending upon the number of cylinders of the engine.

It will be apparent of course that as soon as the stem 26 is released, the spring 20 will return the shaft 17 and the cam 19 to their initial positions and all of the valves 12 will therefore promptly be seated automatically by their springs 16.

Various changes can be made in the construction and arrangement of the parts without departing from the spirit or sacrificing any of the advantages of the invention as defined in the appended claims.

What is claimed is:—

1. An engine starter including a distributing cylinder having ports connected to the respective cylinders of the engine, a compressed air container surrounding said distributing cylinder, valves for closing the respective ports, a member mounted for rotation within the distributing cylinder, means for transmitting motion thereto from the engine, and means for manually shifting said member toward the valves to unseat the valve in the path thereof and admit air from the container to the opened port.

2. An engine starter including a distributing drum having ports opening into the respective cylinders of an engine, a container extending around the drum and for holding air under pressure, spring controlled valves for normally closing communication between the ports and the container, a shaft revolubly mounted within the drum and actuated by the engine, manually operated means for shifting the shaft in one direction, and means movable with the shaft for engaging and unseating the valve in the path thereof during the manual actuation of the shaft.

3. An engine starter including a distributing drum having separate ports opening into the respective cylinders of an engine, spring controlled valves normally closing said ports, an air container extending around the drum, a pump, means operated by the engine for driving the pump to compress air within the container, a shaft mounted for rotation in the drum, means for transmitting motion thereto from the engine, a valve unseating device secured to the shaft and having a beveled working face, and manually operated means for shifting the shaft longitudinally to unseat the valve in the path of said device, and place its port in communication with the container.

In testimony that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two witnesses.

CLARK B. WILCOX.

Witnesses:

H. T. CARPENTER,
G. H. LOWELL.