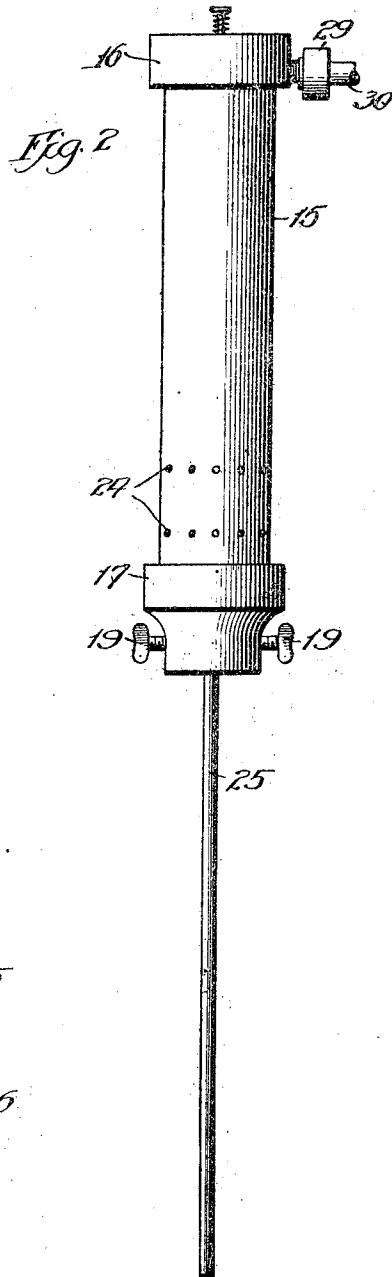
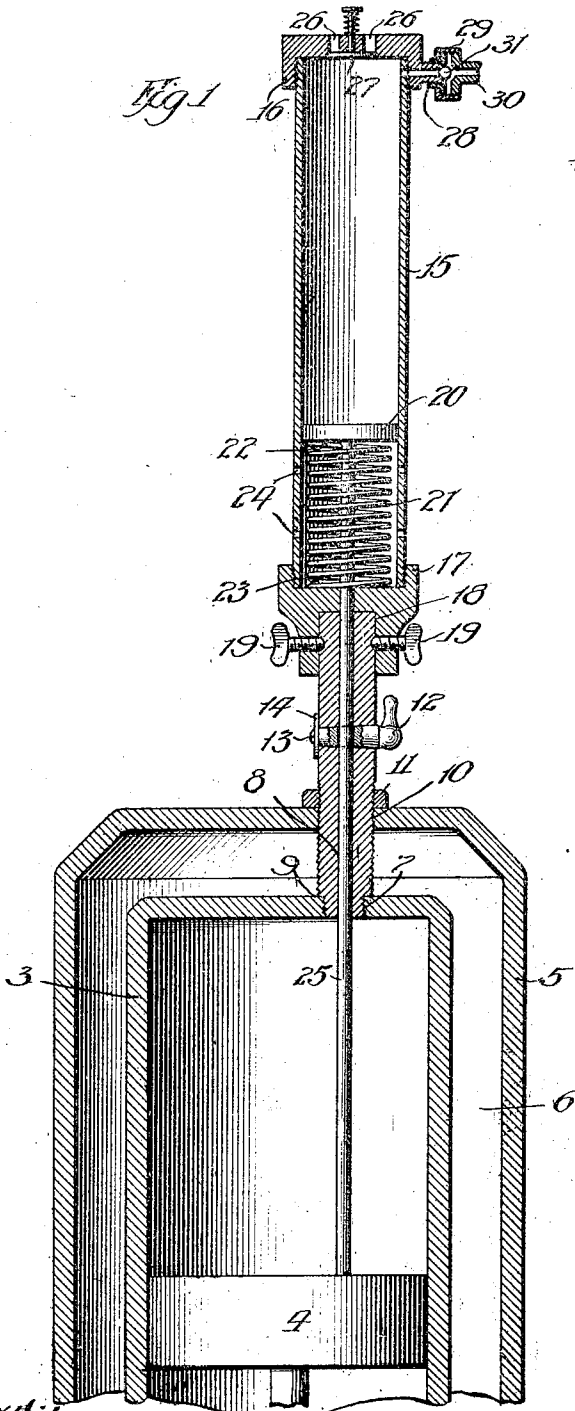


F. E. FOLLETT.
 AIR COMPRESSOR FOR USE WITH ENGINES.
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Patented May 30, 1911.



Witnesses:
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UNITED STATES PATENT OFFICE.

FRANK E. FOLLETT, OF OTTERBEIN, INDIANA, ASSIGNOR OF ONE-HALF TO JOHN R. OPP, OF OTTERBEIN, INDIANA.

AIR-COMPRESSOR FOR USE WITH ENGINES.

998,356.

Specification of Letters Patent. Patented May 30, 1911.

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To all whom it may concern:

Be it known that I, FRANK E. FOLLETT, a citizen of the United States, residing at Otterbein, in the county of Benton and State of Indiana, have invented certain new and useful Improvements in Air-Compressors for Use with Engines, of which the following is a specification.

This invention relates to air compressors for use with engines, and is particularly adapted for use with internal combustion engines, the purpose of the air compressor being to compress air either for storage purposes or for immediate use.

One of the uses for which my invention is particularly adapted is for the inflation of automobile tires, employing for the purpose of operating the compressor one or more of the automobile engine cylinders.

The inflation of automobile tires by means of a manually operated air compressor is a laborious and tedious operation, and it is one of the objects of my present invention to provide means which can be operated directly from the engine for pumping up the tires when required.

Another object of the invention is to provide a device of this character which shall be simple in construction, cheap to manufacture, and which can be readily and quickly attached to the engine when inflation of the tires is required and can be easily and quickly removed and carried in the tool box or other convenient place when not in use.

This invention will be best understood by reference to the following description when taken in connection with the accompanying drawings illustrating one preferred embodiment thereof, in which—

Figure 1 is a vertical sectional view through an engine cylinder and an air compressor arranged in operative relation to the cylinder; and Fig. 2 is an elevation of the air compressor when detached from the engine.

On the drawings 3 designates an engine cylinder which may be of any preferred type or character adapted to inclose the usual engine piston 4. A casing 5 is shown as surrounding the cylinder 3 so as to leave a chamber 6 which provides a water jacket around the cylinder for the purpose of cooling the same.

While the cylinder shown is of a well known internal combustion engine type, it will be evident that the invention is not

restricted to internal combustion engines but is equally applicable to steam engines or in fact any other type of engine embodying a reciprocatory piston.

The engine cylinder 3 is provided with a tapped aperture 7 at its outer end adapted to receive the shouldered threaded end of a hollow stud 8, a shoulder 9 being provided to prevent the stud from projecting into the cylinder. The stud is also exteriorly threaded above the shoulder 9 so that it may be screwed into a tapped opening 10 in the end of the casing 5. A tight fit is thus provided between the stud and the walls of the cylinder and casing, and for the purpose of insuring the retention of the stud in position a lock-nut 11 is threaded down against the outer face of the casing. Substantially midway its length the stud 8 is provided with a transversely disposed turning plug 12 which is adapted to close the bore of the stud when the air compressor is not in use. The turning plug may be of usual construction and is retained in position by the usual set-screw 13 acting in conjunction with the washer 14.

The air compressor comprises a cylinder 15 exteriorly threaded at one end to receive the cap 16 and similarly threaded at its other end for rigid attachment to the lower cap or base 17 which has an elongated contracted portion provided with a socket 18 adapted to fit over the outer end of the stud 8. Set-screws 19 are threaded through the walls of the socket into engagement with the plug disposed therein to securely retain the compressor in position on the plug. A plunger 20 is arranged to reciprocate within the compressor cylinder 15 and is normally held in the position shown in Fig. 1, by a contraction spring 21 secured at one end 22 to the lower face of the plunger and at its other end 23 to the inner wall of the base 17. A plurality of series of perforations 24 are provided in the walls of the cylinder beneath the piston to permit ingress and egress of air behind the plunger 20. An elongated plunger rod 25 secured at one end of the plunger projects through the cap 17, the bore in the hollow stud 8, and the opening through the turning plug 12, some distance into the interior of the engine cylinder 3. Air is admitted to the cylinder 15 of the compressor through an air inlet opening 26 over which there is normally disposed a

check-valve 27. A laterally projecting nipple 28 is threaded for engagement by a coupling ring 29 which connects a flexible hose 30 to the cylinder, and a ball check-valve 31 adapted to seat against the ground end of the nipple 28 prevents a reverse flow of air from the hose 30 back into the cylinder.

The air compressor when not in use is disconnected from the stud 8 by loosening the set-screws 19 and may be carried in the tool box of an automobile or left in any convenient location, and when the engine is running under normal conditions with the compressor removed, the turning plug 12 is turned to close the bore of the hollow stud 8. When it is desired to employ the air compressor to inflate the tires of an automobile or for any other purpose, the turning plug 12 is positioned with its opening in alinement with the bore of the hollow stud 8 so that the end of the plunger rod 25 may be inserted through the stud into the interior of the cylinder, and the base 17 may be secured upon the outer end of the stud. With the parts assembled as indicated, upward movement of the engine piston 4 will impart a corresponding movement to the plunger 20 through the instrumentality of the plunger rod 25, the protruding end of which will be engaged by the upper face of the engine piston. Upon the return stroke of the piston the plunger is returned to normal position by the contraction spring 21. It will thus be evident that at each reciprocation of the engine piston the plunger 20 will be given a proportionate reciprocation and air will be alternately drawn into the compressor cylinder past the valve 27 and expelled from the cylinder past the valve 31.

It is believed that the invention and its mode of operation will be clearly understood from the above description and it is obvious that various changes in the size, proportion and structural details of the various parts may be resorted to without departing from the spirit of the invention or sacrificing any of the material advantages thereof.

I claim:

1. The combination of an engine cylinder, a hollow stud threaded through the wall thereof, a pump cylinder, a base secured to said cylinder and having a socket adapted to fit over the end of said stud, set-screws carried by said base for attaching the cylinder to said stud, air inlet and outlet valves connected with said pump cylinder, a plunger mounted to reciprocate within said cylinder

and an elongated plunger rod attached to said plunger and projecting through said hollow stud into the path of the piston disposed within the engine cylinder whereby outward movement of the engine piston will impart a corresponding movement to the pump plunger, and means for returning said pump plunger to normal position upon return movement of the engine piston, substantially as described.

2. The combination of an engine cylinder, a hollow stud projecting from one end thereof and having its bore communicating with the interior of said cylinder, a valve disposed across the bore of said stud, an air compressor comprising a base adapted to fit over the outer end of said stud, means for detachably securing said base on said stud, a reciprocatory plunger disposed within the cylinder provided with an elongated plunger rod projecting through the hollow stud and through the valve therein into the engine cylinder whereby a reciprocatory movement is imparted by the engine piston to the plunger rod during the operation of the engine, substantially as described.

3. The combination of an engine cylinder, a hollow stud projecting from the end wall thereof, an air pump adapted to be moved longitudinally into position on said stud, means for locking said cylinder in position on the stud, a reciprocatory plunger disposed within said cylinder, and a plunger rod secured to said plunger and extending through said stud into the interior of the engine cylinder in position to be engaged and actuated by the engine piston located therein, substantially as described.

4. The combination of an engine cylinder, a hollow stud projecting from the wall thereof, an air compressor comprising a cylinder provided with inlet and outlet ports, a plunger mounted therein, an elongated plunger rod projecting from said plunger through said stud into the path of the reciprocatory piston within the engine cylinder whereby the plunger will be positively operated directly from the engine piston, and means for detachably securing said compressor on said stud and permitting the compressor to be detached and the plunger rod to be removed from the stud, substantially as described.

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