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(54) **Belt clip**

(57) A clip is described with first and second arms connected together such that they define between them a space for a belt or the like. A first of the arms has on an outer surface thereof a socket for receipt of a stud and carries latch means for releasably retaining the stud in the socket. The latch means comprises a latching arm carrying a latching boss, the latching arm being movable between a first latching position in which the latching boss protrudes through the first arm into the socket and a second release position in which the latching boss is withdrawn from the socket. A latch release member is provided for moving the latching arm. The latching arm is an integral extension of the first or second arm.

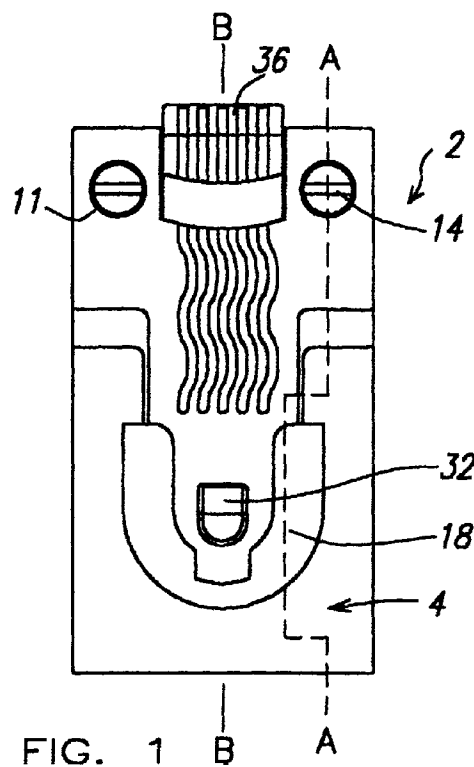


FIG. 1

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Description

This invention relates to a clip for attachment to a belt or the like and to which a stud can be secured, the stud being in turn connected to an item such as a personal telephone or bag to allow hands-free carrying of the item.

One known clip has two arms pivotally connected together by a metal strip folded between the two and attached to both. A first arm defines an open ended socket for reception of a stud. A latch prevents the stud from being removed from the socket. The latch is provided by a boss on the metal strip which protrudes through the first arm into the socket and is received within an aperture of the stud. A pusher bar is held within the first arm and is movable therealong into a position where it causes flexing of the metal strip and thence removal of the latching boss from the recess so that in turn the stud can be removed from the clip.

The known clip can be attached to a belt or the like and for this purpose the second arm has a flange at the end opposite to that which is connected to the first arm. A space for a belt is defined between the arms and between the fold of the strip and the flange. The clip can also be secured to a piece of material such as a shirt pocket or jacket front edge, the resiliency of the metal strip causing the flange to grip the material between it and the first arm.

The above described clip is satisfactory in many ways. However, it suffers from the disadvantage that it requires a metal strip. In addition a metal spring is used to bias the latch release bar away from the latch release position. The metal adds to the cost of production, the other pieces of the clip being plastic. In addition, it makes the clip unsuitable for marine applications as it is vulnerable to rusting and corrosion. Further, the fitting of the strip and the metal springs make assembly of the clip relatively complicated.

It is an object of the invention to provide a clip which does not suffer from the above disadvantages.

A clip in accordance with the invention comprises first and second arms connected together such that they define between them a space for a belt or the like, a first of the arms having on an outer surface thereof a socket for receipt of a stud and carrying latch means for releasably retaining the stud in the socket, the latch means comprising a latching arm carrying a latching boss, the latching arm being movable between a first latching position in which the latching boss protrudes through the first arm into the socket and a second release position in which the latching boss is withdrawn from the socket, and a latch release member for moving the latching arm from the first to the second positions, wherein the latching arm is an integral extension of the one of the first and second arms.

An advantage of this is that by providing the latching arm as part of a main arm, preferably the second arm, plastic material can be used for the latching arm. In ad-

dition assembly is facilitated, as a separate piece does not have to be connected between the two arms.

Preferably the latching arm is flexed from the first latching position to the second release position under pressure from the latch release member and returned to the first latching position on release of the pressure through the resiliency of the material from which the latching arm is formed.

The latch release member may comprise a pusher rod held by the first arm but movable therealong under manual pressure on a button connected to the rod between a locking position and an unlocking position. Biassing means is provided for biassing the pusher rod towards the locking position which, as in the known clip, preferably comprises at least one spring. In a particularly preferred embodiment however two leaf springs are provided which are integrally formed with the pusher rod. This feature again avoids the use of metal and reduces the number of parts.

Very preferably the clip has a support for holding the latching boss in the first latching position. The support ensures that there is no inadvertent release of the stud. The support may conveniently be carried on the latch release member since operation of the latch release member to move the latching arm from the first latching position to the second release position can simultaneously displace the support away from the latching boss to allow such movement.

In one embodiment the first and second arms define the space for a belt or the like in a first clipping position and are movable to a second open position in which the belt or the like can be introduced into or removed from the space.

The first and second arms may be connected together at or adjacent one end by fasteners, the material of the arms and/or the fasteners being sufficiently flexible to allow the arms to be manually pried apart by pressure on their opposite ends. The fasteners are suitably made from a plastics material as are the arms. Through use of the inherent flexibility of the plastics material chosen, the need for a metal strip to allow opening of the clip is avoided.

The first and second arms may be fixedly connected together at or adjacent one end and releasable connection means provided for securing the other ends together in the first clipping position.

In another embodiment the first and second arms are fixed in the space defining position either releasably by a lock or permanently through a non-return closure between their other ends. An advantage of this is that the clip is then very suitable for strenuous activities particularly out-door activities as the clip can only be removed by removing the wearer's belt and will not inadvertently be detached.

The clip in accordance with the preferred embodiments is constructed from three major parts: the first and second arms and the latch release member and only requires in addition fastener means for securing the first

and second arms together. All the parts can be made of plastic. The cost of the clip elements is therefore low and assembly is simple and also therefore low cost. In addition the clip is impervious to water, in particular sea water.

The invention will now be further described by way example with reference to the accompanying drawings in which:

Figure 1 is a top plan view of a first embodiment of a clip in accordance with the invention;
 Figure 2 is a side view of the clip of Figure 1;
 Figure 3 is a bottom plan view of the clip of Figure 1;
 Figure 4 is a section on A-A of Figure 1;
 Figure 5 is a section on B-B of Figure 1;
 Figure 6 is a top plan view of a latch release member forming part of the clip of Figure 1;
 Figure 7 is a top plan view of an arm of a second embodiment of the clip in accordance with the invention;
 Figure 8 is a section on C-C on Figure 7;
 Figure 9 is a top plan view of a latch release member forming part of the second embodiment of the clip, and,
 Figure 10 is a section on D-D of Figure 9.

The clip 2 shown in Figures 1 to 6 comprises a first arm 4, a second arm 6 and a latch release member 8. The first and second arms 4, 6 comprise plates with curved lower ends 9.

At the upper end the first arm 4 has a thickened region 10 defining stepped holes 11 for receiving two split-head hollow bolt members 12 integrally formed with the second arm 6. The arms 4, 6 are connected together by pushing the bolt members 12 through the holes 11, the splits allowing the heads 13 to contract sufficiently to pass through the first smaller section of the holes 11. Once past the step, the bolt heads 13 spring back and latch against the step. Release is prevented by pins 14 force fitted into the bolt members 12 until their enlarged ends 15 are received in correspondingly enlarged end portions 16 of the bores of the bolt members 12. The second arm 6 has recesses 17 above and below the bolt members 12.

The first arm 4 defines on its upper surface an open ended socket 18 with top walls shaped to receive a stud 20, see Figure 5. The stud 20 may be connected to a plate for attachment to an item such as a mobile phone or to a second stud 22, the two halves of which may be connected together either side of a bag for a phone or the like with a central boss 24 extending through an aperture in the bag.

The first arm 4 defines on its under surface a T-shaped recess, the cross pieces 26 of which are of greater depth than the main portion 28.

The second arm 6 has an integral latching arm 30 which is received within the long recess 28 of first arm 4. The latching arm 30 carries on the end distant from

the second arm 6 a latching boss 32 which protrudes through an aperture 34 in the first arm 4 and into the socket 18 when the latching arm 30 is in a first unflexed position.

The latch release member 8 includes a pusher button 36 and an integral pusher rod 38 with a forked head 40. The rod 38 has a portion 41 of generally bulbous cross-section which, in use, is received within a corresponding recess 42 in the latching arm 30.

In assembling the clip 2, the first and second arms 4 and 6 are secured together as described above with the pusher rod 38 held in the T-shaped recess of the first arm 4 between the first arm 4 and the latching arm 30. The bulbous portion 41 is located in the recess 42 and the latching boss 32 extends up between the forks 40. Manual pressure on the pusher button 36 causes the pusher rod 38 to move along the first arm 4 as a result of which the bulbous portion 41 presses against the latching arm 30 flexing it away from the first arm 4 and thus withdrawing the latching boss 32 from the recess 18. A stud 20 located in the recess 18 can then be removed.

On release of manual pressure on the button 36, the pusher rod 38 travels back along the first arm 4 under the action of two springs 44. These comprise leaf springs integrally formed with the pusher rod 38 which are held within the cross pieces 26 of the recess in the underside of the first arm 4.

The clip 2 is shown in Figures 1 to 6 in the clipping position in which the curved lower ends 9 of arms 4 and 6 abut each other and the arms 4, 6 enclose a space suitable for a belt or the like. The clip 2 may be secured in this position by providing the first arm 4 with an integral tongue 46 which is received in a groove 48 formed in the outer face of the second arm 6 above a cut-out 49. The resiliency of the arms 4, 6 will however tend to hold them together in the clipping position.

To open the clip 2 the tongue 46 is released from the groove 48 and the arms 4 and 6 are pried apart by manual pressure. Separation of the arms 4, 6 is possible because the arms 4, 6 and pins 14 are made from a flexible plastic material such as Delrin. The form of the fasteners between the arms 4, 6, i.e., bolt members 12 and snap-fit pins 14, also facilitates separation of the arms 4, 6. The pusher rod 38 with its integral springs 44, pusher button 36 and fork heads 40 is also preferably made from Delrin. To enhance the flexibility of the second arm 6 it may be formed with a cut-out 50, as shown in Figure 3.

Figures 7 to 10 illustrate a second embodiment of a clip which is in many ways similar to the clip 2 and so like reference numerals will be used for like parts but 52 will be used for the clip of the second embodiment.

The head 40 of the latch release member 8 of the clip 52 is elongated and provided with a cross-piece 54 between the forks. As assembled, with the clip 52 in the latching position, the cross-piece 54 is located below the latching boss 32 and serves to support this. The cross-

piece 54 prevents the latching boss moving out of the latching position except when the latch release member 8 is pressed. Thus the cross-piece 54 prevents inadvertent release of a stud such as could occur when the two arms 4, 6 of the clip 52 are partly separated, for example when the clip is on a belt and the wearer bends over.

To accommodate the elongated head of the latch release member 8 of the clip 52, the first arm 4 is cut away below the socket 18 to provide space for the cross-piece 54 and two apertures 56 for the forks of the head 40 when the latch release member is pressed. The forks of the head 40 move through apertures 56 and in two recesses 58 defined in the outer face of the first arm 4.

The curved lower end 9 of the first arm 4 is also longer in the clip 52 than in the clip 2. In use the curved lower end 9 simply abuts the second arm 6 which is straight but may be lengthened to extend below the lower end 9 of the first arm 4. No catch for latching the lower ends 9 of the first and second arms 4 and 6 is provided for the sake of simplicity of construction and also sliding of the clip 52 on to a belt. The lower end of the second arm 6 provides a lead-in extension and the simple overall D-shape retains the clip 52 on a belt in most situations.

However, when the clip is to be used in strenuous or out-door activities, in particular in activities where it is liable to be snagged or caught and therefore vulnerable to inadvertent release, the latch of the first embodiment is used and made either non-returnable or lockable. For example, the second arm 6 may define a slot in place of recess 48 and the tongue 46 have a split head which is dimensioned such that when it is compressed it can pass through the slot but springs back to latch the arms together. A particular advantage of fixing the arms 4, 6 is that the clip 2, 52 can only be detached by removal of the belt or other item on which it is carried and so a possibly crucial piece of equipment carried on the clip cannot be lost.

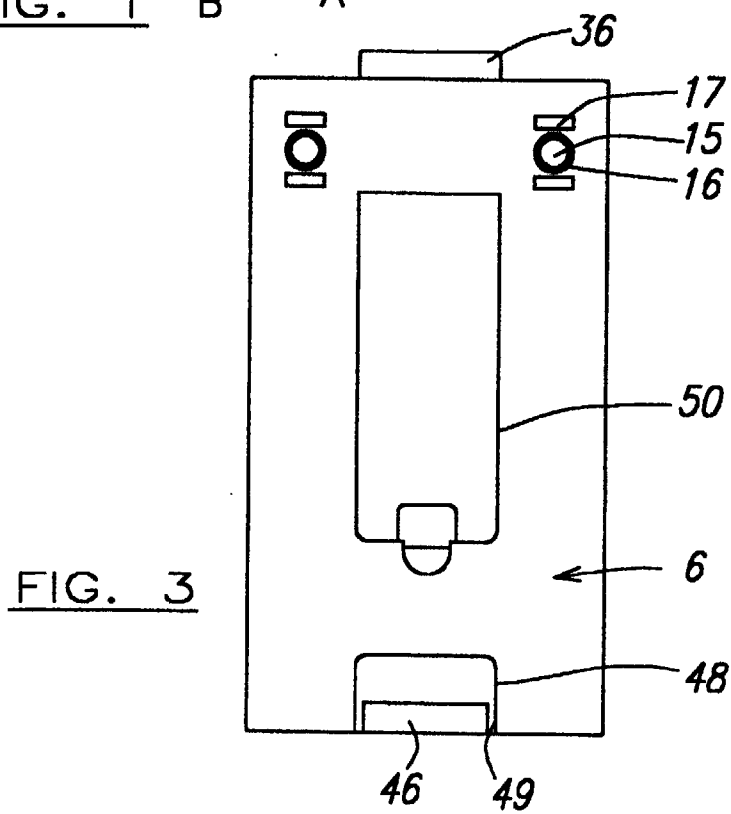
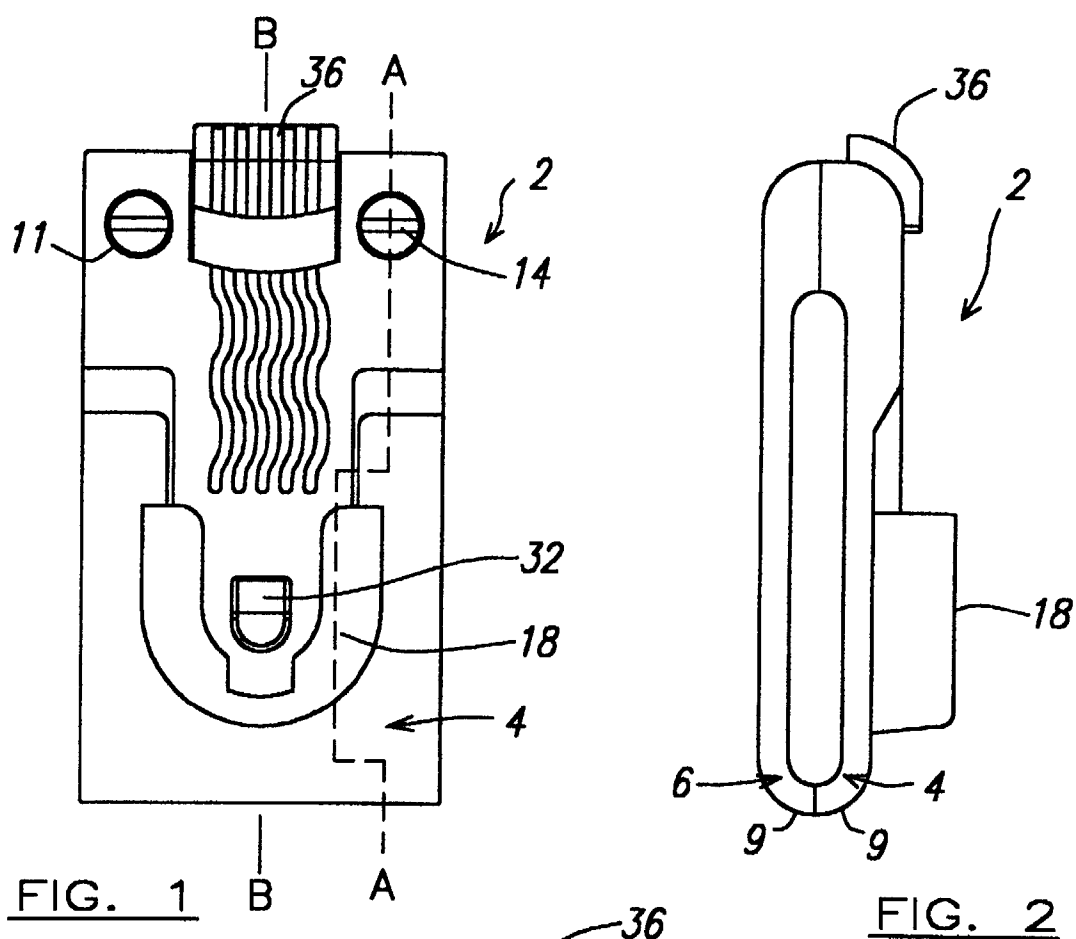
Both clips 2 and 52 include only three major parts: the first arm 4, the second arm 6 and the latch release member 8. All of these parts are made of a plastic material, as are the pins 14. As a result the clips are cheap to manufacture, not only because of the material of the parts but also because of their small number. Furthermore the clips are resistant to damage by corrosion or otherwise from water and can be safely used in marine environments.

Claims

1. A clip comprising first and second arms connected together such that they define between them a space for a belt or the like, a first of the arms having on an outer surface thereof a socket for receipt of a stud and carrying latch means for releasably retaining the stud in the socket, the latch means comprising a latching arm carrying a latching boss, the

latching arm being movable between a first latching position in which the latching boss protrudes through the first arm into the socket and a second release position in which the latching boss is withdrawn from the socket, and a latch release member for moving the latching arm, wherein the latching arm is an integral extension of the first or second arm.

2. A clip as claimed in Claim 1 wherein the latching arm is an integral extension of the second arm.
3. A clip as claimed in either Claim 1 or Claim 2 wherein the latching arm is flexed from the first position to the second position under pressure from the latch release member and returns to the first position on release of the pressure through the resiliency of the material from which the latching arm is formed.
4. A clip as claimed in any preceding Claim wherein the latch release member comprises a pusher rod held by the first arm but movable therealong on manual pressure on a button connected to the rod between a locking position and an unlocking position.
5. A clip as claimed in Claim 4 wherein biasing means are provided for biasing the pusher rod towards the locking position.
6. A clip as claimed in Claim 5 wherein the biasing means comprises at least one spring.
7. A clip as claimed in Claim 6 wherein the leaf springs are provided integrally formed with the pusher rod.
8. A clip as claimed in any preceding Claim wherein a support is provided for holding the latching boss in the first latching position.
9. A clip as claimed in Claim 8 when dependent on any one of Claims 4 to 7 wherein the support is carried on the latch release member.
10. A clip as claimed in any preceding Claim wherein the first and second arms are fixedly connected together at or adjacent one end and releasable connection means is provided for securing the other ends together.
11. A clip as claimed in any preceding Claim wherein the first and second arms are fixedly connected together at or adjacent both ends.
12. A clip as claimed in any preceding Claim wherein the first and second arms and the latching arm are all formed of a plastics material.



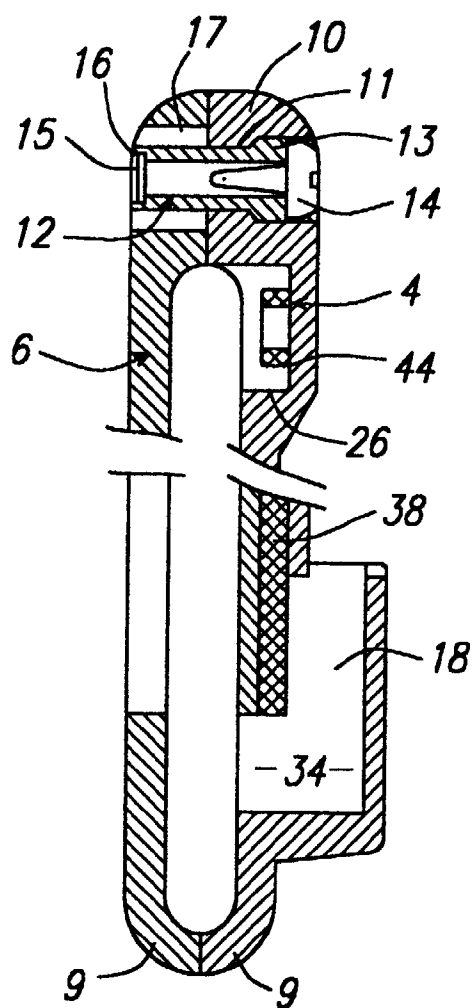


FIG. 4

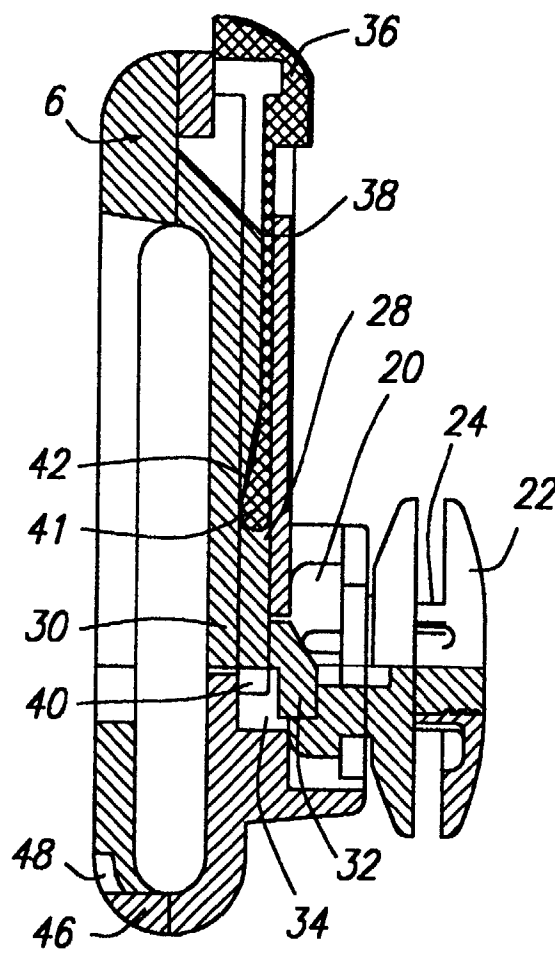


FIG. 5

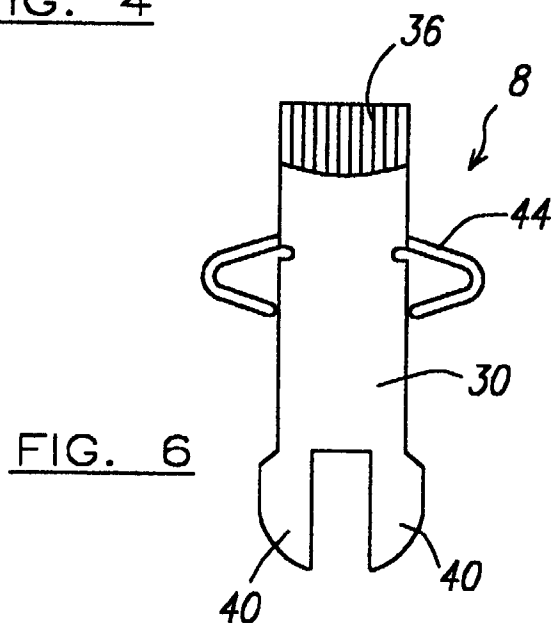


FIG. 6

