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

(11) EP 0 960 746 A2

(12) EUROPEAN PATENT APPLICATION

(43) Date of publication:
01.12.1999 Bulletin 1999/48

(51) Int Cl.[6]: **B42F 13/26**

(21) Application number: **99301947.0**

(22) Date of filing: **15.03.1999**

(84) Designated Contracting States:
AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU MC NL PT SE
Designated Extension States:
AL LT LV MK RO SI

(30) Priority: **26.05.1998 GB 9811259**

(71) Applicant: **WORLD WIDE STATIONERY MANUFACTURING CO. LTD.**
Kwai Chung, New Territories (HK)

(72) Inventor: **Pi, Jin Biao**
Daye City, Hubei Province (CN)

(74) Representative: **Findlay, Alice Rosemary**
Lloyd Wise, Tregear & Co.,
Commonwealth House,
1-19 New Oxford Street
London WC1A 1LW (GB)

Remarks:
Claim 19 is deemed to be abandoned due to non-payment of the claims fees (Rule 31 (2) EPC).

(54) A ring binder mechanism

(57) A ring binder mechanism is disclosed as including wires/tabs for supporting two plates for relative pivotal movement, in which pairs of half-rings are mounted to the plates which are pivotably movable relative to each other between a first configuration in which the half-ring members are closed and the angle between the upper surfaces of the plates is less than 180°, and a second configuration in which the half-ring members are open and the angle between the upper surfaces of the plates is more than 180°, in which the wires/tabs are engaged with the plate members, and the plates are retained by the wires/tabs in a position in which the inner edges of the plates constantly abut each other, and a majority of the upper surfaces of the plates is allowed to be exposed to the environment.

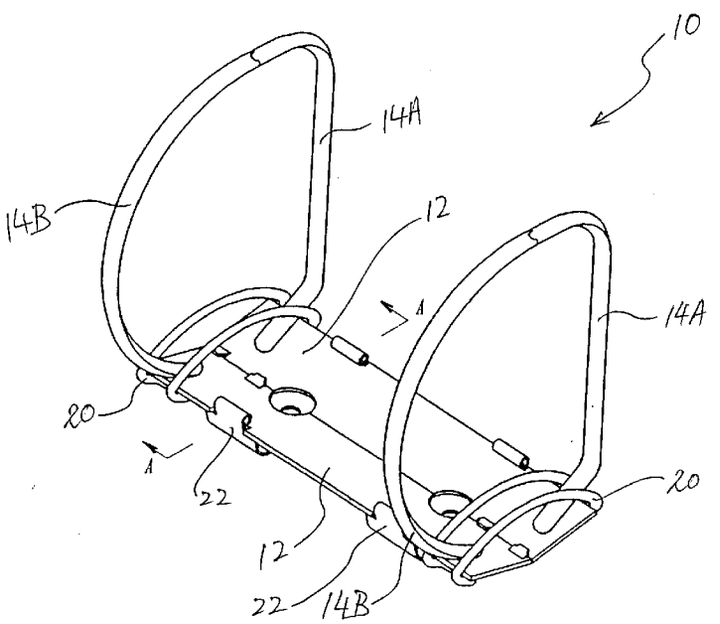

Fig. 1

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Description

[0001] This invention relates to a ring binder mechanism for retaining paper and, in particular, such a mechanism in which a significant amount of material may be saved.

[0002] Conventional ring binder mechanisms usually include a pair of plates supported by a substantially rigid upper housing for relative pivotal movement. The housing extends over the entire length of the plates and is crimped on both lateral edges for engagement with the plates. To each of the plates are mounted a number of ring members which may be caused to be closed or opened, in order to allow paper to be retained thereby or retrieved therefrom. Such a ring binder mechanism requires metallic materials, e.g. steel, for the plates, housing and the plates. It is an object of the present invention to provide an improved ring binder mechanism in which less metallic material is required.

[0003] According to a first aspect of the present invention, there is provided a ring binder mechanism comprising means for supporting two plate members for relative pivotal movement, wherein a plurality of paper-retaining members are mounted to said plate members, wherein said plate members are pivotably movable relative to each other between a first configuration in which the paper-retaining members are closed and the angle between respective upper surfaces of the plate members is less than 180°, and a second configuration in which the paper-retaining members are open and the angle between respective upper surfaces of the plate members is more than 180°, wherein said supporting means comprises at least two supporting members engaging with said plate members, and wherein said plate members are retained by said supporting members in a position in which an edge of one of said plate members is in constant abutment with an edge of the other said plate member.

[0004] According to a second aspect of the present invention, there is provided a ring binder mechanism comprising means for supporting two plate members for relative pivotal movement, wherein a plurality of paper-retaining members are mounted to said plate members, wherein said plate members are pivotably movable relative to each other between a first configuration in which the paper-retaining members are closed and the angle between respective upper surfaces of the plate members is less than 180°, and a second configuration in which the paper-retaining members are open and the angle between respective upper surfaces of the plate members is more than 180°, and wherein said supporting means comprises at least two supporting members engaging with said plate members and allowing a majority of the upper surfaces of the plate members to be exposed to the environment.

[0005] Embodiments of the invention will now be described with reference to the following drawings in which:-

Fig. 1 is a perspective view of a first embodiment of a ring binder mechanism according to the present invention;

Fig. 2 is an exploded view of the ring binder mechanism shown in Fig. 1;

Figs. 3A and 3B are sectional end views of the ring binder mechanism taken along the line A-A in Fig. 1;

Fig. 4 is a perspective view of a second embodiment of a ring binder mechanism according to the present invention;

Fig. 5 is an exploded view of the ring binder mechanism shown in Fig. 4;

Fig. 6 is a perspective view of a third embodiment of a ring binder mechanism according to the present invention;

Fig. 7 is an exploded view of the ring binder mechanism shown in Fig. 6; and

Fig. 8 is a side view of a tab used in the ring binder mechanism shown in Fig. 6.

[0006] A first embodiment of a ring binder mechanism according to the present invention is shown in Figs. 1 to 3B as generally designated as 10. The ring binder mechanism 10 includes a pair of plates 12, to which are mounted two pairs of half-rings 14A, 14B. It can be seen that each of the plates 12 has an inner edge 16 which is in constant abutment with each other (see Figs. 1, 3A and 3B). Lugs 18 are provided adjacent to said inner edges 16 to assist in proper alignment of the plates 12. The plates 12 are supported for pivotal movement, and are retained into their abutting relation, by two types of structures, namely a pair of wires 20, and a pair of tabs 22. It should be understood that either of these two types of structures would suffice for the present invention, and they are here shown together simply for the purpose of convenience.

[0007] It can be seen that each of the wires 20 is bent, extends over the upper surfaces of the plates 12, and is crimped at both sides for engagement with the outer edges of the plates 12 at four points. The wires 20 are tensioned and resilient, and thus bias the plates 12 to either of its closed or open configuration, as shown in Figs. 3A and 3B. As shown clearly in Fig. 1, the wires 20 are positioned next to the half-rings 14A, 14B.

[0008] As to the tabs 22, it can be seen that they extend below the lower surfaces of the plates 12, and are engaged with recesses 24 provided by the outer edges of the plates 12. Because of the inherent resilience of the tabs, the plates 12 are allowed to pivot between the open and the closed configurations. Each of the tabs 22 includes an aperture 26 to which may be secured a rivet

28 for securing the ring binder mechanism 10 to a cover 30.

[0009] Fig. 3A shows the ring binder mechanism 10 as being in the open position, and Fig. 3B shows the ring binder mechanism 10 as being in the closed position. It can be seen that when the ring binder mechanism 10 is in the open position, the angle between the upper surfaces of the plates 12 is more than 180°, while when the ring binder mechanism 10 is in the closed position, the angle is more than 180°. It can also be seen that nearly the whole upper surfaces of the plates 12 are exposed to the outside environment.

[0010] A second embodiment of a ring binder mechanism according to the present invention is shown in Figs. 4 and 5 and generally designated as 100. The basic structure of this ring binder mechanism 100 is very similar to that shown in Figs. 1 to 3B. However, it can be seen that, in this particular embodiment, there are three pairs of half-rings 102A, 102B mounted to a pair of plates 104. Three wires 106 are provided adjacent to the half-rings 102A, 102B. On the other hand, as in the case of the ring binder mechanism 10 shown in Figs. 1 to 3B, only two tabs 108 are provided and extend below the lower surfaces of the plates 104.

[0011] Figs. 6 and 7 show a third embodiment of a ring binder mechanism according to the present invention as generally designated as 200. The basic structure of this mechanism 200 is very similar to those shown in Figs. 1 to 5. However, a major difference of this ring binder mechanism 200 is that each of tabs 202 includes a plurality of prongs 204 which are integrally formed with the tabs 202 (shown more clearly in Fig. 8). These prongs 204 can be pushed to penetrate into a cover (not shown), in order to secure the ring binder mechanism 200 to the cover.

[0012] It can be seen that, with the present invention, a housing extending over the entire length of the pivotal plates can be dispensed with, thus saving a significant amount of raw materials, hence reducing the cost of production and the ultimate price.

[0013] It should be understood that the above only illustrates examples whereby the present invention may be carried out, and that various modifications may be made thereto without departing from the spirit of the invention. For example, instead of having wires, the supporting members may be platelets extending over the upper surfaces of the plate members, and apertures may be provided on both the platelets and the plate members so that rivets may be engaged with the hole on the platelets for securing the ring binder mechanism to a cover.

Claims

1. A ring binder mechanism comprising means for supporting two plate members for relative pivotal movement, wherein a plurality of paper-retaining members are mounted to said plate members, wherein said plate members are pivotably movable relative to each other between a first configuration in which the paper-retaining members are closed and the angle between respective upper surfaces of the plate members is less than 180°, and a second configuration in which the paper-retaining members are open and the angle between respective upper surfaces of the plate members is more than 180°, wherein said supporting means comprises at least two supporting members engaging with said plate members, and wherein said plate members are retained by said supporting members in a position in which an edge of one of said plate members is in constant abutment with an edge of the other said plate member.

2. A ring binder mechanism according to Claim 1 wherein said supporting member comprises a wire member.

3. A ring binder mechanism according to Claim 2 wherein said wire member contacts each of said plate members at two points.

4. A ring binder mechanism according to any of the preceding claims wherein said wire member is provided closely adjacent to said paper-retaining members.

5. A ring binder mechanism according to any of the preceding claims wherein said supporting member extends over the upper surfaces of the plate members.

6. A ring binder mechanism according to any one of Claims 1 to 4 wherein said supporting member extends below the lower surfaces of the plate members.

7. A ring binder mechanism according to Claim 6 wherein said supporting member comprises a tab member engaged with outer edges of said plate members.

8. A ring binder mechanism according to Claim 6 or 7 wherein said tab member is engageable with means for securing said ring binder mechanism to an article.

9. A ring binder mechanism according to Claim 8 wherein said securing means comprises a rivet.

10. A ring binder mechanism comprising means for supporting two plate members for relative pivotal movement, wherein a plurality of paper-retaining members are mounted to said plate members, wherein said plate members are pivotably movable

relative to each other between a first configuration in which the paper-retaining members are closed and the angle between respective upper surfaces of the plate members is less than 180°, and a second configuration in which the paper-retaining members are open and the angle between respective upper surfaces of the plate members is more than 180°, and wherein said supporting means comprises at least two supporting members engaging with said plate members and allowing a majority of the upper surfaces of the plate members to be exposed to the environment.

11. A ring binder mechanism according to Claim 10 wherein said supporting member comprises a wire member.

12. A ring binder mechanism according to Claim 11 wherein said wire member contacts each of said plate members at two points.

13. A ring binder mechanism according to any one of Claims 10 to 12 wherein said wire member is provided closely adjacent to said paper-retaining members.

14. A ring binder mechanism according to any one of Claims 10 to 13 wherein said supporting member extends over the upper surfaces of the plate members.

15. A ring binder mechanism according to any one of Claims 10 to 13 wherein said supporting member extends below the lower surfaces of the plate members.

16. A ring binder mechanism according to Claim 15 wherein said supporting member comprises a tab member engaged with outer edges of said plate members.

17. A ring binder mechanism according to Claim 15 or 16 wherein said tab member is engageable with means for securing said ring binder mechanism to an article.

18. A ring binder mechanism according to Claim 17 wherein said securing means comprises a rivet.

19. A ring binder substantially as herein described and with reference to the accompanying drawings.

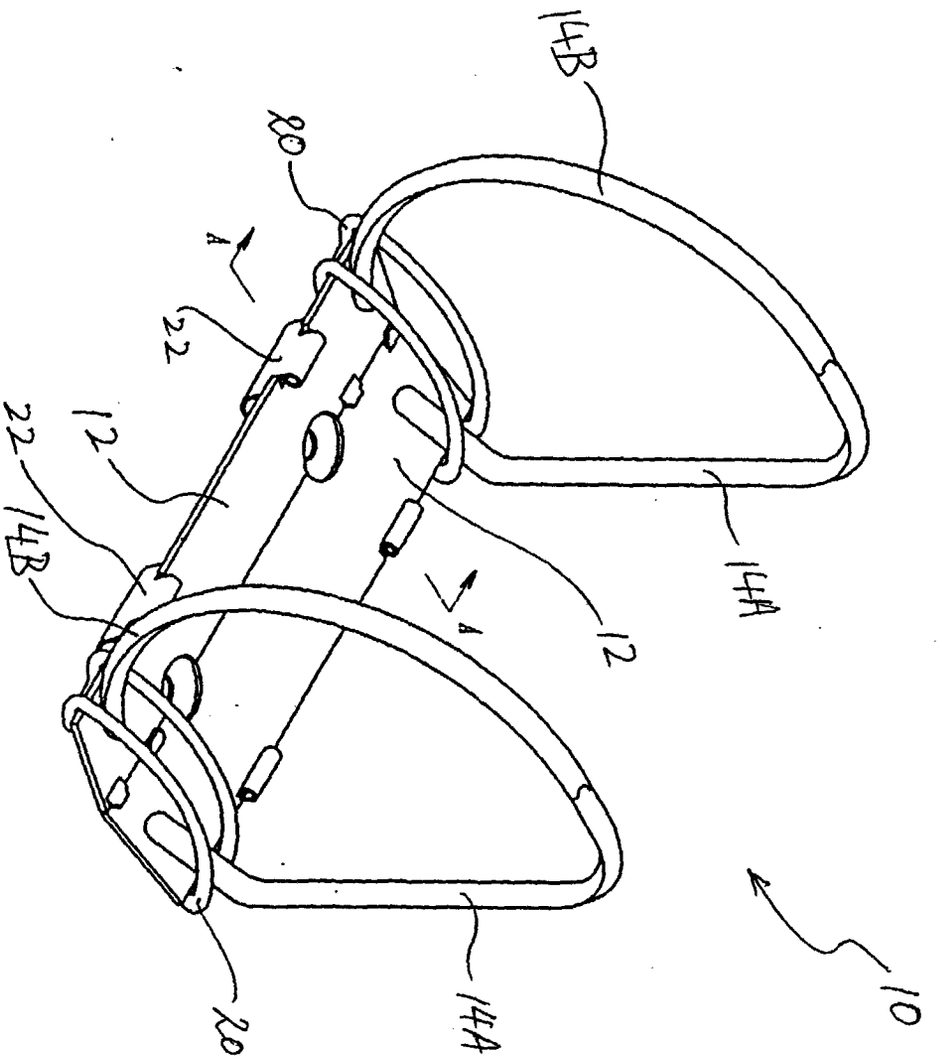

Fig. 1

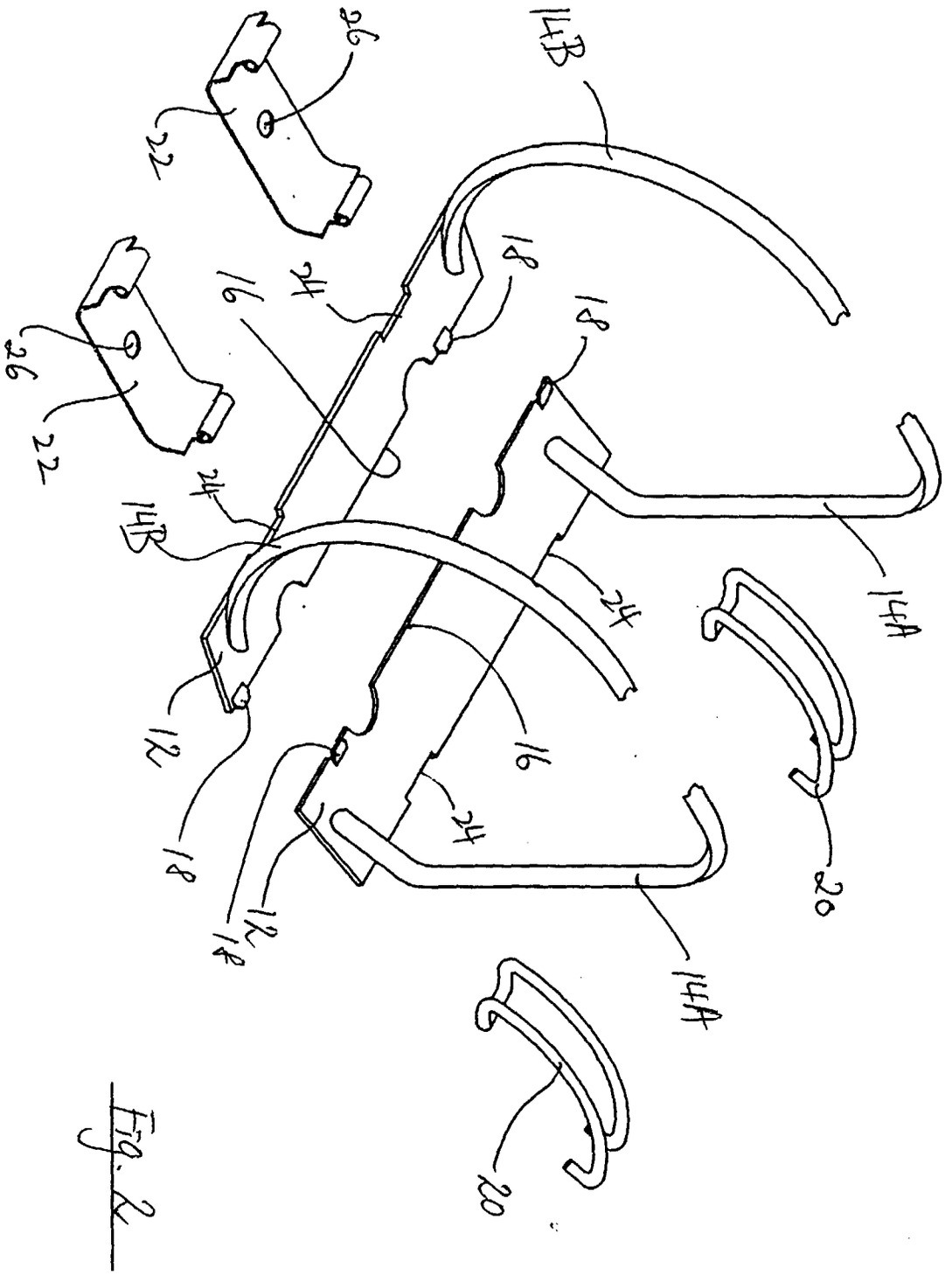

Fig. 2

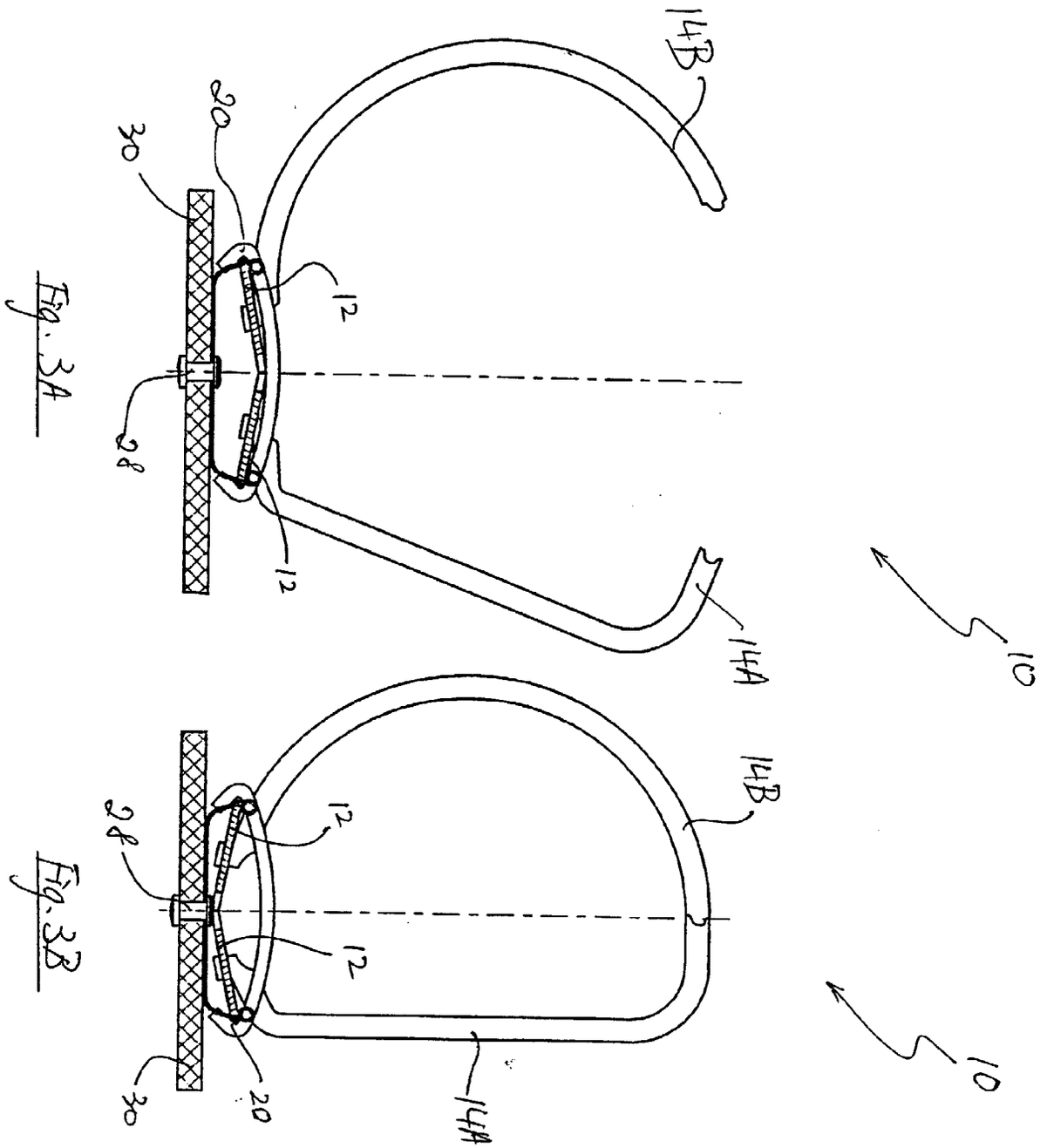

Fig. 3A

Fig. 3B

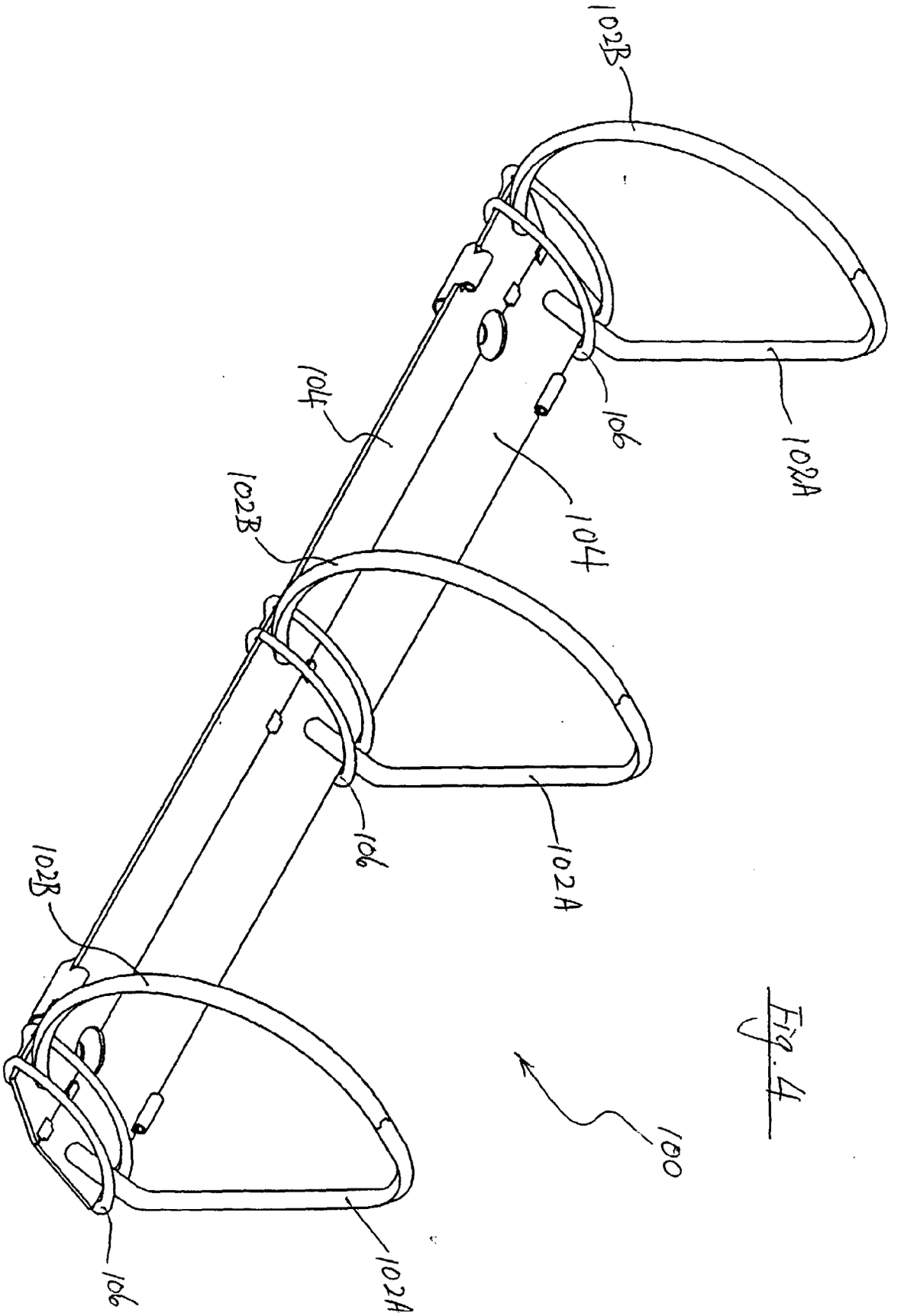

Fig. 4

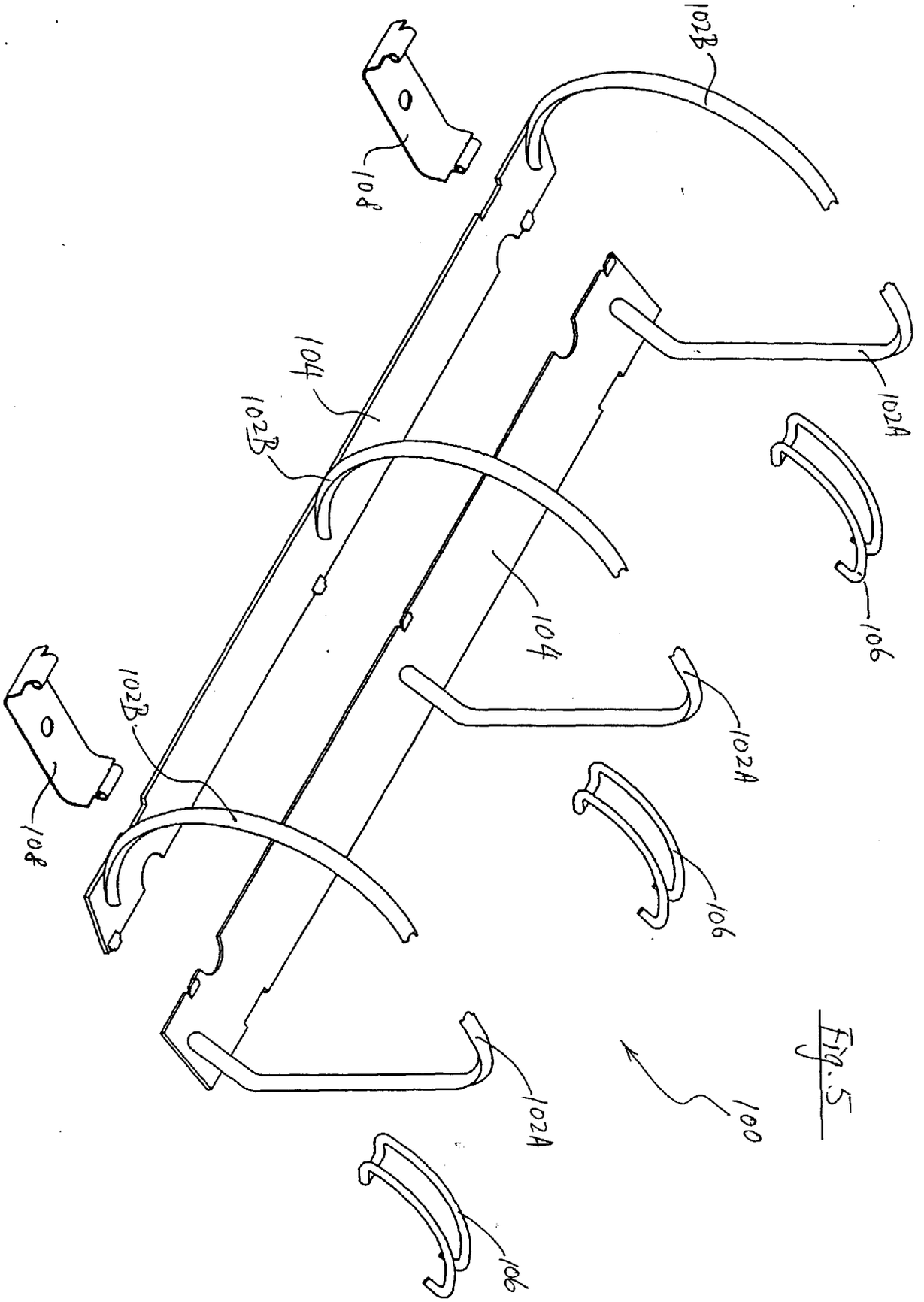

Fig. 5

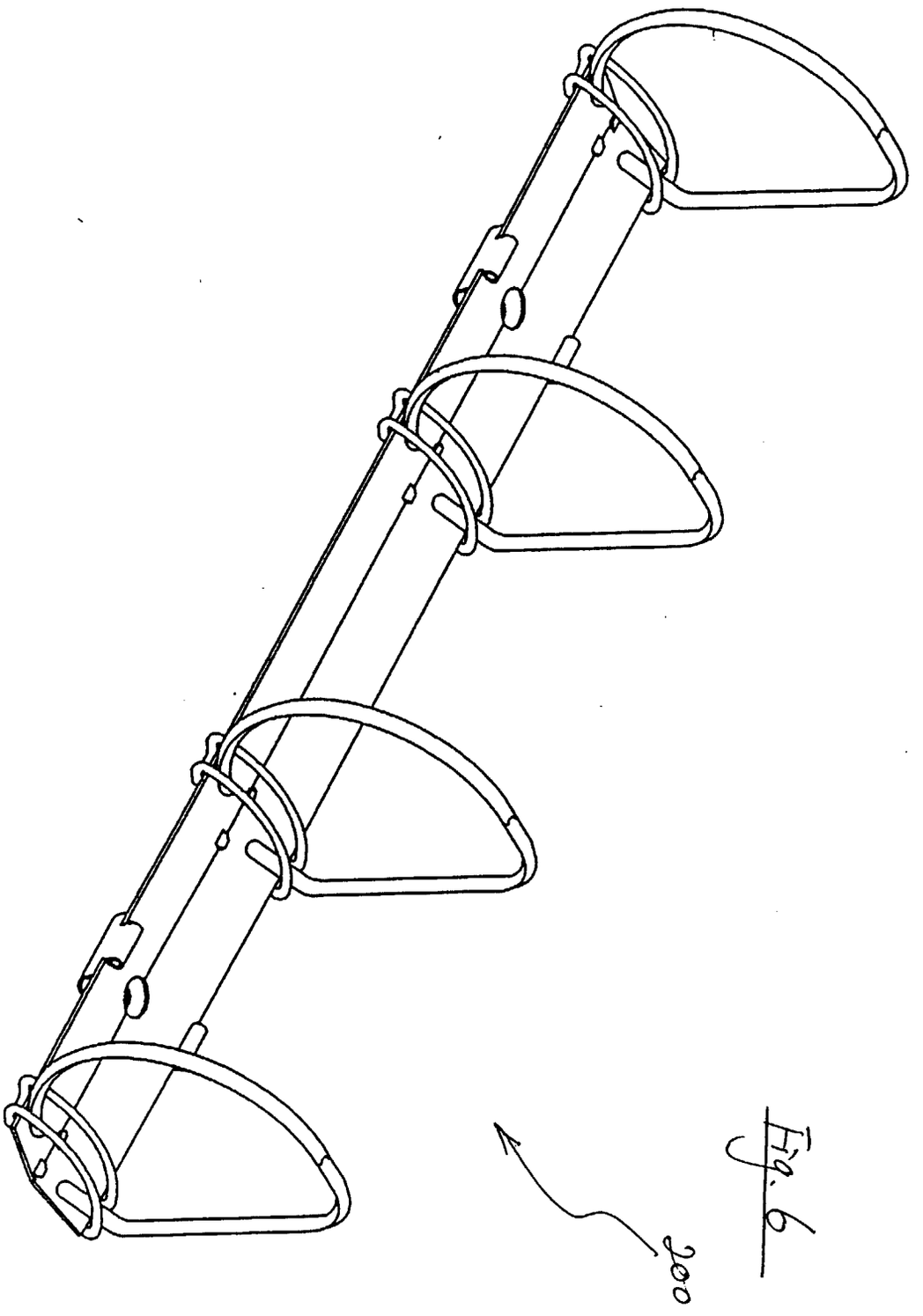

Fig. 6

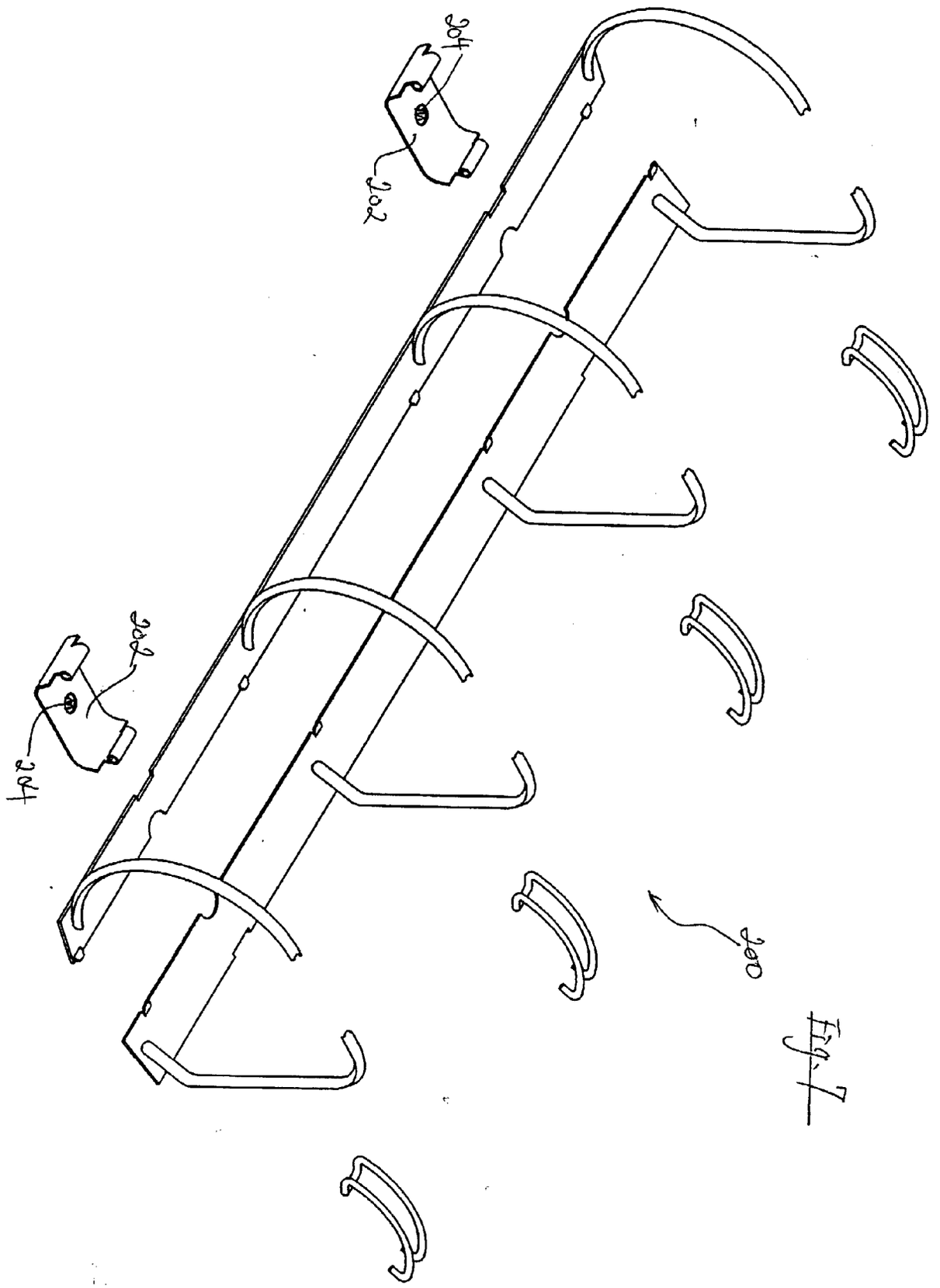

Fig. 1

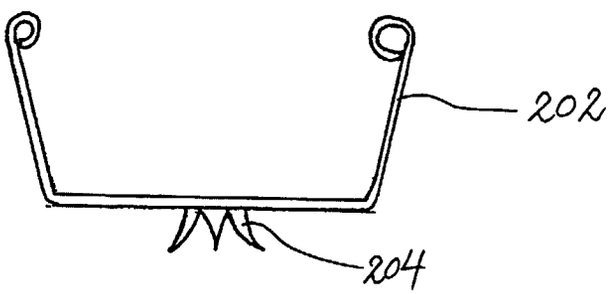

Fig. 8