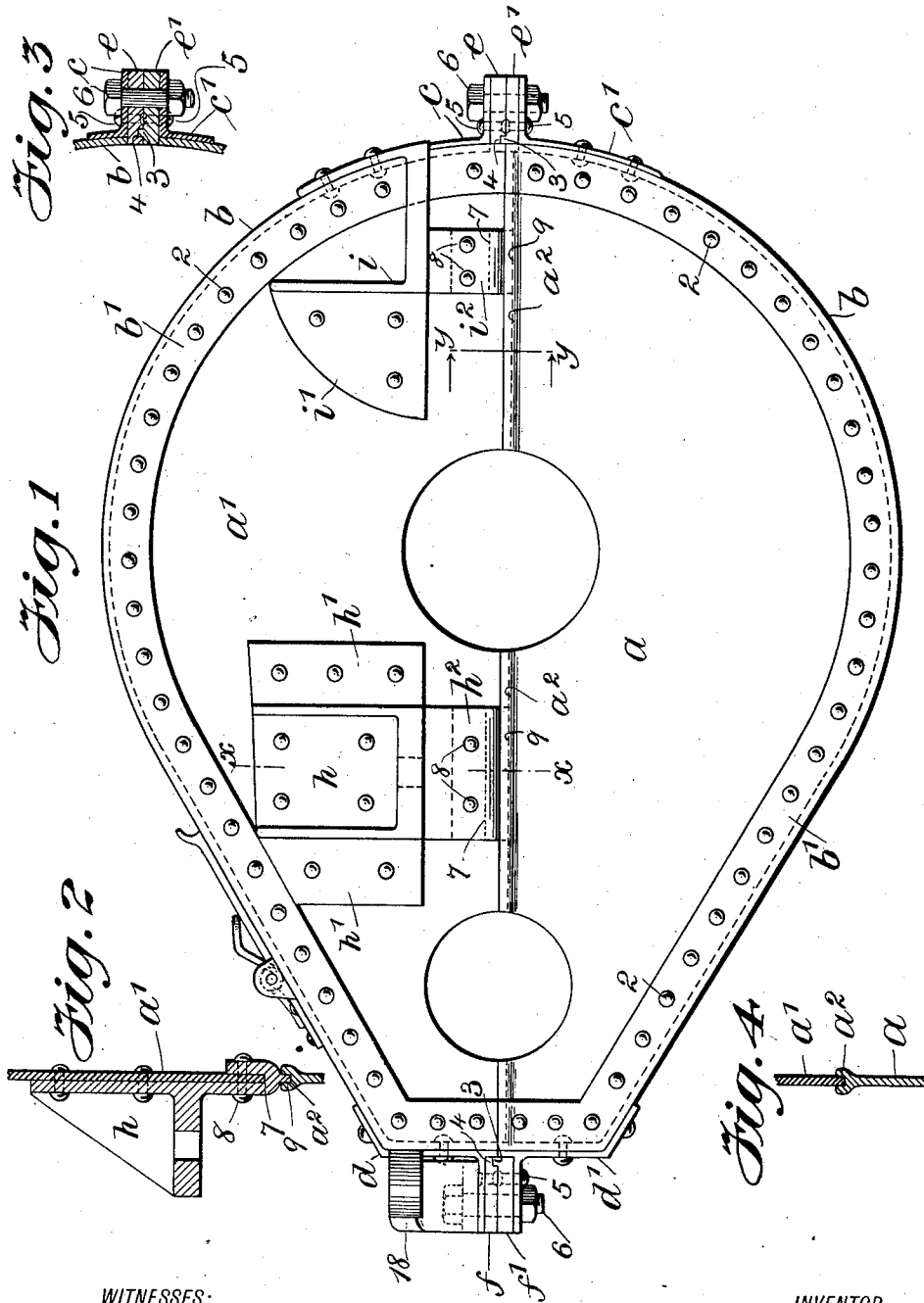


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Chas. J. Clagett
Chas. H. Smith

James Grady
Harold Terrell
his ATTORNEY

UNITED STATES PATENT OFFICE.

JAMES GRADY, OF NEW YORK, N. Y., ASSIGNOR TO COLUMBIA MACHINE WORKS & MALLEABLE IRON CO., OF BROOKLYN, NEW YORK, A CORPORATION OF NEW YORK.

GEAR-CASE.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, JAMES GRADY, a citizen of the United States, residing in the borough of Manhattan, in the city, county, and State of New York, have invented an Improvement in Gear-Cases, of which the following is a specification.

My invention relates to gear cases and particularly to a gear case adapted for employment in connection with motor-driven vehicles, particularly such as street cars.

My invention is designed as an improvement upon the gear case structure shown and described in Letters Patent granted to me December 29, 1908, No. 908,244. In the device of said patent the edges of the parts or halves of the gear case met in opposition, and I have found by experience that it was quite impossible to keep out dust and water, and the object of my present invention is to construct said case substantially dust and water tight.

In carrying out my invention, I construct the edge of one-half of the case with a groove and the edge of the other half plain or slightly wedge-shaped to fit said groove, and within the connecting end flanges of the gear case I prefer to employ two block members, one of which is provided with a groove and the other with a rib to set in the groove; therefore providing a tongue and groove joint around the entire gear case. I also provide for strengthening and stiffening the parts of the gear case, all of which is hereinafter more fully set forth.

In the drawing, Figure 1 is a side elevation of my improved gear case. Fig. 2 is a vertical section at about the dotted line x, x , of one side of the case and through one of the brackets. Fig. 3 is a vertical central section at one end of the case, and Fig. 4 is a vertical cross section at about the dotted line y, y .

The gear case of my present invention like that of my patent aforesaid, is made in two parts similarly constructed and so shaped that the parts of the case when placed together are elliptical in outline; the division being made lengthwise of the case. Each half of the gear case preferably comprises side plate members a, a^1 , between the meeting edges of which openings are provided for the shafts of the gearing. These plates around their outer edges are connected by a peripheral member which com-

prises a plate b with edge flanges b^1 in the form of a spread letter U; the edges of the side plates coming inside of the flanged edges of the peripheral plate and connected thereto by rivets 2. At the opposite ends of the gear case are L-shaped bracket ends c, d and c^1, d^1 , the longer members of which are secured preferably by rivets to the surface of the plate b , consequently the shorter members of said bracket ends are substantially parallel and receive between them filling-blocks e, e^1 and f, f^1 . These blocks are advantageously connected to the shorter members of the bracket plate ends by rivets 5 and the respective members are connected together by bolts 6, which bolts also when secured connect firmly together the two parts of the gear case. One of these filling-blocks at each end of the case is made with a rib 3, and the other of these filling-blocks is made with a groove 4 along the line of the rib and to receive the rib, and these filling-blocks extend across the case between and within the series of side-plates a, a^1 . The support brackets h and i are composed of the U-shaped parts, the side flanges h^1 and i^1 and the bottom flanges h^2 and i^2 ; there being within and back of the brackets also, plates which are substantially prolongations of the plates h^1 and i^1 ; all of said plates being in the same plane and all of them riveted to the side plate a^1 .

The special feature of my present invention relates to providing grooved parts along the edge of one of the side plates,—preferably the side plate a , and along its upper edge; this is of a sufficient width to receive the lower edge of the side plate a^1 . This lower edge may be slightly tapering or wedge-shaped to more freely enter the groove. This construction is duplicated at the other side of the gear case.

Fig. 4 shows the construction at the meeting edges of the halves of the gear case in which the upper edge of the side plate a is upset and provided with a groove a^2 which is wide enough to receive the lower edge of the side plate a^1 , and where the bracket members h, i come, the section Fig. 2 shows that the side plate a^1 stops at the line 7; the edge having been cut away as a recess through which the bottom flange i^2 of the bracket has been in-turned and up-turned and secured by rivets 8, so as at this point to make a very strong connection between

the bracket and side plate of the gear case, and in view of this construction, the lower edge of the bracket has been upset to produce the rib 9 which corresponds to the lower edge of the side plate a^1 so as to enter the groove a^2 with the same facility as the edge of the side plate. In these respects both sides of the gear case are made alike. To provide equal facilities at the ends of the gear case and where the filling-blocks come, I have provided a rib 3 on the end filling-blocks and as shown on the filling-blocks $e^1 f^1$, and grooves 4 on the filling-blocks $e f$ so that these parts interlock at the ends as well as the side plates all along each side. In this way dust and water are excluded from entrance into the gear case except at the narrow annular opening between the shaft of the gears and the openings in one side of the case provided therefor, which is very slight and is only on the shaft side of the case. It is necessary to secure the filling-blocks to the bracket plate ends of the gear case,—therefore I have shown and prefer to employ rivets 5 for connecting the filling-blocks $e f$ to the bracket plate ends c and d and other similar rivets for connecting the filling-blocks $e^1 f^1$ to the bracket plate ends $c^1 d^1$ of the lower half of the gear case; the bolts 6 passing through the bracket plate ends and through the filling-blocks to secure the respective ends of the gear case together. Incidentally, I have also shown and prefer to employ a bracket 18 at the smaller end of the gear case similar to the bracket shown in Figs. 1, 2 and 3 of my aforesaid patent, for the purpose of

assisting in the support of the gear case when in position of use. This, however, while illustrated, forms no part of my present invention.

I claim as my invention:

1. In a divided gear case, and in combination, side plate members and bracket plate ends, with grooves in the edges of the side plates of one member of the divided gear case adapted to receive the edges of the side plates of the other member of the divided gear case, and filling-blocks secured to and coming between the bracket plate ends of the gear case in which are formed ribs and grooves coacting with the closed edges of the side plate members in excluding dust and water from the gear case.

2. In a divided gear case, and in combination, side plate members with grooves in the edges of the side plates of one of the divided members of the gear case, support brackets having side and bottom flanges riveted to the side plates of the other member of the divided gear case, and the bottom flanges passing through edge notches in the side plates and returned and secured by rivets, and the lower edges of the said bottom flanges formed with ribs continuing the continuity and edge of the side plate and adapted equally to be received in the grooves of the other side plate member for excluding dust and water.

Signed by me this 9th day of Aug. 1911.
JAMES GRADY.

Witnesses:

GEO. T. PINCKNEY,
MARY E. LELAND.