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2014208307 05 Aug 2014

ABSTRACT

Adjustable Leg System For A Trellis Attached To A Post comprising a main housing unit consisting of a main body and base plate having a at least one hole, slot, lip, channel, retaining leg to connect a nut and bolt or other means to a leg piece that also has at least one hole, slot or aperture, lip or channel and bend within its length for the leg to adjustably slide along the base plate whilst connected to it said leg piece further connecting to a second leg piece having at least one hole slot or aperture, lip or channel for both leg pieces to adjustably connect together said second leg piece having a foot portion to connect to a fence post said legs may be used with a further leg extension piece having a hole, slot, aperture, lip, channel to sit between and conjoin both leg pieces one at each end of the leg extension piece to form one entire adjustable leg and housing.

2014208307 05 Aug 2014

FIG. 3.

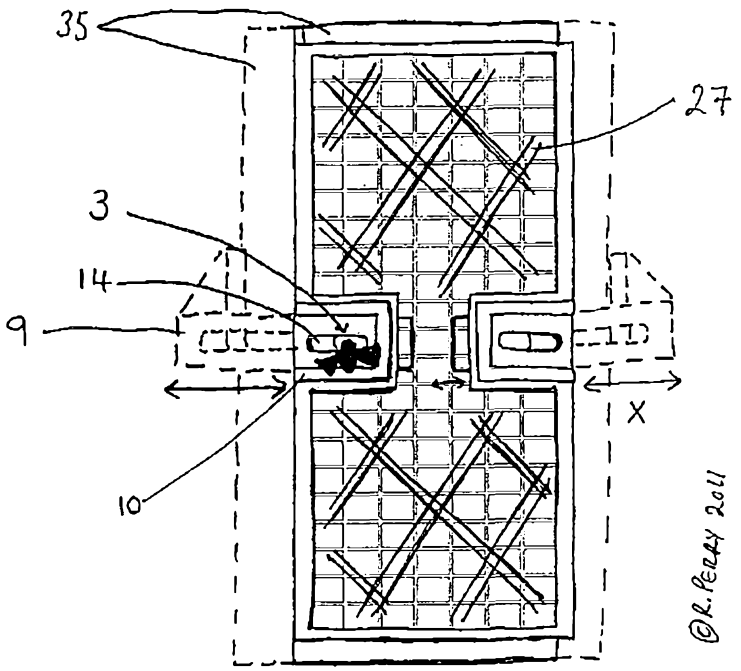


FIG 3A

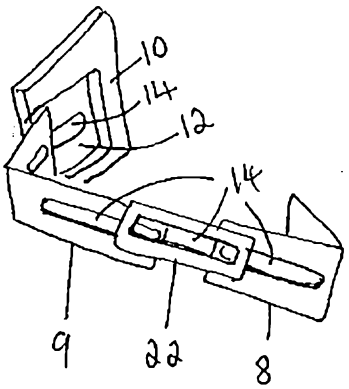


FIG 3B.

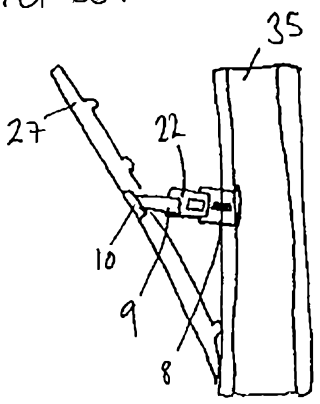
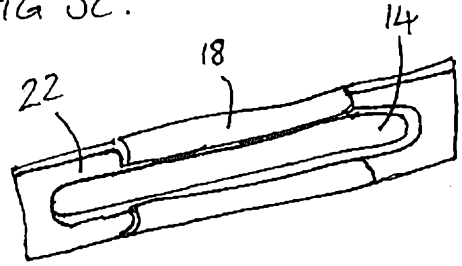


FIG 3C.



Adjustable Leg System For A Trellis Attached To A Post

This invention relates to an Adjustable Leg System For A Trellis Attached To A Post.

In my previous patent application known as PlantLadders 2, I claimed a trellis having an adjustable leg for the purpose of being able to attach the trellis to a fence post, either wooden, plastic or concrete, of varying thickness or depth, wherein the body of said post was irregular in shape and contour and, therefore a leg system having two pieces that releasably and adjustably fitted together was required, in order to adjust to the contour of the slotted side of a concrete fence post.

Since developing this product, I have found that there are many manufacturers of concrete fence posts all of whom make fence posts in slightly different shapes and sizes, depths and widths and therefore the two piece adjustable leg system is incompatible with many of these posts, which drastically reduces my market of consumers for the goods and, that makes me very unhappy, as I want everyone to buy my products, whatever size of fence post they have!

People also take pride in their gardens and often trellises clamped vertically to fence posts are a bit visually boring and so adding a means to angle the trellises away from the post or clamp face of a surface may make the visual appearance of the trellis more interesting when covered in flowers – the flowers would look magically suspended which would add intrigue to the garden arrangement. People would like to be able to set up and adjust their trellis to their own delight to fit in with their garden appearance.

The problem with the two piece adjustable leg system is that although it does adjust to varying depths or thicknesses of concrete fence posts, it cannot adapt or adjust to varying *widths* of fence post – OR both – multi-directional adjustability. It is also limited in depth adjustability due to the leg piece having a length limitation where the leg is blocked by the fence post when in situ.

The initial application Plantladders 2 also claimed the use of 'spacers' to create a gap between the wall the trellis was fixed to and the body of the trellis, to allow plants to grow up the trellis without being directly in contact with the brickwork of a house or fence and, therefore, protecting the surface of the brick/stonework. In testing the product, the spacers also act as compression lugs between the body of the trellis and clamp object when using an adjustable leg system and this is crucial to the performance of the clamp effectiveness of the trellis against the post, as the compression lug (spacer) provides the force to pull the trellis body and leg fixings taught against the post, whilst maintaining the gap between the trellis and post for the plants to grow up trellis.

What is needed is an improved leg system having the means to adjust multi-directionally to accommodate both varying depths and thicknesses of a fence post and also varying widths of a fence post, through the use of a multi-piece adjustable leg system that can be incorporated into the body of the trellis and which is easily releasable from the post once attached and

which may be used in conjunction with 'spacers' incorporated into the body of the trellis to be adaptable to as many sizes and body shapes of fence posts as possible. There should be a means to extend the trellis outwardly from the post at different angles.

According to the present invention there is provided an Adjustable Leg System For A Trellis Attached To A Post comprising a main housing unit made up of a main body with baseplate that is fitted to, or incorporated into, the body of the trellis that receives one or more leg pieces and/or leg extension pieces, said leg pieces that detachably connect together to form one adjustable leg having one or more bends wherein at least one of the said leg pieces incorporates a foot and wherein all of said parts that make up the whole system/apparatus have at least one of a hole, slot, aperture, lip, channel for the purpose of releasably adjustably connecting the parts together via the use of one or more nut and bolt fixings or other means, to allow the trellis to adjust multi-directionally to fit many varying thicknesses, depths and widths of fence posts, which allows the user to attach and release the trellis to and from the post much more easily and also allows everyone in the market to buy the trellis products regardless of what size and shape fence posts they have – so we're all happy!

The invention will now be described in detail and with reference to the accompanying drawings in which:

Figure 1 on page 1/7 shows a front side perspective of a trellis attached to a slotted concrete fence post through the adjustable leg system and housing

Figure 2 on page 2/7 shows the trellis attached to the concrete post from the rear side perspective which shows how a foot piece may bend or adapt to follow the contour of the fence post

Figure 3 on page 3/7 illustrates how the adjustable leg system is adaptable and adjustable to fit varying widths of fence post

Figures 3A, 3B and 3C on page 3/7 show how an extension piece can extend the leg for tilting the body of the trellis away from the post and how the extension piece may incorporate a guide piece.

Figures 4, 5 and 6 on page 4/7 illustrate in perspective how the adjustable leg allows the trellis to be angled outwards from the fence post for decorative and visual effect

Figures 7, 8, 9 and 9A on page 5/7 shows various pieces of the adjustable system and how they fit together.

Figures 10, 11 and 12 on page 6/7 shows in detail the main housing and how it fits to the body of the trellis.

Figures 12, 14, 15 on page 7/7 show a modification additional leg piece to retain the sliding leg piece against the baseplate of the housing unit.

Figure 16A –B on page 7/7 shows a modification of the leg piece to allow a better range of motion in adjustability.

Figure 1 on page 1/7 shows in perspective a trellis body 27 attached to a slotted concrete post 35 via the adjustable multi point leg system 8, 9, and relevant housing 10, 12 used in conjunction with one or more spacers 16 between the underside of the body of the trellis 27 and the outer clamp face of the post 35.

The housing 10 is attached or built into the body of the trellis 27 and sits on top of a metal band 6 running around a part of, or the whole of, the periphery of the body of the trellis said metal band that is in turn welded to the mesh which forms the body of the trellis. It should be noted the body of the trellis is not to be confused with the body of the invention. The metal band adds rigidity and strength to the mesh and provides a flat solid surface for the ends of the mesh to be bound for safety and design appeal and, for the body of the housing to be welded to. The housing piece 10 is formed of either several pieces or one single piece to create a single unit having one or more sides and a base plate 12 which has at least one hole or slot 14 that receives a nut and bolt not shown to allow the top leg piece 9 to adjustably and releasably connect to the base plate 12 when the hole in the base plate and the hole in the leg piece are in alignment and are thus connected by the nut and bolt. The spacer 16 is used for two reasons: 1. To provide a gap between the body of the trellis and the post so that plants can climb up and cling to the trellis and are not prevented or restricted by being clamped directly to the surface of the post and 2: to be used as a clamping compression lug so that the adjustable legs can use the spacer as a fulcrum or counter-force to pull the body of the trellis taught or tight to the post through and across the leg housing using the whole body of the trellis as the straining force.

Figure 2 on page 2/7 shows the trellis 27 attached to the post 35 from the side rear perspective and shows one leg piece 9 attached to the underside of the base plate 12 via a nut and bolt not shown said base plate 12 forming part of the main housing 10. The second leg piece 8 is shown attached to leg piece 9 said leg piece 8 having a bend to form a foot portion that is wrapped around the back of the slotted section of the post to retain the post within the leg system. Where there is a fence post without a slot, leg piece 8 can be omitted from the system and the leg piece 9 attached to the post by a nail or screw not shown through the hole/slot/aperture within the body of leg piece 9, so that hole 14 has two purposes: 1). To attach it to another leg piece or: 2). As a means to attach the leg piece to the post.

Figure 3 on page 3/7 demonstrates how the leg system is adjustable to accommodate different widths of the fence post. Here is a view from the front, of the trellis attached to the post. There are two leg housings 10 – one on each side of the trellis body 27 so that the two legs work together to clamp around the post from each side of the post for a better clamp fix as each leg shares the force of the other leg across the body of the trellis to pull the trellis tight to the post. What is demonstrated in Figure 3 is that the leg piece 9 is attached to the base plate 12 of the housing body 10 by the nut and bolt 3 when the slots/holes/apertures14 present

in both the leg piece 9 and base plate 12 are in alignment. The leg piece 9 is able to adjust inwards and outwards from the edge of the body of the trellis 27 by being releasably attached to the base plate 12 via the nut and bolt 3 allowing it to adjust to varying widths of fence post, as demonstrated by the dashed lines that represent an extended width of a fence post and the leg that has been extended to accommodate the wider post, as shown by the 'X' on the drawing. The only limitation in the overall adjustability of width is that when each housing unit is sited opposite the other one on the body of the trellis, the leg pieces can only adjust as far inwardly until they touch one another, as each leg will block the other at minimum inward adjustability point. Therefore the way around this is to set the leg housing out so that one housing is not opposite the next, by using in a stepped or offset pattern, so that each leg has a wider range of inward adjustability, but for the purpose of the use of the trellis against a post, a smaller version of the invention could be made for very thin posts if necessary. The standard width and depth of a fence post is between 2.5 – 5 inches and this invention provides the capability of a narrow trellis to accommodate these varying dimensions – multi-directional adjustability. There are some posts that may be very thick or thicker than the standard posts in which instance another leg piece known as the leg extension piece 22 may be added for greater dimension of adjustability as shown in Figure 3A on page 3/7.

In the Figure 3A, the additional leg extension piece 22 is shown being the joining member to extend the distance between leg piece 9 and leg piece 8 to form a single longer leg. The leg extension piece 22 also has a slot/hole/aperture 14 to receive a nut and bolt or other means to fasten it to the other leg pieces whilst being fully adjustable thus joining all three pieces together so that the trellis may fit to a range of thicknesses of post. Figure 3C shows how the leg extension piece 22 may also have one or more lips or channels 18 overhanging its main body for the purpose of acting as a runner or guide to receive either or both of leg pieces 8 and 9.

Some people may wish to tilt their trellis outwards from the post at the top or bottom so it looks like the trellis is suspended at an angle as shown in Figure 3B on page 3/7. The adjustable leg system does allow for this tilting and customisation of fixing due to the interchangeable adjustable pieces within the system. Figures 4 and 5 on page 4/7 illustrate from a plan or bird's eye view the complete invention of the leg system against the post and how the adjustability may be limited with only two leg pieces as the bends in the legs and the foot clash or block each other at a certain point to be clamped against the post and the leg piece 9 is not generally extended beyond the bend or foot of leg piece 8 as the fence (not shown) would block the extended leg. This is why the extension leg piece not shown is used to provide additional outward extension of the leg unit and trellis away from the post when people wish to tilt their trellis as shown in Figure 6 on page 4/7 and, then said extension leg piece can be removed from the multiple piece leg unit again when people require their trellis clamped tightly to the post. These Figures also show how the leg system works in conjunction with a slotted post. When in use with a standard solid post, leg piece 8 is also removed from the multiple piece leg unit and the leg piece 9 is fixed directly to the side of the post by a nail or screw inserted through the slot in the body of the leg piece so the leg system

is universal for all types of post. Figure 4 shows the trellis and leg system completely closed where the spacer 16 is flush against the post 35 providing a lug for the trellis body 27 to press against for the legs to be fixed to the post and pulled taught and fastened by a nut and bolt 3. Figure 5 shows the leg system fully extended where the trellis body and spacer are suspended away from the body of the post and the legs are bolted fully open by the nut and bolt 3. The arrow marked 'X' illustrates how the leg pieces can be adjusted in either direction to and away from the post.

Figures 7, 8 and 9 on page 5/7 show in detail the pieces of the leg system and how they fit together – the extension leg piece is not shown in these Figures, these Figures show the basic system. Figure 7 on page 5/7 shows in detail the parts that make up the leg system. The main housing unit has a top frame 10 that is sat top on the base plate 12 and the two are manufactured either as one piece or as two pieces welded together. In this sketch the two are shown as one unit where the upper portion of the unit has a top frame 10 and is formed as an 'L' shaped angle that bends to follow the periphery of the base plate 12 and overhangs the banding 6 incorporated into the trellis body not shown. The banding 6 is not part of the invention but is used to strengthen the body of the trellis for rigidity and design appeal. The housing could overhang and be directly attached to mesh body of the trellis. The overhang lip is so that the housing unit does not fall through the hole made in the body of the trellis during manufacture. The base plate 12 has a slot 14 for the purpose of attaching leg piece 9 to the underside of the base plate by use of a nut and bolt or other means when the slot 14 in leg piece 9 and the slot in the base plate are in alignment so the bolt can be put through both slots and fixed together by the nut tightened over the bolt as shown in Figure 8. Going back to Figure 7, leg piece 9 is a single bodied elongated leg that has a slot 14 and has a bend of approximately 90 degrees to form an L shaped leg and when attached to the housing the leg is bent out of alignment and away from the housing towards the post to pick up or join onto the second leg piece 8 that is also a single bodied L shape with a 90 degree bend where the part of the body after the bend is known as a foot 17. The portion of the leg piece 9 after the bend also has a slot. The leg piece 8 has a slot in its main body to attach to leg piece 9 by use of a nut 3 and bolt 4 or other means and the foot portion 17 is used to wrap around the inside clamp edge of the slotted post. This is a leg system consisting of: A housing body incorporating a base plate, two leg pieces and a separate removable and optional extension leg piece all of which may be joined together by a number of nuts and bolts or other means not mentioned and possible using runners and guides incorporated into or cut and bent from within the body of each piece of the overall system. Figure 8 shows a side view of the housing 10 and base plate 12 above the banding 6 and leg piece 9 below the banding 6 showing the housing and leg piece joined together by a nut 3 and bolt 4. The importance of the Figure 8 is that the leg piece 9 attached to the UNDERNEATH of the banding 6 and base plate 12 of the housing unit is now unobstructed and free to adjust inwardly and outwardly as shown and marked by the arrow and 'X' on the drawing. This creates the adjustability in width for any size of fence post width. Figure 9 on page 5/7 shows leg piece 8 attached to the inside of leg piece 9 by the nut 3 and bolt 4 inserted through the slots/apertures in both leg

pieces which provides the depth adjustability of the two pieces to be adjustable to fit the vast majority of fence posts and the varying depth/thicknesses. We now have a multi-directional adjustable leg. Figure 9A on page 5/7 illustrates how either one or both of the leg pieces may also have one or more lips or channels 18 to act as a guide to receive the other leg piece, said runner or guide that may run a part of, or the whole of, the length of the periphery of the leg piece. In the drawing only leg piece 8 is shown having the guide – for illustration purposes only.

Figure 10 on page 6/7 shows in detail the housing 10 being formed in an C shaped body having a top lip to overhang the banding 6 said body and lip not limited to a three sided shape (it could be one or more sides as long as there is point to attach it to the banding) bent and shaped to follow 3 sides of the base plate 12. The housing could have four sides or just one or two sides not shown. The housing 10 is welded 38 to the base plate 12 to form one unit and the complete unit is welded 38 to the banding 6 around the periphery of the body of the trellis not shown. In manufacture, to eliminate welding and reduce costs, the housing and base plate could be cut from one piece of material and folded. Figure 11 on page 6/7 shows the same as in Figure 10 but from a plan view and showing the housing 10 having the welding 38 around all three sides of its C shaped periphery that are attached to the base plate 12.

Figure 12 shows the side elevation of Figure 10 and shows the housing 10 and base plate 12 formed as one unit and sat within the banding 6 of the trellis body 27.

Figure 13 on page 7/7 shows a modified base plate 12 having additional mini legs 92 and 94 incorporated into the base plate and extending down outwardly and away from the base plate. Note one leg 94 is slightly longer than leg 92. The purpose of these legs is to help releasably secure the leg piece 9 to the base plate so that it is easier to slide the leg inwards and outwards as the mini legs act as runners or guides when receiving leg piece 9 as illustrated in Figure 15 where the leg piece is inserted into the mini legs as shown and marked by 'X' on the drawing. The mini legs are positioned at the far inside end of the base plate away from the trellis outer edge end so that the legs don't limit the adjustability of leg piece 9 by clashing with the bend in leg piece 9 when leg piece 9 is fully closed. If the mini legs are positioned at the other end of the base plate the length adjustability of the leg is reduced by the length of the base plate as the mini legs then become a bump stop and prevent the leg piece from full inward adjustability or being fully closed. The reason for the top mini leg to be slightly longer than the bottom mini leg is that when the trellis is tilted the leg will slightly tilt and will need to have some scope of movement and be angled slightly out of alignment to the base plate.

Figure 14 on page 7/7 shows the base plate 12 with only one mini leg 92 just as a guide for leg piece 9 not shown.

Figures 16A –B on page 7/7 show an alternative modified leg piece 9 having a cylinder body leading into the main leg piece said cylindrical body 58 having a slot/aperture like in a gearbox where the gear stick (in this case represented by the nut and bolt) can be moved up

2014208307 05 Aug 2014

and down the length of the cylindrical housing 58 and pushed up or down into slots. Some of the slots run almost completely around the periphery of the cylindrical housing 58 to allow the leg piece 9 to twist or rotate within the leg housing unit (as a whole) when attached, so that the trellis body may be tilted at different angles whilst allowing the leg piece to remain flush or tightly in contact with the main housing therefore making the system easier to adjust for the user as demonstrated in Figure 16B, where the leg piece 9 is shown moving in two directions by the arrow marked 'X' via the cylindrical apertured housing 12 attached by the nut and bolt 3.

CLAIMS - 1 OF 2

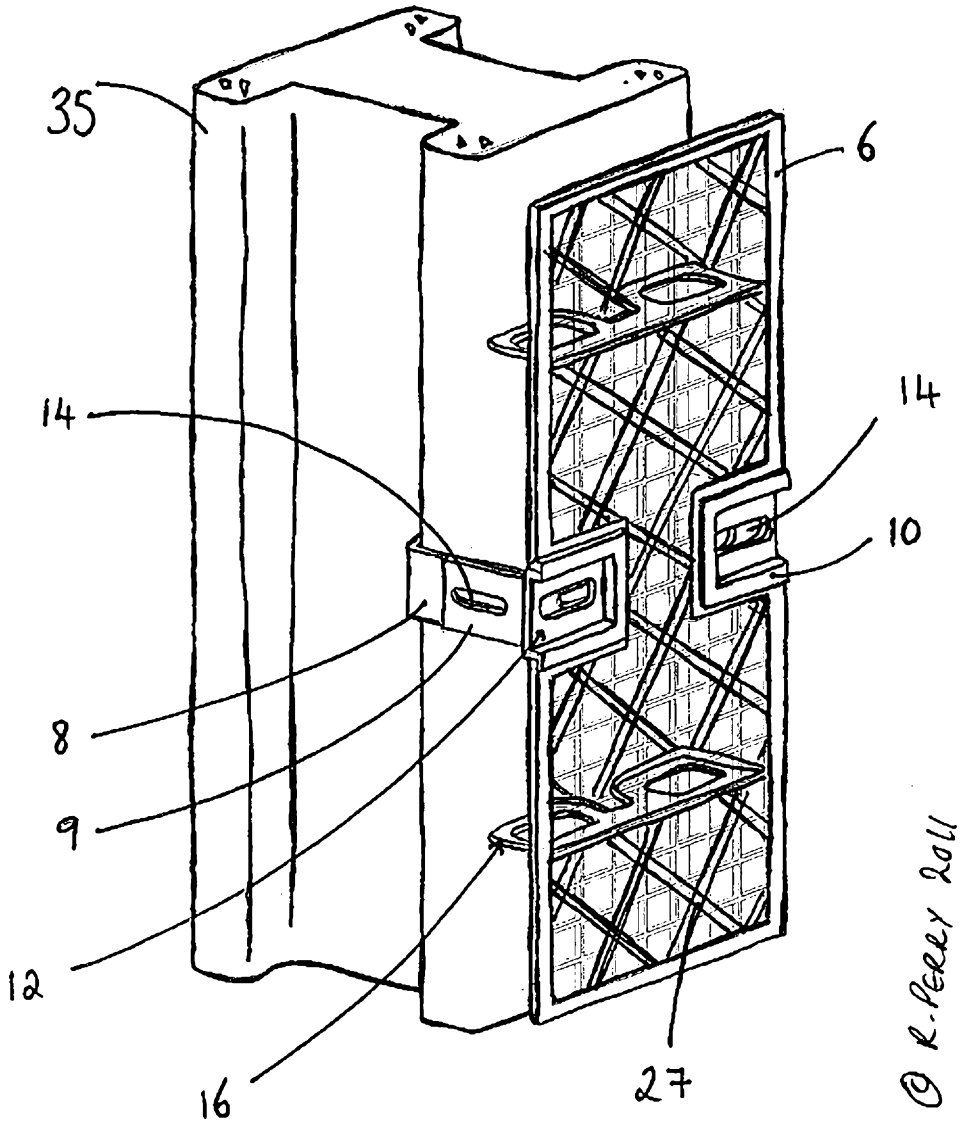
1. Adjustable Leg System For A Trellis Attached To A Post comprising a main housing unit consisting of a main body and base plate said base plate having at least one hole, slot or aperture to receive a nut and bolt or other fastening means to releasably and detachably connect the housing unit as a whole to one or more separate leg pieces each leg piece having at least one hole, slot, aperture, lip, channel means of being connected to one another in a run via a nut and bolt or other fastening means wherein one or more of said leg pieces incorporates a foot or bend within the length of its elongated body to wrap around or retain a portion of a fence post said first leg piece is adjustably and releasably attached to the main housing unit and may adjust inwardly and outwardly along the length of the base plate to adjust to varying widths of fence post said housing unit that is affixed to or incorporated into the body of a trellis said housing unit being able to receive and connect the first leg piece through use of a nut and bolt or other means via at least one hole or slot within the housing unit and leg piece when the hole or slot within the unit and leg piece is in alignment said first leg piece further adjustably connecting to a second leg piece to be adjoined to the first leg piece via a nut and bolt or other fastening means through the holes, slots, apertures, in both said leg pieces said second leg piece that is detachable and wherein said leg pieces may be used in conjunction with one or more separate leg extension pieces having at least one hole, slot, aperture, lip, channel said leg extension piece that releasably and adjustably fixes and fits between either of the first and second leg piece or the housing unit and first leg piece or both for the purpose of extending the length of the overall leg unit said complete unit providing a multi-directional interchangeable leg system where all of the pieces within the system are releasable and/or detachable from one another.
2. Adjustable Leg System For A Trellis Attached To A Post as claimed in claim 1 wherein housing unit comprising a main body may have one or more sides to enable it to be secured to the body of a trellis.
3. Adjustable Leg System For A Trellis Attached To A Post as claimed in claim 1 and claim 2 wherein any one side of said main body of housing unit may have a lip, channel or flange to secure a base plate to its body and/or to provide a securing point to overhang and sit on or within the body of the trellis.
4. Adjustable Leg System For A Trellis Attached To A Post as claimed in claim 1, claim 2 and claim 3 wherein said housing unit comprising a main body and base plate may be formed as one piece cut, folded and/or bent or cast, or two or more pieces welded or fastened together by other means.
5. Adjustable Leg System For A Trellis Attached To A Post as claimed in any one of claims 1 to 4 wherein said base plate has one or more legs extending out of alignment of its periphery.
6. Adjustable Leg System For A Trellis Attached To A Post as claimed in any one of claims 1 to 5 wherein one leg incorporated into said base plate may by longer than the other leg if two or more legs are used.

CLAIMS
2 0F 2

7. Adjustable Leg System For A Trellis Attached To A Post as claimed in any preceding claim wherein any one leg piece may be modified to have a portion of its body formed in a cylindrical or curved shape to retain a portion of or either of a nut and bolt secured to the main housing to allow the cylindrical leg portion to act as a pivot or pinion in conjunction with the housing unit for a better range of adjustability said cylindrical portion having at least one hole, slot or aperture.
8. Adjustable Leg System For A Trellis Attached To A Post as claimed in any preceding claim wherein the invention may be used in conjunction with a spacing device or compression lug incorporated into the body of a trellis.
9. Adjustable Leg System For A Trellis Attached To A Post as claimed in any preceding claim as described herein and with reference to the accompanying drawings.

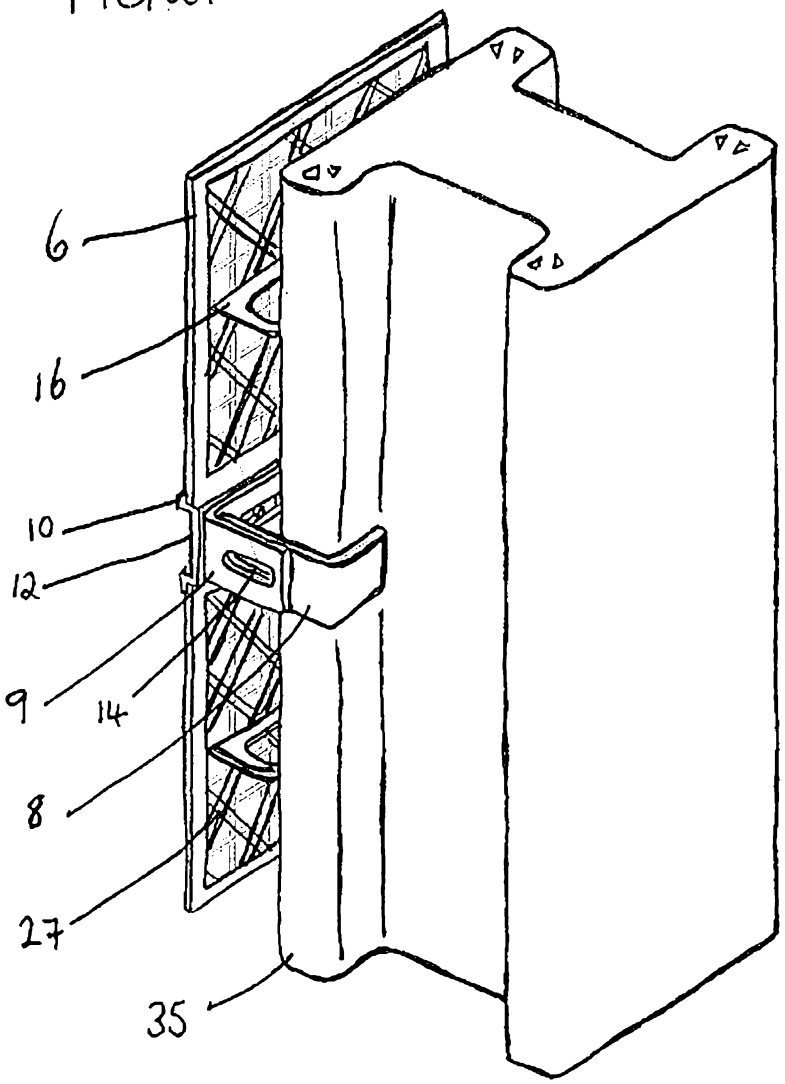
20142083307 05 Aug 2014

FIG 1.



2014208307 05 Aug 2014

FIG 2.



2014208307 05 Aug 2014

FIG. 3.

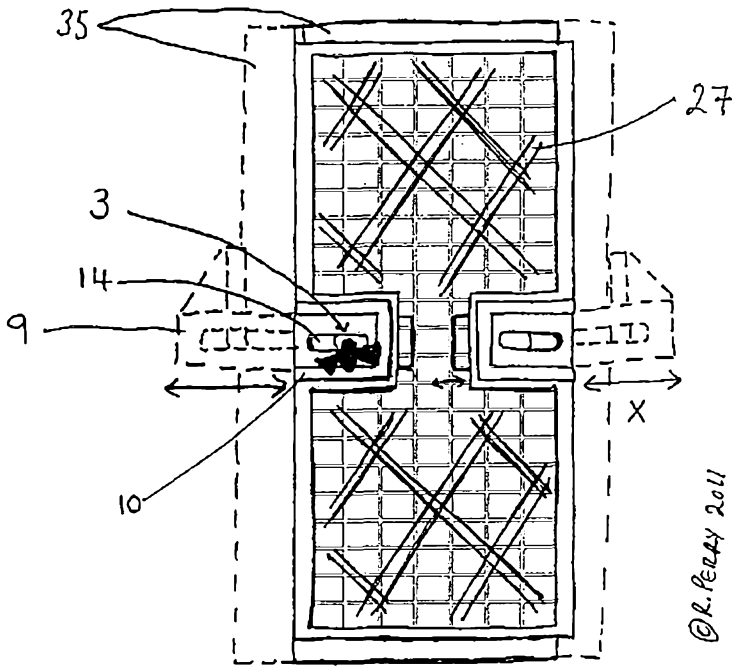


FIG 3A

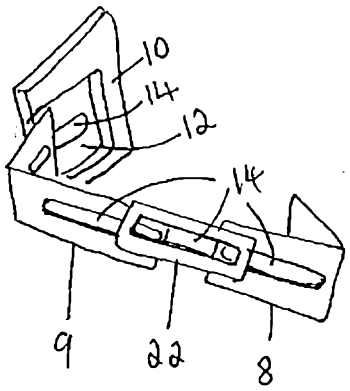


FIG 3B.

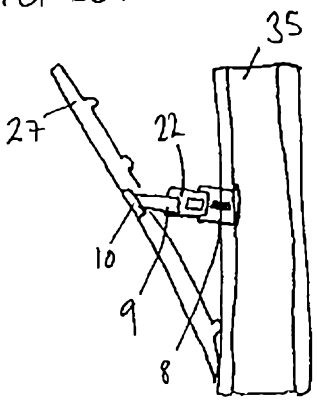


FIG 3C.

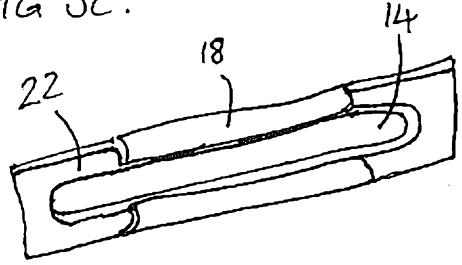


FIG 4.

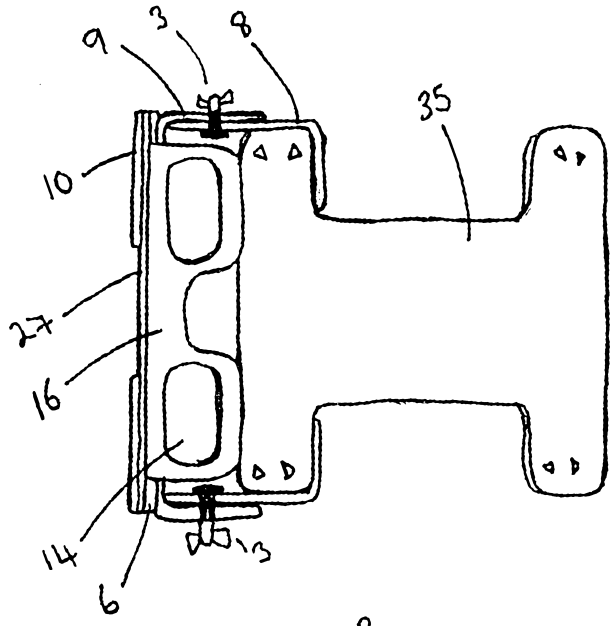


FIG 5.

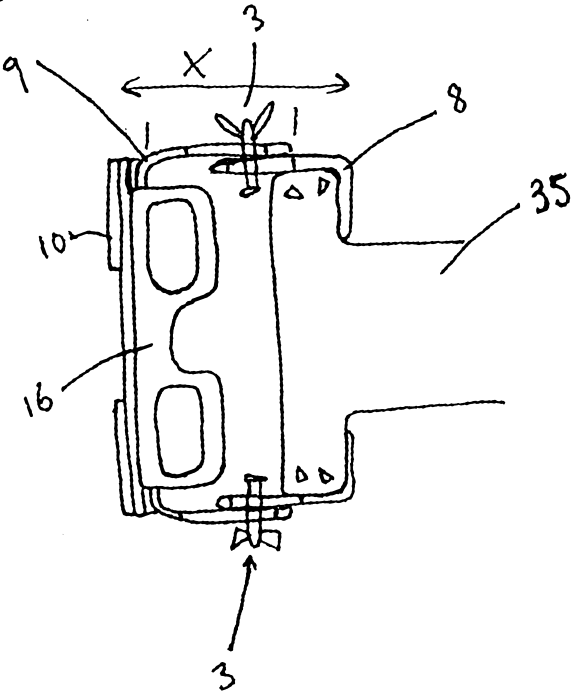
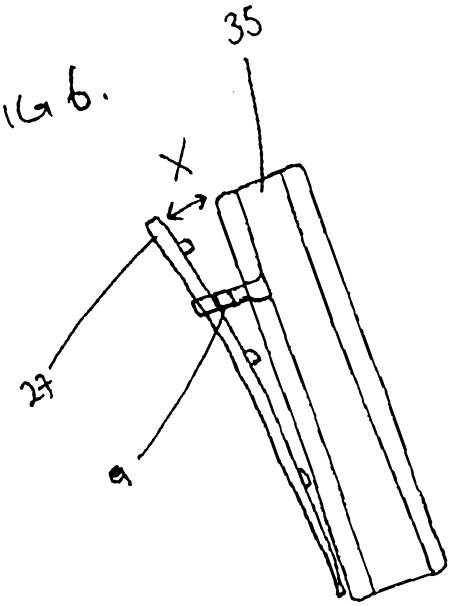


FIG 6.



20142083307 05 Aug 2014

FIG 7.

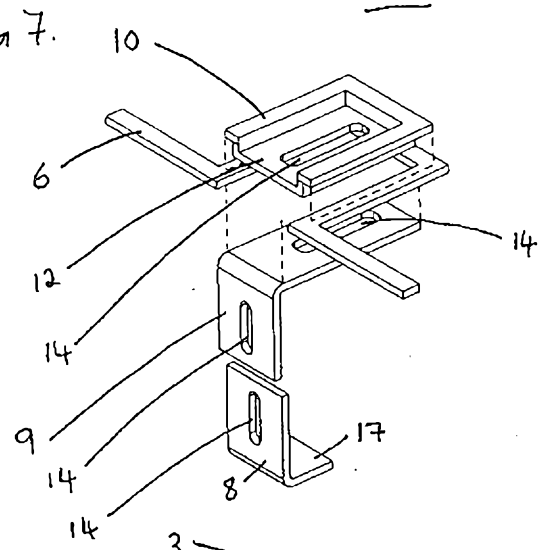


FIG 8.

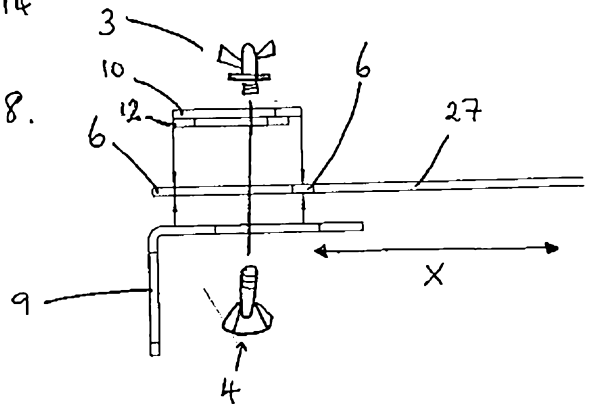


FIG 9.

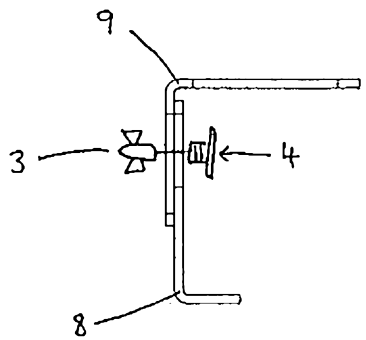
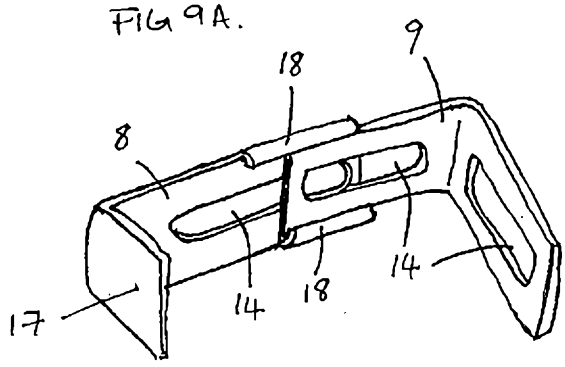


FIG 9A.



2014208307 05 Aug 2014

FIG 10.

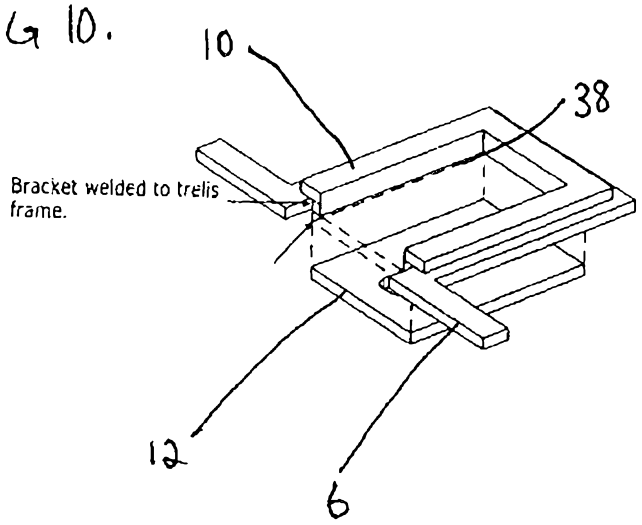


FIG 11.

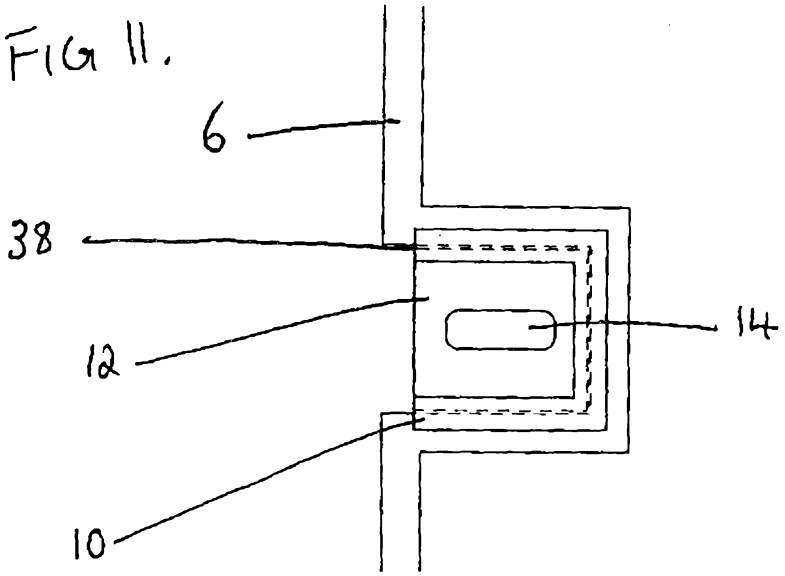
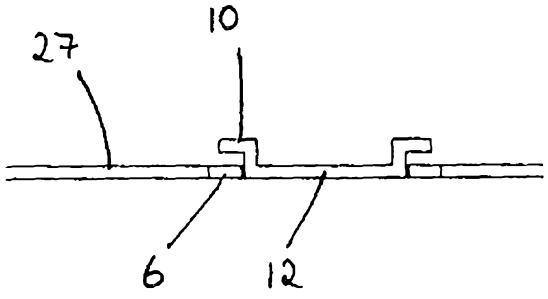


FIG 12.



20142083307 05 Aug 2014

FIG 13.

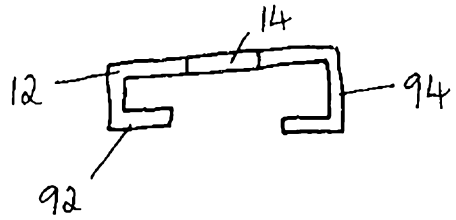


FIG 14.

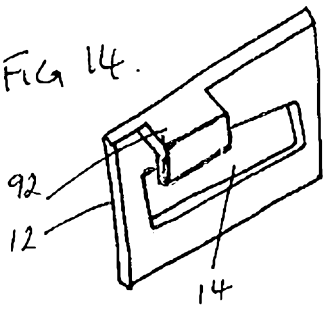


FIG. 15.

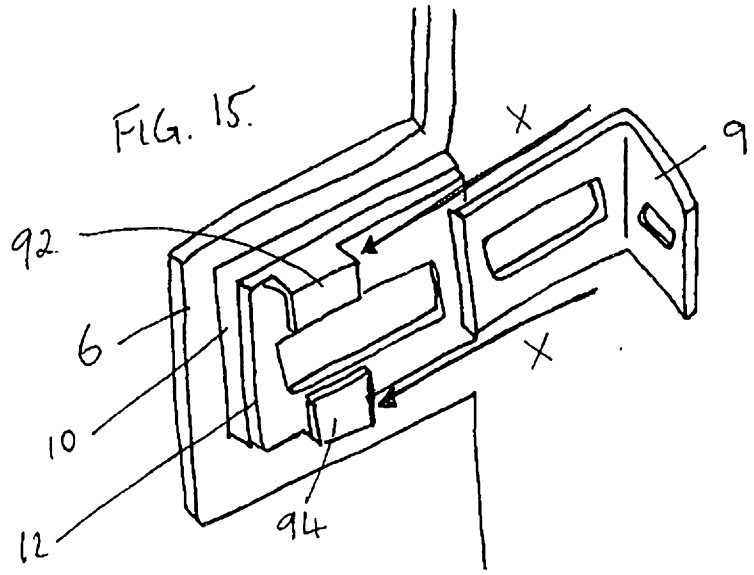
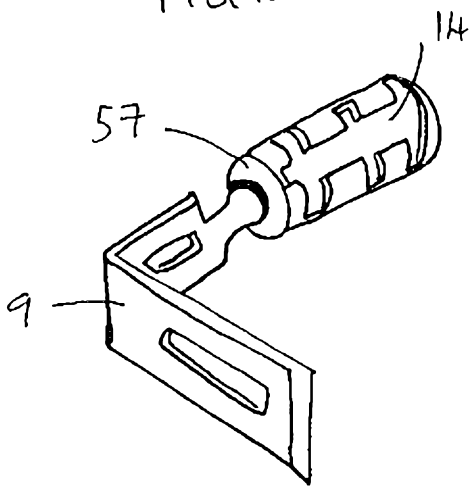


FIG 16A.



B.