(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) EP 0 690 428 A1

(12) EUROPEAN PATENT APPLICATION

(43) Date of publication:
03.01.1996 Bulletin 1996/01

(51) Int. Cl.[6]: **G09F 7/22**, G09F 3/20, G09F 1/12

(21) Application number: **94830325.0**

(22) Date of filing: **30.06.1994**

(84) Designated Contracting States:
CH DE DK ES FR GB IT LI PT SE

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(54) Swinging frame for exposing messages along passageways

(57) A feathering frame (1) for holding printed messages having an inclined-axis hinge (2,6) for favouring the return of the feathering frame (1) to a flag-like rest position after having been accidentally or intentionally rotated, has improved monostable characteristics imparted by an unrestrained abutment between opposed inclined surface (2',8) of the hinged frame (1) and of the supporting bracket (3), forced elastically along the axis of rotation of the hinge. Upon rotation off the rest position, the abutting surface of the hinged frame (1) lifts one side off the rest surface of the bracket (3), establishing a point of abutment that may evolve along an arc on the rest surface. This determines an unstable out-of-axis abutment. The moment-of-force retains an effective arm as long as a substantial parallel abutment between the two opposed surfaces is restored.

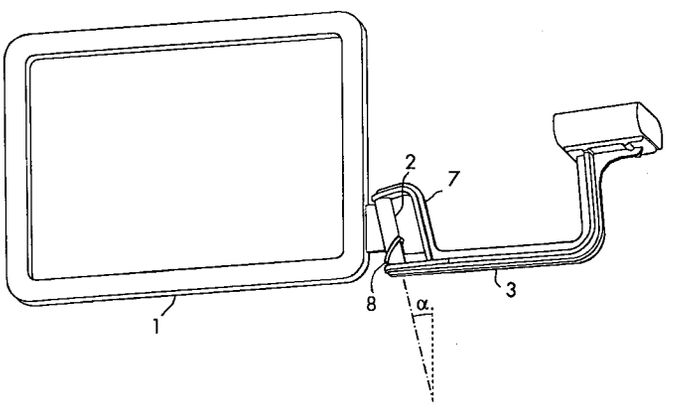

FIG. 3

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Description

The present invention relates to a feathering frame for holding printed signs and/or messages, having improved monostability characteristics of its flag-like rest position.

In modernly equipped retail sale outlets, especially though not exclusively designed as self-service shops, as well as in libraries, stores and similar environments, it is often required to display visual messages and/or printed information along the shelves (either having a promotional character or an addressing and/or indexing function) in a flag-like position, that is such a way as to make them visible at a distance from observation points along an axis parallel to the longitudinal extent of the shelves (that is of the passageway between parallel shelves).

Inevitably these message bearing frames must extend perpendicularly to the face of the shelves, projecting into the passageway. For this reason they must preferably be mounted in a feathering manner so as not to constitute dangerous impediments to the free movement of people along the shelves.

For performing their function, the message bearing frames should automatically return to a rest position perfectly normal to the face of the shelf, following any accidental or intentional swinging (rotation) from such a functional (rest) position.

On the other hand, feathering frames to be used in large numbers in shops selling foodstuff must combine low cost, durability and washability properties. This last requirement is dictated by hygienic considerations and should be satisfied by structures that can be washed and hygienized by immersion in detergent and/or bactericide solutions. This requirement makes most of the known monostable pivoting mechanisms composed by springs, cams and metallic pins hardly suitable. Preferably, the entire structure should be of a non-corrodible, moldable plastic material for reducing also the manufacturing cost.

So far, the renounce to use metal hardware has implied a substantial renounce to a truly monostable mode of operation of the pivoting mechanism of the feathering frame onto a supporting bracket.

Generally, the known structures employ an inclined-axis hinge so that, when the frame is accidentally or intentionally swung on one side or the other from its natural rest position normal to the shelf's face, its centre of gravity describes an arc in space which brings it to rise to a higher level. By gravity, the hinged frame will tend to return to its flag-like rest position, which corresponds to the lowest level that may be assumed by its centre of gravity.

This simple system often reveals itself insufficient to ensure the return of the feathering frame to a perfectly flag-like position because of the relative light weight of the frames themselves (a characteristic that it's hardly renounceable for other obvious reasons) and of the friction in the hinge that is commonly formed by a pin and by a tubular (female) socket, both of plastic. Substantially, the inclined-axis in hinge used in the known structures does not ensure a truly monostable mode of operation; rather it provides for an equilibrium position more or less close to a perfectly flag-like position of the swinging frame.

It has now been found and is the object of the present invention a hinging system that though not requiring the use of any metallic hardware is capable of providing a truly monostable mode of operation thus ensuring the return to a certain and perfectly flag-like position of the hinged frame.

Also the special hinge of the invention relies on an inclination of the axis of rotation with regard to the vertical axis so as to cause a rising of the centre of gravity of the feathering frame pursuant a rotation of it in either direction from a flag-like rest position. On the other hand, the female (tubular) part of the hinge, which may be solidly connected to the feathering frame, bears on an inclined abutment surface of the sustaining arm or bracket, substantially free of any mechanical restraint upon a reciprocal movement of the two abutting surfaces. Basically, the resting bottom surface of the female part of the hinge (rigidly connected to or integral with the feathering frame) is free to rotate while lifting one side or the other, off the inclined supporting surface through an evolving motion, thus establishing a point of abutment that may shift over the inclined surface of the supporting bracket by describing a certain arc on it, because essentially there isn't any restraint to the reciprocal movement between the two abutting surfaces.

On the other hand, the tubular (female) part of the hinge that is solidly connected to the feathering frame is engaged along an inclined axis of rotation that is incident on said inclined rest surface, by a pin, formed at the extremity of an arm extending from the sustaining bracket of the frame. Preferably this pin-terminated arm has an arcuate form and possesses elastic memory characteristics sufficient to exert a certain elastically compressive force on the female part, the bottom end of which rests on the inclined surface of the sustaining bracket, at least pursuant a lifting of one side or the other of the abutting bottom surface of the female part of the hinge, off said inclined rest surface.

The freedom of the point of abutment of the bottom surface of the female part of the hinge (solid with the feathering frame) to evolve on the inclined rest surface of the bracket and the elastically contrasting force exerted on the abuting surfaces by the flexible arm that carries the inclined pin of the hinge, concur to determine a substantially monostable rest position of the oscillating frame, in a perfectly flag-like position.

In fact, the rotation of the feathering frame induces an evolution/rotation of the bottom surface of the female part of the hinge on the inclined abutment surface of the sustaining bracket so as to determine an unstable (out-of-axis) abutment along a perimetral edge of the abutment surface of the female part of the hinge, on which the arm bearing the pin of the hinge exerts an elastic contrasting force. This forces the return to a stable abutment condition between the two surfaces,

in practice to a parallel position of the opposed abutting surfaces and to a substantially "coaxial" abutment with regard to the pivoting axis of the hinge.

Figure 1 shows a feathering frame provided with a tubular (female) part of an inclined-axis hinge;
Figure 2 shows a configuration of the supporting bracket of the feathering frame of Figure 1;
Figure 3 is an assembled view of the feathering frame installed on the relative sustaining bracket.

With reference to Figure 1, the message holding frame may comprise a rectangular frame 1 of a plastic material, having a tubular (female) part 2 of a hinge that can be integrally formed with the rectangular frame 1 or otherwise solidly fastened to it. The axis of the tubular hinge body 2 may have a certain angle of inclination α with regard to a vertical side of the rectangular frame 1. The lower face 2' of the tubular part of the hinge 2 has a certain angle of inclination β with regard to a horizontal plane. The two angles α and β may also be identical, but this is not a necessary condition and in particular the angle β may also be larger or smaller than the angle α. Commonly the angle α may be comprised between 10° and 15°, while the angle β may be comprised between 45° and 75°.

In Figure 2 is shown a sustaining bracket 3, which may be provided with clip means 4 for mounting on a magnetic block 5 or with suitable anchor plates that can be fastened to a shelf or to a wall.

The pin 6 of the hinge is carried by an arcuate arm 7 which extends from the support bracket 3. The inclined axis of the pin 6 is incident on a rest surface 8, which may be substantially flat and inclined by an angle β with regard to a horizontal plane.

The mounting of the feathering frame is carried out by forcibly shifting the arm 7 sufficiently to permit to slip the tubular part 2 of the hinge over the pin 6.

Having done this, the assembly presents itself as depicted in Figure 3.

The arcuate arm 7 has a certain elastic memory and may be able to exert a certain contrasting force on the tubular part 2 of the hinge to keep the inclined terminal face 2' of the tubular part 2 of the hinge abutting flat on the inclined surface 8 of the supporting bracket 3 also when the frame 1 is in a rest position.

When the hinged frame 1 is rotated in either side off its stable rest position (flag-like position), beside lifting its centre of gravity because of the inclination of the pivoting axis of the hinge with regard to the vertical axis, the lower face 2' of the tubular part 2 undergoes an evolving movement by lifting one side off abutment with the rest surface 8 thus bearing on the inclined rest surface 8 of the support arm 3 with one point of its elliptical perimeter in opposition to a contrasting elastic force exerted by the arcuate arm 7 of the pin 6 of the hinge.

The elastic force exerted by the arm 7 determines a moment-of-force or torque about the point of abutment between the two surfaces which forces the hinged frame 1 to return to a rest position so as to re-establish a stable flat abutment of the lower face 2' of the tubular part 2 of the hinge on the inclined surface 8 of the support bracket 3 (i.e. nullification of the moment-of-force).

Therefore, the device of the invention combines with the moment-of-force caused by the inclination of the pivoting axis of the hinge, and therefore by the lifting upon rotation of the centre of gravity of the hinged frame, a moment-of-force determined by the contrasting elastic force exerted by the arm 7 about the out-of-axis abutment point between a bottom edge of the tubular part 2 of the hinge and the inclined surface 8 of the supporting bracket.

On the other hand, while the "arm" of the resetting moment-of-force caused by the lifting of the centre of gravity of the hinged frame 1 tends to diminish progressively until making the residual moment-of-force comparable to the resistant friction force of the hinge, the second moment-of-force that is determined by the elastic force exerted by the arcuate arm 7 retains an "arm" lenght that is perfectly effective as long as the returning of the abutting surfaces 2' and 8 to a mutually parallel position is not complete. This ensures a characteristic of substantial monostability of the rest position and therefore the return to it after any swinging of the hinged frame 1 off its rest position (flag-like position of the frame).

Claims

1. A feathering frame for holding messages comprising a message holding frame (1) hingedly mounted on a supporting bracket (3) by an inclined-axis hinge (2, 6) for favouring the return of the frame (1) to a flag-like rest position pursuant a forced rotation thereof by gravity, characterized by the fact that said inclined-axis hinge comprises an unrestrained abutment between opposed inclined surfaces (2', 8) of the hinged frame (1) and of the supporting bracket (3) respectively, elastically forced along the axis of the hinge.

2. A feathering frame as defined in claim 1, wherein the female part (2) of the hinge is integral to the hinged frame (1) and is engaged by a pin (6) connected to the supporting bracket (3) by an elastic arm (7) capable of exerting said elastic force on said abutment.

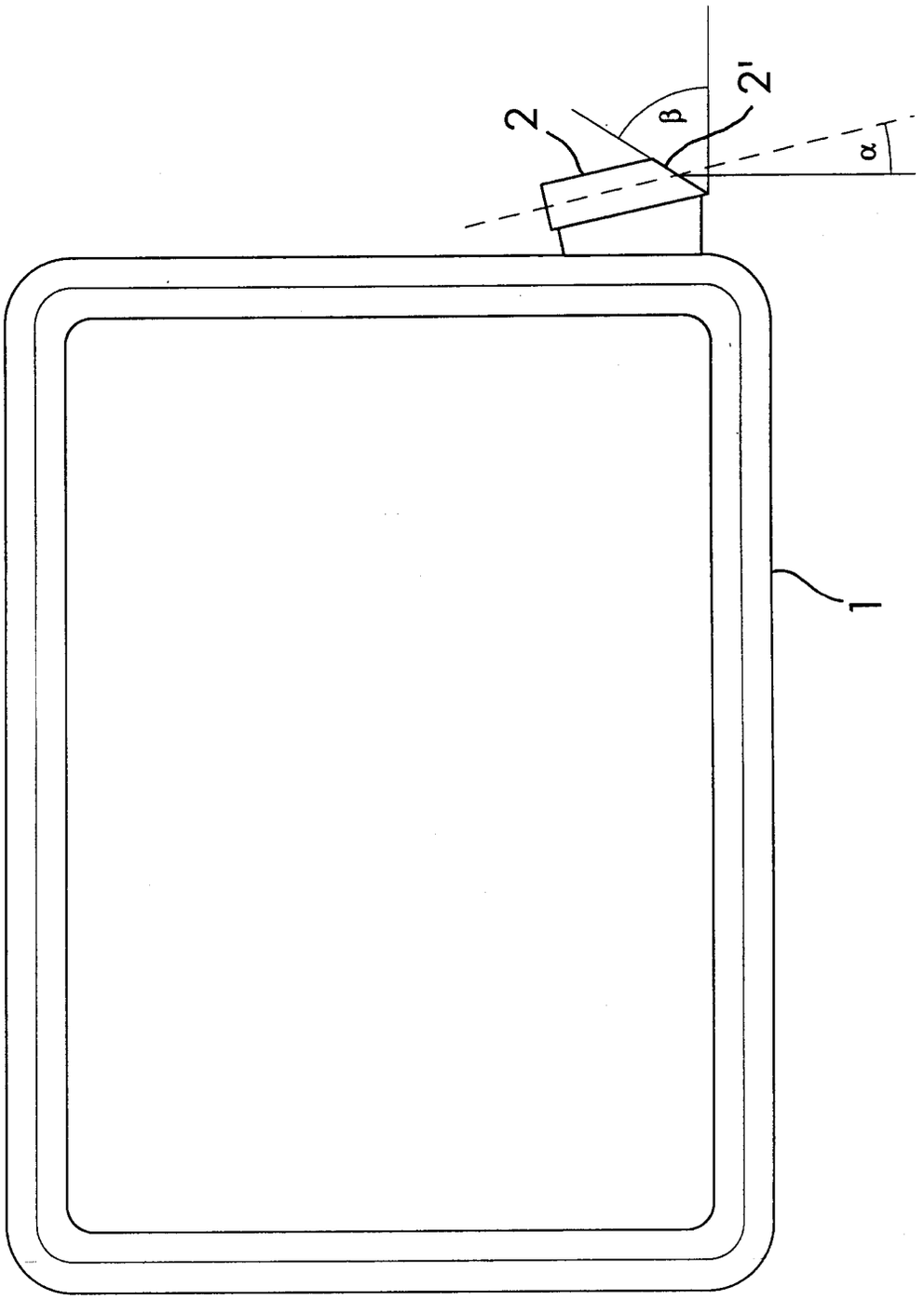

FIG. 1

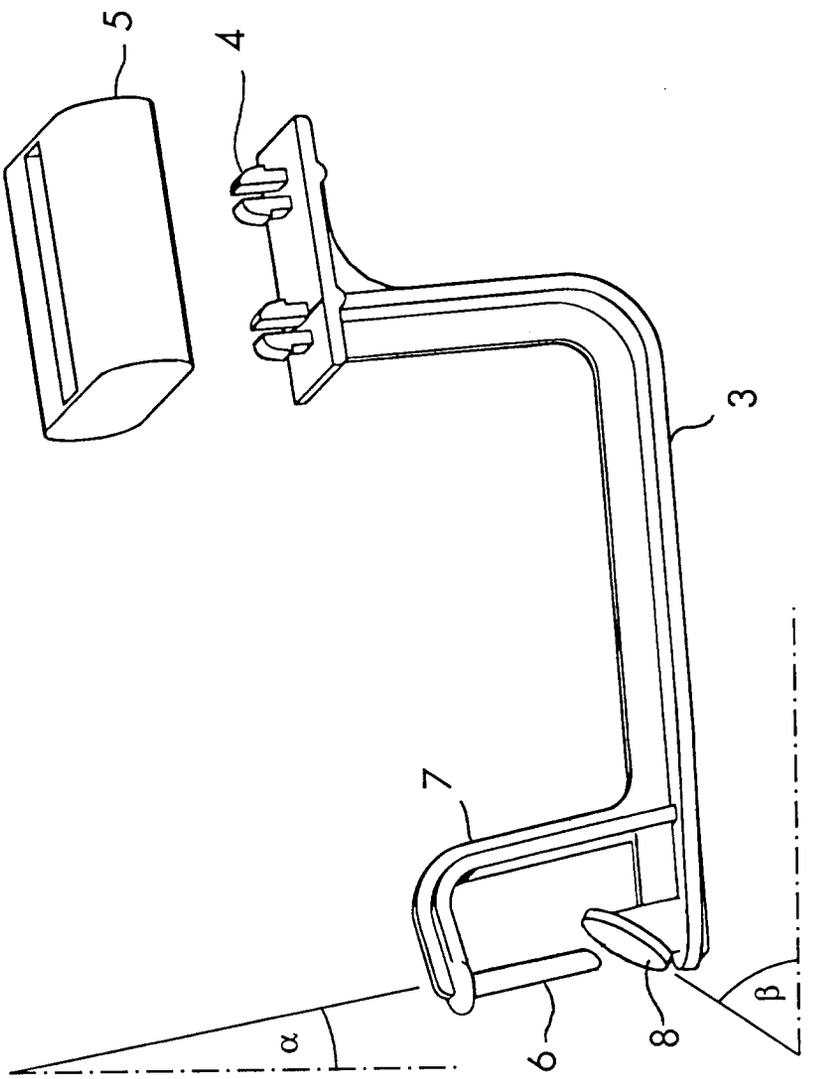

FIG. 2

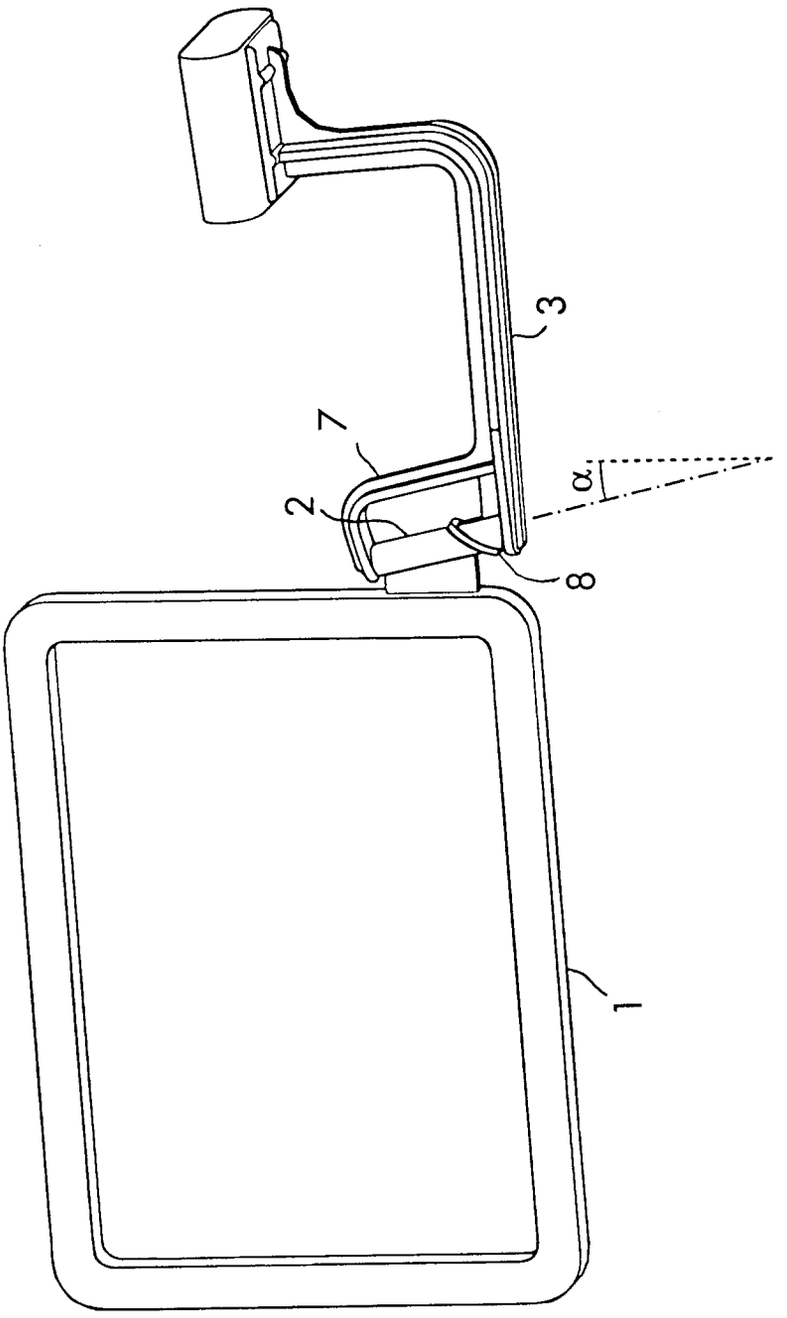

FIG. 3

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EUROPEAN SEARCH REPORT

Application Number
EP 94 83 0325

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)
A	US-A-4 805 331 (C. BOGGESS ET AL.) ---		G09F7/22 G09F3/20
A	FR-A-2 640 789 (G. BEGHELLI SRL) ---		G09F1/12
A	US-A-4 909 464 (S. LEVINE) -----		

TECHNICAL FIELDS SEARCHED (Int.Cl.6)

G09F

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	15 November 1994	Gallo, G

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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