Oct. 1, 1957 LA VERNE B. RAGSDALE 2,808,280

CLOSURE LATCH

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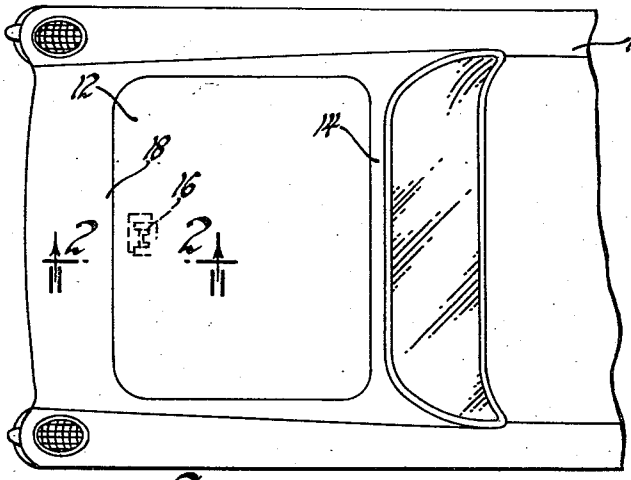


Fig. 1

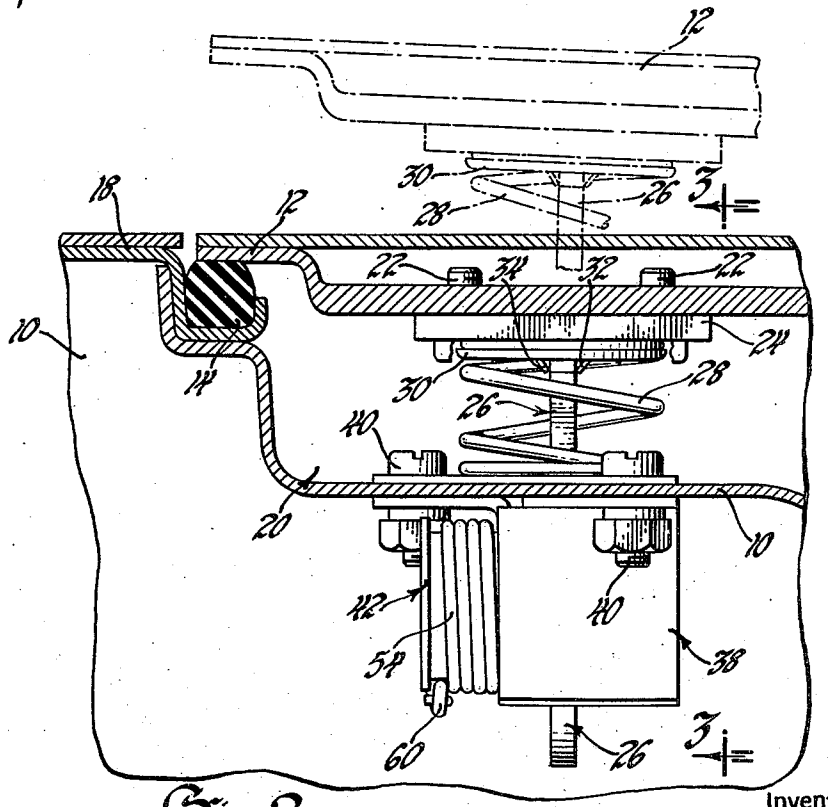


Fig. 2

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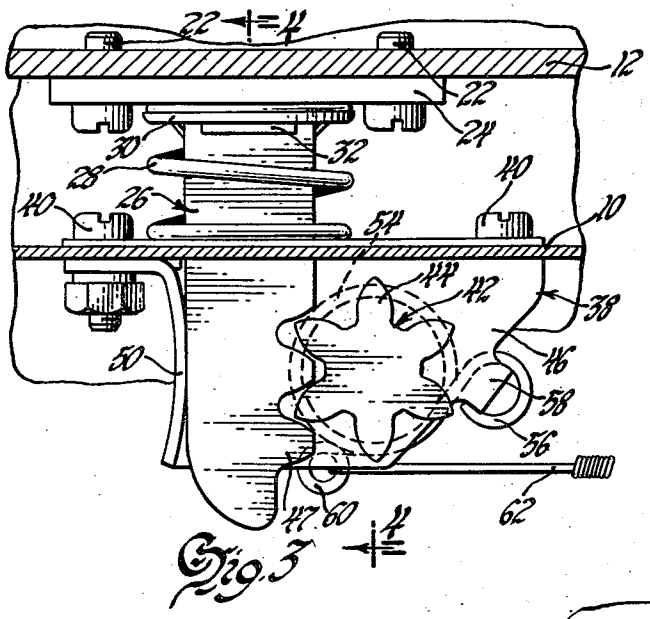


Fig. 3

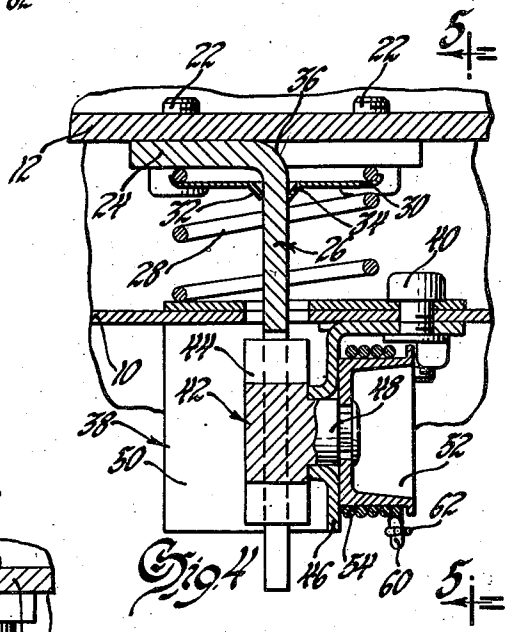


Fig. 4

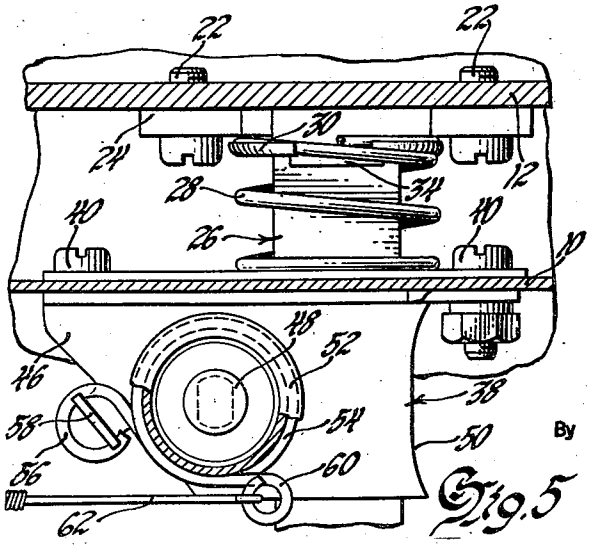


Fig. 5

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CLOSURE LATCH

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7 Claims. (Cl. 292—216)

This invention relates to closure latches and more particularly to a latch of the infinite locking type.

An object of the invention is to provide engageable latching members with a readily releasable disengagement locking means effective over a wide range of engagement.

The latch primarily consists of a rack striker and a rotary bolt having a coil spring clutch that permits free rotation in engaging direction and releasably prevents rotation in disengaging direction. The rack striker is preferably secured to the closure and the rotary bolt to the closure frame, and resilient means may be provided between the closure and frame urging their separation from closed relation. The latch is particularly adapted for installation as a vehicle hood lid latch or rear deck lid latch as it is simple and economical in construction and easily accommodates the slight dimensional deviations common to mass vehicle production.

Further objects and advantages of the present invention will be apparent from the following description, reference being had to the accompanying drawings, wherein a preferred form of the present invention is clearly shown.

In the drawings:

Fig. 1 is a partial top plan view of a vehicle incorporating the latch of the invention;

Fig. 2 is a fragmentary section taken substantially on the plane indicated by the line 2—2 of Fig. 1;

Fig. 3 is a fragmentary section taken substantially along the plane indicated by the line 3—3 in Fig. 2;

Fig. 4 is a fragmentary section taken substantially along the plane indicated by the line 4—4 of Fig. 3; and

Fig. 5 is a fragmentary section taken substantially along the plane indicated by the line 5—5 of Fig. 4.

Referring now to the drawings and more particularly to Fig. 1, a vehicle body 10 is provided with a hood lid or deck lid 12 suitably hinged to the body along the edge 14 and releasably latched to the body at 16 proximate the opposite edge 18. The lid 12 closes flush with the body against a rubber sealing strip 14 as may be seen in Fig. 2 and swings upwardly in opening as shown by the partially open dash-dot position. The lid or closure 12 supports one portion of a latching assembly 20 and the body or closure frame 10 carries the other portion of the latching assembly.

Referring to the remaining figures, bolts 22 secure the head portion 24 of a rack striker 26 to the closure 12. The striker 26 carries a coil spring 28 by means of a washer 30 crimped to the striker by flanges 32 and 34. The coil spring 28 engages the closure frame 10 when the lid 12 is closed urging separation of the lid and frame. The striker 26 is provided with rack teeth 47 for engagement with a rotary bolt, to be described. The striker 26 may be economically manufactured from flat steel stock by utilizing a suitably shaped punch to form a toothed T-shaped striker blank and by bending the blank at 36 in a suitable jig to produce the finished striker.

A supporting bracket 38 is secured by bolts 40 to the

closure frame 10 to rotatably mount a rotary bolt 42 that is provided with pinion teeth 44 that are engageable with the rack teeth 47 of the striker 26. The supporting bracket 38, like the striker 26, may be economically manufactured from flat steel stock by punching and bending. The bracket comprises an L-channel flanged at one end for securement to the closure frame. One wall 46 of the channel is apertured to journal a stub shaft 48 of the rotary bolt 42, and the other wall 50 engages an edge of the striker to reinforce the same during tooth engagement. The wall 50 may be slightly curved, if desired, to smoothly guide the striker into bolt engagement despite minor misalignment of the closure and frame.

A drum 52 is riveted to the stub shaft 48 for rotation with the pinion or bolt 42. About the drum is wound a coil spring 54 having a smaller normal I. D. than the drum O. D. so as to naturally grip the drum and form a coil spring clutch therewith. The coil spring 54 is secured by a loop 56 at one end to a tab 58 on the supporting bracket 38 and by a loop 60 at the other end to a reciprocal release cable 62. When the lid is closed, striker and bolt engagement revolves the drum in spring unwinding direction. The lid cannot be opened as any opening movement would revolve the drum in spring winding direction and increasingly increase the frictional grip of the coil spring on the drum. The coil spring 28 imposes a slight opening force on the lid whenever it is closed to prevent a loosening of the coil spring grip from vibrations that occur in vehicle operation. Opening of the lid is effected by pulling the cable release 62 to increase the coil spring I. D. and thereby loosen the grip on the drum. The latching mechanism is lockable over a wide range as the coil spring clutch is effective whenever the bolt and striker teeth are in engagement. This infinite locking feature particularly adapts the latch for use with vehicles where slight dimensional deviations can be expected.

While the preferred embodiment of the invention has been described fully in order to explain the principles of the invention, it is to be understood that modifications of structure may be made by the exercise of skill in the art within the scope of the invention which is not to be regarded as limited by the detailed description of the preferred embodiment.

I claim:

1. In a vehicle latching arrangement including a compartment having a rotary bolt pinion journaled thereto and a deck lid having a striker rack secured thereto for engagement and disengagement with the pinion over a relatively wide range on closing and opening of the lid, the improvement comprising a coil spring carried by the lid and engageable with the compartment on closing of the lid, a drum carried by the pinion for rotation therewith, and a coil spring clutch for the drum having one end secured to the compartment and the other end adapted for actuation.

2. In a latching arrangement including a pair of relatively movable closure members, one of which has a rotary bolt journaled thereon and the other of which has a striker secured thereto for engagement and disengagement with the bolt on closing and opening movement of the members, the improvement comprising a release member, a drum rotatable with the bolt, and a coil spring having its body in frictional engagement with the drum, the spring having one end secured to the member that journals the bolt so as to grip the drum and normally prevent disengagement of the striker and bolt with the closure members in closed relation and having the other end secured to the release member to permit the release of the grip of the spring on the drum and allow opening movement of the closure members,

3. In a latching arrangement including a pair of relatively movable closure members, one of which has a rotary bolt journaled thereon and the other of which has a striker secured thereto for engagement and disengagement with the bolt on closing and opening movement of the members, the improvement comprising a drum secured to the bolt for rotation therewith, a coil spring wound around the drum and having a lesser normal inner diameter than the outer diameter of the drum so as to be in light frictional engagement therewith, means securing one end of the spring against rotation to clutch the drum against rotation in disengagement direction, and an actuating member secured to the other end of the spring to increase the spring diameter and permit rotation in disengagement direction.

4. In a latching arrangement including a pair of relatively movable closure members, one of which has a rotary bolt journaled thereon and the other of which has a striker secured thereto for engagement and disengagement with the bolt on closing and opening movement of the members, the improvement comprising a drum secured to the bolt for rotation therewith, a release member, and a coil spring having its body encircling the drum in frictional engagement therewith and having one end secured to the member that supports the bolt and the other end secured to the release member.

5. In a latching arrangement including a pair of relatively movable closure members, one of which has a rotary bolt journaled thereon and the other of which has a striker secured thereto for engagement and disengagement with the bolt on closing and opening movement of the members, the improvement comprising a drum secured to the bolt for rotation therewith, a release member, a coil spring in gripping relation with the drum and having one end secured to the release member and the other end secured to the member mounting the bolt, and resilient means carried by one of the closure members for engagement with the other closure member on closing movement therebetween to maintain an opening torque on the bolt.

6. In a latching arrangement including a pair of relatively movable closure members, one of which has a rotary bolt journaled thereon and the other of which has a striker secured thereto for engagement and disengagement with the bolt on closing and opening movement of the members, the improvement comprising a coil spring clutch associated with the bolt to permit bolt rotation in striker engagement direction and to normally prevent bolt rotation in striker disengagement direction, and means for releasing the clutch to permit bolt rotation in striker disengagement direction.

7. In a latching arrangement including a pair of relatively movable closure members, one of which has a rotary bolt journaled thereon and the other of which has a striker secured thereto for engagement and disengagement with the bolt on closing and opening movement of the members, the improvement comprising a coil spring clutch associated with the bolt to permit latching and to normally prevent unlatching, means for releasing the clutch to permit unlatching, and resilient means urging opening movement of the members from closed relation.

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