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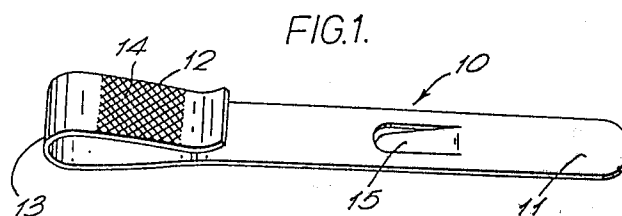
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## 54 **Suspension apparatus.**

57 Apparatus for suspending a foliate article is described, which apparatus comprising a rail (1) having a substantially planar first surface (5) and a projection (6) adjacent to said surface (5), the rail (1) being adapted (7) to be supported with the first surface (5) in a substantially upright position, releasable gripping means (10) having a gripping surface (11) for exerting resilient pressure upon the first surface (5) adjacent to the projection (6), resilient spring means (11, 12, 13) for providing said pressure and, rail engaging means (12) for holding the gripping surface (11) to the rail (1) in a gripping position, in which position the spring means (11, 12, 13) cause the gripping surface (11) to exert pressure upon the first surface (5) adjacent to the projection (6).



## Description

## SUSPENSION APPARATUS

This invention relates to suspension apparatus for suspending articles such as documents, drawings, films, cards, envelopes and, other similar foliate articles.

An object of the invention is to provide a storage system for foliate articles which allows for their easy access and retrieval. In particular, apparatus in accordance with the present invention may be substituted for the document holder employed in a suspension filing system of the type described in published European Patent Application No. 0136075. This reference discloses a document filing system in which a document holder includes a rail, a track which is engageable with a support, in the form of a second rail or track, to enable the document holder to be suspended from the support.

Accordingly, the present invention provides apparatus for suspending a foliate article comprising, a rail having a substantially planar first surface and a projection adjacent to said surface, the rail being adapted to be supported with the first surface in a substantially upright position, characterised by further comprising releasable gripping means having a gripping surface for exerting pressure upon the first surface adjacent to the projection, resilient spring means for providing said pressure and, rail engaging means for holding the gripping surface to the rail in a gripping position, in which position the spring means causes the gripping surface to exert pressure upon the first surface, adjacent to the projection. Thus, if a foliate article is placed between the gripping surface and the first surface of the rail and the gripping means moved into the gripping position, the foliate article is squeezed between the gripping surface, the first surface and the projection and is thereby caused to bend over the projection, so as to be gripped by the apparatus.

An advantage of this invention is that it may be employed to suspend a flexible article, such as a plan, drawing or film, without the need for the latter to be adapted in any way prior to suspension. A further advantage of the invention, is that foliate articles may be suspended directly from the rail without the need for an intermediate document wallet or container.

In an embodiment, the gripping means comprises a clip having a first arm carrying the gripping surface and, a second arm, joined to the first arm by a bridging component, wherein, in the gripping position, the clip engages the rail resiliently between the first and second arms of the clip with the gripping surface exerting pressure upon the first surface. The rail may be slidably engaged between the arms of the clip and arranged such that the clip is slidable upon the rail between the gripping position and a released position, where the rail is out of engagement with at least one arm of the clip. An advantage of such embodiments is that apparatus in accordance with these embodiments may be constructed from two, simple to manufacture, components.

In a further embodiment the rail is channel

sectioned, having a wall facing the first surface and the projection, said wall being spaced a sufficient distance from the first surface to allow the first arm of the clip to slide between the wall and the first surface. Preferably the first arm of the clip extends further from the bridging portion than the second arm and, holding means are provided for holding the first arm within the channel defined by the rail, when the clip is in the released position. An advantage of such embodiments is that when the clip is released from the gripping position, it remains attached to the rail and is, thus, more easily returned to the gripping position and, less likely to become mislaid.

In a preferred form of the above embodiment, the holding means comprises a spigot formed upon the first arm, which spigot extends away from the second arm and is engagable in a recess or hole formed in, or through, the wall of the channel, when the clip is in the released position.

In a preferred embodiment, the spigot engages the wall when the clip is in the gripping position, to augment the pressure provided at the gripping surface. Furthermore, the arm may be arranged so that the end thereof remote from the bridging portion, is engageable upon the wall to further augment the pressure provided at the gripping surface. A lining of foliate material may be attached to the rail and arranged to lie in double thickness between the gripping surface and the first surface.

Guide means may be provided on the rail to guide the clip between the gripping and released positions.

A specific embodiment of the present invention will now be described with reference to the following drawings:-

Figure 1 is a scrap view of the component parts of an apparatus in accordance with the present invention;

Figure 2 is the same view as Figure 1 showing the components of the apparatus semi-assembled;

Figure 3 is the same view as Figures 1 and 2, showing the components of the apparatus fully assembled and gripping a quantity of foliate articles;

Figure 4 is a section of XX in Figure 2;

Figure 5 is a section on YY in Figure 3;

Figure 6 is a rear view of the apparatus shown in Figure 2 and;

Figure 7 is a cross-section of an alternative rail.

The apparatus will be described as orientated in Figures 1, 2 and 3, in which a portion of a rail 1 is shown. The rail 1 is formed from plastics material, such as polyethylene or polyvinylchloride. The rail 1 comprises a first wall 2, in the form of a substantially rectangular elongate strip and a second wall 3. The second wall 3 comprises an inclined portion 4 extending downwardly and away from the upper part of the first wall 2, to a substantially upright portion 5. The upright portion 5 is substantially parallel to the

first wall 2. An intumed flange 6 extends inwardly from the otherwise free edge of the upright portion 5. The surface of the upright portion 5 which faces the first wall 2 provides the first surface and the intumed flange 6 provides the projection.

The upper portion of the first wall 2, above the inclined portion 4 of the second wall 3, is turned over to provide a hook 7 extending along the length of the rail 1. The hook 7 is formed so as to be engageable upon a supporting rail in a suspension filling system of the type described in Published European Patent Application No. 0136075.

A sheet 8 of thin, flexible and transparent plastic material is located within the channel defined by the walls 2 and 3. The sheet 8 is folded over with the fold line adjacent to the root of the second wall 3, where the second wall 3 extends forth from the first wall 2. The sheet 8 is bonded into the first wall 2 at 9, in order to prevent it from becoming dislodged from the rail 1. Alternatively the sheet 8 may be attached to the first wall 2 by welding, or through a length of double sided tape.

A spring clip 10, integrally formed from a resilient material such as spring steel, comprises a first arm 11, a second arm 12 and a bridging portion 13. Both the arms 11 and 12 are substantially rectangular in cross-section, the first arm 11 being approximately three times the length of the second arm 12. At rest, the bridging portion 13, which has the same cross-section as the arms 11 and 12, is in the form of an extension of the first arm 11 curved around upwardly (as shown in Figure 1) towards the second arm 12, joining the second arm 12 as an extension thereof. Thus the bridging portion 13 follows a smooth curve joining the adjacent, fixed, ends of the arms 11 and 12. The portions of the arms 11 and 12 adjacent to the bridging portion 13 lie in convergent planes, which become closer with increased distance from the bridging portion 13. The free end of the second arm 12 is turned upwardly and away from the first arm 11 and, adjacently, the first arm 11 is turned away from the second arm 12, the remaining portion of the first arm 11 lying in a plane substantially parallel to the majority of the second arm 12. The second arm 12 has a roughened portion 14 on the upper surface thereof. A spigot in the form of an ear or flap 15 extends downwardly and towards the bridging portion 13, from its root approximately midway along the first arm 11. The surface of the first arm 11 which faces the second arm 12 provides the gripping surface.

The clip 10 is dimensioned so that it may slide in between the first and second walls 2 and 3 of the rail 1, the width of the first arm 11 of the clip 10 being slightly less than the separation between the flange 6 and the inclined portion 4 of the second wall 3. The distance between the arms 11 and 12 of the clip 10 is such that the clip 10 resiliently grips the upright portion 5 of the second wall 3, when the latter is placed between the arms 11 and 12 of the clip 10; Additionally, the free end of the first arm 12 and the ear 15 engage the first wall 2, in order to augment the pressure exerted upon the upright portion 5 of the second wall 3.

A slot 16, dimensioned to accept the ear 15, is

formed through the first wall 2 of the track 1 adjacent to the open end of the rail 1 (see Figure 6).

In use the first arm of the clip 10 is inserted into the rail 1, in the direction of arrow A in Figure 2. Once the clip 10 has been inserted as far as shown in Figures 2 and 6, the ear 15 engages in the slot 16 to prevent the accidental removal of the clip 10 from the rail 1. On insertion, the first arm 11 of the clip 10 slides into the rail 1 between the sheet 8 and the first wall 2. Foliate articles 17, for suspension, then should be inserted in the direction of arrow B in Figure 2 into the fold of the sheet 8. The clip 10 then should be pushed further in the direction of arrow A until it adopts the position shown in Figure 3. In the position shown in Figure 3 the clip 10 grips the sheet 8, the foliate articles 17 and the upright portion 5 of the second wall 3 tightly together between its arms 11 and 12. The foliate articles 17 and the sheet 8 are thus forced towards the inner, or first surface of the upright portion 5 of the wall 3 and the flange 6, adopting a lazy "S" shaped fold, as illustrated in Figure 5. Figure 4 shows the position of the foliate articles before the insertion of the clip 10, i.e. the position shown in Figure 2.

A second clip may be employed at the other end of the rail 1, which is not illustrated, in order to cooperate in supporting the foliate articles 17. Once the clip or clips have been pushed to the positions shown in Figures 3 and 5 the rail 1 may then be suspended by the hook 7 and the foliate articles 17 would remain retained in and supported by the rail 1. The foliate articles are easily released from rail 1 by sliding the clip 10 in the opposite direction to arrow A, until it adopts the position shown in Figures 2 and 6.

Figure 7 shows an alternative form of rail 20. Said rail 20 will be described at orientated in Figure 7 and, is formed from a plastics material, such as polyethylene or polyvinylchloride. The rail 20 comprises a first upright wall 21, in the form of a substantially rectangular elongate strip and the second wall 22. The second wall 22 comprises a substantially horizontal portion 23 extending away from the mid part of the first wall 21, to a substantially upright portion 24. The upright portion 24 is substantially parallel to the first wall 21. An intumed flange 25 extends inwardly from the lower edge of the first wall 21. The surface of the first wall 20 which faces the second wall 22 provides the first surface and the intumed flange 25 provides the projection.

The upper portion of the first wall 21, above the horizontal portion 23 of the second wall 22, is turned over to provide a hook 25 extending along the length of the track 20. The hook 25 is formed so as to be engageable upon a supporting rail in a suspension filling system of the type described in Published European Patent Application No. 0136075. Two guide flanges 26 and 27 are formed on the outer face of the first wall 21 and, extend longitudinally along the length of the rail 20. The lower guide flange 27 is adjacent to the intumed flange 26 and upper guide flange 28 is spaced a short distance below the horizontal bridging portion 23 of the second wall 22.

In use the first arm of the spring clip 10 is inserted

into the rail 20 in the same manner as described above for the rail 1. As the clip 10 is pushed further into the rail 20, its second arm 12 slides between the guide flanges 27 and 28. The presence of the guide flanges 27 and 28 facilitate the correct insertion of the clip 10.

## Claims

1. Apparatus for suspending a foliate article comprising a rail (1) having a substantially planar first surface (5) and a projection (6) adjacent to said surface (5), the rail (1) being adapted (7) to be supported with the first surface (5) in a substantially upright position, characterised by further comprising releasable gripping means (10) having a gripping surface (11) for exerting resilient pressure upon the first surface (5) adjacent to the projection (6), resilient spring means (11, 12, 13) for providing said pressure and, rail engaging means (12) for holding the gripping surface (11) to the rail (1) in a gripping position, in which position the spring means (11, 12, 13) cause the gripping surface (11) to exert pressure upon the first surface (5) adjacent to the projection (6).

2. Apparatus as claimed in Claim 1, characterised in that the gripping means (10) comprises a clip (10) having a first arm (11) carrying the gripping surface (11) and a second arm (12) joined to the first arm (11) by a bridging component (13), wherein, in the gripping position, the clip (10) engages the rail (1) resiliently between the first and second arms (11, 12) of the clip (10) with a gripping surface (11) exerting pressure upon the first surface (5).

3. Apparatus as claimed in Claim 2, characterised in that the rail (1) is slidably engaged between the arms (11, 12) of the clip (10) the arrangement being such that the clip (10) is slidable upon the rail (1) between the gripping position and a released position wherein the rail (1) is out of engagement with at least one arm (11, 12) of the clip (10).

4. Apparatus as claimed in Claim 3, characterised in that the rail (1) is channel sectioned, having a wall (2) facing the first surface (5) and projection (6), said wall (5) being spaced a sufficient distance from the first surface (5) to allow the first arm (11) of the clip (10) to slide between the wall (2) and the first surface (5).

5. Apparatus as claimed in Claim 4, characterised in that the first arm (11) extends further from the bridging portion (13) than the second arm (12) and holding means (15, 16) are provided for holding the first arm (11) within the channel defined by the rail (1), when the clip (10) is in the released position.

6. Apparatus as claimed in Claim 5, characterised in that said holding means (15, 16) comprise a spigot (15) formed upon the first arm (11), which spigot (15) extends away from

the second arm (12) and is engageable in a recess (16) or hole formed in, or through the wall (2).

7. Apparatus as claimed in Claim 6, characterised in that the spigot (15) engages a wall (2) when the clip (10) is in the gripping position, to augment the pressure provided at the gripping surface (10).

8. Apparatus as claimed in Claim 4, characterised in that the first arm (11) is arranged so that the end thereof remote from the bridging portion (13) is engageable upon the wall (2) to augment the pressure provided at the gripping surface (11).

9. Apparatus as claimed in any of the preceding claims characterised in that a lining of foliate material (8) is attached to the rail (1) and arranged to lie in double thickness between the gripping surface (11) and the first surface (5).

10. Apparatus as claimed in Claim 9 characterised in that the lining (8) is formed from a flexible plastics material.

11. Apparatus as claimed in Claim 3 characterised in that guide means (27, 28) are provided on the rail (20) to guide the clip (10) between the gripping and released position.

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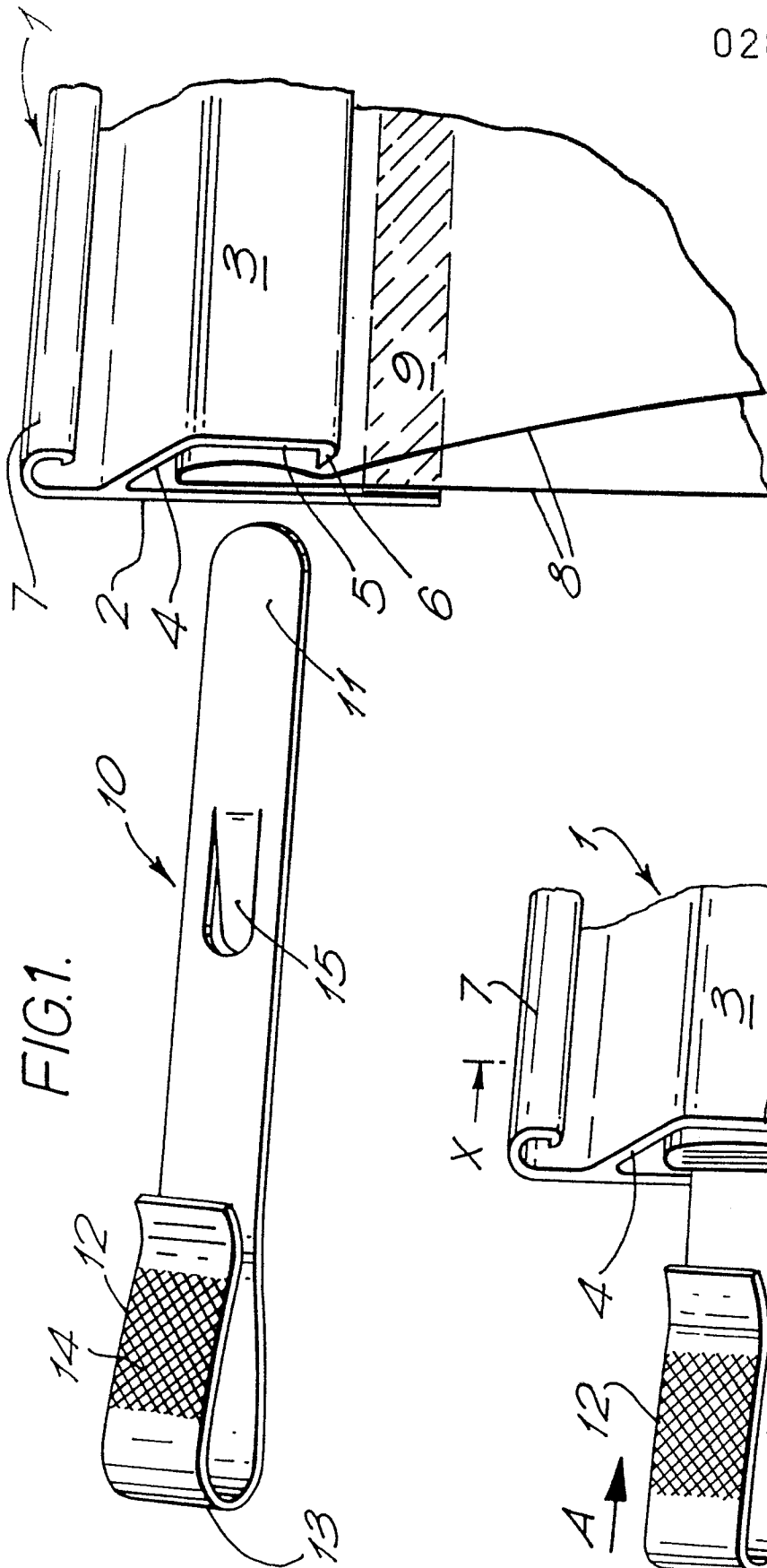


FIG. 1.

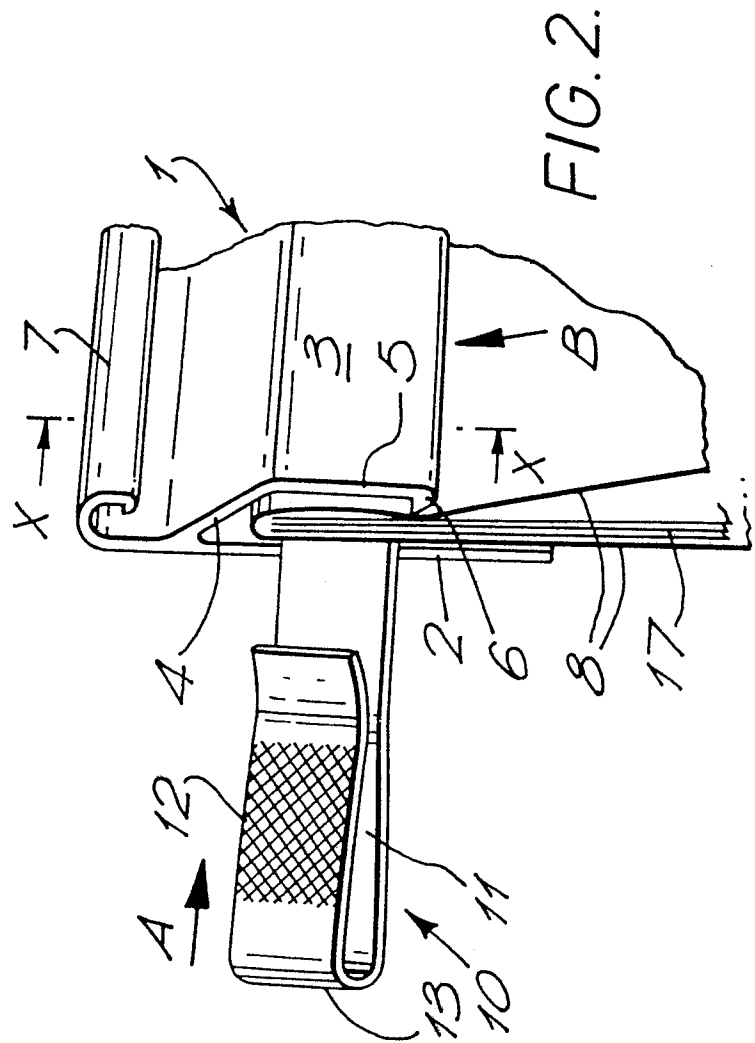


FIG. 2.

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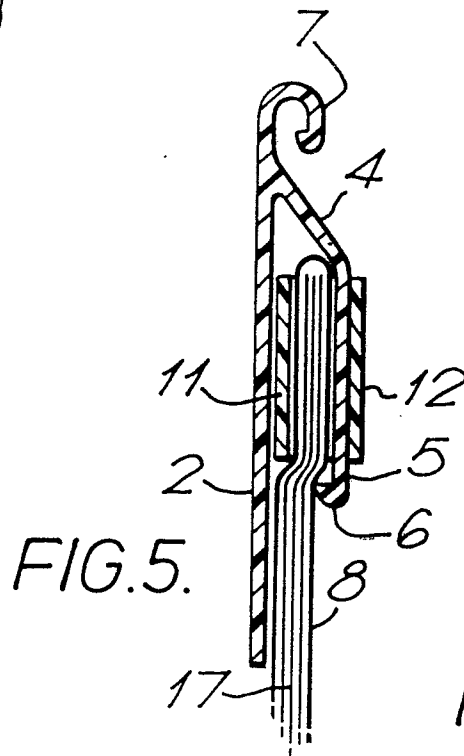
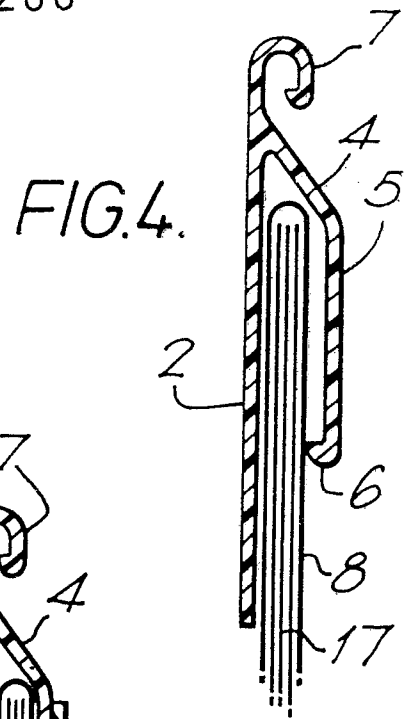
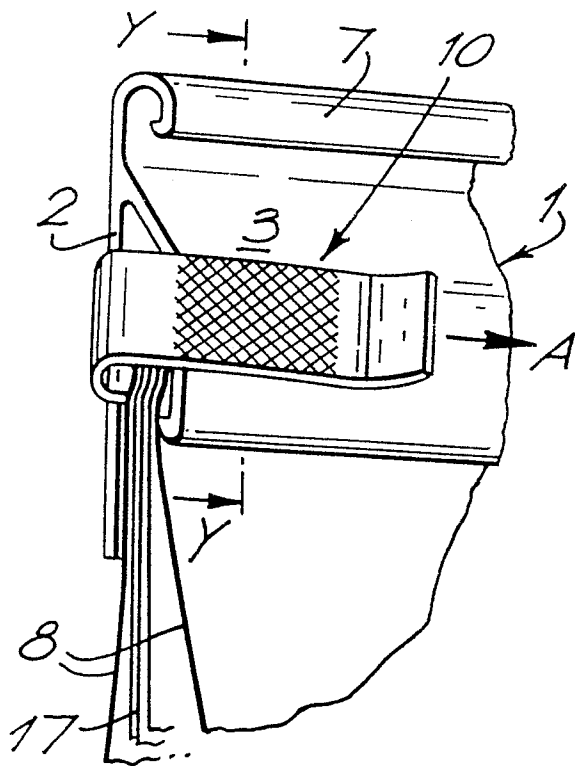


FIG. 6.

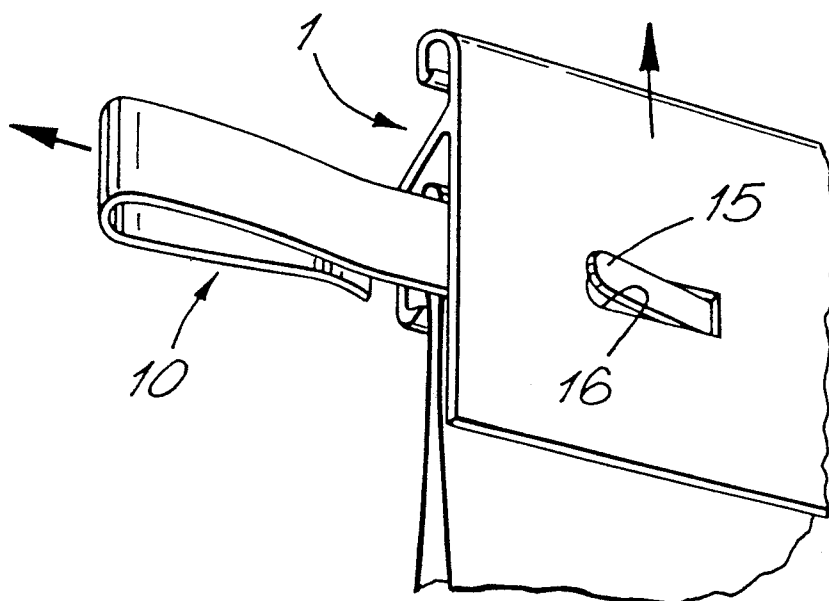


FIG. 7.

