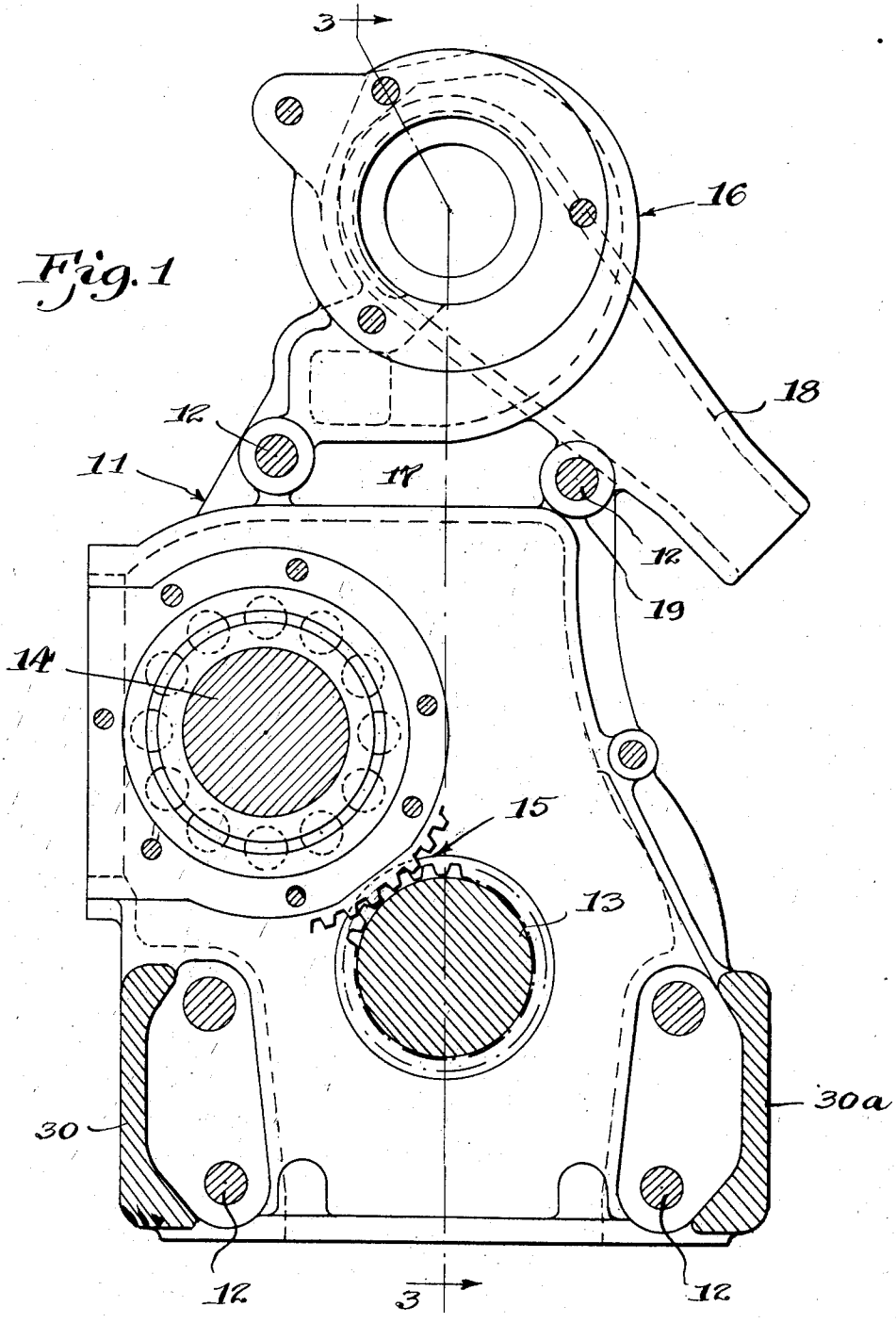
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ENGINE

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Fig. 1



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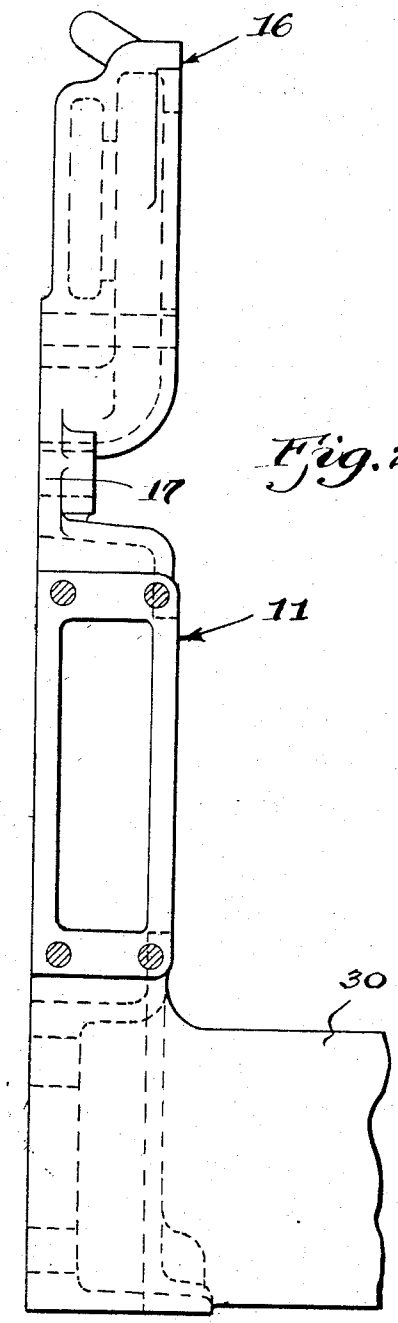


Fig. 2

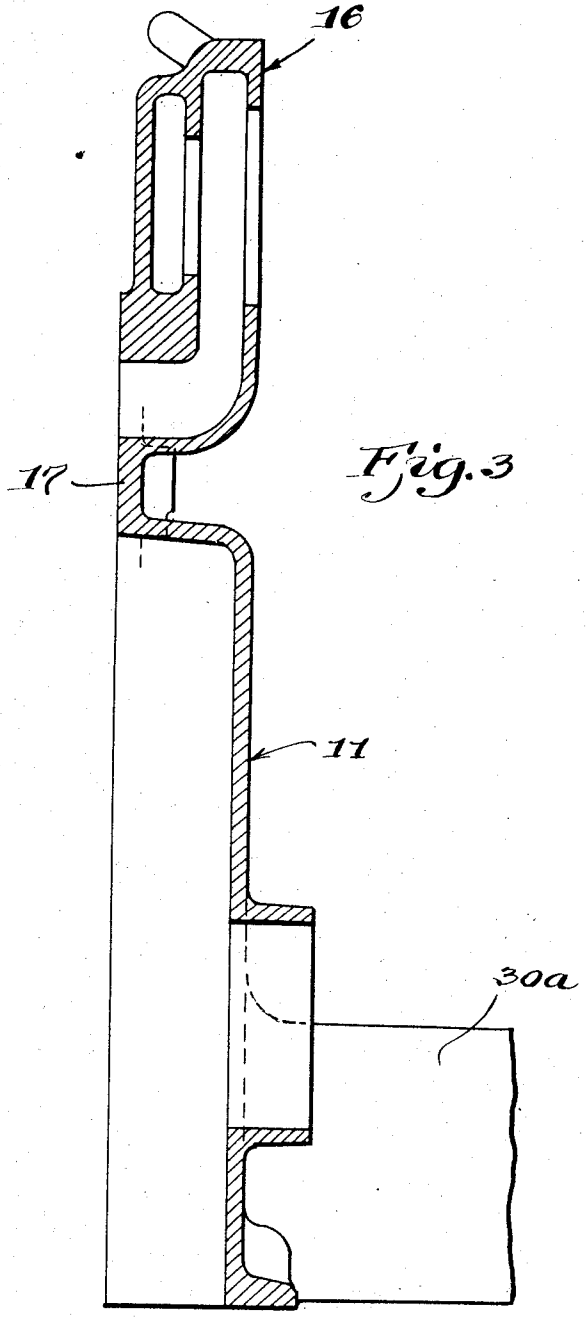


Fig. 3

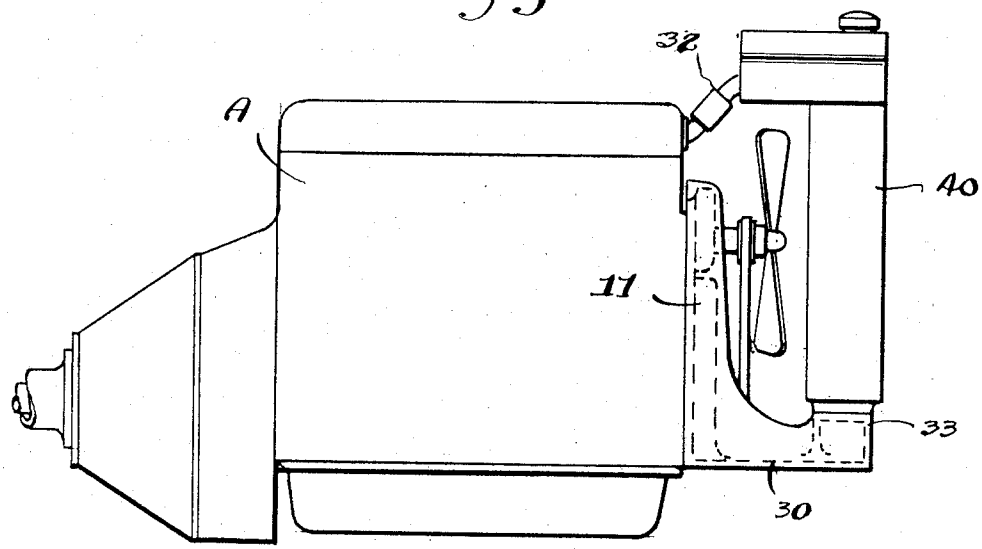
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Fig. 4



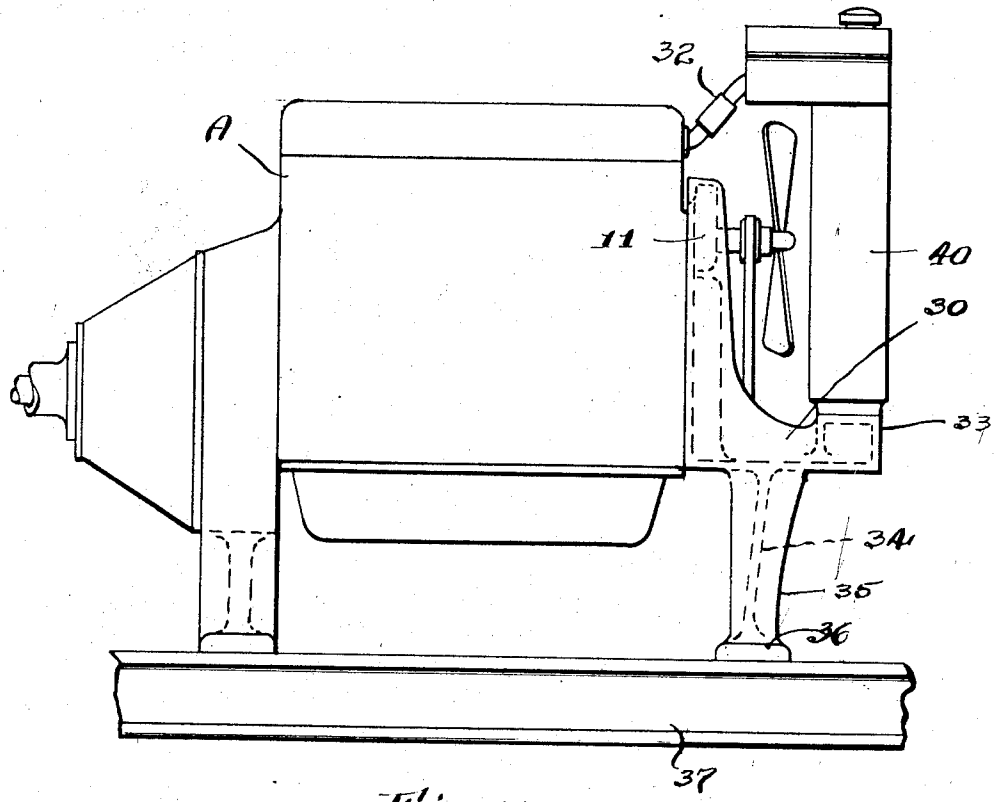


Fig. 5

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UNITED STATES PATENT OFFICE

2,353,231

ENGINE

Earl Ginn, North Muskegon, Mich., assignor to Continental Motors Corporation, Detroit, Mich., a corporation of Virginia

Application October 9, 1941, Serial No. 414,273

9 Claims. (Cl. 123—195)

My invention relates to engines and more particularly to the structural features thereof, having to do specifically with structural features of the gear case whereby to facilitate manufacture and assembly of the engine.

In the manufacture of internal combustion engines, engineers are constantly striving to simplify the construction, in order to economize on material, and to facilitate servicing of the engine, as well as to minimize engine weight with the consequent saving in manufacturing cost. Most engines embody a number of accessories or other engine parts, which are more or less component parts of the engine, and these parts in general are constructed of separate castings of forgings fastened to the engine and supported on suitable pads or brackets.

An object of my present invention is to facilitate the manufacturing and servicing of internal combustion engines by providing an integral gear case and water pump assembly thereby obtaining a more compact engine of minimum weight and size as well as providing for the saving in production tooling and assembly labor.

More particularly, I have provided an integral gear case and pump housing structure constructed in a novel manner and having many practical advantages over the present day practice.

Another object of my invention is to further simplify the manufacture and maintenance of an internal combustion engine by incorporating one or more integral supports with the integral gear case and pump housing, the supports providing an engine radiator support and a motor support.

For a more detail understanding of my invention reference may be had to the accompanying drawings illustrating a preferred embodiment of my invention and in which:

Fig. 1 is an end elevational view of my improved gear case and water pump housing assembly,

Fig. 2 is a side elevation thereof,

Fig. 3 is a vertical sectional view taken on the line 3—3 of Fig. 1,

Fig. 4 is a side elevational view of a modified construction embodying an integral gear case and water pump assembly provided with an integral radiator support, and

Fig. 5 is an elevational view showing said gear case assembly provided with an integral radiator support and an engine support.

Referring more particularly to the accompanying drawings, I have chosen to illustrate my invention in connection with an internal combustion engine A constructed to provide a gear case structure 11 fastened or secured by suitable bolts 12 to the engine block A. The engine crankshaft 13 is preferably geared to the camshaft 14 by suitable gearing 15 housed within the gear case 11.

The above mentioned gear case is preferably positioned at the front end of the engine, and is provided with an integral extension which lies substantially in the same plane as the gear case, and this extension provides a pump housing structure 16. It will be observed that the pump housing is integrally connected with the gear case by a web 17 and is provided with an outlet connection 18 consisting of a tubular pipe section, said pipe section being integrally connected with the gear case structure as at 19.

It will be observed that the pump housing projects upwardly from the gear case and is aligned substantially in the plane of said gear case. The assembly is constructed in such a way as to arrange for the connection 18 to extend laterally downwardly in overlapping relation or below the uppermost part of the gear case, (see Fig. 1), and said connection is attached integrally at an intermediate portion as at 19 to said gear case. Thus the pump is positioned in such a manner as to be readily driven by suitable driving means from the crankshaft and the whole is assembled as a unit to the front end of the engine.

Referring more particularly to the drawings, it will be noted that the gear case casing 11 is provided with an integral extension projecting forwardly and comprising a pair of webs 30 and 30a, which project far enough forward to extend beneath the engine radiator 31. This radiator is connected with the engine A in any suitable manner by a water connection 32. The extensions 30 and 30a merge into a radiator support 33 for supporting the radiator 40.

In Fig. 5 the extensions 30 and 30a are integrally connected at an intermediate point by a transverse web 34, which is integrally connected with the downwardly projecting extensions 35 that terminate in foot portions 36 which can be secured in a convenient manner with the chassis frame member 37 for supporting the engine.

It will be quite apparent that the present construction facilitates the manufacturing assembly and thus results in considerable saving in labor as well as in the material used.

It will be apparent to those skilled in the art to which my invention pertains, that various modifications and changes may be made therein

without departing from the spirit of my invention or from the scope of the appended claims.

I claim:

1. An engine structure comprising a gear case, means carried thereby for securing the gear case to an engine cylinder block, and a pump housing structure having water inlet and outlet connections, a web integrally connecting said pump housing with said gear case, said pump housing projecting upwardly from said gear case and aligned substantially in the plane of the gear case, one of said pump housing connections partially overlying said web and attached integrally to the said gear case.

2. An engine structure comprising a gear case, means carried thereby for securing the gear case to an engine cylinder block, and a pump housing structure having water inlet and outlet connections, a web structure integrally connecting said pump housing with said gear case, said pump housing projecting upwardly from said gear case and aligned substantially in the plane of the gear case, one of said connections comprising a tubular pipe section projecting substantially radially from the pump housing and partially overlying said web structure, said connection attached integrally at an intermediate portion thereof to the said gear case.

3. An engine structure comprising a gear case, means carried thereby for securing the gear case to an engine cylinder block, and a pump housing structure having water inlet and outlet connections, a web structure integrally connecting said pump housing with said gear case, said pump housing projecting upwardly from said gear case and aligned substantially in the plane of said gear case, one of said connections comprising a tubular section projecting radially laterally and downwardly from said pump housing in overlapping relation with respect to the web structure and gear case, said connection attached integrally at an intermediate portion thereof to said gear case, the aforesaid tubular water connection having an extension projecting laterally beyond said gear case.

4. An engine structure comprising a gear case secured to the engine structure, a frame for supporting the engine and an integral one piece extension carried by said gear case and terminating in supporting portions providing a radiator support and an engine support, said engine support secured to the frame.

5. An engine structure comprising a gear case secured to the engine structure, a frame for supporting the engine and an integral one piece extension carried by said gear case, said extension projecting forwardly and downwardly to provide an engine support secured to said frame.

6. An engine structure comprising a gear case secured to the engine structure, and a pair of parallel spaced web-like side extensions projecting forwardly from said gear case and integrally carried thereby, said extensions integrally joined together only near their extremities to provide a support portion comprising a flat bearing pad for supporting a radiator.

7. An engine structure comprising a gear case secured to the engine structure, an engine support said gear case comprising a casing provided with a plurality of integral extensions, one of said extensions comprising a pump housing structure, another of said extensions extending substantially normal to the plane of the gear case and terminating in a radiator support, said radiator support extension having an integral downwardly projecting extension substantially midway thereof and terminating in a foot for placement upon said engine support.

8. An engine structure comprising a gear case, means carried thereby for securing the gear case to an engine cylinder block, and a pump housing structure connected with said gear case by an integral web and aligned substantially in the plane of the gear case, said gear case, web and pump housing having aligned machined surfaces secured flush against a single plane end face of the cylinder block.

9. An engine structure comprising a gear case, means carried thereby for securing the gear case to an engine cylinder block, and a pump housing structure having water inlet and outlet connections and connected with said gear case by an integral web, said pump housing projecting upwardly from said gear case and aligned substantially in the plane of the gear case, said gear case, web and pump housing having aligned machined surfaces secured flush against a continuous single plane machined end face of the cylinder block.

EARL GINN.