May 14, 1940. S. B. ATWOOD 2,200,439

HINGE

Filed April 5, 1937 2 Sheets-Sheet 1

Fig. 1

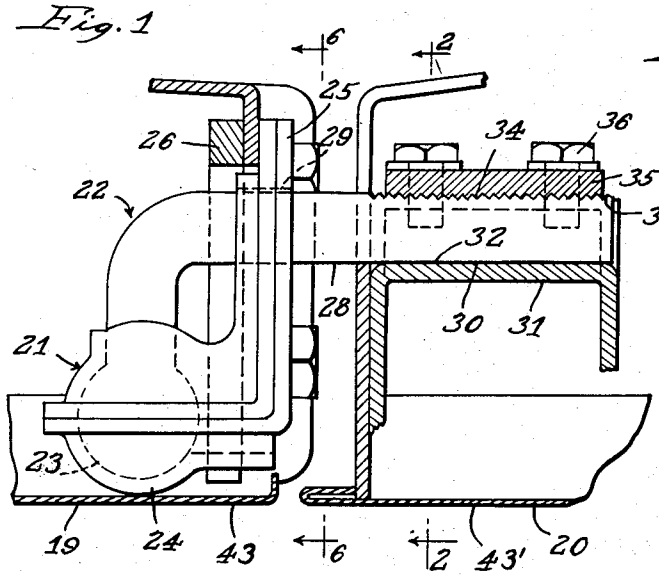


Fig. 5

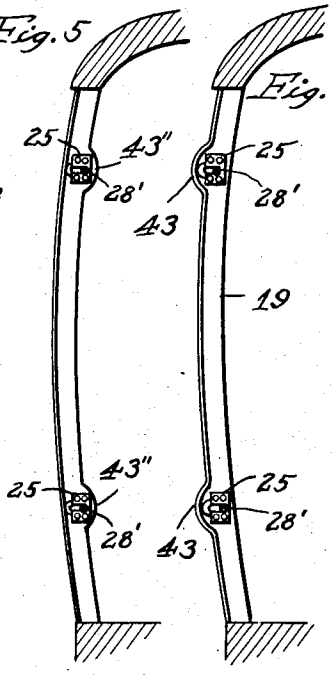


Fig. 6

Fig. 2

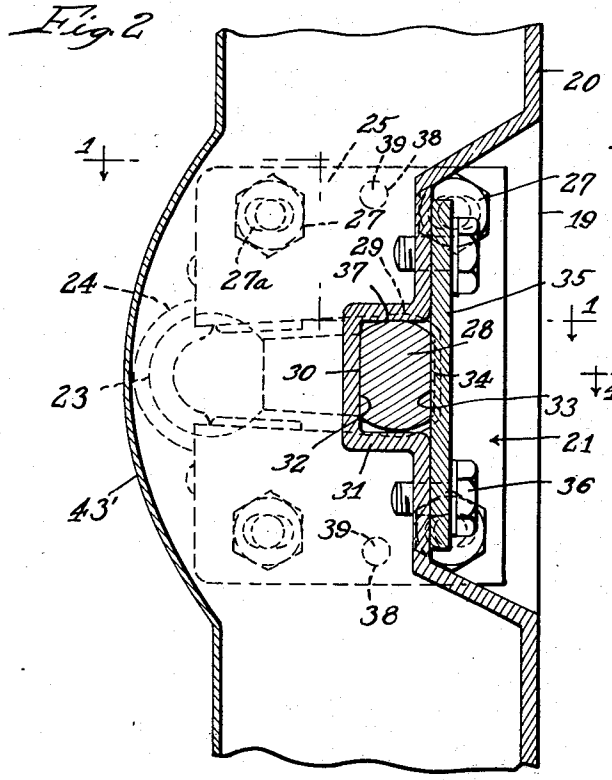


Fig. 3

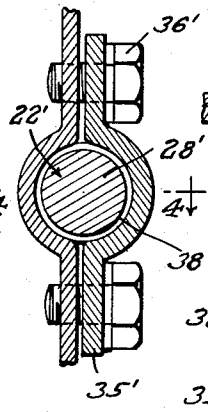
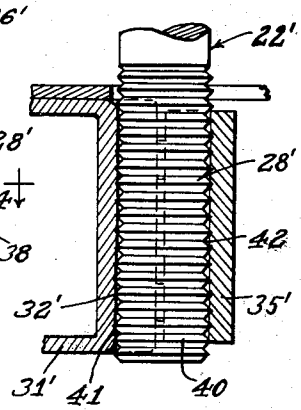


Fig. 4



Inventor:
Seth B. Atwood

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Attys.

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Fig. 9

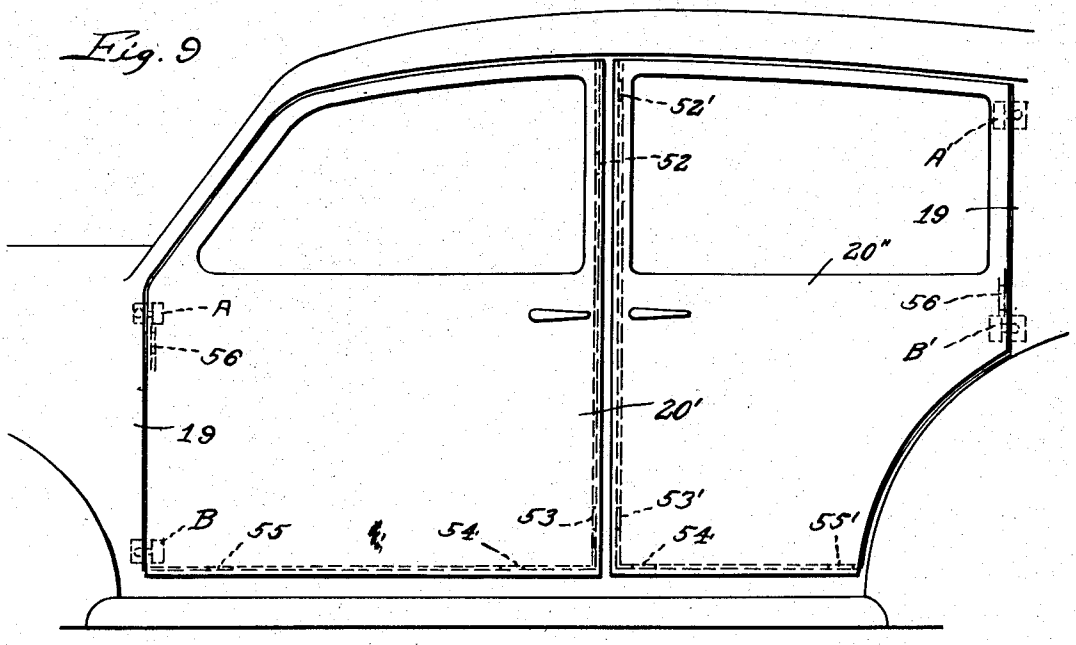


Fig. 7

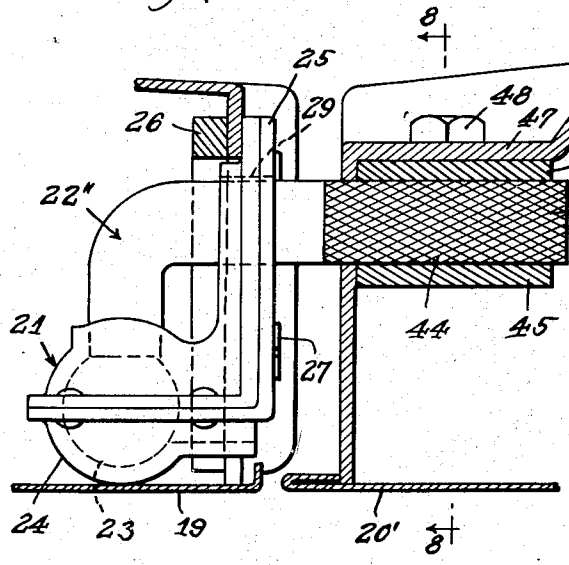
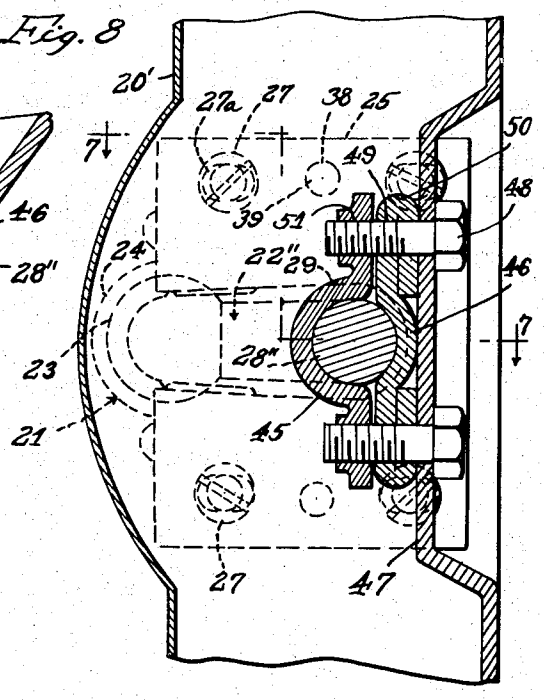


Fig. 8



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Patented May 14, 1940 2,200,439

UNITED STATES PATENT OFFICE

2,200,439

HINGE

Seth B. Atwood, Rockford, Ill.

Application April 5, 1937, Serial No. 135,068

14 Claims. (Cl. 16—129)

This invention relates to novel adjustable hinges for mounting the doors of motor vehicles.

It is common practice now to use pintle type hinges on the doors of motor vehicles and, due to the curvature of the bodies and the amount of deviation from standard body specifications occurring in quantity production, there has been considerable difficulty in mounting doors with these hinges. It has been customary to apply forked bars or other tools to the hinges and bend them enough to center the doors and line them up relative to one another and to the body. This bending has been tolerated because no other way of meeting the problem suggested itself, although it is apparent that pintles were thrown out of alignment by reason of bending the hinges, with the result that the doors would not open and close as they should. It is also generally known that most of the wear on the hinge pintles, and the consequent play and door rattling, is directly traceable to this bending of the hinges to make the doors fit. It is, therefore, the principal object of my invention, firstly, to provide a pair of ball and socket type hinges on each door of a motor vehicle, whereby to eliminate the problems going with misalignment of pintles and accordingly insure easy operation of the door, and, secondly, to provide hinges of the kind mentioned having the members that attach to the door and body easily adjustable relative thereto so that the doors can be centered and trued up and fastened in place, and there is no necessity for bending the hinges.

Another important object is to provide ball and socket hinges in which the angular gooseneck members are tiltable relative to the socket members from a normal horizontal position and the attaching shanks thereof are arranged to be clamped in adjusted positions, whereby to permit up and down adjustment of the door to a central position in the door opening before the hinges are fastened and thereby obviate necessity for bending the hinges, this tilting adjustment taken with the other adjustments obtaining universal adjustability of the door, up or down, right or left, and in or out, as occasion requires.

The invention is illustrated in the accompanying drawings, wherein—

Figure 1 is a horizontal section through a portion of a door pillar and door showing a concealed ball and socket type hinge made in accordance with my invention, this section being on the broken line 1—1 of Fig. 2;

Fig. 2 is a vertical section on the line 2—2 of Figure 1;

Figs. 3 and 4 are sectional details of a modified or alternative construction of attaching means, Fig. 4 being taken on the line 4—4 of Fig. 3;

Figs. 5 and 6 are fragmentary vertical sections of an automobile body illustrating two forms of door pillars, Fig. 6 being a view in the plane of the line 6—6 of Figure 1.

Fig. 7 is a horizontal section similar to Fig. 1, showing another construction of a concealed ball and socket type hinge made in accordance with my invention, this section being on the broken line 7—7 of Fig. 8;

Fig. 8 is a vertical section on the line 8—8 of Fig. 7, and

Fig. 9 is a fragmentary side view of an automobile, showing the two doors thereof in the process of being mounted on hinges like the one shown in Figs. 7 and 8 in accordance with the method of my invention.

Similar reference numerals are applied to corresponding parts throughout the views.

In Figs. 1 and 2, 19 designates the pillar and 20 the door. The concealed ball and socket type hinge shown comprises a socket member 21 secured to the pillar 19, and a gooseneck member 22 secured to the door 20. The gooseneck member has a ball head 23 working with a close swivel fit in the socket 24 of the socket member. This hinge has been disclosed in a copending application of Harold E. VanVoorhees, Serial No. 128,356, filed March 1, 1937, and it will, therefore, suffice for the present purposes to say that the attaching flanges 25 of the socket member are arranged to be bolted to the pillar into the usual tapping plate 26. Bolts for this purpose are indicated at 27 in Fig. 2. The gooseneck member 22 is substantially L-shaped, one leg of the L terminating in the ball head 23 and the other leg forming the attaching shank 28 adapted to be secured to the door 20. This shank extends through a slot 29 in the socket member 21 so as to allow pivotal movement of the gooseneck member relative to the socket member through approximately 90°, as fully described in the aforesaid application.

In accordance with my invention, the door 20 may be adjusted along the shanks 28 for horizontal adjustment of the door in the door opening to central position, and the socket members 21 may be adjusted horizontally relative to the pillar 19 to permit in and out adjustment of the door to secure proper alignment of the outer sides of the doors relative to one another and to the body. The adjustability of the socket members 21 is secured by having the bolts 27 entered

through horizontal slots 27a provided in the attaching flanges 25 of the socket members, and it is obvious that if the bolts 27 are first left loose until the socket members 21 have been jogged one way or the other as required in the lining up of the doors, the bolts can thereafter be tightened and the socket members will be made rigid with the pillar 19. Now, it will be observed that a hinge seat 30 is provided in the door 20 on a formed sheet metal member 31 inserted in the door frame and welded or otherwise suitably secured in place thereon. The shank 28 is flattened to provide a smooth flat face 32 on one side for abutment with the seat 30. The opposite side of the flattened shank is serrated transversely, as at 33, to interlock positively with the serrations 34 on a clamping plate 35 arranged to be secured to the member 31 by cap screws 36. The recess 37 in the bottom of which the hinge seat 30 is provided, is just wide enough in its vertical dimension to accommodate the flattened portion of the shank 28 so that the weight of the door is carried on the shanks independently of the screws 36, the latter serving merely to clamp the shank 28 in place. The recess 37 is just wide enough in its transverse dimension to nearly accommodate the flattened shank 28, so that the clamping plate 35 when fastened tightly jams its serrations 34 firmly down into the serrations 33 in the shank, whereby to minimize any likelihood of the door working loose. Obviously, when the door is being mounted, the screws 36 will not be tightened firmly until the workman finds out whether the door is centered well enough. Then, if he desires to shift the door one way or the other, it is a simple matter to loosen the screws 36 slightly and adjust the door relative to one or both shanks of the two hinges on the door to the extent of one or two or more serrations 33—34, whereupon the screws may be tightened again and the door may be fairly accurately centered. Once the doors have been centered and lined up to one another and to the body, two or more holes 38 are preferably drilled through the wall of the pillar 19 in register with holes provided in the attaching plates 25 of each hinge, and steel dowel pins 39 driven tightly into place therein to permanently locate the door. Thus, it is apparent that I avoid the necessity for any bending of hinges and accordingly avoid the objections that went with that practice, not to mention the danger of loosening the hinges and damaging the same by excessive strain apt to be placed upon the parts in bending.

In the construction shown in Figs. 3 and 4, the round shank 28' is not flattened but is simply provided with straight annular grooves 40 which may be rolled in the rod from which the gooseneck member is formed. These grooves 40 cooperate with other grooves 41 in the hinge seat 32' formed on the member 31' inserted in the door frame. They also fit in corresponding grooves 42 provided in the clamping plate 35'. If necessary, the shank 28' can be hardened so that after the screws 36' for fastening the plate 35' are tightened, the workman can hit the plate 35' with a hammer to cause the ridges of the hardened shank to sink into the soft metal of the clamping plate, whereupon the screws 36' can be tightened still further to securely anchor the shank to the door. In either event, that is, whether the shank is hardened or not the screws 36' will at first be tightened just enough to support the door and to check up on its centered relationship to the door opening, after which, if some adjustment is necessary, the screws for one or both hinges can be loosened enough to permit the door to be shifted one way or the other to the extent of one, two, or more grooves, after which the screws will be re-tightened. The fact that the shanks 28' are cylindrical instead of flattened on opposite sides like the shank 28, is of advantage because it permits cocking the gooseneck members 22' slightly from a horizontal plane so that the shanks 28' are slightly above or below the related ball heads 23, according to whether the door requires an up or down adjustment in the door opening to center it. The slots 29 in the socket member 21 are wide enough, as indicated in Fig. 2, to permit a sufficient angular adjustment of the gooseneck members to take care of any ordinary amount of up and down adjustment of a door, and, if necessary, the width of the slots 29 may be increased to provide a still greater range of angular adjustability of the gooseneck members relative to the socket members. In other words, with this construction the door is adjustable universally; it is adjustable up or down by virtue of the tilting adjustment of the angular gooseneck members 22', to the right or left by virtue of the endwise adjustability of the shanks 28' relative to the door, and in or out by virtue of the horizontal adjustability of the socket members 21 on the pillar 19.

It is realized that in some cars the door pillars 19 may not be wide enough to accommodate a concealed hinge of the type herein disclosed, especially if, due to the curvature of the body, a larger sized hinge is required having the gooseneck members with the ball heads 23 spaced far enough from the shanks 28 to afford the required operating radius. Under those conditions I contemplate bulging the pillars at the hinge locations, as indicated at 43 in Fig. 6, so as to accommodate the hinges. A corresponding bulge 43' will be provided in the door and these bulges may taper off to merge with the outside of the body or may be continued to form a sort of ornamental beading around the body, depending, of course, upon the design and what gives the best appearance in a given case. If desired, the bulge in the pillars may be both ways, that is, inwardly as well as outwardly, although it is believed that inward bulging, as indicated at 43'' in Fig. 5, will be most commonly used for the reason that such bulges on the interior can be covered up so as not to be noticeable or at least objectionable, and there is, furthermore, no necessity of carrying the bulge beyond the hinge location for the sake of appearance when the bulges are on the inside of the body.

Referring now to Figs. 7 and 8, the concealed ball and socket type hinge illustrated has a socket member 21 similar to what is shown in Figs. 1 and 2, but the gooseneck member 22'' while similar to the gooseneck members 22 and 22' previously mentioned, in so far as its ball head 23 working with a close swivel fit in the socket 24 is concerned, has a shank 28'' of cylindrical form like the shank 28', but knurled as indicated at 44, instead of annularly grooved. The knurling of the cylindrical shank 28'' has the advantage over smooth surfaces that there is much less likelihood of the shank working loose once it is clamped in adjusted position. The clamps 45 and 46 are fastened to a flat seat 47 by bolts 48 accessible from the inside of the car. The bolts are passed through holes 49 in the folded ends 50 of the clamp 46 and thread in holes 51 in the pierced, swedged and tapped ends of the

clamp 45. Obviously these clamps when drawn together tightly will seize the knurled portion 44 of the shank 28'' so firmly that there is no likelihood of the gooseneck members 22'' working loose. There will be no distortion of the door at the seat 47 no matter how much the bolts 48 are tightened, because the outer faces of the folded ends 50 are in the same plane as the flat seat 47 and this plane is tangent to the arc of the outside of the intermediate portion of the clamp 46.

In accordance with my invention, shims 52—56 are entered in the door opening around the door 20', as illustrated in Fig. 9, when the two hinges indicated at A and B have been loosely secured in place, that is to say, with the bolts 27 threaded in the tapping plate 26 loosely enough to allow the attaching plates 25 to shift horizontally in either direction relative to the bolts entered in the bolt holes 27a thereof, and with the bolts 48 left loose enough so that the shanks 28'' are free to turn or move endwise with respect to the clamping plates 45 and 46. The shims 52—56 are preferably wedge shaped and are adjusted by a workman inside the car until the door has been wedged in approximately the desired position, centrally located in the door opening and properly lined up with the body and the other door 20''. The latter has its pair of hinges A' and B' and a corresponding set of shims 52', 53', 54, 55' and 56. When the doors are centered and trued up properly, the gooseneck members 22'', which may be cocked up or down slightly from an intermediate horizontal position by reason of up or down adjustment of the door, are clamped firmly by the tightening of the bolts 48 before the doors are opened and the shims removed. Care is taken in the opening of the doors not to cause the socket members 21 to shift in relation to the door pillars 19, and when the doors are opened, the bolts 27 are tightened up. Then the door can be closed again to re-check their positions, and, if they are found to be satisfactorily mounted, holes 38 are preferably drilled through the attaching wall of the pillar in register with holes provided in the plates 25, and dowel pins 39 are driven into these holes to prevent the hinges from shifting out of position later if any of the bolts 27 should happen to loosen, which, of course, is not apt to occur so long as the proper care is exercised in the first instance to tighten these bolts properly. It should be understood that the doweling of the hinges is merely an additional precaution which some automobile manufacturers may for the sake of economy, or for some other reason, see fit to dispense with.

It is believed the foregoing description conveys a good understanding of my invention. The appended claims have been drawn with a view to covering all legitimate modifications and adaptations.

I claim:

1. A pair of concealed ball and socket hinges for mounting a door on a vehicle body having corresponding outside curvature, each hinge comprising a socket member secured to the body at a point adjacent the door opening therein, and a gooseneck member comprising a substantially horizontally disposed angular shank with a ball head on one end thereof operating in the socket of the socket member with a swivel action, the other end of the shank being the attaching end and disposed in the plane of the door and substantially parallel with the outside surface thereof, and means for securing the attaching ends of said shanks to the door with freedom for rotary and endwise adjustment thereof relative to the door in vertical and horizontal adjustments, respectively, of the door.

2. A pair of concealed ball and socket hinges for mounting a door on a vehicle body having corresponding outside curvature, each hinge comprising a socket member secured to the body at a point adjacent the door opening therein, and a gooseneck member comprising a substantially horizontally disposed angular shank with a ball head on one end thereof operating in the socket of the socket member with a swivel action, the other end of the shank being the attaching end and disposed in the plane of the door and substantially parallel with the outside surface thereof, means for securing the socket members to the body with freedom for adjustment inwardly and outwardly, and means for securing the attaching ends of the gooseneck shanks to the door with freedom for rotary and endwise adjustment thereof relative to the door in vertical and horizontal adjustments, respectively, of the door.

3. As an article of manufacture, a clamp of the character described comprising a pair of sheet metal clamping members, said members being bent to arcuate form intermediate their ends to fit on opposite sides of a cylindrical element to be clamped therebetween, the ends of one of said members being folded under to double thickness and so that the outer faces of the folded ends are in the same plane and tangent with the outside of the intermediate connecting arcuate portion, and the folded ends of said member having openings provided therein adapted to register with openings provided in the ends of the other member.

4. The combination in an automobile construction of a door, a body, and a pair of hinges with ball and socket joints to mount the door on a two-point suspension, said combination being characterized by the adjustable construction of the hinges in relation to the body for fitting the door to the body, each hinge comprising a ball socket bearing plate, a ball mounted in the plate, a door supporting arm extending from the ball and movable through a socket opening of sufficient width to permit adjustment transversely to the hinging movement of the arm, said arm being adjustable on the ball and socket joint into any one of a number of positions through a substantial angular range in each of which positions said arm may support the door in its closed position with the supporting arm at an acute angle to the vertical axis through the ball, the supporting arm at the end opposite its ball being provided with fastening means, all ends of both hinges being fastened and adjusted to the door and body with at least one of the supporting arms being held at its ends in an adjusted position with the arm in the closed position of the door at an acute angle to the line joining the two points of hinge suspension provided by the two ball and socket points, whereby the door is fitted to the body by the angular adjustment of the door supporting arm of the hinge construction with relation to the line joining the two-point door suspension.

5. The combination in an automobile construction of a door, a body, and a pair of hinges with ball and socket joints for mounting the door on the body on a two-point suspension, said combination being characterized by the adjustable construction of the hinges in relation to the body

for fitting the door to the body, each hinge comprising a support and a door supporting gooseneck, a ball socket on one of the two last mentioned parts, and a ball mounted in the socket and carried on the other of said parts, said gooseneck extending from the ball and socket joint and movable through a socket opening of sufficient width to permit adjustment transversely to the hinging movement of the gooseneck, said gooseneck being adjustable relative to said joint into any one of a number of positions through a substantial angular range, in each of which positions said gooseneck may support the door in its closed position with the gooseneck at an acute angle to the vertical axis through the ball, the gooseneck at the end opposite the ball and socket joint being provided with fastening means in relation to which said gooseneck is adapted to be adjusted to adjust its ball and socket end portion to the angle desired, all ends of both hinges being fastened and adjusted to the door and body with at least one of the door supporting goosenecks being held at its ends in an adjusted position with the gooseneck in the closed position of the door at an acute angle to the line joining the two points of hinge suspension provided by the two joints, whereby the door is fitted to the body by the angular adjustment of the door supporting gooseneck of the hinge construction with relation to the line joining the two point door suspension.

6. The combination in an automobile construction of a door, a body, and a pair of hinges with universal joints for mounting the door on the body on a two-point suspension, said combination being characterized by the adjustable construction of the hinges in relation to the body for fitting the door to the body, each hinge comprising two relatively movable members interconnected for universal movement with respect to one another, one of said members being a door supporting gooseneck and extending from the universal joint and movable through a socket opening of sufficient width to permit adjustment transversely to the hinging movement of the gooseneck, said gooseneck being adjustable with respect to said joint into any one of a number of positions through a substantial angular range in each of which positions said gooseneck member may support the door in its closed position with the gooseneck member at an acute angle to the vertical axis through the universal joint, the gooseneck at the end opposite the universal joint being provided with fastening means in relation to which said gooseneck is adapted to be adjusted to adjust its universal joint end portion to the angle desired, all ends of both hinges being fastened and adjusted to the door and body with at least one of the door supporting goosenecks being held at its ends in an adjusted position with the gooseneck in the closed position of the door at an acute angle to the line joining the two points of hinge suspension provided by the two joints, whereby the door is fitted to the body by the angular adjustment of the door supporting gooseneck of the hinge construction with relation to the line joining the two point door suspension.

7. The combination in an automobile construction of a door and body and a pair of hinges with ball and socket joints for mounting the door on the body on a two-point suspension, said combination being characterized by the adjustable construction of the hinges in relation to the body for fitting the door to the body, each hinge comprising a support and a door-supporting gooseneck, a ball socket on one of the two last-mentioned parts and a ball mounted in the socket and carried on the other of said parts, said gooseneck extending from the ball and socket joint and movable through a socket opening of sufficient width to permit adjustment transversely to the hinging movement of the gooseneck, said gooseneck being adjustable relative to said joint into any one of a number of positions through a substantial angular range, in each of which positions said gooseneck may support the door in its closed position with the gooseneck at an acute angle to the vertical axis through the ball, the gooseneck at the end opposite its ball being provided with clamping means in relation to which said gooseneck is adapted to be rotatably and slidably adjusted and clamped in adjusted position, all ends of both hinges being fastened and adjusted to the door and body with at least one of the door supporting goosenecks being held at its ends in an adjusted position with the gooseneck in the closed position of the door at an acute angle to the line joining the two points of hinge suspension provided by the two joints, whereby the door is fitted to the body by the angular adjustment of the door supporting gooseneck of the hinge construction with relation to the line joining the two point door suspension.

8. The combination in an automobile construction of a door and body and a pair of hinges with universal joints for mounting the door on the body on a two-point suspension, said combination being characterized by the adjustable construction of the hinges in relation to the body for fitting the door to the body, each hinge comprising two relatively movable members interconnected for universal movement with respect to one another, one of said members being a door support and extending from the universal joint and movable through a socket opening of sufficient width to permit adjustment transversely to the hinging movement of the door support member, the latter being adjustable with respect to said joint into any one of a number of positions through a substantial angular range, in each of which positions said member may support the door in its closed position with the member at an acute angle to the vertical axis through the universal joint, the door-supporting member at the end opposite the universal joint being provided with clamping means in relation to which said member is adapted to be adjusted before clamping thereof to adjust its universal joint end as desired, all ends of both hinges being fastened and adjusted to the door and body with at least one of the relatively movable hinge members being held at its ends in an adjusted position with the hinge member in the closed position of the door at an acute angle to the line joining the two points of hinge suspension provided by the two joints, whereby the door is fitted to the body by the angular adjustment of the member of the hinge construction with relation to the line joining the two point door suspension.

9. The combination in an automobile construction of a door and body and a pair of hinges with ball and socket joints for mounting the door on the body on a two-point suspension, said combination being characterized by the adjustable construction of the hinges in relation to the body for fitting the door to the body, each hinge comprising a support and a door-supporting gooseneck, a ball socket on one of the two last-mentioned parts and a ball mounted in the socket

and carried on the other of said parts, said gooseneck extending from the ball and socket joint and movable through a socket opening of sufficient width to permit adjustment transversely to the hinging movement of the gooseneck, said gooseneck being adjustable relative to said joint into any one of a number of positions through a substantial angular range, in each of which positions said gooseneck may support the door in its closed position with the gooseneck at an acute angle to the vertical axis through the ball, the gooseneck at the end opposite its ball being provided with clamping means in relation to which said gooseneck is adapted to be adjusted endwise and rotatably to different angularity with reference to the clamping means and clamped in adjusted position, all ends of both hinges being fastened to the door and body, said door being adapted to be fitted to the body by the angular adjustment prior to clamping of at least one of the door-supporting goosenecks of the hinge structure relative to a line joining the two points of door suspension.

10. The combination in an automobile construction of a door and body and a pair of hinges with universal joints for mounting the door on the body on a two-point suspension, said combination being characterized by the adjustable construction of the hinges in relation to the body for fitting the door to the body, each hinge comprising two relatively movable members interconnected for universal movement with respect to one another, one of said members being a door support and extending from the universal joint and movable through a socket opening of sufficient width to permit adjustment transversely to the hinging movement of the door supporting member, the latter being adjustable with respect to said joint into any one of a number of positions through a substantial angular range, in each of which positions said member may support the door in its closed position with the member at an acute angle to the vertical axis through the universal joint, the door-supporting member at the end opposite the universal joint being provided with clamping means in relation to which said member is adapted to be adjusted endwise and rotatably to different angularity with reference to the clamping means before clamping thereof to adjust its universal joint end as desired, all ends of both hinges being fastened and adjusted to the door and body with at least one of the relatively movable hinge members being held at its ends in an adjusted position with the hinge member in the closed position of the door at an acute angle to the line joining the two points of hinge suspension provided by the two joints, whereby the door is fitted to the body by the angular adjustment of the member of the hinge construction with relation to the line joining the two point door suspension.

11. A pair of ball and socket hinges for mounting a door on a vehicle body having corresponding outside curvature, each hinge comprising a socket member and a gooseneck member, one of which members is adapted to be secured to the door and the other to the body adjacent the door opening therein, the gooseneck member comprising a substantially horizontally disposed angular shank with a ball head on one end thereof operating in the socket of the socket member with a swivel action, the other end of the shank being the attaching end, and means for securing the attaching ends of said shanks to one of said door and body with freedom for rotary and horizontal endwise adjustment thereof in vertical and horizontal adjustments, respectively, of the door.

12. A pair of ball and socket hinges for mounting a door on a vehicle body having corresponding outside curvature, each hinge comprising a socket member and a gooseneck member, one of which members is adapted to be secured to the door and the other to the body adjacent the door opening therein, the gooseneck member comprising a substantially horizontally disposed angular shank with a ball head on one end thereof operating in the socket of the socket member with a swivel action, the other end of the shank being the attaching end, means for securing the attaching ends of said shanks to one of said door and body with freedom for rotary and horizontal endwise adjustment thereof in vertical and horizontal adjustments, respectively, of the door, and means for securing the socket members to the other of said door and body with freedom for horizontal adjustment to compensate for the rotary adjustment of the gooseneck members.

13. The combination in an automobile construction of a door, a body and a pair of hinges with ball and socket joints to mount the door on a two-point suspension, said combination being characterized by the adjustable construction of the hinges in relation to the body for fitting the door to the body, each hinge comprising a ball socket bearing plate, a ball mounted in the plate, a door-supporting arm extending form the ball and movable through a socket opening of sufficient width to permit adjustment transversely to the hinging movement of the arm, said arm being adjustable endwise relative to one of said door and body to which the same is adapted to be fastened and also being adjustable on the ball and socket joint into any one of a number of positions through a substantial angular range in each of which positions said arm may support the door in its closed position with the supporting arm at an acute angle to the vertical axis through the ball, the supporting arm at the end opposite its ball being provided with fastening means relative to which the arm is adjustable endwise, all ends of both hinges being fastened and adjusted to the door and body with at least one of the supporting arms being held at its ends in an adjusted position with the arm in the closed position of the door at an acute angle to the line joining the two points of hinge suspension provided by the two ball and socket joints, whereby the door is fitted to the body by the angular adjustment of the door-supporting arm of the hinge construction with relation to the line joining the two-point door suspension.

14. A pair of ball and socket hinges for mounting a door on a vehicle body, each hinge comprising a socket member and a gooseneck member, one of which members is adapted to be secured to the door and the other to the body adjacent the door opening therein, the gooseneck member comprising a substantially horizontally disposed angular shank with a ball head on one end thereof operating in the socket of the socket member with a swivel action, the other end of the shank being the attaching end, and means for securing the attaching ends of said shanks to one of said door and body for rotary and horizontal endwise adjustment thereof in vertical and horizontal adjustments, respectively, of the door.

SETH B. ATWOOD.

CERTIFICATE OF CORRECTION.

Patent No. 2,200,439. May 14, 1940.

SETH B. ATWOOD.

It is hereby certified that error appears in the printed specification of the above numbered patent requiring correction as follows: Page 3, second column, line 65, claim 4, for "points" read --joints--; page 5, first column, line 18, claim 9, beginning with "both hinges" strike out all to and including the word and period "suspension." in line 23, same claim, and insert instead the following --

> both hinges being fastened and adjusted to the door and body with at least one of the door supporting goosenecks being held at its ends in an adjusted position with the gooseneck in the closed position of the door at an acute angle to the line joining the two points of hinge suspension provided by the two joints, whereby the door is fitted to the body by the angular adjustment of the door supporting gooseneck of the hinge construction with relation to the line joining the two point door suspension.

same page, second column, line 32, claim 13, for "form" read --from--; and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 23rd day of July, A. D. 1940.

(Seal)

Henry Van Arsdale,
Acting Commissioner of Patents.