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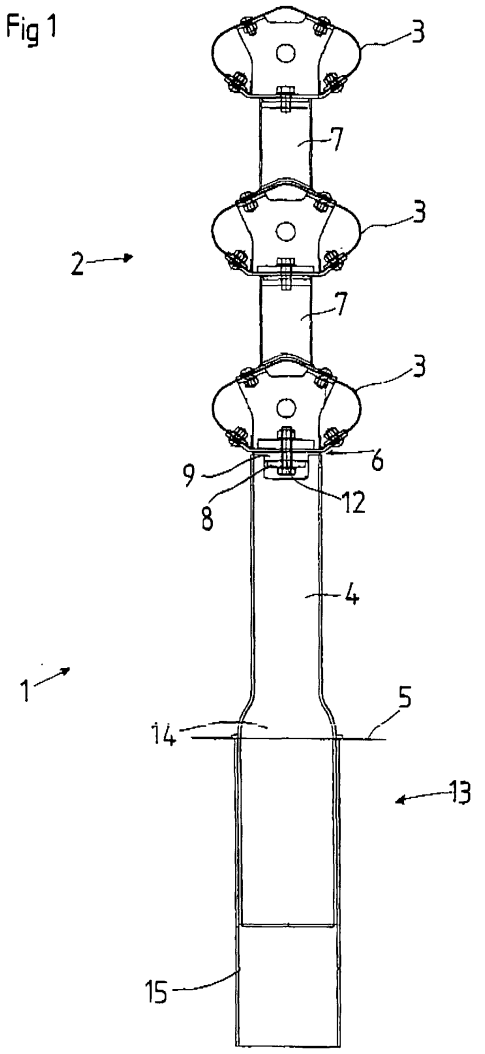
(54) Post

(57) The disclosure relates to a post for supporting one or more catchment devices (3) such as wires or sheet metal profiles in a road barrier (1). The post (4) supports a catchment unit (2) with catchment devices (3), the post (4) and the catchment unit (2) being interconnected by a bolt (12) which is released in the event of a collision whereafter the catchment devices (3) are held together by fittings (7) but released from the post (4). The lower region of the post (4) is anchored in the ground in a ground anchorage (13). The post (4) has a flattened section (14) in its lower end which is disposed transversely of the direction of travel of the carriageway. The flattened section (14) entails that the post (4) is quite easy to bend in the collision direction, and a weakening entails that the post (4) is bent at the ground in the event of a collision.

Fig 1



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Description

TECHNICAL FIELD

[0001] The present invention relates to a post for supporting one or more elongate catchment devices such as wires or sheet metal profiles in a road crash barrier, comprising an upright upstanding from ground level and whose upper end is removable from the catchment devices.

BACKGROUND ART

[0002] Road crash barriers have long been in existence and have many various configurations. A feature common to them is that in general they include supporting posts which extend upwards from the ground and support catchment devices which typically comprise elongate elements such as sheet metal profiles or wires which extend substantially parallel with ground level.

[0003] Historically, road crash barriers were placed principally at such positions where it was obvious that such a barrier was needed, for example at a slope beside a road or at bridges and the like. As a result of the demand for increased road safety, not least as a result of the so-called "zero fatalities vision", which implies an objective that no people at all are killed in road traffic, the need for side barriers at highways and roadways has increased. Moreover, increasing numbers of highways are provided with central barriers which separate counter flowing traffic. This entails that existing roads or highways are occasionally retrofitted with central barriers without the total width of the highway being increased, which requires that the barriers take up as little space as possible.

[0004] Road safety requirements also entail that different types of vehicles of different sizes and payloads must be able to be caught up, retarded and retained on or alternatively returned to the roadway in a reliable manner. If attempts are made to solve these problems by a pure and simple dimensioning of the barrier, it is easy to wind up in a situation where a barrier is dimensioned so powerfully that, while it meets with the requirement of withstanding a collision from a fully loaded road haulage truck, it instead constitutes a threat to small cars which happen to run into some part of the barrier. Quite simply, the barrier is far too powerful for a collision with a small car to be safe for its passengers.

[0005] One method of alleviating the problem inherent in damage to colliding vehicles and injury to their passengers is that the posts are positioned a distance from the roadway, on the one hand in order to reduce the risk of collision at all and, on the other hand, in order that the speed of the colliding vehicle will to some degree have had time to be retarded before the vehicle strikes the post.

[0006] A quite common solution has hitherto been that powerful posts a distance from the roadway "present" deformable sheet metal profiles or wires on transverse arms so that a deformation zone is created between the sheet metal profile and the posts. A problem inherent in these barriers is that they are extremely bulky and require considerable material consumption. Moreover, they must be doubled so as to function as a central barrier, i.e. one set of sheet metal profiles or wires must be presented out towards each respective carriageway. This renders the construction even more bulky. Thus, it is hardly useable as a central barrier on existing roads which are not widened. Moreover, assembly is complex and time-consuming.

[0007] At or in the proximity of the roads, there are also many other types of posts, such as illumination posts, road sign posts and posts for marking the side edge of the road. Regardless of the type of post, there is a general need in the art for their safety properties, namely that they do not cause excessively large damage to any possible colliding vehicle and injury to its passengers. Moreover, these posts should be quick and easy to mount in position.

[0008] Another method of reducing the risk of damage and injury is to adapt the configuration of the posts in situ. One method is to employ a slight dimensioning throughout in the post, but this drastically increases the need for repairs in the event of other damage than that caused by collision. Moreover, an overall slight dimensioning fails to contribute to guiding the direction of outward bending of the post on collision. Such guiding is however desirable in order to realise the optimum collision properties in the road crash barrier.

[0009] Another method to reduce the risk of damage or injury is to provide the post with a row of perforations at its base. Also in such constructions, it is difficult to guide the outward bending direction of the affected post. Moreover, the risk is increased that the post be torn loose and damage passing vehicles and injure their passengers.

[0010] Yet a further drawback in the prior art is that neither overall slight dimensioned constructions nor posts displaying perforations are sufficiently strong to withstand a collision in the lateral direction from heavy vehicles at the same time as they must give way on collision straight from the front by small passenger vehicles.

PROBLEM STRUCTURE

[0011] There is thus a need in the art to realise a post which displays such properties that it has a predictable behaviour and suitable outward bending on collision with both small and light vehicles and heavy road haulage vehicles.

SOLUTION

[0012] The objects forming the basis of the present invention will be attained if the post intimated by way of introduction is characterised in that the column or upright has a flattened region flush with ground level for realising

an indication for directed outward bending of the post on collision.

[0013] Further advantages will be attained if the post is moreover given one or more of the characterising features as set forth in appended Claims 2 to 14.

BRIEF DESCRIPTION OF THE ACCOMPANYING DRAWINGS

[0014] The present invention will now be described in greater detail hereinbelow, with reference to the accompanying Drawings. In the accompanying Drawings:

Fig. 1 is a cross sectional view of an upstanding road crash barrier according to the present invention;

Fig. 2 is a straight side elevation of the barrier on collision substantially in the longitudinal direction of the barrier;

Fig. 3 is a view corresponding to that of Fig. 1, where the barrier is shown on collision substantially in the transverse direction of the carriageway;

Fig. 4 is a detailed view of a connecting device included in the barrier according to the present invention;

Fig. 5 is a straight sectional view of the lower region of the post and its anchorage transversely of the direction of travel of the adjacent carriageway;

Fig. 6 is an exploded view of the anchorage;

Fig. 7 is a perspective view of a support member included in the anchorage;

Fig. 8 is a sectional view taken along the line A-A in Fig. 5 from above; and

Fig. 9 is a view corresponding to the lower portion of Fig. 1 of an alternative embodiment of the present invention.

DESCRIPTION OF PREFERRED EMBODIMENT

[0015] The purpose with a road barrier 1 according to the present invention is to retain or return a vehicle on its correct carriageway adjacent which the barrier 1 is disposed. By such means, the risk is avoided that the vehicle drives off the carriageway and out into the surrounding terrain, which may be full of obstacles and objects it is extremely unsuitable to collide with. Possibly, the road barrier may be disposed adjacent a slope or adjacent a waterway. The road barrier 1 may also be provided so as to separate carriageways with counter flowing traffic and, as a result contribute in preventing head-on collisions between two meeting vehicles.

[0016] Fig. 1 shows a section through the road barrier 1 according to the invention. The barrier comprises a unit 2 of catchment devices 3 which catch up colliding vehicles in order to retain them on, or return them to the carriageway. The catchment unit 2 is supported by a series of posts 4 which in turn are disposed in or on a substrate 5, for example the ground. Between each respective post and the catchment unit 2 there is a connection 6 which is removable under certain circumstances on collision. The lower region of the post 4 is inserted and fixed in the ground 5 in an anchorage 13.

[0017] The catchment devices 3 are disposed straight above the posts 4 so that the road barrier 1 is symmetric and functions well in a positioning as a central barrier, but also in positionings as a side barrier.

[0018] On a collision, the catchment devices 3 are caused to bend outwards lightly in order to retard the colliding vehicle softly. When the speed of the vehicle has reduced, its kinetic energy is also reduced and the action on the catchment devices 3 will be less as well as their outward bending, which entails that the colliding vehicle is steered back in its original direction of travel on the carriageway.

[0019] The catchment devices 3 may be of many different types. A few examples of useable catchment devices 3 are beams, sheet metal profiles, wires or the like. A feature common to the catchment devices 3 is that they are relatively strong, in particular in relation to their own weight, and lightly yieldable, i.e. they withstand extreme tensile forces without breaking or failing in the material or in any possible joints, in order to realise a safe and dependable catchment and retardation of colliding vehicles so that these are retained on the carriageway. Preferably, the joint element is in the form of interior sleeves provided when the catchment devices 3 consist of sheet metal profiles. The joint element and their anchorage in the sheet metal profiles are just as strong as the rest of the profiles.

[0020] The catchment devices 3 carry out the greater part of the return steering work in the event of a collision. However, the posts 4 not only function as support members but also afford a certain increase of the rigidity of the road barrier 1 as a whole, since they retain the catchment devices 3 in a certain position in the lateral direction, at least until the catchment devices 3 have come loose from the upper region of the post 4. It is thus desirable that the post 4 be difficult to bend in the lateral direction, in particular in the event of collision by extremely heavy vehicles, such as fully loaded road haulage trucks. Such vehicles are often so high that the posts do not cause any appreciable injury to the passengers, but the major feature is that the return steering function of the road barrier 1, and in particular the return steering function of the catchment devices 3 is kept intact.

[0021] In the preferred embodiment, which is shown in Fig. 1, the catchment unit 2 is constructed from one or more elongate sheet metal profiles 3. In the preferred embodiment, the sheet metal profiles 3 have a cross sec-

tion which is substantially elliptical so that the catchment devices 3 are both strong and light in relation to the material consumption, as well as not causing more damage than necessary to any possible colliding vehicle or injury to its passengers. Alternatively, the catchment devices 3 may have other suitable cross sections or may even consist of wires. The essential feature is that the catchment devices 3, in those cases where they are two or more in number, are united as a single unit which is placed at the upper end of the post 4. The unit 2 of catchment devices 3 is secured to the post 4 in such a manner that, at the same time as the thus formed road barrier 1 is not bulky in the lateral direction, optimum properties will be attained in the barrier 1 in the event of a collision. To this end, the unit 2 of catchment devices 3 is secured on the post 4 in such a manner that the connection 6 between them is removable in the event of a sufficiently great force being applied, i.e. in the event of a collision. During the collision cycle, the unit 2 of catchment devices 3 remains, however, united together.

[0022] In the preferred embodiment, the catchment devices 3 are interconnected to form the unit 2 by fittings 7 which are disposed between the catchment devices 3. Fig. 1 shows one example where two catchment devices 3 are included in the catchment unit 2, but is naturally possible to provide both more or fewer catchment devices in the unit 2. The fittings 7 hold together the catchment devices 3 with such strength that they are held together and function as a unit 2 in most types of collisions. The reason why the catchment devices 3 are held together as a unit 2 is that the catchment and returning properties are better than if the catchment devices 3 had been moveable in the vertical direction in relation to one another. In such an event, they would have been capable of moving over or under the colliding vehicle with the result that the vehicle is not caught up in an appropriate manner.

[0023] The fitting 7 which interconnects the catchment devices 3 with one another is advantageously angled so that, on the one hand, it extends a distance outside the catchment device 3 and, on the other hand, extends transversely in relation thereto in order to create a space between the catchment devices 3. The fitting 7 may be provided with an additional bend in order to realise an anchorage against the adjacent catchment device 3, or it may be disposed to extend into the device through a slot provided for this purpose. Thus, the fitting 7 is provided with anchorage lugs for anchoring the fitting 7 in the catchment devices 3.

[0024] The post 4 is disposed to possess such bending properties that it does not cause excessive damage to a colliding vehicle or serious injury to its passengers even if the vehicle is small.

[0025] The post 4 displays different properties in different directions, such that it gives way particularly easily in the event of certain types of collisions, but is more resistant in other types of collisions. It is particularly advantageous if the post 4 bends most easily on collision in the longitudinal direction of the carriageway, since the speed in this direction is typically greatest, while the post 4 is considerably more rigid in the event of a collision in a direction transversely of the longitudinal direction of the carriageway, since the speed in the lateral direction of a colliding vehicle is generally limited.

[0026] Figs. 2 and 3 illustrate two typical cases in the event of collisions. Many collisions are a combination of these two typical cases, but in general one of these typical cases is the predominant.

[0027] Fig. 2 shows a collision in the direction of the carriageway, i.e. in the direction of the arrow A. Typically, this collision takes place with a small vehicle which is both low in profile and relatively light in weight. The colliding force is substantially directed in the direction of travel, since the speed in this direction is greatest. Regardless of where the colliding vehicle first comes into contact with the road barrier 1, sooner or later it will arrive at a post 4. Possibly, the vehicle will have had time to be retarded slightly by the contact with the catchment devices 3, but its speed is typically still quite high on its collision with the post 4. In order that retardation in such a collision is not excessively great, the post 4 is quite easy to bend in the direction of collision which is marked with the arrow A in Fig. 2. Preferably, a weakening is provided, and most preferably this weakening has a directive effect so that the post 4 is bent at the ground in the longitudinal direction of the carriageway on a collision. Since the collision generally takes place a distance down on the post 4, the connection 6 will also be subjected to a moment of force which acts to loosen the connection 6 in that friction in the connection 6 is overcome. However, the catchment unit 2 remains substantially in position, since it is still supported by the remaining posts 4 of the road barrier 1. Thus, the road barrier 1 will not be bent towards the ground in its entirety together with the posts 4.

[0028] The collision with the post 4 gives a certain, limited retardation of the vehicle, together with the retarding effect of the catchment unit. Those reaction forces on the vehicle which occur as a result of the collision and which may result in the vehicle driving off the carriageway will be effectively absorbed by the catchment devices 3 so that the vehicle is kept on the carriageway, possibly by a certain outward bending of the catchment devices 3. The speed of the colliding vehicle will be reduced, but additional posts 4 may possibly also be collided with. All posts 4 are so easily flexing that this retardation will not be excessively powerful, which minimises the injuries which the passengers may suffer. When the speed is so low that the posts 4 are no longer bent by the colliding vehicle, the road barrier 1 will remain standing and the catchment devices 3 will have a lesser outward bending in the lateral direction which increases their returning effect towards the carriageway.

[0029] Fig. 3 shows another typical case of collision against the road barrier 1. This case relates to a collision in the lateral direction. The speed straight in the lateral

direction is generally not as great in comparison with the speed in the longitudinal direction of the carriageway. The consequences of a vehicle coming into a counter flowing carriageway or driving off the road may nevertheless be serious. Thus, the road barrier 1 must meet these stresses, also when collision takes place with a heavy vehicle. In such a case, when the vehicle is extremely heavy such as, for example, a fully loaded road haulage truck, not particularly high speeds are needed in the lateral direction for particularly great retardation forces needing to be developed by the road barrier 1. Of particular importance is that not the whole of the barrier is felled to a position along the ground and thereafter quite simply driven over.

[0030] Fig. 3 shows a collision in the direction of the arrow B by a larger vehicle. Such a vehicle is typically higher and heavier than a normal private car. Because of the greater weight, the kinetic energy is greater and the point of impingement on the road barrier 1 will be higher up.

[0031] As a result of the higher point of impingement, the catchment unit 2 is bent away from the colliding vehicle. Because the unit 2 functions as a fulcrum, the stress will be greatest in the connection 6 which is subjected to a force transversely of the longitudinal direction of the carriageway. Two washers 8, 9 included in the connection 6 tend to slide towards one another when the loading in the longitudinal direction of the barrier becomes sufficiently great, and a bolt 12 included in the connection will break when the loading in the transverse direction of the barrier exceeds a certain level. The posts 4 may also be exposed to collision transversely of the longitudinal direction of the carriageway but they will not cause any appreciable damage to the vehicle since this is so large. Thus, it is not a requirement that the posts 4 are particularly easily bent in a direction transversely of the carriageway. It is rather the case that, to some degree, they contribute to an increased stability in the road barrier 1 in the lateral direction and therefore should be quite rigid.

[0032] Once the connection 6 has been broken, which will take place at a higher force than in the event of a collision in the longitudinal direction of the carriageway, the catchment unit 2 will be released from the post 4. However, the unit 2 still possesses its catchment function, since it is held together as a single unit. Since the fulcrums between the point of impingement of the colliding force and each respective anchorage member 7 which holds together the catchment devices 3 are shorter than the fulcrums between the point of impingement and the connection 6, the forces in these points will be considerably less and breakage will principally takes place in the connection 6. When this connection is broken, the mutual stresses between the catchment devices 3 and the anchorage members or fittings 7 will be less, since the catchment unit has been released. At the same time, the barrier will straighten itself out and its height will be retained largely unchanged.

[0033] The catchment unit 2 will have a certain outward bending in the lateral direction and the speed of the vehicle in the lateral direction will be reduced gradually. Since it is probable that the vehicle simultaneously moves forwards in the longitudinal direction of the carriageway, it is likely that several connections 6 will be released in that the bolt 12 in each respective connection 6 is broken off. The release of the catchment unit 2 at one point moreover increases the forces on the other bolts 12 and thereby increases the probability of failure in additional bolts 12. When the movement in the lateral direction has been retarded so much that those forces which act on the catchment unit 2 are no longer sufficiently great to cause failure in the bolts 12, the vehicle will be returned in its path, since the road barrier 1 is thereafter intact.

[0034] Thus, the road barrier 1 functions for both collision by smaller private cars, in particular in the longitudinal direction of the road barrier, but also on collision by larger, heavily loaded vehicles, in particular in the event of collision in the transverse direction of the road barrier 1.

[0035] Fig. 4 shows a perspective view of the connection 6. The connection includes two washers 8, 9 which are placed one on the other. Each one of the washers 8, 9 is fixedly welded or fixed by other means to the post 4 and the catchment unit 2, respectively. In the preferred embodiment, the washer 9 is provided with bends.

[0036] The bends are such that several portions of the washer 9 make an angle with the rest of the washer 9. The upwardly angled portions preferably function for anchorage with the lower of the catchment devices 3. Each one of the washers 8, 9 has a slot 10 and 11, respectively. The slots 10, 11 are of substantially the same width and are open towards the edge of the washer 8, 9. In order to function in the connection 6, the open ends of the slots 10, 11 are turned to face in the same direction.

[0037] The slots 10, 11 are so long that, when the washers 8, 9 have been laid on one another with the open ends of the slots 10, 11 facing in the same direction, they overlap one another. A bolt 12 is disposed to extend through the slots 10, 11 and suitable means are provided on the bolt 12 for fixing it. When the bolt union is tightened, the washers 8, 9 will be drawn towards one another with quite large force. As a result, the washers 8, 9 will be fixed in relation to one another by a friction union. They can thus slide in relation to one another on condition that the forces in the longitudinal direction of the barrier are sufficiently great. The bolt 12 will not prevent such a sliding if this takes place in the direction of the slots 10, 11, since the bolt 12, on sliding of the washers in relation to one another, is moveable through either of the slots 10, 11, depending upon in what direction the mutual sliding takes place between the washers 8, 9. The bolt 12 slides out through a specifically provided recess in the upper end of the post 4.

[0038] The connection 6 is disposed so that the slots 10, 11 extend in the longitudinal direction of the carriageway, i.e. in a direction of the arrow A. A collision substantially in the direction of the carriageway thus takes place

in the direction of the arrow A. Depending on the direction of collision, the inner end of one of the slots 10 or 11 will come into abutment against the bolt 12 while this is moveable through the other of the slots 10, 11 and the connection 6 slides apart.

[0039] On a collision transversely of the longitudinal direction of the carriageway, i.e. in the direction of the arrow B, the contact between the slots 10, 11 and the bolt 12 will take place at the sides of the bolt 12 when the washers 8, 9, and thereby the slots 10, 11 are displaced in the lateral direction in relation to one another. Finally, the contact forces between the sides of the slots 10, 11 and the bolt 12 will be so great that the bolt 12 breaks. The washers 8, 9 will then be wholly freely moveable in relation to one another and the connection 6 is broken.

[0040] On collision by light vehicles, it is, however, important that the post 4 which is difficult to bend in the lateral direction does not constitute a danger to the passengers of the vehicle when the post 4 is collided with straight from in front. Even a light vehicle, for example a small private car, should be capable of felling the post 4 on a collision from the front, while the function of the catchment devices 3 will remain intact. Thus, the post 4 has a directed weakening portion at the bottom so that it can simultaneously satisfy the need of being difficult to bend on collision in the lateral direction but relatively easy to bend on collision from in front, in the direction of the carriageway. This is realised in the preferred embodiment in that a flattened section 14 is provided at the bottom end of the post 4. The flattened section 14 is oriented such that its wider side faces towards a colliding vehicle which travels in the major direction of travel of the carriageway.

[0041] Fig. 5 shows the lower region of the post 4 and the anchorage 13 in the ground 5. In this Figure, the apparatus is seen from the side, i.e. transversely of the direction shown in Fig. 1. The flattened section 14 displays different flexural rigidity in the two directions shown in Fig. 1 and 5. A quite small car travelling at normal speed will, as a result, be able to fell the post 4 on a collision straight from the front. Since the flexural rigidity is greater in the transverse direction of the flattened section 14, the post 4 will withstand considerably greater stresses on collision in the lateral direction, for example collision by a skidding road haulage trailer.

[0042] In the preferred embodiment, the anchorage 13 in the ground 5 includes a casing pipe 15 which is dug down in its entirety or for the greater part into the ground 5. The casing pipe 15 has, in the preferred embodiment, substantially circular cross section, but it is naturally also conceivable to provide other cross sectional configurations. The flattened section 14 of the post 4 is insertable in the casing pipe 15 at least so far that the upper portion of the flattened section 14 is still located above or in line with the surface of the ground 5. By such means, it is possible that the post 4 be bent in the flattened section 14 on collision. In order to retain the post 4 in its position, a pair of support members 16 are provided on either side of the flattened section 14. The support members 16 are in the form of a substantially L-shaped cross section, where the one longer shank 18 abuts against the flattened section 14 of the post 4 and the other, shorter shank 17 abuts against the upper edge of the casing pipe 15. The angle between the two shanks 17, 18 included in the support member 16 therefore function as a breaking edge when the post 4, whose flattened section 14 is held between two support members 16, is struck by a collision.

[0043] The support members 16 are substantially of the same width as the width of the flattened section 14 of the post 4. Since the flattened section 14 is only slightly narrower than the casing pipe 15 so as to be insertable therein, and the support members 16 are substantially of the same width as the flattened section 14, this implies that the form of the support members 16, the flattened section 14 and the casing pipe 15 per se define the movement possibilities of the post 4 and its anchorage 13. In order further to increase stability and make unintentional dismantling impossible, the support members 16 are moreover fixedly welded in the casing pipe 15 and possibly also in the flattened section 14.

[0044] Fig. 6 is an exploded view of the casing pipe 15, the flattened section 14 of the post 4 and the support members 16. The casing pipe 15 displays a substantially circular cross section which is employed in the preferred embodiment. The advantage inherent in a circular cross section is that the alignment of the casing pipe 15 on positioning in the ground 5 does not need to be exact, but affords possibilities for adjustment of the angle of the flattened section 14 in relation to the adjacent carriageway so that the desired direction is obtained.

[0045] Fig. 7 is a perspective view of one of the support members 16. Here, the L-shaped cross section can clearly be seen with a shorter shank 17 which abuts against the upper edge of the casing pipe 15 and whose outer contour substantially corresponds with the outer contour of the casing pipe 15. The longer shank 18 abuts against the flattened section 14 with its main surface, while its side edges 21 abut against or are adjacent to the inside of the casing pipe 15. As a result, the possibilities of the support member 16 to move reciprocally in the casing pipe 15 are restricted for purely geometric reasons. There is quite simply no large space of movement to allow this. Moreover, the shorter shank 17 and its angle to the longer shank 18 will further contribute in the support members 16 being retained in their position in that they abut against the upper edge of the casing pipe 15.

[0046] Fig. 8 is a sectional view substantially taken along the line A-A in Fig. 5. The section is seen from above and the elliptical cross section of the flattened section 14 is visible between the support members 16. Also in this Figure, it can be discerned how the longer shank 18 on the support member 16 abuts against the broad side of the flattened section.

[0047] The flattened section 14 has a cross section which is elliptoid with a minor axis 19 and a major axis

20. In the desired orientation of the post, the minor axis 19 is thus parallel with the adjacent carriageway, while the major axis 20 is transversely directed in relation thereto.

[0048] As was intimated in Fig. 1, the flattened section 14 is wider than the rest of the post 4, at least in the direction of the major axis 20. This is because the material in an originally cylindrical pipe has been moved out to the sides when being flattened. If the pipe had originally been narrower, for example conical, in that end where the flattening takes place, another result might possibly have been obtained. In such an event, this is a pure case of dimensioning.

DESCRIPTION OF ALTERNATIVE EMBODIMENTS

[0049] Fig. 9 shows an alternative embodiment of the invention. In this embodiment, the flattened section 14 has been made shorter and is fixedly welded at its lower end on a transversely directed plate 22. Anchorage means 23 are in turn provided in the plate 22 for anchoring in the ground 5 or some other substrate, such as a concrete foundation. In the Figure, the anchorage means 23 are shown as elongate bolts.

[0050] In the alternative embodiment, the contemplated bending properties in the different directions are retained, at the same time as the fixing does not require deep holes to be excavated for the casing pipes 15. Thus, the alternative embodiment may be employed at such places where the ground is not suitable for the preferred embodiment.

[0051] The present invention may be modified and varied further without departing from the scope of the appended Claims.

Claims

1. A post for supporting one or more elongate catchment devices (3) such as wires or sheet metal profiles in a road barrier (1), comprising uprights upstanding from the ground level (5) and whose upper end is removable from the catchment devices, **characterised in that** the upright has a flattened section flush with the ground level (5) for realising an indication for directed outward bending of the post (4) in the event of a collision.

2. The post (4) as claimed in Claim 1, **characterised in that** the flattened section (14) extends a distance below the ground level (5) in the mounted state.

3. The post (4) as claimed in Claim 1 or 2, **characterised in that** the flattened section (14) has a cross section with a major axis (20) and a minor axis (19), the major axis (20) extending transversely of the direction of travel of an adjacent carriageway.

4. The post (4) as claimed in Claim 3, **characterised in that** the length of the major axis (20) is at least four times as great as the length of the minor axis (19).

5. The post (4) as claimed in any of Claims 1 to 4, **characterised in that** its cross section above the ground level, in a mounted state, is substantially symmetrical around a centre axis.

6. The post (4) as claimed in any of Claims 1 to 5, **characterised in that** the post (4) has an anchorage which includes a casing pipe (15) below the ground level (5) in which the upstanding upright is insertable.

7. The post (4) as claimed in Claim 6, **characterised in that** the diameter of the casing pipe (15) is substantially equal to or slightly larger than the largest transverse dimension of the flattened section (14) of the upstanding upright.

8. The post (4) as claimed in Claim 6 or 7, **characterised in that** the upstanding tube has, above the flattened section (14) a largest transverse dimension which exceeds the largest transverse dimension of the casing pipe (15) so that the upstanding upright partly remains above the ground level.

9. The post (4) as claimed in any of Claims 7 or 8, **characterised in that** the outer major axis (20) of the flattened section (14) substantially coincides with the inner diameter of the casing pipe (15).

10. The post (4) as claimed in any of Claims 6 to 9, **characterised in that** two support members (16) are insertable and fixable in the casing pipe (15) on both sides of the flattened section (14) for supportingly fixing the post (4).

11. The post (4) as claimed in Claim 10, **characterised in that** each respective support member (16) displays the major configuration of an L, where the one shank (18) extends downwards in the casing pipe (15) and the other shank (17) extends transversely of the casing pipe (15) at its opening.

12. The post (4) as claimed in Claim 11, **characterised in that** the L-shaped support members (16) are disposed such that the angle between the shanks (17, 18) extends along the flattened section (14) so as to function as a break edge in the event of a collision.

13. The post (4) as claimed in any of Claims 1 to 5, **characterised in that** the post (4) has an anchorage which includes a transversely directed plate (22) fixedly welded at the flattened section (14) and fixable in the substrate (5).

14. The post (4) as claimed in Claim 13, **characterised in that** the anchorage includes fixing means (23) which extend a distance down in the substrate (5) such as the ground or a foundation.

Fig 1

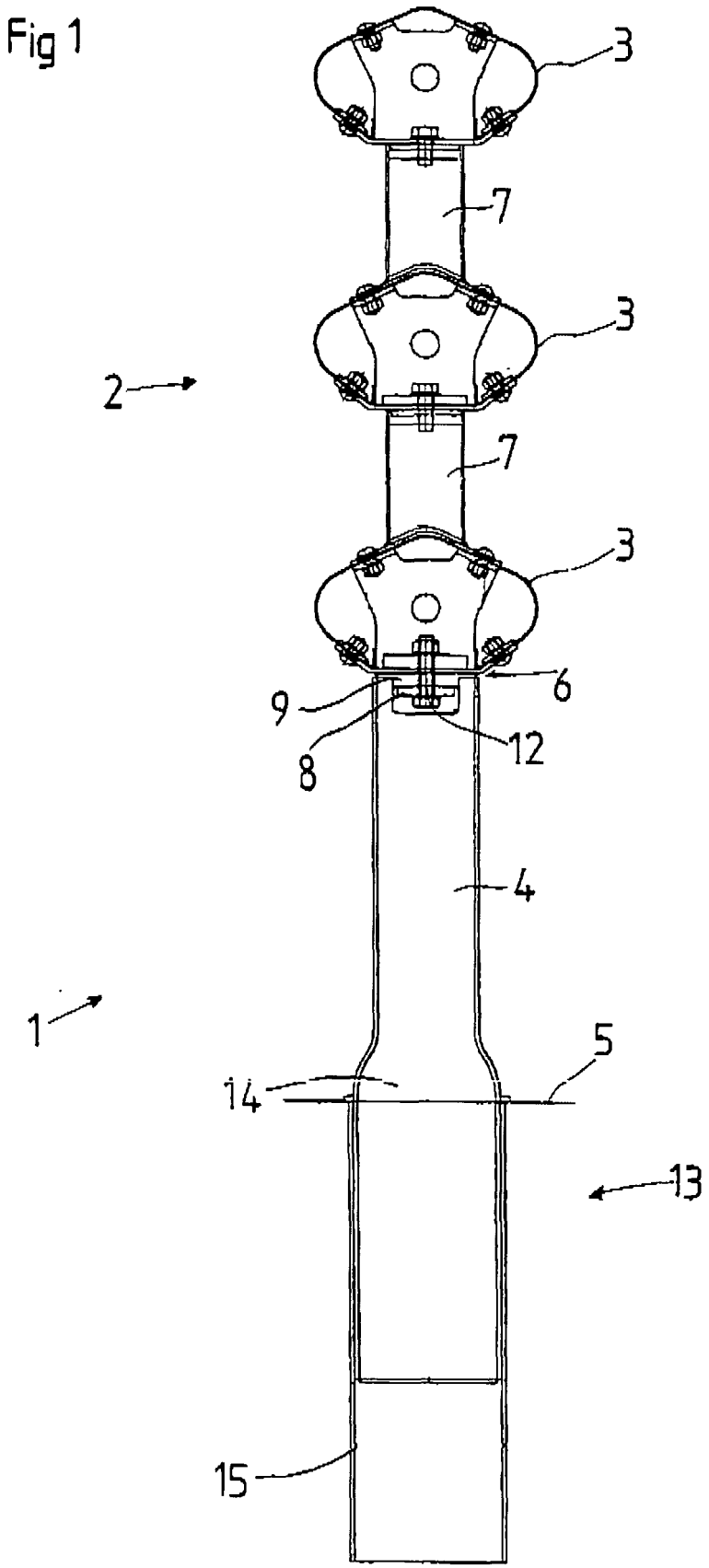


Fig 2

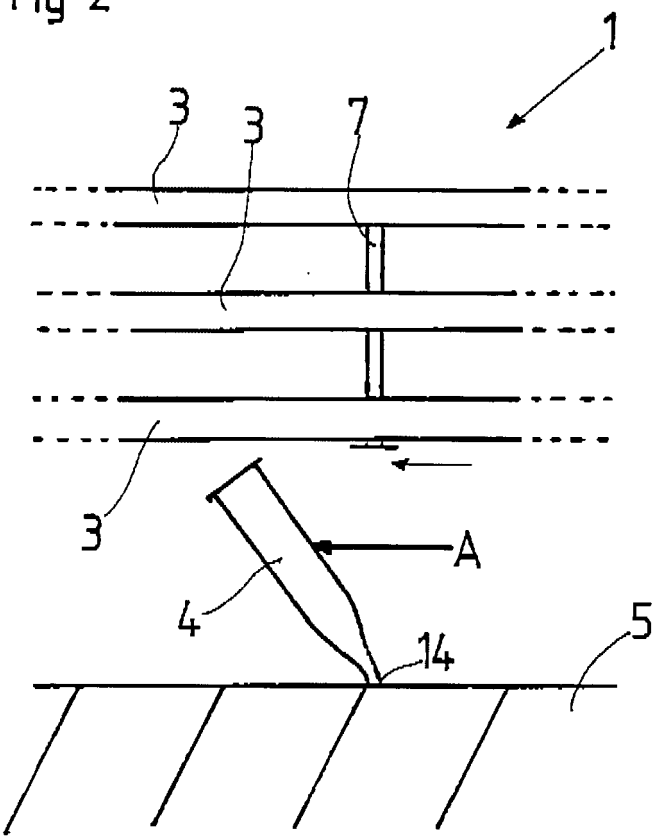


Fig 3

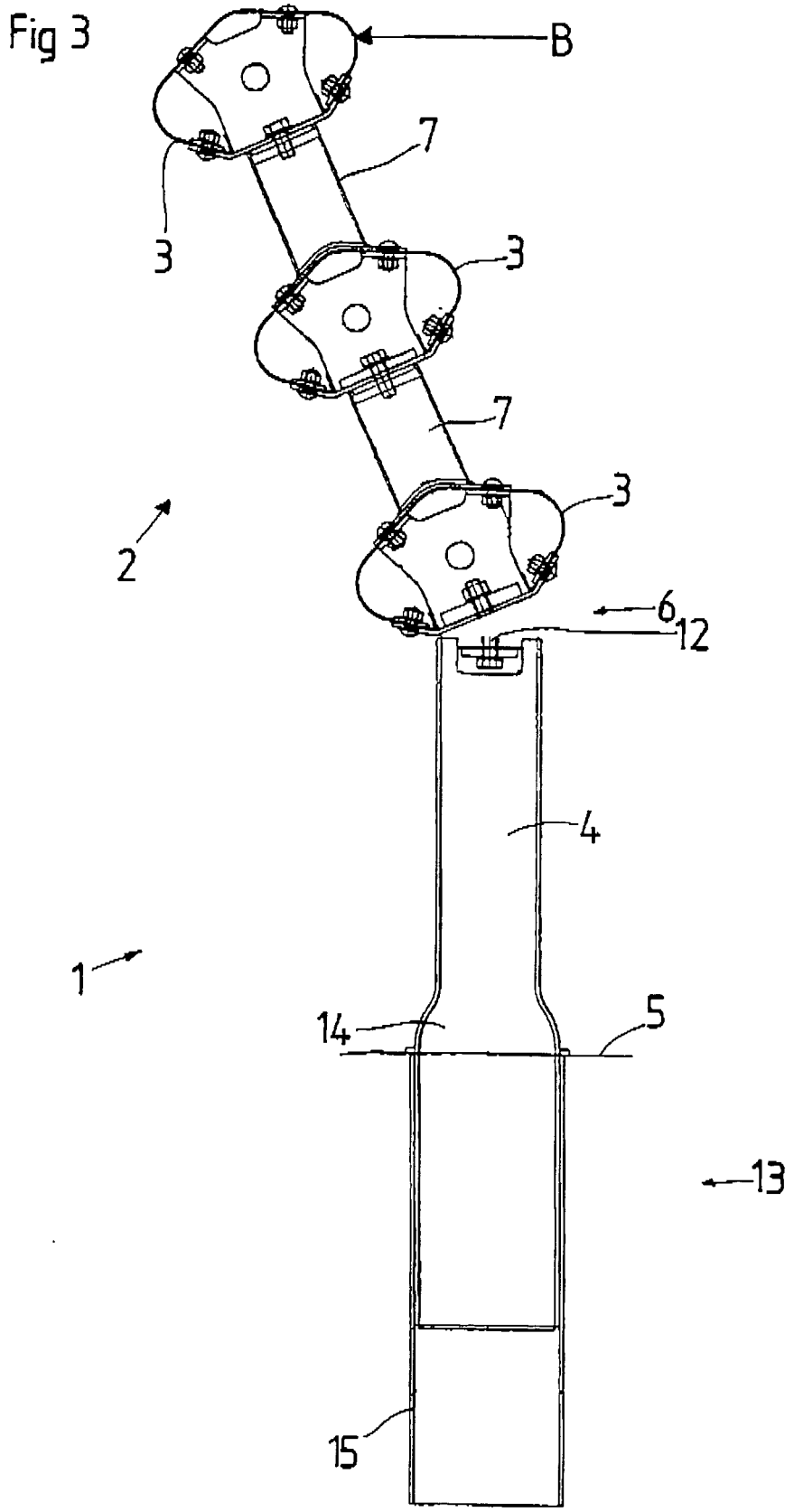
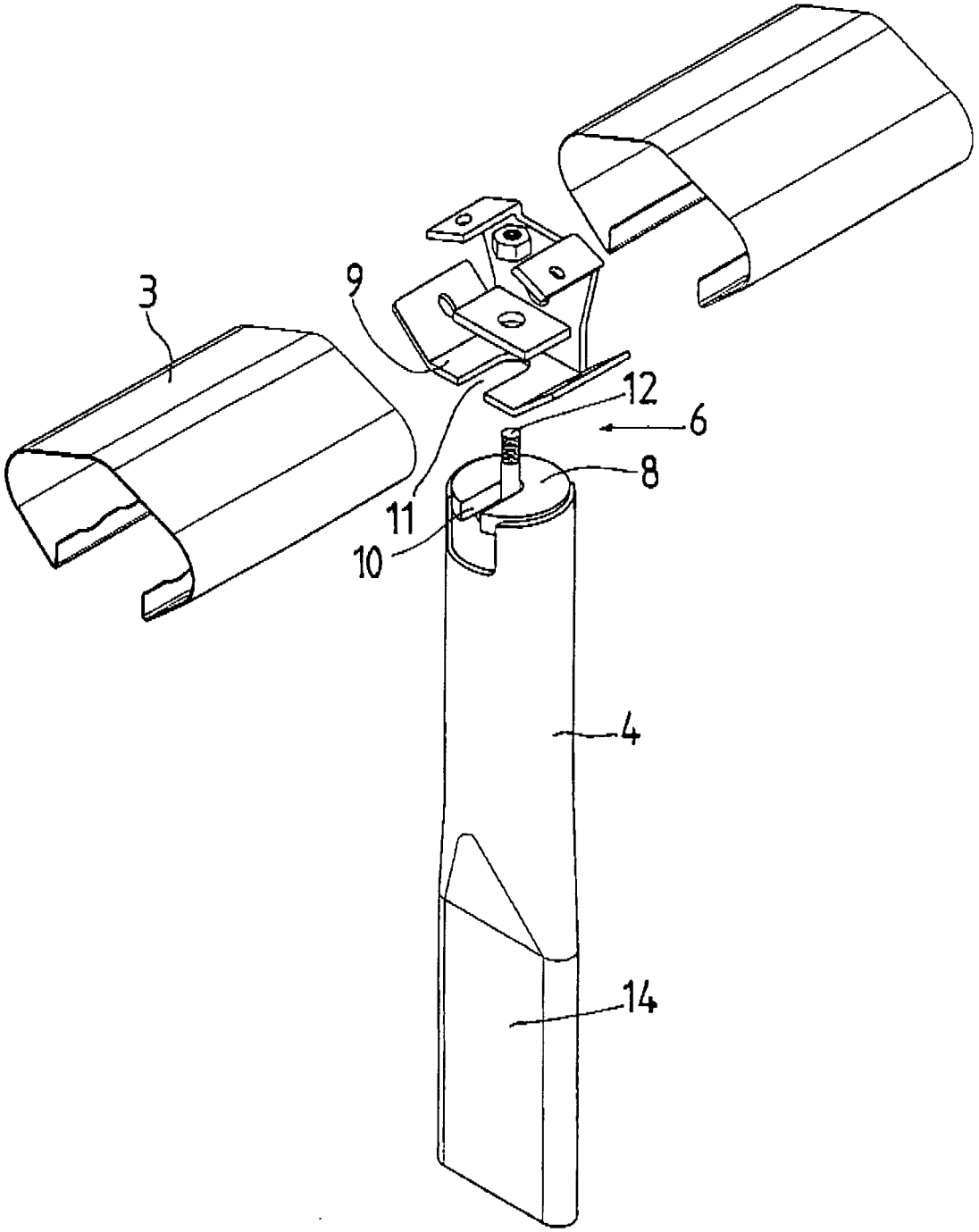


Fig 4



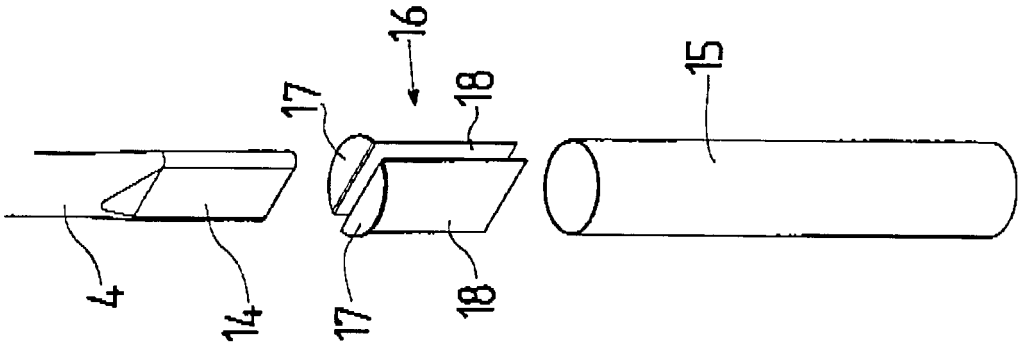


Fig 6

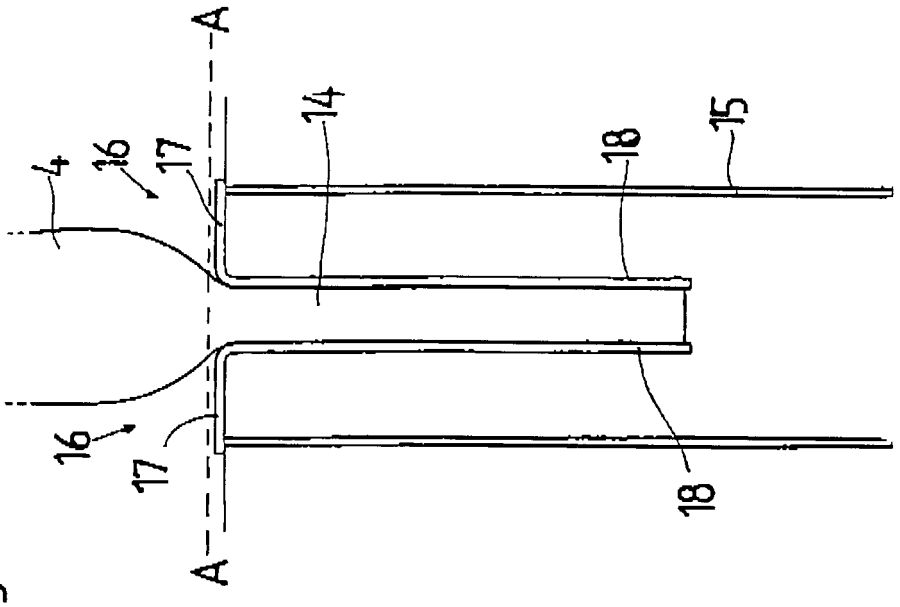


Fig 5

Fig 7

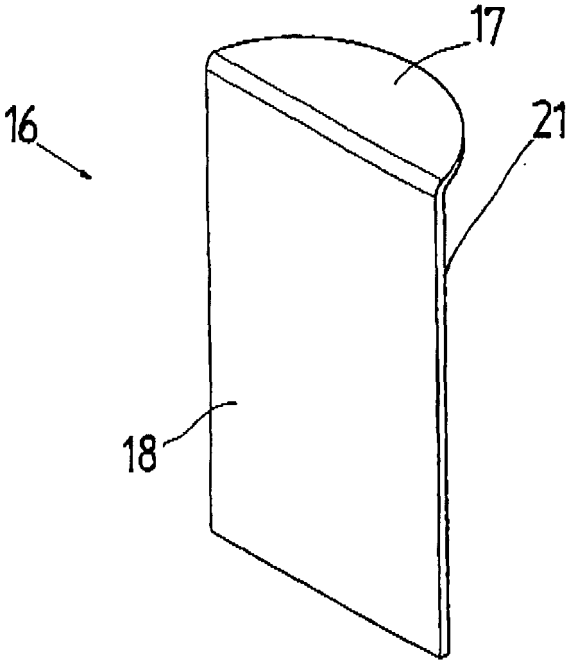


Fig 8

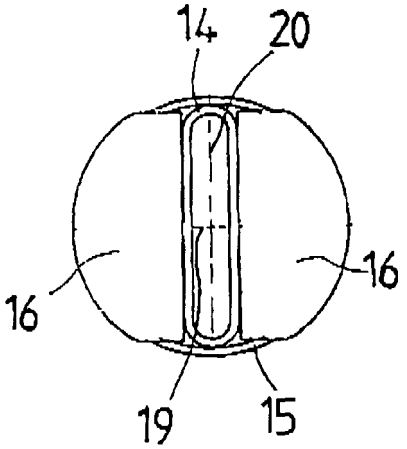
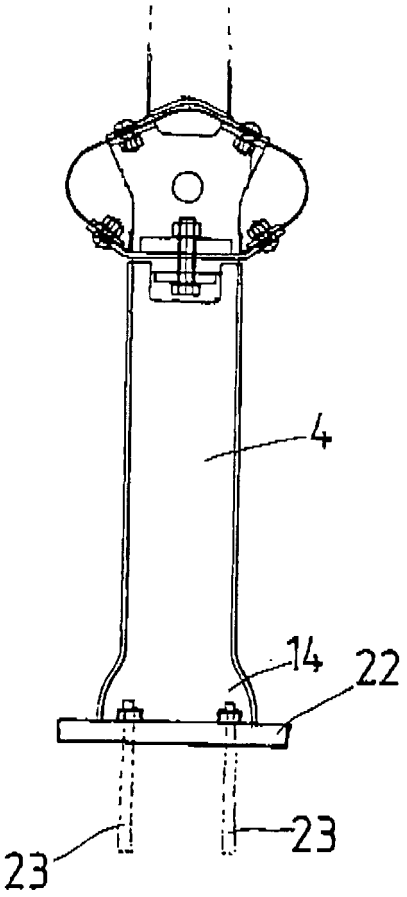


Fig 9



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