July 23, 1957 LA VERNE B. RAGSDALE 2,799,889

HINGE HOLDOPEN

Filed April 22, 1953 2 Sheets-Sheet 1

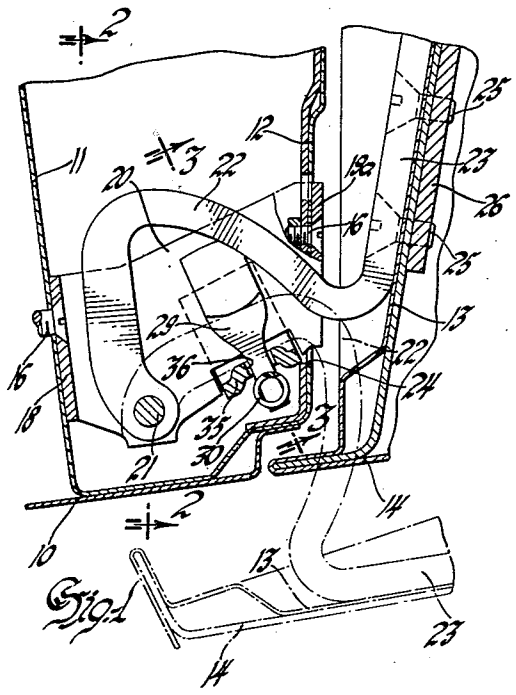


Fig. 1

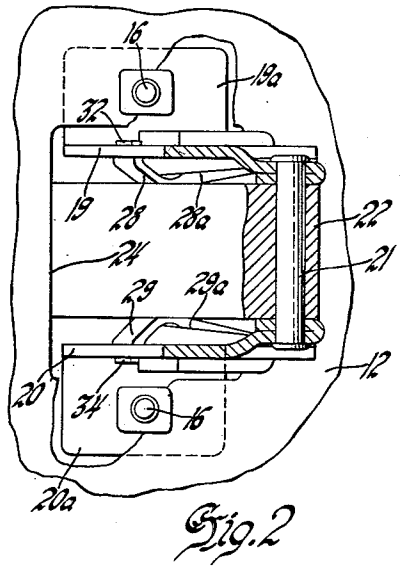


Fig. 2

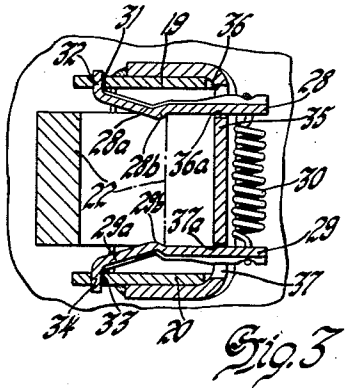


Fig. 3

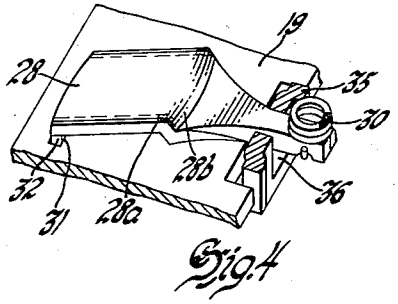


Fig. 4

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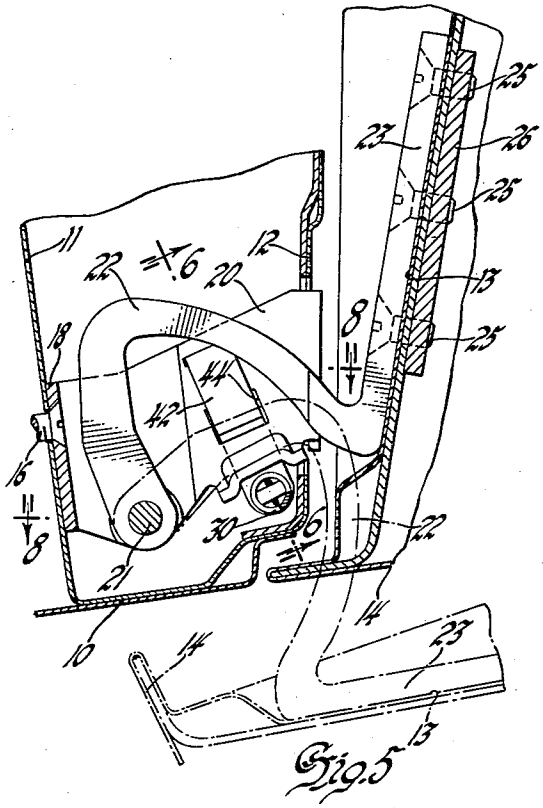


Fig. 5

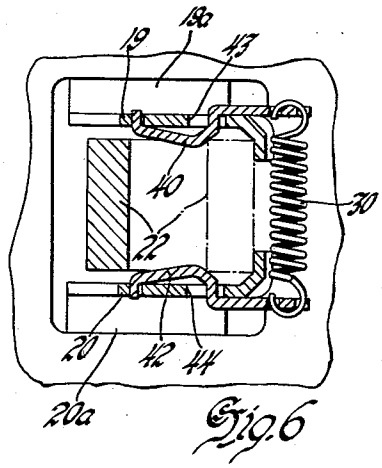


Fig. 6

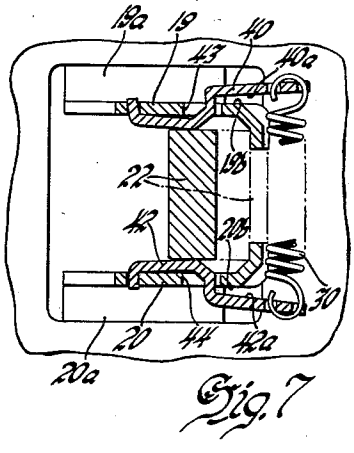


Fig. 7

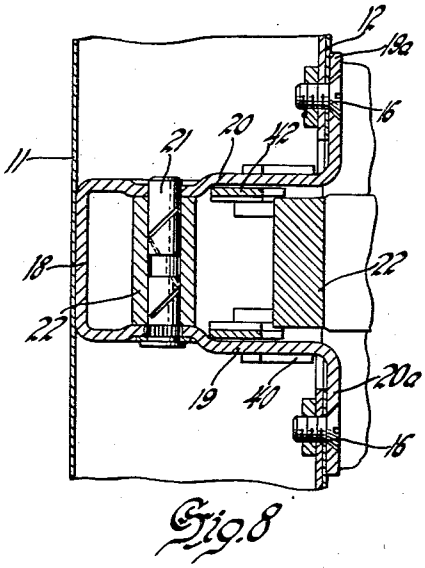


Fig. 8

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HINGE HOLDOPEN

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5 Claims. (Cl. 16—140)

This invention relates to a hinge holdopen, and more particularly to an improved holdopen device for automobile door hinges.

One feature of the invention is that it provides an improved hinge holdopen; another feature of the invention is that it provides a pair of holdopen cams pivotally supported at one end opposite each other on the hinge box walls, with a portion of each cam lying in the path of swinging movement of the hinge strap; a further feature of the invention is that the cams are interconnected at their free end by a tension spring, said cams being forced apart against the force of the spring upon swinging movement of the hinge strap; still another feature of the invention is that it provides a hinge holdopen which may be easily manufactured and assembled, the parts being separate metal stampings with no permanent connections between them; and yet another feature of the invention is that the holdopen cams, which are of rigid material, are provided with an offset portion in the path of swinging movement of the hinge strap providing an inclined cam surface for engagement by said strap to obtain a holdopen action.

Other features and advantages of the invention will be apparent from the following description and from the drawings in which:

Fig. 1 is a horizontal sectional view through a portion of an automobile door and body hinge pillar showing one form of hinge holdopen apparatus, the arrangement of the part when the door is closed being shown in solid lines and the arrangement of the parts when the door is open being shown in broken lines;

Fig. 2 is a section taken along the line 2—2 of Fig. 1;

Fig. 3 is a section taken along the line 3—3 of Fig. 1, the hinge strap being shown in closed position in solid lines and in open position in broken lines;

Fig. 4 is a detail section showing a portion of the hinge box and one of the holdopen cams;

Fig. 5 is a horizontal section through the door and body hinge pillar showing a modified form of holdopen device, the arrangement of the parts when the door is closed being shown in solid lines and the arrangement of the parts when the door is open being shown in broken lines;

Fig. 6 is a section taken along the line 6—6 of Fig. 5, the arrangement of the parts when the door is closed being shown in solid lines and the arrangement of the parts when the door is open being shown in broken lines;

Fig. 7 is a section similar to Fig. 6, but showing the arrangement of the parts when the door is in a different position; and

Fig. 8 is a section along the line 8—8 of Fig. 5.

Referring now more particularly to the drawings, **10** is an outer side panel of an automobile body, and **11** is a body hinge pillar mounted in the walls of said body, said pillar having a hinge face **12** which is spaced from the complementary hinge face **13** of an automobile door **14**. The door preferably is secured to the body by two hinges which are spaced vertically. Only one of these hinges is illustrated in the drawings.

A hinge box is mounted within the body hinge pillar **11** by means of screws **16**. The box is generally U-shaped, having a base wall **18** and opposite side walls **19** and **20**, each having a flange **19***a* and **20***a*, respectively, by means of which the hinge box is secured to the hinge face **12** of the pillar **11**.

A hinge pin **21** is mounted between the walls **19** and **20** and forms a pivotal support for a gooseneck hinge strap **22** which is mounted for swinging movement between the walls **19** and **20**, and which has a free end portion **23** extending through an open **24** in the hinge face **12** of the body hinge pillar. The free end portion **23** is secured to the hinge face **13** of the door **14** by means of screws **25** and a reinforcing plate **26** on the inner surface of the hinge face of the door. The door may be swung between open and closed positions, as shown in Fig. 1.

In order to provide a holdopen action in the operation of the door, holdopen cams **28** and **29** are pivotally supported at one end opposite each other on the respective walls **19** and **20**. These cams are rigid material, and may be steel stampings and the resiliency necessary for proper holdopen action is attained through a tension spring **30** which interconnects the cams. The wall **19** is formed with a slot **31**, and one end of cam **28** is provided with a lug **32** which is received in the slot to provide a pivotal mounting for the cam. Similarly, the hinge box wall **20** is formed with a slot **33** which receives a lug **34** at one end of the holdopen cam **29**. To hold the cams in position stop means are provided in the form of a guide member **35** which extends between the walls **19** and **20** adjacent the free end of the cams. The member **35** is formed as a strap having a slot **36** through which the free end of the cam **28** extends, and a slot **37** through which the free end of the cam **29** extends. Shoulder **36***a* at the base of slot **36** limits inward movement of cam **28** and shoulder **37***a* at the base of slot **37** similarly limits inward movement of cam **29**, while the opposite side walls of the slots hold the cams in proper alignment.

Each cam has a bowed portion **28***a* and **29***a* respectively between its ends lying in the path of swinging movement of strap **22** and each cam is formed with an offset portion providing inclined cam surfaces **28***b* and **29***b*, respectively, in the path of swinging movement of the strap **22**. When the door is closed, the strap **22** is in the position shown in solid lines in Fig. 1, where the strap is not in engagement with the holdopen cams. When the door is opened, the strap moves to the position shown in broken lines in Fig. 1 and the strap engages and rides over the bowed portions **28***a* and **29***a* of the respective cams forcing the cams apart against the force exerted by tension spring **30**. When the door has nearly reached its full open position, the strap **22** rides over the offset portions **28***b* and **29***b* of the cams and is resiliently held in open position by means of the inclined cam surface formed by said offset portion, as shown in broken lines in Fig. 3. With the door in open position, the strap **22** may abut the guide member **35**, as shown in broken lines in Fig. 3, to provide a door check. The force of the spring **30** acting through the inclined cam surfaces **28***b* and **29***b* will hold the door in open position against the force of gravity and such other forces as the wind blowing against the door; but when the door is pushed or pulled closed manually the strap **22** rides up over the offset portions of the holdopen cams forcing the cams apart against the action of the spring **30**.

The door holdopon device above described is advantageous for mass production and assembly methods because it does not require any permanent connections and each part is a separate, easily formed part, the cams **28** and **29** preferably being rigid steel stampings. Since there are no screws, rivets or other permanent connections between

the holdopen cams and associated parts of the hinge, assembly of the apparatus is facilitated.

Figs. 5 to 8 show modified form of holdopen device in which the holdopen cams extend through slots in the hinge box walls to the exterior of the hinge box, and wherein different stop means are provided. In this modified form of the invention, the hinge structure per se is similar to that shown in Fig. 1, and therefore, will not again be described in detail.

In the modified form of the invention, holdopen cams **40** and **42** are pivotally mounted on the respective walls **19** and **20** of the hinge box by means of lug and slot connections, in the same manner as described with reference to Figs. 1 to 4. In the modified form of the invention, however, the guide member **35** is omitted and the holdopen cam **40** extends through a slot **43** in the wall **19** to the exterior of the hinge box, while the holdopen cam **42** extends through a slot **44** to the exterior of the hinge box. As in the first form of the invention, the cams are interconnected at their free end by means of spring **30**. Instead of a separate stop and guide member **35**, the stop means in the modified form of the invention comprise abutting surface portions on the cams and the exterior wall surface of the hinge box, and the cams are guided by the slots **43** and **44**. The abutting surface portions are shown best in Fig. 7, wherein the inner surface portion **40***a* of the holdopen cam **40** is adapted to abut against the exterior wall surface portion **19***b* to stop inward movement of the cam **40**, and wherein the interior surface portion **42***a* of the cam **42** is adapted to abut against exterior wall **20***b* to limit inward movement of the cam **42**.

Fig. 6 shows in solid lines the position of the parts when the door is closed, the hinge strap **22** being out of engagement with the holdopen cams. The position when the door is open is shown in broken lines in Figs. 5, 6 and 7, the hinge strap **22** being resiliently held in door open position by means of the inclined surface provided by the offset portion of the cam members. Fig. 7 shows, in solid lines, how the hinge strap **22** forces the cams apart when the door is in an intermediate position between open and closed positions.

While I have shown and described two embodiments of my invention, it is capable of many modifications. Changes, therefore, in the construction and arrangement may be made without departing from the spirit and scope of the invention as set forth in the appended claims.

I claim:

1. A hinge holdopen of the character described for automobile door and body members, including: a hinge box having opposite walls each formed with a slot; means for mounting said box on the body; a goose-neck hinge strap pivotally mounted on said box for swinging movement between said walls; means for mounting said strap on the door; a pair of rigid holdopen cams pivotally supported at one end opposite each other on said walls, each cam having a lug at said end received in said slot in one wall, each cam having a bowed portion between its ends lying in the path of swinging movement of said strap, and each cam being formed with an offset portion in the path of swinging movement of said strap providing an inclined cam surface for engagement by staid strap; a spring under tension interconnecting said cams at the other end thereof; and a guide member extending between said walls adjacent said other end of the cams, said member having guide slots adjacent each wall, the end of each cam adjacent said spring extending through one of said slots.

2. A hinge holdopen of the character described, including: a hinge box having opposite walls each formed with a slot; a gooseneck hinge strap pivotally mounted on said box for swinging movement between said walls; a pair of rigid holdopen cams loosely pivotally supported at one end opposite each other on said walls each cam having a tongue projecting into one of said slots to provide a pivotal mounting for the cam, each cam having a bowed portion between its ends lying in the path of swinging movement of said strap, and each cam being formed with an offset portion in the path of swinging movement of said strap providing an inclined cam surface for engagement by said strap; a spring under tension interconnecting said cams adjacent the other end thereof; and stop means for limiting movement of said cams, said strap engaging said cams and forcing them apart against the force of said spring upon swinging movement of the strap, each cam being pivotally supported adjacent the inner surface of one of said walls by means of said tongue and slot connection between the pivotally supported end of each cam and one of said walls.

3. A hinge hold-open of the character described, including: a hinge box having opposite walls each formed with a slot; a gooseneck hinge strap pivotally mounted on said box for swinging movement between said walls; a pair of rigid hold-open cams loosely pivotally supported at one end opposite each other on said walls each cam having a tongue projecting into one of said slots to provide a pivotal mounting for the cam, each cam having a bowed portion between its ends lying in the path of swinging movement of said strap, and each cam being formed with an offset portion in the path of swinging movement of said strap providing an inclined cam surface for engagement by said strap; a spring under tension interconnecting said cams adjacent the other end thereof; and stop means for limiting movement of said cams comprising a guide member extending between said walls adjacent said other end of the cams, said guide member having guide slots adjacent each wall of the hinge box, the adjacent end of each cam extending through one of said slots, said hinge strap engaging said cams and forcing them apart against the force of said spring upon swinging movement of the strap.

4. A hinge hold-open of the character described, including: a hinge box having opposite walls each formed with a slot; a gooseneck hinge strap pivotally mounted on said box for swinging movement between said walls; a pair of rigid hold-open cams loosely pivotally supported at one end opposite each other on said walls each cam having a tongue projecting into one of said slots to provide a pivotal mounting for the cam, each cam having a bowed portion between its ends lying in the path of swinging movement of said strap, and each cam being formed with an offset portion in the path of swinging movement of said strap providing an inclined cam surface for engagement by said strap; a spring under tension interconnecting said cams adjacent the other end thereof; and stop means for limiting movement of said cams, said strap engaging said cams and forcing them apart against the force of said spring upon swinging movement of the strap, each cam being pivotally supported at one end adjacent the inner surface of one of said walls and a portion intermediate the ends of each cam passing through a slot in the adjacent hinge box wall to the exterior thereof, said stop means comprising abutting surface portions on said cams and the exterior hinge box wall surface.

5. A hinge hold-open of the character described, including: a hinge box having opposite walls each formed with a slot; a gooseneck hinge strap pivotally mounted on said box for swinging movement between said walls; a pair of rigid hold-open cams loosely pivotally supported at one end opposite each other on said walls each cam having a tongue projecting into one of said slots to provide a pivotal mounting for the cam, each cam having a bowed portion between its ends lying in the path of swinging movement of said strap, and each cam being formed with an offset portion in the path of swinging movement of said strap, and each cam being formed with an offset portion in the path of swinging movement of said strap providing an inclined cam surface for engagement by said strap; a spring under tension interconnecting said cams adjacent the other end thereof; and stop means for limiting movement of said cams, said strap engaging

said cams and forcing them apart against the force of said spring upon swinging movement of the strap, each cam being pivotally supported at one end adjacent the inner surface of one of said hinge box walls and a portion intermediate the ends of each cam passing through a slot in the adjacent hinge box wall to the exterior thereof.

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