J. H. SCHREIBER.

AIR PUMP.

APPLICATION FILED MAY 17, 1920.

1,382,018.

Patented June 21, 1921.

2 SHEETS—SHEET 1.

Fig. 1.

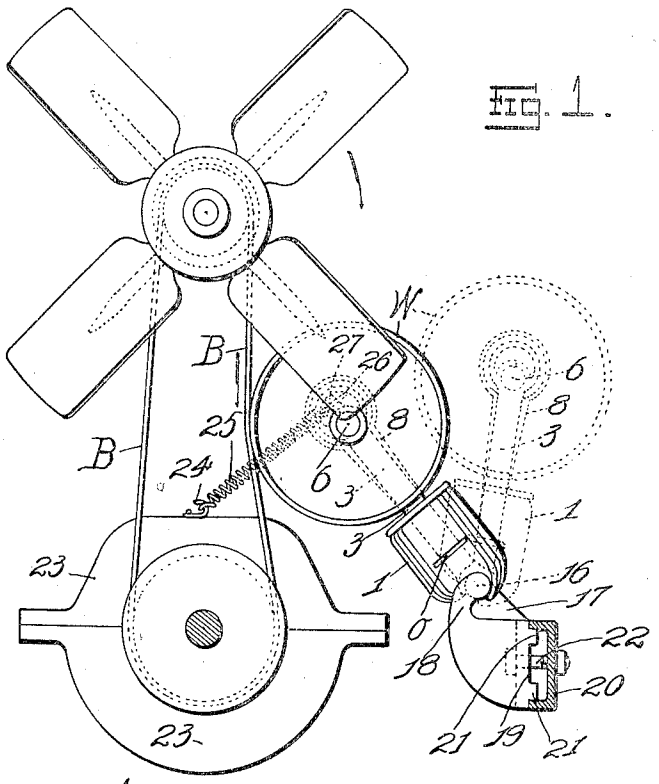


Fig. 2

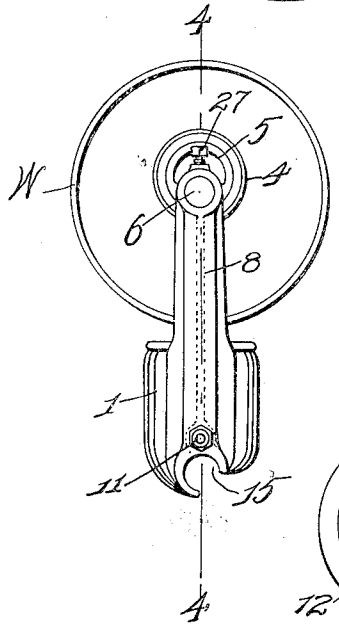
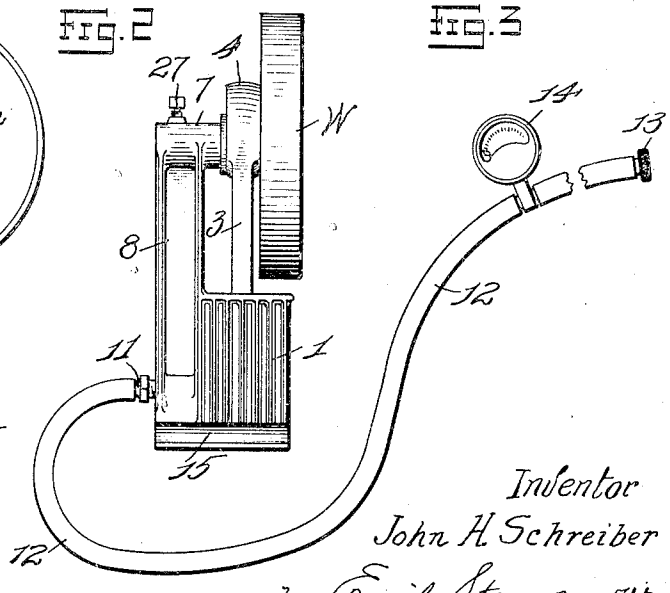


Fig. 3



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2 SHEETS—SHEET 2.

Fig. 4

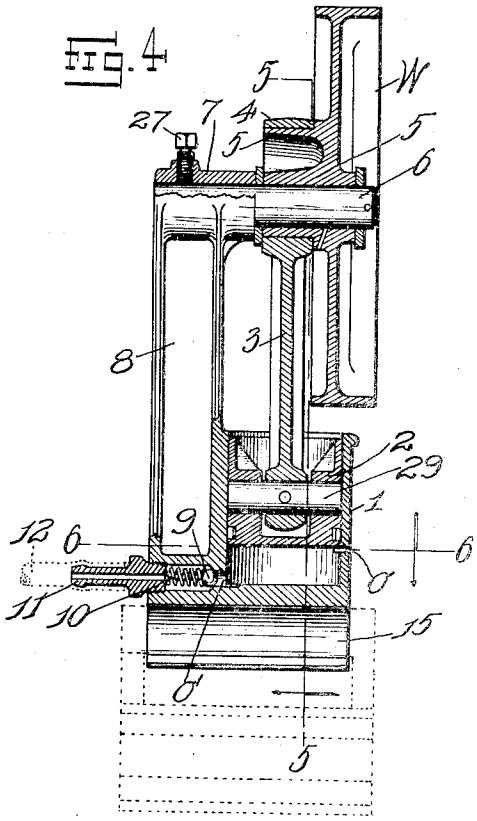


Fig. 5.

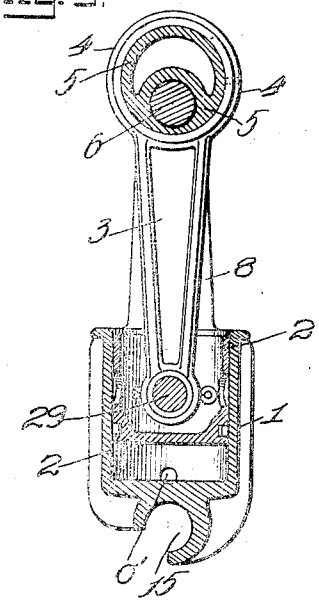


Fig. 6

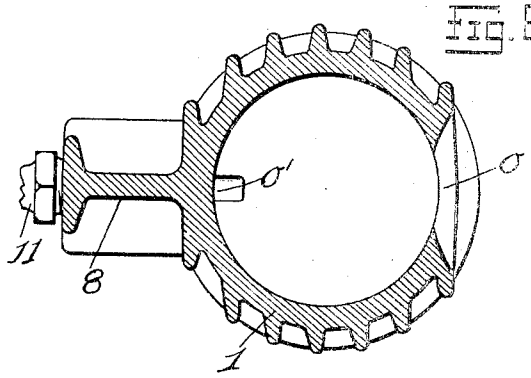


Fig. 7

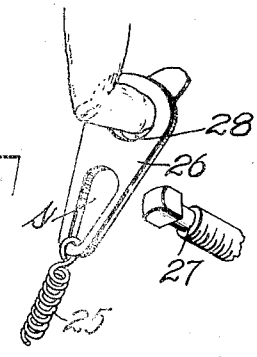
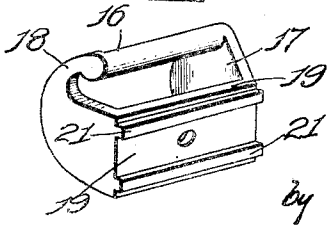


Fig. 8



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UNITED STATES PATENT OFFICE.

JOHN H. SCHREIBER, OF ST. LOUIS, MISSOURI.

AIR-PUMP.

1,382,018. Specification of Letters Patent. Patented June 21, 1921.

Application filed May 17, 1920. Serial No. 381,987.

To all whom it may concern:

Be it known that I, JOHN H. SCHREIBER, a citizen of the United States, residing at St. Louis, State of Missouri, have invented certain new and useful Improvements in Air-Pumps, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part hereof.

The present invention is directed to improvements in air pumps, and particularly to pumps having special application in the inflation of pneumatic tires for automobiles and self-propelled vehicles generally. The object sought is to provide a pump that can be temporarily applied to some driven part of an automobile mechanism, preferably the drive belt for the radiator fan from which the power may be transmitted to the piston of the pump, the latter forming an automobile accessory that can be readily stored in the tool box when not in service. A further object is to provide suitable means for holding the driving wheel actuating the piston in firm frictional engagement with the fan belt aforesaid; means for permitting a quick mounting and demounting of the pump, and to provide further and other features of construction the advantages of which will be fully apparent from the following detailed description in connection with the accompanying drawings in which—

Figure 1 represents a side elevation of my improved pump shown applied to the fan belt of an automobile; Fig. 2 is a side elevation of the pump detached viewed from the opposite side to that shown in Fig. 1; Fig. 3 is a rear elevation of the pump showing the hose attachment leading from the pump cylinder; Fig. 4 is an enlarged longitudinal middle section on the line 4—4 of Fig. 2; Fig. 5 is a longitudinal section at right angles to the section in Fig. 4 taken on the line 5—5 of Fig. 4; Fig. 6 is a cross-section on the line 6—6 of Fig. 4; Fig. 7 is a perspective detail of one end of the spring which holds the pump wheel to the fan belt; and Fig. 8 is a perspective of the plate to which the pump cylinder is hingedly secured.

Referring to the drawings, 1, represents a peripherally ribbed or finned cylinder in which operates a reciprocating piston 2, one end of the cylinder being open. The piston rod 3 leading from the piston extends through the open end of the cylinder a suitable distance and terminates in a strap 4 which is passed about the eccentric hub 5 of the drive wheel W loosely mounted on the axle or spindle 6, the said spindle being supported in a bearing 7 at the free end of an arm 8 preferably cast with the walls of the cylinder and projecting longitudinally a suitable distance beyond the open end thereof as shown, the axis of the spindle 6 being disposed at right angles to, and intersecting the axis of, the cylinder as shown, the periphery of the drive wheel being removed a slight distance from the open end of the cylinder. The length of stroke of the piston is of course determined by the size of the eccentric 5, the piston being at the limit of its outward stroke in Fig. 4 or just beyond the air intake port or slit *o* formed in the cylinder walls as shown. Positioned diametrically opposite the inlet *o* at the base of the arm 8, is the discharge port *o'*, normally closed by a ball check valve 9 held to its seat by a coiled expansion spring 10, the latter being confined between the valve and the inner end of the hollow nipple 11 screwed to the wall of the cylinder, the outer portion of the nipple being formed to receive one end of a hose 12 the opposite end of which terminates in a fitting or coupling 13 for attaching to the casing of the the check-valve on the felly of the vehicle wheel communicating with the inflatable inner tube of the pneumatic tire as well understood in the art. To indicate the pressure of the air the hose 12 is provided with a suitable pressure gage 14 at a convenient point.

Formed at the closed end of the pump cylinder is a diametrically disposed open ended cylindrical groove or slot 15 adapted to receive the hinge pin 16 connecting the terminal web 17 and arm 18 cast with a plate 19 which may be secured to the side channel 20 of the frame of the vehicle, the bottom of the plate being preferably formed with side lugs or ribs 21 to engage the inner faces of the flanges of the channel, a bolt 22 securing the plate to the web of the channel (Fig. 1). In practice the groove 15 of the cylinder is passed longitudinally over the pin 16 from the end adjacent the arm 18 toward the web 17, the latter arresting the cylinder when the groove is fully over the pin, it being observed that the cylinder is so held as to cause the edges of the walls of the groove to clear the arm 18 when the

cylinder is being passed over the pin (dotted position Fig. 1). By now tilting the cylinder about the axis of the pin, the terminal of one of the bounding walls of the groove will be rocked into position opposite the arm 18 so that the cylinder can not slip off the pin while in this inclined position (Fig. 1). The connection is similar to that present in prevailing constructions of link belts, and *per se* is not new. Any equivalent of the hinged connection between the plate 19 and pump cylinder would fall within the spirit of my invention. Secured at some convenient point on the walls of the crank-case 23 or other portion of the vehicle is a hook 24 to which is temporarily anchored one end of a coiled spring 25, the opposite end of the spring carrying a plate 26 provided with a slot *s* for receiving the screw-bolt or set screw 27 by which the spindle 6 is secured in the bearing 7, the plate being provided with a finger hole 28 for easy manipulation.

To inflate a tire the driver takes the pump from his tool box, passes the cylinder over the pin 16 by holding the cylinder in substantially the position shown by dotted lines in Fig. 1, then tilts it sufficiently to bring the drive wheel W against the adjacent lap of the fan belt B usually present on automobiles, the wheel W being held in firm engagement with the belt by the spring 25 one end of which is anchored to the hook 24, the spring being stretched and the opening 28 of the plate 26 at the opposite end passed over the set screw 27. The hose 12 is then coupled to the casing of the check-valve leading from the inflatable tube of the tire, the engine is started and the air pumped into the tube by the reciprocations of the piston 2, as clearly apparent from the drawings. Obviously, the piston rod 3 is pivotally connected to the piston, a pin 29 for that purpose being employed in the present example as shown in Fig. 4. Features shown but not alluded to are well understood in the art and fall within the purview of the skilled mechanic. The device may be altered in many details without involving a departure from the nature or spirit of the invention. For example, in lieu of a fixed spindle or axle 6, about which the wheel W and the eccentric hub 5 are loosely mounted, I may substitute a rotatable shaft to which the wheel with its hub is keyed or otherwise secured. In that event the eccentric might be a separate piece from the wheel and not necessarily a part of it since the wheel would impart rotation to both when it was itself once set in motion. Other changes might be made falling within the purview of the skilled mechanic. Obviously, the pump need not be limited in its application to the inflation of pneumatic tires but may be employed for other purposes not necessary to enumerate herein.

Having described my invention what I claim is:

In an air pump of the character described the combination which comprises a cylinder provided at one end with a groove, a supporting member for the cylinder, said supporting member having a plate secured thereto, said plate having terminal arms projecting therefrom, a pin spanning said arms, one of said arms being shaped to permit the groove in the cylinder to be longitudinally passed over the pin whereby the pin and groove comprise a hinge connection, a piston operating in said cylinder, and means for reciprocating the piston.

In testimony whereof I affix my signature, in presence of two witnesses.

JOHN H. SCHREIBER.

Witnesses:
EMIL STAREK,
ELSE M. SIEGEL.