



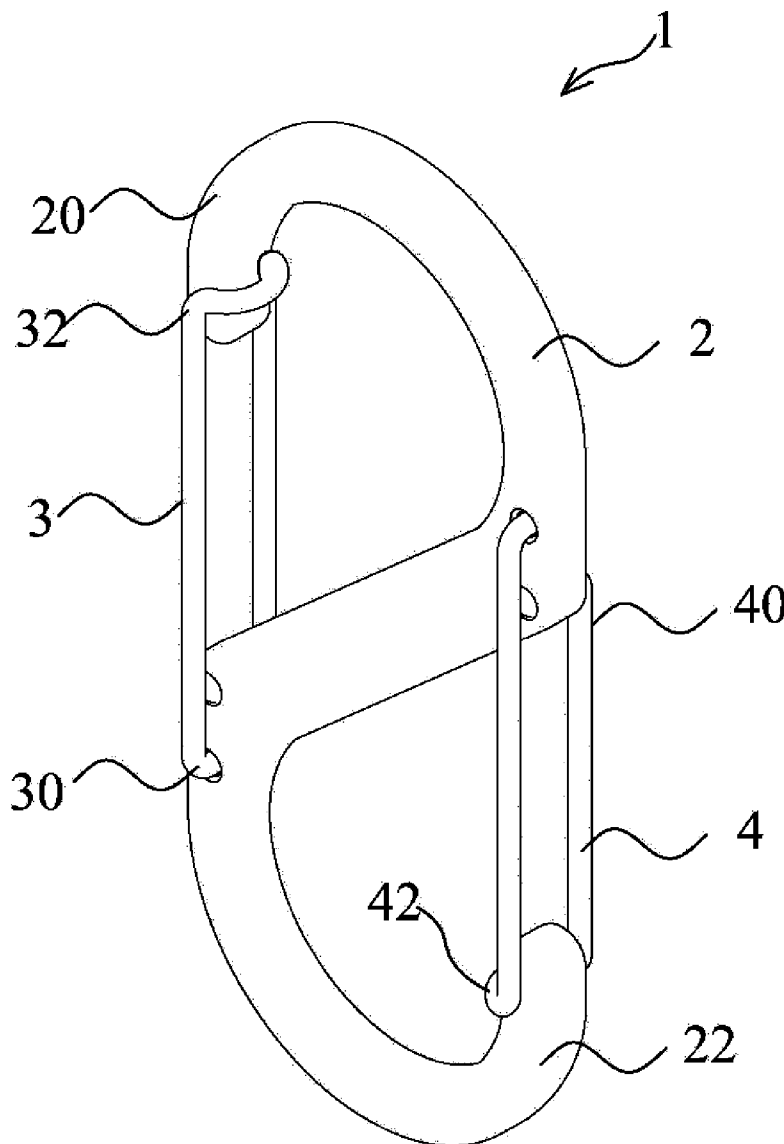
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(19) **United States**(12) **Patent Application Publication**
Bing(10) **Pub. No.: US 2009/0000086 A1**(43) **Pub. Date: Jan. 1, 2009**(54) **HOOK**(52) **U.S. Cl. 24/592.11**(76) **Inventor: Liang Bing, Yangjiang City (CN)**(57) **ABSTRACT**

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(21) **Appl. No.: 11/770,470**(22) **Filed: Jun. 28, 2007****Publication Classification**(51) **Int. Cl.**
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The present invention relates to a hook, characterized in comprising: a S-shaped body (2) having hook-bills (20, 22) respectively at two ends; and, two self-locking members (3, 4) for locking said two hook-bills (20, 22), one end of each self-locking member (3, 4) is positioned on the said S-shaped body (2), and the other end of each self-locking member (3, 4) is locked on the corresponding hook-bill (20, 22) so that the two hook-bills (20, 22) are locked by said self-locking members (3, 4). The present invention brings forward a hook which can be conveniently hung to different objects such as a belt, the band of a schoolbag or other bands, or a metal pole, and can also keep desired rigidity and elasticity at the same time.



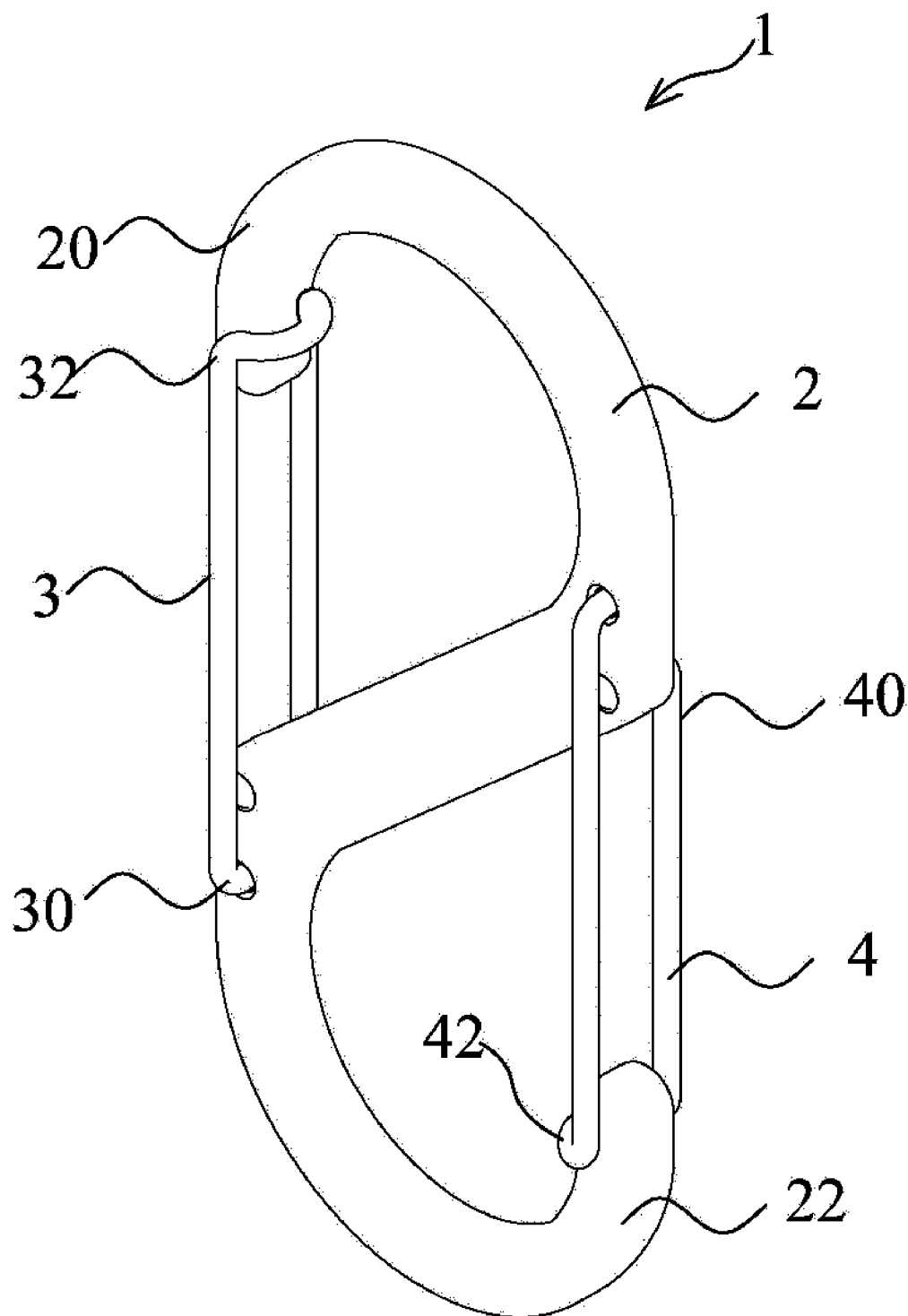


FIG.1

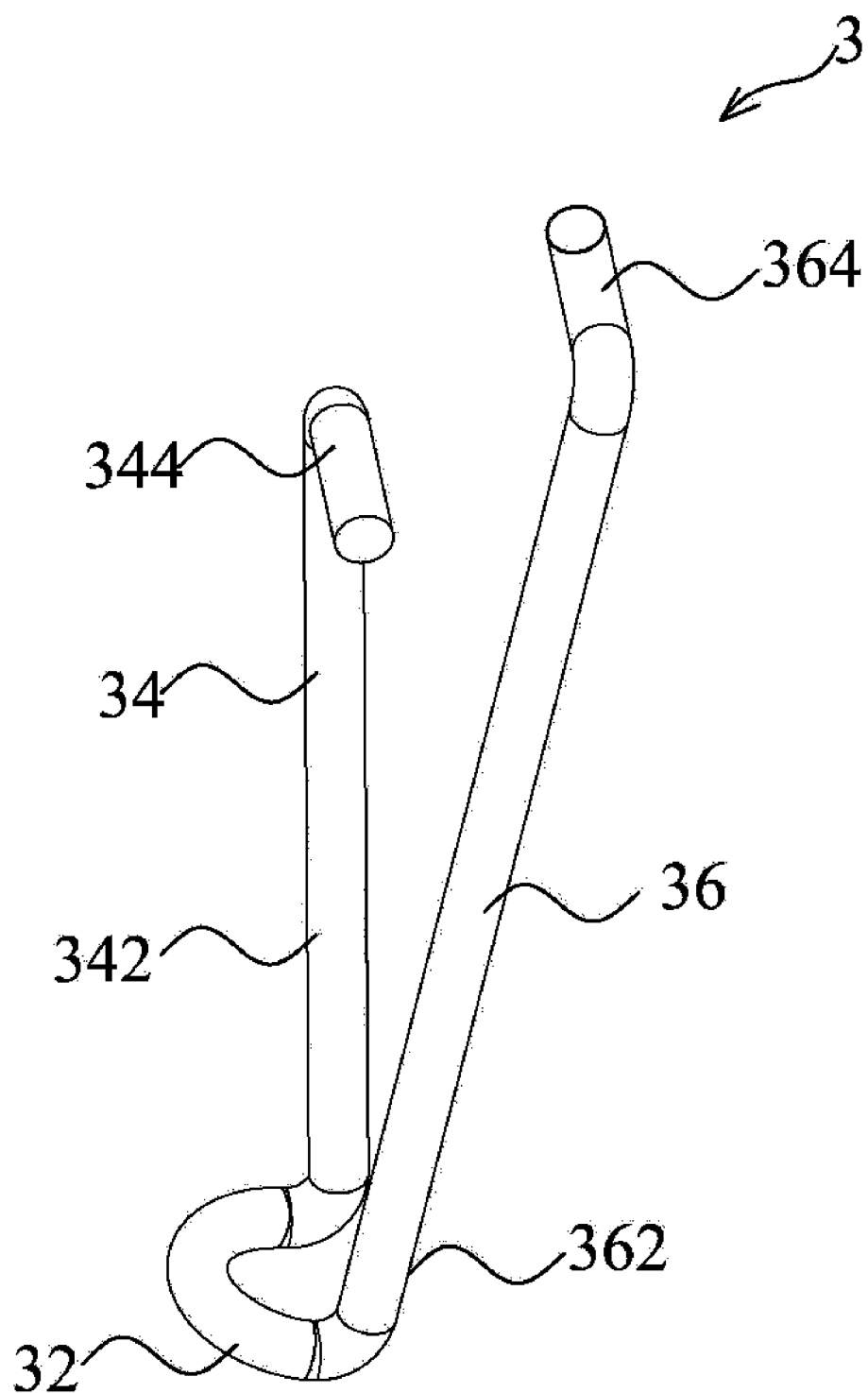


FIG.2

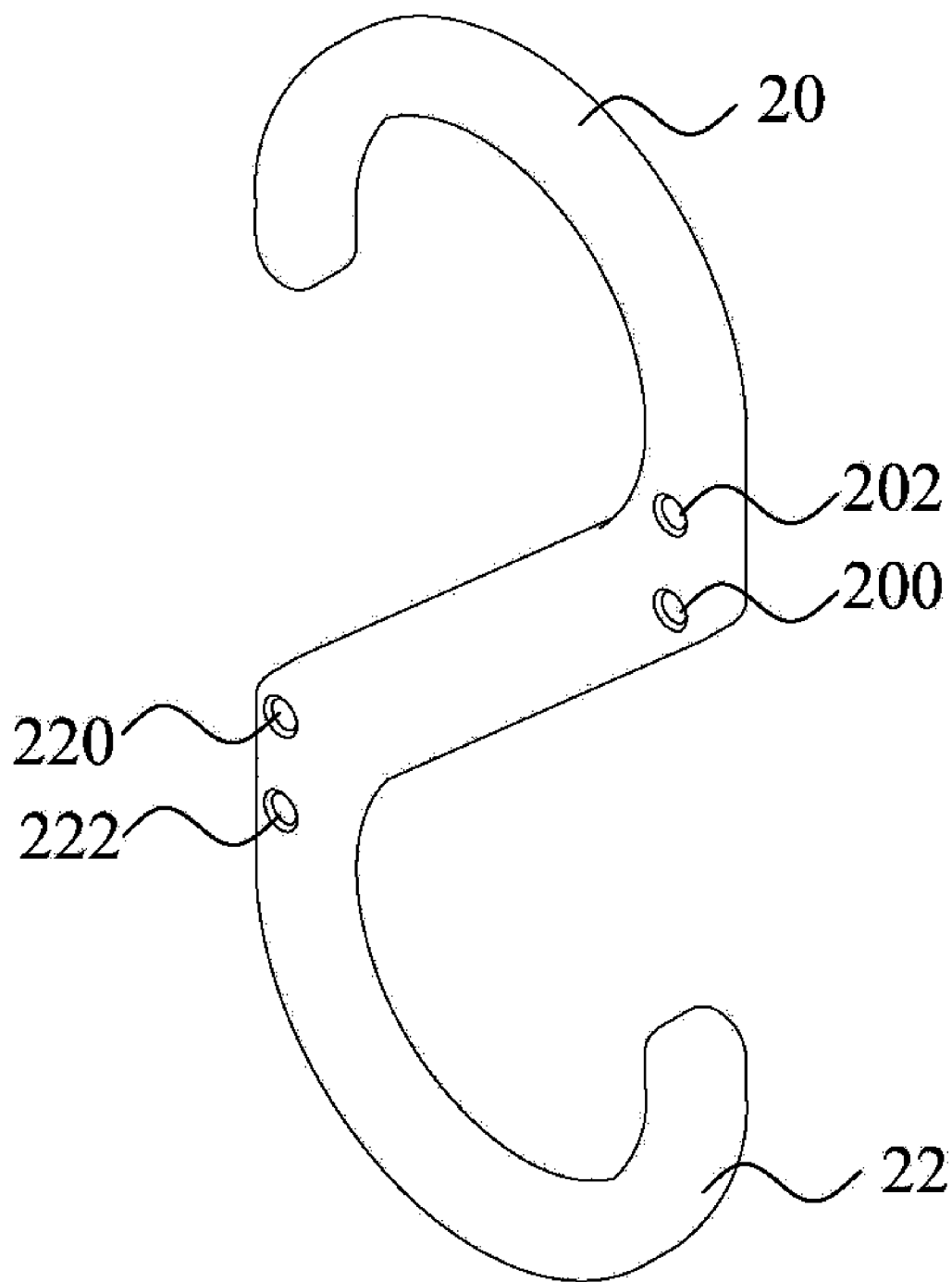


FIG.3

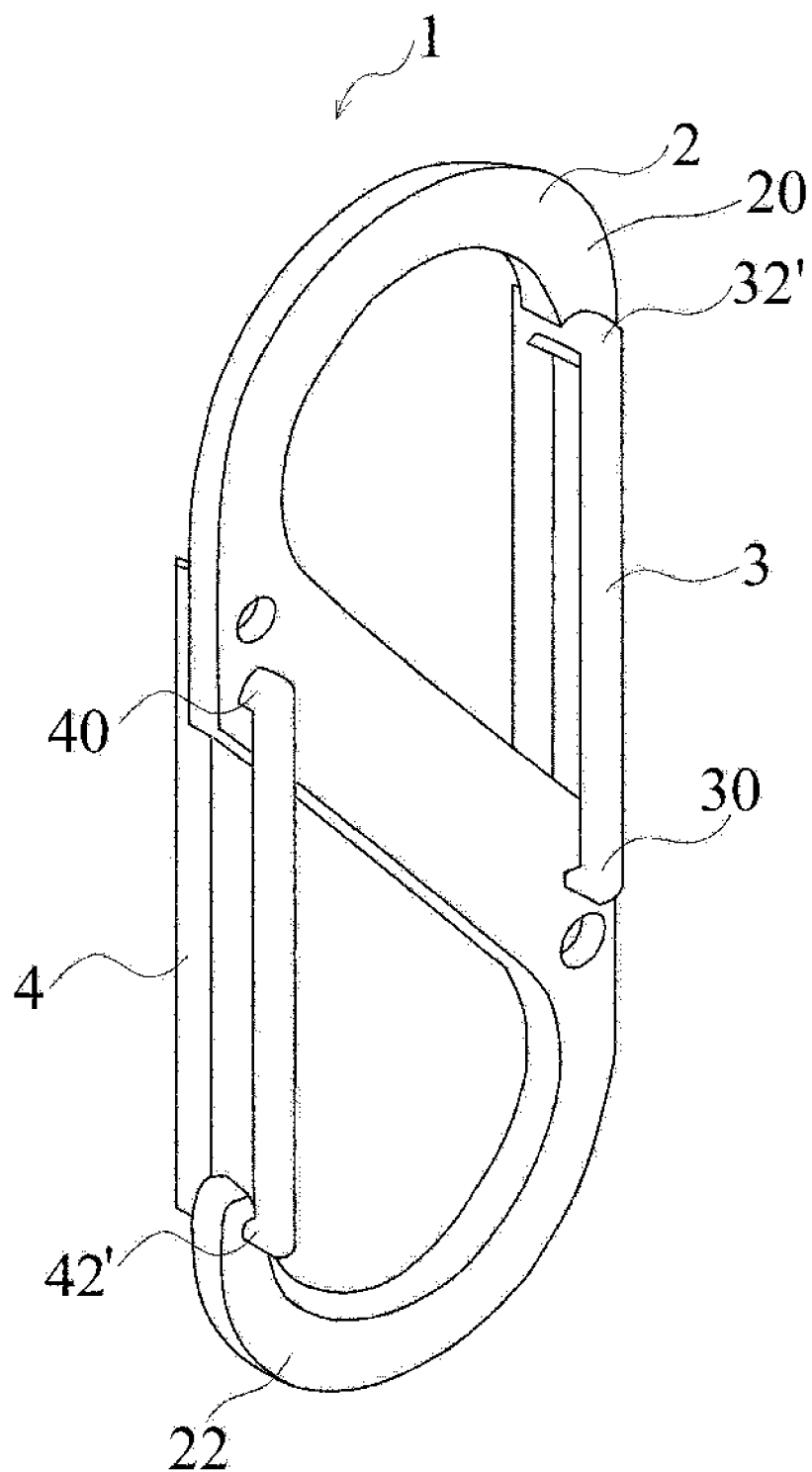


FIG.4

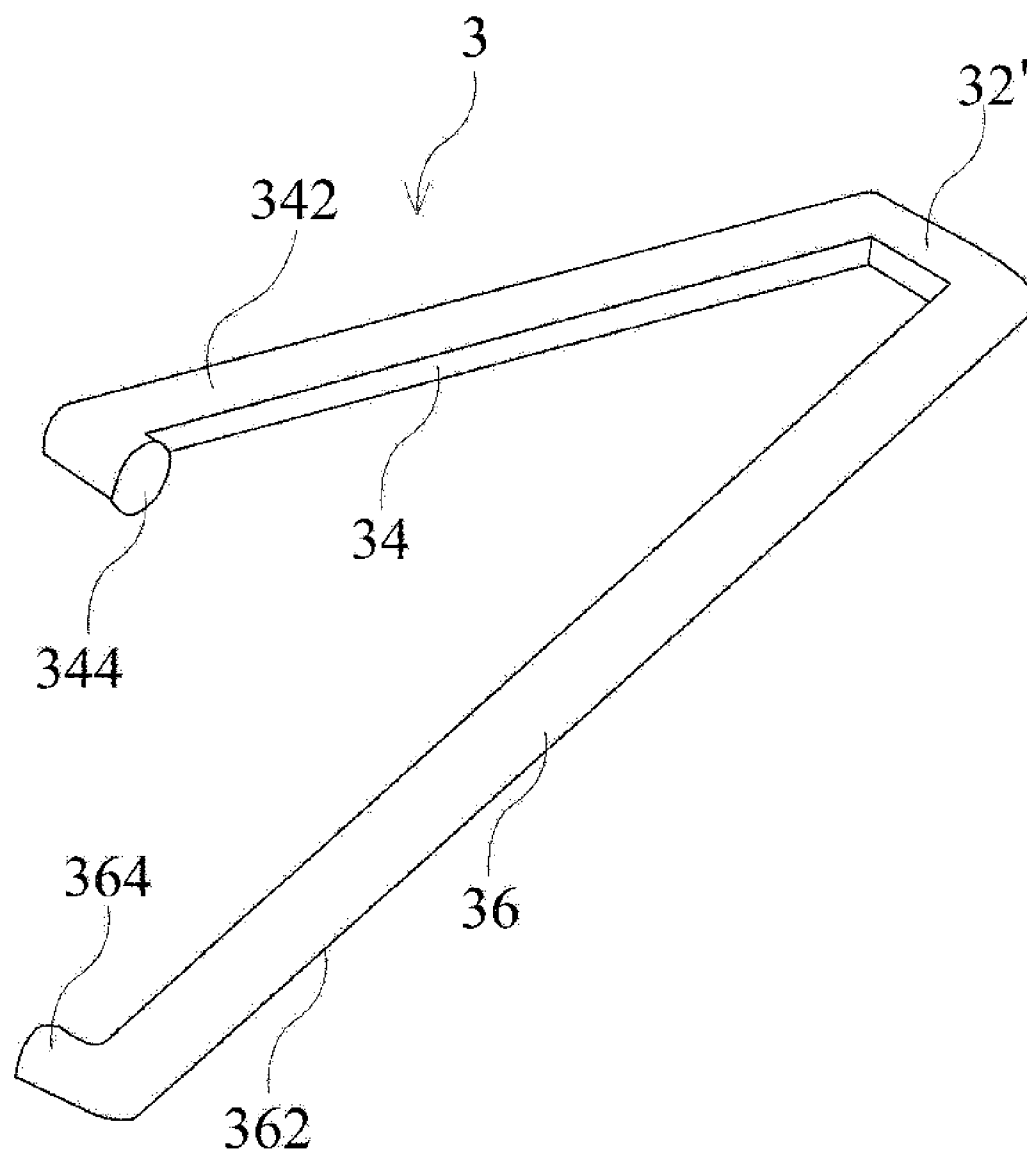


FIG.5

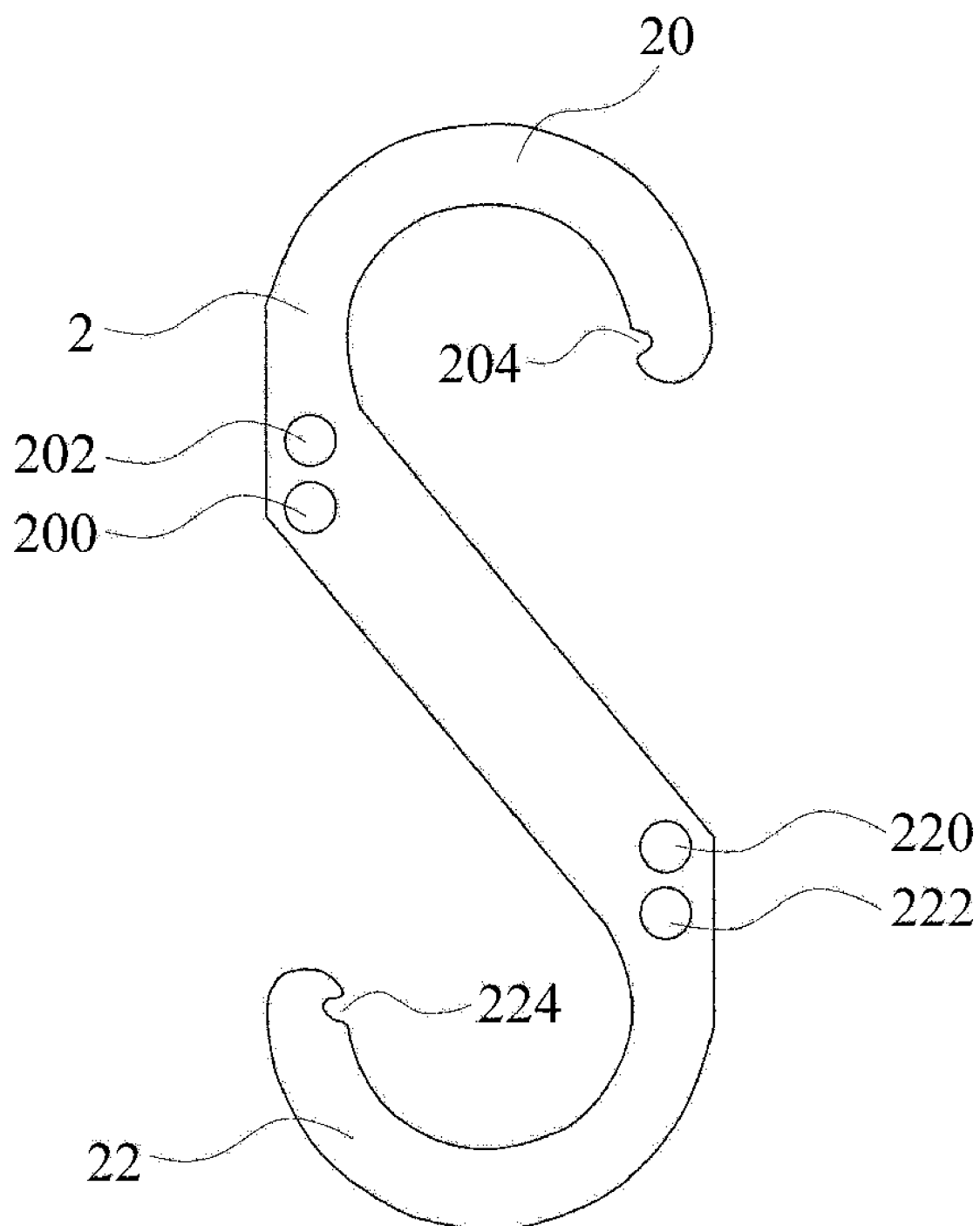


FIG.6

HOOK

TECHNICAL FIELD

[0001] The present application relates to a hook, especially a self-locking hook that can carry objects.

RELATED ART

[0002] There are various hooks, which are used for carrying daily articles such as keys, ornaments or mobile telephones. For example, this hook can hang on clothes, bags or other objects and lock the daily articles such as the keys, ornaments or mobile telephones therein. The usual structure of the hook is shown as this form . But this kind of structure is formed by twisting one wire, which needs rigidity for realizing elastic locking, and therefore, it should also keep rigidity. While for a hook, it is difficult to keep rigidity and elasticity at the same time.

SUMMARY OF INVENTION

[0003] On the basis of the prior art, the object of present application is to provide a hook, which not only has rigidity to carry object, but also has elasticity to realize elastic locking. In addition, the hook can be conveniently and firmly hung to different objects such as the bands of schoolbags, other bands, or metal poles at one end and also can carry objects at the other end.

[0004] The hook according to the present invention comprises: a S-shaped body having respectively a hook-bill at two ends; and two self-locking members for locking said hook-bills, one end of each self-locking member is positioned on the said S-shaped body, and the other end of each self-locking member is locked on the corresponding said hook-bill so that the two hook-bills are locked by said self-locking members.

[0005] According to the first embodiment of the present invention, each self-locking member is an elastic self-locking member and has the same structure, respectively comprising: two L-shaped arms, said two L-shaped arms have different lengths and present a certain non-coplanar inclination, and each L-shaped arm includes a short arm as a positioning leg and a long arm; an arcing portion, which connects the two long arms of the two L-shaped arms and projects transversely in non-coplanar from the extension direction of said long arms, forming a recess for receiving said two hook-bills. Said two hook-bills are locked in the said recess so as to avoid the shaking of said self-locking members.

[0006] According to the second embodiment of the present invention application, each self-locking member is an elastic self-locking member and has the same structure, comprising: two L-shaped arms, said two L-shaped arms have different lengths and present a certain non-coplanar inclination in a free situation, and each L-shaped arm includes a short arm as a positioning leg and a long arm; and a connection portion, which connects the two long arms of the two L-shaped arms. At the same time, notches are provided in the inside of said hook-bills, correspondingly locking the said connection portion therein. Here the connection portion can be in the form of arc or non-arc.

[0007] Two openings are respectively arranged in the corresponding position of the S-shaped body opposite to the said hook-bills for receiving said positioning legs of the self-locking members in the first and the second embodiments. When said two positioning legs are inserted into the said openings, the two L-shaped arms generally are parallel to

each other so that a force biasing said self-locking members towards outside is created, thereby locking the two hook-bills in the recess formed by the corresponding arcing portion according to the first embodiment, or locking the connection portion of the elastic self-locking members in the notches according to the second embodiment.

[0008] Said openings are arranged in one row longitudinally, and preferably, the positioning legs are riveted into said openings, so that one end of the self-locking members can be firmly positioned on S-shaped body.

[0009] In addition, said body is a one-piece metal member so that the rigidity can be ensured. The self-locking member is also a one-piece metal member, which can be formed by twisting a spring steel wire.

[0010] Since the S-shaped body and symmetric self-locking members are applied in present invention, one end of said hook can be connected to various objects such as the bands of schoolbags, other bands or metal poles, and the other end can easily carry daily articles such as keys, ornaments or mobile phones, the hook has both rigidity and elasticity.

[0011] It should be understood that the foregoing general description and the following detailed description are just illustrative.

BRIEF DESCRIPTION OF THE DRAWINGS

[0012] The drawings which form a part of the description helps to understand the principle of the present invention, and such drawings illustrate some embodiments of the present invention, and can be used to describe the principle of the present invention in conjunction with the description.

[0013] FIG. 1 illustrates the hook in assembled situation according to the first embodiment of the present invention;

[0014] FIG. 2 is a perspective view illustrating the self-locking member of the hook in a free situation according to the first embodiment of the present invention;

[0015] FIG. 3 is a perspective view illustrating the body of the hook according to the first embodiment of the present invention;

[0016] FIG. 4 illustrates the hook in assembled situation according to the second embodiment of the present invention;

[0017] FIG. 5 is a perspective view illustrating the self-locking member of the hook in a free situation according to the second embodiment of the present invention; and

[0018] FIG. 6 is a perspective view illustrating the body of the hook according to the second embodiment of the present invention.

BEST MODE OF CARRYING OUT THE PRESENT INVENTION

[0019] The present invention will now be explained by reference to certain preferred embodiments thereof. However, it is to be understood that the invention is not limited to these particular embodiments.

[0020] FIG. 1 is a perspective view illustrating the hook in assembled situation according to the first embodiment, in which said self-locking members 3, 4 are mounted on the hook which is in a locking state. As illustrated, the hook 1 comprise: a S-shaped body 2 having hook-bills 20, 22 respectively at two ends; and two self-locking members 3, 4, arranged at two sides of said S-shaped body 2 and used for locking two hook-bills 20, 22 respectively. One end 30 of the self-locking member 3 is positioned on the said S-shaped body 2, and the other end 32 of the self-locking member 3 is

locked on hook-bill 20 by means of elastic force. One end 40 of the self-locking member 4 is positioned on the said S-shaped body 2, and the other end 42 of the self-locking member 4 is locked on the hook-bill 22 by means of elastic force so that the two hook-bills 20, 22 are locked.

[0021] Referring to FIG. 2, it is a perspective view illustrating the self-locking members of the hook in a free situation according to the first embodiment of the present invention. As illustrated in FIG. 2, each self-locking member 3, 4 is a one-piece elastic metal member, and the two self-locking members have the same structure. As illustrated by the self-locking member 3, the self-locking member 3 is torsion rod spring and comprises: two L-shaped arms 34, 36, said two L-shaped arms 34, 36 have different lengths and present a certain non-coplanar inclination in a free situation, and the L-shaped arm 34 includes a short arm 344 as a positioning leg and a long arm 342; the L-shaped arm 36 includes a short arm 364 as a positioning leg and a long arm 362, and an arcing portion 32, which connects the two long arms 342, 362 of the two L-shaped arms 34, 36 and projects transversely non-coplanar from the extension direction of said long arms 342, 362, thereby forming the recess for receiving said hook-bills 20, 22.

[0022] Referring to FIG. 3, it is a perspective view illustrating the S-shaped body of the hook according to the first embodiment of the present invention. The S-shaped body 1 is a one-piece metal member with certain rigidity. The S-shaped body 2 comprises two hook-bills 20, 22. As illustrated in FIG. 3, in order to position one end 30 of the self-locking member 3 on the S-shaped body 2, two openings 220, 222 are arranged in the corresponding position on the S-shaped body opposite to the said hook-bill 20, 22 for receiving said positioning legs 344, 364. Similarly, in order to position said self-locking member 4 on the S-shaped body 2, also two openings 200, 202, which are similar to the openings 220, 222, are arranged for the positioning legs of the self-locking member 4. In order to firmly fix the positioning legs 344, 364 into the openings 220, 222, the positioning legs 344, 364 can be riveted into the openings 220, 222. Said openings 220, 222 are arranged in one row longitudinally.

[0023] Referring to FIGS. 1, 2 and 3, as illustrated therein, two arms 34, 36 present a certain non-coplanar inclination in a free situation, and also, the self-locking member 3 is a one-piece elastic metal member. Therefore, when the positioning legs 344, 364 are inserted into the openings 220, 222, two L-shaped arms generally are parallel to each other, an elastic force created by said long arm 36 and said short arm 34 causes said arcing portion 32 to move outwards and by this way, the hook-bills 20, 22 are locked into the recess formed by said arcing portion 32.

[0024] Now, the hook is closed and locked. One can use the thumb to slightly push the self-locking members 32, 42, which causes said arcing portions 32, 42 to separate from the hook-bills 20, 22, and finally the hook is opened. A force which pushes the arcing portions 32, 42 to move outwards is formed so that the arcing portions 32, 42 support on the side of hook-bills 20, 22 when self-locking member is mounted on the S-shaped body, so that the self-locking can be realized.

[0025] FIG. 4 is a perspective view illustrating the hook in assembled situation according to the second embodiment of the present invention, in which said self-locking member 3 is mounted on said S-shaped body 1. As illustrated, the hook 1 comprises: a S-shaped body 2 having hook-bills 20, 22 respectively at two ends; and two self-locking members 3, 4,

arranged at two sides of said S-shaped body 2 and used to lock said hook-bills 20, 22. One end 30 of the self-locking member 3 is positioned on the said S-shaped body 2, and the other end 32 of the self-locking member 3 is locked on the hook-bill 20 by means of an elastic force. One end 40 of the self-locking member 4 is positioned on the said S-shaped body 2, and the other end 42 of the self-locking member 4 is locked on the hook-bill 22 by means of an elastic force so that the two hook-bills 20, 22 are locked. Unlike the first embodiment, here the hook-bills 20, 22 are locked into the notches (the notches 204, 224 as illustrated in FIG. 6). Correspondingly, the self-locking members 3, 4 do not necessarily include the arcing portion forming the recess.

[0026] Referring to FIG. 5, it is a perspective view illustrating the self-locking member of the hook in a free situation according to the second embodiment of the present invention. As illustrated in FIG. 5, each self-locking member 3, 4 is a one-piece elastic metal member and the two self-locking members have the same structure. As illustrated by the self-locking member 3, the self-locking member 3 comprises: two L-shaped arms 34, 36, said two L-shaped arms 34, 36 have different lengths and present a certain non-coplanar inclination in a free situation, the L-shaped arm 34 includes a short arm 344 as a positioning leg and a long arm 342; the L-shaped arm 36 includes a short arm 364 as a positioning leg and a long arm 362, and a connection portion 32', which connects the two long arms 342, 362. The connection portion 32' can be in a form of arc or non-arc.

[0027] Referring to FIG. 6, it is a perspective view illustrating the S-shaped body of the hook according to the second embodiment of the present invention. The S-shaped body 2 is a one-piece metal member with certain rigidity. The S-shaped body 2 comprises two hook-bills 20, 22. As illustrated in FIG. 6, in order to position the ends 30, 40 of the self-locking member 3 on S-shaped body 2, two openings 220, 222 are arranged in the corresponding position opposite to the said hook-bills 20, 22 for receiving said positioning legs 344, 364. Similarly, in order to position said self-locking member 4 on S-shaped body 2, two openings 200, 202 are also arranged for the positioning legs of the self-locking member 4. In order to firmly fix the positioning legs 344, 364 into the openings 220, 222, the positioning legs 344, 364 can be riveted into the openings 220, 222 longitudinally. Said openings 220, 222 are arranged in one row longitudinally. Unlike the first embodiment, here notches 204, 224 are arranged on the inside of said hook-bills 20, 22 for receiving said connection portions 32', 42'.

[0028] Referring to FIGS. 4, 5 and 6, as illustrated therein, arms 34, 36 present a certain non-coplanar inclination in a free situation and also, the self-locking member 3 is a one-piece elastic metal member. Therefore, when the positioning legs 344, 364 are inserted into the openings 220, 222, two L-shaped arms generally are parallel to each other, an elastic force created by said long arm 36 and short arm 34 cause said arcing portion 32' to move outwards and by this way, the connection portion 32' is locked into the notch 204.

[0029] Now, the hook is closed and locked. One can use the thumb to slightly push the self-locking members, which causes said arcing portions 32', 42' to separate from the hook-bills 20, 22, and finally the hook is opened. A force which pushes the connection portions 32', 42' to move outwards is formed when self-locking member is mounted on the S-shaped body, so that the self-locking can be realized.

[0030] While the invention has been explained by reference to certain preferred embodiments thereof, it is to be understood that the invention is not limited to the particular details of these embodiments, and various modifications and substitutions of equivalents may be made thereto without departing from the scope of the invention as defined in the appended claims.

1. A hook (1), characterized in comprising a S-shaped body (2) having hook-bills (20, 22) respectively at two sides; and, two self-locking members (3, 4), one end (30, 40) of each self-locking member (3, 4) is positioned on the said S-shaped body (2), and the other end (32, 42) of each self-locking member (3, 4) is operatively locked on the corresponding hook-bill (20, 22).

2. The hook (1) according to claim 1, wherein each self-locking member (3, 4) is an elastic self-locking member and has the same structure, said self-locking member (3) comprises: two L-shaped arms (34, 36), said two L-shaped arms (34, 36) have different lengths and present a certain non-coplanar inclination in a free situation, each L-shaped arm (34, 36) includes short arms (344, 364) as positioning legs and long arms (342, 362); and an arcing portion (32), which connects the two long arms (342, 362) of the two L-shaped arms (34, 36) and projects transversely from the extension direction of said long arms (342, 362), forming a recess for receiving said two hook-bills (20, 22).

3. The hook (1) according to claim 2, wherein said two hook-bills (20, 22) are locked in the recess formed by said arcing portions (32, 42).

4. The hook (1) according to claim 1, wherein each self-locking member (3, 4) is an elastic self-locking member and has the same structure, said self-locking member (3) com-

prises: two L-shaped arms (34, 36), said two L-shaped arms (34, 36) have different lengths and present a certain non-coplanar inclination in a free situation, each L-shaped arm (34, 36) includes short arms (344, 364) as positioning legs and long arms (342, 362); and connection portions (32', 42'), which connect the two long arms (342, 362) of the two L-shaped arms (34, 36).

5. The hook (1) according to claim 4, wherein notches (204, 224) are arranged in the inside of said hook-bills (20, 22), and the connection portions (32', 42') are locked in said notches (204, 224).

6. The hook (1) according to claim 3 or 5, wherein two openings (220, 222; 200, 202) respectively are arranged in the corresponding position of the S-shaped body opposite to the two hook-bills (20, 22) for receiving said positioning legs of said self-locking members (3, 4).

7. The hook (1) according to claim 6, wherein when said two positioning legs of the L-shaped arms are inserted into the said openings (220, 222; 200, 202), two L-shaped arms of each self-locking member (3, 4) generally are parallel to each other.

8. The hook (1) according to claim 7, wherein said positioning legs of each self-locking member (3, 4) are respectively riveted in said openings (220, 222; 200, 202).

9. The hook (1) according to claim 8, wherein said openings (220, 222) are arranged in one row longitudinally.

10. The hook (1) according to claim 9, wherein said self-locking members (3, 4) are one-piece metal members.

11. The hook (1) according to claim 10, wherein said body (2) is a one-piece metal member.

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