

DESCRIPTION

CLIP

5 **Technical Field**

This invention relates generally to double-ended clips for mounting articles on a user's belt or clothing.

Background Art

10 The disclosure of US Patent No: 5,687,458 titled "Clip for Releasably Attaching Articles Together" issued November 18, 1997 is incorporated by reference herein.

15 In a plant setting, particularly, it is often important for workers to have safety gear in their possession. For example, gloves, helmets, ear muffs, safety glasses, radios and flashlights provide no protection unless they are used when a hazard presents itself. Construction workers often carry the tools of their trade, such as hammers, knives, tape measures and drills mounted to their belts.

20 It is an object of the present invention to provide a clip for maintaining articles releasably clipped to a belt or clothing.

25 A further object of this invention is to provide a clip which is simple in construction and economical to manufacture.

Disclosure of Invention

In one embodiment of the invention, there is provided a clip assembly for maintaining articles releasably clipped together. The assembly comprises a

first resilient clip member and a second resilient clip member. The clip members each have a front end defining openable opposed jaws, a bridged back end, and a longitudinal axis extending between the front end and the back end. The first resilient clip member further defines a slot extending across the
5 bridged back end, said slot having width dimension, and the second resilient clip member further defines a post having an enlarged spherical head extending longitudinally from the bridged back end, the head of the post having a diameter which is slightly greater than the width of the slot. The second clip is connected to the first clip for rotational freedom of movement by receipt of
10 the spherical head through the slot.

In additional embodiments of the invention there are provided clips suitably deployed as the first and second resilient clip members in the above combination. Each clip member has a front end defining openable opposed
15 jaws, a bridged back end, and a longitudinal axis extending between the front end and the back end. Each clip member has an upper longitudinally elongated finger gripping portion and a lower longitudinally elongated finger gripping portion extending from the bridged back end and diverging from each other in vertically opposed relation when viewed from the side. Each clip member has
20 a narrow rectangular portion extending from a forward end of each finger gripping portion in laterally opposed crossed relation. An upper L-shaped jaw portion extends from each narrow rectangular portion extending from the lower finger gripping portion. A lower L-shaped jaw portion extends from each narrow rectangular portion extending from the upper finger gripping
25 portion. Each L-shaped jaw portion is wider than the narrow rectangular

portion. Each of the finger gripping portions is sufficiently resilient so that when pressed together by the fingers of an operator, the jaw portions will open and when released will be biased toward an abutted condition. The first resilient clip member further defines a slot extending across the bridged back end and partway down the finger gripping portions. The slot has a width dimension and is for receiving a post having an enlarged generally spherical head, the head of the post having a diameter which is slightly greater than the width of the slot. The second clip member further defines a post having an enlarged spherical head extending longitudinally from the bridged back end of the clip. The head of the post has a diameter to retain the post in a slot through which the head has been received, the diameter being slightly greater than the width of the slot.

Brief Description of Drawings

Figure 1 is a pictorial illustration of a double ended clip according to certain embodiments of the invention.

Figure 2 is a side view of the double ended clip of Figure 1.

Figure 3 is a top view of the double ended clip taken along perspective lines 3-3 of Figure 2.

Best Mode for Carrying out the Invention

In one embodiment of the invention, there is provided a clip assembly for maintaining articles releasably clipped together. The assembly comprises a

first resilient clip member 30 and a second resilient clip member 40. The clip members each have a front end 50, 66 defining openable opposed jaws, a bridged back end 52, 68, and a longitudinal axis extending between the front end and the back end. The first resilient clip member further defines a slot 82
5 extending across the bridged back end, said slot having width dimension, and the second resilient clip member further defines a post 84 having an enlarged spherical head 86 extending longitudinally from the bridged back end, the head of the post having a diameter which is slightly greater than the width of the slot. The second clip is connected to the first clip for rotational freedom of
10 movement by receipt of the spherical head through the slot.

One embodiment of the invention provides a double ended clip assembly 20 for maintaining articles releasably clipped together. The clip comprises a first resilient clip member 30 and a second resilient clip member 40.

15 The first resilient clip member has a front end 50 defining openable opposed jaws, a bridged back end 52, and a longitudinal axis extending between the front end and the back end. An upper longitudinally elongated finger gripping portion 54 and a lower longitudinally elongated finger gripping portion 56
20 extend from the bridged back end and diverge from each other in vertically opposed relation when viewed from the side. See Figure 2. A narrow rectangular portion 58, 60 extends from a forward end of each finger gripping portion in laterally opposed crossed relation. An upper L-shaped jaw portion 62 extends from the narrow rectangular portion which extends from the lower
25 finger gripping portion. A lower L-shaped jaw portion 64 extends from the narrow rectangular portion which extend from the upper finger gripping portion. Each L-shaped jaw portion is wider than the narrow rectangular

portion. Each of the finger gripping portions is sufficiently resilient, or sufficiently biased to close the jaws, such that when pressed together by the fingers of an operator, the jaw portions will open and when released will be biased toward an abutted condition.

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The second resilient clip member has a front end 66 defining openable opposed jaws, a bridged back end 68, and a longitudinal axis extending between the front end and the back end. The second resilient clip member has an upper longitudinally elongated finger gripping portion 70 and a lower
10 longitudinally elongated finger gripping portion 72 extending from the bridged back end and diverging from each other in vertically opposed relation when viewed from the side. See Figure 2. A narrow rectangular portion 74, 76 extends from a forward end of each finger gripping portion in laterally opposed crossed relation. An upper L-shaped jaw portion 78 extends from the narrow
15 rectangular portion which extends from the lower finger gripping portion. A lower L-shaped jaw portion 80 extends from the narrow rectangular portion which extends from the upper finger gripping portion. Each L-shaped jaw portion is wider than the narrow rectangular portion. Each of the finger gripping portions is sufficiently resilient, or biased toward closing the jaws,
20 such that when pressed together by the fingers of an operator, the jaw portions will open and when released will be biased toward an abutted condition.

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The first resilient clip member further defines a slot 82 extending across the bridged back end and partway down the finger gripping portions. The slot has a width dimension.

The second resilient clip member further defines a post 84 having an enlarged spherical head 86 extending longitudinally from the bridged back end. The head of the post has a diameter which is slightly greater than the width of the slot.

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The second clip member is connected to the first clip member for rotational freedom of movement around the longitudinal axis of the clip by receipt of the spherical head through the slot. The first resilient clip member preferably faces oppositely from the second resilient clip member. Each of the first resilient clip member and the second resilient clip member is preferably of unitary construction, and is more preferably constructed of injection molded plastic.

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The slot is preferably sized to releasably retain the head, so that the clip members become disconnected from each other upon exposure to axially opposed force of predetermined magnitude. The post is preferably loosely carried in the slot and the head is positioned against an inner surface of the bridged back end of the first resilient clip member. The inner surface of the bridged back end of the first resilient clip member is preferably cylindrically shaped to accommodate the spherical head of the second resilient clip.

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The slot preferably has a length in the range of from 2 to 4 times the diameter of the sphere. The slot preferably has an inlet 88 on the outer surface of the clip which is beveled and an inlet on the inner surface of the clip which is square. This structure permits the clips to be assembled with less force than is required for disassembly. The diameter of the sphere is preferably in the range of 1.02 to 1.2 times the width of the slot.

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The post preferably has a diameter which is in the range of 0.2 to 0.8 times the diameter of the sphere and a length which is in the range of 0.5 to 5 times the diameter of the sphere.

- 5 In the preferred embodiment, the bridged back end of the first resilient clip member is formed by a pair of juxtaposed arcuate links 90, 92. Because the clip is formed from resilient material, the links separate sufficiently to permit assembly, and snap back to their original configuration to lock in the sphere.
- 10 The clip elements are preferably cross braced to provide greater closing bias. A first cross-brace 94 extends between the upper longitudinally elongated finger gripping portion and the lower longitudinally elongated finger gripping portion of the first resilient clip member. The first cross brace is positioned normal to the longitudinal axis of the first resilient clip member and spaced
- 15 apart from the bridged back end of the first resilient clip member. A second cross-brace 96 extends between the upper longitudinally elongated finger gripping portion and the lower longitudinally elongated finger gripping portion of the second resilient clip member. The second cross brace is positioned normal to the longitudinal axis of the second resilient clip member and spaced
- 20 apart from the bridged back end of the second resilient clip member.

- For enhanced gripping strength, the jaws of each of the first resilient clip member and the second resilient clip member come together along a “Z” shaped parting line 98 with right angle turns. The jaws of each of the first
- 25 resilient clip member and the second resilient clip member come together in an angular tongue in groove 100 abutting relationship.

To provide operating clearances, each of the resilient clip members preferably defines a pair of generally rectangular cutouts 102, 104 through which the narrow rectangular portions pass.

5 To reduce the likelihood of snagging, the clips are preferably streamlined. When viewed from above, (see Figure 3), a mid-section of each of the first resilient clip and the second resilient clip is wider than the bridged back end and the jaws, and, when viewed from the side, (see Figure 2) a mid-section of each of the first resilient clip and the second resilient clip is wider than the
10 bridged back end and the jaws.

The preferred clip is formed of resilient, dielectric material. Many thermoplastic polymers are suitable. An engineering grade plastic with good structural properties is preferred. All pieces are preferably injection molded.

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The clips are retained together by interference between the spherical head and the pair of juxtaposed arcuate links. However, upon an axial force of predetermined magnitude, the spherical surface of the head will wedge apart the juxtaposed arcuate links sufficiently to permit passage of the head between
20 the links, and thus permit separation of the clips. In a preferred embodiment, this occurs at approximately 30 to 50 pounds of axial force.

CLAIMS

1. A resilient clip member having a front end defining openable opposed jaws, a bridged back end, and a longitudinal axis extending between the front end and the back end,

said resilient clip member having an upper longitudinally elongated finger gripping portion and a lower longitudinally elongated finger gripping portion extending from the bridged back end and diverging from each other in vertically opposed relation when viewed from the side,

a narrow rectangular portion extending from a forward end of each finger gripping portion in laterally opposed crossed relation, an upper L-shaped jaw portion extending from said narrow rectangular portion extending from the lower finger gripping portion, a lower L-shaped jaw portion extending from said narrow rectangular portion extending from the upper finger gripping portion, each L-shaped jaw portion being wider than the narrow rectangular portion;

each of said finger gripping portions being sufficiently resilient such that when pressed together by the fingers of an operator, said jaw portions will open and when released will be biased toward an abutted condition,

wherein the bridged back end of the resilient clip member is formed from a pair of juxtaposed arcuate links, a slot being defined between the links, said slot extending across the bridged back end and partway down the finger gripping portions, said slot having a width dimension and being for receiving a post having an enlarged generally spherical head, the head of the post having a diameter which is slightly greater than the width of the slot, the pair of juxtaposed arcuate links resiliently separating sufficiently to permit passage of the head of the post.

2. A resilient clip member as in claim 1 wherein the bridged back end of the resilient clip member is formed by a pair of juxtaposed arcuate links, and the slot has a uniform width from one end to the other end and is closed at both ends, said resilient clip further comprising in combination with an article having a protruding post and enlarged spherical head attached to the resilient clip member by receipt of the enlarged spherical head through the slot.

3. A resilient clip member as in claim 1 further comprising

a cross-brace extending between the upper longitudinally elongated finger gripping portion and the lower longitudinally elongated finger gripping portion of the resilient clip member, said cross brace being positioned normal to the longitudinal axis of the resilient clip member and spaced apart from the bridged back end of the resilient clip member.

4. A resilient clip member as in claim 1 wherein an inner surface of the bridged back end of the resilient clip member is partially cylindrically shaped to accommodate the generally spherical head.

5. A resilient clip member as in claim 1 wherein the slot has an inlet on the outer surface of the resilient clip member which is beveled and an inlet on the inner surface of the resilient clip member which is squared off.

6. A resilient clip member as in claim 1 the slot has a length in the range of from 2 to 4 times its width.

7. A clip assembly for maintaining articles releasably clipped together, comprising in combination:

a first resilient clip member having a front end defining openable opposed jaws, a bridged back end, and a longitudinal axis extending between the front end and the back end,

a second resilient clip member having a front end defining openable opposed jaws, a bridged back end, and a longitudinal axis extending between the front end and the back end,

wherein the first resilient clip member further defines a slot extending across the bridged back end, said slot having a width dimension, and

the second resilient clip member further defines a post having an enlarged spherical head extending longitudinally from the bridged back end, the head of the post having a diameter which is slightly greater than the width of the slot,

said second clip being connected to the first clip for rotational freedom of movement by receipt of the spherical head through the slot,

wherein the bridged back end of the first resilient clip member is formed from a pair of juxtaposed arcuate links, the slot being defined between the links, said pair of juxtaposed arcuate links resiliently separating sufficiently to permit passage of the head of the post and connection of the first resilient clip member to the second resilient clip member.

8. A clip assembly as in claim 7 wherein

the first resilient clip member has an upper longitudinally elongated finger gripping portion and a lower longitudinally elongated finger gripping portion extending from the bridged back end and diverging from each other in vertically opposed relation when viewed from the side,

a narrow rectangular portion extending from a forward end of each finger gripping portion in laterally opposed crossed relation, an upper L-shaped jaw portion extending from said narrow rectangular portion extending from the lower finger gripping portion, a lower L-shaped jaw portion extending from said narrow rectangular portion extending from the upper finger gripping portion, each L-shaped jaw portion being wider than the narrow rectangular portion;

each of said finger gripping portions being sufficiently resilient such that when pressed together by the fingers of an operator, said jaw portions will open and when released will be biased toward an abutted condition,

the second resilient clip member has an upper longitudinally elongated finger gripping portion and a lower longitudinally elongated finger gripping portion extending from the bridged back end and diverging from each other in vertically opposed relation when viewed from the side,

a narrow rectangular portion extending from a forward end of each finger gripping portion in laterally opposed crossed relation, an upper L-shaped jaw portion extending from said narrow rectangular portion extending from the lower finger gripping portion, a lower L-shaped jaw portion extending from said narrow rectangular portion extending from the upper finger gripping portion, each L-shaped jaw portion being wider than the narrow rectangular portion;

each of said finger gripping portions being sufficiently resilient such that when pressed together by the fingers of an operator, said jaw portions will open and when released will be biased toward an abutted condition;

and the slot extends across the bridged back end and partway down the finger gripping portions of the first resilient clip member between the juxtaposed arcuate links, and the slot has a uniform width from one end to the other end and is closed at both ends.

9. A clip assembly as in claim 8 wherein each of the first resilient clip member and the second resilient clip member are of unitary construction.

10. A clip assembly as in claim 8 wherein the first resilient clip member faces oppositely from the second resilient clip member.

11. A clip assembly as in claim 8 wherein

the slot is sized to releasably retain the head, so that the clip members become disconnected from each other upon exposure to axially opposed force of predetermined magnitude.

12. A clip assembly as in claim 8 wherein the post is loosely carried in the slot and the head is positioned against an inner surface of the bridged back end of the first resilient clip member and the slot has a length in the range of from 2 to 4 times the diameter of the sphere.

13. A clip assembly as in claim 8 wherein the jaws of each of the first resilient clip member and the second resilient clip member come together along a "Z" shaped parting line with right angle turns.

14. A clip assembly as in claim 8 wherein the jaws of each of the first resilient clip member and the second resilient clip member come together in an angular tongue in groove abutting relationship.

15. A clip assembly as in claim 8 wherein each of the resilient clip members defines a pair of generally rectangular cutouts through which the narrow rectangular portions pass.

16. A clip assembly as in claim 8 wherein, when viewed from above, a mid-section of each of the first resilient clip and the second resilient clip is wider than the bridged back end and the jaws, and, when viewed from the side, a mid-section of each of the first resilient clip and the second resilient clip is wider than the bridged back end and the jaws, to reduce the risk of snagging the clip on an object when in use.