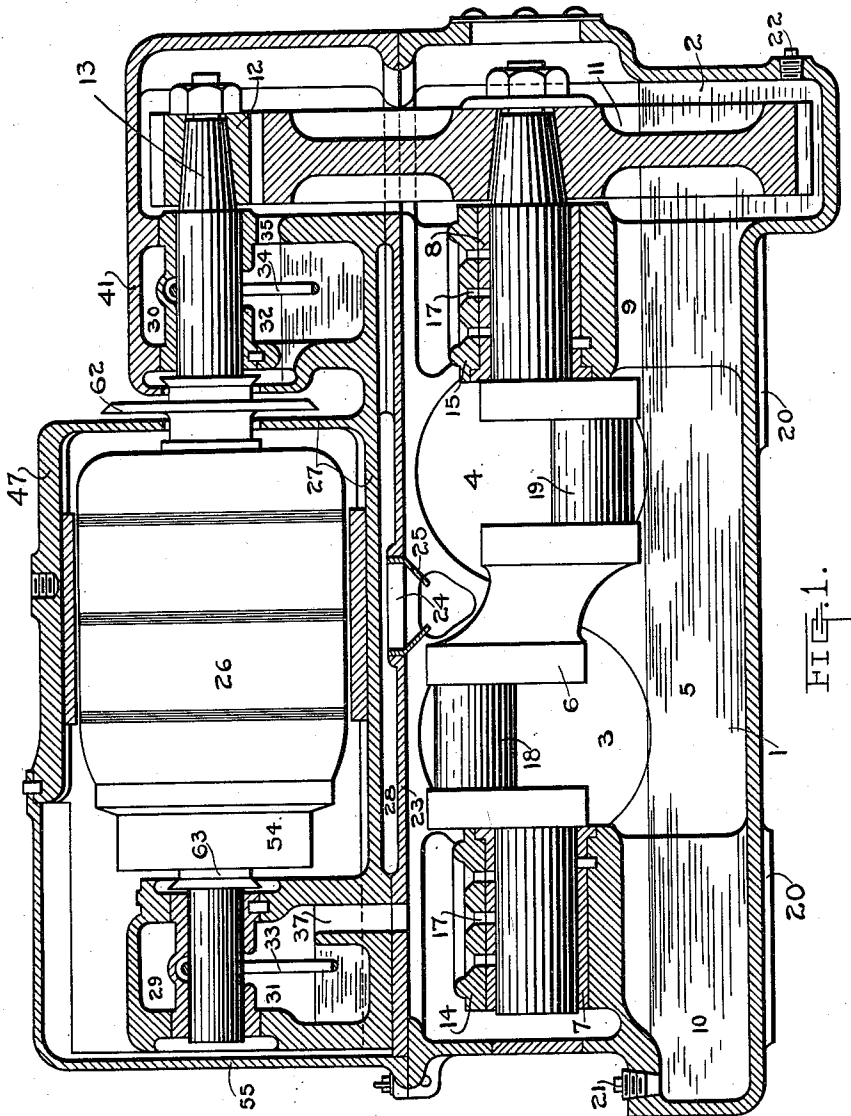


W. H. LIEBER.
LUBRICATING SYSTEM.
APPLICATION FILED MAY 3, 1909.

1,014,628.

Patented Jan. 9, 1912

3 SHEETS—SHEET 1.



WITNESSES.

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Acase

W. H. Lieber

INVENTOR

BY

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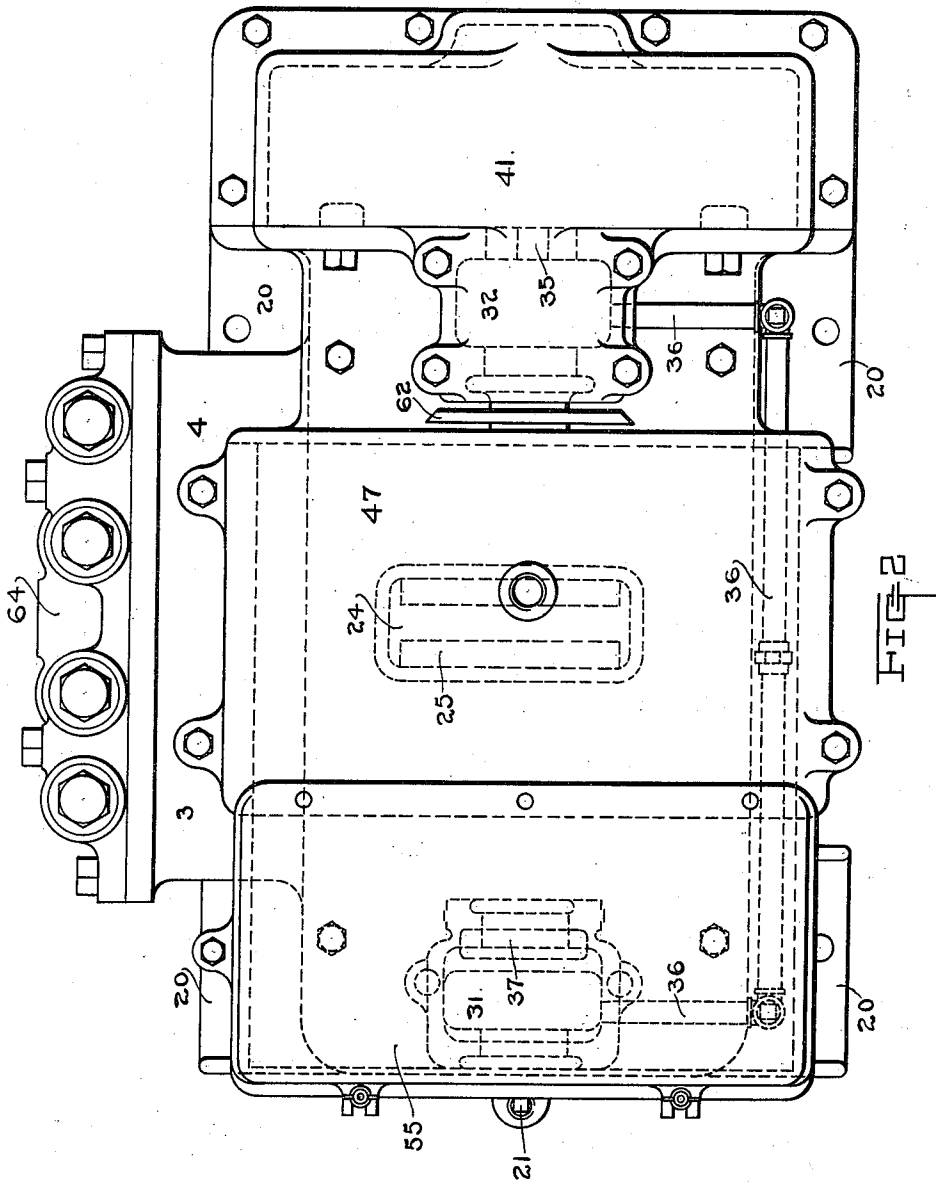
ATTORNEY.

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WITNESSES:
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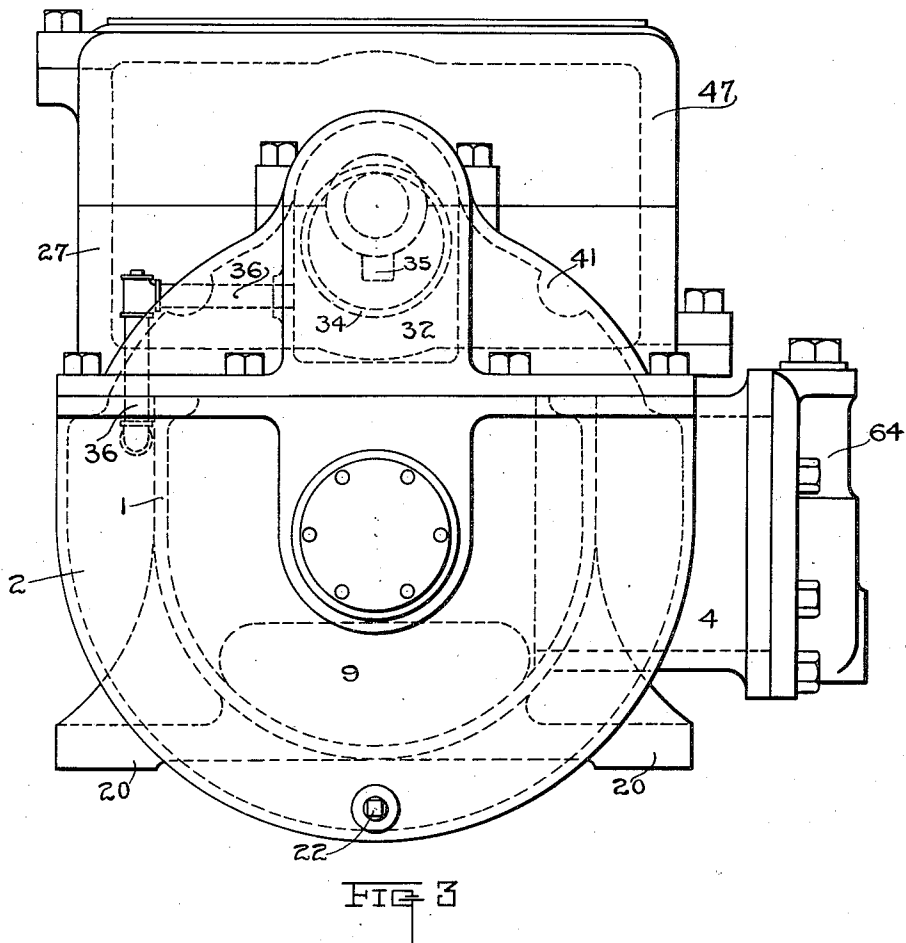
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3 SHEETS-SHEET 3.



WITNESSES -
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WILLIAM H. LIEBER, OF MILWAUKEE, WISCONSIN, ASSIGNOR TO ALLIS-CHALMERS COMPANY, OF MILWAUKEE, WISCONSIN, A CORPORATION OF NEW JERSEY.

LUBRICATING SYSTEM.

1,014,628.

Specification of Letters Patent.

Patented Jan. 9, 1912.

Original application filed November 19, 1908, Serial No. 463,401. Divided and this application filed May 3, 1909. Serial No. 493,635.

To all whom it may concern:

Be it known that I, WILLIAM H. LIEBER, a citizen of the United States, residing at Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented certain new and useful Improvements in Lubricating Systems, of which the following is a specification.

This invention relates to improvements in lubricating systems and is particularly adapted to be used in connection with motor driven machinery in which the motor is mounted above the driven member.

The object of the invention is to provide an efficient and automatic lubricating system which will keep a constant circulation of lubricant to the various bearings of a machine without the aid of special circulating pumps.

This application is a division of an application for patent for motor compressor, Serial No. 463,401, filed Nov. 19, 1908.

A clear conception of the invention can be obtained by referring to the accompanying drawings in which like reference characters designate the same parts in different views.

Figure 1 is a central vertical section of a motor driven compressor having the motor mounted above the compressor, and having the invention applied thereto. Fig. 2 is a plan of the device shown in Fig. 1. Fig. 3 is an end view of same.

The crank case 1, gear case 2, and the cylinders 3, 4, are cast in one piece and inclose the working parts of the compressor. The crank shaft 6 is supported in the crank case 1 by the bearing 7 at its front end, and the bearing 8 near its gear end, and lies at right angles to the cylinders 3, 4. The large openings 9, 10, under the bearings 8, 7, respectively form a continuous basin for the oil 5 throughout the entire length of the crank case 1 and gear case 2. The openings 21, 22, respectively, above and below the continuous oil basin, form an admission and discharging means for the oil 5 therein. The crank case 1 and gear case 2 are cast with round bottoms, see Fig. 3, to give strength to the casting and also to allow the connecting rods, not shown to be more effective in throwing the oil 5 while sweeping there-

through. The bottom of the crank case 1 is provided with feet 20.

The crank shaft 6, supported by the bearings 7, 8, is held in place by suitable caps 14, 15, which are provided with oil basins at their tops. These oil basins have holes 17 passing from their lower portions to the bearings 7, 8, of the crank shaft 6. The cranks 18, 19, of the crank shaft 6 are located directly in front of and in line with the openings of the cylinders 3, 4. Suitable connecting rods extend from the cranks 18, 19, to wrist pins of reciprocating pistons in the cylinders 3, 4. The connecting rods, wrist pins and pistons are not shown because their construction is well known in the art. See Christensen 635,280, Oct. 17, 1899. A suitable cylinder head 64, see Figs. 2, 3, incloses the cylinders 3, 4, at their outer end. The end of the crank shaft 6 which is nearest the bearing 8, carries a gear 11 which extends above the top of the gear case 2 and also down into the oil basin containing the oil 5.

The pump base 1 is provided with a cover 23 which extends up to the gear case 2 and has an opening 24 passing therethrough. This opening 24 serves as a vent for the interior of the crank case 1 and opens directly into the atmosphere. The shields 25 may be provided to prevent any oil 5 from splashing out due to the revolution of the crank shaft 6.

The motor base 27, supporting the armature shaft 13, is mounted upon the cover 23, an air space 28 separating the two. The armature shaft 13 is supported upon the motor base 27 by two bearings 29, 30, which are located directly above the oil pockets 31, 32, respectively. The oil rings 33, 34, which are suspended from the shaft 13, extend down into the pockets 31, 32, respectively, the lower portions of these rings 33, 34, being immersed in the oil 5 within the pockets 31, 32. The pocket 32 has an opening leading thereto near the upper portion of the gear 11. The pocket 31 has an overflow 37 leading therefrom, which overflow 37 is directly in line with the basin on the top of the bearing cap 14. The two pockets 31, 32, are connected by a pipe 36 which ex-

tends along the upper edge of the crank case 1.

The armature shaft 13, supported in the bearings 29, 30, carries the front oil thrower 63, commutator 54, armature 26, a rear oil thrower 62, and the pinion 12. This pinion 12 meshes with the gear 11, thus forming a driving connection between the armature shaft 13 and crank shaft 6. The bearing 30 at the gear end of the armature shaft 13 is provided with a cap 41, which cap also forms a cover for the upper part of the gear 11 and the pinion 12.

The motor is inclosed by the motor base 27, the field frame 47, and the cover 55, the latter being removable to allow for easy access to the brushes and other working parts of the motor. The front oil thrower 63 prevents any oil from passing from the bearing 29 to the commutator 54 and armature 26, while the rear oil thrower 62 serves a like purpose at the other end of the armature 26.

During the operation of the motor compressor, the gear 11 revolving in the gear case 2, acts as a pump and carries considerable oil 5 to the pinion 12. This oil 5 is deflected endwise from the gear 11 upon coming in contact with the pinion 12, part of the oil passing through the opening 35 and into the rear pocket 32. The rest of the oil 5 which does not pass through the opening 35 flows back to the oil basin in the lower portion of the gear case 2. During its passage back to the oil basin, a portion of the oil 5 flows into the basin at the top of the bearing cap 15, passing from thence through the holes 17 to the bearing 8. The oil 5 in the pocket 32 is carried up to the bearing 30 by the oil ring 34. As the oil 5 rises in the pocket 32, a portion of it will flow out of said pocket 32 through the pipe 36, and from this pipe into the front pocket 31. Here the oil 5 is carried up to the bearing 29 by the oil ring 33. As the oil 5 rises in the pocket 31, a portion thereof will flow out of the pocket 31 through the over flow 37, and will be precipitated into the basin at the top of the front cap 14. From this basin the oil will pass down through the openings 17 to the bearing 7, and from thence back to the oil basin at the bottom of the crank case 1. It might be desirable to have an overflow similar to that in the front bearing pocket 31, in the rear pocket 32, the discharge therefrom being to the cap 15; but this is not necessary in the present construction.

The lubrication of the pistons, wrist pins and connecting rods is effected by the latter which sweep through the oil 5 and throw it back against the wrist pins. In this way an automatic oiling of all of the bearings of the machine is accomplished and the machine needs no manual oiling when once assembled.

It should be understood that it is not desired to be limited to the exact details of construction shown and described, for obvious modifications will occur to a person skilled in the art.

It is claimed and desired to be secured by Letters Patent:

1. In a lubricating system, a motor and a driven member, a plurality of oil pockets adjacent the bearings of said motor, common means for transmitting power from said motor to said driven member and for continuously supplying oil to one of said pockets, means for carrying oil from said pockets to said motor bearings, a conduit connecting said pockets and adapted to carry oil from one of said pockets to the other of said pockets, a basin adjacent said transmission means, and an overflow conduit leading from one of said pockets to said basin.

2. In a lubricating system, a motor and a driven member, a plurality of oil pockets adjacent the bearings of said motor, common means for transmitting power from said motor to said driven member and for continuously supplying oil to one of said pockets, means for carrying oil from said pockets to said motor bearings, a conduit connecting said pockets and adapted to carry oil from one of said pockets to the other of said pockets, a basin, and an overflow conduit leading from one of said pockets to said basin.

3. In a lubricating system, a motor and a driven member, a plurality of oil pockets adjacent the bearings of said motor, common means for transmitting power from said motor to said driven member and for continuously supplying oil to one of said pockets, means for carrying oil from said pockets to said motor bearings, a conduit connecting said pockets and adapted to carry oil from one of said pockets to the other of said pockets, a basin adjacent a bearing of said driven member, and an overflow conduit leading from one of said pockets to said basin.

4. In a lubricating system, a motor and a driven member, a plurality of oil pockets adjacent the bearings of said motor, gears for transmitting power from said motor to said driven member and for simultaneously and continuously supplying oil to at least one of said pockets, a conduit connecting said pockets and adapted to carry oil from one of said pockets to the other of said pockets, a basin adjacent a bearing of said driven member, and an overflow conduit leading from one of said pockets to said basin.

5. In a lubricating system, a motor, a crank case below said motor, a crank shaft and a bearing therefor within said crank case, pockets in the motor frame adjacent the bearings of said motor, common means for

driving said crank shaft by said motor and
for elevating oil to said pockets, a pipe con-
necting said pockets and adapted to carry
oil from one of said pockets to the other of
5 said pockets, means for carrying oil from
said pockets to the bearings of said motor, a
basin within the crank case adjacent said
crank shaft bearing, and means for carry-
ing oil from one of said pockets to said
10 basin.

6. In a lubricating system, a motor and a
driven member, a plurality of oil pockets
adjacent the bearings of said motor, com-
mon means for transmitting power from
15 said motor to said driven member and for

continuously supplying oil to one of said
pockets, means for carrying oil from said
pockets to said motor bearings, a conduit
connecting said pockets and adapted to
carry oil from one of said pockets to the 20
other of said pockets, a bearing for said
driven member, and an overflow conduit
leading from one of said pockets to said
bearing.

In testimony whereof, I affix my signa- 25
ture in the presence of two witnesses.

WILLIAM H. LIEBER.

Witnesses:

G. F. DE WEIN,
H. C. CASE.