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

(11) Publication number: **0 357 583 A1**

(12) # EUROPEAN PATENT APPLICATION

(21) Application number: **89870131.3**

(51) Int. Cl.[5]: **A 47 G 1/18**

(22) Date of filing: **28.08.89**

(30) Priority: **30.08.88 BE 8800985**

(43) Date of publication of application:
07.03.90 Bulletin 90/10

(84) Designated Contracting States:
AT BE CH DE ES FR GB GR IT LI LU NL SE

(71) Applicant: **LINEAIR**
D'Aumalestraat 132
B-1070 Brussels (BE)

(72) Inventor: **van Waeyenberge, Marie-Magdalena**
Kasteelstraat 45
B-1710 Dilbeek (BE)

(74) Representative: **Callewaert, Jean et al**
Bureau Gevers S.A. rue de Livourne 7 bte 1
B-1050 Bruxelles (BE)

(54) **A frame provided with a suspension system.**

(57) A frame provided with a suspension system which comprises a wire having a substantially loop shaped profile, which wire is resilient and bent back on two extremities and the frame being provided with at least two notches, in such a manner that the bent extremities of the wire grasp hingedly into the notches.

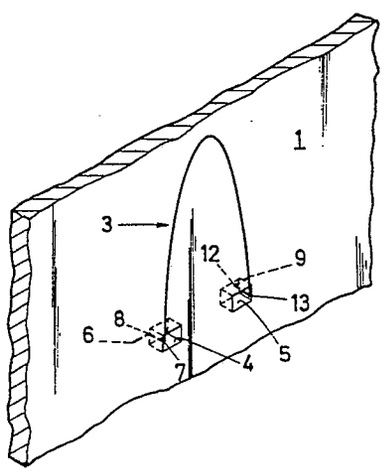

Fig.2.

EP 0 357 583 A1

Description

A frame provided with a suspension system.

The invention relates to a frame provided with a suspension system which comprises a wire having a substantially loop shaped profile.

Frames suitable for hanging a portrait, a mirror or the like, are generally known. Such frames are provided with a suspension system, usually a metal wire or a rope which is bent according to a mainly loop shaped profile. This suspension system is mostly fixed by means of one or more nails or screws to the frame or, when the frame is provided with a carrier sheet, screwed or glued to that carrier sheet.

A drawback of the known suspension systems using screws or nails consists in that they are not very aesthetic, often cause damages to the frame, and furthermore they are only appropriate for large frames. Suspension systems which are glued to the carrier sheet are little reliable and vulnerable.

A further drawback of the known suspension systems is that the mounting of the latter is laborious and requires a high accuracy. Further, the use of screws or nails causes unaesthetic projections.

It is an object of the invention to realize a frame with an easily mountable, aesthetic and reliable suspension system.

To this end, a frame according to the invention is characterized in that the wire is resilient and bent back on two extremities and in that the frame is provided with at least two notches, in such a manner that the bent extremities of the wire grasp hingedly into the notches. Since the wire is resilient, it can be easily mounted by hand into the frame for example by squeezing it somewhat together. Making these notches does not require laborious operations and can thus be executed easily, cheap and on a large scale. The suspension system is reliable and it is fastened very well to the frame, since the bent extremities hinge into the notches. Further, the hinged wire can be made fairly thin as a result of which the cross section of the notches must not be large, all this then results into an aesthetic suspension system.

A preferred embodiment of a frame according to the invention is characterized in that at each of said bent extremities, the wire comprises a first bending which is substantially at right angles to the part of the profile situated there, and also a second bending at a small distance from the first bending, which second bending is substantially at right angles to the wire portion between the first and the second bending.

The wire portion forms a support upon which the frame rests, whereas a wire portion, following the second bending, serves as fixation for fixing that suspension system.

A further preferred embodiment of a frame according to the invention is characterized in that said second bendings are bent in such a manner with respect to the V-shaped profile, that a first line through a first extremity of the wire portion and substantially parallel to a first leg of the V-shaped profile and a second line through a second extremity of the wire portion and substantially parallel to a second leg of the V-shaped profile cross each other, and that the angle between that first and that second line is a sharp angle. This improves a hinged working.

Preferably, the frame comprises a carrier sheet and said notche is formed by a boring in the carrier sheet. A boring can easily be formed. Moreover, due to the use of a boring, the bent portions of the wire can completely be sunk into these borings so that the suspension loop can entirely rest against the carrier sheet. So, there are not caused any disturbing projections on the back of the frame.

Preferably, the frame is provided with four notches, a first system of two notches being situated on a first line and a second system, formed by two further notches, being situated on a second line and said first and second line being substantially perpendicular to each other.

Further particularities of the invention will now be described with reference to the drawing wherein :

Figure 1 shows the back of a frame according to the invention;

Figure 2 shows a perspective view of the wire of the suspension system;

Figure 3 illustrates the bending of the suspension wire;

Figure 4 shows the back of a frame according to the invention wherein two systems of notches and two suspension wires are provided.

In the drawings, a same reference number is assigned to the same or corresponding elements.

The back of a frame according to the invention and illustrated in Figure 1, comprises a framework 2 which encloses a carrier sheet 1. In that carrier sheet, two notches 4 and 5 are provided in which a wire 3 is hingedly fixed.

The wire 3 has a mainly loop shaped, but preferably V-shaped profile, and is part of the suspension system of the frame. Since the wire is resilient, it can be easily applied in the notches for example by squeezing both legs of the V-profile towards each other. The resilient character of the wire causes the latter to stick firmly in the notches 4 and 5. Preferably, the extremities of the wire are sunk into the notches in such a manner that the wire can rest against the carrier sheet.

The notches are preferably formed by cylindrically or ovally shaped borings in the carrier sheet. Such borings can easily and mechanically be made into the carrier sheet, for example by punching or drilling. As shown in Figure 4, the carrier sheet can also comprise two systems of notches 4, 5; 14, 15, each provided with a wire 3, 16, for example used for a rectangular frame in order to be able to hang this as well in the longitudinal as in the transversal direction. The distance between the centres of the notches is situated between 2 and 3 cm, but is preferably equal to 2,5 cm. The notches are situated on one line which is substantially parallel to a side of the framework

and which extends on approximately 1/3 of the carrier sheet in the longitudinal or transversal direction

Making notches in the carrier sheet by drilling is only a preferred embodiment. It will be clear that there are other possible embodiments for coupling the wire 3 and the framework 2 to each other.So it is for example possible for small frames, to make the notches into the framework itself or on a small projection which is therefor applied to the framework or to the carrier sheet.

Regarding the profile of the wire, there are also several possible embodiments. So, the wire can for example have an omega profile or it can be designed in such a manner that it is snapped into the notches by stretching it somewhat out instead of by squeezing it together.

The wire 3 is bent outwards at its extremities, as illustrated in Figure 2 or 3. Each of the extremities has preferably two bendings. A first bending 7 is substantially at right angles to the part of the profile situated there. A second bending 8, situated at a small distance from the first bending 7, is substantially at right angles to the wire portion between the first and the second bending (in the further description referred to as first wire portion). That first wire portion has a length corresponding to the thickness of the carrier sheet. As a result of this, it is possible that the second wire portion, between the end portion 6 and the second bending 8, grasps upon the inner side of the carrier sheet.

When the loop shaped profile now rests against the outer side of the carrier sheet, then the first wire portion is located in the notch, whereas the second wire portion rests against the inner side of the carrier sheet. During a hinged movement wherein the wire loop hinge away from the outer side of the carrier sheet, the second wire portion moves against the inner side of the carrier sheet. At this movement, the first wire portion creeps from the notch to the inner side of the carrier sheet, whereby the end portions of the loop enters into the notches. When the loop is at right angle to the carrier sheet, then both the first and the second wire portion rests on the inner side of the carrier sheet. The suspension system according to the invention allows thus a large hinging movement and there exists always a good connection between the wire and the carrier sheet, for each possible position of the loop during the hinging movement.

The fact that the first wire portions are sunk into the notches results in that the loop can completely rest against the carrier sheet as a result of which there do not arise unaesthetic projections.

The second wire portions are bent in such a manner, at their second bendings 8, with respect to the V-shaped profile of the wire, that a first 10, respectively a second line 11 through the endpoint 6, respectively 9, and substantially parallel to the corresponding leg of the profile, cross each other according to a sharp angle as shown in Figure 3. Due to this shape of bending, the second wire portion always remains nicely at rest against the inner side of the carrier sheet during the hinging movement.

Claims

1. A frame provided with a suspension system which comprises a wire having a substantially loop shaped profile, characterized in that the wire is resilient and bent back on two extremities and in that the frame is provided with at least two notches, in such a manner that the bent extremities of the wire grasp hingedly into the notches.

2. A frame as claimed in claim 1, characterized in that at each of said bent extremities, the wire comprises a first bending which is substantially at right angles to the part of the profile situated there, and also a second bending at a small distance from the first bending, which second bending is substantially at right angles to the wire portion between the first and the second bending.

3. A frame as claimed in claim 2, characterized in that said extremities are outwardly bent with respect to said profile.

4. A frame as claimed in one of claims 2 or 3 wherein the loop of the loop shaped profile presents a substantially V-shape, characterized in that said second bendings are bent in such a manner with respect to the V-shaped profile, that a first line through a first extremity of the wire portion and substantially parallel to a first leg of the V-shaped profile and a second line through a second extremity of the wire portion and substantially parallel to a second leg of the V-shaped profile cross each other, and that the angle between that first and that second line is a sharp angle.

5. A frame as claimed in one of claims 2, 3 or 4, characterized in that said wire portion between the first and the second bending has a length corresponding to the thickness of a carrier sheet belonging to the frame.

6. A frame as claimed in any one of claims 1 to 5 wherein said frame comprises a carrier sheet, characterized in that said notch is formed by a boring in the carrier sheet.

7. A frame as claimed in claim 6, characterized in that the notches are collinear on a line which is substantially parallel to a side of the frame and which extends in the carrier sheet on approximately 1/3 in longitudinal or lateral direction.

8. A frame as claimed in one of claims 6 or 7, characterized in that the notches are provided on a predetermined distance from each other.

9. A frame as claimed in any one of claims 6 to 8, characterized in that the notches are oval or cylindrically shaped and in that the distance between the centres of these notches is comprised between 2 and 3 cm.

10. A frame as claimed in any one of claims 1 to 9, characterized in that the frame is provided with four notches, a first system of two notches being situated on a first line and a second system, formed by two further notches, being

situated on a second line and said first and second line being substantially perpendicular to each other.

11. A frame as claimed in claim 10, characterized in that each system of notches is provided with a resilient wire which presents mainly a loop shaped profile and which is bent back on two extremities.

12. A suspension wire for use in a frame as claimed in any one of claims 1 to 11, characterized in that said suspension wire is resilient, presents a substantially loop shaped profile and is bent back on two extremities.

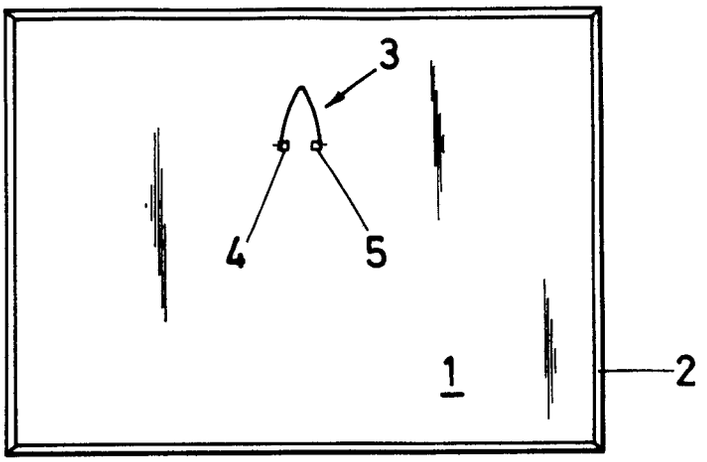

Fig.1.

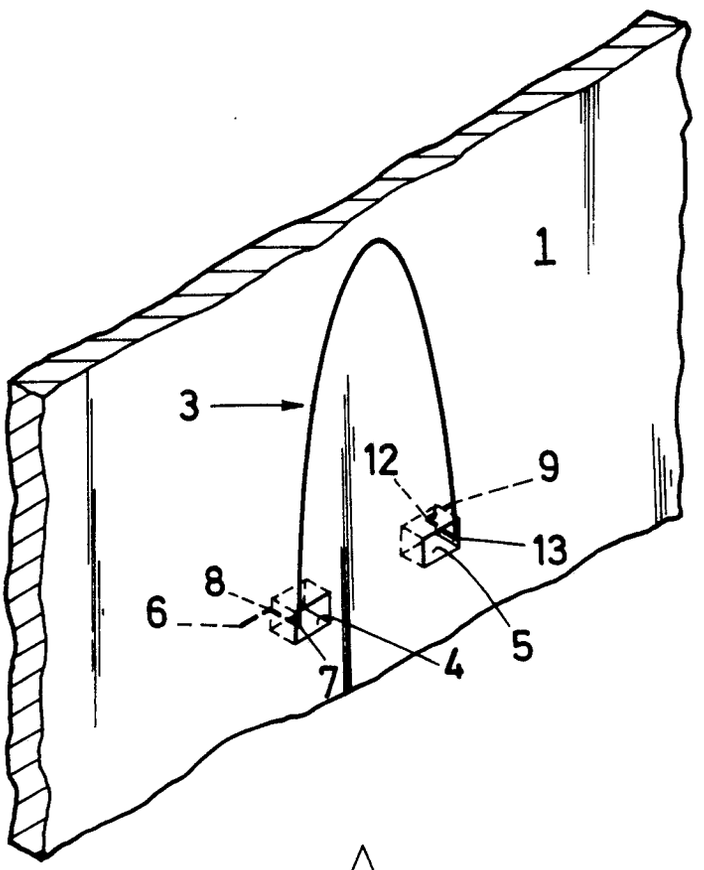

Fig.2.

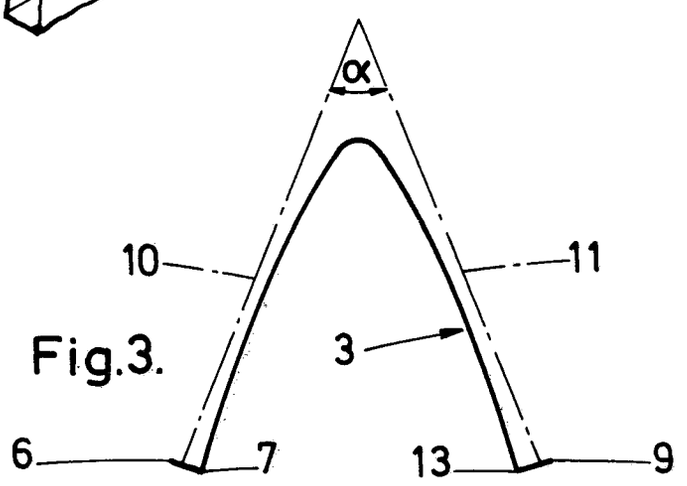

Fig.3.

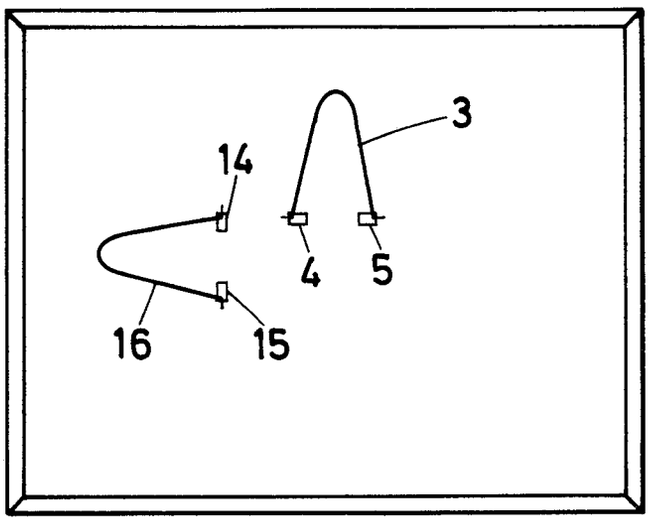

Fig.4.

European Patent Office

EUROPEAN SEARCH REPORT

Application Number

EP 89 87 0131

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.5)
X	US-A-1348245 (SIEWENIE) * the whole document *	1-3, 5, 6, 8, 9, 12	A47G1/18
X	US-A-3030057 (WRIGHT) * column 2, lines 22 - 47; figures 1, 2 *	1, 4, 6-12	
X	US-A-3219302 (SMITH) * figures 5, 6 *	1-6, 8, 9, 12	
A	DE-C-362899 (WINKLER)		
			TECHNICAL FIELDS SEARCHED (Int. Cl.5)
			A47G

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	20 NOVEMBER 1989	BEUGELING G.L.H.

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
Y : particularly relevant if combined with another document of the same category
A : technological background
O : non-written disclosure
P : intermediate document

T : theory or principle underlying the invention
E : earlier patent document, but published on, or after the filing date
D : document cited in the application
L : document cited for other reasons

& : member of the same patent family, corresponding document

EPO FORM 1503 03.82 (P0401)

1