C. W. BLACKMAN.

GEAR CASE AND HOUSING FOR AUTOMOBILES.

APPLICATION FILED JAN. 29, 1908.

961,097. Patented June 14, 1910.

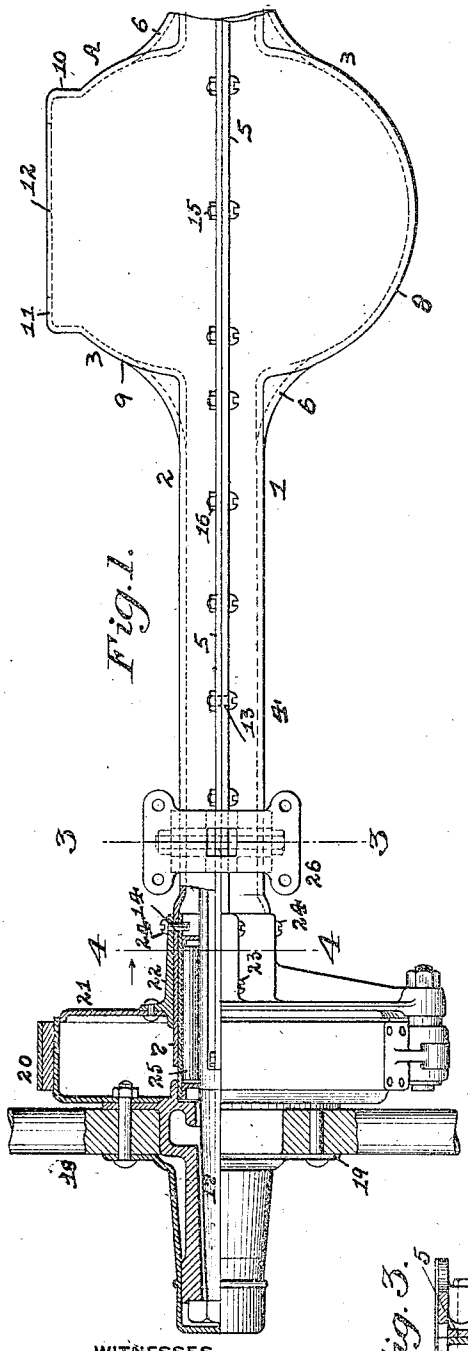

Fig. 1.

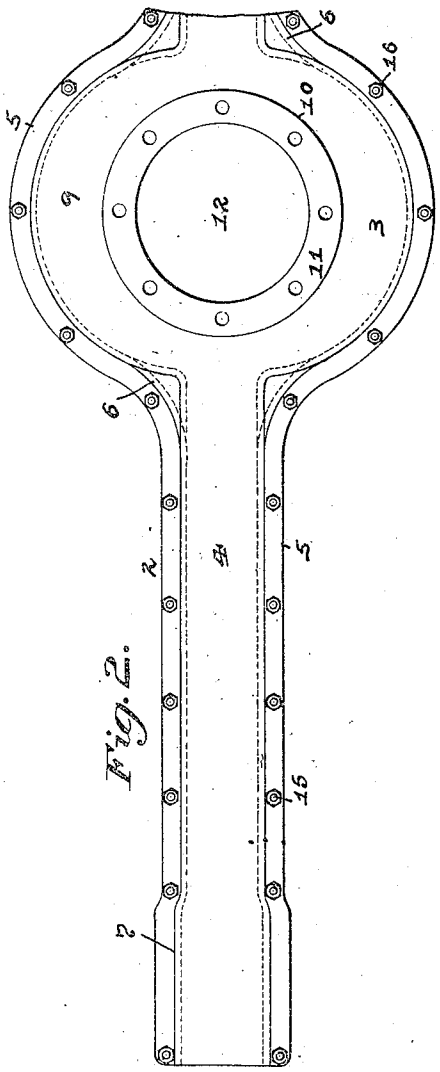

Fig. 2.

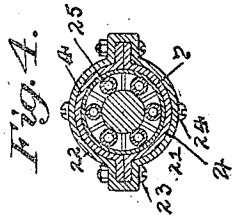

Fig. 4.

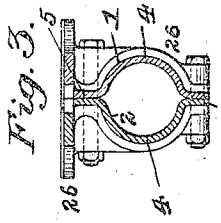

Fig. 3.

WITNESSES

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# UNITED STATES PATENT OFFICE.

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## GEAR CASE AND HOUSING FOR AUTOMOBILES.

961,097. Specification of Letters Patent. Patented June 14, 1910.

Application filed January 29, 1908. Serial No. 413,235.

*To all whom it may concern:*

Be it known that I, CHARLES W. BLACKMAN, a resident of Cleveland, in the county of Cuyahoga and State of Ohio, have invented a new and useful Improvement in Gear Cases and Housings for Automobiles; and I do hereby declare the following to be a full, clear, and exact description thereof.

My invention relates to gear cases and housings and has special reference to metallic cases and housings as are applied to the rear axles of automobiles. Heretofore, in the use of these gear cases and housings they have generally been made up of a number of metal parts, generally of cast metal, and connected together, and as so formed they were very liable to become disconnected or separated, which would cause rattling of the same and make objectionable noises, while at the same time such parts were easily broken and would thereby cause noises and permit the entrance of dirt, etc. into the working parts within the same.

The object of my invention is to overcome these objections and provide a metallic gear case and housing which will be cheap, simple and efficient in its construction, will be light in weight, strong and durable, will do away with the casting of the same and will permit ease of assembling in place for use.

My invention consists, generally stated, in the novel arrangement, construction and combination of parts, as hereinafter more specifically set forth and described, and particularly pointed out in the claims.

To enable others skilled in the art to which my invention appertains to construct and use my improved gear case and housing, I will describe the same more fully, referring to the accompanying drawing, in which:—

Figure 1 is a top plan view of a portion of my improved gear case and housing, showing one end partly in section and with some of the working parts applied thereto. Fig. 2 is a side elevation of the same. Fig. 3 is a cross-section on the line 3—3 Fig. 1. Fig. 4 is a like view on the line 4—4 Fig. 1, looking in the direction of the arrow.

Like symbols of reference herein indicate like parts in each of the figures of the drawing.

As illustrated in the drawing two sheet metal plates are cut to the size and shape required, and these plates are adapted to be placed within and between suitable dies of a press and in their cold state and each pressed or stamped at one operation to form the complete and finished members 1 and 2 for the gear case and housing A, shown in Figs. 1 and 2. These plates when placed within the dies are each bent up to form the enlarged central or intermediate hollow gear case portion 3 on the members 1 and 2 and the hollow semi-circular axle portion 4 extending out from each side of the same, which such portions 3 and 4 are also formed with the flanges 5 extending out from the side edges of the same. The gear case portions 3 are connected to the axle portions 4 on each of the members 1 and 2 by the curved bracing portions 6 and the outer ends of said portions 4 are enlarged, as at 7, to form a seat for the roller bearing therein and the connection of the braking device to the same, as hereinafter described. The gear case portion 3 on the member 1 is formed of a bowl or half globular shape, as at 8, and the like portion on the member 2 is substantially of a bowl or globular shape and is curved inwardly from the axle portion 4, as at 9, and terminates in the straight portion 10, which is bent inwardly to form the flange 11 for the outer face of a circular opening 12 formed by the same for the shaft or connections to the gears in the gear case portions 3, as hereinafter described. After the members 1 and 2 for the gear case and housing A have been thus formed to shape the holes 13 are punched or drilled within the flanges 5 on the same and opposite to each other, and the holes 14 are punched or drilled in the enlarged ends 7 on the portions 4 and opposite to each other. The members 1 and 2 for forming the gear case and housing 1 are now ready to be attached around the gears and axle, and this can be accomplished by inserting the gears and axle within the gear case portions 3 and axle portion 4 respectively, of said members and in such position so that the flanges 5 on said members are in vertical alinement, when the screw bolts 15 can be placed within the holes 13 in said flanges and screwed up to place by the nuts 16. The axle 17 carries the wheels 18 at its ends and the hubs 19 of said wheels carry the revolving portion 20 of the braking device 21 of any approved construction, while the stationary portion 22 is secured to the enlarged ends

7 on the members 1 and 2 through screw bolts 23 passing through the flanges 5 and through screw bolts 24 passing through the holes 14 in said ends and entering the seat therein formed by said ends and within which are located the roller bearings 25 for engaging with said axle. A suitable bearing 26 is secured around the axle portions 4 of the members 1 and 2 and adjacent to said enlarged ends 8 thereon for being connected to the usual point to support the same.

It will thus be seen that my improved gear case and housing will provide for reducing the number of parts in such a connection for the rear axles of automobiles, and the two members used in constructing the same will form substantially one piece when connected together. The device is easily and quickly formed and will do away with the casting of these parts in the ordinary forms of these constructions, thereby saving considerable expense in the cost of manufacture and assembling of the same.

It will be evident that my improved gear case and housing can be used in connection with different forms of axles and gears and for other purposes and uses, while various modifications and changes in the design and construction of the gear case and housing may be resorted to without departing from the spirit of the invention or sacrificing any of its advantages.

What I claim as my invention, and desire to secure by Letters Patent, is:—

1. A gear case and housing formed of two members having an enlarged hollow gear case portion within each of the same and an opening through one of said hollow portions, and flanges on said members for connecting the same together and the contracted portion of said members having an enlarged end portion thereon.

2. A gear case and housing formed of two members having an enlarged hollow gear case portion within each of the same and one of said hollow portions having an opening through the same provided with an inwardly extending flange, and flanges on said members for connecting the same together and the contracted portion of said members having an enlarged end portion thereon.

3. A gear case and housing formed of two members having an enlarged hollow gear case portion within each of the same and an opening through one of said hollow portions, flanges on said members for connecting the same together, and strengthening web portions between said hollow portions and the contracted portions.

4. A gear case and housing formed of two members having an enlarged hollow gear case portion within each of the same and one of hollow portions having an opening through the same provided with an inwardly extending flange, flanges on said members for connecting the same together, and strengthening web portions between said hollow portions and the contracted portions.

In testimony whereof, I, the said CHARLES W. BLACKMAN, have hereunto set my hand.

CHARLES W. BLACKMAN.

Witnesses:
FRANK H. MORSE,
H. H. FISHER.