Sept. 4, 1923. 1,467,066

W. PRELLWITZ

COMPRESSOR

Filed Feb. 7, 1922 2 Sheets-Sheet 1

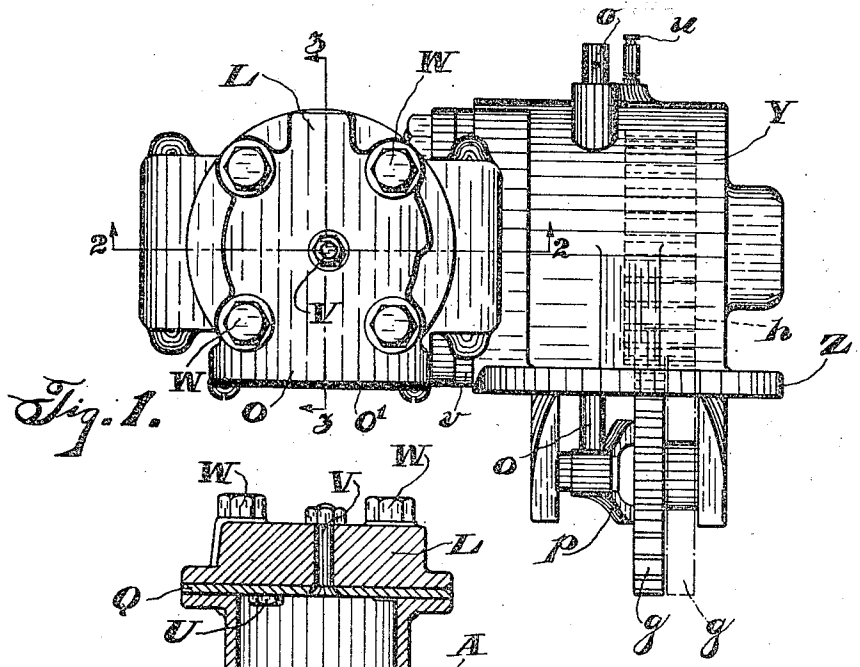


Fig. 1.

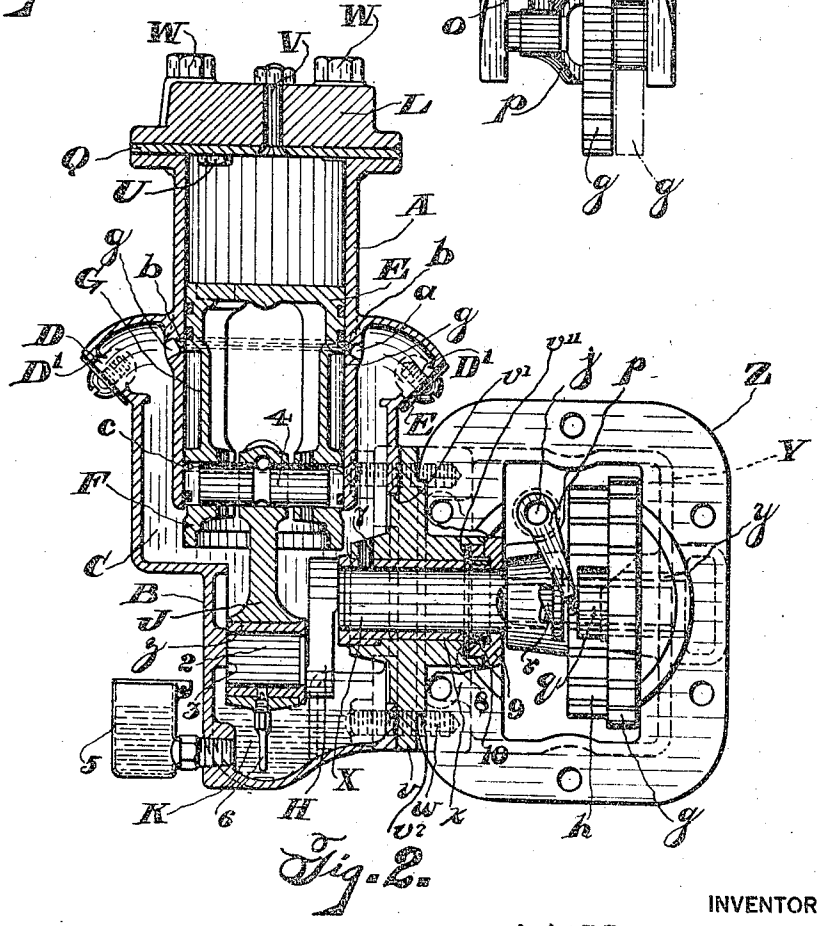


Fig. 2.

INVENTOR

William Prellwitz

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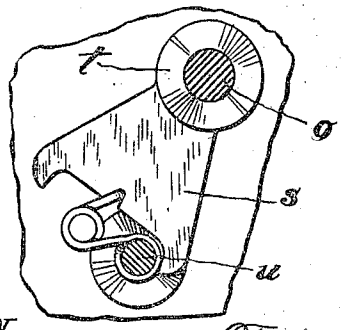


Fig. 4.

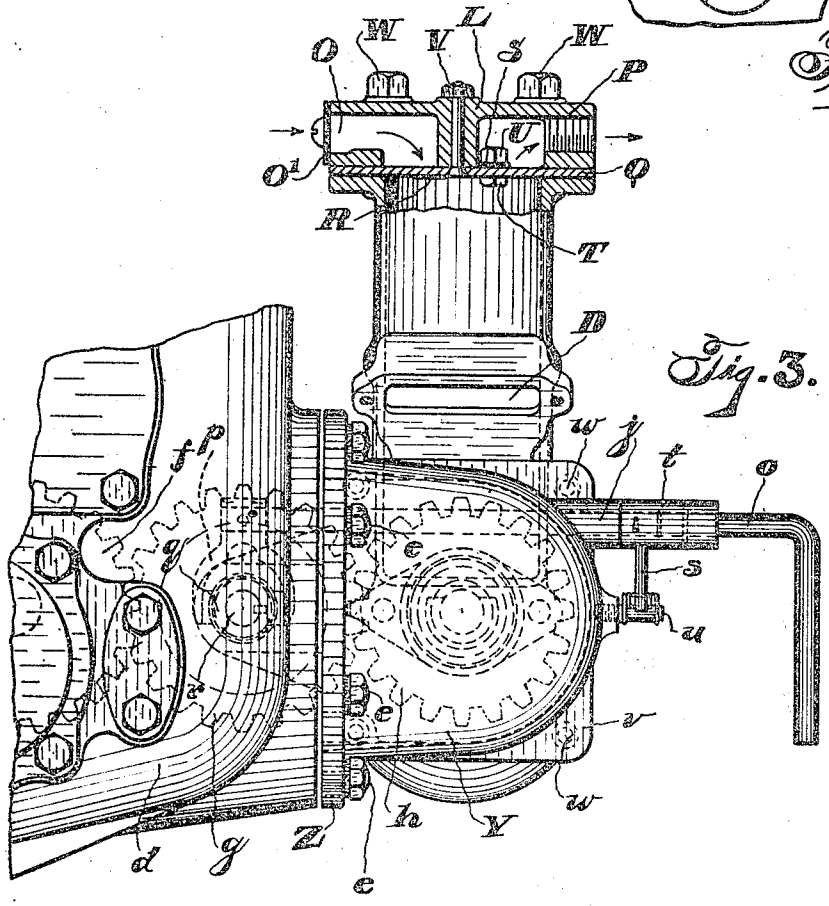


Fig. 3.

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Patented Sept. 4, 1923. 1,467,066

UNITED STATES PATENT OFFICE.

WILLIAM PRELLWITZ, OF EASTON, PENNSYLVANIA, ASSIGNOR TO INGERSOLL-RAND COMPANY, OF JERSEY CITY, NEW JERSEY, A CORPORATION OF NEW JERSEY.

COMPRESSOR.

Application filed February 7, 1922. Serial No. 534,683.

To all whom it may concern:

Be it known that I, WILLIAM PRELLWITZ, a citizen of the United States, and a resident of Easton, county of Northampton, and State of Pennsylvania, have invented a certain Compressor, of which the following is a specification accompanied by drawings.

This invention relates to compressors, but more particularly to a compressor suitable for attachment to the gear box or other convenient part of a motor truck, so that the compressor may be driven from the gearing or other driving mechanism of the truck and used for any desired purpose, as for instance, for pumping up pneumatic tires.

In my co-pending application, Serial No. 386,278 filed June 3, 1920, I have disclosed a compressor especially designed for pumping up tires and having provision for preventing lubricating material from commingling with the air compressed, so that oil is kept out of the tires, and I prefer to show this same feature in connection with my present invention and also provide the compressor with means for conveniently mounting it on the gear box of a motor truck.

The objects of the present invention are to enable the machine to be easily assembled and taken apart and furthermore to prevent oil or liquid grease in the gear casing of the machine from entering the crank case of the compressor. Such lubricating material might pass along the crank shaft into the compressor crank case, but my construction effectually prevents such action in a simple and efficient manner.

Further objects of the invention will hereinafter appear, and to all of these ends the invention consists of the features of construction, arrangement of parts and combinations of elements hereinafter described and claimed in this specification and shown in the accompanying drawings, in which—

Figure 1 is a top plan view of the machine,

Figure 2 is a longitudinal sectional elevation of the machine on the line 2—2 of Figure 1, looking in the direction of the arrows,

Figure 3 is an end elevation of the machine partly in transverse section on the line 3—3 of Figure 1, looking in the direction of the arrows, the machine being shown connected to the gear box of a truck, and

Figure 4 is a detail perspective view of the locking spring pin and forked gear shifter for the machine.

Referring to the drawings, the cylinder A and crank case B may be formed in any suitable manner, and in this instance the upper portion C of the crank case forms the usual "breathing" space for the crank, communicating with the atmosphere at the openings D preferably covered by the screen plates D'.

The piston reciprocating in the cylinder A is preferably provided with the outer or upper head E and the inner or lower head F connected by the reduced neck G. The piston is connected to the crank H by the connecting rod J and the piston and cylinder are supplied with oil from the crank case B, the oil being indicated at K.

The cylinder is provided with a suitable head L having the inlet opening O preferably covered by the screen O', and also having the outlet P. Between the head L and the cylinder A is preferably placed a plate Q carrying the inlet valve R and the discharge valve S. These valves are preferably in the form of strips of sheet metal, as shown in my copending application, and suitably secured to the plate Q by means of the screws and nuts T and U. The valves are adapted to seat over the inlet port and discharge port respectively in the plate Q, and require no lubrication. The head L and plate Q, may be secured together by means of the bolt V and the head and plate are secured to the cylinder by means of the screws W.

As the piston reciprocates in the cylinder A, air is compressed in the usual manner and discharged at the outlet P, which may be suitably connected for inflating a tire. The crank shaft X may be connected to be driven from the motor vehicle engine, as will be described.

Drainage apertures *a* are shown in my said copending application, are provided in the cylinder walls, and in order to collect and drain away the excess oil, a circular groove *b* is formed inside the cylinder A communicating with the apertures *a*. The groove *b* is located at a point intermediate the upper and lower limits of the overlap of the outer

and inner pistons E and F in their travel. Another cooperating groove *c* is formed in the periphery of the inner piston head F to collect the excess oil and carry it into the collecting groove *b* and permit the oil to drain out of the apertures *a*, all preferably as disclosed in my said co-pending application.

In order to adapt the compressor for mounting on the gear box of a motor truck, I connect a gear casing Y at one side of the crank case B of the compressor and provide the gear casing with a flange Z, which may be connected to the gear box *d* of a motor truck, as by means of the bolts *e*. The gear *f* in the motor truck gear box *d* then meshes with the idler gear *g* carried by the gear case Y of the compressor, which may be shifted into and out of mesh with the gear *f*.

Any suitable means may be provided for shifting the idler gear *g*, and in this instance, a rod *j* manipulated by a handle *o*, is provided with a fork *p* engaging a grooved sleeve *q* forming part of the hub of the idler gear *g* and sliding on the idler gear shaft *r*. A locking plate *s* carried by the coupling member *t* on the shifting rod *o* cooperates with a locking spring pin *u* mounted on the gear casing Y for maintaining the gear shifter and idler gear *g* in the desired position.

In order to enable the parts of the machine to be readily and conveniently assembled and disassembled, a removable bearing plate *v* having extensions on each side thereof is provided between the gear casing Y and the crank case B, and these three parts of the frame are suitably held together by means of the screws W. This bearing plate *v* fits into and closes the opening *v'* in the side of the crank case B and also fits into and closes a similar opposite opening v^2 in the adjacent side of the gear casing Y, so that the parts are held securely and rigidly in alignment. The bearing plate *v* forms a main bearing for the crank shaft X upon which the driving gear *h* is mounted, and a main bearing bushing *x* is preferably provided for the crank shaft. An out-board bearing bushing *y* is also provided in the gear casing Y for the outer end of the crank shaft X.

The ring *z* of the connecting rod J is adapted to be slipped over the crank pin 2 of the crank H and bears against the inner finished face 3 of the crank case, so that the connecting rod is prevented from coming off the crank pin. The opposite end of the connecting rod is connected to the piston by means of the usual piston pin 4. Lubricating material K is supplied to the crank case through the oil cup 5 and an oil splash pin 6 is provided on the connecting rod. The main bearing may be lubricated through the oil aperture 7 in the flanged portion of the bearing plate *v*.

It is important that oil or liquid grease in the gear casing Y be prevented from passing into the crank case B of the compressor along the crank shaft. In order to prevent such passage of oil, sealing means, preferably in the form of a cup leather 8 and gland 9 are inserted in one of the bearing plate extensions around the crank shaft X in the gear casing Y and the cup leather is preferably surrounded by a spring 10, which presses and locks the cup leather against the shaft and effectually prevents the oil from passing along the shaft to the compressor crank case. The packing 8 as shown is preferably seated against an internal shoulder 11 in the bearing plate extention, which extends into the gear case, and the main bearing bushing *x* extends partially through the bearing plate to a point adjacent the said packing seat. This forms a satisfactory and tight seal around the crank shaft, which is also readily accessible.

I claim:

1. A compressor having in combination a crank case, a gear case adapted to contain lubricant, a main bearing between the said two cases having an internal shoulder located within the gear case, a crank shaft in said main bearing and also having a bearing in the outer end of the gear case, a main bushing for the crank shaft extending through the said main bearing to a point adjacent the said internal shoulder, a flexible packing around the crank shaft seated on said internal shoulder, and a gland for holding the packing in position, whereby lubricant is prevented from passing along the shaft from the gear case to the crank case.

2. A compressor having in combination a crank case, a gear case adapted to contain lubricant, a removable bearing plate fitting into and closing opposite openings in the adjacent sides of both the crank case and gear case, said bearing plate having extensions at each side, the extension on the gear case side having an internal shoulder forming a packing seat, a crank shaft having a bearing in said bearing plate and also in the outer end of the gear case, a main bushing for said crank shaft extending partially through the bearing plate, a flexible packing around the crank shaft seated on said internal shoulder and a gland for holding the packing in position whereby lubricant is prevented from passing along the shaft from the gear case to the crank case.

In testimony whereof I have signed this specification.

WILLIAM PRELLWITZ.