

Aug. 25, 1931.

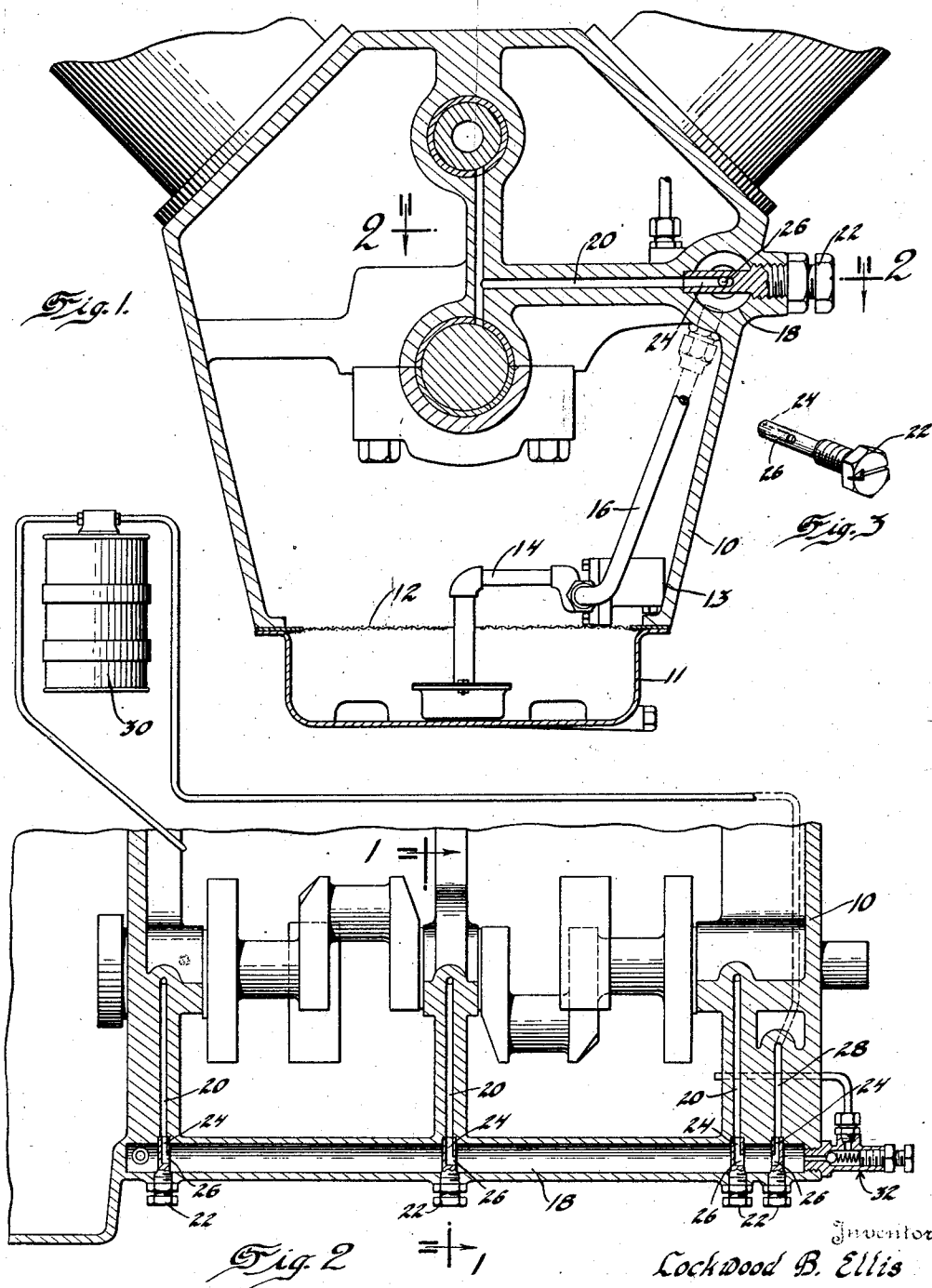
L. B. ELLIS

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OIL FILTERING AND LUBRICATING SYSTEM

Filed April 2, 1928

2 Sheets-Sheet 1



By *Blackmore, Spencer & Finch*
Attorney

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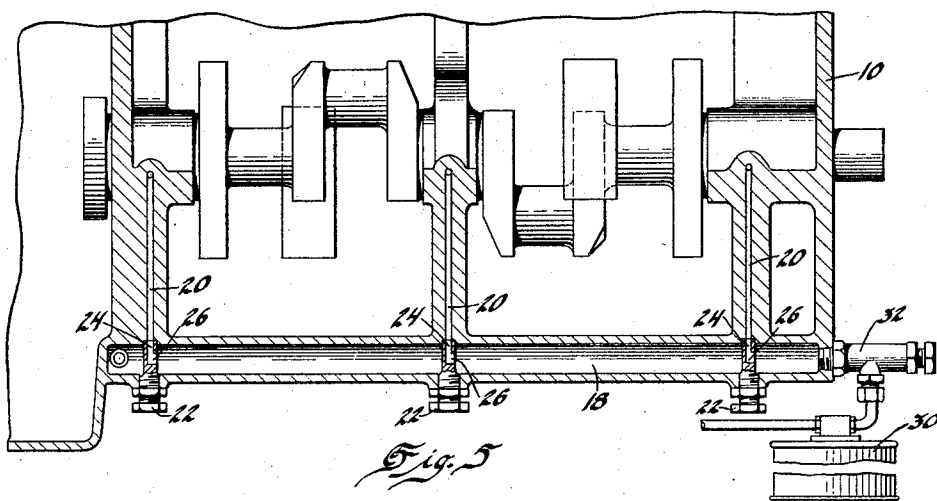
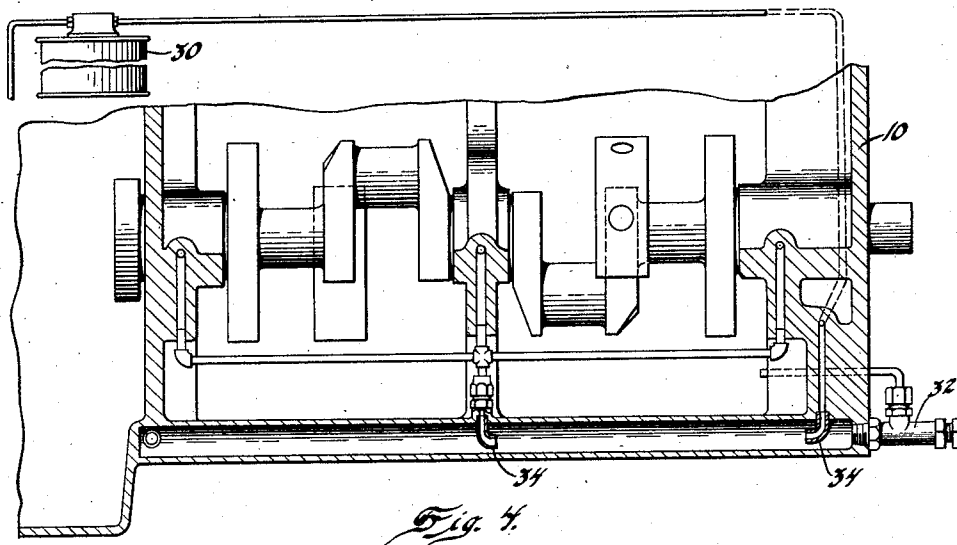
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2 Sheets-Sheet 2



Inventor

Lockwood B. Ellis

By *Blackmore, Speers & Fitch*
Attorney

UNITED STATES PATENT OFFICE

LOCKWOOD B. ELLIS, OF DETROIT, MICHIGAN, ASSIGNOR TO GENERAL MOTORS CORPORATION, OF DETROIT, MICHIGAN, A CORPORATION OF DELAWARE

OIL FILTERING AND LUBRICATING SYSTEM

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This invention has to do with pressure lubricating systems such as those employed on internal combustion engines and has to do with an arrangement for making use of the velocity of the oil stream to divert foreign
5 particules away from the bearings. This is accomplished by arranging the branches taking oil to the bearings so that their inlets face down stream so that the oil entering the
10 branches must make a reverse turn. The foreign particles continue past the inlet because of their much greater inertia.

In lubricating systems provided with an oil filter this same principle may be availed of
15 to direct the dirt laden oil to the filter. In this case the inlet to the branch line to the filter is arranged to face upstream so that it receives the oil, dirt and all. If preferred the same result may be accomplished simply
20 by connecting the filter directly at the end of the pressure line.

Obviously the two uses of the principle involved in this invention may be combined. The system may include branches leading to
25 the bearings having inlets facing down stream and the branch leading to the filter facing up stream.

Figure 1 is a section through a portion of an engine equipped with my improved lubricating system.
30

Figure 2 is a section on line 2—2 of Figure 1.

Figure 3 is a perspective view showing one of the fittings used in Figures 1 and 2.

35 Figures 4 and 5 are views similar to Figure 2 but showing modified arrangements.

Referring to the form of the device shown in Figures 1 to 3, 10 indicates the crank case of an internal combustion engine, and the
40 oil pan which serves as a reservoir for lubricant. A screen 12 is preferably provided between the crank case proper and the oil pan so that the dirt is to some extent prevented from getting into the pan. 13 indicates the usual
45 motor driven oil pump receiving its supply from the reservoir through intake 14 and forcing the oil upwardly through conduit 16 to the oil distributing conduit 18.

From the distributing line 18, branches 20
50 lead to the engine bearings. I have shown

each of these branches equipped with an inlet fitting 22 one of which is shown enlarged in Figure 3. This fitting is provided with a longitudinal bore 24 registering with the
55 branch line, and with a transverse bore 26 intersecting the longitudinal bore and opening into the distributing line. The transverse bores face down stream as shown, so that the oil entering them must turn back upon itself. The foreign particles, because of their great
60 er inertia, continue on.

I have also shown a branch 28 leading to the oil filter 30. This branch is equipped with a fitting 22 like that shown in Figure 5, but in this case the transverse bore 26 faces
65 up stream so that dirt as well as oil enters the line leading to the filter.

In the form shown in Figure 2 the end of the distributing line is equipped with a pressure relief valve 32. At ordinary speeds the
70 pressure relief valve is open so that there is a continuous flow of oil through the distributing line and through the valve back into the crank case.

I have shown a slightly different form of fitting in Figure 4. This consists simply of
75 an L-shaped pipe 34. The fitting for the bearings faces downstream and that for the filter faces up stream as in the preceding form.
80

In Figure 5 I have shown a slight modification. Here the oil filter 30 is located directly at the end of the distributing line so that all
85 of the oil that does not go to the bearings finds its way to the filter.

The advantages of my invention are obvious. The system provides, in effect an initial selection of clean oil for the bearings, and a selection of dirty oil for the filter. It
90 affords a valuable auxiliary to a pressure operated, filter equipped lubricating system.

I claim:

1. In a lubricating system including parts to be lubricated, the combination of an oil
95 pressure line, and means for forcing oil under pressure through said line and a branch line connected to said pressure line for conducting oil to one of said parts and having its inlet facing down stream so that foreign par-
100

ticles are carried past the inlet by virtue of their greater inertia.

2. In a lubricating system including parts to be lubricated, the combination of an oil
5 pressure line, and a branch line for conducting oil to said bearings having its inlet facing downstream so that foreign particles are carried past by virtue of their greater inertia, an
oil filter, and a line leading to said oil filter,
10 said line having its inlet facing upstream so that foreign particles are diverted to the filter.

3. In a lubricating system for internal combustion engines having an oil reservoir,
15 parts to be lubricated, an oil filter and a conduit for the return of clean oil from the filter to the reservoir, the combination of a pressure line for supplying oil from the reservoir to said parts, a line connecting said filter
20 with said pressure line, said last named line having its inlet facing the direction of flow in said pressure line so that foreign particles are diverted to the filter, and a conduit for returning oil to the reservoir communicating
25 with the pressure line beyond its point of connection with said filter line in the direction of oil flow.

4. In a lubricating system the combination of an oil pressure line provided with an intersecting transverse bore, a branch line
30 communicating with said bore at one side thereof, and a fitting projecting into the pressure line from the opposite side of the bore, said fitting having a longitudinal bore aligning
35 with said branch line and a transverse passage establishing communication between the branch line and the pressure line at one side of said longitudinal bore.

5. In a lubricating system including an oil
40 reservoir and parts to be lubricated, the combination of an oil pressure line for conducting lubricant from the reservoir to the parts, said line including a conduit provided with a plurality of intersecting transverse bores,
45 branch lines communicating with said bores at one side thereof, and a plurality of fittings projecting into the conduit from the opposite sides of the bores, each of said fittings having a longitudinal bore aligning with the corresponding branch line and a transverse passage establishing communication between
50 the branch line and the conduit, said transverse passage facing downstream so that foreign particles are carried past the inlet by
55 virtue of their greater inertia.

In testimony whereof I affix my signature.

LOCKWOOD B. ELLIS.