No. 840,695. PATENTED JAN. 8, 1907.

M. W. HANKS & J. T. ATWOOD.

ENGINE MOUNT.

APPLICATION FILED NOV. 21, 1905.

4 SHEETS—SHEET 1.

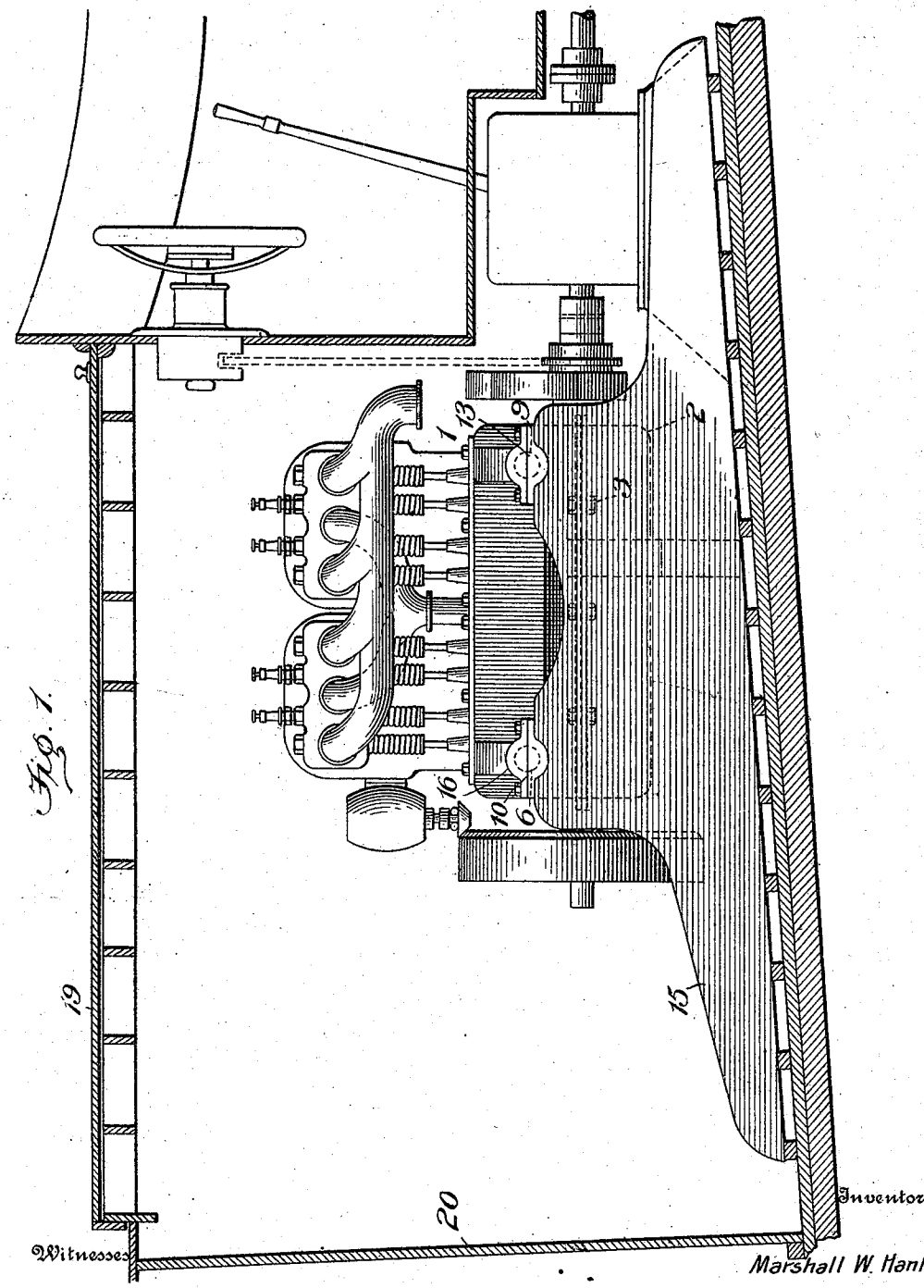


Fig. 1.

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4 SHEETS—SHEET 2.

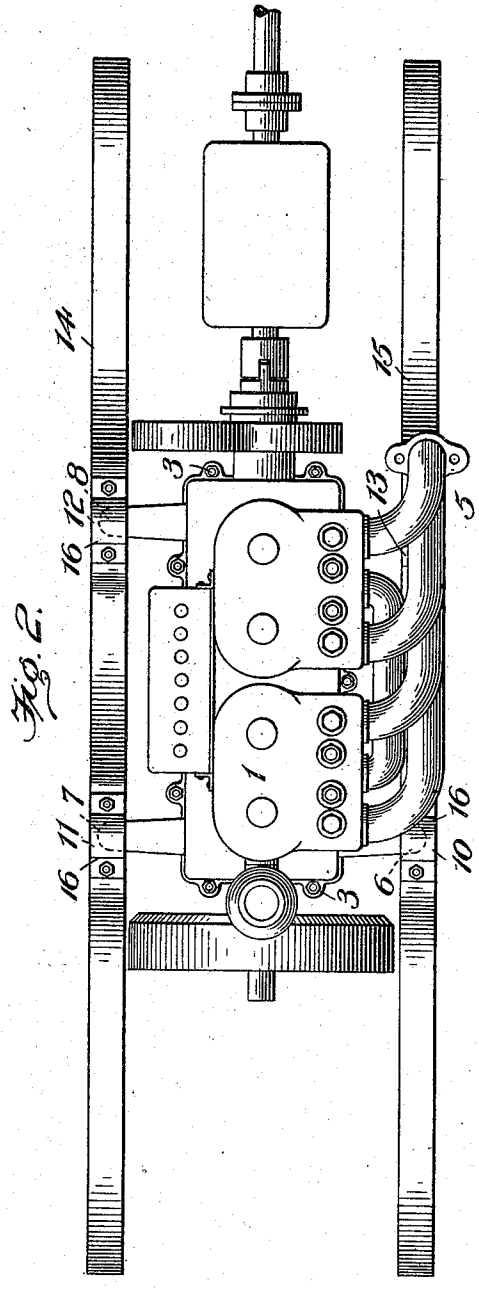


Fig. 2.

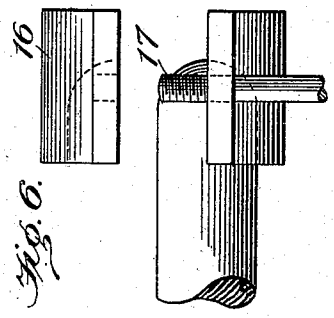


Fig. 6.

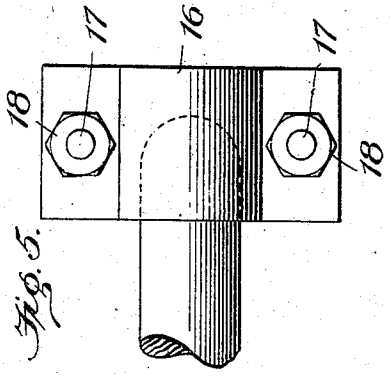


Fig. 5.

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4 SHEETS—SHEET 3

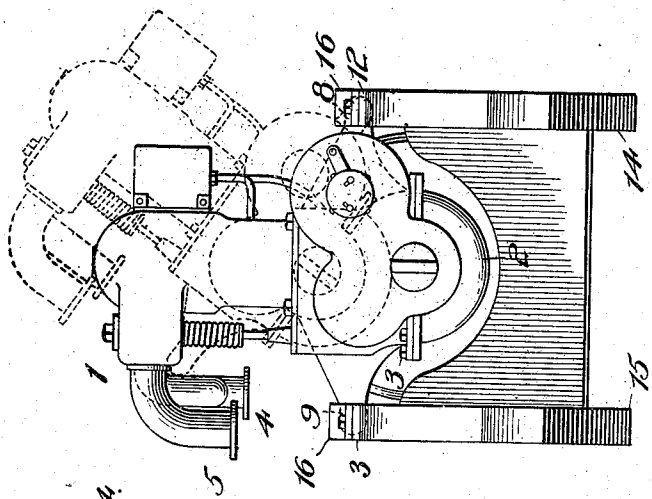


Fig. 4.

Fig. 3.

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4 SHEETS—SHEET 4.

Fig. 8.

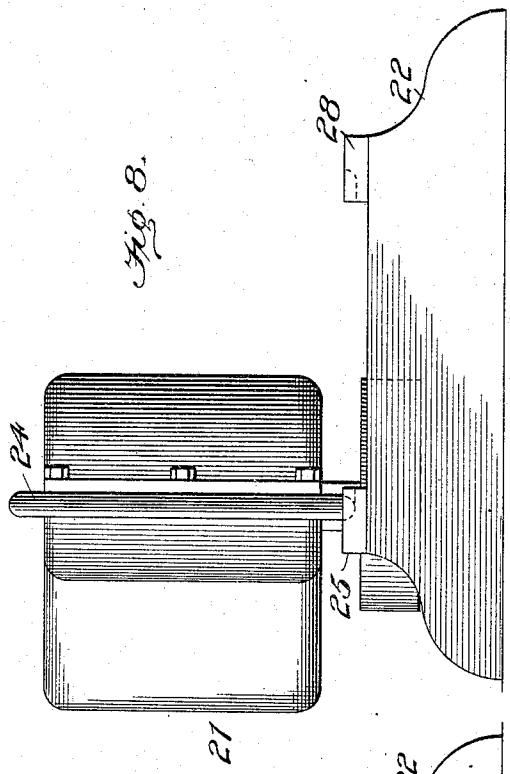


Fig. 10.



Fig. 11.

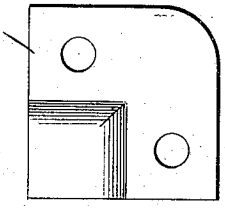


Fig. 7.

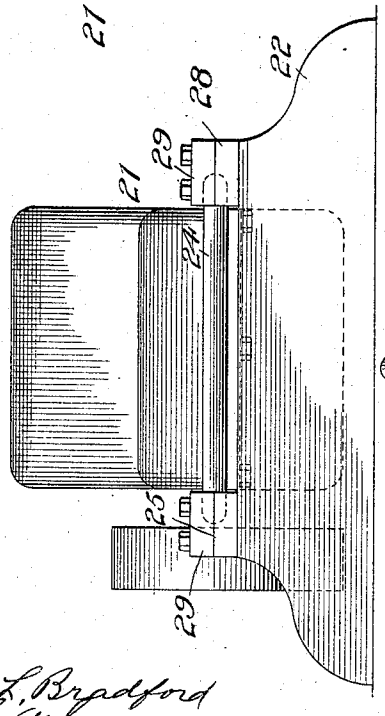
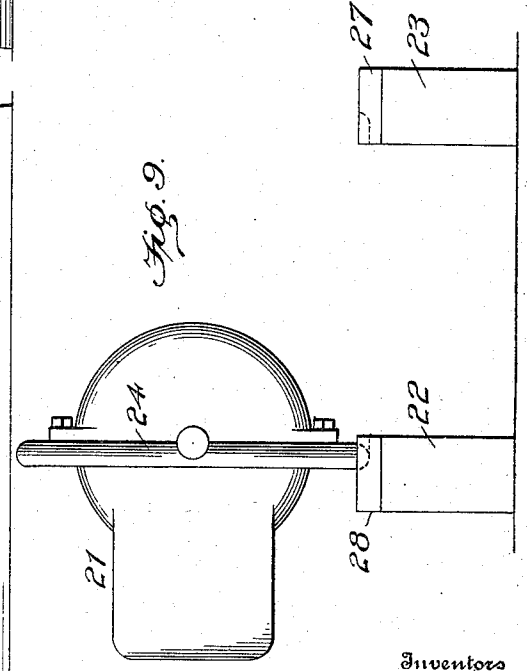


Fig. 9.



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UNITED STATES PATENT OFFICE.

MARSHALL WILFRED HANKS AND JAMES THOMAS ATWOOD, OF MADISON, WISCONSIN; SAID ATWOOD ASSIGNOR TO SAID HANKS.

ENGINE-MOUNT.

No. 840,695. Specification of Letters Patent. Patented Jan. 8, 1907.

Application filed November 21, 1905. Serial No. 288,380.

To all whom it may concern:

Be it known that we, MARSHALL WILFRED HANKS and JAMES THOMAS ATWOOD, citizens of the United States, residing at Madison, in the county of Dane and State of Wisconsin, have invented certain new and useful Improvements in Engine Mounts or Foundations; and we do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to engines, motors, and other power-generators for launches, automobiles, and other vehicles, and contemplates the production of an improved mount or foundation, by the employment of which the engine or the like may be tilted from its normal position for convenient inspection, adjustment, and repairs.

In power-driven launches and automobiles, more especially, it is extremely desirable to so arrange the machinery that repairs can be readily made. The difficulty encountered in repairing or adjusting engines in these types of craft and vehicles is due to the fact that the machinery is not accessible at all sides. In the case of most of the modern automobile-engines it is necessary while making repairs and adjustments in the so-called "crank-chamber" to crawl beneath the machine and loosen the bolts fastening the lower part of said chamber before free access can be had to the bearings, connecting-rods, and cranks.

In launches it would be almost impracticable to use an engine such as described, as access to the under side of the engine is not afforded, and the hand-holes which lead to the chamber are usually of so small an area as to practically prevent all adjustments and repairs. In some instances comparatively large hand-holes for access to the crank-chamber are provided; but even in the best types of modern engines convenient access to the parts within is not obtainable.

If the modern automobile-engine provided with a detachable lower chamber part could be readily loosened from its foundation or mount and tilted, say ninety degrees, the under side would be exposed and obviously repairs and adjustments could be very conveniently and quickly made. An appliance of this character in the modern-built launch would allow of the use of the latest and most approved type of automobile-engine. Its absence has caused one of the most serious drawbacks to the successful operation of the gas-engine in small launches.

The improved mount or foundation, by the use of which the above-described desirable results are obtained, is set forth in detail in the following description, and illustrated in the accompanying drawings. Said drawings exhibit the invention it its preferred forms of embodiment; but no limitation is intended by such disclosure, as various changes and modifications may be made in the invention without exceeding the scope of the concluding claims.

In the drawings, Figure 1 is a side elevation of an engine and a mount or foundation embodying our invention in position in a launch. Fig. 2 is a top plan view. Fig. 3 is a side elevation, the engine being shown tilted on end. Fig. 4 is an end elevation, full lines showing the normal position of the engine and dotted lines the position of the engine when tilted laterally. Figs. 5 and 6 are detail views of one of the trunnions and its bearing. Fig. 7 is a side elevation of a modified form of the appliance. Fig. 8 is a similar view with the engine tilted on end. Fig. 9 is an end elevation showing the engine tilted laterally. Figs. 10 and 11 are detail views of the bearings for the engine-supporting element.

Referring to the drawings by numerals, and first to Figs. 1 to 6, inclusive, 1 designates the engine, for example, of the internal combustion type, having a crank-chamber, of which the part 2 is removable, being fastened by the bolts and nuts 3. The fuel or carbureter and exhaust connections of the engine are shown, respectively, at 4 5, and in each connection is a flange or other coupling, whereby to disconnect the engine, as hereinafter explained. Extending laterally from the engine-casing are four arms or trunnions 6 7 8 9, having rounded outer ends normally resting in correspondingly-shaped sockets in bearings 10 11 12 13, secured on foundation-timbers 14 15. The caps 16 of

said bearings are removably fastened to confine the arms or trunnions by bolts 17 and nuts 18, as shown more clearly in Figs. 5 and 6. Fig. 1 shows the engine and foundation installed in a launch, the foundation consisting of two timbers in separated relation fastened on the floor of the engine-room. The engine is readily accessible while the hatch 19 and bulkhead-doors 20 are opened. When adjustments or repairs are necessary, the fuel and exhaust connections are uncoupled and the engine-shaft is disconnected from the shaft of the propeller. If the engine is to be tilted on end, the caps of bearings 12 13, for example, are removed, and the engine may assume the position shown in Fig. 3, in which position convenient access to the bearings, connecting-rods, and cranks may be had upon the removal of the lower part 2 of the crank-chamber. The engine may be tilted laterally to the right or left by removing the caps of all of the bearings 10, 11, 12, and 13, one of such positions being indicated by the dotted lines in Fig. 4.

Referring to Figs. 7 to 11, inclusive, the engine 21 therein shown may likewise be of the internal-combustion type and may be supported or mounted on foundation-timbers 22 23, similar to the aforesaid timbers 14 and 15. The engine 21 may have a similar crank-chamber and fuel and exhaust connections; but in lieu of the trunnions 6 7 8 9, the engine-casing is provided with a flange 24, extending from the sides and ends and having a rounded edge, as shown more plainly in Fig. 9. Fastened on the timbers are four bearings or blocks 25, 26, 27, and 28, having each a cap 29, removably bolted in place. The blocks are provided with sockets receiving the corners of the flange 24, with which they conform in shape and which, like the first-described bearings, serve as hinges in the tilting movements of the engine.

Referring to Figs. 8 and 9, it will be observed that the engine 21 is by its described mounting capable of being tilted on end or laterally to the right or left to expose its under side for inspection, adjustments, or repairs. The construction differs from that shown in Figs. 1 to 6 in that to obtain the tilting movements all of the bearings or block-caps must be temporarily removed, this being permitted by unscrewing the confining nuts.

For the purposes of the invention any type of engine and any construction of foundation may be employed, and the above specific disclosure is, therefore, not to be regarded as a limitation. Likewise, also, the specific installation shown is not intended as a limitation, as the invention is equally adapted for use in connection with craft, automobiles, and other vehicles without material modification.

We claim as our invention—

1. The combination with an engine, of a mount therefor, said engine being adapted to operate only when located in a fixed relation to the mount and means on the engine and mount to permit the tilting of the engine in a plurality of directions from its normal position whereby access may be obtained to the various parts thereof.

2. The combination with an engine, of a mount therefor, said engine being adapted to operate only when located in a fixed relation to the mount and coöperating means on the engine and mount whereby the engine may be tilted in a plurality of directions from its normal position whereby access may be obtained to the various parts of the engine.

3. The combination with an engine, of a mount therefor, journal-bearings formed on the mount and means on the engine for removably engaging said journal-bearings whereby the engine may be tilted in a plurality of directions from its normal position.

4. The combination with an engine, of a mount therefor provided with journal-bearings, and journals on the engine adjacent its ends and adapted to removably engage the journal-bearings whereby the engine may be tilted in a plurality of directions from its normal position.

5. The combination with an engine, of a mount therefor, journal-bearings formed on the mount and provided with removable caps and journals formed on the engine adapted to removably engage with the bearings, whereby said engine may be tilted in a plurality of directions from its normal position.

6. The combination with an engine, of a mount provided with a plurality of journal-bearings journals at each end of the engine adapted to removably engage said journal-bearings whereby said engine may be tilted in a plurality of directions from its normal position.

7. The combination with an engine, of a mount therefor, journals projecting from the engine and journal-bearings on the mount with which said projecting journals removably engage whereby said engine may be tilted into a plurality of directions from its normal position.

8. The combination with an engine, of a mount therefor, journal-bearings on the mount and projecting journals on the engine located near the ends thereof and adapted to removably engage the journal-bearings whereby the engine may be tilted in a plurality of directions from its normal position.

9. The combination with an engine, of a mount, journal-bearings on the mount,

rounded projections on the engine forming journals and adapted to engage the journal-bearings and removable caps for said bearings whereby the engine may be tilted in a plurality of directions from its normal position.

10. The combination with an engine, of a mount therefor, journals projecting from the engine at each angle thereof and journal-bearings on the mount with which said projections removably engage whereby the engine may be tilted in a plurality of directions from its normal position.

In testimony whereof we affix our signatures in presence of two witnesses.

MARSHALL WILFRED HANKS.
JAMES THOMAS ATWOOD.

Witnesses:
MARY NOLAN,
JOHN S. MAIN.