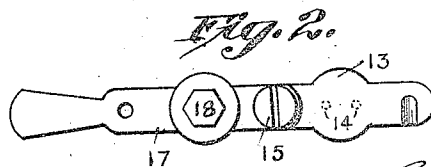
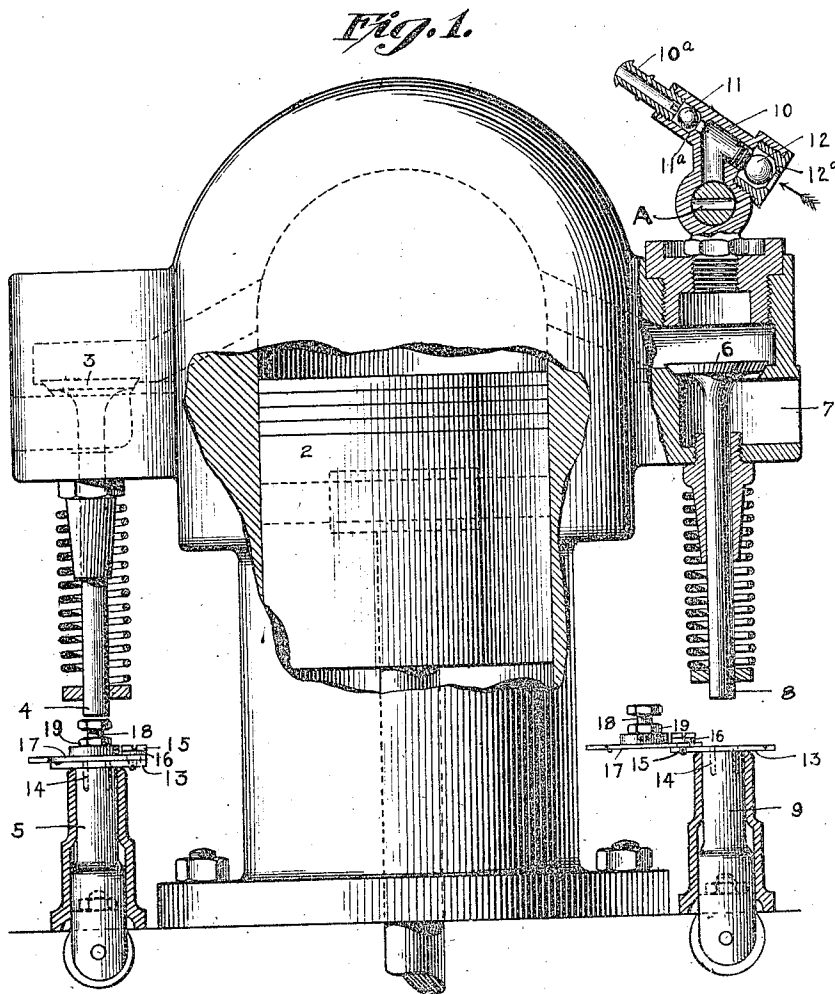


L. GALLI.
 DEVICE FOR SUPPLYING COMPRESSED AIR.
 APPLICATION FILED APR. 24, 1907.

952,799.

Patented Mar. 22, 1910.
 2 SHEETS—SHEET 1.



WITNESSES
Edw. J. Bennett
And A. Bennett.

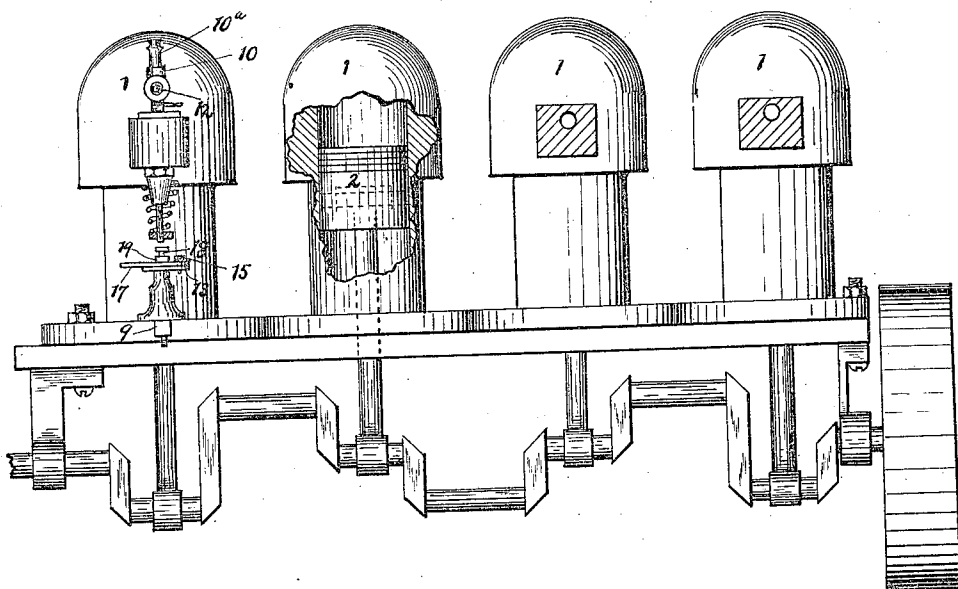
INVENTOR
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Fig. 3.



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UNITED STATES PATENT OFFICE.

LOUIS GALLI, OF NEW YORK, N. Y.

DEVICE FOR SUPPLYING COMPRESSED AIR.

952,799.

Specification of Letters Patent. Patented Mar. 22, 1910.

Application filed April 24, 1907. Serial No. 369,926.

To all whom it may concern:

Be it known that I, LOUIS GALLI, a citizen of the Republic of Switzerland, and resident of New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Devices for Supplying Compressed Air, of which the following is a specification.

My invention relates to improvements in devices for supplying compressed air, and particularly to devices for pumping up automobile tires, and more particularly to those devices connected with or operated by the engine of the car itself.

The objects of my invention are to provide a convenient, economical, simple, effective, easily operated and satisfactory arrangement by which a force of compressed air may be obtained, and particularly such a device as can be readily attached to an existing engine. I accomplish these ends by the means described, illustrated and claimed in the accompanying specification, drawings and claims, in which drawings like characters of reference refer to like parts throughout the respective views.

Figure 1 is an elevation of one cylinder of a multiple cylinder engine partially in section and showing parts broken away to show the interior structure, and embodying my improvement. Fig. 2 is a plan of a portion of the device constituting my improvement. Fig. 3 is a side view of a multiple cylinder engine to which my invention has been applied.

In the figures, 1— is one cylinder of a multiple cylinder engine; 2— the piston; 3— the inlet valve; 4— the inlet valve stem; 5— lift rod of the inlet valve stem actuated by the ordinary cam; 6— the outlet valve; 7— the outlet passage; 8— the outlet valve stem; 9— the lower part of the outlet lift rod actuated by the usual cam; 10— body of a double valve adapted to be attached to the cylinder, preferably over the outlet valve; 10^a— hose nipple; 11—12— check balls; 11^a—12^a— ball valve seats; A— being a valve by which the air can be admitted to or cut off from the cylinder. 13—14—15—16—17—18—19— cutting out device comprising the plate—13—, securing pins—14—, pivot—15—, spring—16—, lever—17—, stud—18— and nut—19—.

In many instances where explosive engines are utilized, it is desirable to obtain a quantity of compressed air, and this is

particularly true in the case of automobiles, where not only is a quantity of air under pressure often necessary, but this air must be comparatively pure; for instance, where it is desired to pump up the tires. Heretofore it has generally been necessary to fill the tires by the laborious method of hand or foot pumping—at once slow and tiresome. It is, moreover, impracticable and unsatisfactory to fill the tires with the burned gases scavenged from the cylinders, since the same injuriously affect the rubber of the tires.

The operation of the device is as follows, taking, for example, the occasion of pumping up a tire:—The plates—13— being secured to the top of the lift rods—5— and—9— by the pins—14—, and the levers—17— being thrown over in such way that the studs—18— (adjusted and held by the nut—19—) are directly under the valve stems—4— and—8— (it being understood, of course, that this attachment is applied to both the inlet and outlet valves); the valves are, therefore, operated by the usual cam and in the usual way. When it is desired to commence pumping, however, the levers—17— are thrown over, thus removing the studs—18— from their position intermediate the valve stems and lift rods—that is, —4— and—5— of the inlet valve, and—8— and—9— of the outlet valve. It is evident, therefore, that the motion of the cams can no longer be transmitted to the valves. The cylinder, therefore, becomes inoperative, so far as giving any propulsive effect, but since the piston is nevertheless reciprocated within the cylinder by the operation of the remaining cylinders of the engine, the cylinder is thus turned into a pump, and, in order to take advantage of this and properly control the air drawn in and forced out of the cylinder, I attach the valve and hose attachment—10—, etc., to the cylinder-head in such way that it shall be accessible and convenient. I prefer to place it over the outlet valve passage as illustrated. The operation of this valve will be clear and is as follows:—When the piston commences a down stroke, the pressure of the outside atmosphere forces the ball—12— away from its seat—12^a—, thus permitting free access of the air to the interior of the cylinder. At the same time, the ball—11— is, by the atmosphere, and as here shown, by gravity, forced against its seat—11^a—, thus preventing the withdrawal of

the air already pumped to the tire or other receptacle. At the beginning of the up-stroke, the air which has filled the cylinder during this operation just described is, of course, forced out, bringing the ball —12— against its seat —12^a— and forcing the ball —11— away from its seat —11^a—, and thence passing into the tire or other receptacle—the operation being repeated indefinitely. It will be evident that this operation can be accomplished without stopping the engine and by merely manipulating the levers —17— on the two main engine valves, and the valve —A—, and that the cylinder can be made again instantly coöperative with the other cylinders of the engine by merely moving the levers —17— to their normal and original position—the valve —A— being opened or closed according as the cylinder is or is not in operation as an air pump.

What I claim and desire to protect by Letters Patent is—

1. An engine comprising a plurality of cylinders; a piston in each of said cylinders; gas inlet and exhaust valves for each cylinder; means for rendering the valves of one cylinder inoperative, said means comprising lift rods; studs rotatable and adjustable upon said lift rods, and adapted to engage the stems of said valves; an air inlet and outlet attachment for said cylinder, removably mounted therein, said attachment comprising an inlet valve operating under atmospheric pressure to admit air to the cylinder; and a valved outlet to said attachment operating to permit the egress of air from the cylinder; and a throttle intermediate said valves and the cylinder for interrupting the communication between the valves and cylinder.

2. An engine comprising a plurality of cylinders; a piston in each of said cylinders; gas inlet and exhaust valves for said cylinders; means for converting one of said cylinders into an air pump, said means comprising lift rods, rotatable studs mounted upon said lift rods normally engaging the valve stems of said gas inlet and exhaust valves of said cylinder, but adapted to be rotated so as to render said valves inoperative; and a combined air inlet and outlet attachment for said cylinder comprising a valve operating under atmospheric pressure to admit air to said cylinder upon the suction stroke of said piston; a valved outlet

permitting the egress of air through said attachment upon the compression stroke of said piston; and a valve intermediate said valves and said cylinder whereby said attachment may be rendered inoperative.

3. The combination, in an engine having a plurality of cylinders, valves for each of said cylinders, and means for holding said valves of one only of said cylinders inoperative, of valve mechanism communicating with said cylinder having said valves adapted to be rendered inoperative, whereby said last mentioned cylinder can be converted into a pump.

4. The combination, in a multi-cylinder engine, of means for maintaining the valves of one cylinder only of said engine, inoperative, and a double valve member communicating with said cylinder and permitting the entrance of air through one of its valves at one stroke of the piston, and permitting the escape of the air from said cylinder through the other of its valves, at a subsequent stroke of the piston, said other cylinders remaining operative to drive said one cylinder.

5. The combination, in a multi-cylinder engine, each cylinder of which has valves and lift rods for actuating said valves, of means for rendering said rods of one of said cylinders inoperative whereby said valves of said one cylinder are held shut and a double valve member communicating with said cylinder and permitting the entrance of air thereinto at one stroke of the piston; and permitting the escape of the air from said cylinder at the succeeding stroke of the piston.

6. The combination, in a multi-cylinder engine, each cylinder of which has valves and lift rods, said lift rods being sectional, a section of each of said rods being bodily movable, whereby it can be displaced to render its valve inoperative, of a member having a passage communicating with said cylinder, further passages communicating with said first passage and a one-way valve in each of said further passages, said member having means for connecting one of said further passages with an air conduit.

Signed at New York in the county of New York, and State of New York this 17th day of April, 1907.

LOUIS GALLI.

Witnesses:

JOHN W. LOVELAND,
WM. P. HAMMOND.