Oct. 21, 1958 R. W. VOSE 2,856,629

HOLD OPEN DOOR HINGE

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FIG. 1

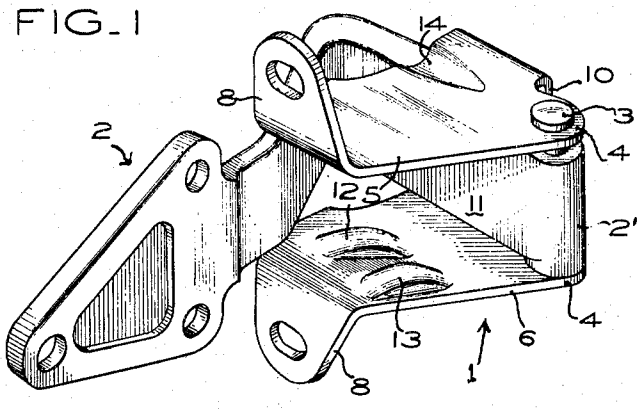


FIG. 2

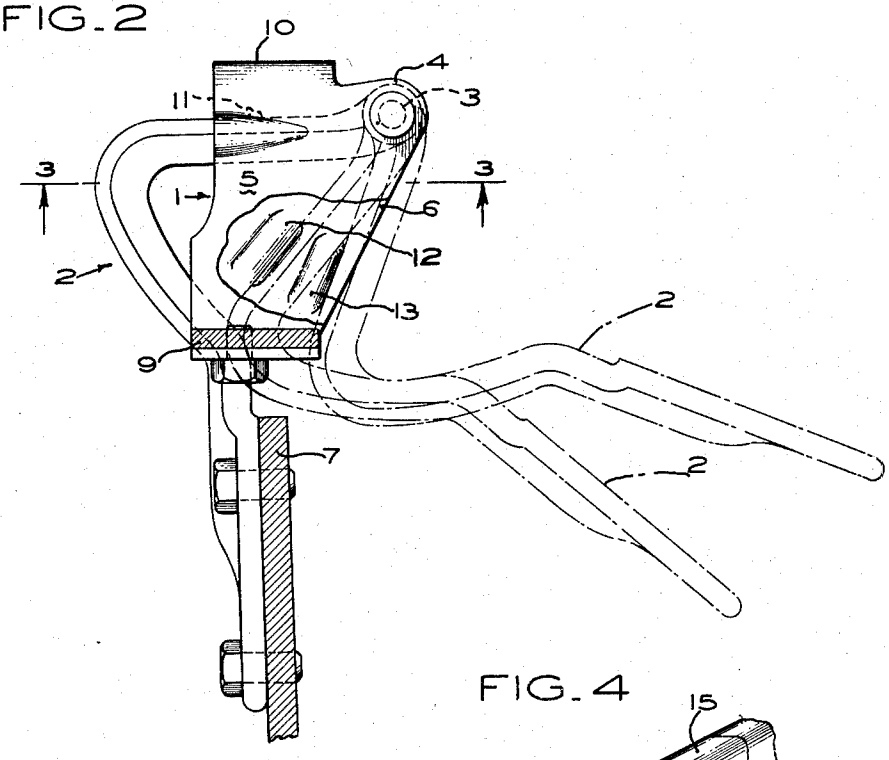


FIG. 3

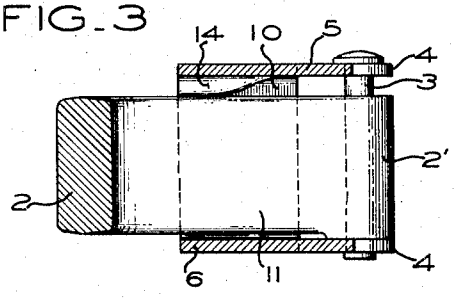
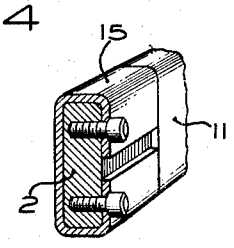


FIG. 4



INVENTOR
ROBERT W. VOSE

BY Chapin & Neal
ATTORNEYS

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HOLD OPEN DOOR HINGE

Robert W. Vose, West Springfield, Mass., assignor to Moore Drop Forging Company, Springfield, Mass., a corporation of Massachusetts

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2 Claims. (Cl. 16—143)

This invention relates to a door hinge with a hold open or detent construction combined therewith and in particular to a novel construction for a door hinge for automobiles.

An object of the invention is to provide a simplified hold open detent means for an automobile door of a sturdy and durable type and one which may be incorporated in the form of the conventional parts of a standard hinge structure for such doors.

Another object of the invention is to provide this type of structure in a conventional box type car door hinge without the use of spring elements.

Another object of the invention is to form a detent means, the engagement and disengagement of which may be accomplished by applying a predetermined torque to the door and the resistance to which is supplied by the weight of the door itself.

These and other specific objects and advantages of the invention will be apparent from the following disclosure of an embodiment of the invention as shown by the accompanying drawings in which:

Fig. 1 is a perspective view of an automobile door hinge of this invention;

Fig. 2 is a top plan of the hinge of Fig. 1 with the movable hinge leaf member indicated by dot-dash lines in partially open and full open positions relative to the stationary member;

Fig. 3 is a sectional view on line 3—3 of Fig. 2; and

Fig. 4 is a detail view showing a modification of the detent engaging means.

Insofar as I am aware, prior automobile door hinge constructions embodying a hold open feature have incorporated therein a device including a resilient member for yieldably holding the door in partially open or fully open position. Many attempts have been made to solve the problem of a completely satisfactory type of construction and various and sundry more or less elaborate mechanisms have been devised for this purpose. Some few prior constructions have been adopted as commercial structures. However, in spite of the many efforts to produce a suitable combined device, many present day automobile doors are constructed with a separate hold open or detent unit. A separate unit of course requires separate handling and is relatively expensive to make and install.

The present invention not only incorporates a hold open feature in an automobile door hinge itself but also does so by a novel formation and arrangement of conventional parts of a standard hinge. In other words provision for the hold open feature may be built into an ordinary box type car door singe with pintle, box hinge member, and conventional goosenecked movable hinge member of substantially the same form as an ordinary hinge but with the parts dimensioned to provide a limited vertical shifting movement of the goosenecked leaf member on the pintle and one or more projections integrally deformed from the metal of the walls of the box member.

The invention resides in the novel arrangement of the parts of the hinge and the relationship thereof so as to take advantage of the weight of an automobile door when swung into an open position.

In the drawings, Figs. 1 and 2, a conventional type of box hinge for an automobile door is shown with a U-shaped, female box member **1** pivotally connected with a goosenecked male hinge leaf member **2** by a vertical pintle **3** fixed between the ears **4** of an upper wall **5** and lower wall **6**, such walls constituting the legs or sides of the U-shaped member **1**. This type of hinge is well known and need not be further described in its essential features. It is to be noted that the outer end of the gooseneck is adapted for attachment to a door frame hanger support indicated at **7**; the oppositely turned mounting flanges **8** of the upper and lower walls are fixed to a door pillar support indicated at **9** with the connecting wall at **10** of the box member also being usually fixed to a frame support (not shown); and the inner end portion **11** of the gooseneck (inwardly of the bend) generally passes between the upper and lower walls **5** and **6** during substantially its entire horizontal swinging movement from open to closed positions all as indicated by Fig. 2.

As shown by Fig. 1 and Fig. 3 the gooseneck is mounted for vertical movement axially at the pivot, the spacing between the two walls **5** and **6** permitting limited slidable movement. As best shown by Fig. 3 the top edge of the knuckle portion **2'** of the gooseneck is spaced from the upper rear **4** and thus the gooseneck may slide axially on the pintle while turning thereon.

Carried on the lower wall **6** and each at an equal radial spacing from the axis of the pintle **3** are two closely spaced camming projections **12** and **13** comprising a socket forming means. The projections are preferably formed by integrally upsetting the metal of wall **6** and are upraised from the inner surface of the wall a distance slightly less than the extent of the limited vertical movement permitted by the slidable knuckle portion **2'** on the pintle **3**. The projections form a socket or detent means between them for holding socket engaging means formed on the lower edge portion of the hinge leaf **2** inwardly of the bend of the gooseneck. The socket engaging edge of the gooseneck is radially spaced from the pintle at a distance equivalent to the radial spacing of the projections therefrom. Accordingly the gooseneck will engage the projections at a desired predetermined position of relative pivotal movement between the hinge members. In pivoting the gooseneck, as by applying a predetermined torque thereto in swing in an automobile door to open or close the same, the lower edge of the gooseneck will ride up the edge of a projection and over the same by camming the gooseneck upwardly and sliding the knuckle **2'** on the pintle. By appropriately forming the camming surfaces of the projection the force necessary to ride over the projection and lift the door vertically can be varied as desired. The force required for movement from closed to opened position and force required for movement in the opposite direction may also, if desired, be different since the inclination of the camming surfaces at each side may be individually formed. Thus the engagement and disengagement of the interlocking socket means can be easily controlled for heavy or light automobile doors, the force necessary for moving the door being directly related to the weight thereof.

In Fig. 2 the partially open interlocked position of the movable gooseneck is shown in dot-dash lines with the socket engaging edge portion thereof between the projections **12** and **13**. The full open position of the gooseneck is indicated by the dot-dash line position outwardly of projection **13**. In the latter position further outward pivotal movement is prevented by the abutment of the gooseneck against a conventional stop (not shown) which governs the extent to which the car door may be opened.

The door is thus held against return towards closed position by the projection **13**.

When in closed position vertical shifting movement of the gooseneck would be objectionable and thus stop means are provided in the upper wall as by the depending projection deformed from the upper wall at the edge thereof as at **14**. The stop **14** is positioned in overlying relation to the top edge of the gooseneck when the latter is in closed position in the assembly and thus prevents the vertical "shucking" of the knuckle **11** on pintle **3**.

In the embodiment of the gooseneck shown by Figs. 1 to 3 the cam engaging surfaces at the inner portion have been indicated as formed in the lower edge portions of the gooseneck plate member itself. If desired for reasons of an improved bearing action, a bearing metal **15** (Fig. 4) having superior wearing qualities or a smoother bearing action, may be wrapped around the gooseneck for sliding contact against the projections.

What is claimed is:

1. An automobile door hinge comprising a U-shaped box hinge member for attachment to a door post with its arms horizontally disposed to form upper and lower walls, a pintle extending between the upper and lower walls of the box member adjacent its closed end, a gooseneck member for attachment to an automobile door, said gooseneck being pivotally mounted on said pintle for swinging movement between said upper and lower walls from an open to a closed position, the portion of said gooseneck between said upper and lower walls having a height less than the distance therebetween, said pivotal mounting of said gooseneck permitting sliding movement on said pintle as limited by the upper and lower walls of said box member, a projection integrally formed on the inner face of said lower wall outwardly spaced from said pintle and intermediate the path of swinging movement of said gooseneck, said gooseneck having a portion for engaging said projection to cam the gooseneck upwardly on application of a predetermined torque force to swing the gooseneck beyond the projection and releasably maintain the gooseneck in its open position and an integrally formed projection depending from said upper wall at a point outwardly of said pintle and angularly spaced from said raised projection to bear against the upper edge of said gooseneck in its closed position and prevent sliding movement thereof when the gooseneck is in said closed position.

2. An automobile door hinge comprising a U-shaped box hinge member for attachment to a door post with its arms horizontally disposed to form upper and lower walls, a pintle extending between the upper and lower walls of the box member adjacent its closed end, a gooseneck member for attachment to an automobile door, said gooseneck being pivotally mounted on said pintle for swinging movement between said upper and lower walls from an open to a closed position, the portion of said gooseneck between said upper and lower walls having a height less than the distance therebetween, said pivotal mounting of said gooseneck permitting sliding movement on said pintle as limited by the upper and lower walls of said box member, a pair of angularly spaced raised projections integrally formed on the inner face of said lower wall outwardly spaced from said pintle and intermediate the path of swinging movement of said gooseneck, said projections forming a socket therebetween, said gooseneck having a portion for engaging said projections to cam the gooseneck upwardly on application of a predetermined torque force to swing the gooseneck beyond one of the projections and into said socket or beyond the second projection to selectively releasably maintain the gooseneck in an intermediate position or its open position and an integrally formed projection depending from said upper wall at a point outwardly of said pintle and angularly spaced from said raised projections to bear against the upper edge of said gooseneck in its closed position and prevent sliding movement thereof when the gooseneck is in said closed position.

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