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(54) **Collapsible lock for a vehicle hood**

(57) The invention relates to a collapsible lock for a vehicle hood, comprising a case or frame (4) which is assembled in the front framework (11) of the vehicle with the capacity of vertical movement and is connected thereto through fixing means and through elastic supports (7-8) allowing the movement between the hood and the front framework when a force exceeding a prefixed value is applied on the hood.

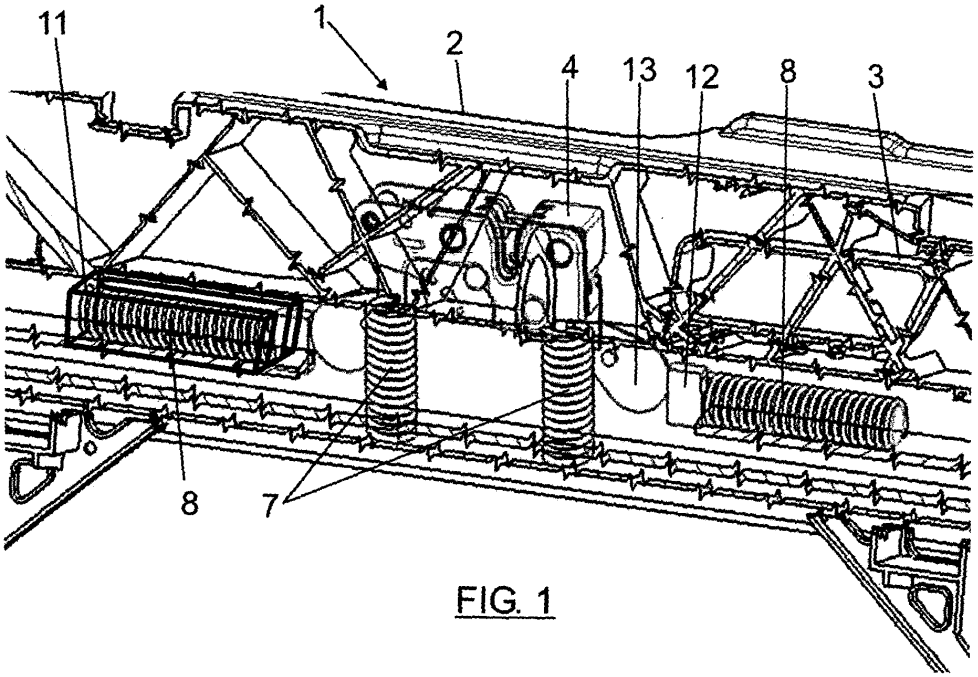

FIG. 1

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Description

FIELD OF THE INVENTION

[0001] The present invention relates to a collapsible lock for a vehicle hood, comprising a case or frame which is fixed to the front framework of the vehicle, generally at the upper part thereof and which can be actuated from inside the vehicle.

BACKGROUND OF THE INVENTION

[0002] To assure the closing position of a vehicle hood, the front framework is provided with a lock which is usually actuated from inside the vehicle. This lock is internally assembled at the upper part of the front framework and is usually fixed thereto by means of screws, such that its immobility is assured.

[0003] This arrangement makes the lock form a point of the front framework of maximum hardness, which can entail a considerable risk in the event of running over and colliding with a pedestrian.

DESCRIPTION OF THE INVENTION

[0004] The object of the present invention is to eliminate the problem set forth by means of a lock which is assembled in the hood by means of a retractable mechanism, with certain deformation capacity, the purpose of which is to absorb the energy produced as a result of an impact against the vehicle hood, for example due to running over a pedestrian.

[0005] With this arrangement the point of high hardness of the hood is eliminated, due to the assembly of the lock, and thus the risk of injuries in the event of running over a pedestrian is reduced.

[0006] According to the invention, the case or frame of the lock is assembled in the front framework with the capacity of relative vertical movement with respect to said framework, and is connected thereto through fixing means allowing a certain movement between the front framework and the case or frame when a force exceeding a prefixed value is applied on the hood. The lock is further connected to the front framework through elastic supports absorbing the energy of the impact, as they are deformed during the relative vertical movement of the case of frame of the lock.

[0007] The fixing means for fixing the lock to the front framework can consist of screws traversing the hood through vertical mounting holes, though which the screws and thus the frame or case of the lock can move vertically when an impact occurs on the hood with a force exceeding a prefixed value.

[0008] The aforementioned elastic supports are assembled between the case or frame of the lock and the front framework and consist of two vertical compression springs, assembled in a compressed condition under the lock, between said lock and the framework, and of two horizontal compression springs supported at one side on the hood structure and at the opposite side on a rotating eccentric cam which is articulated, at a point opposite to the support point with the spring, to a vertical arm on which the lock is supported. A gas spring is housed inside each horizontal spring to absorb the energy due to an impact. The horizontal springs, plus the gas springs, can be housed in a case assembled in the front framework, the case of which is transversely open at the support side of the cam.

BRIEF DESCRIPTION OF THE DRAWINGS

[0009] The attached drawings show a non-limiting embodiment, with the aid of which the constitution and operation of the lock of the invention can be better understood.

[0010] In the drawings:

Figure 1 shows an inner elevational view of a vehicle front framework, with the lock thereof assembled according to the invention.

Figure 2 shows a view similar to Figure 1, showing the mounting holes made in the front framework, to fix the lock.

Figure 3 shows a perspective view of the lock with the elastic means connecting it to the front framework.

Figure 4 shows a side elevational view of one of the horizontal compression springs.

Figure 5 shows a schematic section of the lock assembled in the front framework, according to section line V-V of Figure 2.

Figures 6 and 7 show vertical sections of the lock, taken along section lines VI-VI and VII-VII of Figure 2.

DETAILED DESCRIPTION OF AN EMBODIMENT

[0011] Figure 1 shows an inner elevational view of a vehicle front framework 1, including an outer cover 2 and an inner structure 3. The case or frame 4 of a lock is assembled between the cover and structure, which case or frame can generally be actuated from inside the vehicle.

[0012] The case or frame 4 of the lock is fixed to the front framework 1 by means of screws 5, Figure 2, passing through mounting holes 6 made in the structure 3 of the front framework 1, these mounting holes running in a vertical direction.

[0013] To fix the case 4 of the lock to the front framework 1, the screws 5 will be tightened with a strain such that the when the hood and the lock 4 receive an impact the intensity of which exceeds a prefixed value, the screws 5 can move downwards along the mounting holes 6, thus allowing the hood to move in the same direction with respect to the front framework 1, which is the fixed part of the vehicle structure.

[0014] In addition, the lock 4 is connected to the struc-

ture 3 of the front framework 1 by means of elastic supports including 2 vertical compression springs 7, assembled under the case 4 of the lock, between the latter and the structure 3 of the front framework, and two horizontal compression springs 8, all of this as can best be seen in Figure 3.

[0015] The vertical springs 7 are fixed between cylindrical inserts 9 and 10, Figure 7, fixed to an element of the structure 3 of the front framework 1 and to the case or frame 4 of the lock, respectively.

[0016] As can best be seen in Figure 4, each horizontal spring 8 is housed in a case 11 which is fixed to the structure 3 of the front framework 1, which is transversely open at one side. A gas spring is housed inside each spring 8, the head 12 of which gas spring is supported, through the open transverse wall of the case, on an eccentric cam 13 rotating about an axis 14, which cam is articulated at a point opposite to the support point with the head 12, with a vertical arm or flat bar on which the case 4 or rack of the lock rests or is supported, Figure 4.

[0017] Figures 5 and 6 show how the fixing screws 5 pass through the mounting holes 6 of the structure 3 of the front framework 1, said screws being able to move together with the case 4 of the lock in a vertical direction, when the hood receives an impact, as a result of running over a pedestrian, for example.

[0018] The movement of the screws 5 and case 4 of the lock is controlled by springs 7 and 8 which will absorb the energy of the impact.

[0019] The lock 4 will act directly on the springs 7 in its vertical movement, whereas in the springs 8, upon pushing the lock in direction A of Figure 4, a rotation of the eccentric cam 13 about the axis 14 will occur, which will press on the head 12 of the spring 8, compressing it, which will cause the gas spring housed in said spring 8 to act as an energy absorption means, in the event of an impact.

[0020] The gas springs inside the horizontal springs 8 thus act as energy absorption means, to reduce the effect of the impact caused as a result of running over, as the intrusion of the hood in the front framework is allowed, thus reducing the risks of injuries to the pedestrian or person who is run over.

Claims

1. A collapsible lock for a vehicle hood, comprising a case or frame (4) which is fixed to the structure (3) of the vehicle front framework (1), **characterized in that** the mentioned case or frame is assembled in the front framework with the capacity of relative vertical movement and is connected to said framework through fixing means and through elastic supports allowing the movement between the hood and the front framework when a force exceeding a prefixed value is applied on the hood.

2. A lock according to claim 1, **characterized in that** the fixing means connecting the case or frame (4) to the front framework (1) consist of screws (5) traversing said framework through vertical mounting holes (6), along which the screws and the case or frame can move vertically.

3. A lock according to claim 1, **characterized in that** the mentioned elastic supports consist of 2 vertical compression springs (7) located under the case or frame (4), which are assembled in a compressed condition between said case or frame and the front framework (1), and of two horizontal compression springs (8) which are supported at one side on the structure (3) of the front framework (1) and at the opposite side on a rotating eccentric cam (1) which is articulated at a point (15) opposite to the support point with the spring, to a vertical arm (16) on which the case or frame of the lock is supported.

4. A lock according to claim 3, **characterized in that** each of the mentioned horizontal springs (8) is housed in a case (11) assembled in the front framework, the case of which is transversely open at the support side of the cam (13).

5. A lock according to claims 3 and 4, **characterized in that** a gas spring is housed inside each horizontal spring, to absorb energy in the event of an impact, through the head (12) of which gas spring said horizontal spring is supported in the rotating eccentric cam (13).

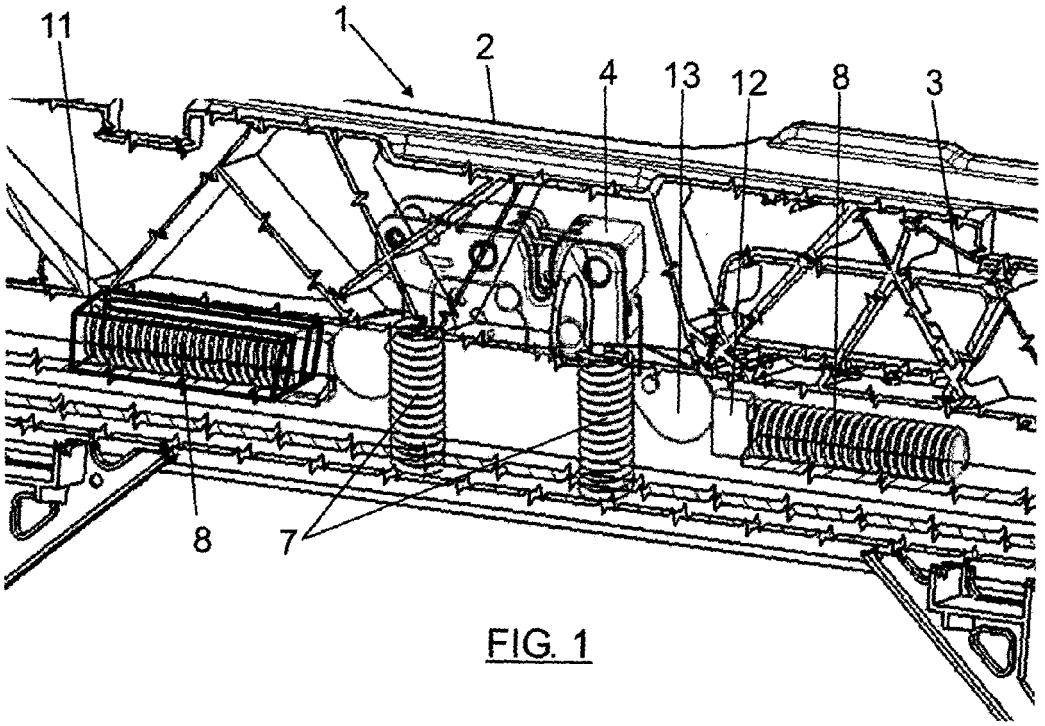

FIG. 1

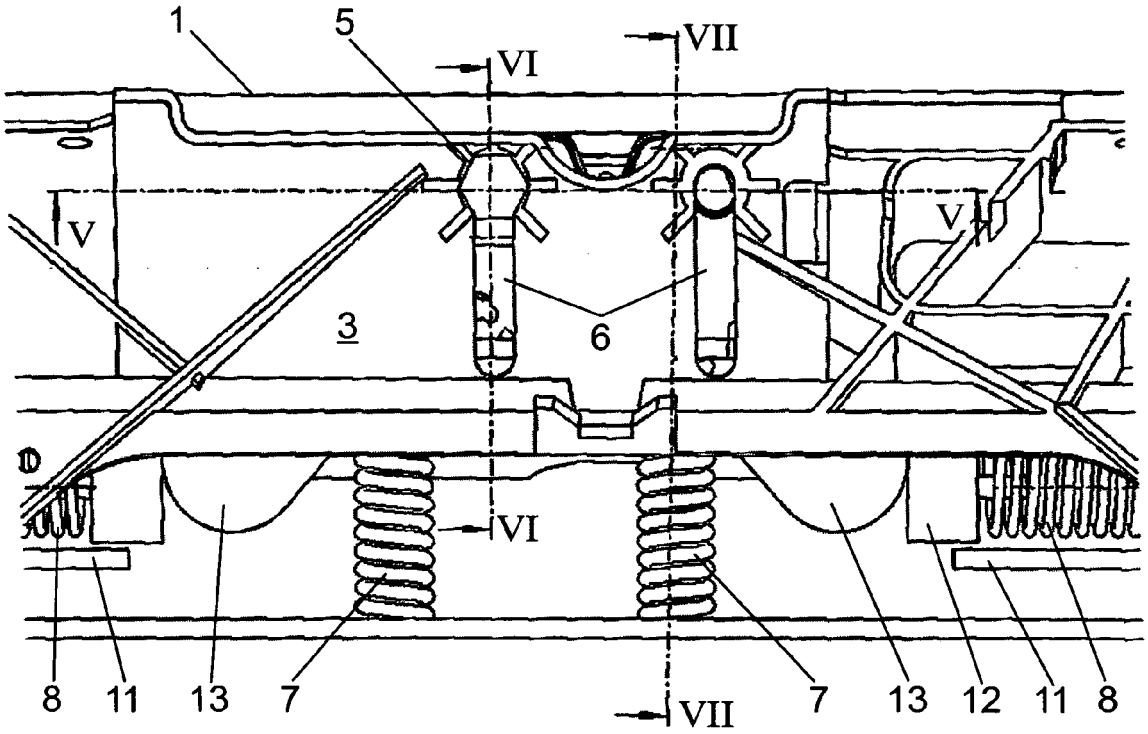

FIG. 2

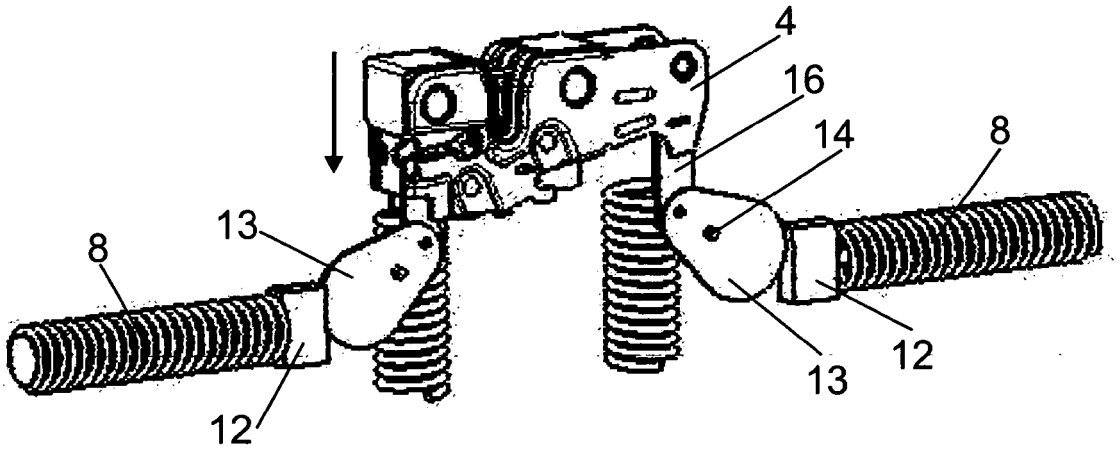

FIG. 3

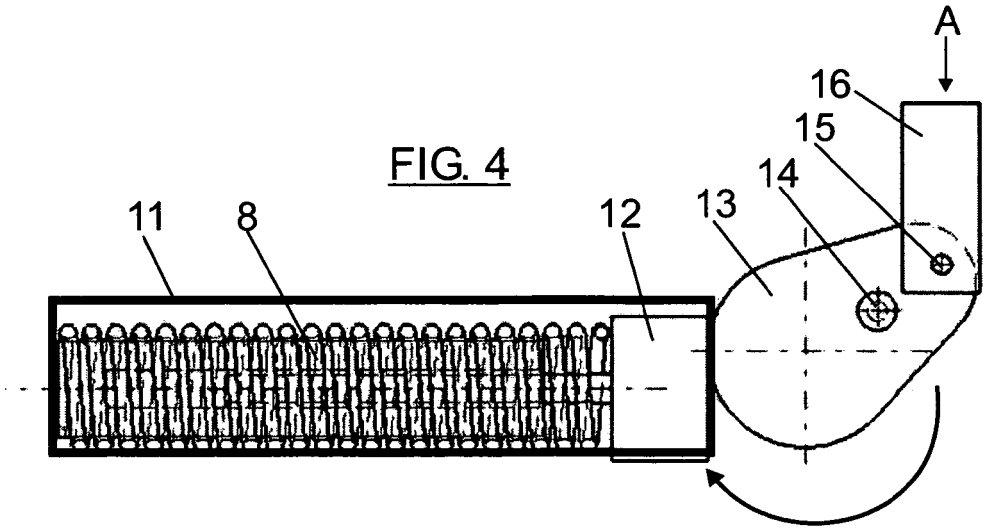

FIG. 4

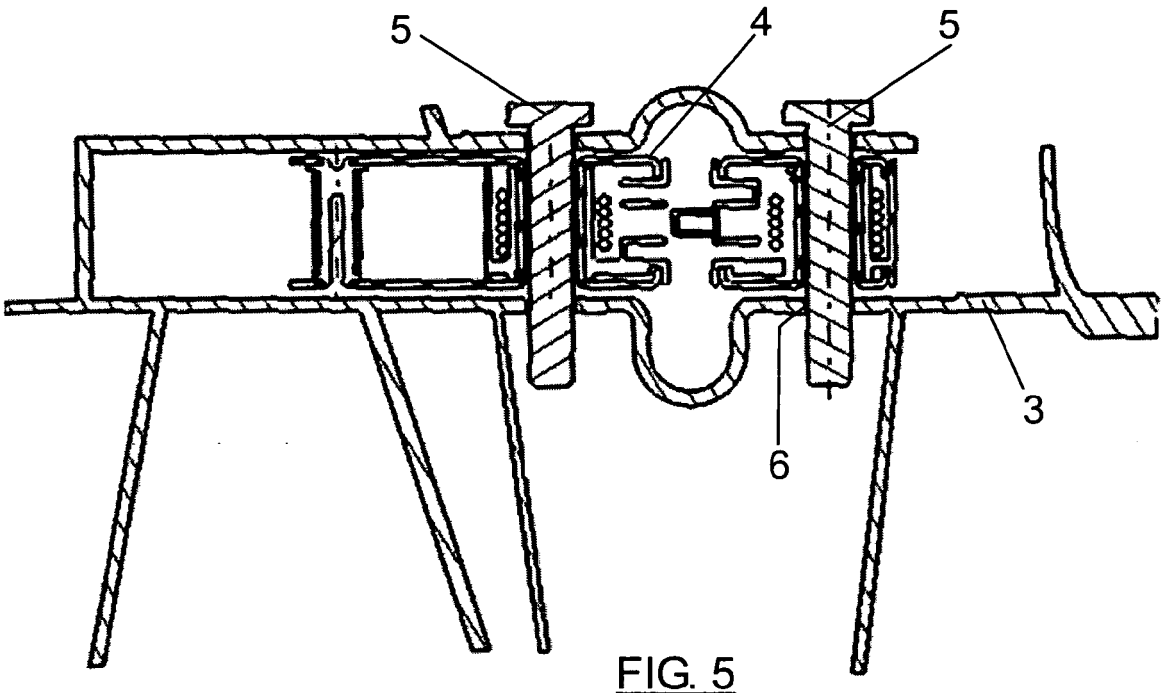

FIG. 5

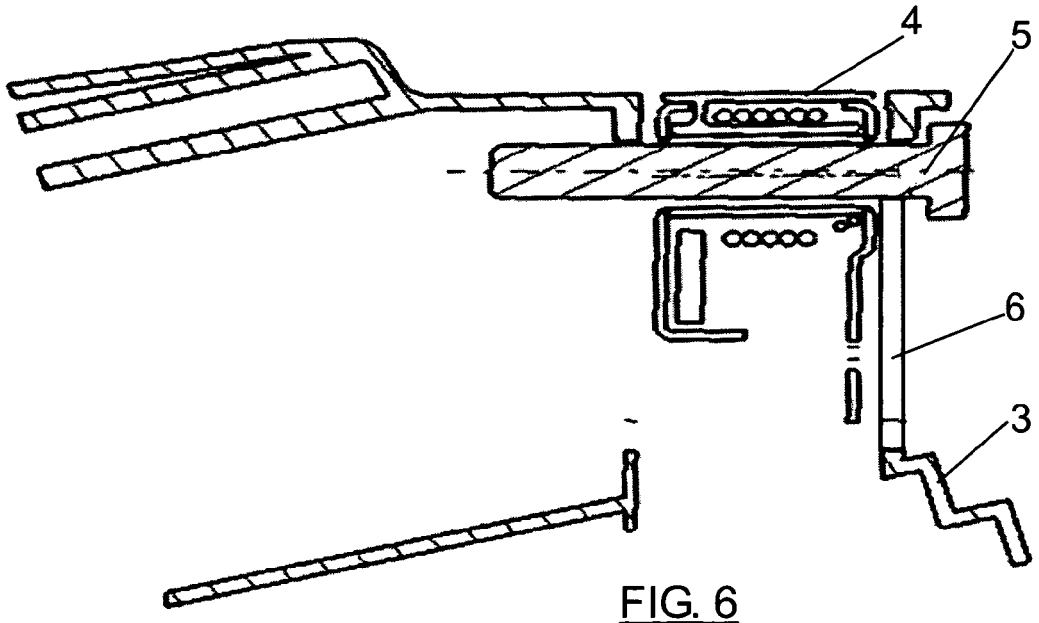

FIG. 6

FIG. 7