Sept 10, 1957 LA VERNE B. RAGSDALE 2,805,442

LID HINGE AND HOLD-OPEN

Filed Aug. 31, 1953 2 Sheets-Sheet 1

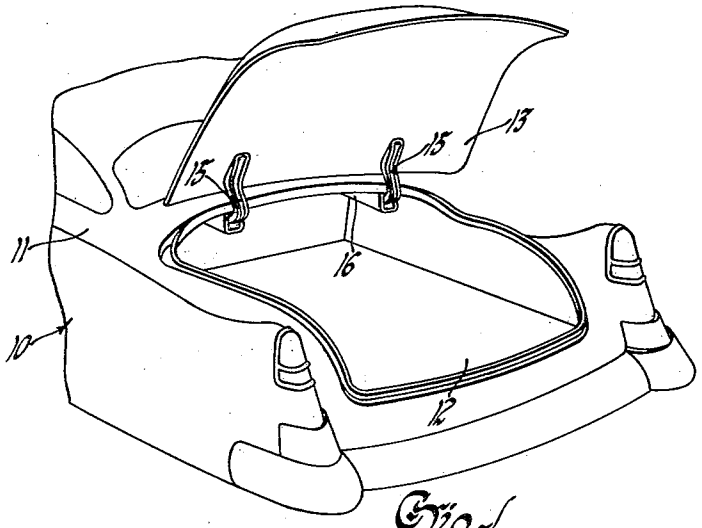


Fig. 1

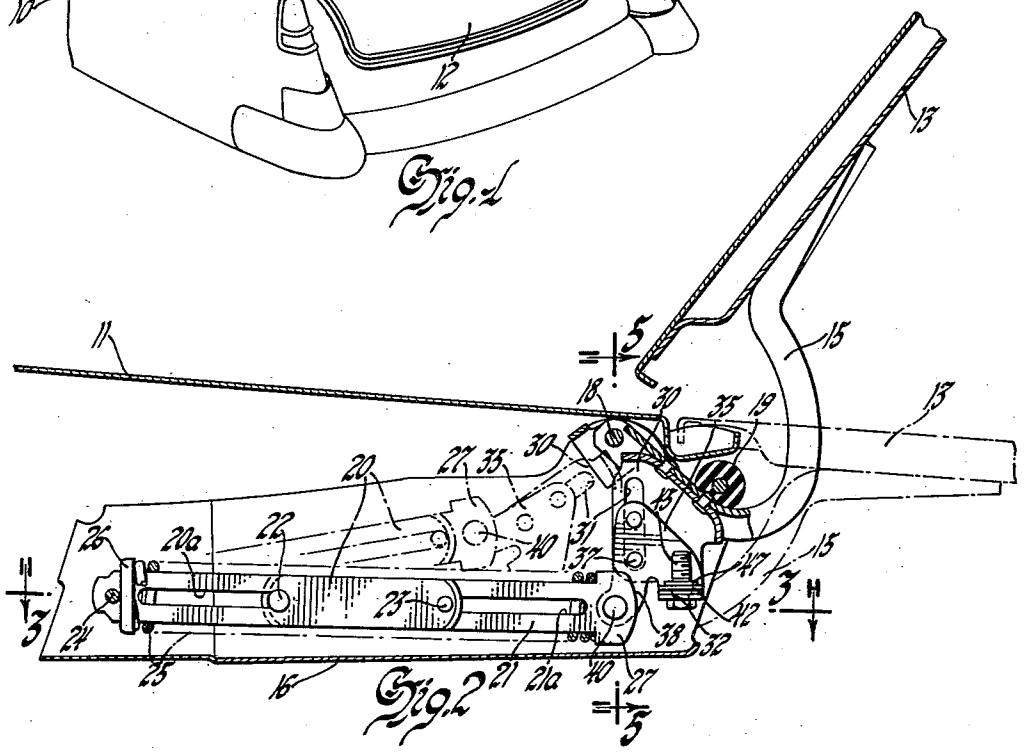


Fig. 2

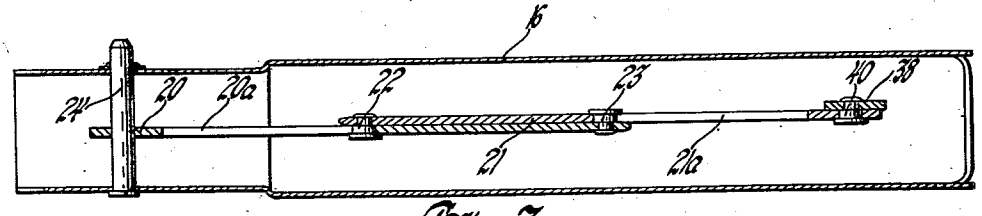


Fig. 3

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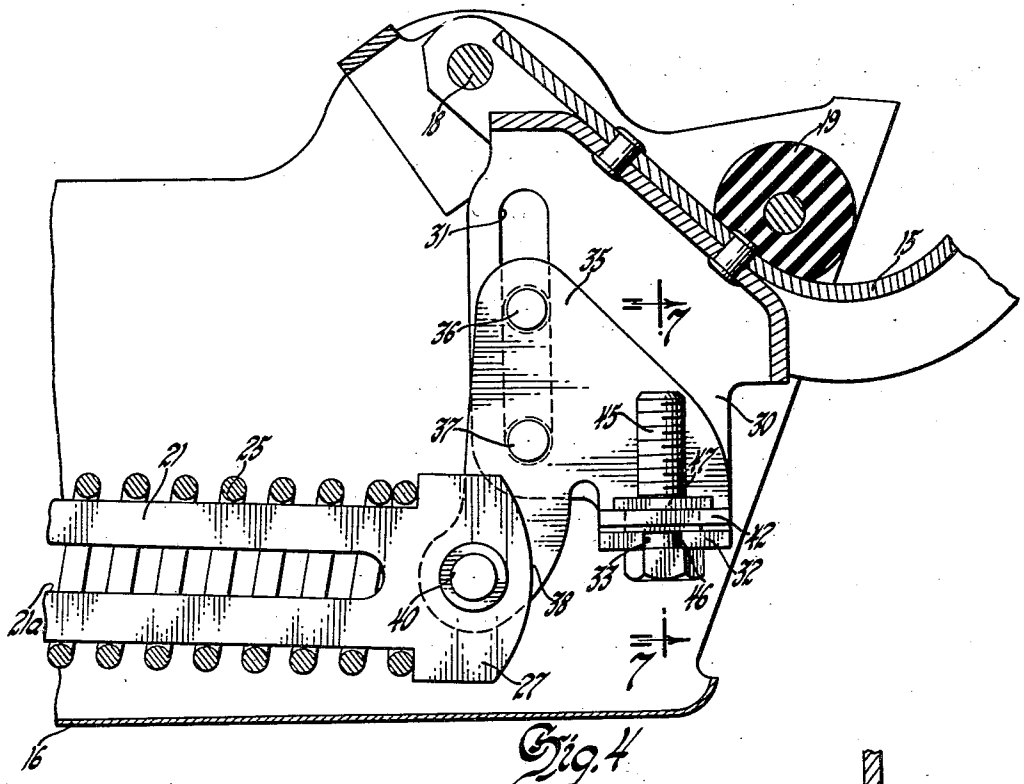


Fig. 4

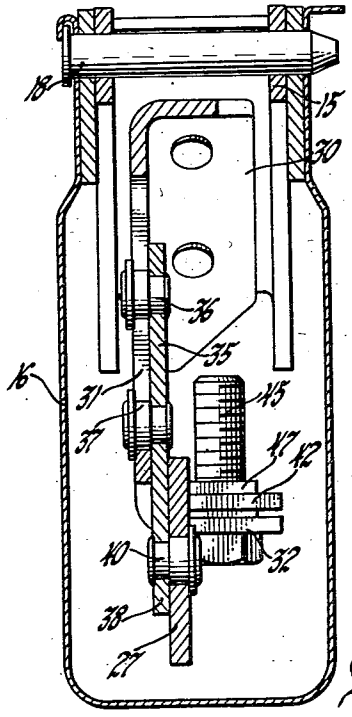


Fig. 5

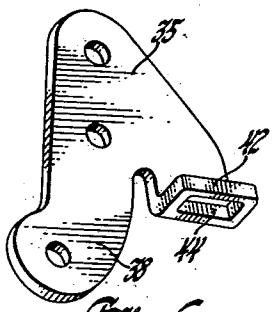


Fig. 6

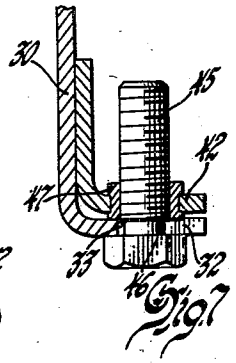


Fig. 7

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LID HINGE AND HOLD-OPEN

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Application August 31, 1953, Serial No. 377,318

4 Claims. (Cl. 16—190)

This invention relates to a lid hinge and hold-open, and more particularly to a hinge and adjustable hold-open for the deck lid of an automobile.

Hingedly mounted deck lids are provided with counterbalance spring means which facilitate initial opening movement of the deck lid and which increase in effectiveness as the deck lid approaches open position and hold the deck lid in its fully open position. Because of variations in spring strength and in the size and weight of different deck lids it is difficult to obtain a uniform counterbalance effect in assembly line production. This invention provides a simple and effective adjustment means whereby the counterbalance force exerted by the spring may be varied to obtain proper operation despite variations in spring strength, size and weight of deck lids, and the like. According to the invention, the location of the connection of the counterbalance spring to the hinge strap may be moved toward or away from the pivotal axis of the hinge strap so that desired counterbalance action may be obtained after the automobile is fully assembled.

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

Fig. 1 is a fragmentary rear perspective view of an automobile embodying the invention;

Fig. 2 is an enlarged fragmentary longitudinal vertical section through one of the deck lid hinges, the deck lid, hinge and counterbalance means being shown in open position in solid lines and in closed position in broken lines;

Fig. 3 is an enlarged horizontal section taken along the line 3—3 of Fig. 2, the counterbalance spring being removed;

Fig. 4 is a further enlarged section corresponding to a portion of Fig. 2;

Fig. 5 is an enlarged vertical transverse section taken along line 5—5 of Fig. 2;

Fig. 6 is an isometric view of the adjusting link; and

Fig. 7 is a detail view of the adjusting means.

Referring now more particularly to the drawings, an automobile designated generally as **10** in Fig. 1 has a body **11** with a deck compartment **12** and a deck lid **13** therefor. The deck lid is hingedly mounted on the body, being carried on spaced goose-neck hinge straps **15**, each of which is pivotally mounted in a channel-shaped elongated hinge box **16**.

Since the hinge straps **15** are secured to the deck lid **13** closely adjacent the forward edge thereof, the leverage of the deck lid is high, and counterbalance springs are provided to offset the weight of the deck lid. Preferably, these springs are arranged to exert enough counterbalance force almost to overcome the weight of the deck lid when the deck lid is nearly closed, and to increase in effectiveness and more than overcome the weight of the deck lid as the deck lid approaches open position, so that the springs will hold the deck lid open as shown in Fig. 1. This varying counterbalance action is obtained

by mounting the springs so that the moment arm of the springs change as the deck lid moves toward open position.

Each hinge and counterbalance means is similar and only one will be described. As shown best in Figs. 2, 4 and 5, strap **15** is pivoted upon a pin **18** which extends between the opposite walls of the elongated hinge box **16** immediately below the body panel **11** and closely adjacent the forward edge of the deck compartment opening **12**, and the goose-neck form of strap **15** enables the deck lid **13** to move upwardly and forwardly when opened to provide free access to the compartment **12**. A rubber bumper **19** limits opening movement of the deck lid.

Each hinge is provided with counterbalance spring means comprising extensible and retractable aligned spring supporting links **20** and **21**, each provided with a slot **20***a* and **21***a* respectively. A pin **22** is secured to the end of link **21** and projects through the slot **20***a*, and a similar pin **23** is secured to the end of the link **20** and projects through the slot **21***a* so that the links, while held in alignment, may be extended or retracted as the deck lid is opened or closed. The forward end of link **20** is pivoted on a pin **24** mounted between the hinge box walls, and the links support a compression spring **25**, the forward end of the spring seating against a collar **26** and the rear end of the spring seating against a shoulder formed by an enlarged head portion **27** at the end of link **21**.

The structure described above is old. In the past the rear end of the counterbalance spring has been secured directly to a support bracket rigid with the hinge strap, and there has been no means of adjustment to compensate for variations in spring strength, size and weight of different deck lids, and the like. Instead of securing the rear end of the counterbalance spring means directly to the hinge strap **15** as has been done in the past, an adjustment means is provided so that the effective counterbalance force exerted by the spring may be varied as desired. A support bracket **30** is riveted to the underside of strap **15** and depends downwardly from said strap within the box **16**. Support **30** is formed with an elongated vertical guide slot **31**, and at its lower end the support is provided with a right angle flange **32** having a slot **33** therein.

A link **35** (Fig. 6) is slidably mounted on the support member **30** by means of spaced pins **36** and **37** which extend through the guide slot **31**. Link **35** has a depending connector portion **38** which is articulated to the head **27** of spring supporting link **21**, a rivet **40** providing this connection.

In order to adjust the relative position of the link **35** on the support **30** a flange **42**, which is complementary to the flange **32**, is formed on link **35**, and an opening **44** in this flange registers with the slot **33** in the flange **32**. The link **35** and the support member **30** are connected by means of a shoulder bolt **45** having a reduced neck portion **46** (Fig. 7) which fits into slot **33** in flange **32**, and having a threaded body portion which engages a nut **47** mounted in the opening **44**.

In the drawings, the adjustment means is so positioned that a maximum of counterbalance force is exerted by the spring **25**. If less counterbalance force is desired, the bolt **45** is turned to move the pins **36** and **37** up in the slot **31** closer to the pivot pin **18** which mounts the hinge strap **15**. This variation in the point of location of the connection between the spring means and hinge strap decreases the leverage factor of the force exerted on strap **15** by spring **25**, and consequently lowers the counterbalance effect of the spring. It should be noted that this spring adjusting means has no effect on the amount of pivotal movement of the hinge strap **15** between open and closed positions so that the operation of the deck

lid is exactly the same throughout the entire range of adjustment of the apparatus except, of course, for the variation in counterbalance force.

While I have shown and described one embodiment of my invention, it is capable of many modifications. Changes, therefore, in the construction and arrangement may be made within the spirit and scope of the invention as set forth in the appended claims.

I claim:

1. In an automobile having a body with a deck compartment and a deck lid therefor, a hinge and counterbalance for the deck lid, including: a hinge box mounted on the body within the compartment; a goose-neck hinge strap having one end pivotally mounted on said box and the other end connected to the lid; a support member depending from said strap intermediate the ends thereof, said support being formed with an elongated guide slot extending at an angle from the strap; counterbalance compression spring means within said box; means pivotally connecting one end of said spring means to said box; a link connected to the other end of said spring means, said link being slidably mounted on said support by means of spaced pins extending through said guide slot; and adjustment means for varying the position of said link on the support to adjust the counterbalance force exerted by said spring means.

2. Apparatus of the character claimed in claim 1, wherein said support member and said link are provided with complementary flanges having registering openings; and wherein said adjustment means comprises a bolt threaded into one member and having a shoulder engaging the other member.

3. In an automobile having a body with a deck compartment and a deck lid therefor, a hinge and counterbalance for the deck lid, including: a hinge box mounted on the body within the compartment; a hinge strap having one end pivotally mounted on the hinge box and the other end connected to the deck lid; support means depending from the strap intermediate the ends thereof, said support means being formed with an elongated guide slot extending at an angle from the strap; a counterbalance spring within said hinge box; means pivotally connecting one end of said spring to said hinge box; a link connected to the other end of said spring, said link being slidably mounted on said support means by spaced pins extending through said guide slot, and said link and support means having registering flange portions extending at a right angle from the plane in which said link and support means lie; and adjustment means extending through said flange portions for varying the position of the link on the support means to adjust the counterbalance force exerted by the spring.

4. In an automobile having a body with a deck compartment and a deck lid therefor, a hinge and counterbalance for the deck lid, including: a hinge box mounted on the body compartment; a hinge strap having one end pivotally mounted on said hinge box and the other end connected to the lid and having depending support means intermediate the ends thereof, said support means being formed with an elongated guide slot extending at an angle from the strap and said support means having an outwardly turned flange adjacent one end of the slot; a counterbalance spring in said hinge box; means pivotally connecting one end of said spring to said hinge box; a link connected to the other end of said spring, said link being slidably mounted on said support means by spaced pins extending through said guide slot and said link having an outwardly turned flange registering with the flange on the support means; and adjustment means comprising a bolt extending through said registering flanges for varying the position of the link on the support means to adjust the counterbalance force exerted by said spring.

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