

[54] **DOOR SPRING**

[76] Inventor: **Lucien Favre**, Gland, Switzerland

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[51] Int. Cl..... **E05f 1/08**

[58] Field of Search..... **16/72, 80, 145, 85, 16/129, 180, 190, 181, 182, 86 A; 74/569**

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*Primary Examiner*—Bernard A. Gelak

*Assistant Examiner*—Peter A. Aschenbrenner

*Attorney*—Raymond A. Robic

[57] **ABSTRACT**

A device adapted to return a door to its closing position after it has been opened.

The device comprises a cam adapted to be fixed on the door and a casing adapted to be fixed on the frame of the door, the casing comprises a spring exerting a force on a roller which is held in contact with the curve of the cam and means adapted to control the force of the roller on the cam, the cam and the casing being provided with means to adjustably mount them on the door and the frame.

**3 Claims, 2 Drawing Figures**

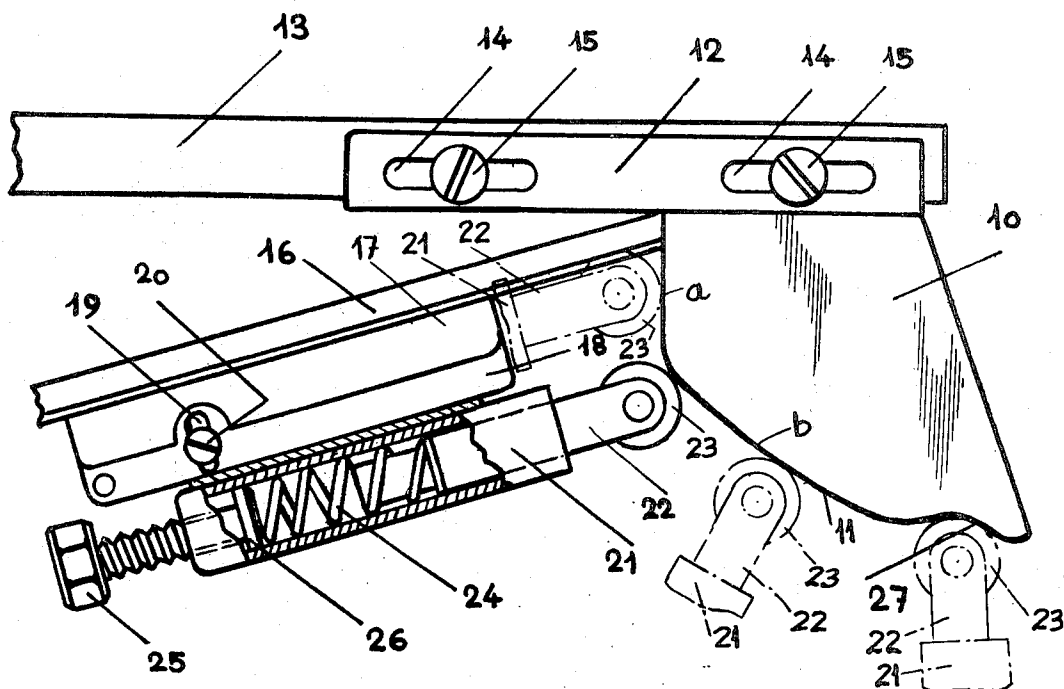


Fig 1

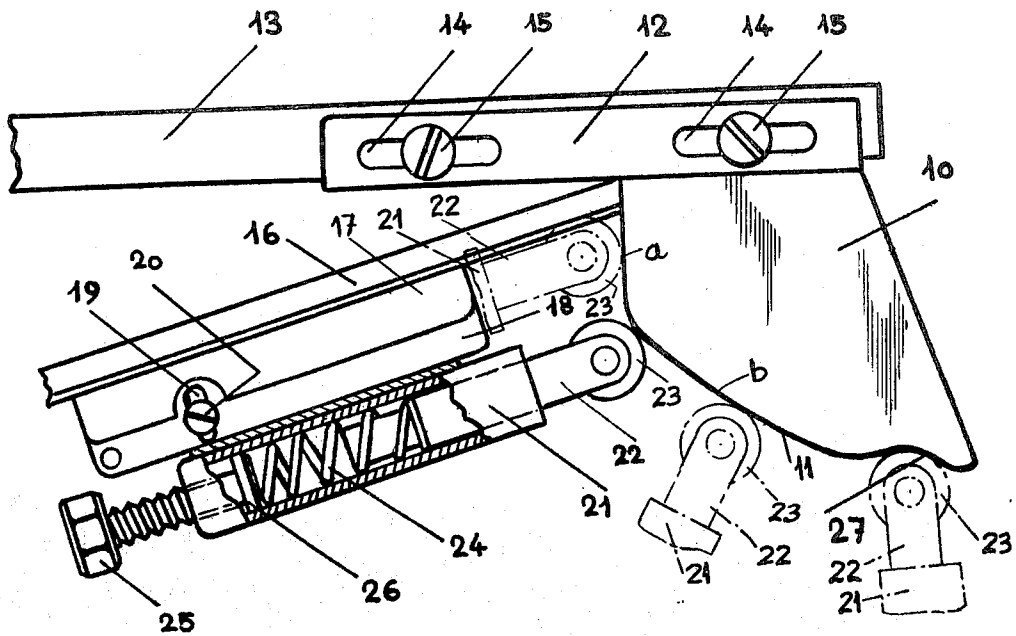
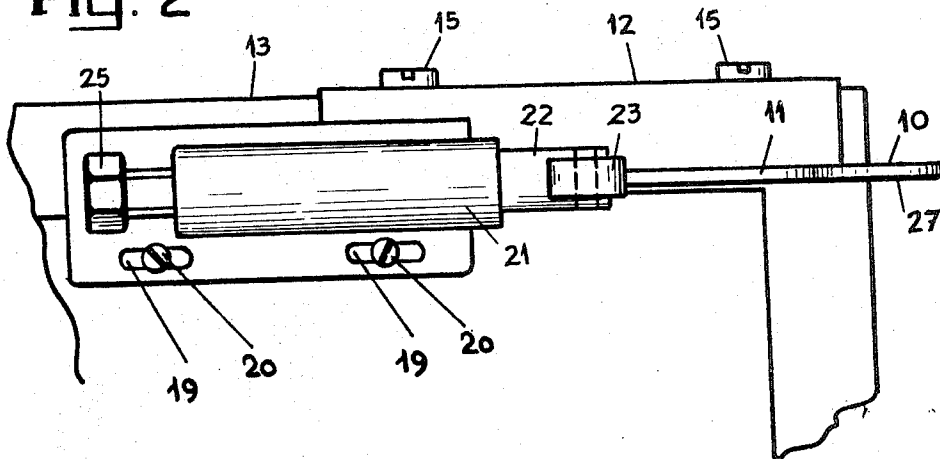


Fig. 2



INVENTOR  
Lucien FAVRE

BY

Raymond C. Robin

ATTORNEY

## DOOR SPRING

## FIELD OF THE INVENTION

The present invention relates to a door closure.

## DESCRIPTION OF THE PRIOR ART

Devices are known that bring a door back to its closed position after the latter having been opened. These devices are spring actuated and are provided with a brake system to prevent a sudden release of the spring. Such a brake system which usually uses the compression of a liquid or air requires a very precise setting. In order to obtain such a setting, complicated means must be foreseen. For this reason, the cost of these devices is rather high. Furthermore, the operation of these devices may sometimes fail when the temperatures vary considerably and in particular when these temperatures are very low. Another disadvantage of these devices consists in the fact that a light pressure on the door may cause it to open.

## SUMMARY OF THE INVENTION

An object of the present invention is to overcome the above-mentioned disadvantages.

More specifically, the invention is a door closure for closing an opening formed by a frame part and a door part swingingly connected to the frame part, this closure comprising: a cam fixed to one of the parts and having a camming edge; a follower fixed to the other part and including a follower roller and resilient means biasing the roller against the camming edge for constant application thereagainst. The aforementioned camming edge is formed, in succession, of a straight portion that extends at right angle to the said one part, a curved portion that extends in a direction away from the follower and a stop notch adapted to receive the follower roller to hold the door part in open position.

## BRIEF DESCRIPTION OF THE DRAWING

A drawing is annexed to illustrate an embodiment of the invention, wherein

FIG. 1 is a top plan view of the door closure when the door is slightly open;

FIG. 2 is a front view of the door spring mounted at the top of the door.

## DESCRIPTION OF THE PREFERRED EMBODIMENT

The door closure shown in the drawing comprises a cam 10 provided with a curved surface 11. The cam 10 is fixed by means of a metallic strip 12 in a corner located at the top of the frame 13 of the door. This strip 12 is provided with elongated slot 14 through which screws 15 are inserted to fasten the strip to the frame 13 of the door. On account of the elongated slot 14 provided in the metallic strip 12, the cam 10 may take a desired orientation relative to the frame 13 of the door and then rigidly fixed by means of the screws 15 on the said frame. The leaf 16 which is swingingly mounted in the frame of the door by some known means, is provided with a strip 17 in which is fixed a support 18 provided with means which cooperate with the cam 10. The support 18 is provided with slots 19 through which the screws 20 pass to rigidly secure the strip 17. The elongation of the slots 19 enables the support 18 to take a variety of orientations over the strips 17 carried by the leaf 16.

The support 18 carries follower assembly formed of a casing 21 in which is located a roller holder 22 and a roller 23 extending outside the casing 21. The roller holder 22 is under the action of a force exerted by a spring 24 located inside the casing 21. The end of the casing 21 opposite the roller 23 is provided with a threaded hole through which is mounted a setting screw 25. The screw 25 is adapted to exert a pressure on a small plate 26 which is in contact with the spring 24. When the setting screw 25 is rotated, the force exerted by the spring may be controlled.

The roller 23 is located in such a way as to come in contact with the curved surface 11 of the cam 10. The pressure at which the roller 23 is applied against the curved surface 11 of the cam 10 may be varied and adjusted by means of the setting screw 25.

The curved surface 11 is provided at the end of the path of the roller 23, with a notch 27 in which the roller 23 can be lodged. In this position, the leaf remains open and the door does not close by itself by means of the door closure.

The operation of the door closure, as described above, is as follows:

When the leaf 16 is open, the roller 23 moves from a straight surface *a* of the camming surface 11 to a surface *b* curving in the direction of opening of the door. The roller is pushed inwardly of the housing 21 by the cam 10 and against the pressure exerted by the spring 24. As soon as the pressure exerted on the leaf stops, the latter is brought back to its closing position by means of the door spring. For this purpose, the spring applies a pressure against the roller holder 22 and this pressure is transmitted by means of the roller 23 on the camming surface 11 of the cam 10. The closing of the leaf 16 takes place in such a way that as long as the roller 23 rides on the curved surface *b*, the door closes relatively slowly. But as soon as it comes in contact with the straight surface *a*, extending substantially at right angle to the door frame 13, the door closes rather abruptly ensuring complete closure thereof. Once the door is closed, it will not open by itself.

The pressure which is necessary to open the door may be controlled by means of the setting screw 25. The position of the cam 10 which is also adjustable, also influences the pressure with which the leaf 16 is applied against the frame 13. As stated above, the various parts of the door closure may be fixed to the frame 13 of the door and to the leaf 16 in such a way that they may be moved and adjusted as well as solidly fixed in a desired position.

Every part of the door closure which constitute the above-described embodiment are simple to manufacture. This lowers its cost as compared to the known devices.

An alternative embodiment of the above-described invention would consist in that the cam with its camming surface 11 be fixed to the leaf 16. The support 18 as well as the parts cooperating with the cam 10 would then be fixed to the frame 13 of the door.

I claim:

1. A door closure for closing an opening formed by a frame part and a door part swingingly connected to said frame part, said closure comprising:

- a. a cam fixed to one of said parts and having a camming edge;
- b. a follower fixed to the other part and including a follower roller and resilient means biasing said

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roller against said camming edge for constant application thereagainst, and  
c. wherein said camming edge is formed, in succession, of a straight portion extending at right angle to said one of such part, a curved portion extending in a direction away from said follower and a stop notch adapted to receive said follower roller to hold said door part in open position,  
whereby, when said door part moves from open to closed position, said biased roller first rides on said curved portion to force said door to close relatively slowly and then rides on said straight portion to allow said door part to move abruptly towards said frame part to ensure complete closure.

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2. A door closure as claimed in claim 1 wherein said cam is fixed to said frame part and means so fixing it as to allow displacement of said camming surface with respect to said follower roller.  
3. A door closure as claimed in claim 2 wherein said follower is fixed to said door part and comprises a casing, a roller holder rod slidably received in said casing to which said follower roller is mounted and a spring in said casing biasing said rod and roller outwardly against said camming edge, and means fixing said casing to said door part adjustably in longitudinal direction whereby said casing may be displaced longitudinally to vary the biasing pressure acting on said roller.

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