(12) UK Patent (19) GB (11) 2522473 (13) B

(45) Date of B Publication 16.09.2020

(54) Title of the Invention: Improvements to windposts

(51) INT CL: ***E04B 2/58*** (2006.01) ***E04B 1/19*** (2006.01) ***E04H 12/22*** (2006.01)

(21) Application No: **1401398.1**

(22) Date of Filing: **28.01.2014**

(43) Date of A Publication **29.07.2015**

(56) Documents Cited:
AU 000608319 B2 **FR 002962144 A1**
AU 2008100949

(58) Field of Search:
As for published application 2522473 A viz:
INT CL **E04B, E04H**
Other: **EPODOC, WPI**
updated as appropriate

Additional Fields
Other: **None**

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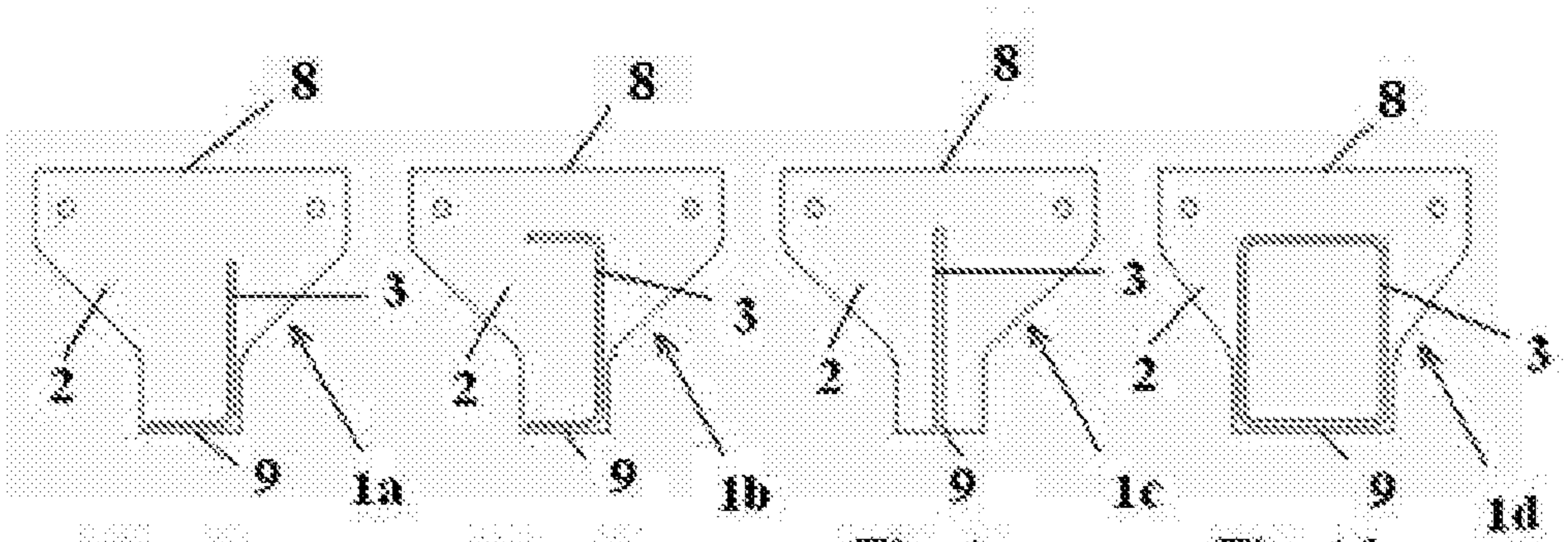

Fig. 1a Fig. 1b Fig. 1c Fig. 1d

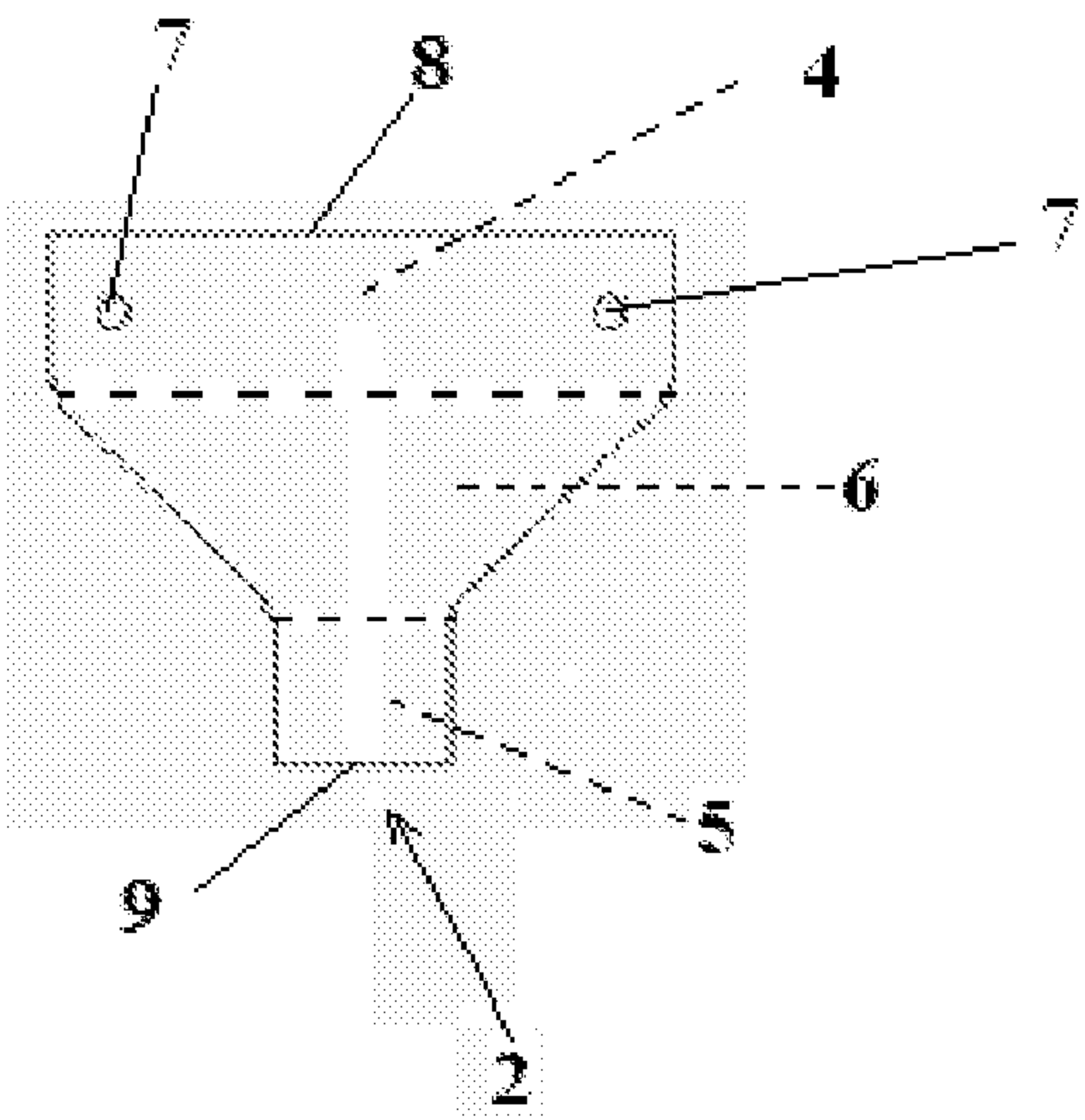

Fig. 2

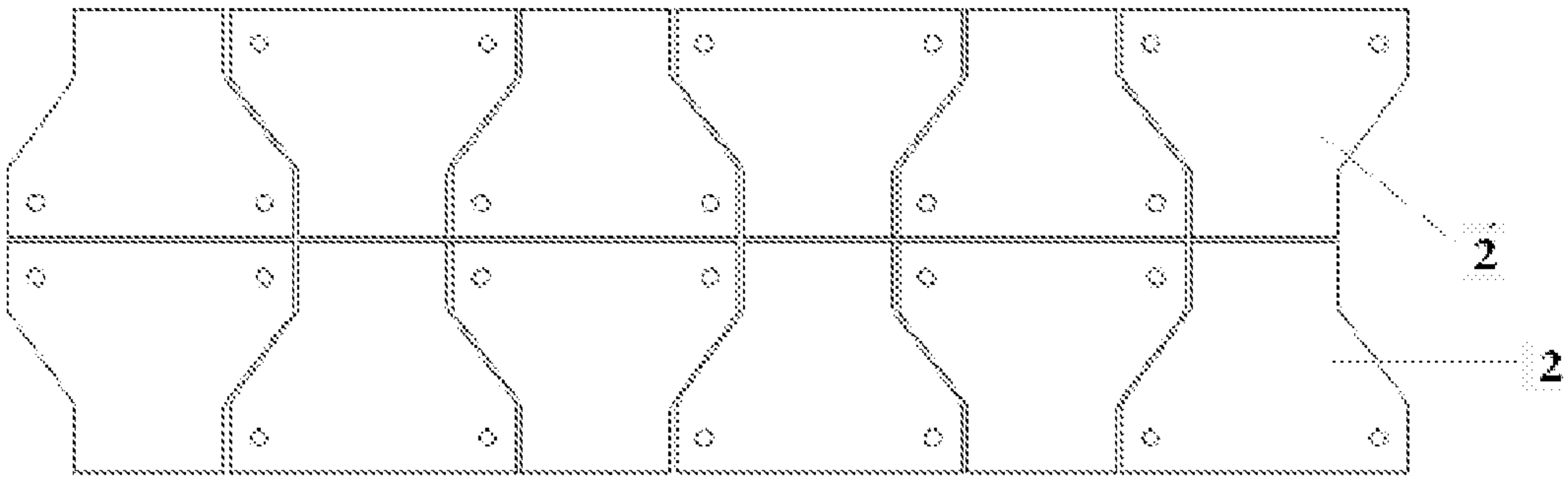

Fig.3

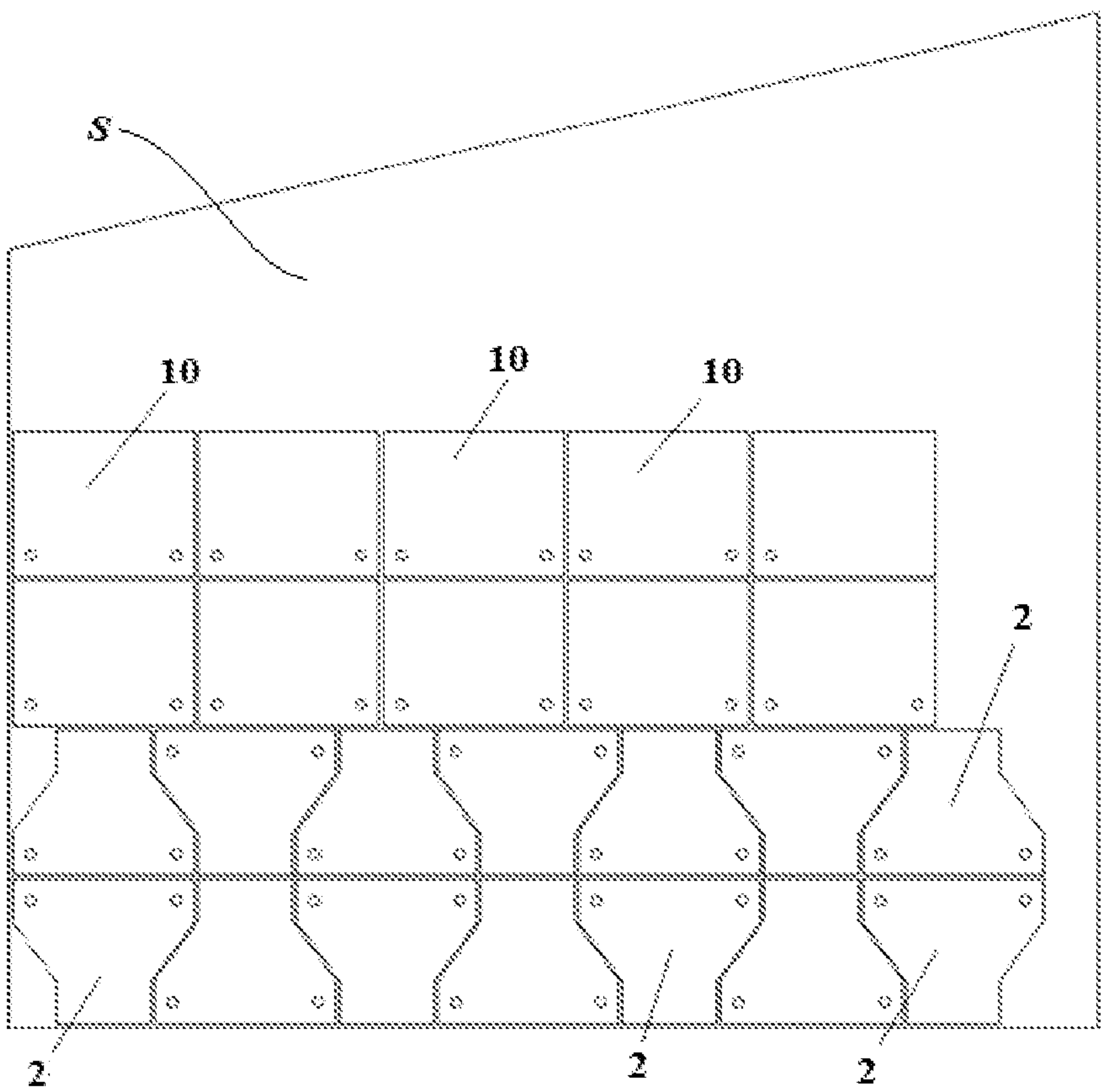

Fig. 4

IMPROVEMENTS TO WINDPOSTS

The present invention relates to a windpost for use in the construction industry, in particular for reinforcing a masonry panel to enable it withstand lateral wind loads, crowd loads and pressure loads.

Conventionally a windpost comprises a post attached to a baseplate. The end of the post is tied into a masonry panel via a head cleat and typically has an L, C, box or planar/spine cross-sectional profile. The baseplate is bolted to an appropriate part of the primary structure. Typically, the windpost is designed to span vertically between floors to provide lateral support for masonry panels of brickwork. The windpost transfers loads applied to the masonry panel via the bolted connections to the primary structure. The post is also provided with a series of spaced apertures along its length for the attachment of wall ties which, in turn, are built into the mortar joints of the masonry panel. Alternatively, the ties can be post-fixed into the windpost to the same purpose.

Windposts are currently modelled either as simply supported beams with a pinned base and head, or as a propped cantilever with a fixed base. The latter are made by thickening the baseplate and, if required, adding extra plates and fixings to make the base capable of withstanding the subsequent moments that arise as a result of lateral loads applied to the post. Generally, the modelling used means that in practice windposts are made far stronger than they need to be to withstand the loads for which they have been designed. This is wasteful as it means more metal is used in their manufacture than needs to be the case.

It is an object of the present invention is overcome the aforementioned disadvantage and to provide a windpost which for any given maximum load is made from a thinner gauge of metal than a conventional post resulting in less material being used in its construction thereby saving on material.

According to the present invention there is provided a windpost comprising a post attached to a baseplate that is adapted to provide a varying degree of moment capacity across its width from a side adapted to be connected to a supporting structure to its opposite side, wherein the baseplate has a shape that can be divided into two rectangular portions joined by an intermediate trapezoidal portion, one of the rectangular portions being wider than the other.

Windposts in accordance with the invention are designed with baseplates that possess varying levels of fixity so that the baseplates contain more material where, in use, the bending moment is at its greatest and less material where the bending moment is lower. This fixity is used to reduce the deflection in the post, which in turn reduces the section gauge of the post required to withstand a given load. Also, the baseplate is profiled to optimise its strength to weight ratio. In particular, it is preferably designed to allow a greater utilisation of sheet material in its manufacture when being cut from the sheet material from which it is manufactured.

Although the windposts of the present invention are particularly suited for use as propped cantilever windposts, they can also be used in all other situations, for example as simply supported beams. In the latter case the baseplate of the windpost may be adapted to be connected to a supporting structure at both sides but still be adapted to provide a varying degree of moment capacity across its width from one side, which is adapted to be connected to a supporting structure, to its opposite side, which may also be adapted to be connected to the same or another structure.

Other preferred but non-essential features of the present invention are described in the dependent claims appended hereto.

The present invention will now be described by way of example with reference to the accompanying drawings, in which:-

Figs. 1a to 1d are plan views of windposts according to the present invention that have posts with different cross-sectional profiles;

Fig. 2 is a plan view of a baseplate of a windpost as shown in Figs 1a to 1d but to a larger scale;

Fig. 3 is a plan view of a metal sheet showing how baseplates of the windposts shown in Figs. 1a to 1d tessellate to maximize the number that can be produced from a single sheet; and

Fig. 3 is a view similar to Fig. 3 showing a side-by-side comparison of tessellating baseplates as shown in Fig. 2 and conventional baseplates.

Figs 1a to 1d show windposts 1a to 1d respectively each comprising a baseplate 2 and a post 3. The posts 3 of the windposts 1a to 1d have a cross-sectional profile that is respectively an L-shape, a C-shape, a planar or spine shape, and a box shape. In each case the baseplate 2 has a tessellating, non-rectangular shape. In particular in the illustrated embodiments the shape is one that can be divided into two rectangular portions 4, 5 joined by an intermediate trapezoidal portion 6, as shown in Fig. 2. One of the rectangular portions 4 is wider than the other 5, the post being located substantially over the narrower 5 of the two portions 4, 5. The wider portion 5 is provided with a pair of holes 7 to permit it to be bolted to a supporting structure. Hence, the baseplate 2 is adapted to provide a varying degree of moment capacity across its width from a side 8 adapted to be connected to a supporting structure, for example by the holes 7, to its opposite side 9.

In addition to the foregoing, the baseplate 2 may also be adapted to be secured to a supporting structure as appropriate and may, therefore, define a plurality of holes or apertures 7 adapted to permit bolt fixings to be used to secure it. Hence, the baseplate 2 may be provided with two, four or, in fact, any number of fixings required to provide the appropriate load capacity needed to withstand the expected applied loads. However, in all cases, the windpost will comprise a baseplate 2 that possesses a varying level of fixity by containing more material at one side where, in use, the bending moment will be at its greatest and less material at an opposing side where the bending moment is lower even if both of these sides are adapted to be connected to a supporting structure. A windpost according to the invention is therefore suitable for use not only as a propped cantilever windpost but in all other situations too.

In addition, the shape of the baseplate 2 is preferably designed in order that a plurality can be cut without significant waste from a metal sheet, as shown in Fig. 3. Whereas a conventional baseplate is rectangular and typically as wide as the wider portion 4 of the baseplates 1a to 1d and of the same depth, the shape of the baseplates 2 is such that more of them can be cut from a given size of metal sheet *S*, as shown in Fig. 4. Here, the same area of sheet metal can be used to produce fourteen baseplates 2 of the shape described above in accordance with the invention but only ten conventionally sized rectangular baseplates 10. This saves considerable quantities of metal, which is thereby used more efficiently.

Also, for any given length of post 3, the section gauge of the post 3 required to withstand a given load is reduced so that less metal is used for the post 3 too. Typically, the post 3 and the baseplate 2 are made from metal sheeting having the same gauge. This means that overall a windpost according to the invention uses considerably less metal in its construction than a conventional windpost.

CLAIMS

1. A windpost comprising a post attached to a baseplate that is adapted to provide a varying degree of moment capacity across its width from a side adapted to be connected to a supporting structure to its opposite side, wherein the baseplate has a shape that can be divided into two rectangular portions joined by an intermediate trapezoidal portion, one of the rectangular portions being wider than the other.

2. A windpost as claimed in Claim 1, wherein the wider of the two rectangular portions is at the side of the baseplate that is adapted to be connected to the supporting structure.

3. A windpost as claimed in Claim 2, wherein at least the wider of the two rectangular portions is provided with a pair of holes to permit the baseplate to be bolted to the supporting structure.

4. A windpost as claimed in any of Claims 1 to 3, wherein the post is located substantially over said opposite side of the baseplate.

5. A windpost as claimed in any of Claims 1 to 4, wherein the baseplate has a tessellating, non-rectangular shape.

6. A windpost as claimed in Claim 1, wherein the post is located substantially over the narrower of the two rectangular portions of the baseplate.