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**Retrieval equipment for deployed bungy**

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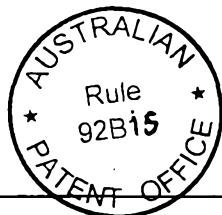
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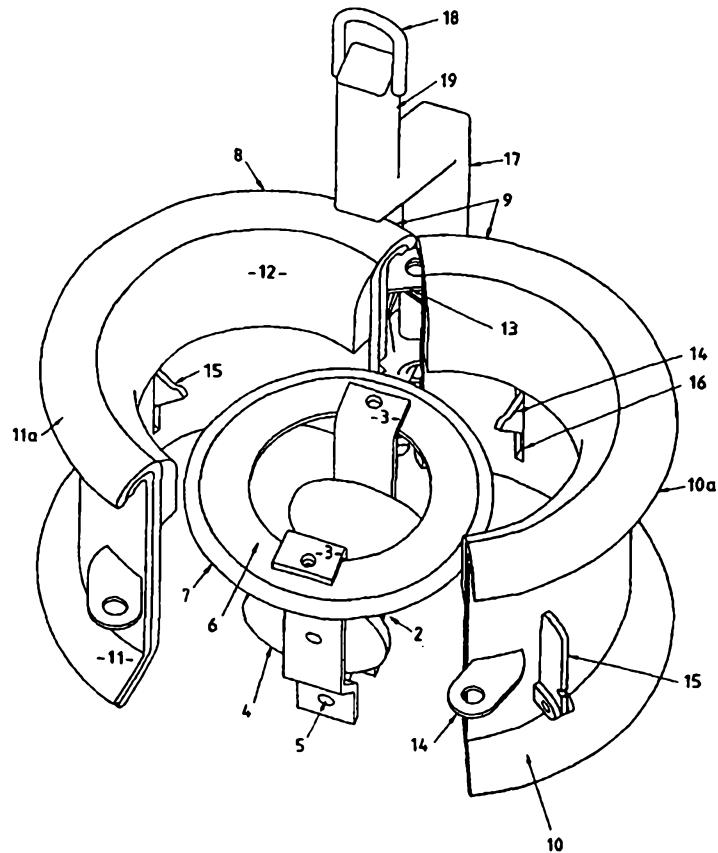
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4) Title: RETRIEVAL EQUIPMENT FOR DEPLOYED BUNGY

## 7) Abstract

Retrieval equipment for a deployed bungee comprises a retrieval/hauling member (8) and a terminal coupling unit (2) connectable to or integral with the free end of the bungey. The retrieval/hauling member (8) is attached to a retrieval cable via an extension arm (17) and is provided with an aperture for receipt of said bungey. The retrieval/hauling member (8) releasably engages the terminal coupling unit (2) by a split collar (9, 10, 11) provided with retractable spring retaining mechanisms (15, 5). After completion of a jump, the split collar (9) of the retrieval/hauling member (8) can be enclosed around the deployed bungey and lowered down the bungey to engage the terminal coupling unit (2). The bungey can then be hauled back up to the jump site using a retrieval cable.



Title: Retrieval Equipment For Deployed Bungy

Technical Field

The present invention relates to retrieval equipment for a deployed bungy and more particularly to a novel retrieval/hauling unit which is inter-engageable with a bungy terminal coupling unit and method of using same.

As used herein the term "bungy" means an elongated elastic member, such as a vine, cord, rope or strap, more typically a multi-stranded latex cord.

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Background Art

The pursuit of bungy jumping from a structure such as a cliff, bridge, jumping platform or tower is known. One end of the bungy is releasably anchored to said structure and the free end is releasably attached to a terminal connection means (e.g. a karabiner or coupling unit) from which the harness or ankle-cuff secured to the jumper can be releasably connected thereto. Typically, the bungy is releasably anchored to said structure by means of a tethering cable secured to a crane arm located at the jump site.

20 At present, upon completion of the jump, the jumper is lowered to a landing site adjacent the base of the structure (for example, lowering the jumper into a gorge for boat pickup) or operational crew secure the deployed bungy to a retrieval cable connected to a winching system (e.g. a crane operated winch, windlass or vehicular tow hauling) to return the suspended jumper to the structure and/or retrieve the bungy.

25 The free end of the retrieval cable is lowered from the jump site to operational crew at the landing site, who then releasably secure the cable to the deployed bungy terminal



connection. On voice or hand signal command from the landing site crew, the jump site crew engage and control the winching system. Alternatively, the bungy may be manually hauled up to the jump site once the jumper has been released from the deployed bungy.

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It can often be a long and arduous task, involving a number of crew members, to secure the retrieval cable to the deployed bungy and manipulate the retrieved bungy length, given the weight and elastic properties of the bungy. The deployed bungy can swing with exposure to air turbulence such as wind gusts or helicopter back-draughts.

10 The effect of air turbulence can be a major factor, particularly if the landing site is located in a gully or ravine. The retrieval cable may frequently become intertwined with the deployed bungy length during its descent to the landing site. Similarly, the weight and movement of the bungy during hauling can slow the operation of retrieval.

15 The strain and effort of a manual haul can be exhausting for the operators and may lead to back injury, particularly if the jump rate is high and/or the distance between the landing site and jump site is large. The hauling position becomes uncomfortable with time in view of the necessity to wear a safety harness.

20 Disclosure of invention

It is an object of the present invention to provide improved retrieval equipment for a deployed bungy, which is easy and rapid to operate, dismantle for transport to an alternative jumping site or store out of use.

25 The present invention provides retrieval equipment for a deployed bungy comprising a retrieval/hauling member provided with an aperture for receipt of said bungy, a



terminal coupling unit connectable to or integral with the free end of the bungy, means to attach said retrieval/hauling member to a retrieval cable; said retrieval/hauling member being releasably engageable with said terminal coupling member.

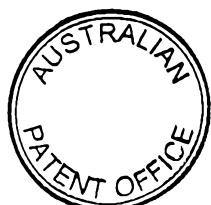
- 5 It will be appreciated that the retrieval/hauling member may be directly or indirectly connected to the terminal coupling unit. For example, the retrieval/hauling unit may connect onto the securing means provided for the jumper (i.e. tethering rope or webbing sling, ankle cuff or harness) secured to the terminal coupling unit.
- 10 Preferably said aperture is a passage through the retrieval/hauling member. Preferably said retrieval/hauling member includes a releasable opening mechanism.

The retrieval/hauling member is substantially symmetrical in shape and said aperture is concentric relative to the central axis thereof. Alternatively, said aperture is offset.

- 15 Preferably said opening mechanism is a lockable hinged opening. Alternatively said opening mechanism is effected by the dis-engagement of over-centre latches located on opposing sides of the retrieval/hauling member.

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- 20 In two preferred forms of the present invention, the invention provides a terminal coupling unit having a continuous peripheral projection adapted to inter-engage with said retrieval/hauling member and/or function as a guide member for the passage of the retrieval/hauling member; wherein said retrieval/hauling member is a collar comprising a body and an attachment to secure said retrieval/hauling member to a retrieval cable. Preferably said body includes a retractable retaining means biased to
- 25 a locking position.



In a preferred embodiment, said attachment means is an extension arm. Preferably the free end of said extension arm is adjacent but slightly offset from the central axis of an engaged said terminal coupling unit without obstructing the top opening of same. Preferably said extension arm is detachable from said body for maintenance, transport 5 or storage. Preferably said body is rotatably secured to said extension arm. More preferably, said extension arm is biased to an upright position by a spring release mechanism such that the engagement of said spring release means inverts the body of said collar to assist an operator in removing an engaged terminal coupling unit from said retrieval/hauling member. That is, it is easier and a more safe procedure to lift the 10 terminal coupling unit from the retrieval/hauling member when the free end of the bungy is orientated above the retrieval/hauling member. Alternatively said attachment is a plurality of equi-distantly-spaced lugs located on the periphery of said collar.

Brief description of the drawings

15 By way of example only, preferred embodiments of the present invention are described in detail, with reference to the accompanying drawings in which:-

Fig. 1 is a perspective view of a terminal coupling unit of a first preferred embodiment of the present invention,

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Fig. 2 is a cross-sectional view of the terminal coupling unit of Fig. 1 inter-engaged with a retrieval/hauling member of the present invention,

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Fig. 3 is a perspective view of Fig. 2 showing the retrieval/hauling member in an open position wherein the terminal coupling unit is disengaged therefrom,



Fig. 4 is a perspective view of a modified retrieval/hauling member of Fig.s 2 & 3 wherein the collar is rotatably secured to the extension arm,

5 Fig. 5 is a plan view from above of a second preferred retrieval/hauling member shown in the open position,

Fig. 6 is a side view of another preferred terminal coupling unit in accordance with the present invention,

10 Fig. 7 is a side view showing the terminal coupling unit of Fig. 6 inter-engaged with the retrieval/hauling member of Fig. 5,

15 Fig. 8 is a side view of the main component of the retaining mechanism of the retrieval/hauling member of Fig.s 5 & 7,

Fig. 9 is a plan view of the retaining mechanism component of Fig. 8,

Fig. 10 is a cross sectional view showing the inter-engagement of a modified retrieval/hauling member of Fig.s 5 & 7 with a modified terminal coupling unit of Fig.s 6

20 & 7 wherein the terminal coupling unit is provided with the retractable retaining mechanism, and the retrieval/hauling collar is provided with a nose projection,

Fig. 11 is a plan view from above showing a modified retrieval/hauling member of Figs 2 & 3 or 4 wherein the collar aperture is off-set, and

25



Fig. 12 is a plan view from above showing a modified retrieval/hauling member of Fig.s 5 & 6 wherein the collar aperture is offset.

Best Modes For Carrying Out The Invention

5 Referring to Fig.s 1-3 in general, a first preferred embodiment of the two essential components of the retrieval equipment for a deployed bungy, a terminal coupling unit 2 and retrieval/hauling member (8, Fig.s 2 and 3) are thereshown.

With particular reference to Fig. 1, the terminal coupling unit 2 comprises a bracket 3 supporting a reel 4, tethering bar 5 and ring 6. In use, the free end of a bungy is 10 secured around the spool of the reel 4, and the harness or ankle-cuff is releasably connected to the tethering bar 5 usually via means of a karabiner and tethering rope. The rim of the ring 6 is formed as a continuous peripheral projection 7. The peripheral projection 7 provides a flange as a contact point for inter-engagement with the 15 retrieval/hauling member to initiate retrieval of the deployed bungy as hereinafter described. Preferably, the ring 6 is removable for maintenance or replacement.

With reference to Fig.s 2 and 3, the retrieval/hauling member 8 comprises a releasable split collar 9 and an extension arm 17. The collar 9 consists of two mirror image 20 substantially crescent shaped sections 10, 11, secured to each other at one end thereof by means of a hinge 13. The sections 10, 11 are releasably secured at the opposing end by an external latch mechanism comprising a pair of lugs 14, and latch or locking pin (not shown). The rim of each section (10a, 11a) is rounded or beveled 25 to provide a smooth surface for resting and drapage of the bungy length during hauling and after retrieval. Advantageously, the rim (10a, 11a) further functions as a guide



means for the passage of the retrieval/hauling member 8 from the anchoring tether cable (not shown) onto the bungy length at retrieval set-up.

In the open position as depicted in Fig. 3, the latch or locking pin (not shown) is 5 disengaged and the lugs 14 are separated via the articulation of the sections 10, 11 about the hinge 13. To close the collar 9, the free ends of sections 10 and 11 are pulled adjacent each other, so that the apertures of the lugs 14 are aligned and the latch engaged therewith. It will be appreciated that the split collar 9 may be releasably secured by alternate known mechanisms such as bolts or over-centre latches and/or 10 these mechanisms may also be used in place of the hinge 13 and/or latch mechanism to split open the collar 9. In the closed position as depicted in Fig. 2, the secured collar 9 is formed with a central passage, having a throat guide 12 adjacent the top opening thereof. Preferably the throat guide 12 is composed of a low friction material to reduce abrasive damage of the bungy resulting from repetitive retrieval.

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Each section 10, 11 has a plurality of retractable spring retaining mechanisms (15, 16).

Each mechanism (15, 16) comprises a catch 15 capable of moving between an extended locking position as shown in Fig.s 2 and 3 and a retracted position (shown in dotted outline in Fig. 2) wherein the catch 15 recedes within a slot 16. Each catch 15 is

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biased by spring means (not visible) to the extended position wherein the hook shaped portion protrudes from the slot 16.

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The collar 9 is supported on an extension arm 17. One end of the extension arm is secured adjacent the hinge 13 and the free end 19 is provided with a lug fitting 18 for attachment to the retrieval cable (not shown). Preferably said extension arm 17 is detachably secured to the collar 9 such that the arm 17 may be removed for



maintenance, transport or storage. In use, the lug 18 and free end 19 are positioned adjacent but slightly offset from the central axis of the terminal coupling unit 2 whereby the extension arm 17 does not obstruct the top opening of the terminal coupling unit 2 provided for receipt of the free end of the bungy. Alternatively, the means to attach the 5 retrieval/hauling member 8 to the retrieval cable is a plurality of equi-distantly spaced lugs located on the periphery of the collar 9, as illustrated in respect of the third preferred embodiment (51, 52, Fig.s 5 & 7).

In use, the free end of the bungy is attached to the terminal coupling unit 2 in advance 10 of deployment as hereinbefore described and the retrieval/hauling member 8 is secured by the lug 18 to a retrieval cable connected to a winching system such as a crane operated winch, vehicular winch or windlass (not shown). Alternatively, the retrieval cable is secured for subsequent manual or vehicular tow hauling.

15 Upon completion of the jump, the jumper may be lowered to a landing site and released from the harness or ankle cuff or remain suspended secured therein for retrieval with the deployed bungy. Jump site crew thread the deployed bungy through the aperture of the collar 9 by opening the collar 9, enclosing the sections 10, 11 around the bungy and closing the collar 9 as hereinbefore described. It will be 20 appreciated that where the retrieval cable is securely tied off or controlled by a winching system, the retrieval/hauling member 8 may be placed on the bungy length adjacent the top at jump set-up and returned to that position after the bungy has been deployed and subsequently retrieved (i.e. between consecutive jumps). The throat guide 12 restricts the degree of movement of the bungy length within the aperture of 25 the collar 9.



To retrieve the bungy, the retrieval/hauling member 8 is run down the deployed bungy length by gravity feed of the retrieval cable or under winch control until the ring 6 of the terminal coupling unit 2 contacts and docks with the spring locking mechanisms 15, 16. The throat guide 12 prevents the deployed bungy length from being snared on the 5 extended catches 15 or free end arm length 19, even if air turbulence effects swinging of the bungy. Docking is achieved by the inter-engagement of each catch 15 with the peripheral projection 7:- the projection 7 pivots the catches 15 in the direction of Arrow A (Fig. 2) as the retrieval/hauling member 8 slides down over the terminal coupling unit 2. As the retrieval/hauling member 8 slides into the position shown in Fig. 2, the 10 catches 15 spring back into the extended locking position shown and the hooked portion of each catch 15 supports and releasably retains the peripheral projection 7. The weight of the bungy and spring bias means of the catches 15 maintain the docked inter-engagement position of the terminal coupling unit 2 within the retrieval/hauling member 8.

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The winching system is then engaged, or alternatively, the vehicular tow hauling or manual hauling is commenced until the retrieval cable, deployed bungy length, retrieval/hauling member 8 and docked terminal coupling unit 2 are back above the 20 jump site within arm's reach of the operator. Preferably, said retrieval cable is connected to a winching system via a friction-free eddy current coupling member (e.g. a TASC unit) which provides a slipping clutch control such that the operator can brake and/or control the rate of descent and ascent of the retrieval/hauling member 8 (not shown).

25 To release the terminal coupling unit 2 from the retrieval/hauling member 8, the collar 9 is opened and the sections 10, 11 are separated. To increase operational speed



and afford a more safe jump re-set procedure, the retrieval/hauling member (8, Fig. 4) can be modified whereby the collar 9 is rotatably bolt secured to the extension arm 17. The extension arm 17 is provided with a spring release mechanism (17a & b, Fig. 4) biased by a compression spring (not visible) to hold the extension arm in an upright 5 position. Engagement of both spring release mechanism levers 17a inverts collar 9 approximately 180° such that upon rotation of the collar 9 about the pivot 17b, the bungy is orientated below the retrieval/hauling member 8. This orientation assists the operator in safety removing the terminal coupling unit 2 from the retrieval/hauling member 8, reducing the likelihood of dropping the bungy after disengagement. When 10 the terminal coupling unit 2 is removed, the retrieval/hauling member 8 is returned to the upright position by depressing both levers 17a.

Whilst the terminal coupling unit 2 has been depicted and described as a substantially open structure, it will be appreciated that the body of the terminal coupling unit may be 15 formed as an open ended substantially cylindrical structure (shown in broken lines in Fig. 1) incorporating a means to releasably secure the end of the bungy and means to connect the harness or ankle cuffs thereto. Similarly, the retrieval/hauling member 8 may be formed in any desired polygonal or substantially cylindrical shape wherein the aperture is concentric or offset as illustrated in Fig. 11. Further, it will be appreciated 20 that the collar 9 need not be formed in two releasable sections (10, 11), but could be a closed cylinder, so that in use the bungy length would be manually fed through the aperture of the collar 9 (not shown). Similarly, it will be appreciated that the collar 50 need not split completely in half as depicted and described but may merely include a releasable section having a sufficient opening to allow egress of the bungy length. It 25 will also be appreciated that either the terminal coupling unit or the retrieval/hauling member may be provided with the releasable retaining means biased to a locking



position as hereinafter described in a further aspect of the present invention with reference to Fig.10 and as described above with reference to Fig.s 2 & 3 or Fig. 4, respectively.

5 Referring to Fig.s 5-9 and Fig. 10, a second preferred embodiment of the two essential  
components of the retrieval equipment for deployed bungy, a retrieval/hauling member  
49 and a terminal coupling unit 44 is thereshown.

With particular reference to Fig.s 7 & 10, the terminal coupling unit 44 comprises a  
10 bracket 45 supporting a tubular housing in the form of spool 46, and a ring 47. The  
bracket 45 is funnel-shaped in appearance. In use, a webbing sling or tethering rope  
(not shown) is connected to the terminal coupling unit 44 by feeding the webbing or  
rope length through the bracket aperture 45a, the central spool cavity 46a and bracket  
aperture 45b respectively and then securing the free ends in known manner. A  
15 coupling such as a karabiner is attached to the webbing sling or tethering rope for  
subsequent connection of the bungy and the harness or ankle cuff.

The wall defining the central aperture of the ring 47 is formed with a continuous beveled lower lip 47b which functions as a guide means for the passage of the retrieval/hauling member and/or provides a contact point for the inter-engagement with the retrieval/hauling member to initiate retrieval of the deployed bungey as hereinafter described in detail. Preferably, the ring 47 is removable for maintenance or replacement.

25 With reference to Fig. 10, the modified terminal coupling unit 44 further carries a series of retractable spring mechanisms 63 and a manual override mechanism 64. Each



retractable spring mechanism includes a catch 63a & b that is pivotably secured to the internal wall of the bracket 45. Each catch 63a & b is capable of moving between the illustrated extended locking position and a retracted position wherein the catch head 63a moves towards the bracket 45 in the direction of Arrow B by compression of the 5 tensioned spring 63c effected by the pivotal movement about the pivot pin 65. The spring 63c biases the catch 63a & b to the extended position.

The manual override mechanism 64 comprises a cable 66 and a pull-down over-centre lever 67. The bracket 45 is fitted with a padded, open ended sleeve 68 which provides 10 a surface for rigid securement of the lever 67 and advantageously acts as a shock absorber dampening the resultant engagement jolt being transmitted onto the jumper when the terminal coupling unit 44 docks with the retrieval/hauling member 49 as hereinafter described. The cable 66 is threaded through the apertures adjacent the tail portion of each catch 63b and the free ends are secured to the lever 67 in known 15 manner. The cable 66 provides an interconnecting linkage between all the tail portions 63b. Whenever the lever 67 is depressed in the direction of Arrow B', the tension on the cable 66 increases effecting pivoting of the catches 63a & b and compression of the spring 63c such that the spring biased is overridden and the catches are all retained in the retracted position. The spring bias can be re-engaged upon release of 20 the lever 67 as illustrated. It will be appreciated that a rotatable ring provided with a series of equi-distantly spaced peripheral projections aligned to abut and effect pivoting of the catches 63a & b when the lever 67 is depressed may be substituted for the tensioned cable 66.

25 With reference to Fig.s 5, 8, 9 & 10, the retrieval/hauling member 49 comprises a releasable split collar 50 and a set of suspension lugs 51, 52. The collar 50 consists of



two mirror image substantially crescent shaped sections 53, 54, secured to each other at one end thereof by means of a set of spaced hinges 55. The sections 53, 54 are releasably secured at the opposing ends by a series of external over-centre latch mechanisms 56, 57. Each latch mechanism 56 or 57 comprises a pair of lugs 59, and 5 a releasable latch 58. A lining composed of a low friction material is provided on the internal rim of each section 53a, 54a and walls defining the throat of the retrieval hauling member 49. The rim lining 53a, 54a provides a surface area for resting and drapage of the bungy length during hauling and after retrieval, respectively. The throat lining reduces the incidence of abrasive damage to the bungy resulting from repetitive 10 retrieval.

In the open position as depicted in Fig. 5, the latches 58 are disengaged from the lugs 59 and the collar 50 is opened via the articulation of the sections 53, 54 about the hinges 55. To close the collar 50, the free ends of the sections 53, 54 are pulled 15 adjacent whereby the lugs 59 are aligned and the latches 58 are engaged therewith. It will be appreciated that the split collar 50 may be releasably secured by alternate known mechanisms such as bolts, locking pins or similar releasable couplings and/or these mechanisms or over-centre latches may also be used in place of the hinges 55 to split open the collar 50.

20 In the closed position as depicted in Fig.s 7 and 10, the secured collar 50 is formed with a central throat aperture having rim lining 53a, 54a adjacent the top opening. The external wall of the nose portion 50a is inwardly inclined to function as a contact guide for inter-engagement with the terminal coupling unit 44 to initiate retrieval of the 25 deployed bungy as hereinafter described.



Referring specifically to Fig.s 5, 7, 8 & 9, each section 53, 54 has a plurality of retractable spring mechanisms 60, 61. With particular reference to Fig.s 7, 8 & 9, each mechanism comprises a catch 60 capable of moving between an extended locking position as shown in Fig. 7 and as indicated by Arrow D, Fig. 8, and a retracted position (indicated by Arrow E, Fig. 8) wherein the catch 60 recedes within a dimensioned slot 61. Each catch 60 is pivotally secured within the base of the slot by bolt 61a (Fig. 7 only) and sprung biased by a compression spring 60a to the extended position wherein the catch arm 60b protrudes from the slot 61.

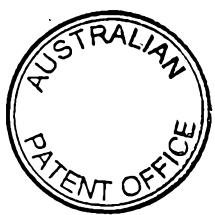
10 Referring specifically to Fig. 10, each section 53, 54 of the modified retrieval/hauling member 49 includes a nose step 50b on the external wall of the nose portion 50a in place of the retractable spring mechanisms (60, 61; Fig.s 5, 7, 8 & 9) as a contact point for inter-engagement with the modified terminal coupling unit 44 to initiate retrieval of the deployed bungy as hereinafter described in detail.

15

Referring to Fig.s 5-9 & 10, in use, the retrieval/hauling member 49 is attached to the retrieval cable by securing a webbing sling through the apertures of the suspension lugs 51, 52 and using a coupling device to connect the webbing sling to the retrieval cable (not shown). The free end of the bungy is attached to the terminal coupling unit

20 44 as hereinbefore described and the retrieval cable is connected to a winching system such as a crane operated winch, vehicular winch or windlass (not shown). Alternatively, the retrieval cable is secured for subsequent manual or vehicular tow hauling.

25 Upon completion of the jump, the jumper may be lowered to a landing site and released from the harness or ankle cuff or remain suspended secured therein for



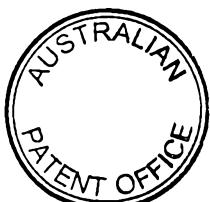
retrieval with the deployed bungee. Jump site crew open the collar 50 and enclose the collar around the bungee by closing the sections 53, 54 around the bungee as hereinbefore described. It will be appreciated that where the retrieval cable is securely tied off or controlled by the winching system, the retrieval/hauling member 49 may be 5 placed on the bungee length adjacent the top at jump set-up and returned to that position after the bungee has been deployed and subsequently retrieved (i.e. between consecutive jumps). The throat lining of the collar 50 prevents abrasive damage and restricts the degree of movement of the bungee length within the throat aperture.

10 To retrieve the bungee, the retrieval/hauling member 49 is run down the deployed bungee length by gravity feed of the retrieval cable or under winch control until the nose portion 50a contacts the ring 47 of the terminal coupling unit 44. The inclined shape of the nose portion 50a and lower beveled lip of the ring 47 guides the retrieval/hauling member 49 into the throat aperture of the terminal coupling unit 44.

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Referring specifically to Fig.s 5-9, each catch 60 recedes into its respective slot 61 as a portion of the ring 47 contacts the catch arm 60b (i.e. said contact overrides the bias of the compression spring 60a). When the contact ceases as the retrieval/hauling member 49 continues to fall, the catch 60 returns to the extended position. The

20 inclined sides of the bracket 44 restrict lateral movement of the nose portion 50a. The terminal coupling unit 44 contacts and docks with the spring locking mechanisms 60, 61 when the lower lip of the ring 47 becomes seated on and supported by the stop rest of each catch (60c, Fig.s 8 & 9). The weight of the bungee and the sprung bias of the catches 60 maintains the docked inter-engagement position of the retrieval/hauling 25 member 49 within the throat of the terminal coupling unit 44.



With specific reference to Fig. 10, the nose step 50b contacts and docks with the spring mechanisms 63. Docking is achieved by the inter-engagement of each catch head 63a with a portion of the peripheral nose step 50b:- the nose portion 50a descends into the throat aperture of the modified terminal coupling unit 44; the nose 5 step 50b contacts and pivots the catches 63a & b in the direction of Arrow B, overriding the bias of the spring 63c; the catches 63a & b spring back into the illustrated extended locking position wherein each catch head 63a supports and releasably retains the peripheral nose step 50b. The weight of the bungy and spring bias of the catches 63a & b maintain the docked inter-engagement locking position of 10 the modified retrieval/hauling member 49 within the throat of the modified terminal coupling unit 44.

With reference to Figs 5-9 & 10 in general, the winching system is then engaged, or alternatively, the vehicular tow hauling or manual hauling is commenced until the 15 retrieval cable, deployed bungy length, and docked retrieval/hauling member 49 and terminal coupling unit 44 are back above the jump site within the arms reach of the operator. Preferably, said retrieval cable is connected to winching system via a friction-free eddy current coupling member (e.g. a TASC unit) which provides a slipping clutch control such that the operator can brake and/or control the rate of 20 descent and ascent of the retrieval/hauling member 49. To release the terminal coupling unit 44 from the retrieval/hauling member 49, the lever 67, (Fig.10) is depressed to simultaneously override the spring bias of the catches 63a & b, or the collar 50, (Fig. 7) is opened and the sections 53, 54 are separated.

25 Whilst the terminal coupling unit (44, Fig.s 5-9 & 10) has been depicted in described as a substantially open structure, it will be appreciated that the body of the terminal



coupling unit may be formed as an open ended substantially cylindrical structure incorporating a means to releasably secure the face end of the bungy and means to connect the harness or ankle cuffs thereto. Similarly, the retrieval/hauling member 49 may be formed in any desired polygonal or substantially cylindrical shape wherein the 5 aperture is concentric or offset as shown in Fig. 12. Further, it will be appreciated that the collar 50 need not be formed in two releasable sections (51, 52), it could be a closed cylinder, so that in use the bungy length would be manually fed through the aperture of the collar 50 (not shown). Similarly, it will be appreciated that the collar 50 need not split completely in half as depicted but may merely include a releasable 10 section having a sufficient opening to allow egress of the bungy length. It will further be appreciated that either the terminal coupling unit or the retrieval/hauling member may be provided with the releasable retaining means biased to a locking position as illustrated in Fig. 10 and Figs 5-9 respectively.



**THE CLAIMS DEFINING THE INVENTION ARE AS FOLLOWS:**

1. Retrieval equipment for a deployed bungy comprising: a retrieval/hauling member provided with an aperture for receipt of said bungy; a terminal coupling unit connectable to or integral with the free end of the bungy; and means to attach said retrieval/hauling member to a retrieval cable; said retrieval/hauling member being releasably engageable with said terminal coupling unit upon contact therewith.
  
2. Retrieval equipment as claimed in claim 1 wherein said aperture is a passage through the retrieval/hauling member.
  
3. Retrieval equipment as claimed in claim 1 or claim 2 wherein said retrieval/hauling member includes a releasable opening.
  
4. Retrieval equipment as claimed in any one of claims 1-3 wherein said retrieval/hauling member is substantially symmetrical in cross section and said aperture is substantially concentric with the central axis thereof.
  
5. Retrieval equipment as claimed in any one of claims 1-3 wherein said aperture is offset relative to the central axis of said retrieval/hauling member.
  
6. Retrieval equipment as claimed in any one of claims 1-5 wherein the rim of said aperture is rounded or beveled.
  
7. Retrieval equipment as claimed in claim 6 wherein at least the rim of said aperture is lined, coated or composed of a low friction material.



8. Retrieval equipment as claimed in any one of claims 1-7 wherein the retrieval/hauling member at least partially surrounds the terminal coupling unit when in releasable engagement therewith.

5 9. Retrieval equipment as claimed in any one of claims 1-7 wherein the retrieval/hauling member is at least partially surrounded by the terminal coupling unit when in releasable engagement therewith.

10. Retrieval equipment as claimed in any one of claims 1-9 wherein said terminal coupling unit is provided with a continuous peripheral projection adapted to inter-engage with said retrieval/hauling member and/or function as a guide member for the passage of the retrieval/hauling member; and wherein said retrieval/hauling member is a collar comprising a body and an attachment to secure said retrieval/hauling member to a retrieval cable.

15

11. Retrieval equipment as claimed in claim 10 wherein said body includes a retractable retaining mechanism biased to a locking position.

12. Retrieval equipment as claimed in claim 10 wherein said terminal coupling unit includes a retractable retaining mechanism biased to a locking position and said body is adapted to inter-engage with said retractable retaining mechanism.

20

13. Retrieval equipment as claimed in claim 11 or 12 wherein said retractable retaining mechanism is a series of retractable catches.

25



14. Retrieval equipment as claimed in claim 13 wherein the retractable retaining mechanism further includes a release mechanism to override and engage the said locking bias.

5 15 Retrieval equipment as claimed in any one of claims 10-14 wherein said retrieval/hauling member is moved into the open position by separation of a lockable hinged opening.

10 16. Retrieval equipment as claimed in any one of claims 10-15 wherein said attachment is an extension arm connectable to a retrieval cable.

17. Retrieval equipment as claimed in any one of claims 10-15 wherein said attachment is a series of suspension supports connectable to a retrieval cable.

15 18. Retrieval equipment as claimed in claim 16 or claim 17 wherein said collar is rotatably secured to said attachment; said collar being capable of orientation in either an upright or an inverted position by rotation through approximately 180 degrees wherein said collar is sprung biased to said upright position.

20 19. Retrieval equipment substantially as described herein with reference to the drawings.

DATED the 18<sup>th</sup> day of June 2001

FUN INNOVATORS NZ LIMITED

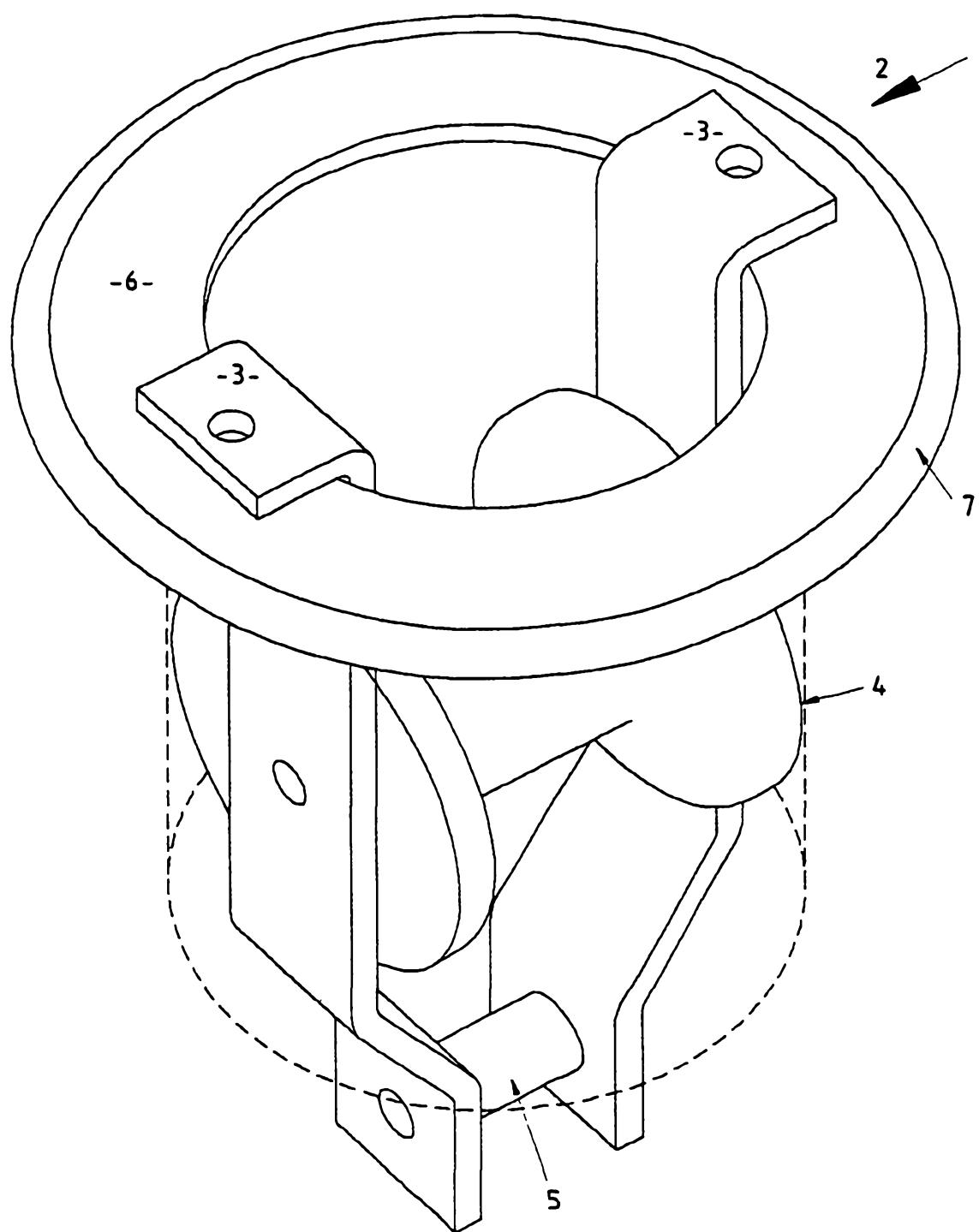
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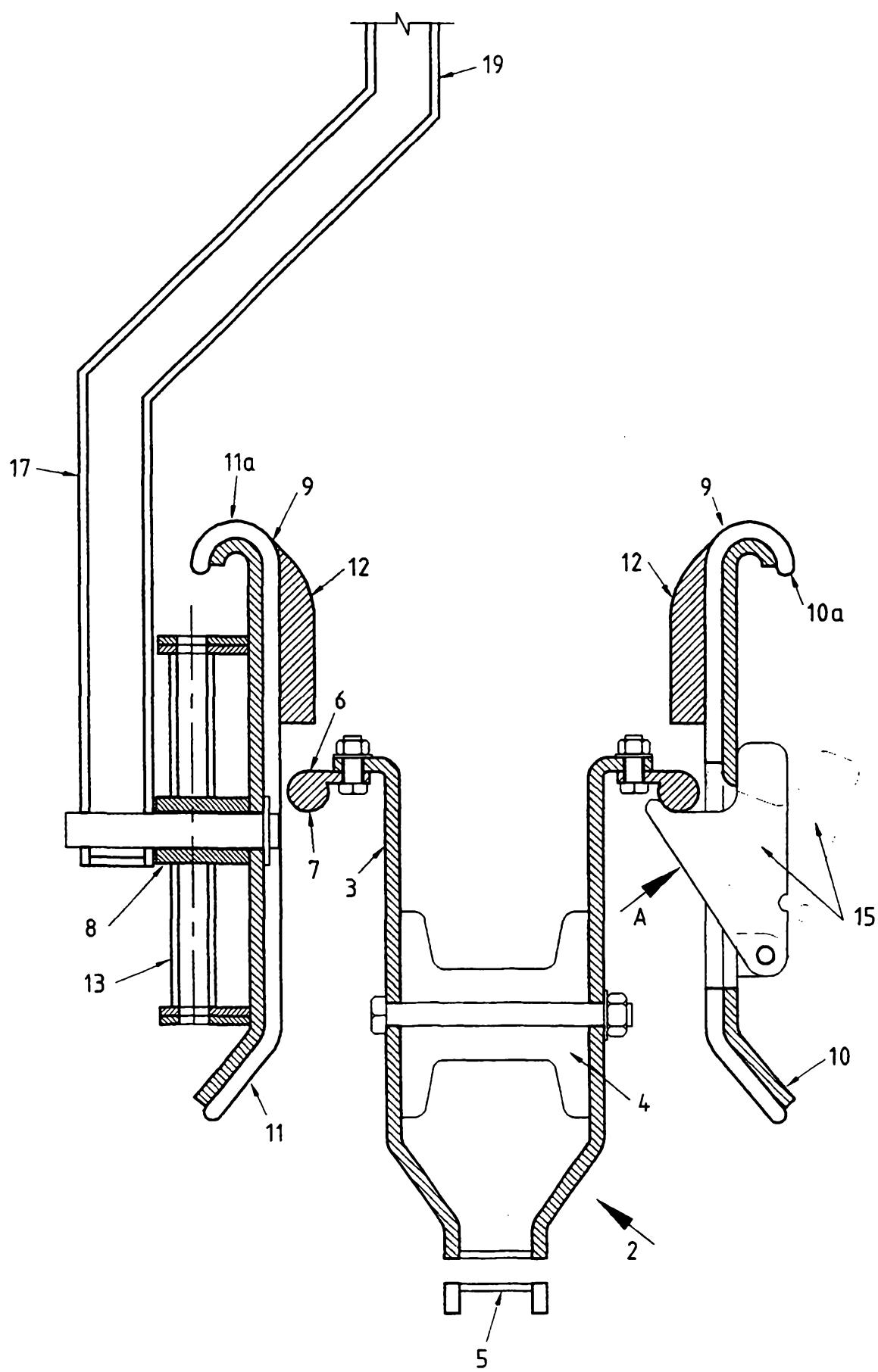
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PIZZEYS PATENT AND TRADE MARK ATTORNEYS



Fig 1





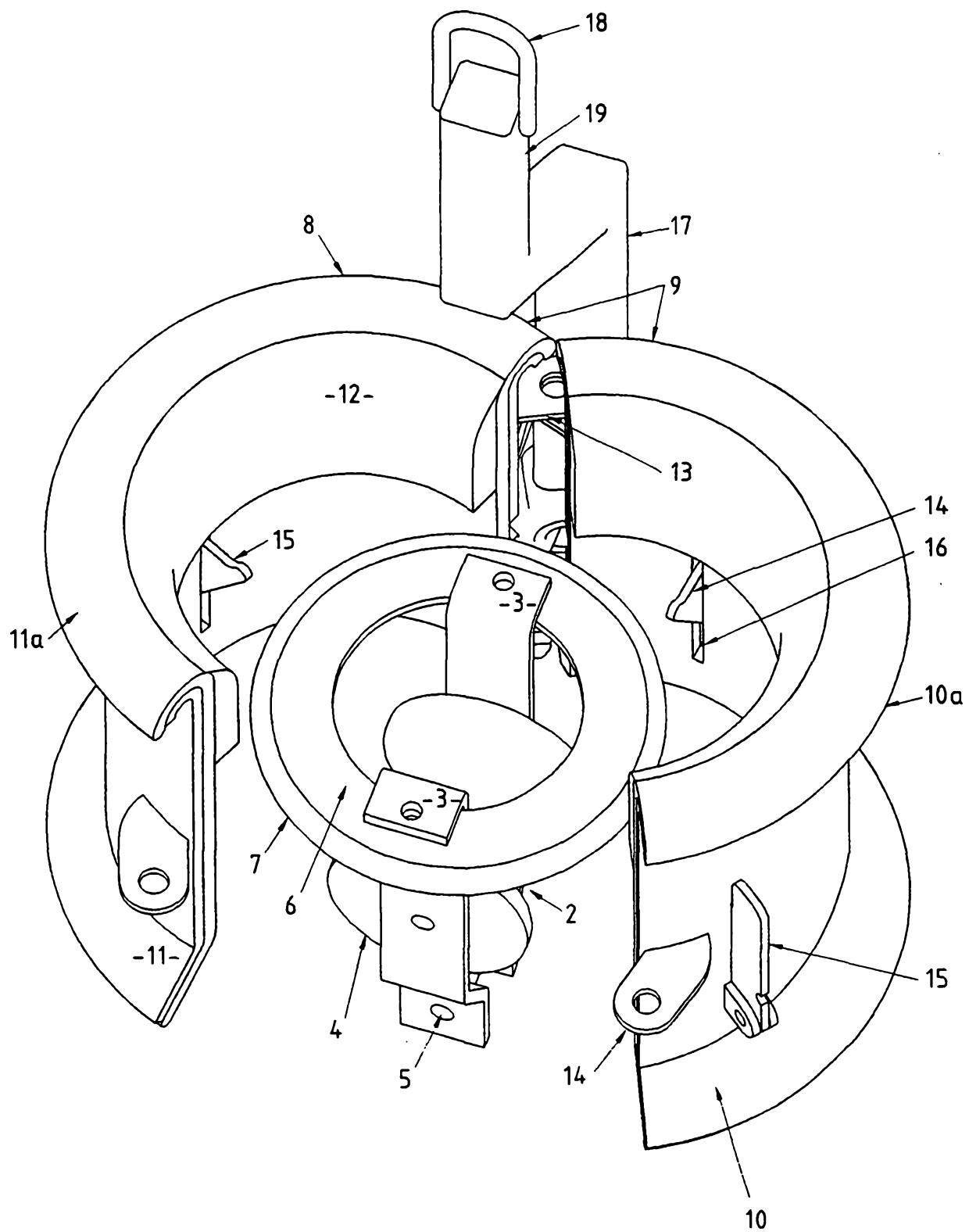
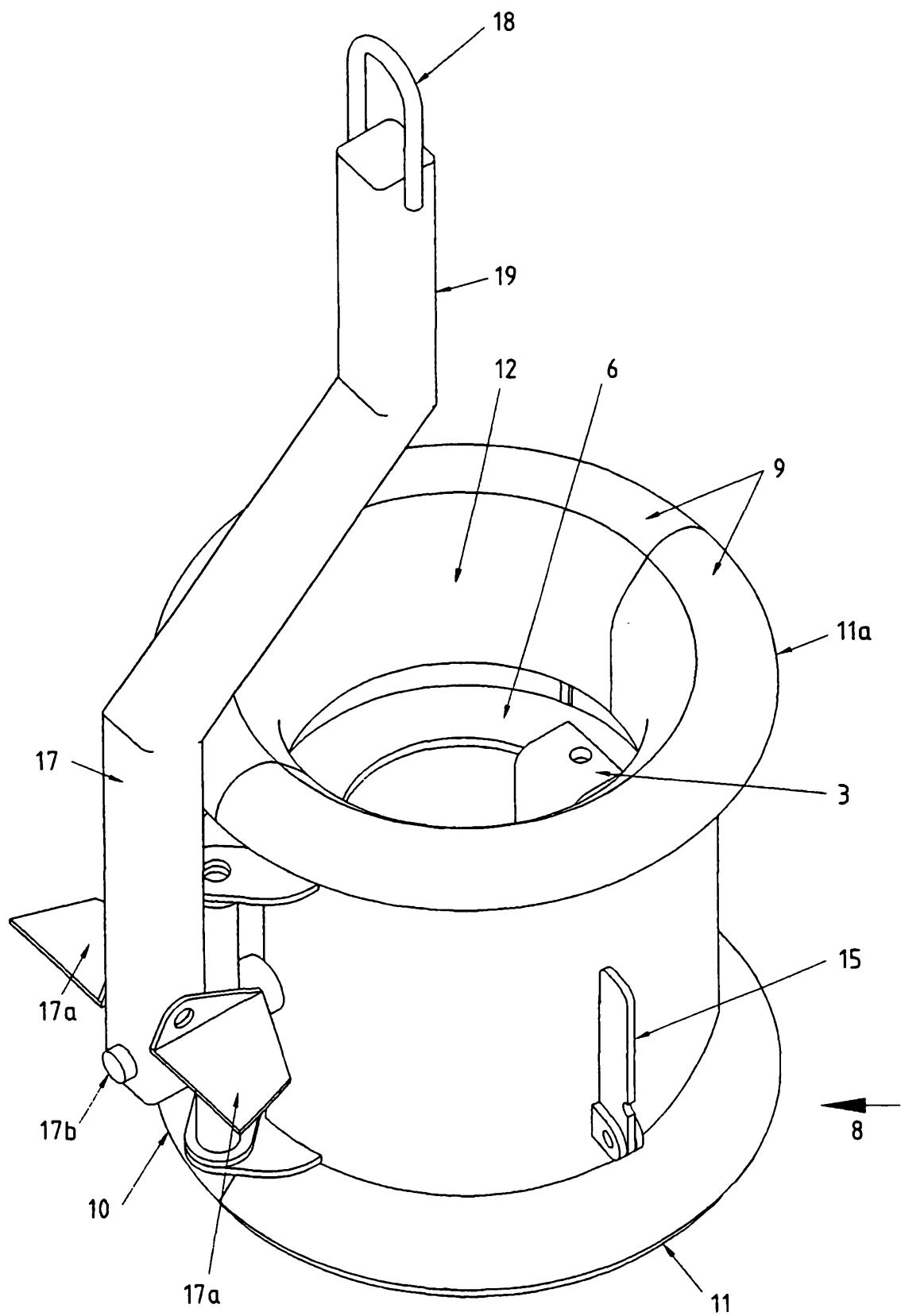
3/13  
Fig 3

Fig 4



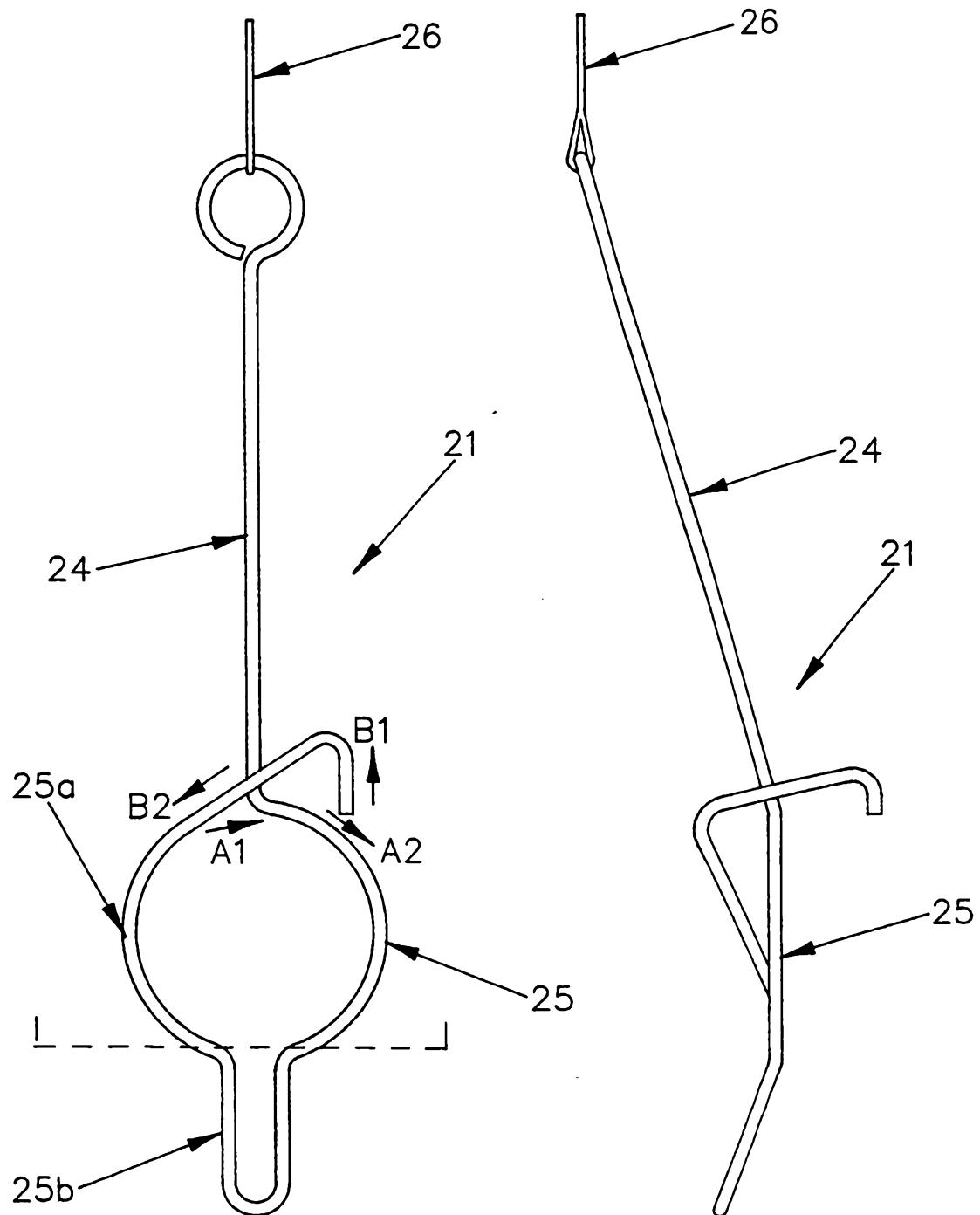


Fig.5

Fig.6

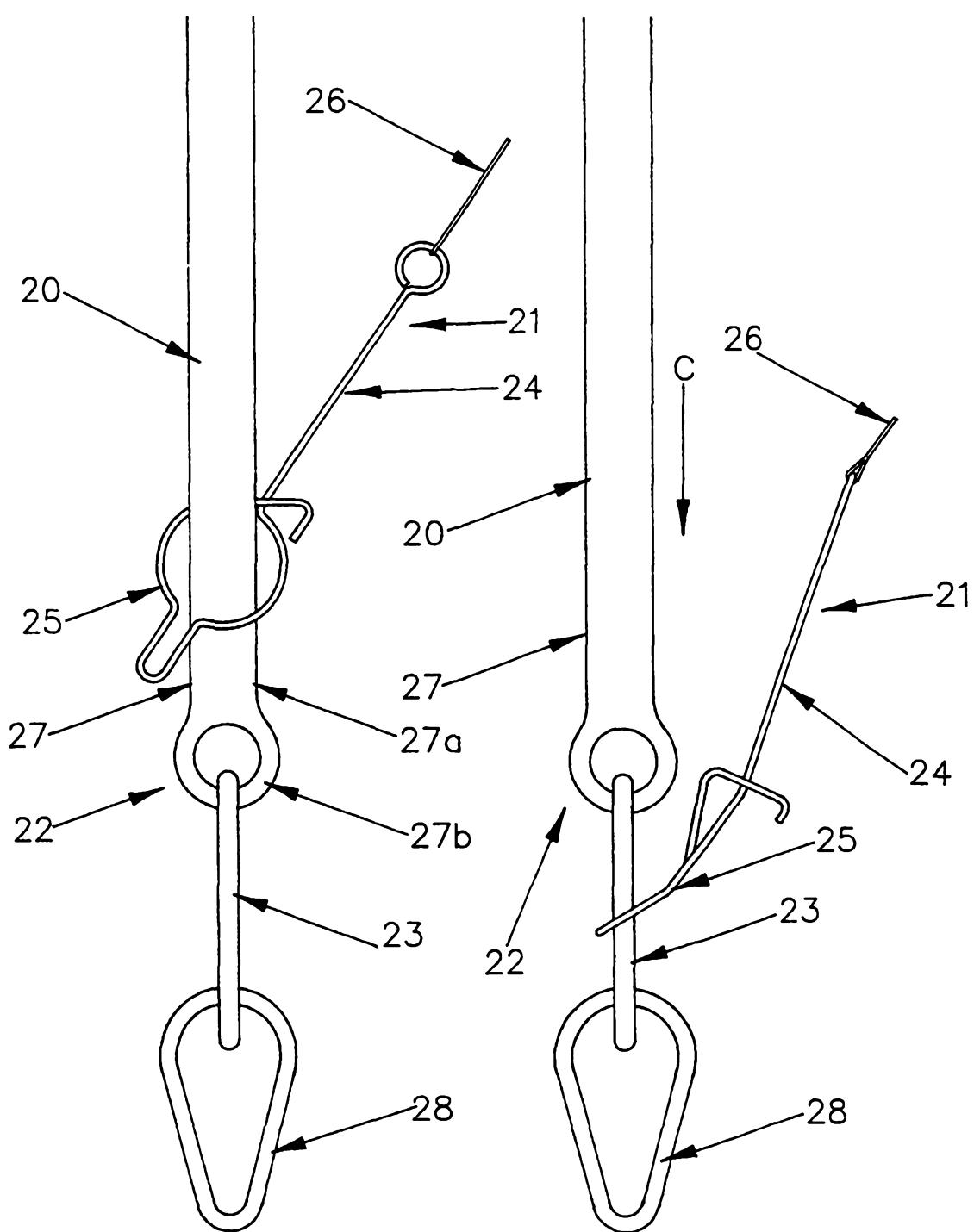


Fig. 7(i)

Fig. 7(ii)

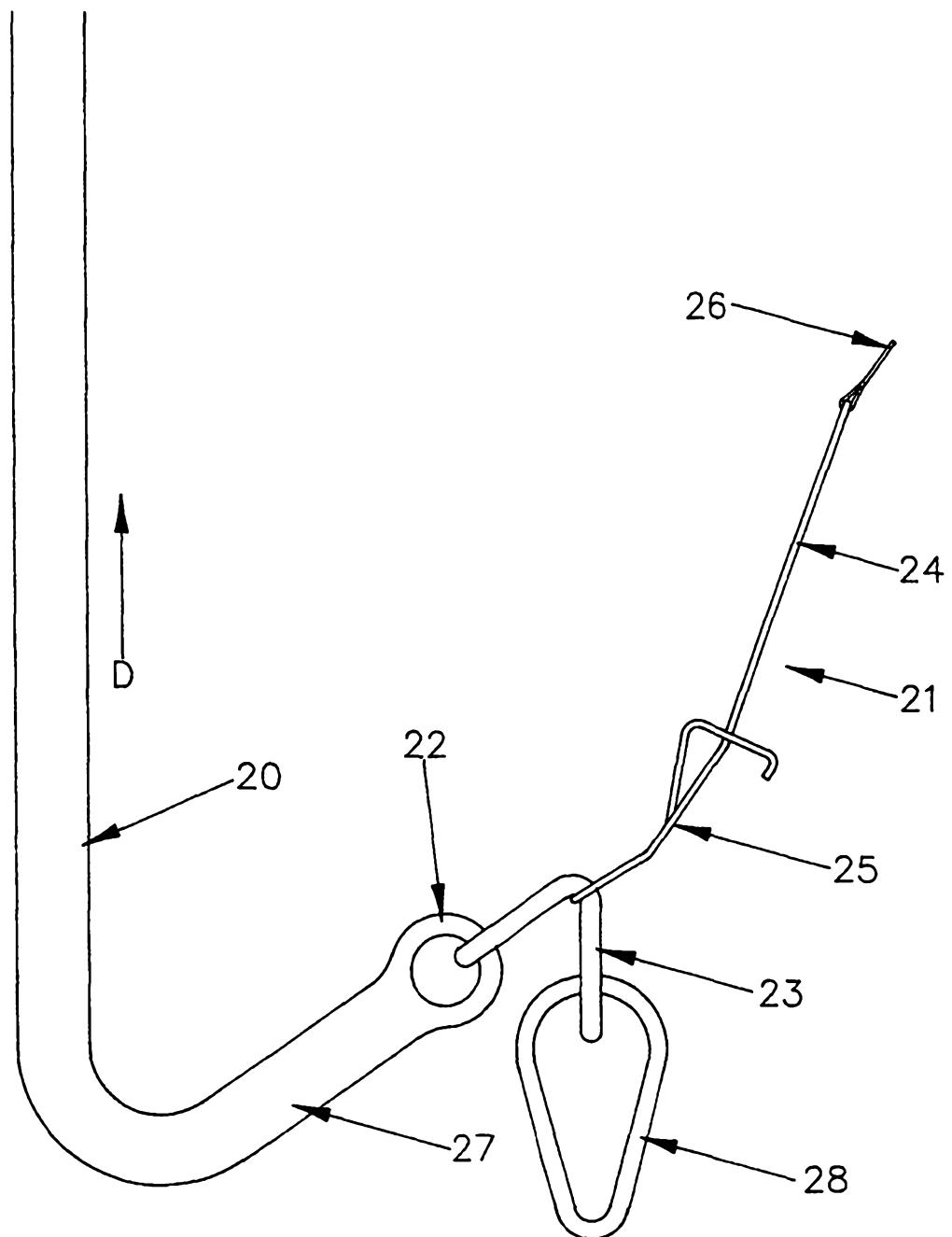


Fig.7(iii)

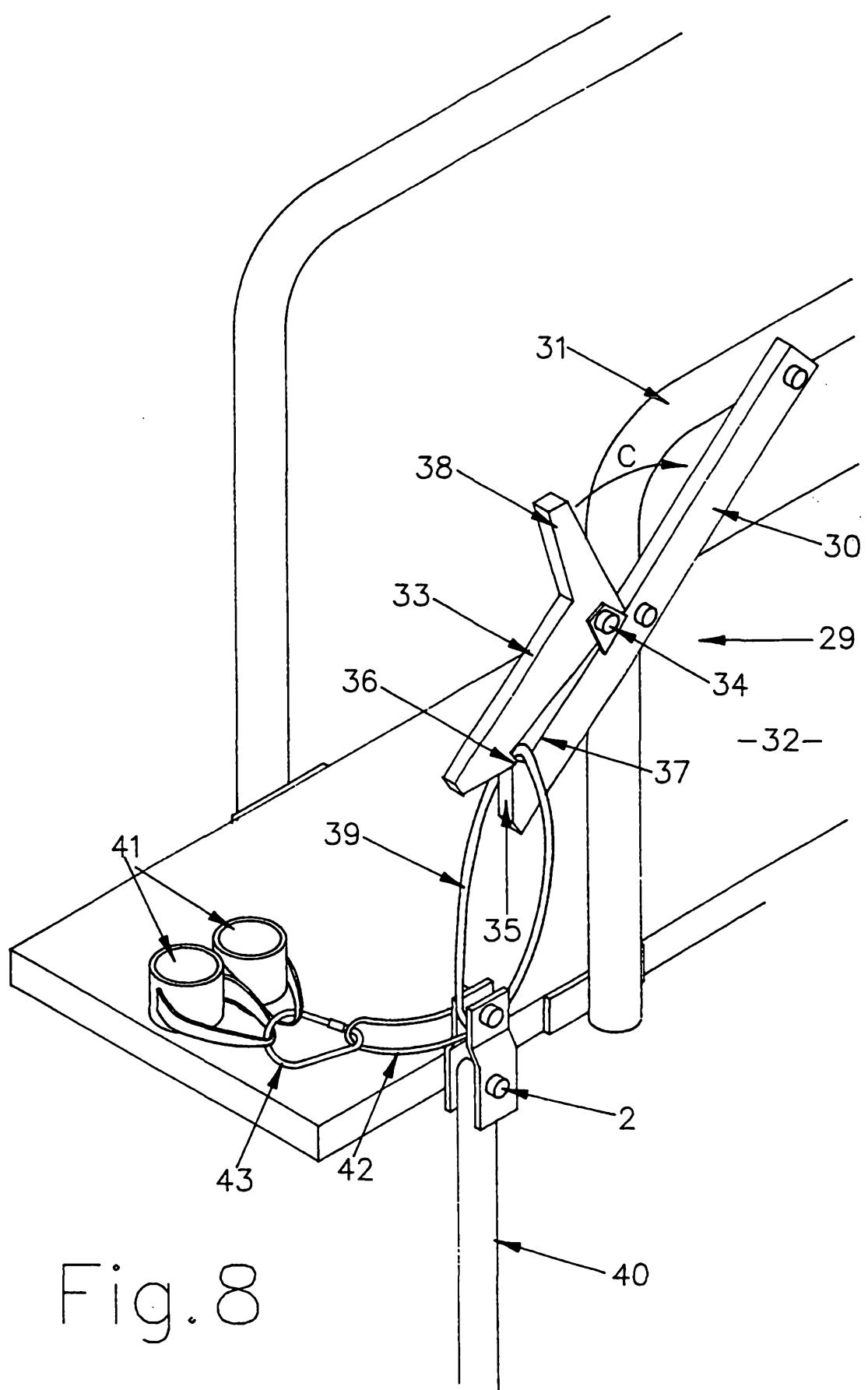


Fig. 8

Fig. 9

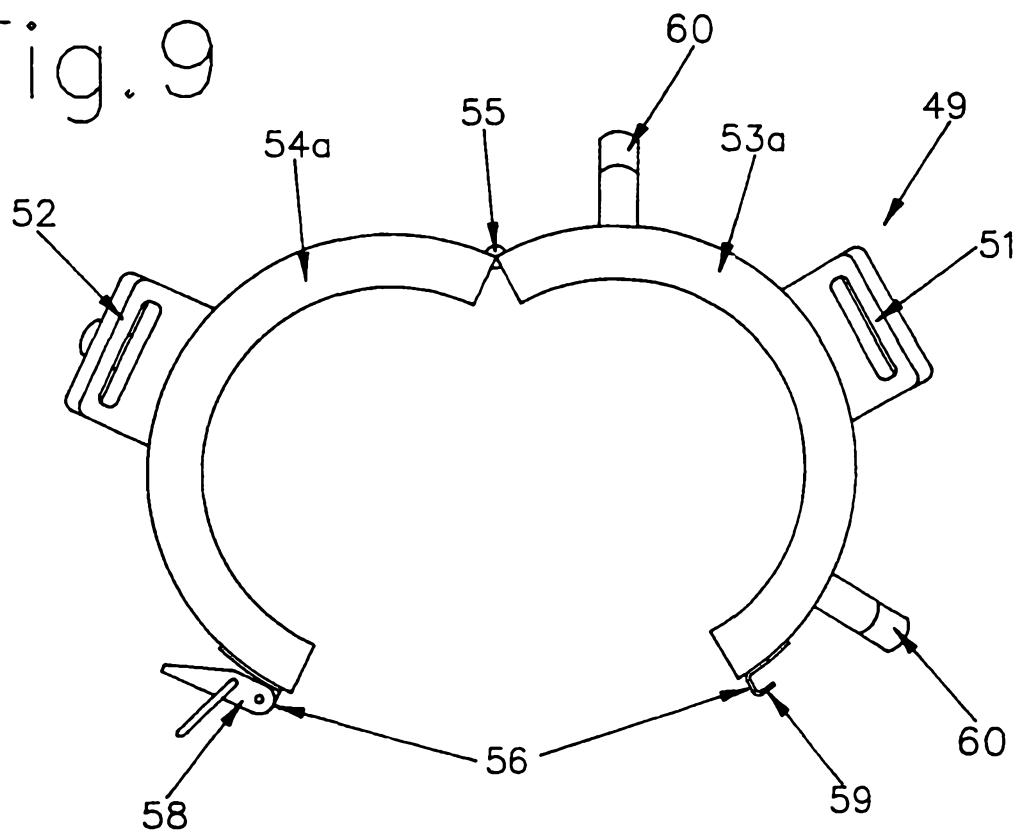
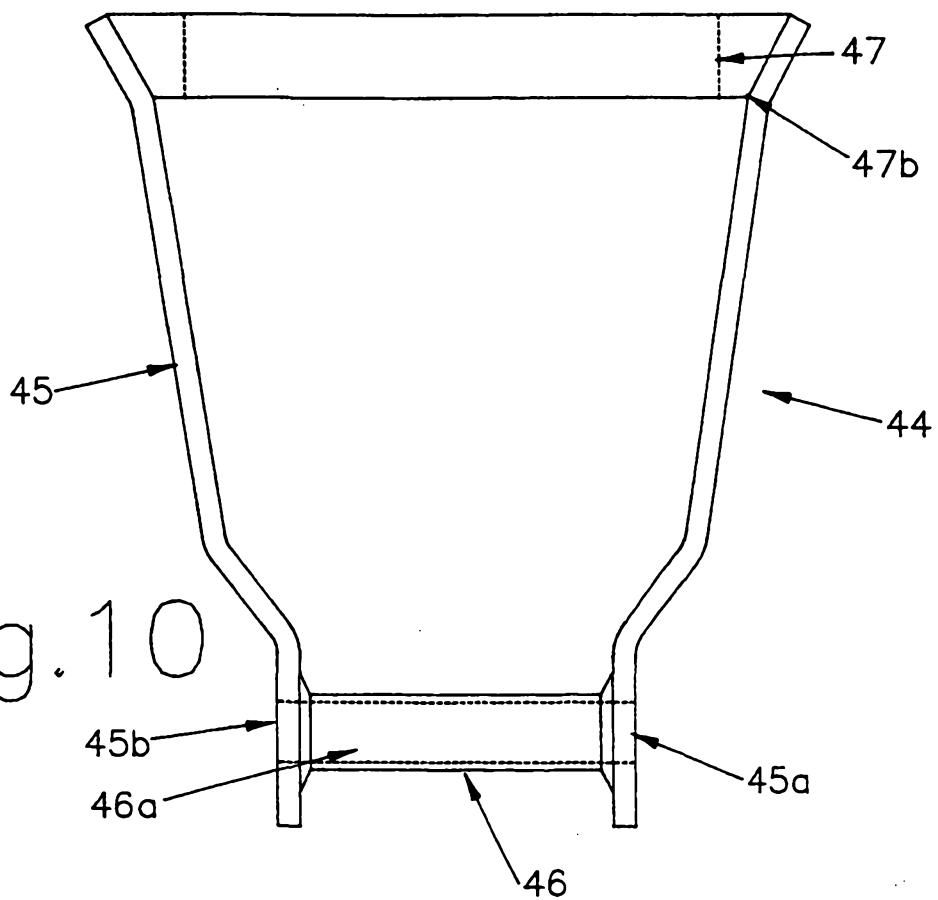


Fig. 10



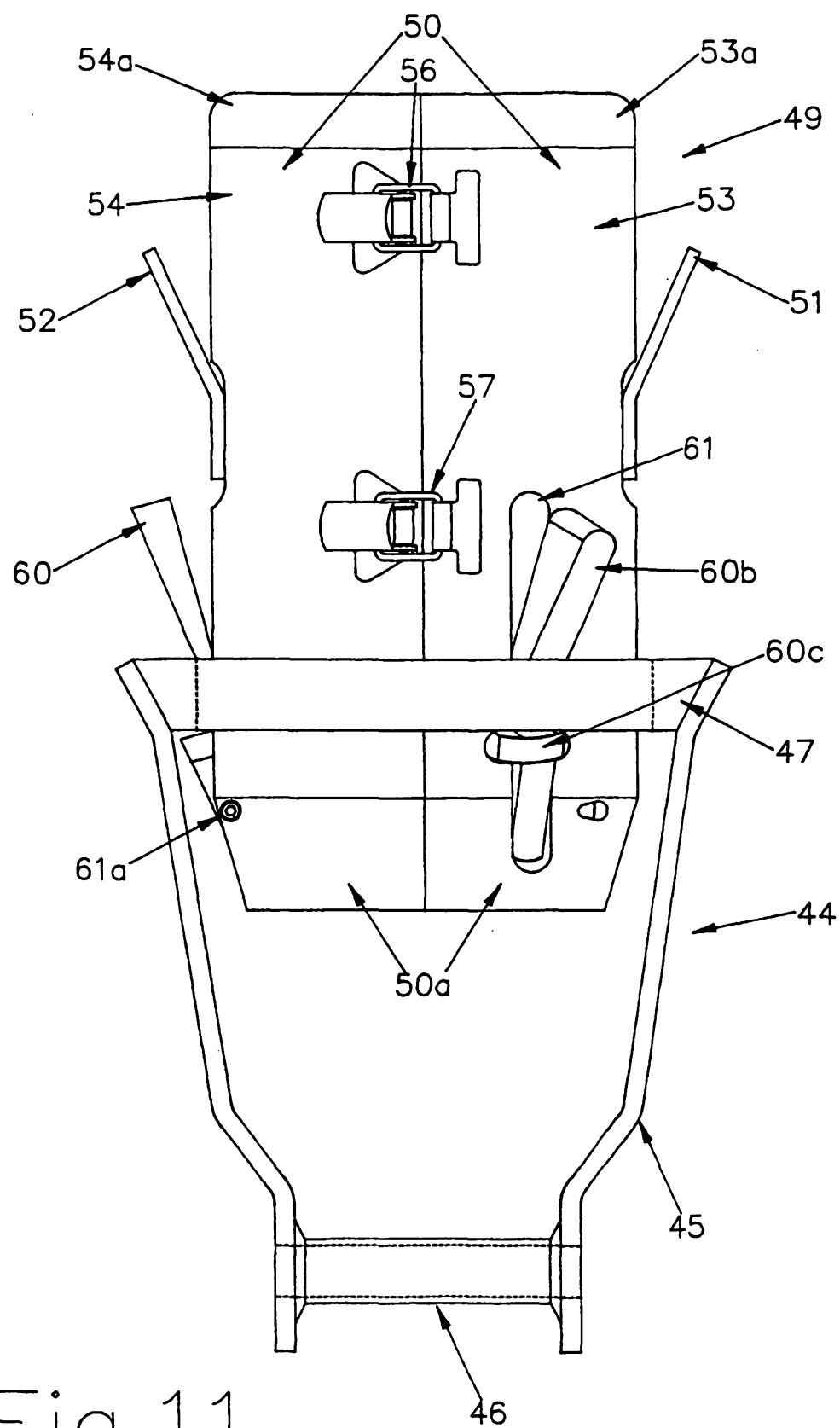


Fig. 11

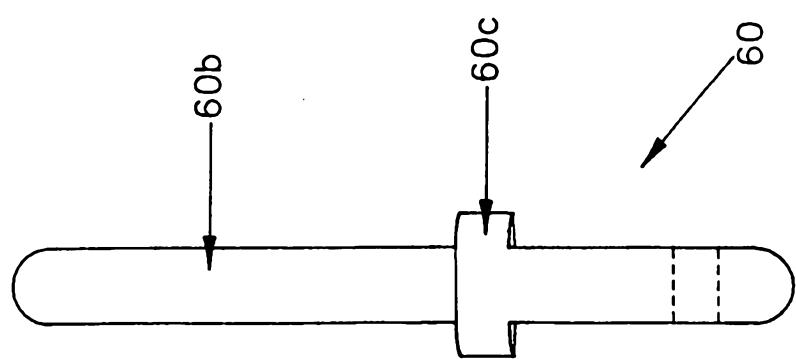


Fig. 13

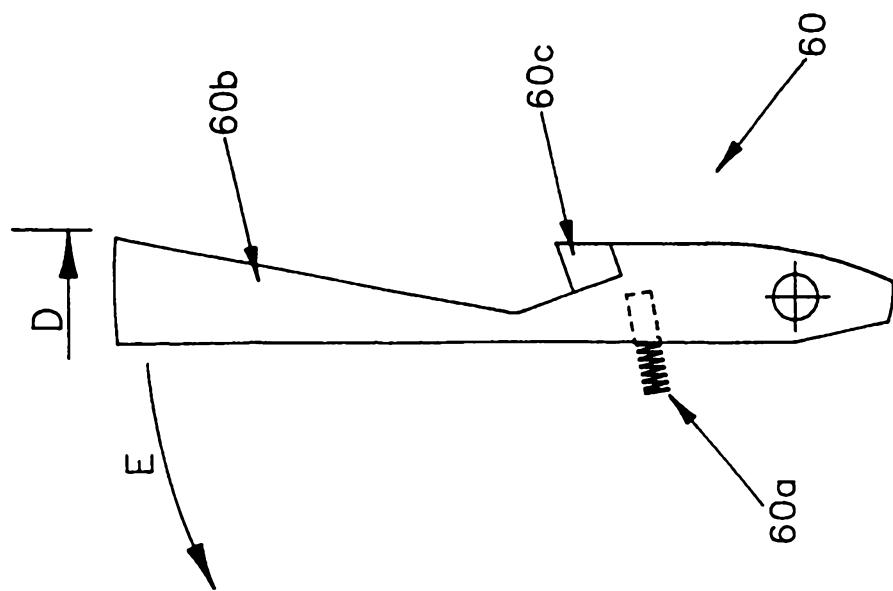


Fig. 12

Fig. 14

