

1,357,741.

Fig. 1.

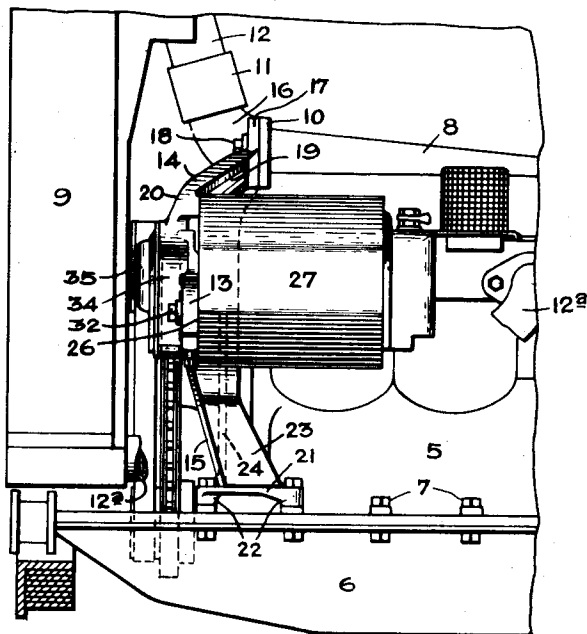


Fig. 2.

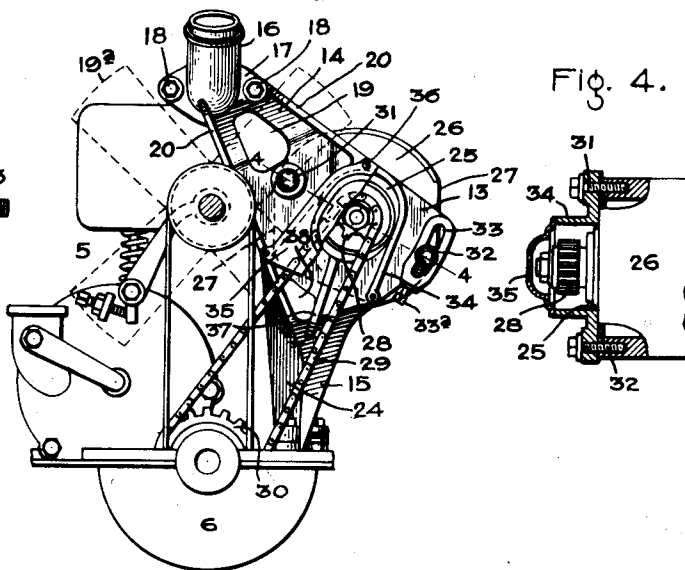


Fig. 4.

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UNITED STATES PATENT OFFICE.

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ADJUSTABLE MOUNTING FOR AUTOMOBILE-STARTING MOTORS AND GENERATORS.

1,357,741.

Specification of Letters Patent.

Patented Nov. 2, 1920.

Application filed October 4, 1917. Serial No. 194,779.

To all whom it may concern:

Be it known that I, GEORGE E. STEVENS, a citizen of the United States, residing at Lynn, in the county of Essex, State of Massachusetts, have invented certain new and useful Improvements in Adjustable Mountings for Automobile-Starting Motors and Generators, of which the following is a specification.

10 The present invention relates to starting and lighting sets for automobiles and particularly to those intended for Ford machines.

In providing a starting and lighting set 15 which is to be applied to a car already built, one of the problems met with is to provide a suitable mounting adjacent the engine for the motor or generator. One of the first requirements is that it be of such a character 20 that it can be easily and quickly installed and adjusted by the average garage employee and without material modification of any of the existing parts of the automobile.

Another requirement is that the mounting or bracket for the motor or generator, 25 not being an integral part of the engine frame, be so designed and constructed that when attached to the engine frame, it shall afford very rigid support to the motor or 30 generator and resist to the maximum degree all forces which may tend to spring or bend it, and thereby disturb the alinement of the shaft of the motor or generator which it supports, with respect to the 35 shaft of the engine on which it is mounted, the two shafts respectively being connected together by gearing or equivalent means. In some types of brackets or mountings heretofore used, the point of support of the motor or generator on the bracket or mounting, 40 and the point or points of support of the bracket on the engine frame have been so fixed by the design of the mounting, that the forces applied through gearing or its 45 equivalent, between the engine shaft and the generator or between the motor and the engine shaft have had a strong tendency to force the respective shafts out of alinement with each other, and thereby seriously interfere with the proper functioning of the connecting gearing or its equivalent, resulting in undue noise, losses of power, and excessive wear.

55 In the bracket or mounting herein described, an especial feature of the improve-

ment is that it provides for maintaining the acting and reacting force coupled in substantially continuous and closely paralleled straight lines, thus assuring minimum tendency to spring or bend the bracket or mounting, and maximum tendency to maintain the shafts in correct alinement with the obvious attendant advantages.

A further requirement is that the mounting or support be composed of a few simple 65 parts of a rugged nature so arranged that neither it nor the motor or generator mounted thereon will interfere with the accessibility of the engine parts, and that the initial cost of manufacturing be as low as 70 possible. And a still further requirement is that it interfere with the circulation of air from the fan over the engine, and with the radiation of heat from the engine as little as possible, so as not to affect materially the 75 cooling of the engine.

The object of my invention is to provide an improved bracket support or mounting which will to a high degree fulfil the requirements above specified, and for a consideration of what I believe to be novel and my invention, attention is directed to the accompanying specification and the claims 80 appended thereto.

In the drawing, Figure 1 is a side elevation 85 of the front part of an automobile fitted with my improved apparatus; Fig. 2 is a front view thereof, the radiator being removed; Fig. 3 is a top plan view of the bracket, and Fig. 4 is a section taken on the 90 line 4—4, Fig. 2.

Referring to the drawing, 5 indicates an internal combustion engine which is suitably mounted on the chassis of an automobile, and 6 a crank casing which is secured to a flange on the engine base by 95 bolts 7. 8 indicates a conduit formed in the head of the engine through which cooling water flows from the cylinder jackets to the radiator 9. It terminates in a flange 100 10 and in the standard Ford cars has a short flanged pipe section bolted thereto which is connected by a piece of hose 11 to a pipe 12 leading to the radiator. 12^a indicates the pipe which forms the other connection between the radiator and the cylinder jackets. It is shown broken away to 105 more clearly illustrate the parts behind it.

The bracket comprises a central portion 13 which extends at substantially right 110

angles to the axis of the engine and is supported by two extensions 14 and 15. The extension 14 projects at a slight angle to the plane of the central portion 13 and preferably has a pipe connection 16 formed integral with its end. This pipe connection is similar to that found on a Ford car as referred to above. A flange 17 surrounds the pipe connection, which flange is fastened to flange 10 by bolts 18. The pipe connection 16 is thus substituted for the usual pipe connection found on Ford cars. Of course, if found desirable, the usual pipe connection already on Ford cars may be utilized, in which case the end of extension 14 will be flat and coupled between the flange 10 and the flange on such pipe connection. Extension 14 is provided with an opening 19 to lighten the structure and with strengthening flanges 20, one along each edge of the bracket. The opening 19 also serves to permit the passage of air from the ventilating fan 19^a along the side of the engine. The extension 15 also projects at a slight angle to the plane of the central portion 13 and terminates in a foot 21 which extends at about right angles to said extension. Foot 21 is provided with two bosses 22 which are spaced to correspond to the spacing of the bolts 7, and through which are suitable openings to receive fastening bolts. By this arrangement the bracket is fastened by bolts similar to those which serve to fasten the crank casing 6 in place, except that they are longer. No new bolt holes are thus required to be made. 23 is a stiffening rib which extends from the foot 21 to the pipe connection 16. At the foot 21, it is substantially as wide as the foot is long but narrows as it approaches the upper end of the bracket so as to come within the confines of the flange 17. A further stiffening rib 24 is provided on this side of the bracket which extends from the foot 21 to a point about half way up the rib 24, thus materially strengthening the lower portion of rib 24. The central portion 13 of the bracket is provided with an opening 25 over which is fastened the front end of a dynamo electric machine 26. The machine 26 is flattened on its two sides as shown at 27 so that it may fit close up to the engine and otherwise come within the confines of the space available for it. The front end of the machine 26 fits directly against the face of the bracket and its shaft projects through opening 25 and carries a sprocket wheel 28 over which passes a chain 29 which transmits power between the dynamo electric machine 26 and a sprocket wheel 30 on the engine crank shaft. The dynamo electric machine 26 is fixed to the bracket by two bolts 31 and 32. The bracket has a curved slot 33 through which bolt 32 passes,

the center of curvature being bolt 31. By this means the dynamo electric machine 26 may be turned on the bolt 31 as a pivot to adjust the tension of the chain 29 after which it is fixed in adjusted position by means of adjusting screw 33^a after which it may be securely clamped in such adjusting position by tightening up bolt 32 and pivot bolt 31. A housing is provided for sprocket wheel 28 comprising a curved wall 34 which surrounds the opening 25 on three sides, having an open side through which the chain 29 passes. The curved wall 34 is formed as an integral part of the bracket and serves to strengthen it. On the curved wall 34 is fastened a cover plate 35 held in place by screws 36.

As is clear from Fig. 2, the flange 20 at the upper edge of extension 14 merges into the curved wall 34 and that at the lower edge extends to wall 34 where their edges are integrally united. In other words, flanges 20 and wall 31 form one continuous integral structure. At 37 is a stiffening rib located below the sprocket wheel 28 and extending in the same general direction as does the chain 29. It extends from the edge of opening 25 to a point part way down the extension 15, passing along the edge of an opening 38 which is formed in the bracket to lighten the structure and also to permit of the passage of air from the ventilating fan along the side of the engine.

It will be noted that the extension 15 and ribs 23 and 24 lie at right angles to each other thus providing a strong rigid structure but one which at the same time is light in weight. Also that the flanges 20 on the one side of extension 14 and the rib 23 on the other side thereof likewise give a strong rigid and light structure for extension 14.

It will also be noted that the line of pull of the chain drive is in a plane substantially parallel to the plane of the bracket and bracket supports and quite close thereto. Owing to this arrangement there are but slight twisting or turning stresses on the bracket and its supports. This is important as it means that the greater portion of the driving pull on the bracket is a straight line pull in the plane of the bracket.

The arrangement gives a very simple mounting for the machine 26 and provides for the easy adjustment of it as well as its removal for repair or other purposes. The installation takes up the minimum amount of space and as is obvious can be very readily installed without modification of any of the vehicle parts.

In accordance with the provisions of the patent statutes, I have described the principle of operation of my invention, together with the apparatus which I now consider to represent the best embodiment thereof; but I desire to have it understood that the ap-

paratus shown is only illustrative and that the invention can be carried out by other means.

5 What I claim as new and desire to secure by Letters Patent of the United States, is:—

10 The combination with an internal combustion engine having a conduit for conveying cooling water, and a flange, of a bracket comprising a flat central portion which lies
15 in a plane at a right angle to the axis of the engine, and two extensions one of which is fastened to said conduit and the other of which has a foot fastened to said flange, said central portion having an opening, a
dynamo electric machine having a flat end

which engages directly a flat surface of said central portion with its shaft projecting through said opening, a pivot bolt located to one side of the axis of said machine for pivotally connecting the machine to the
20 bracket whereby the machine may be adjusted by turning it on said bolt, means for holding the machine in any adjusted position, and a transmission wheel on said shaft
25 which is located on the side of the bracket opposite to that on which the dynamo electric machine is located.

In witness whereof, I have hereunto set my hand this 1st day of October, 1917.

GEORGE E. STEVENS.