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**(54) A mechanical device for controlling the opening of a door**

(57) A device for controlling the opening of a door pivotally mounted on one side, in particular a door for the object containing compartment of a motor vehicle passenger's cabin, consists of two coaxial elements (18, 20) of which one is adapted for rotating about and translating along an axle (16) with respect to the other element. The first coaxial element is integral with a fixed

part of the passenger's cabin, whilst the second element is fixed for rotation with the door of the object containing compartment. The two coaxial elements are pressed one against the other by the biasing action of a spring (22).

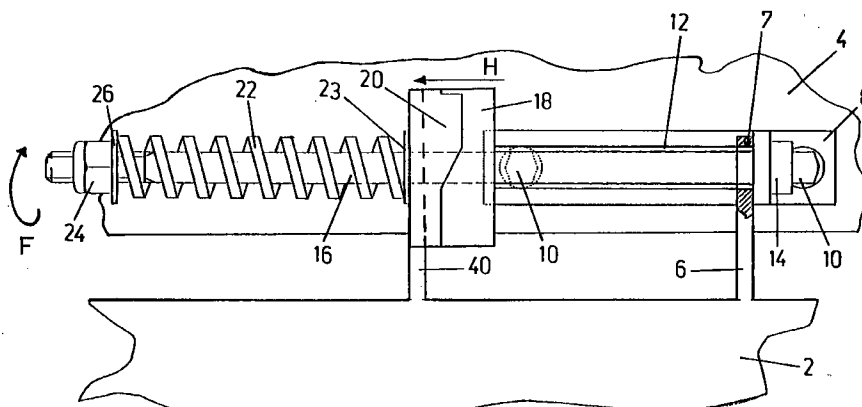


FIG. 1

## Description

The present invention relates to a mechanical device for controlling the opening of a door, in particular the door of an object containing compartment disposed on a motor-car dashboard.

A problem that is felt at present with the new arrangement of motor-cars dashboards lies in that the object containing compartment and its relevant door is located in positions where the door, when opened, falls towards the vehicle floor. This causes the door to open very quickly, rebounding on the end of stroke stopping means.

As apparent, this feature can be regarded as a drawback with high quality motor-cars, as the user often has to use his hands to let the door open gently to avoid the above cited rebound.

It is an object of the present invention to provide a device capable of overcoming the above prior art drawbacks.

In accordance with one aspect of the invention as claimed, this object is accomplished by the provision of a mechanical device for controlling the opening of a door, in particular the door of an object containing compartment disposed on a motor-car dashboard, as claimed in claim 1.

In order that the present invention may be well understood there will now be described a preferred embodiment thereof, given by way of example, reference being made to the accompanying drawings, in which:

FIG. 1 is a schematic, partially cross-sectioned view of a device in accordance with this invention applied to the door of an object containing compartment mounted on the dashboard of a motor-car; and

FIG. 2 is a perspective view to an enlarged scale of a detail of the device shown in FIG. 1.

With reference to the drawings, numeral 2 designates a door for an object containing compartment (not shown), in particular a compartment located on the dashboard 4 of a motor-car.

Door 2 is hinged, through arms 6 to hinges 8 fixed to the dashboard 4 by means of bolts 10. As shown in FIG. 1, the arm 6 is provided with a bore 7 and is inserted on a tube 12 integral with said hinge 8. The arm 6 can rotate about tube 12 in the direction of arrow F so as to allow opening and closing of the object containing compartment door.

Within the tube 12 there is inserted a bolt 14. The axle 16 of bolt 14 is disposed parallel to the fixed hinge 8 and is integral with a first coaxially disposed bushing 18, a second bushing 20 also coaxial to axle 16 being slidably and rotatably inserted thereon. The second bushing 20 is urged against the first bushing 18 by a spring 22 coaxial to axle 16 and fitted with a washer 23. Spring 22 is kept in position against bushing 18 by a

self-locking nut 24 with a relevant washer 26. Nut 24 is screwed onto the threaded end of axle 16 opposite to the end engaged by the fixed hinge 8.

As more clearly shown in FIG. 2, the two bushings 18 and 20 have front facing surfaces 26 and 28, respectively. These surfaces are designed so as to couple with each other, particularly by means of flat surfaces 30 and 32 disposed alternately on different levels and joined by joining surfaces which are alternately inclined 34 or perpendicular 36.

Bushing 20 provides a spline 38 adapted to cooperate with a finger element 40 integral with the door 2 (FIG. 1). Finger element 40 is capable of driving the bushing 20 in rotation therewith in the direction of arrow F when the door is closed, and in the opposite way when the door is opened.

Rotation of the bushing 20 is prevented by the fact that bushing 20 must slide along the inclined walls 34 away from the fixed bushing 18 in the direction of arrow F until the flat surfaces 30 engage. This translating motion along axle 16 is contrasted by the spring 22 which keeps the two bushings pressed one against the other.

The contrasting force acting when the door 2 is being opened may be adjusted at pleasure according to requirements by simply varying the characteristics of the spring 22 or selectively replacing the type of spring, or adjusting the load bearing on the spring by tightening or loosening the nut 24.

In this manner there is provided a slowing-down device being reliable with time and of low constructional cost. The position of this device with respect to the movable part (the door) and the fixed part can obviously be chosen depending on the possibility of preventing the sight of it from the outside, without falling out of the scope of the present invention.

In addition, another advantage of the device of this invention lies in that the door being closed is recalled by the action of the spring 22 when, due to rotation in the direction opposite to that of arrow F, the two inclined walls 34 come in contact again.

## Claims

1. A device for controlling the opening/closing of a door pivotally mounted on one side, in particular a door for the object containing compartment of a motor vehicle passenger's cabin, characterised in that it consists of two coaxial elements (18, 20) of which one element is adapted for rotating about and translating along an axle (16) with respect to the other element, the first of said elements being integral with a fixed part of the passenger's cabin, the second element being fixed for rotation with the door of said object containing compartment, said two coaxial elements being pressed one against the other by the biasing action of an elastic element (22).

2. A device as claimed in claim 1, characterised in that said coaxial elements are first and second bushings (18, 20) having facing surfaces consisting of planes (30, 32) alternately disposed on two different levels and alternately joined by a perpendicular plane (36) and an inclined plane (34). 5
3. A device as claimed in claim 1, characterised in that said elastic element is a spring (22). 10
4. A device as claimed in claim 1 and 2, characterised in that said second bushing is provided with a spline (38) for connecting to said door to rotate therewith. 15

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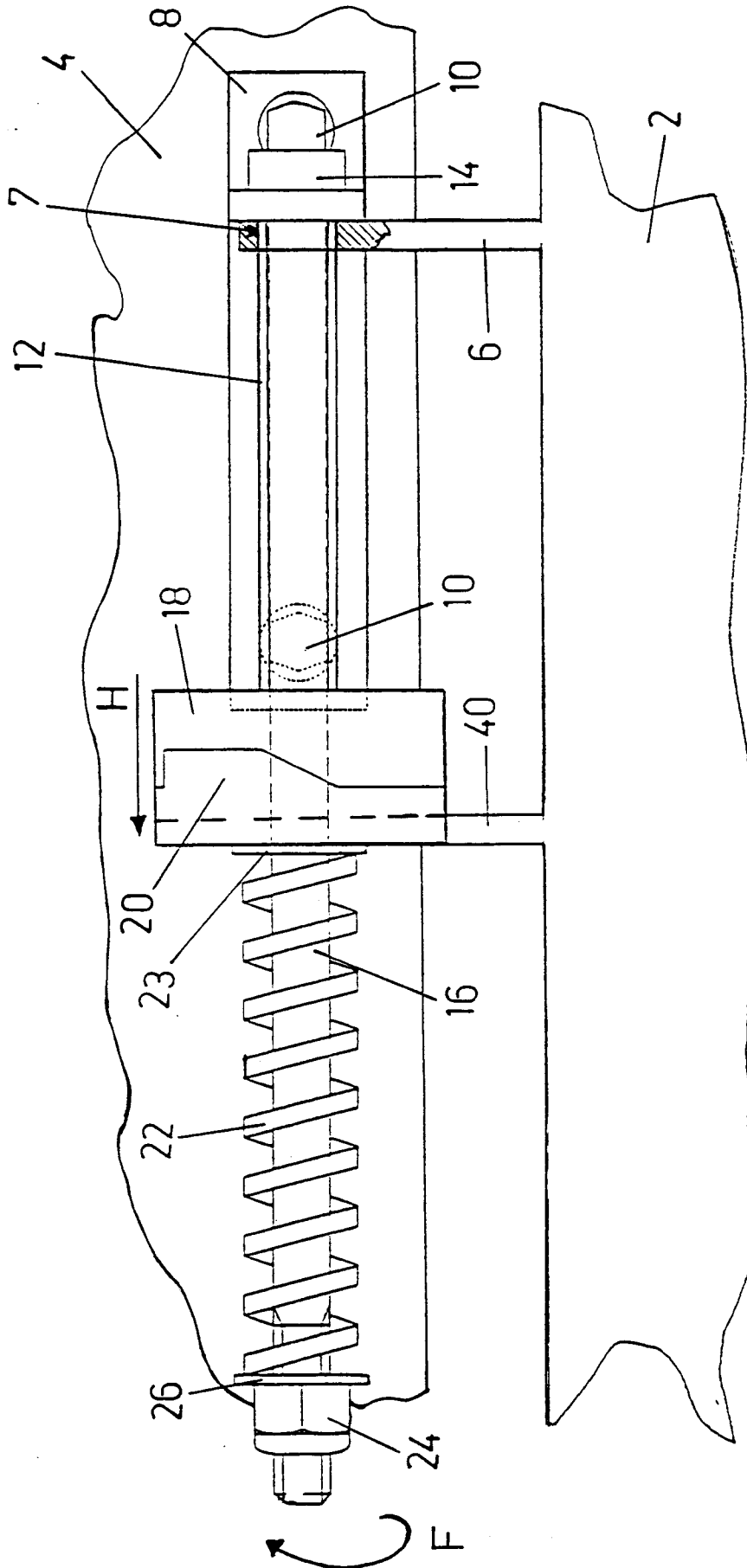


FIG. 1

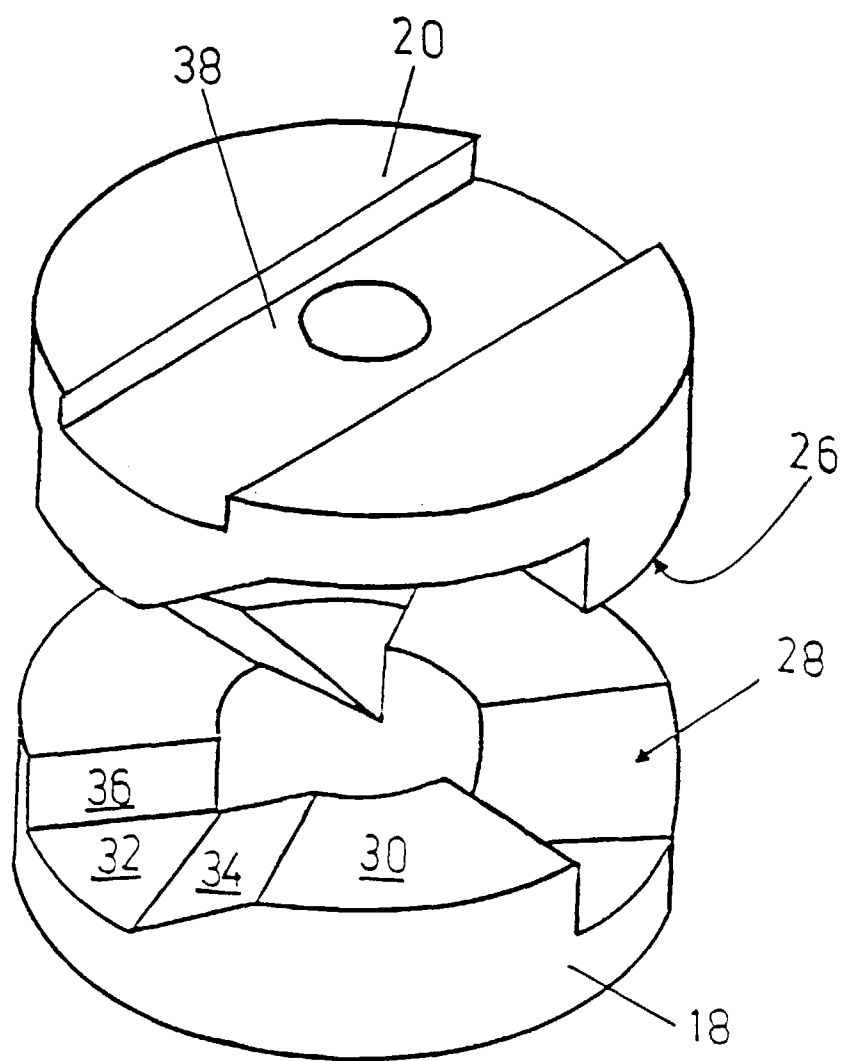


FIG. 2



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## EUROPEAN SEARCH REPORT

Application Number  
EP 97 10 6244

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.6)
X	EP 0 535 912 A (NEC CORPORATION) * column 2, line 36 - column 4, line 3; figures 1-7 *	1,3	E05D11/10
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X	EP 0 422 882 A (SUGATSUNE INDUSTRIAL CO.) * column 7, line 21 - column 9, line 26; figures 1-6 *	1-4	
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			TECHNICAL FIELDS SEARCHED (Int.Cl.6)
			E05D
The present search report has been drawn up for all claims			
Place of search		Date of completion of the search	Examiner
THE HAGUE		23 July 1997	Guillaume, G
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