

12 **EUROPEAN PATENT APPLICATION**

21 Application number: **89202417.5**

51 Int. Cl.⁵ **E04H 17/10**

22 Date of filing: **26.09.89**

30 Priority: **01.11.88 NL 8802677**

43 Date of publication of application:
09.05.90 Bulletin 90/19

64 Designated Contracting States:
AT BE CH DE ES FR IT LI LU NL SE

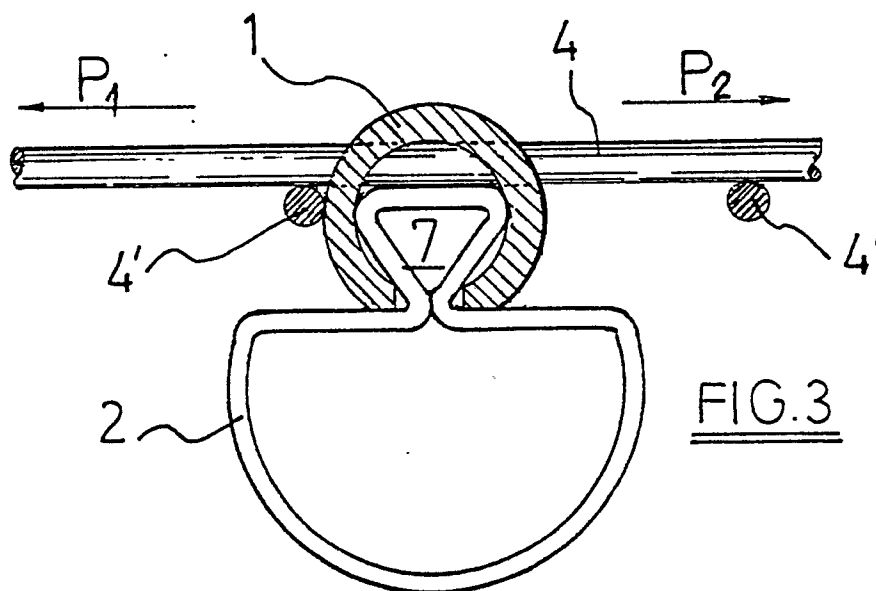
71 Applicant: **N.V. BEKAERT S.A.**
Bekaertstraat 2
B-8550 Zwevegem(BE)

72 Inventor: **Bruggeman, Frans**
Dorenstraat 4
B-9690 Kuisbergen(BE)

74 Representative: **Demeester, Gabriel et al**
N.V. Bekaert S.A. Bekaertstraat 2
B-8550 Zwevegem(BE)

54 **Fencing post and fencing comprising such posts.**

57 This invention relates to a post for fixing a netting-shaped fencing material that is provided with a bulge substantially extending in longitudinal direction that serves as bearing surface for the netting sheet to be fixed and for fixing the netting sheet in conjunction with several clamping means whereby each of the clamping means (1) consists of an elastically deformable piece that can grip round the bulge (7) of the post (2) taking up and clamping at least one wire part (4, 4') of the netting sheet (3) to be fixed.



FENCING POST AND FENCING COMPRISING SUCH POSTS

The present invention relates to a post for fixing netting-shaped fencing material that is provided with a bulge extending substantially in longitudinal direction that serves as bearing surface for the netting sheet to be fixed and for fixing the netting sheet in conjunction with several clamping means.

Such a post with clamping means is known in the art. These posts are generally applied using clamping means in the form of bent metal wire ends, which are pinched round the bulge of the post by means of pincers, in which process they take up and fix a wire part of the netting sheet to be fixed. However, these bent metal wire ends cannot be used several times, as a metal wire end breaks after having been bent a number of times and it furthermore being time-consuming to work with used wire ends. Also, these wire ends are sharp and may consequently inflict bodily harm to people or animals if they get caught on such pinched metal wire ends. One may also get injured taking off the clamped metal wire ends in order to remove the fencing.

The invention aims to provide a solution to the said disadvantages and is to this end characterised in that each of the clamping means consists of an elastically deformable piece that can grip round the bulge of the post taking up and clamping at least one wire part of the netting sheet to be fixed.

As the clamping means are elastically deformable, they can be fitted and removed many times and when properly carried out they cannot inflict bodily harm.

In particular, the clamping means consists of synthetic material and has a cylindrical outside and inside surface, a slot-shaped recess extending longitudinally of the cylindrical shape being present for gripping round the bulge of the post as well as at least one slot-shaped wire recess extending in a direction deviating from the direction of the axis being present on both sides of the slot-shaped recess for taking up and clamping a wire part of the netting sheet. The synthetic material to be used for the clamping means can for instance be polyethylene, polypropylene, nylon or polyoxymethylene, whether or not reinforced with fibres such as glass fibre. The cylindrical outside and/or inside surface is not necessarily understood to mean a circular cylindrical surface. The cylindrical outside and/or inside surface can also present a regular polygon or other shapes.

The clamping means described hereinabove can be used in a very simple way to clamp a wire part of a netting sheet to the described post. This fixing can be carried out manually or by means of

tools.

Advantageously, the axis of the cylindrical inside surface of the clamping means is shifted in the plane comprising the axis of the cylindrical outside surface and the axis of the slot-shaped recess extending in longitudinal direction, in the direction of the axis of the slot-shaped recess extending in longitudinal direction.

The wall thickness taper thus obtained greatly enhances the clamping action of the clamping means in accordance with the present invention.

Very advantageously, the slot-shaped wire recesses extend at right angles to the cylinder axis.

In general, the slot-shaped recesses extend in such a way with respect to the cylinder axis, that when the clamping means grips round the bulge of the post, they can take up and clamp a wire part of the netting sheet. As a lot of netting types have horizontally and vertically extending wire parts, preference is given to slot-shaped wire recesses that extend at right angles to the cylinder axis.

With very great advantage, the slot-shaped wire recesses have a width that substantially corresponds to the diameter of the wire applied in the netting sheet.

The slot-shaped wire recess should not be larger nor smaller than the diameter of the wire applied in the netting sheet. Too large a width of the slot-shaped wire recesses gives too much play to the netting sheet and too small a width of the slot-shaped wire recesses makes it impossible to tighten the netting sheet as the wire is then jammed in the slot-shaped wire recesses.

In particular, the slot-shaped wire recesses comprise hollows at their closed ends, which can take up a wire part with play.

The presence of these hollows has the advantage that the clamp can first be manually fixed on a wire part, after which the clamp can be hit round the bulge of the post by means of a hammer or the like. This prevents unnecessary injury by possible mishitting.

Preferably, the slot-shaped recess extending in axial direction comprises end planes that with the clamping means in clamping condition rest against a surface of the post.

Because of these end planes, the frictional resistance between the post and the clamping means becomes so high that they can hardly move with respect to each other in vertical direction.

It is also preferable that the bulge be located on a flat part of the post that substantially extends longitudinally of the post and is parallel to the post axis and that the end planes of a clamping means in clamping condition rest against said flat part.

If the bulge is located on a flat part of the post, the end planes of the clamping means in clamping condition will rest against said flat part as a result of which a good clamping action occurs, with regard to any vertical shifting of the clamping means.

The invention also relates to a fencing comprising a wire netting sheet, fixing posts as well as clamping means for fixing the wire netting sheet to the posts, characterised in that the fixing posts and the clamping means consist of a fixing post and clamping means as described hereinbefore in accordance with the invention.

The present invention will hereinafter be illustrated with reference to the accompanying drawing, in which:

Figure 1 represents a fencing comprising a wire netting sheet, fixing posts as well as clamping means in accordance with the invention.

Figure 2 represents, in perspective, a clamping means in accordance with the present invention.

Figure 3 represents a section through a post with bulge and through a clamping means, a wire part being fixed to the post by means of the clamping means.

Figure 4a represents a view from above of a clamping means in accordance with the present invention in nonclamping condition.

Figure 4b represents a side view of the clamping means in accordance with the invention represented in figure 4a.

Figure 5a represents a view from above of another embodiment of a clamping means in accordance with the present invention, the thickness of which decreases in the direction of the axially extending slot-shaped recess.

Figure 5b represents a side view of the clamping means from figure 5a in accordance with the invention, comprising hollows.

Figure 6a represents a view from above of yet another embodiment of a clamping means in accordance with the present invention, the clamping means being provided with a recess or hollow for a pin to be fixed therein.

Figure 6b represents a side view of the clamping means from figure 6a in accordance with the present invention, with the pin fixed in the recess or hollow.

Figure 1 shows the clamping means 1 in conjunction with a wire part 4 of the netting sheet 3 and the vertical bulge 7 of the post 2. Such a separation can for instance be used for fencing off pastureland where cattle graze. The clamping means 1 is shown on a larger scale in figure 2. Here we can clearly see the longitudinally extending slot-shaped recess 5 and the slot-shaped recess 6 extending at right angles to it. Such a clamping means can generally be made of tubular

material. Tubular material is not necessarily understood to mean a circular cylindrical object. The outside and inside surface of the tubular material can also present a regular polygon or another shape. A number of exemplary materials are polytetrafluoroethylene, polyethylene, PVC, polypropylene etc. ... When fixing a clamping means of the said type, the recess 5 is driven over the bulge 7 of the post 2 while taking up a wire part 4 of the netting sheet 3. This can be done by hand by simply pressing the clamping means 1 over the bulge 7. However, it is preferable to carry out this fixing by means of a hammer or similar tool. The netting sheet 3 can be tightened before a number of clamping means 1 are fitted on the bulge 7, distributed over the greater part of the length of post 2. The tension thus obtained in the netting sheet 3 is maintained by the presence of the clamping means 1. Figure 3 clearly shows that a netting sheet 3 tightened in the direction of the arrow P₁ cannot slacken again because the vertical wire part 4' rests against the clamping means 1. Before the situation in figure 3 is attained, however, the netting sheet 3 is tightened in the direction of the arrow P₁ so that the wire part 4' comes well to the left of the bulge 7, whereupon the clamping means 1 is hit over the bulge 7 and the horizontal wire part 4 by means of a hammer. At that moment, the netting sheet 3 is taut and this tension is maintained because the wire part 4' ends up resting against the clamping means 1. The arrow P₂ indicates the tension in the taut netting sheet.

The netting sheet 3 used in these examples only has vertical 4' and horizontal 4 wire parts. Nonetheless, it is quite possible to use a netting sheet that has a different pattern such as rhombic netting, hexagonal netting etc... The clamping means to be used for these nettings falls completely within the scope of the present invention, as this is only a variation of the described clamping means that is obvious to the skilled worker.

The figures 4a and 4b enclosed herewith are given by way of illustration of the shape of the clamping means in accordance with the present invention. Figure 4a shows the clamping means in accordance with the present invention as viewed from above and figure 4b shows the clamping means as viewed from the side. The end planes 5' of the recess 5 in figure 4a are for increasing the friction between the clamping means 1 and the post 2 when the clamping means 1 encloses the bulge 7 of the post 2 while taking up and clamping a wire part 4. If this friction is inadequate, the netting sheet 3 may sag under the pressure of for instance the neck of cattle grazing over the fence or persons stepping over the fence.

Another embodiment of the clamping means in accordance with the present invention is repre-

sented in figures 5a and 5b. Figure 5a illustrates the eccentricity described in claim 3 of the cylindrical inside surface with respect to the cylindrical outside surface of the clamping means 1. The axis of the cylindrical inside surface is shifted in the plane through the axis of the cylindrical outside surface and the longitudinal axis of the recess 5 in the direction of the recess 5. This means that wall thickness $d_1 < d_2$. Consequently, the wall thickness of this clamping means, as viewed from the recess 5, increases clockwise to a maximum straight opposite the recess 5 whereupon it decreases again to a minimum, right next to the recess 5. This embodiment of the clamping means has a greater clamping action than a clamping means with constant thickness of wall (fig. 4a). Even though they are not shown, end planes 5' may also be present here as represented in figure 4a.

The embodiment where hollows 8 are present is shown in figure 5b. The presence of these hollows makes it considerably simpler and safer to fit the clamping means in accordance with the present invention. Indeed, before being fitted on the bulge 7 of the post 2, the clamping means 1 can be slipped so far over a wire part 4 that the wire is taken up in hollow 8. At that moment, the hands of the user can be withdrawn, whereupon the clamping means 1 can be hit over the bulge 7 by means of a hammer. This precludes possible injury by mishitting. Furthermore, it would be possible to tighten the netting sheet 3 with one hand while hitting the clamping means 1 on the bulge 7 of the post 2 with the other hand.

Figures 6a and 6b represent yet another embodiment of a clamping means 1 in accordance with the invention. Indeed, it is also possible to provide the clamping means 1 represented in figure 2 with a protruding pin 10 so that the clamping means can be held by this pin when fitting it on the bulge 7 of the post 2 thus avoiding that the user's hand is hit when hitting with the hammer on the clamping means 1. It is also possible to provide the clamping means 1 with a small recess or hollow 9 for the fitting therein of a pin 10 in order to facilitate the fitting of the clamping means 1 on the post 2.

It will be understood that the foregoing figures with accompanying description are provided for the purpose of illustration only and that the scope of the invention is not limited to this.

The clamping means in accordance with the present invention have particularly good properties for fixing a netting sheet to posts provided with a bulge substantially extending longitudinally thereof.

Claims

1. Post for fixing a netting-shaped fencing material that is provided with a bulge substantially extending in longitudinal direction that serves as bearing surface for the netting sheet to be fixed and for fixing the netting sheet in conjunction with several clamping means characterised in that each of the clamping means (1) consists of an elastically deformable piece that can grip round the bulge (7) of the post (2) taking up and clamping at least one wire part (4, 4') of the netting sheet (3) to be fixed.

2. Post in accordance with claim 1, characterized in that the clamping means (1) consists of synthetic material and has a cylindrical outside and inside surface, a slot-shaped recess (5) extending longitudinally of the cylindrical shape being present for gripping round the bulge (7) of the post (2) as well as at least one slot-shaped wire recess (6) extending in a direction deviating from the direction of the axis being present on both sides of the slot-shaped recess (5) for taking up and clamping a wire part (4, 4') of the netting sheet (3).

3. Post in accordance with claims 1-2, characterized in that the axis of the cylindrical inside surface of the clamping means (1) is shifted in the plane comprising the axis of the cylindrical outside surface and the axis of the slot-shaped recess (5) extending in longitudinal direction, in the direction of the axis of the slot-shaped recess (5) extending in longitudinal direction.

4. Post in accordance with claims 2 and 3, characterized in that the slot-shaped wire recesses (6) extend at right angles to the cylinder axis.

5. Post in accordance with claims 2-4, characterized in that the slot-shaped wire recesses (6) have a width that substantially corresponds to the diameter of the wire applied in the netting sheet (3).

6. Post in accordance with claims 2-5, characterized in that the slot-shaped wire recesses (6) comprise hollows (8) at their closed ends, which can take up a wire part (4, 4') with play.

7. Post in accordance with claims 1-6, characterized in that the slot-shaped recess (5) extending in axial direction comprises end planes (5') that with the clamping means in clamping condition rest against a surface of the post (2).

8. Post in accordance with claim 7, characterized in that the bulge (7) is located on a flat part of the post (2) that substantially extends longitudinally of the post (2) and is parallel to the post axis and in that the end planes (5') of a clamping means (1) in clamping condition rest against said flat part.

9. Fencing comprising a wire netting sheet, fixing posts as well as clamping means for fixing the wire netting sheet to the posts, characterized in that the fixing posts and the clamping means consist of a fixing post (2) and clamping means (1) as described in one or more of the claims 1-8.

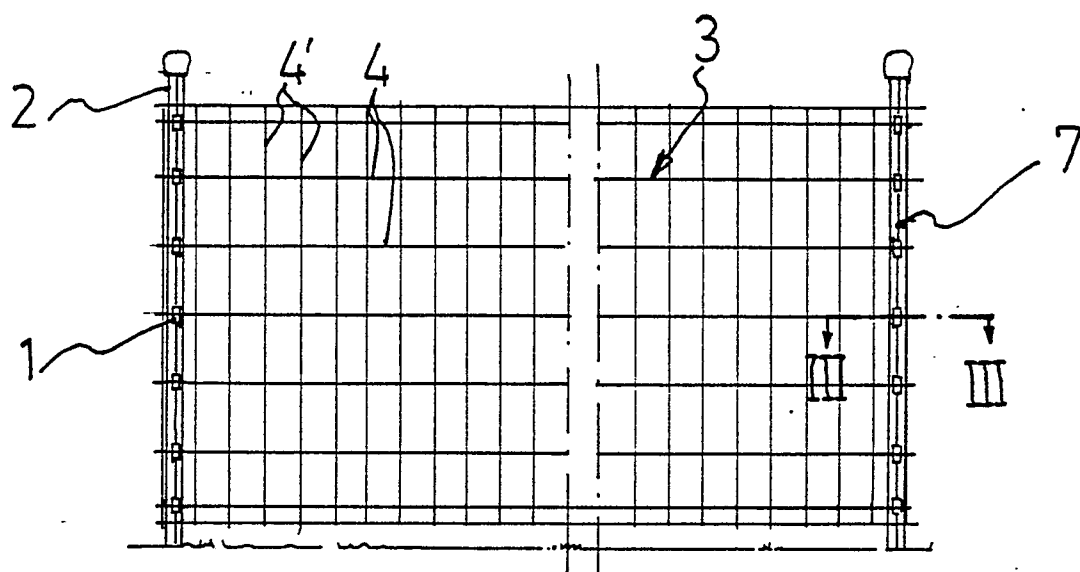


FIG. 1

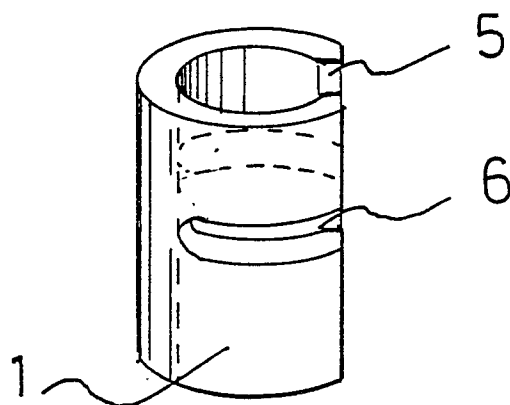


FIG. 2

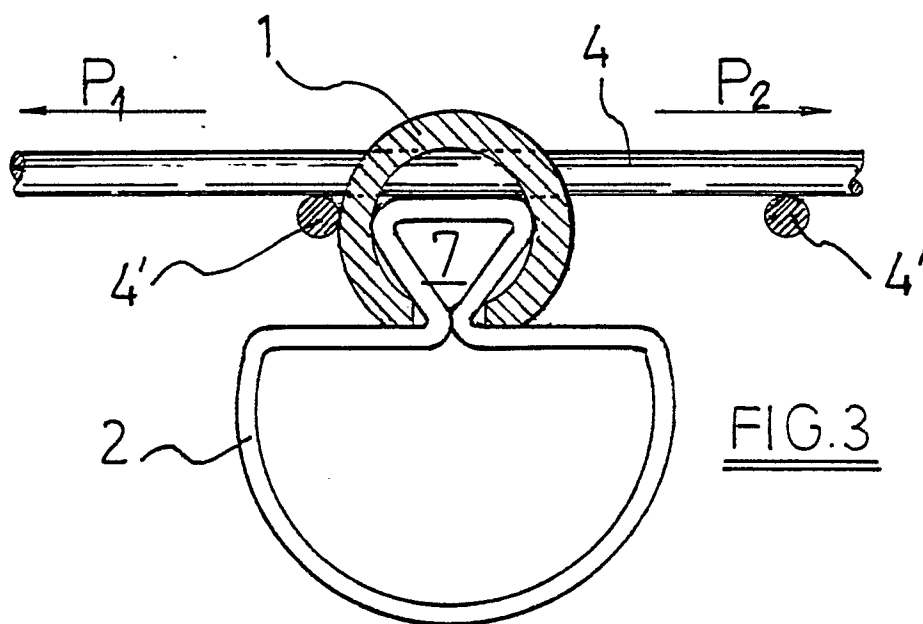


FIG. 3

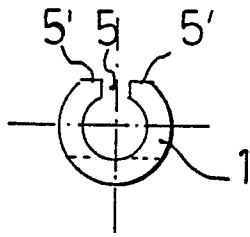


FIG. 4a

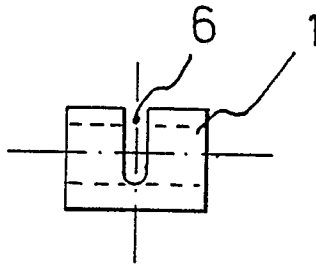


FIG. 4b

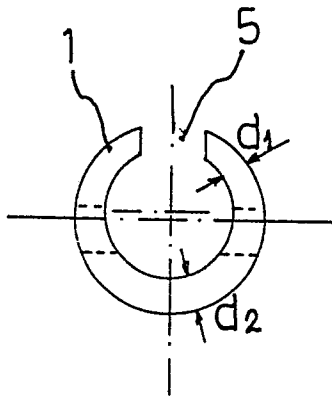


FIG. 5a

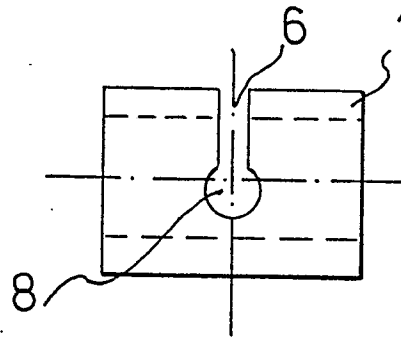


FIG. 5b

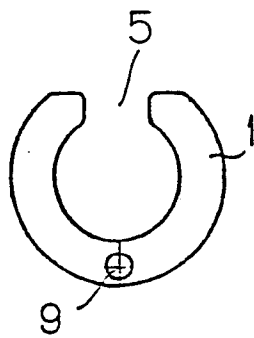


FIG. 6a

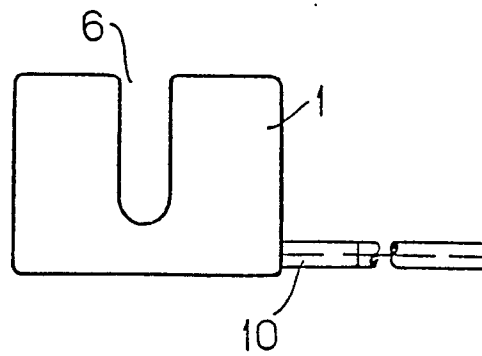


FIG. 6b



DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.5)
X	NL-A-8 600 065 (BEKAERT S.A.) * P. 4, l. 30 - p. 5, l. 22; fig. 1,2 *	1	E 04 H 17/10
Y	---	2,4,7-9	
Y	DE-A-3 422 049 (RECKENDREES) * P. 5; fig. 1,2 *	2,4,7-9	
A	---		
A	DE-A-1 950 285 (VALLOUREC) * P. 7, last paragraph - p. 8, first paragraph; fig. 9,10 *	1	
A	---		
A	GB-A- 988 165 (MALKMUS-DORNEMANN) * P. 2, l. 24-63; fig. 1-10 *	1,2	
A	---		
A	GB-A-2 029 870 (KOCH) -----		
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 03-01-1990	Examiner CLASING M.F.
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			