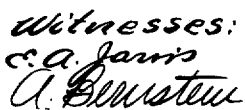


AXLE HOUSING.

1,209,134.

2 SHEETS—SHEET 1.

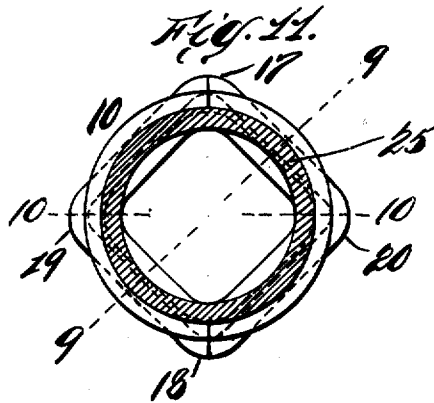
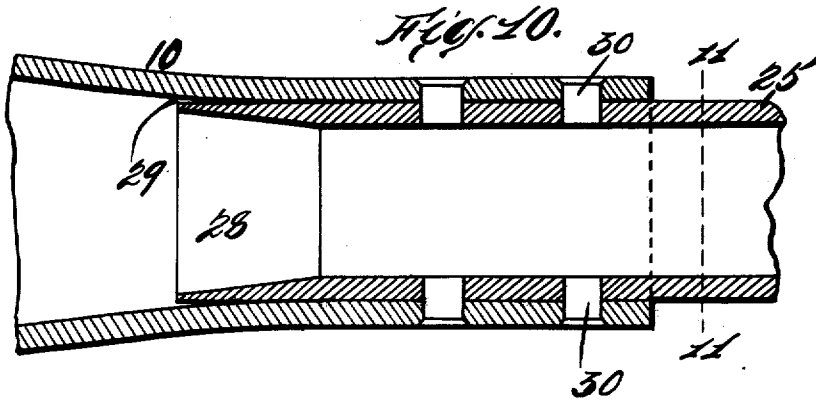
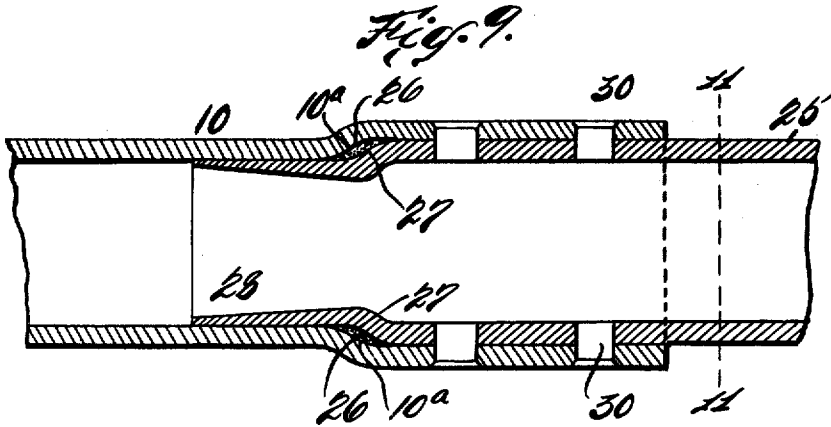


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 AXLE HOUSING.
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1,209,134.

Patented Dec. 19, 1916.
 2 SHEETS—SHEET 2.



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UNITED STATES PATENT OFFICE.

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AXLE-HOUSING.

1,209,134.

Specification of Letters Patent.

Patented Dec. 19, 1916.

Application filed August 19, 1914. Serial No. 857,481.

To all whom it may concern:

Be it known that we, JOHN F. DODGE and HORACE E. DODGE, citizens of the United States, residing at Detroit, Michigan, and Grosse Pointe, Michigan, respectively, have invented certain new and useful Improvements in Axle-Housings, of which the following is a clear, full, and exact description.

This invention relates to improvements in axle housings or casings, more particularly for the rear axle of a motor car, and one of the objects of the invention is to provide a housing which possesses combined strength and elasticity.

Another object of the invention is to provide an axle housing with stiffening means arranged longitudinally thereof, the same being preferably composed of sheet metal.

Other objects of the invention are to provide an improved construction of housing which is simple, durable and practical.

These being among the objects of the present invention, the same consists of certain features of construction and combinations of parts to be hereinafter described and then claimed with reference to the accompanying drawings illustrating a suitable embodiment of the invention, in which—

Figure 1 is a side elevation of the improved housing; Fig. 2 is an edge view thereof; Figs. 3, 4, 5, 6, 7 and 8 respectively are transverse sections of the intermediate member only of the housing on the lines 3—3, 4—4, 5—5, 6—6, 7—7 and 8—8, Fig. 1; Fig. 9 is a longitudinal section on line 9—9, Fig. 11; Fig. 10 is a longitudinal section on line 10—10, Fig. 11; and Fig. 11 a cross-section on line 11—11, Figs. 9 and 10; said figures showing more clearly the construction of the housing and inserted tube at the joint.

Referring to the drawings, the improved housing or casing comprises an intermediate member 10 and end members 11, 12. The intermediate member will first be described. It is preferably composed of heavy sheet metal, made of two properly bent up longitudinal and transversely arched sections 13, 14, said sections being complementary to each other, and the longitudinal joints at 15 being united as by welds. It will thus be seen that each of the said sections acts as a lateral support for the other section so that said sections mutually support each other, said sections being further strengthened

in a lateral direction by arching them in cross section. In this way a stiff and strong and yet somewhat elastic intermediate member 10 is provided. Said member 10 comprises a central enlarged portion 16, while the ends of said member 10 taper away from said enlarged central portion. The cross-section of the enlarged central portion 16 is clearly shown in Fig. 3, while the cross-sections of the major portion of each end beyond the enlarged portion 16 is shown in Figs. 4, 5, 6 and 7. From Fig. 4 it will be seen that the intermediate member 10 is relatively narrower in one direction than in the other, and from Fig. 5 it will be seen that the relative proportions are not so widely different, while from Fig. 6 it will be seen that the cross section is substantially square. From Fig. 7 it will be seen that here the irregular cross-section has substantially disappeared and that the cross-section is substantially cylindrical. Of course these proportions and configuration may be more or less varied, but the said housing becomes wider toward its middle axis, along one transverse dimension than along the other. Said intermediate member 10 has side walls which in a transverse direction are waved or formed in compound curves, produced by means of longitudinal corrugations 17, 18, at opposite edges or sides and intermediate or side corrugations 19, 20, which are spaced equidistant from the corrugations 17 and 18. By means of this construction, the said housing is further stiffened and strengthened, and yet a certain degree of elasticity is permitted. Said corrugations 17, 18, 19 and 20 project outwardly, along the tapering sides of the intermediate member 10, and, becoming gradually smaller, extend to points short of the extremities of said member, and at the extremities the ends of the member are made cylindrical, as shown in cross-section in Fig. 8.

From Figs. 9, 10 and 11 in particular, it will be seen that the end portions of the relatively short tubular members 24 and 25, are inserted into the cylindrical sleeves or ends 21, 22, until the edges thereof pass beyond them to points within and clear of the corrugated portions or those tapered portions of the housing member 10 which adjoin said sleeves or ends 21, 22, and that the inserted ends of the said tubular members are specially formed. The inner ends of the tubu-

lar members 24, 25, thus extend far enough into housing member 10 to bridge and strengthen the connection between the taper and straight sections of said member so that vertical strains are taken care of.

At 26, the intermediate member and each tubular member are preferably brazed together. At these points the squared portions of the housing shown in section in Fig. 6 are enlarged into the substantially cylindrical section shown in Fig. 7, forming shoulders 10^a beyond, while the tubular members are similarly formed with shoulders 27, and the inner extremities, beyond them, reduced. The inner extremity of each tubular member is also squared as shown at 28 to fit into the corresponding portion of the intermediate member but as said extremity is not tapered, spaces are left between the parts, at 29, Fig. 10 where said members are brazed together.

By means of the described special joint between the intermediate and tubular members, any torque in said members is taken care of. To the same end, rivets 30 may connect the said members. End members 24, 25, are preferably made of seamless tubing. The outer ends of the end members 24, 25, are contracted or reduced as shown at 31.

Obviously the present invention is susceptible of modification, as parts may be omitted, parts added and parts substituted without departing from the spirit and scope thereof.

What we claim as new is—

1. An axle housing, comprising a longitudinally corrugated intermediate member having cylindrical uncorrugated ends, said member being tapered toward said ends, and end members inserted into said cylindrical ends and extending inwardly beyond said cylindrical ends to points within the corrugations, so as to bridge the joints between the taper and the cylindrical ends, said members being permanently united.

2. An axle housing, comprising a longitudinally corrugated intermediate member having cylindrical uncorrugated ends, said member being tapered toward said ends, and end members inserted into said cylindrical ends and extending inwardly beyond said cylindrical ends, so as to bridge the joints between the taper and the cylindrical ends, said intermediate member and end members including non-circular, engaging and co-acting surfaces at the meeting portions of said members, and which are of less diameter than the cylindrical portions, and means for permanently uniting said end members to said intermediate member.

Signed at Detroit, Mich., this 31 day of July 1914.

JOHN F. DODGE.
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Witnesses:

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