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BALL OR ROLLER LOCKS

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Fig. 1

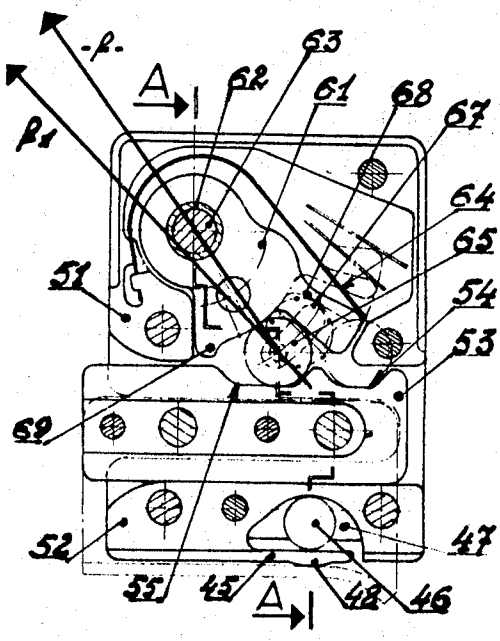
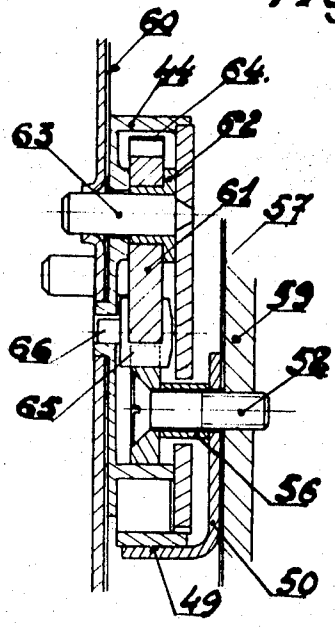


Fig. 2



INVENTOR

Paul BOYRIVEN

BY

Raymond de Roberis

ATTORNEY

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BALL OR ROLLER LOCKS

Paul Boyriven, Paris, France, assignor to Compagnie Industrielle de Mecanismes, Courbevoie, France

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U. S. Cl. 292—261 4 Claims

ABSTRACT OF THE DISCLOSURE

A lock, particularly for the door of a vehicle, in which a keeper pin formed with locking recesses in succession along the periphery of and axially thereof is received in a keeper formed with an appropriate chamber. The keeper has a housing formed with an aperture opening into the locking recesses in locking position of the lock. A locking roller is provided in the housing to normally protrude from the aperture whereby to be received in one of the locking recesses. The roller has lateral lugs engageable in slots of the lock casing and there is provided in the housing a rotatable sector which is adapted to abut the locking member to hold it in aperture protruding locking position. The improvement lies in the provision of finger-like thrust members that radially project from the rotatable sector at either end thereof and which are intended to control the locking roller for movement between the locking and release position; the rotatable sector being biased by a leaf spring. Further improvement resides in the provision of a resilient ball in a recess formed in a portion of the keeper located on the side of the pin chamber opposite the aperture; the recess being closed by a resilient wall having a boss outwardly of the recess. In combination with a flange extending parallel to the pin and movable integrally therewith to press on the said boss to flex the resilient wall inwardly whereby to compress the resilient ball.

The present invention relates to locks particularly for the doors, hoods or trunks of vehicles and are improvements of locks described and claimed in my previous U.S. application Ser. No. 690,606, filed on Dec. 14, 1967, now Pat. No. 3,473,835.

The improved locks of the present invention are mainly characterized by a better control of the movement of the roller by the provision of a new combination comprising a rockable sector having two thrust members to thus limit the stroke or displacement of the roller, whereas a return spring for this sector is economically obtained by a flake-type spring blade and by a resilient and deformable element interposed between the lock casing and its keeper to prevent the formation of vibrations and noises.

The invention will be better understood by the description that follows of a preferred embodiment thereof having reference to the appended drawings wherein:

FIG. 1 is a view in elevation of a roller lock in engagement with the pin thereof, improved according to the present invention, it being pointed out that the frontal plate of the keeper and the pin plate are withdrawn;

FIG. 2 is a transverse cross-sectional view according to line A—A of FIG. 1 and in which the aforesaid plates are back into position.

With reference to the drawings, there is provided a lock casing **44** advantageously obtained by the molding of some material, preferably a slightly resilient plastic material such as commercially known under the trademark "Delrin" in such a way as to thus form a flexible partition wall **45** confining a resilient element **46**, advantageously made of rubber, in an appropriate groove or recess **47**

in such a manner as to hold a boss **48** in contact with an inturned edge or flange **49** of the keeper pin **50** with a pressure, in the order of 25 kg. for instance, sufficient to thus provide a simplified and cheap anti-vibration device acting as a door wedge.

Housing or casing **44** further comprises other bosses, namely **51** and **52**, the rounded edges of which facilitate the insertion and the centering of the front end **53** of the keeper pin. The latter is formed, as with previous locks of this type, with two locking recesses **54** and **55** extending in succession along the periphery of and axially of the keeper pin and intended to respectively provide partial or safety closure as well as final or complete closure of the door.

This keeper pin **53**, solid with the plate **50** through a spacer **56**, is conventionally secured on the foot or post of a door **57** by such means as screws **58** threaded into a counter plate **59** whereas the lock casing **44** is secured on the edge **60** of the door also by screws and in the usual manner.

Casing **44** comprises a chamber for the housing and centering of a rocking sector **61** and its sleeve **62** about an axle **63** and for the movement of a spring blade **64** embedded in the boss **51** and biasing section **61** in the rest position shown, whereas rocking in opposite direction is obtained in the usual manner as by means, for instance, of a lever acting on axle **63.**

Finally, the displacement of the roller **65**, apart from being limited by those of its lateral lugs, such as **66** in appropriate slots such as **67**, are also limited by two thrust members in the form of fingers **68** and **69** at either end of the rocking sector **61.**

It will easily be understood that, by this combination, if the door and its lock made according to the present invention are brought close to the frame which carries the keeper pin, because of its rounded edges, the front end **53** will tend to center itself between the bosses **51** and **52** of the lock casing **44** until it lifts the roller **65** in the position illustrated in broken lines by lifting the rocking sector **61** and its resilient leaf or spring blade **64** an equal amount.

By continuing this closing movement of the door, the roller **65** will first fall in the first recess **54** of the keeper front end **53** resulting in a first locking position called "safety" position whereas by continuing the same movement, the roller **65** will be lifted again to finally fall in the second recess **55** thus ensuring final closure, that is complete closure of the door.

In this position, the roller **65** ensures a very effective self locking between the rocking sector **61** and its recess **55**, namely due to a slight difference in the direction between the reaction of the roller **65** on its sector **61** according to arrow *f* and its reaction on the keeper pin according to *f1* whereas release of roller **65** is always possible, to open the door by a simple rocking of sector **61**, against the bias of its spring **64**, that is counter-clockwise with respect to FIG. 1.

It remains obviously possible and in conformity with the present invention to combine the locking mechanism thus improved with any door wedge device.

I claim:

1. In a lock for doors, hoods or trunks of a vehicle, said lock including a keeper pin formetd with locking recesses in succession along the periphery of and axially of the pin; a keeper formed with a chamber for the reception of said pin; said chamber having a pin inlet opening for the insertion of said pin; said keeper having a housing formed with an aperture opening into said locking recesses in locking position of said lock; a locking member in said housing normally protruding from said aperture to be received in one of said locking recesses;

means to guide said locking member between a locking position wherein said locking member lies in one of said locking recesses and a release position wherein said locking member is free of said keeper pin, and a rotatable sector in said housing adapted to abut said locking member to hold it in said aperture protruding locking position, wherein the improvement comprises:

finger-like thrust members radially projecting from said rotatable sector at either end thereof to control said locking member for movement between said locking and release positions, and

resilient means acting on one of said thrust members to bias said locking member towards said locking position.

2. The improved lock as claimed in claim 1 wherein said resilient means is a leaf spring of which one end is fixed to said keeper in said housing and the other end is pressed against the tip of said one of said thrust members.

3. The improved lock as claimed in claim 1 including absorption vibrations means in the portion of said keeper located on the side of said pin chamber opposite said aperture.

4. A lock as claimed in claim 1 wherein said keeper has a portion thereof, located on the side of said pin chamber opposite said aperture, which is hollowed out to define a recess having confining walls of which one is an overhanging and thus resilient wall; a resilient element in said recess and over said resilient wall; said resilient wall being formed with a boss outwardly of said recess; wherein said keeper pin is mounted on a door post and there is provided on said post a flange extending parallel to said pin and spaced therefrom a distance such as to press on said boss, in closing position of said lock, to flex said resilient wall inwardly to compress said resilient element whereby to absorb vibrations as said lock is being closed.

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MARVIN A. CHAMPION, Primary Examiner

E. J. McCARTHY, Assistant Examiner

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292—252