



Europäisches Patentamt
European Patent Office
Office européen des brevets



(11) **EP 1 264 936 A2**

(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
11.12.2002 Bulletin 2002/50

(51) Int Cl.7: **E01F 9/017, E01F 9/011**

(21) Application number: **02011991.3**

(22) Date of filing: **30.05.2002**

(84) Designated Contracting States:
**AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU
MC NL PT SE TR**
Designated Extension States:
AL LT LV MK RO SI

(72) Inventor: **Boswell, Anthony**
Gravesend, Kent DA11 7LY (GB)

(74) Representative: **Raynor, Simon Mark et al**
Urquhart-Dykes & Lord
Midsummer House
413 Midsummer Boulevard
Central Milton Keynes MK9 3BN (GB)

(30) Priority: **04.06.2001 GB 0113493**

(71) Applicant: **Boswell, Anthony**
Gravesend, Kent DA11 7LY (GB)

(54) **Guide device and car park**

(57) The invention relates to a guide device (2) for helping drivers to guide their vehicles into parking spaces, and a car park that includes a plurality of the guide devices for delimiting the boundaries of parking spaces in which vehicles may be parked, thereby defining the layout of the car park. The guide device (2) includes a

support member (10) that is constructed and arranged to stand on the ground, at least one arm that is supported by the support member and in use extends substantially horizontally from the support member, and a ground anchor (12) having a lower part for anchoring in the ground and an upper part to which the support member may be attached.

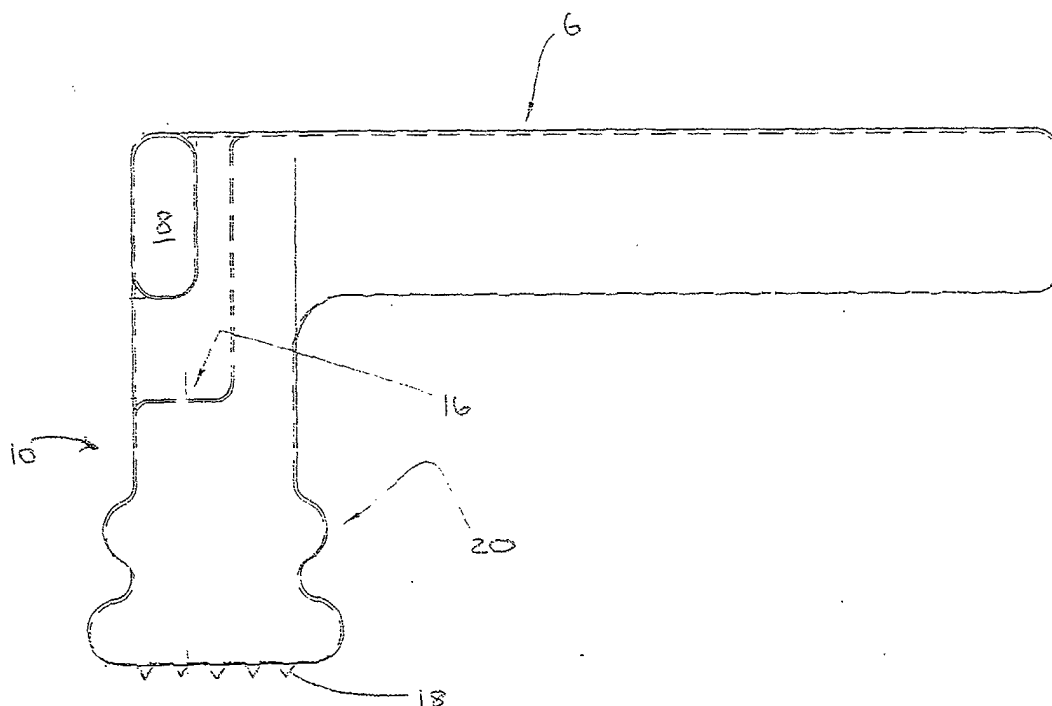


FIGURE 3

EP 1 264 936 A2

Description

[0001] The present invention relates to a guide device, and to a car park that includes a plurality of guide devices. In particular, but not exclusively, the invention relates to a guide device for delimiting the boundaries of parking spaces in which vehicles may be parked, defining the layout of the car park, and helping drivers to guide their vehicles into and out of parking spaces.

[0002] In public and private car parks, the dimensions of designated parking spaces are calculated such that each parking space is wide enough for the parking of a "standard" vehicle, and allows adequate space between adjacent parked vehicles for the occupants to get out of and into the vehicles with an assumption of relative ease. The width is calculated on the assumption that all drivers park their vehicles nearly centrally within the designated parking spaces.

[0003] Conventional markings on the ground of parking spaces are generally not visible during a parking manoeuvre and as a result, most drivers will seek to park at around the midpoint between two adjacent vehicles. It is well known that not all drivers park neatly, and any inaccuracies in the position of a row of parked vehicles can be perpetuated and maintained as vehicles join or depart from the row of parked vehicles concerned. For example, once a driver has located a vacant parking space in a car park, he is often faced with the situation that the vehicles in the two adjacent parking spaces have not parked straight and/or in the centre of their respective spaces, thereby reducing the amount of space available to the driver on parking. A number of problems arise, the most obvious being that there will be insufficient room for the occupants to get out of the vehicle. Due to poor parking or mere carelessness, vehicles are often damaged when the doors of adjacent vehicles are opened, or by manoeuvring shopping trolleys or prams between the parked vehicles. Vehicles can also be damaged along their flanks by collision while another vehicle exits or enters a parking space. Poor parking also results in a loss of parking capacity if the gap between two adjacent vehicles is too narrow for safe and convenient use.

[0004] The inventor's earlier International patent application No. PCT/GB99/02148 discloses a guide device for helping drivers to manoeuvre their cars into parking spaces by employing a barrier device that is within the driver's view. The barrier device is positioned along the flanks of the parking spaces, occupying the space between parked vehicles, thereby preventing shopping trolleys, prams and similar hazards from parking between parked vehicles. By denying easy access to the rear of the parking spaces, drivers are obliged to manoeuvre their vehicles forward into the parking space, leaving their rear luggage compartment adjacent to the aisle, rather than reversing into the parking space, which is more time consuming and hazard prone. The structure and materials of the barrier device are such that the

device will not injure the surface of the car in the event of contact or impact.

[0005] However, this guide device has a number of limitations.

[0006] The guide device is relatively long, extending along the flank of the vehicle and causing interference with the opening doors. Although the horizontal arm of the device will deflect upon the opening of a vehicle's doors, some drivers anticipate physical inconvenience from the device's presence between parked vehicles, for example interference with the opening doors of any wider than average vehicle, or interference with the opening of vehicle doors in use by a less than physically able driver or passenger.

[0007] Herringbone car parks use one way aisles in either direction on either side of chevronned parking spaces set at an angle to the aisles. A common problem encountered in car parks of herringbone configuration arises when drivers drive through a vacant bay in front of their parking space to emerge in the next aisle going the wrong way. Another problem arises when drivers position their vehicle by reference to the adjacent vehicle, failing to take account of the offset, which is created by the fact that the parking spaces are at an angle to the aisle. Vehicles are therefore often parked with their rear extremity in the aisle, thereby causing an obstruction in the aisle. The guide device disclosed does not demarcate the end boundary of the parking space or prevent drivers driving through a vacant bay in front to emerge in the next aisle.

[0008] The guide device is also fixed into position by cramp bolt, adhesive or grouting and is therefore only suitable for use on hard, solid car park surfaces, such as concrete or tarmacadam. In particular, it is not suitable for use on grass or aggregate.

[0009] Grass or aggregate parking areas are commonly used for overflow or similar light duty purposes. Grass, aggregate and similar surfaces can be constructed with an engineered sub-base sufficient to allow their use in low turnover parking situations, such as daily employee or commuter parking. Grass parking can be virtually maintenance free, but its present limitation is in providing physical organisation and visual structure to the surface of the parking area. White painted lines or similar delineations frequently have to be re-made and are therefore inappropriate.

[0010] Where there are no ground markings, vehicles are often directed nose to tail along roads and access lanes, and then supervised by stewards into self generating rows and aisles of parked vehicles. Drivers tend to park further apart than in designated car parks thereby creating a reduced parking density. Upon exit, drivers return to their vehicles in no particular order, and then commence moving out of the car park "ad hoc". Most drivers take the nearest competitive shortcut to the exit, which results in congestion.

[0011] The aim of the present invention is to provide a guide device and car park that includes a plurality of

the guide devices that mitigate at least some of the above-mentioned problems.

[0012] According to the present invention, there is provided a guide device for helping drivers to guide their vehicles into parking spaces, said guide device including a support member that is constructed and arranged to stand on the ground, at least one arm that is supported by the support member and in use extends substantially horizontally from the support member, and a ground anchor having a lower part for anchoring in the ground and an upper part to which the support member may be attached.

[0013] The present invention encourages and helps drivers to park their vehicles in parking spaces more accurately, so that they are parked near the centre and nearly straight within the parking space. The guide device is positioned above the ground, within the driver's line of sight, thereby providing visual and physical guidance to drivers engaged in manoeuvring into or out of a parking space.

[0014] Advantageously, the support member includes a ground-contacting portion that is deformable to accommodate movements of the ground.

[0015] Advantageously, the support member includes a resilient plastics moulding.

[0016] Preferably, the support member includes ground engaging elements for preventing rotation of the support member relative to the ground.

[0017] Advantageously, the ground engaging elements comprise spikes on a lower surface of the support member.

[0018] Advantageously, the ground anchor includes a spike that is suitable for being driven into the ground.

[0019] Preferably, the guide device includes means for attaching and locking the ground anchor to the support member to prevent rotation relative thereto.

[0020] Advantageously, the guide device includes a plurality of arms that are supported by the support member, said plurality of arms including a first arm for demarking a side boundary of a parking space and a second arm for demarking an end boundary of a parking space.

[0021] The present invention further provides a guide device for helping drivers to guide their vehicles into parking spaces, said guide device including a support member that is constructed and arranged to stand on the ground, and a plurality of arms that are supported by the support member, said plurality of arms including a first arm for demarking a side boundary of a parking space and a second arm for demarking an end boundary of a parking space.

[0022] The guide device helps drivers to park their vehicles accurately within a parking space. The first arm demarking the side of the parking space helps drivers to position their vehicles straight within the parking space. The second arm demarking the end of the parking space is directly in front of the driver and provides a visible designation to the end of the parking space so

that vehicles are parked further forward in the parking spaces, thereby preventing the rear extremity of the vehicle from obstructing the aisle. The second arm also prevents drivers from driving through a vacant bay in front of their parking space.

[0023] Preferably, the first and second arms are constructed and arranged to be substantially horizontal in use.

[0024] Preferably, the first and second arms are substantially perpendicular to each other.

[0025] Preferably, the first arm is substantially longer than the second arm.

[0026] Advantageously, the first arm has a length in the range 100-300cm, preferably approximately 150cm, and the second arm has a length in the range 100-150cm, preferably approximately 80cm.

[0027] Preferably, the support member is constructed and arranged to be substantially vertical in use.

[0028] Preferably, the or each arm is made of a plastics material.

[0029] Advantageously, the or each arm is made of polyethylene.

[0030] The present invention further provides a car park having a plurality of guide devices including any of the features described in the preceding statements of invention, said guide devices being arranged to define the layout of the car park and demark the boundaries of parking spaces within which vehicles may be parked.

[0031] The car park may have a grassed surface or any other suitable surface, for example aggregate or tarmac.

[0032] Advantageously, the car park includes a plurality of vehicle access lanes, said parking spaces being set at an acute angle to the access lanes.

[0033] Advantageously, the car park has a herringbone layout.

[0034] An embodiment of the invention will be described, by way of example, with reference to the accompanying diagrams, in which:

Figure 1 is a plan view of a car park, illustrating the positions of the guide devices;

Figure 2 is a top view of the guide device;

Figure 3 is a side view of the guide device;

Figure 4 is a end view of the guide device;

Figure 5 is a side view of a mounting peg and bolt;

Figure 6 is a partially sectional side view of a mounting pin and bolt;

Figure 7 is a cross-sectional view of the mounting pin, and

Figure 8 is a side section, showing the mounting pin

in use.

[0035] Figure 1 shows the use of the guide device 2 to delimit the width of each parking space 4 in a "chevron" or "herringbone" parking layout. The guide device is fixed to the ground towards the end of the parking space 4.

[0036] The guide device is shown in figures 2, 3 and 4, and consists essentially of two horizontal arms 6,8, which are arranged at 90° to each other and attached to a perpendicular support 10. The device is then mounted on a mounting peg 12 that is driven into the ground, and is secured to the peg by means of a bolt 14.

[0037] The device 2 is preferably made of a low friction, high density plastic, for example polyethylene.

[0038] The arms 6,8 are of different lengths, approximately 150cm and 90cm respectively, and are positioned at a height of approximately 80cm above the ground.

[0039] The support 10 includes a bolt hole 16, approximately 40cm from the end of the support for securing the device in position by means of a bolt 14 to the mounting peg 12. The mounting peg extends downwards through a hole in the base of the support and is positioned off-centre relative to the support, thereby discouraging rotation of the device. For mounting the device on unstable surfaces, such as grass or aggregate, the support 10 includes downwardly projecting teeth 18 on the base of the support and a flexible collar 20. The downwardly projecting teeth 18 help prevent rotation of the device once it has been secured in position. Once the device has been secured in position, the flexible collar 20 maintains the downward pressure of the device on the ground, whilst allowing for ground movement, for example seasonal heave due to a varying amount of surface moisture in clay or similar soils.

[0040] The mounting peg 12, shown in figure 5, is cruciform in section. It is approximately 90cm in length and made of galvanised steel. A nut 21 is welded in the top end of the mounting peg. There are also castellations (not shown) on the top of the mounting peg. The bolt 14 is a tamper proof bolt. A steel washer 22 and a plastic washer 24 are used when attaching the support member securely to the mounting peg.

[0041] Operation of the guide device will now be described in relation to use on a grass or aggregate surface.

[0042] Once the position of the guide device at the end of the parking space has been determined, the mounting peg 12 is inserted approximately 50cm into the ground. The support member 10 of the guide device is then placed over the projecting part of the mounting peg 12. The guide device is then bolted to the mounting peg 12. The guide device is positioned so that the longer arm 6 is directed along the side and the shorter arm 8 along the end boundary of the parking space. Before the bolt 14 is tightened, the guide device can be rotated on the mounting peg 12 until correctly aligned with ad-

jacent guide devices and the intended car park geometry. When correctly aligned the bolt 14 can be tightened compressing its fabric between the castellations on the top of the peg and the plastic washer 24 above, thereby preventing further rotation. Rotation of the device is also prevented by means of the downwardly projecting teeth 18 on the base of the device, which engage with the surface of the ground.

[0043] When the support member is fixed to the mounting peg with the bolt 14, the flexible collar is compressed against the ground and will maintain downward pressure on the ground surface, and make good any loss of soil volume following installation, or seasonal heave due to varying amounts of surface moisture in the ground.

[0044] The device helps guide drivers and their vehicles into a parking space so that when parked the vehicle is positioned near to the centre of the designated bay.

[0045] The shorter arm 8 is positioned along the end boundary of the parking space and prevents drivers from driving through the parking space into a vacant parking space in front. When the parking layout has a herringbone configuration, this prevents the driver from emerging in the next aisle going the wrong way and thereby disrupting traffic flow. The shorter arm 8 also provides a visible designation of the position of the end of the parking space, further helping the driver to position the car correctly within the parking space.

[0046] The position of the guide device also prevents damage to the flanks of the vehicles by preventing the manoeuvring of shopping trolleys and prams between parked vehicles.

[0047] Due to the increased accuracy of parking by drivers into and out of parking spaces, the width of the access lanes to the parking spaces could be reduced. This will increase the potential capacity of a parking area.

[0048] The use of the guide device on grass, aggregate or similar surfaces enables the greater potential for use of these areas as more efficient parking areas. Grass and similar car parks can be cost effectively constructed to durable engineering standards. They also have the advantage of being permeable to rain water, and therefore do not contribute to storm water flows in piped drainage and in nearby rivers, or keep rain water from aquifers or ground water beneath.

[0049] A mounting pin, which can be used as an alternative to the mounting peg to hard surfaces such as tarmac or concrete, is shown in Figs. 6 to 8. The mounting pin 30 is made of any suitable material such as stainless steel and is generally cylindrical, having a length of 460mm and a diameter of 20mm. The lower portion 32 of the pin (e.g. the bottom 100mm) has a cruciform cross-section, as shown in Fig. 7. At its upper end, the pin has a collar 34 of a plastics material, for example HDPE, which is engaged by a washer 36 and a bolt 38 that engages a threaded bore 40 in the upper end of the

peg. The head of the bolt is protected with an armoured ring 42.

[0050] In use, a 20mm diameter hole 44 is drilled into the ground and filled with epoxy resin, which serves as a fixative and a sealant. The peg is inserted into the hole to the depth of the cruciform lower section 32 (as shown in Fig. 3), leaving the upper section 46 standing above ground level. The support member is placed over the peg and the collar 34 is then placed onto the peg and the bolt 38 and washer 36 are located in position and fastened down, to compress the collar against the support member. This locks the support member in position. If necessary, an adhesive pad (not shown) can be placed underneath the support member, to prevent it turning relative to the ground.

[0051] Various modifications of the guide device are envisaged, for example the device may have three or even four orthogonal arms designating the limits of adjacent parking spaces in different configurations of car park layout.

[0052] When the device is to be used on hard solid surfaces, such as concrete or tarmacadam, the upper part of the mounting peg can be fixed to the surface of the ground by a corrosion resistant metal flange, which can then be cramp bolted or otherwise attached to the surface.

[0053] There is also a potential for providing advertising material on, or attached to the device.

Claims

1. A guide device for helping drivers to guide their vehicles into parking spaces, said guide device including a support member that is constructed and arranged to stand on the ground, at least one arm that is supported by the support member and in use extends substantially horizontally from the support member, and a ground anchor having a lower part for anchoring in the ground and an upper part to which the support member may be attached.
2. A guide device according to claim 1, in which the support member includes a ground-contacting portion that is deformable to accommodate movements of the ground.
3. A guide device according to claim 2, in which the support member includes a resilient plastics moulding.
4. A guide device according to any one of the preceding claims, in which the support member includes ground engaging elements for preventing rotation of the support member relative to the ground.
5. A guide device according to claim 4, in which the ground engaging elements comprise spikes on a

lower surface of the support member.

6. A guide device according to any one of the preceding claims, in which the ground anchor includes a spike that is suitable for being driven into the ground.
7. A guide device according to any one of the preceding claims, including means for attaching and locking the ground anchor to the support member to prevent rotation relative thereto.
8. A guide device according to any one of the preceding claims, including a plurality of arms that are supported by the support member, said plurality of arms including a first arm for demarking a side boundary of a parking space and a second arm for demarking an end boundary of a parking space.
9. A guide device for helping drivers to guide their vehicles into parking spaces, said guide device including a support member that is constructed and arranged to stand on the ground, and a plurality of arms that are supported by the support member, said plurality of arms including a first arm for demarking a side boundary of a parking space and a second arm for demarking an end boundary of a parking space.
10. A guide device according to claim 8 or claim 9, wherein the first and second arms are constructed and arranged to be substantially horizontal in use.
11. A guide device according to any one of claims 8 to 10, wherein the first and second arms are substantially perpendicular to each other.
12. A guide device according to any one of claims 8 to 11, in which the first arm is substantially longer than the second arm.
13. A guide device according to claim 12, in which the first arm has a length in the range 100-300cm, preferably approximately 150cm, and the second arm has a length in the range 100-150cm, preferably approximately 80cm.
14. A guide device according to any one of the preceding claims wherein the support member is constructed and arranged to be substantially vertical in use.
15. A guide device according to any one of the preceding claims, wherein the or each arm is made of a plastics material.
16. A guide device according to any one of the preceding claims, wherein the or each arm is made of pol-

yethylene.

17. A guide device according to any one of the preceding claims, incorporating information or advertising displayed upon the visible surface and applied during manufacture or subsequently. 5
18. A car park having a plurality of guide devices according to any one of the preceding claims, said guide devices being arranged to define the layout of the car park and demark the boundaries of parking spaces within which vehicles may be parked. 10
19. A car park according to claim 18, said guide devices being arranged to define the pattern of the aisles and to control the circulation of vehicles within the car park. 15
20. A car park according to claim 18 or claim 19, said car park having a grassed or aggregate surface. 20
21. A car park according to claim 18 or claim 19, said car park having a tarmacadam, concrete or other hard surface. 25
22. A car park according to any one of claims 18 to 21, including one or more vehicle aisles, said parking spaces being set at an acute angle to the aisles.
23. A car park according to claim 22, said car park having a herringbone configuration in plan. 30

35

40

45

50

55

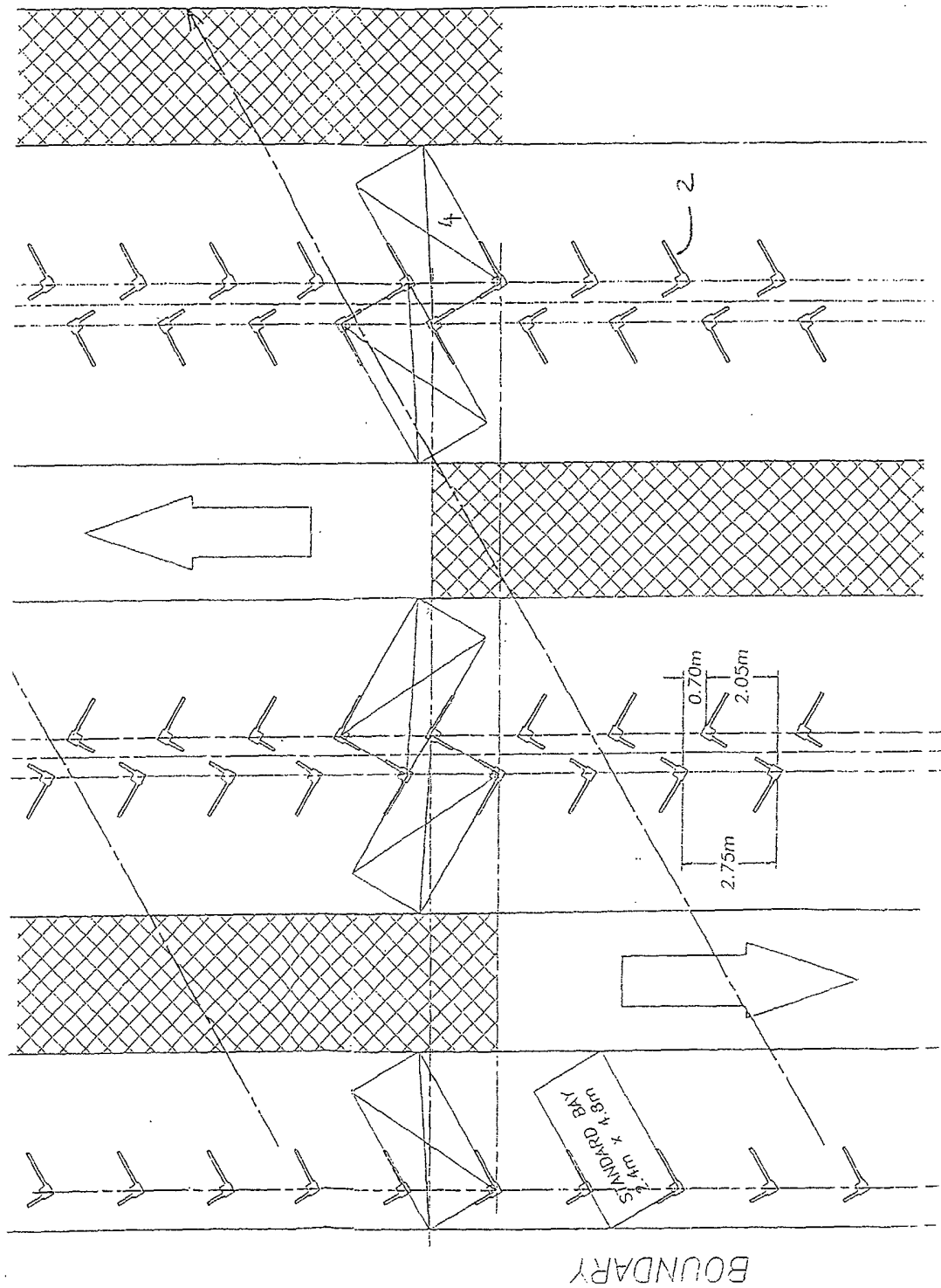


FIGURE 1

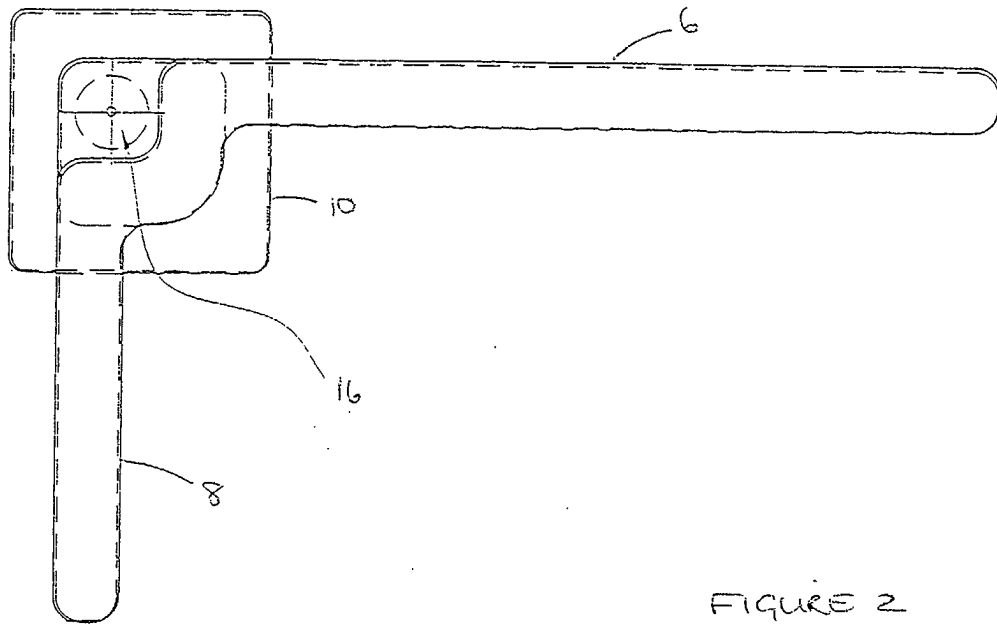


FIGURE 2

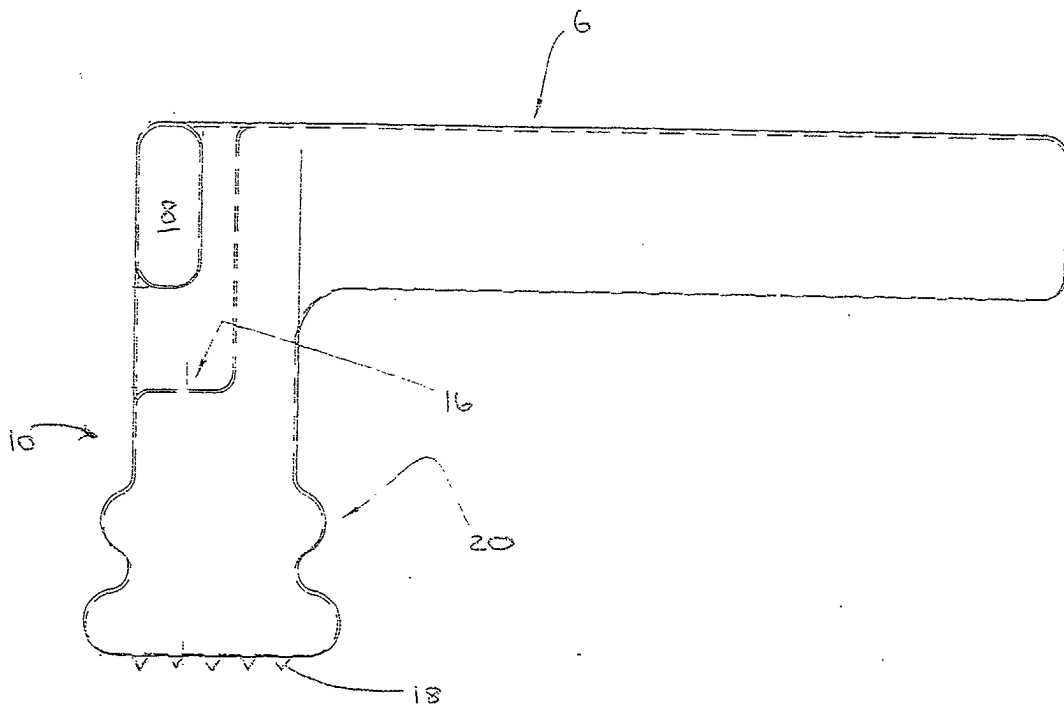


FIGURE 3

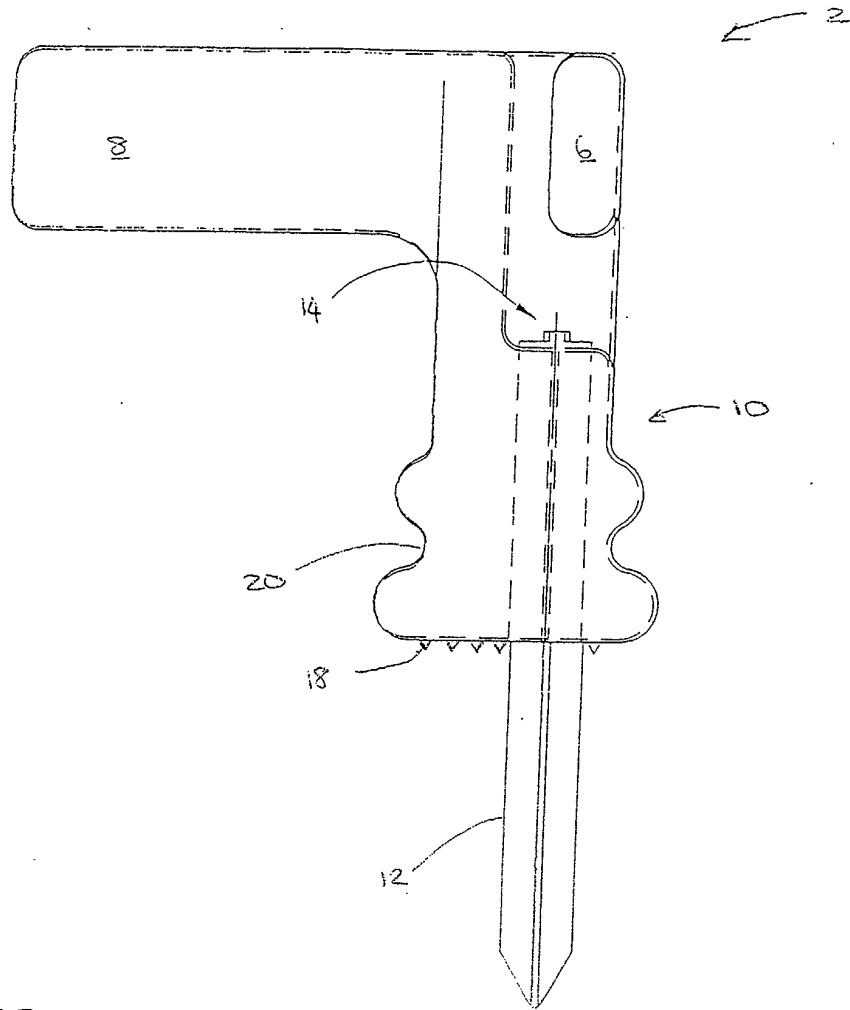


FIGURE 4

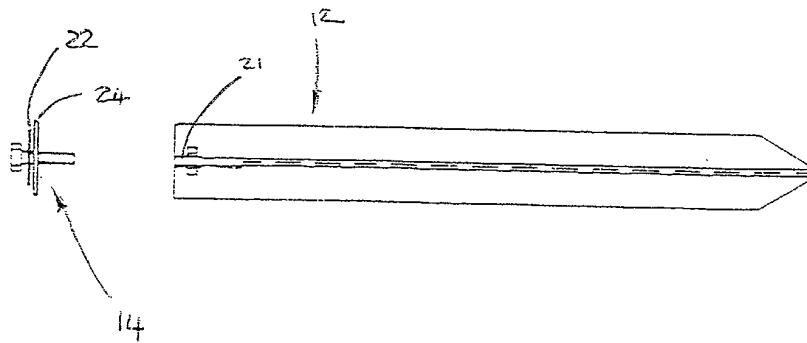


FIGURE 5

