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London, WC1R 5EU(GB)**(54) **Wall tie device.**

(57) A wall tie system for use during construction of a new structure to tie the new structure to an existing wall. The system comprises a backing plate (1) which in use, is fixed to the existing wall and a number of wire ties (20, 21, 22) having one part (21) which is, in use, engaged with the backing plate (1) and another part (20) which is interposed between successive courses of the new wall. The backing plate is provided along its length with a number of hook-like tabs (7) extending out of the front face of the backing plate behind which the wire ties are engaged. The tabs (7) are arranged in opposed pairs and the pairs in longitudinally spaced groups with three pairs to a group. The wire ties (20, 21, 22) are approximately U-shaped with the ends (21, 22) of the limbs of the U bent at right angles to the plane of the U. The tie (20, 21, 22) is fitted to the backing plate (1) by inserting the bent ends (21) of the limbs of the U behind the tabs (7) so that the web (20) of the U extends outwardly from the backing plate (1) and

positioning the tie on the backplate (1) so that the web (20) of the U lies between two successive courses of the new wall.

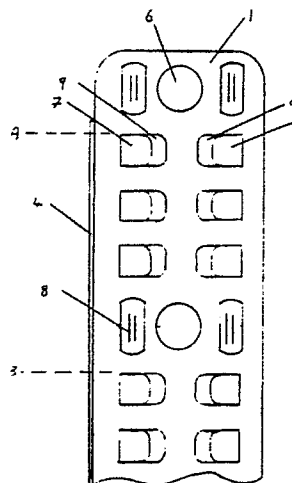


Fig. 1

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"WALL TIE DEVICE"

The present invention relates to a wall tie device comprising a wall plate and at least one connecting tie for the purpose of tying a brick or block structure to an existing structure each tie having a first portion which engages with the wall bracket and a second portion which is interposed between successive courses of the brick or block structure.

In the past the construction of a partitioning wall or new external wall necessitated interleaving of the new bricks with the old to establish a solid structure. However, this was a time consuming and skilled operation where all old bricks had to be gouged out so that the new bricks could be interleaved between them. To simplify this process interengaging plates and ties have been proposed which firmly tie the new structure to the existing one without the use of interleaving brick work. The present invention relates to an improved form of a tie system comprising a wall plate and a tie.

The present invention provides a wall tie device for tying a newly constructed brick or block structure to an existing structure, the device comprising a back-plate adapted to be secured to the existing structure and to engage with one or more wall ties interposed between successive courses of the newly built structure to tie the newly built structure to the existing structure the back-plate including a series of engaging means disposed along the length of the back-plate, each for engaging a first part of such a wall tie while a second part of the wall tie extends outwardly from a front face of the back-plate to be interposed between two successive courses of the newly built structure wherein the engaging means each comprises a pair of opposed tabs extending forwardly out of the plane of the back-plate and laterally over the front face of the back-plate to define two or more free edges extending lengthwise of and in front of the plane of back-plate behind which the first part of the wall tie may, in use, be engaged.

The construction of the back-plate according to the present invention means that the tie may be engaged with the back-plate at any point along its length so that the system may accommodate different brick sizes. In this way the problem of having to manufacture a range of brick size-dependent back-plate can be avoided. In addition since the tie may be engaged with the back-plate by pushing it perpendicularly towards the back-plate there is no need for either end of the back-plate to be accessible in order to be able to insert the tie.

Preferably the tabs are in the form of hook-like projections having first parts extending outwardly from the plane of the back-plate and a second part transversely of the back-plate, at least 1cm, more preferably at least 2cm.

The tabs may be arranged on the back-plate in laterally spaced pairs with each tab being adapted to engage one limb of the tie and the tabs of each pair extending towards on another. Such tabs or hooks can conveniently be stamped and folded out of the back plate. The number of tabs can vary, for instance there can be a small number of long tabs or a larger number of short tabs. The pairs of tabs may also be arranged in longitudinally spaced groups of, for example, 2 to 5 pairs. Preferably fixing means e.g. holes for bolts, screws, nails etc to allow the back-plate to be attached to the existing wall are disposed between the groups of pairs.

Alternatively, there can be only two continuous tabs extending lengthwise of the back-plate.

By making the various features of the back-plate symmetrical about its longitudinal centre it need not be orientated in a particular way when fitted to a wall.

The invention also provides a tie for use with the system of the present invention, the tie comprising two limbs which are capable of being held by the tabs on the back-plate. The limbs may be rigid or resilient. The tie is preferably adapted so that it can be moved, preferably continuously, lengthwise of the back-plate. Thus the tie should be shaped so that the parts of the tie which is to be interposed between the courses of bricks is clear of the fixing means when the tie is in position. The fixing means are preferably arranged to permit vertical adjustability of the ties in the space between respective adjacent fixing means and more preferably continuously along the length of the bracket. Suitably the tie has two limbs which are interconnected at an end and have their free ends bent over to form "feet" so that the central, bent portion of the tie may be disposed between the courses of the new structure and the free ends of the tie disposed lengthways along the back plate engaging the tabs.

In use the limbs of the tie are engaged with the tabs of the back-plate by being held between the back plate and the tab. This may be done by first engaging the free end of one of its limbs with the securing means in a manner such that the tie is pivotable about an axis lengthwise of the back plate, then pivoting the tie about that axis into a position in which the free end of the other of its limbs can spring into engagement with the securing means. Thus the invention provides a conve-

nient and easy way to attach the tie to the bracket. The feet are preferably of such a length that they engage a plurality of tabs, for example two or more. They may be of such a length that they engage all of the tabs positioned between a pair of fixing means.

Preferably the feet of the tie are spaced apart and are interconnected by a central portion which extends longitudinally along the wall under construction. The central portion may, for example, be generally "U" shaped with a curved or straight web to the "U". There may be an additional section between the limb and each foot. This may take the form of a knee extending in the opposite direction to the feet so that the tie can be held in position on the back-plate by tabs above and below the central portion. The knee may be made the same length as the feet so that where the back-plate has a plurality of pairs of tabs the tie is engaged with an identical number of the securing means regardless of its longitudinal position relative to the back-plate.

The feet may be made of the same material as the rest of the tie. The tie can be manufactured from one length of wire so shaped as to leave a space between the feet to accommodate the passage of the fixing bolts as the tie is slid length-wise of the back-plate. The tie may alternatively be solid, eg. made of folded sheet metal, in which case it can be so shaped as to have a vertically extending channel again for the purpose of accommodating the fixing bolts.

The invention further provides a combination of back-plate and a tie embodying the present invention.

The invention will be further described by way of a non-limitative example with reference to the accompanying drawings, in which:

Figure 1 shows a portion of a back-plate for use in an embodiment of the present invention.

Figure 2 shows a portion of the back-plate of Figure 1 viewed from the side.

Figure 3 shows a portion of the back-plate of Figure 1 viewed from the end.

Figure 4 shows one form of tie for use with the back-plate of Figure 1.

Figure 5 shows the tie of figure 4 viewed from the side.

Figure 6 shows the tie of figure 4 viewed in perspective.

The dotted line shows the tie in a position in which it could be in use.

Figure 7 shows an embodiment of the tie device in use.

Figure 8 shows an alternative form of tie for use with the back-plate of Figure 1.

The back-plate of which one end portion is shown in Figures 1 and 2 is stamped and folded out of sheet metal and comprises a plate 1 having a surface 2 which faces the new brickwork and a reverse surface 3 which faces the existing structure. The back-plate may be suitably coated, eg with an epoxy resin, or be of a suitable material, to be highly resistant to corrosion.

The back-plate may be provided with a side flange 4 formed by folding the sheet metal at right angles to the back plate 1, this flange being provided with a row with keying holes 5 for mortar, plaster or rendering. Two such side flanges at opposite sides of the back-plate or, alternatively none may be provided. Disposed along the longitudinal centre line of the back-plate is a series of fixing holes 6. These holes may be circular, or may be of rounded oblong or oval shape to provide a degree of lateral adjustability of the back-plate when fixed to a wall.

Disposed longitudinally between the fixing holes 6 are three pairs of tabs 7. These tabs 7 are stamped and folded out from the back-plate 1 and are so adapted such that a tie (described below) can be held against the surface 2 of the back plate 1. The tabs 7 comprises a part which extends perpendicularly from the back-plate 1 and a part which is parallel to the back plate 1, although it can slope inwards towards the centre of the back-plate 1 to help keep the tie in place. It will be appreciated that a continuous tab could be provided by joining all the individual tabs together.

The back-plate is provided with a number of "feet" 8 to maintain it in parallel spaced relation to the existing wall so that the rear surface 3 is stood off from the surface of the existing wall. This provides a space into which mortar from the new courses of bricks can enter via the holes 9 behind the tabs 7. The holes 9 are produced when the tabs 7 are stamped and folded out of the back-plate 1.

The mortar helps bond the new wall to the existing one provided there is no excessive relative vertical movement of the two walls.

As can be seen in Figures 1 and 2 the side flanges 4 stop short of the end of the back-plate and have a rounded corner 10. The other end of the back-plate can be of corresponding layout with the centre part between the two ends comprising as many repeats as are necessary to achieve the desired length of the section A-B in figure 1.

Referring now to figures 4, 5, 6, 7 and 8 the tie 20 comprises an approximately "U" shaped middle portion (it should be noted that unlike a conventional letter "U", the two limbs preferably converge in the direction away from the web of the "U") and with the free ends of the limbs of the "U" being bent over to form "feet" 21 which are at least

approximately perpendicular to the plane of the "U" section so that they extend along the back-plate when the tie is installed. The feet 21 can be spaced apart from the "U" shaped middle portion by an intervening section 22. Alternatively, they are spaced apart from the "U" shaped middle portion by an ear 23 as shown in Figure 8. In the form shown in Figure 8 the feet 21 extend approximately equal distances in the two opposite directions from the plane defined by the intervening central section 22. The tie is made of metal wire or rod material.

When a new wall is to be built and tied to an existing structure, one or more back-plates such as the one in Figure 1 are fixed to the old wall along the vertical line from which the new wall will extend. There may be a continuous or intermittent arrangement of these back-plates along this line. Alternatively one continuous back-plate may be used.

The back-plate may be fixed to the existing structure by any suitable means such as nails, screws or bolts so as to fix the back-plate 1 firmly to the wall. Every so often a tie 20 must be fixed to the back-plate and be placed on top of the top course of bricks so far laid out in the new structure so that in the laying of the next course of bricks the tie 20 is firmly interposed between them and strongly holds these new bricks to the back-plates. This is done by squeezing the limbs 21 of the tie 20 together, if the tie is resilient, and inserting the tie 20 between a pair of tabs 7 by pushing the tie 20 perpendicularly, or at least approximately perpendicularly, towards the back plate 1.

Alternatively the tie may be slid down between the pairs of tabs 7 so that the U shaped portion rests on the top course of bricks of the new structure. Once the tie 20 is in the required position the limbs can be released, if they are resilient, so that they spring outwards to press against the vertical part of the tabs 7. The feet 21 are held behind successive tabs 7 and may be positioned upwards or downwards relative to the wall structures, although an upwards position is preferred so that the feet 21 do not have to be pushed into mortar associated with lower courses of bricks or blocks.

The tie shown in Figure 8 has an indent 24 in each limb. This can provide the limbs with an extra degree of resilience or can provide a suitable means for holding the tie between a holder's thumb and forefinger.

Once in place the tie 20 can be in a variety of positions relative to the back plates. For example the part of the central portion nearest the intervening section 22 can rest on top of a tab 7. Alternatively, since the feet 21 extend vertically upwards or downwards behind the rear of the tab 7, the tie 20 can also be positioned such that the central

portion is in an intervening position between two pairs of tabs 7. For example it can be between two adjacent pairs of tabs 7 or it can be between two pairs of tabs means 7 which are separated by a fixing hole 8.

Claims

1. A wall tie device for tying a newly constructed brick or block structure to an existing structure, the device comprising a back-plate (1) adapted to be secured to the existing structure and to engage with one or more wall ties (20, 21, 22) interposed between successive courses of the newly built structure to tie the newly built structure to the existing structure the back-plate (1) including a series of engaging means (7) disposed along the length of the back-plate (1), each for engaging a first part (21) of such a wall tie (20, 21, 22) while a second part (20) of the wall tie extends outwardly from a front face of the back-plate (1) to be interposed between two successive courses of the newly built structure wherein the engaging means (7) each comprises a pair of opposed tabs (7) extending forwardly out of the plane of the back-plate (1) and laterally over the front face of the back-plate (1) to define two or more free edges extending lengthwise of and in front of the plane of back-plate (1) behind which the first part (1) of the wall tie (20, 21, 22) may, in use, be engaged.

2. A device according to claim 1 characterised in that the tabs (7) are stamped and folded out of the back-plate (1).

3. A device according to claim 1 or 2 characterised in that a first part of each tab (7) extends substantially perpendicularly outwardly from the plane of the back-plate (1) and a second part thereof extends substantially parallel to and over the back-plate (1) in a direction laterally thereof to form a hook.

4. A device according to claim 3 characterised in that the second part of each tab (7) extends towards the back-plate (1).

5. A device according to any one of claims 1 to 4 characterised by a plurality of pairs of opposed tabs (7) spaced lengthwise along the back-plate (1).

6. A device according to claim 5 characterised in that the tabs (7) of each pair extend towards one another.

7. A device according to claim 5 or 6 characterised in that the pairs of tabs (7) are arranged in spaced groups with fixing means (6) allowing the back-plate (1) to be fixed to the existing wall, disposed between longitudinally adjacent groups.

8. A device according to claim 7 characterised in that the spacing between the fixing means (6) is such that when the back-plate (1) is placed against the existing wall, at least two fixing means (6) register with courses of the existing wall.

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9. A device according to any one of the preceding claims characterised by a flange (4) extending forwardly from the plane of the back-plate (1) along a longitudinal edge of the back-plate.

10. A device according to claim 9 characterised in that a flange (4) is provided along both longitudinal edges of the back-plate (1).

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11. A device according to any one of the preceding claims characterised in that the free edges of the corresponding tabs (7) of the series of engaging means conform to a line extending longitudinally of the back-plate (1).

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12. A device according to any one of the preceding claims in combination with at least one wall tie (20, 21, 22) engageable with a pair of the tabs (7) on the back-plate (1).

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13. A combination according to claim 12 characterised in that the first part (21) of each tie comprises a pair of spaced-apart legs engageable with respective ones of the tabs (7) of one of the engaging means.

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14. A combination according to claim 13 characterised in that the legs (21) of each tie are bent so as to extend lengthwise of the back-plate (1) when the second part (20) of the tie is interposed between said successive courses.

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15. A combination according to claim 14 characterised in that the legs (21) are so dimensioned as to engage with the tabs (7) of at least two longitudinally adjacent engaging means.

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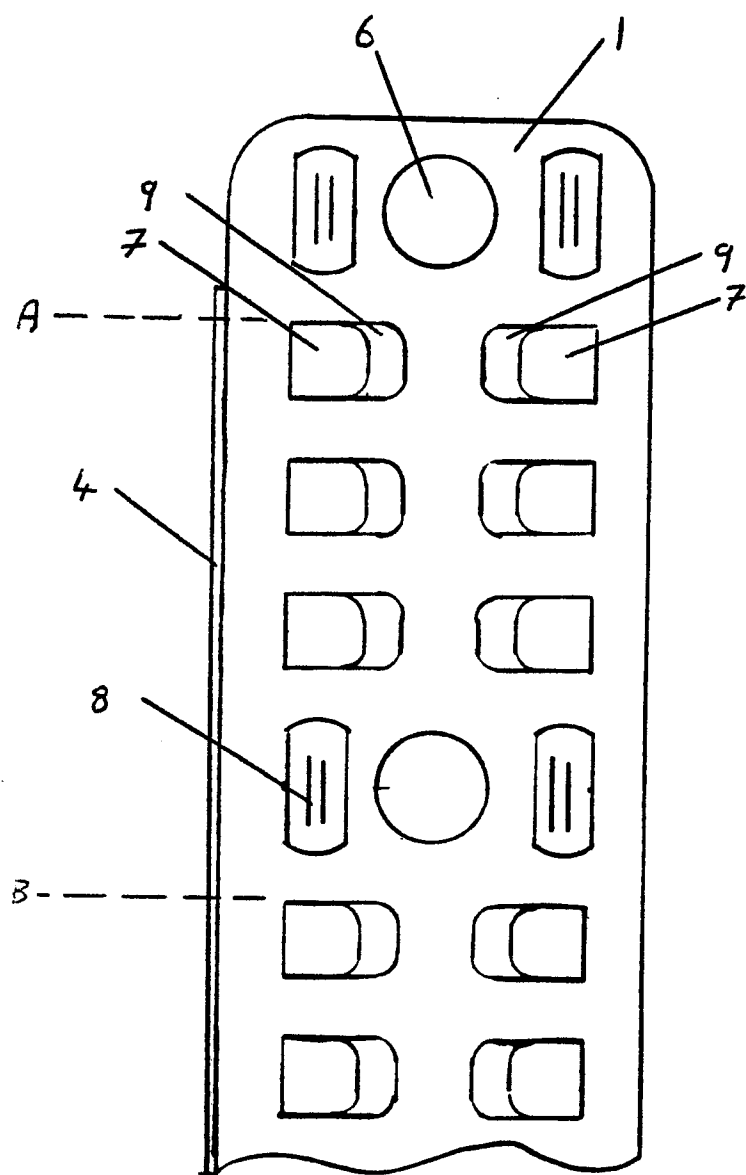


FIG 1

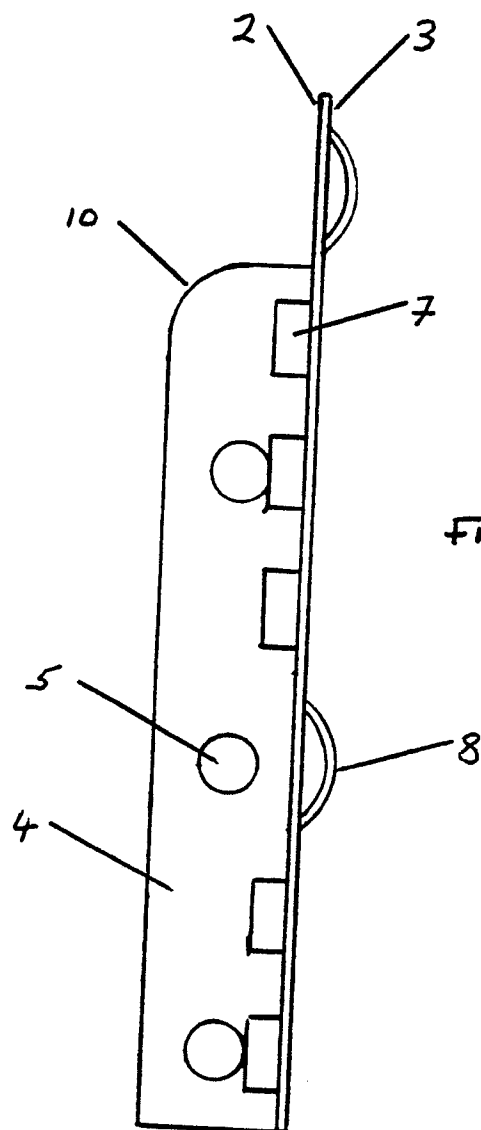


FIG 2

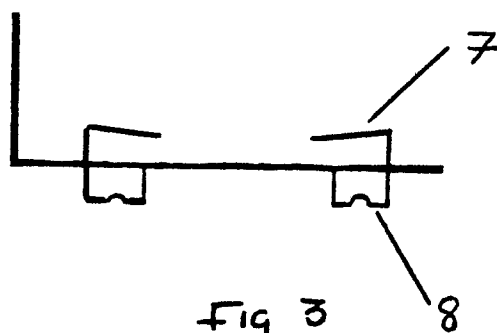


FIG 3

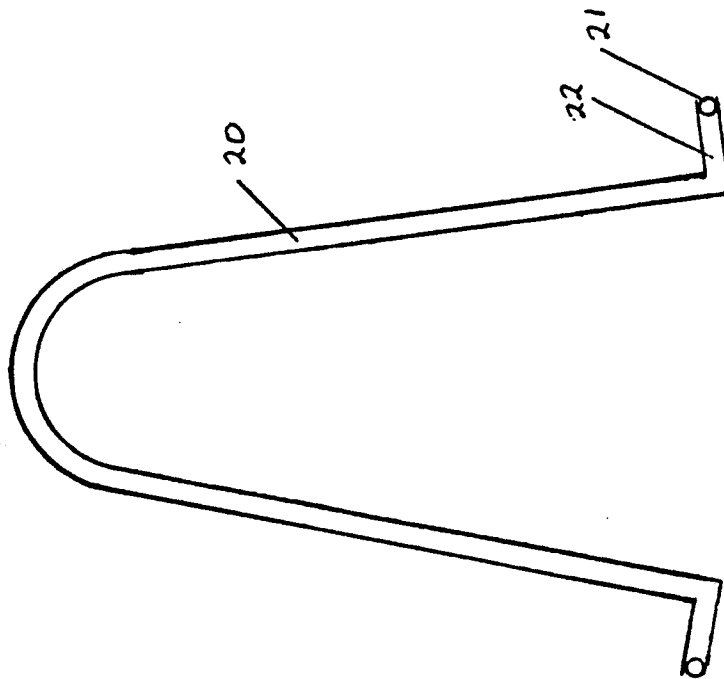


Fig 4

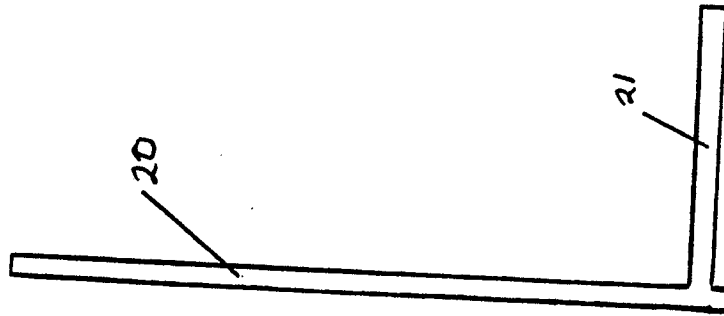


Fig 5

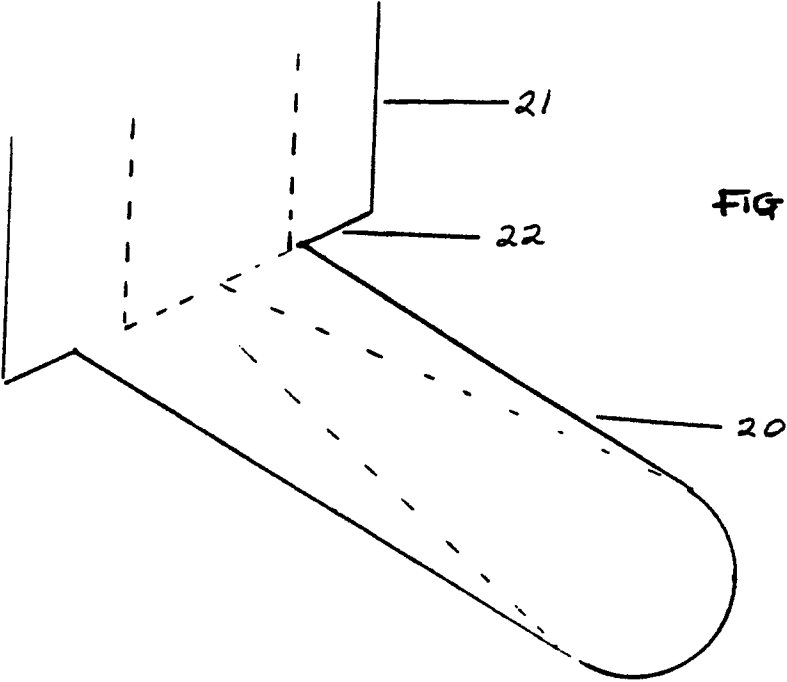


FIG 6

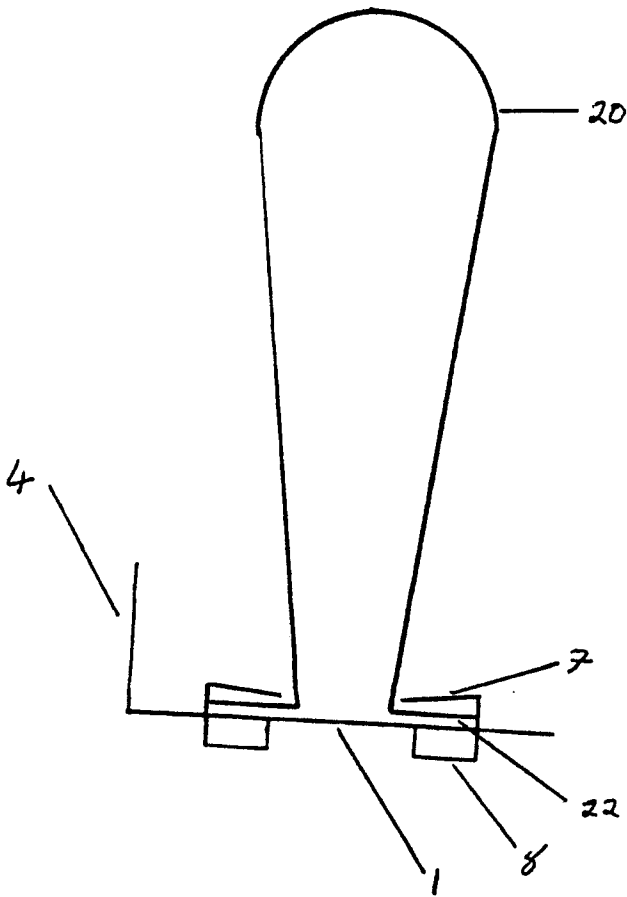


FIG 7

