March 29, 1927. 1,622,876

H. LEO

AIR PUMP

Filed June 13, 1925

FIG. 1

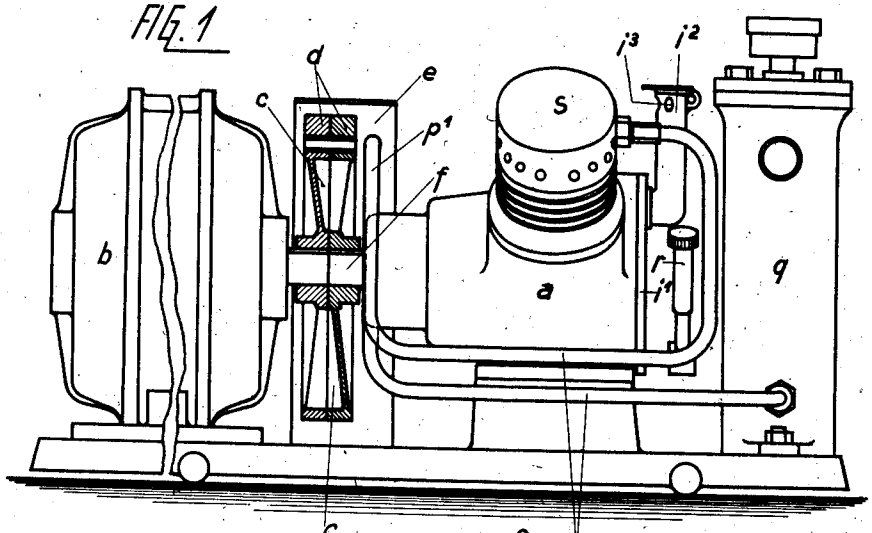


FIG. 3

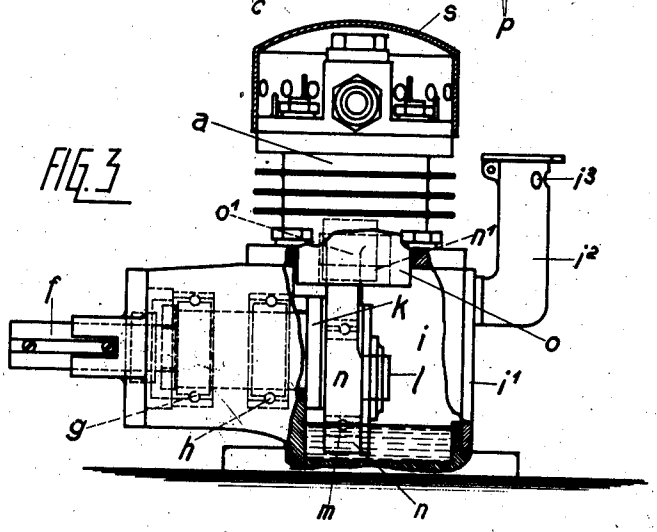
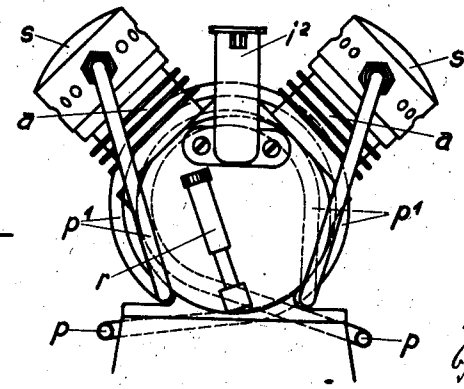


FIG. 2



Inventor:
Hermann Leo
by George C. Heinicke
Attorney.

Patented Mar. 29, 1927. 1,622,876

UNITED STATES PATENT OFFICE.

HERMANN LEO, OF GERA-REUSS, GERMANY.

AIR PUMP.

Application filed June 13, 1925. Serial No. 36,917.

This invention relates to improvements in air pumps, and it is the principal object of the invention to provide an air pump for use in automobiles and garages adapted to be coupled with an electromotor by the intermediary of a fan providing for a continuous and uniform generation of a current of cooling air.

Another object of the invention is the provision of such an air pump with a weighted fan adapted to carry the pump at all times over the dead point.

A further object of the invention is the provision of a one or two cylinder pump in which the motor shaft is guided into an oil containing chamber and has attached thereto a disc with an eccentrically arranged pin or bolt thereon carrying a ball bearing, the ring of which carries an operating member.

A still further object of the invention is the provision of an oil chamber closed by a cover carrying the oil supply duct provided with a plurality of openings in its upper part or head through which the air current generated by the fan enters the oil chamber.

It is furthermore also one of the objects of the invention to provide a pump equipped with a pipe for guiding the exhaust air in a plurality of convolutions past the fan into a pressure wind-chest for effectively cooling said air.

These and other objects and advantages of my invention will become more fully apparent as the description thereof proceeds, and will be specifically defined in the appended claims.

In the accompanying drawing, forming a material part of this disclosure:

Fig. 1 is a side elevation of an air pump constructed according to the present invention, particularly adapted for use as a garage pump.

Fig. 2 is an end view of a two cylinder pump constructed according to the present invention.

Fig. 3 is a side elevation of a one-cylinder pump for use as an automobile pump adapted to be installed into a car.

The air pump *a* is coupled with an electromotor *b* by the intermediary of a ventilator or fan *c* having a weighted part *d* in order to prevent the pump to come to a dead stop.

A casing *e* serves as a protecting cover for the fan *c*.

The shaft *f* of the pump is coupled directly with the electromotor shaft and is journaled in ball bearings *g* and *h* (Fig. 3).

A rotating disc *k* is attached to the end of shaft *f* entering a chamber *i* of the pump casing. This disc is equipped with an eccentrically arranged pin or bolt *l* carrying the ball bearing *m* to which is engaged an operating member *n*, and the bolt *o'* on piston *o* is connecting said operating member and piston by the movable engagement between the head *n'* of the operating member *n* and said bolt *o'*.

A cover *i'* closes the oil containing chamber *i* and carries the oil supply pipe i^2 and an oil gage *r* indicating the level of the oil within chamber *i*.

The oil supply pipe i^2 has openings i^3 in the upper part or head thereof through which the air current generated by the fan *c* is entering the chamber *i* in order to effectively cooling the same.

The air pump can be constructed as a one cylinder pump as for instance illustrated in Figure 3, or as a multi-cylinder preferably two-cylinder pump as shown by way of example in Figure 2.

As one cylinder pump it is especially well adapted for use on cars and can be conveniently installed in motor cars of any type in which case the motor *b* and the wheeled base thereof may be dispensed with, while the two cylinder pump with the electromotor and the wheeled base is particularly well adapted for use in garages, etc.

The air exhausted by the pump is guided through the duct *p* into the pressure wind-chest *q* which is equipped in the well known manner with a reducing safety valve and manometer.

In order to effect a positive cooling of the air exhausted by the pump under pressure, the duct *p* is carried in a number of convolutions *p'* within or into the fan cover *e* close to the fan *c* so that the air current generated by the fan will effectively cool the air in the duct.

The entrance of dirt, dust, etc., into the pump cylinder is prevented by constructing the air exhaust valve as a cap representing the valve cone which is spring-controlled or pressed while a nut is used to close the valve casing towards the outside.

An air pump constructed as described above will be able to execute a very great number of revolutions owing to the peculiar arrangement of the operating member *n* on the piston *o* and the crank so that the pump

will work at all times with the greatest possible efficiency.

The generated heat, and a heating of the parts in general, will be effectively avoided and prevented by the continuous and uniform generation of an air current by the fan *c*.

It will be understood that I have illustrated and described one example of the many ways of constructing my pump and that the same may be subjected to many changes such as fall within the scope of the appended claims without departure from the principle involved.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:

1. In a motor-operated air pump, a fan for coupling pump and motor, a weighted part on said fan for carrying it over the dead center, an oil containing chamber into which one end of the pump shaft extends, a disc on said shaft within said chamber, an eccentrically arranged bolt on said disc, a ball bearing on said bolt, an operating member on said ball bearing, a head on said operating member, a pump cylinder piston and a bolt on said piston to which said head is movably engaged, and a means for cooling the parts.

2. In a motor-operated air pump, a fan for coupling pump and motor shafts, a casing for said fan, a duct for the exhaust gases guided into said casing in a plurality of convolutions, one for each pump cylinder, and a pressure wind chest into which said duct is guided.

Signed at Gera-Reuss, Germany, this 17th day of May A. D. 1925.

HERMANN LEO.