



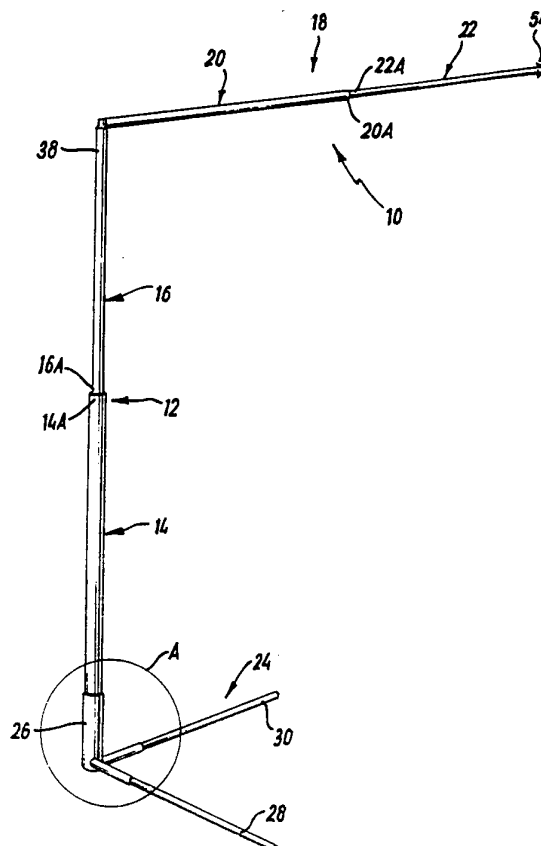
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(54) Title: IMPROVEMENTS IN OR RELATING TO STANDS AND CONNECTORS

(57) Abstract

A stand (10) suitable for supporting a netting, for example, mosquito netting, the stand comprising a base (24), first support means (12) adapted to extend upwardly from the base and second support means (18) adapted to extend transversely from said first support means. The second support means is adapted to support the netting, and the first and second support means are detachably connected to one another. A connector (110), suitable for connecting the first and second support means together, comprises first and second connection means (112, 114). The first connection means includes locking means (116) and the second connection means comprises first and second substantially opposite faces (118, 120). The locking means can be inserted in the bore in a first direction and can engage the first face to lock the first connection means to the second connection means.



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Improvements in or relating to stands and connectors

This invention relates to stands and to connectors. More particularly but not exclusively, the invention relates to stands suitable for supporting mosquito netting, such as mosquito netting, and to connectors for use with such stands.

It is often desirable to be able to set up mosquito netting on a temporary basis. For example, temporary hospital beds may be set up where there has been a natural disaster in hot areas of the world. In such cases, there is the danger of contracting diseases such as malaria from mosquitoes and it would be desirable from a patient's point of view for him to be protected by mosquito netting. Known supports for mosquito netting are difficult to set up, are bulky and are not readily transportable.

Also, campers would benefit from being able to protect themselves from mosquitoes at night while staying in hot areas of the world. Known supports would not enable them to do this.

It is an object of this invention to obviate and/or mitigate these and other disadvantages.

According to one aspect of this invention there is

- 2 -

provided a stand suitable for supporting a netting, the stand comprising a base, first support means extending upwardly from the base and second support means extending transversely from said first support means, said second support means, being adapted to support the netting, and said first and second support means being detachably connected to one another.

Preferably, each of the first and second support means comprises at least two retractable support members to enable the lengths of the respective support means to be varied, for example, for storage purposes. The retractable support members are conveniently telescopically retractable, and the first support means may be adapted to receive the second support means, for example for storage purposes.

Preferably, securing means are provided to secure the first and second support means to each other. In one embodiment, the securing means comprises a first formation on one of the support means, the first formation being provided with an arrangement of notches, and a second formation on the other of the support means in the form of a detent means adapted to be received in and secured to the first formation by the arrangement of notches.

- 3 -

The detent means may be provided with urging means to urge the detent means inwards of the second support means. Preferably, the detent means comprises an elongate bar extending into the second support means and at least one detent member extending transversely from the bar to engage in the notches.

The base may include holding means adapted to hold the first support means. Preferably the holding means comprises a socket adapted to receive the first support means. Preferably, the base also includes first and second ground engaging members extending generally radially outwardly from said holding means. Conveniently, said ground engaging members are detachable and may be threadably secured to the holding means.

The first and second support means may be formed principally of a plastics material which may have strengthening fibres embedded therein. For example, the support means may be formed of fibreglass. The holding means may be formed of steel or other suitable material to which the ground engaging members can be threadably secured thereto.

Each of said ground engaging members may be provided with a ferrule having a threaded member thereon

- 4 -

to threadably engage the holding means.

According to another aspect of this invention there is provided a connector comprising first and second connection means, the first connection means comprising locking means and the second connection means having first and second substantially oppositely arranged faces, and said second connection means defining a bore extending between said first and second faces, whereby the locking means can be inserted in the bore in one direction and can engage said first face to lock the first connection means to the second connection means.

Preferably the first and second faces are so arranged that when the locking means is inserted into the bore in the opposite direction, the locking means is prevented from engaging said second face, thereby preventing the first and second connection means from being locked together.

The first connection means may include a stop member from which the locking means extends. Preferably, the stop member is adapted to engage the second face of the second connection means when said locking means engages said first face. Preferably, the stop member is adapted to engage the first face to

- 5 -

prevent the locking means engaging the second face when said first connection means is inserted into the bore in said opposite direction.

Preferably, the locking means comprises an insertion member, which may be elongate and may be adapted to be inserted into the bore, and a projection extending transversely from the insertion member adapted to engage said first face. The insertion member is desirably substantially cylindrical in configuration to enable the first connection means to be rotated about the axis of said insertion member when said insertion member is inserted in the bore. Preferably, said rotation causes the projection to engage said first face.

In the preferred embodiment the first and second faces are substantially planar in configuration. However, it will be appreciated that the first and second faces need not be planar, and may be curved or of any other suitable configuration.

The stop member may be provided with gripping means to assist the stop member in being gripped thereby assisting the rotation of said first connection member. Preferably, said gripping means comprises a knurled outer surface of said stop member.

- 6 -

In the preferred embodiment, the first and second faces are angled relative to each other, whereby the bore extends substantially perpendicularly to the plane of said first face but is at an angle to said second face. Thus, insertion of the locking means into the bore in said opposite direction results in the stop member engaging said first face before said projection has emerged from the bore, preventing the first connection means from being rotated whereby the projection is prevented from engaging said second face so that the first and second connection means are not locked together.

According to another aspect of this invention there is provided an assembly comprising a stand as described in paragraphs 5 to 11 above and a connector as described in paragraphs 12 to 18 above to connect the first and second support means to each other.

An embodiment of the invention will now be described by way of example only with reference to the accompanying drawings in which:-

Fig. 1 is a perspective view of a stand;

Fig. 2 is an enlarged view of the area labelled A in Fig. 1 showing a base forming part of the stand with

- 7 -

ground engaging members detached;

Fig. 3 is a plan view of first support means forming part of the stand shown in Fig. 1 and showing a first part of a connector for connecting the first and second support means together;

Fig. 4 is a view on the line IV-IV in Fig. 3;

Fig. 5 is a view on the line V-V in Fig. 4;

Fig. 6 is a view on the line VI-VI in Fig. 5;

Fig. 7 is a perspective view of the upper end of first support means showing the first part of the connector shown in Figs. 3 to 6;

Fig. 8 is a view of one end portion of second support means with the end cut away to show a second part of a connector to connect the first and second support means together;

Fig. 9 is a view similar to Fig. 1 showing netting support by the stand;

Fig. 10 is a front view of second connection means forming part of an alternative connector;

- 8 -

Fig. 11 is a rear view of the second connection means shown in Fig. 10;

Fig. 12 is a side view of the second connection means shown in Fig. 10;

Fig. 13 is a side view of first connection means forming part of an alternative connector;

Fig. 14 is a perspective view of the first and second connection means shown in Figs. 10 to 13 before being locked together;

Fig. 15 is a perspective view similar to Fig. 14 showing the first and second connection means after being locked together; and

Fig. 16 is a side view of the first and second connection means wherein the first connection means is inserted into the second connection means in the direction opposite to that shown in Figs. 14 and 15.

Referring to the drawings, Fig. 1 shows a stand 10 suitable for supporting mosquito netting 50 (see Fig. 9). The stand 10 includes first support means 12 which comprises retractable support members 14,16. The support members 14,16 are tapered such that the end 14A

- 9 -

of support member 14 has an inner diameter which is slightly less than the outer diameter of the end 16A of support member 16. In this way, the support member 16 is prevented from becoming detached from the support member 14.

the stand 10 also includes second support means 18 which comprises retractable support members 20,22. As with the first support means 12, the support members 20,22 are tapered such that the end 20A of the support member 20 has an inner diameter which is slightly less than the end 22A of the support member 22, thereby preventing the support members 20,22 from, coming apart.

The outer diameter of the support means 18 is less than the inner diameter of the support means 12 such that the support means 12 can receive the support means 18 therein for the purpose of storage or carriage.

The stand 10 also comprises a base 24 incorporating a tubular socket 26 adapted to receive the support member 14. The support member 14 is pushed into the socket 26 and is a tight fit therein.

The base 24 also includes ground engaging members 28,30 in the form of elongate cylindrical rods which are provided at their respective ends with threaded members

- 10 -

32,34 respectively. The threaded members 32,34 are threadably received in respective threaded apertures 36 in the tubular socket 26. For the sake of clarity, only one threaded aperture 36 is shown, which receives the threaded member 32.

A reamed hole 36A is formed in the socket 26 surrounding each aperture 36. The diameter of each hole 36a is such that it receives the end portion of each ground engaging member 28,30.

Figs. 3 to 8 show a first example of a connector for connecting the support means 12,18 together. The upper end 38 of the support member 16, is provided with a formation 40 which is cylindrical in shape and is provided with notches 42,44. The notch 44 extends vertically through the cylinder along one of the diameters, as can be seen from Fig. 3. The notch 42 is perpendicular to the notch 44 and extends horizontally into the formation 40 from one side to a central point 43, as can be seen from Figs. 5 and 6.

Fig. 8 shows the end of the support member 20 which is secured to the support member 16. A plug 46 of, for example, aluminium, is inserted in the end, as shown. An elongate bar 48 extends through the plug 46 and carried at one end thereof urging means which may be

- 11 -

in the form of a spring 49 to urge the bar 48 in the direction indicated by arrow X.

The bar 48 also carried detent members 50,51 extending therefrom.

In order to secure the support means 18 to the support means 12, the notch 44 receives the bar 48 in such a way that the bar 48 slides down the notch 44 until the detent members 50,51 reach the notch 42. The spring 49 urges the bar 48 in the direction indicated by the arrow X so that the detent members 50,51 are received in the notch 42 thereby to secure the first support means 12 to the second support means 18.

Fig. 9 shows the stand 10 supporting mosquito netting 50. As can be seen from Fig. 9 the netting 50 is provided with rings 52 through which the first and second support means 12,18 extend, as shown. Attachment means 54 may be provided at the free end of the support member 22 to attach the ring 52A thereto.

By virtue of the arrangement described, there is provided a stand suitable for supporting mosquito netting which is collapsible, compact, lightweight and transportable.

- 12 -

Referring to the Figs 10 to 16, there is shown a connector 110 (see Figs. 14 and 15) which comprises a first connection means 112 (Fig. 13) and a second connection means 114 (Figs. 10 to 12). The first connection means 112 comprises locking means 116, and the second connection means has first and second substantially oppositely arranged faces 118,120. The second connection means 114 defines a bore 122 extending between the first and second faces 118,120.

The locking means 116 comprises an insert member 124 adapted to be inserted into the bore 122, and a projection 126 extending transversely from the insert member 124. As can be seen from the drawings, the bore 122 has the same cross-section as the cross-section of the end of the insert member 124 and projection 126 combined. Thus, the insert member 124 and projection 126 can be inserted into the bore 122 as shown in Figs. 14 and 15.

The locking means 116 of the first connection means 112 is inserted into the bore 122 in a first direction as shown by arrow 'Y' in Fig. 15, such that the projection 126 extends beyond the first face 118 and the stop member 130 engages the second face 120. The first connection means 112 can then be rotated in the direction of the arrow 'B' about the axis of the insert

- 13 -

member 124 (or in the opposite direction to the arrow B) such that the stop member 126 engages the first face 118 to lock the first connection means 112 to the second connection means 114.

The first and second connection means 112,114 also included bottom portions 115,117 respectively to enable the first and second connection means 112,114 to be attached to articles to be connected together. The connector 110 can be used to connect together the first and second support means 12,18 in place of the first example of connector described above. The second connection means 114 can replace the formation 40 in the support member 16, and the first connection means 112 can replace the arrangement in the end of the support member 20. The bottom portions 115,117 of the first and second connection means 112,114 respectively can be pushed into the ends of the support members 20,16 such that they are attached to the support members 20,16 by a friction fit whereby the support members 20,16 can be connected together. If desired, suitable adhesive can be used to attach the respective bottom portions 115,117 to the

The stop member 130 has a knurled outer surface 132 to enable the stop member 130 to be gripped and rotated as indicated above.

- 14 -

As can be seen from Fig. 12, the first and second faces 118,120 are angled relative to each other, and the bore 122 extends substantially perpendicularly to the first face 118. Thus, when the insertion member 116 of the first connection means 112 is inserted into the bore 122 in the direction indicated by arrow 'Y', until the stop member 130 engages the second face 120, the projection 126 emerges beyond the first face 118 and can therefore be made to engage the first face 118 by rotation of the first connection means 112 in the direction indicated by the arrow 'B', or opposite thereto.

However, if the first connection 112 means should be inserted into the second connection means 114 in the opposite direction, i.e. as shown in Fig. 16, the stop member 130 will engage the first face 118 at an angle thereto and, thus, a portion of the projection 126 will remain inside the bore 122, thereby preventing the first connection means 112 being rotated so that the first and second connection means 112,114 cannot be locked together in this arrangement.

Various modifications can be made without departing from the scope of the invention. For example, in the stand 10 more than two ground engaging members could be provided. Also, each support means could

- 15 -

comprise more than two telescopic members. Also, in the connector 110, the shape of the end of the insert member and the projection could be different, therefore altering the profile of the bore. Also, the angle between the two faces could be varied.

Claims:

1. A stand suitable for supporting a netting, the stand comprising a base, first support means extending upwardly from the base and second support means extending transversely from said first support means, said second support means, being adapted to support the netting, and said first and second support means being detachably connected to one another.

2. A stand according to Claim 1, wherein each of the first and second support means comprises at least two retractable support members to enable the lengths of the respective support means to be varied.

3. A stand according to Claim 2, wherein the retractable support members are telescopically retractable.

4. A stand according to Claim 3, wherein the first support means is adapted to receive the second support means.

5. A stand according to any preceding Claim, wherein the base includes holding means adapted to hold the first support means.

- 17 -

6. A stand according to Claim 5, wherein the holding means comprises a socket adapted to receive the first support means.

7. A stand according to Claim 5 or 6, wherein the base includes first and second ground engaging members extending generally radially outwardly from said holding means.

8. A stand according to Claim 7, wherein said ground engaging members are detachable and may be threadably secured to the holding means.

9. A stand according to Claim 7 or 8, wherein each of said ground engaging members provided with a ferrule having a threaded member thereon to threadably engage the holding means.

10. A connector comprising first and second connection means, the first connection means comprising locking means and the second connection means having first and second substantially oppositely arranged faces, and said second connection means defining a bore extending between said first and second faces, whereby the locking means can be inserted in the bore in a first direction and can engage said first face to lock the first connection means to the second connection means.

- 18 -

11. A connector as claimed in Claim 10, wherein the first and second faces are so arranged that when the locking means is inserted into the bore in the direction opposite to said first direction, the locking means is prevented from engaging said second face, thereby preventing the first and second connection means from being locked together.

12. A connector as claimed in Claim 10 or 11, wherein the first connection means includes a stop member, said stop member being adapted to engage the second face of the second connection means when said locking means engages said first face.

13. A connector according to Claim 12, wherein the stop member is adapted to engage the first face to prevent the locking means engaging the second face when said first connection means is inserted into the bore in the direction opposite to said first direction.

14. A connector according to Claim 12 or 13, wherein the stop member is provided with gripping means to assist the stop member in being gripped thereby assisting the rotation of said first connection member.

15. A connector according to Claim 14, wherein said gripping means comprises a knurled outer surface of said

stop member.

16. A connector according to any of Claims 14 to 19, wherein the locking means comprises an elongate insertion member, which is adapted to be inserted into the bore, and a projection extending transversely from the insertion member adapted to engage said first face.

17. A connector according to Claim 16, wherein the insertion member is substantially cylindrical in configuration to enable the first connection means to be rotated about the axis of said insertion member when said insertion member is inserted in the bore.

18. A connector according Claim 17, wherein said rotation causes the projection to engage said first face.

19. A connector according to any of Claims 10 to 18, wherein the first and second faces are substantially planar in configuration.

20. A connector according to any of Claims 10 to 18, wherein the first and second faces are curved.

21. A connector as claimed in any of Claim 10 to 20, wherein the first and second faces are angled relative

- 20 -

to each other, whereby the bore extends substantially perpendicularly to the plane of said first face but is at an angle which is substantially non-perpendicular to said second face.

22. An assembly comprising a stand as claimed in any of Claims 1 to 9 and a connector as claimed in any of Claims 10 to 21 to connect the first and second support means to each other.

23. A stand substantially as herein described with reference to and as shown in Figs. 1 to 9.

24. A connector substantially as herein described with reference to and as shown in Figs. 10 to 16.

25. Any novel subject matter or combination including novel subject matter herein disclosed, whether or not within the scope of or relating to the same invention as any of the preceding claims.

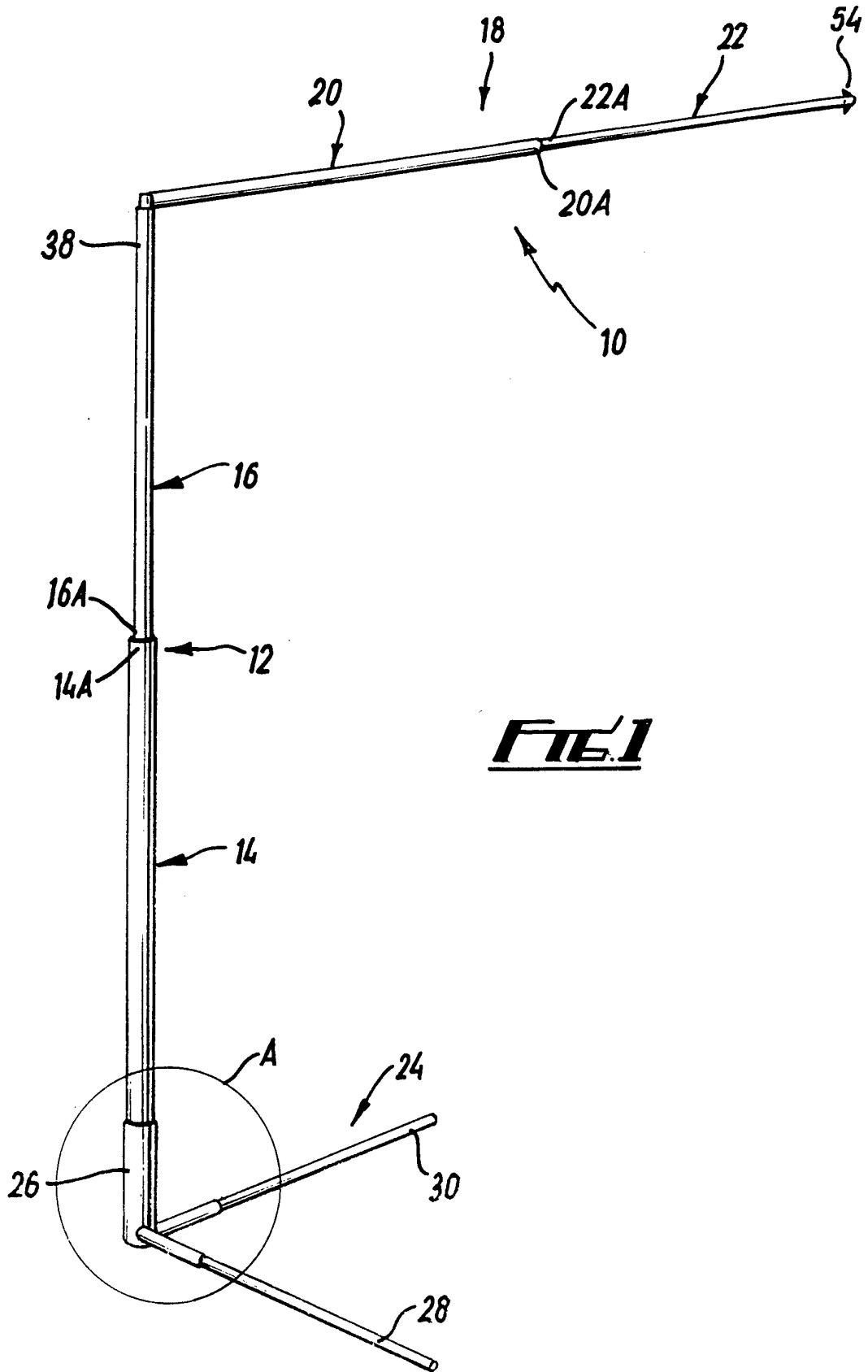


FIG. 1

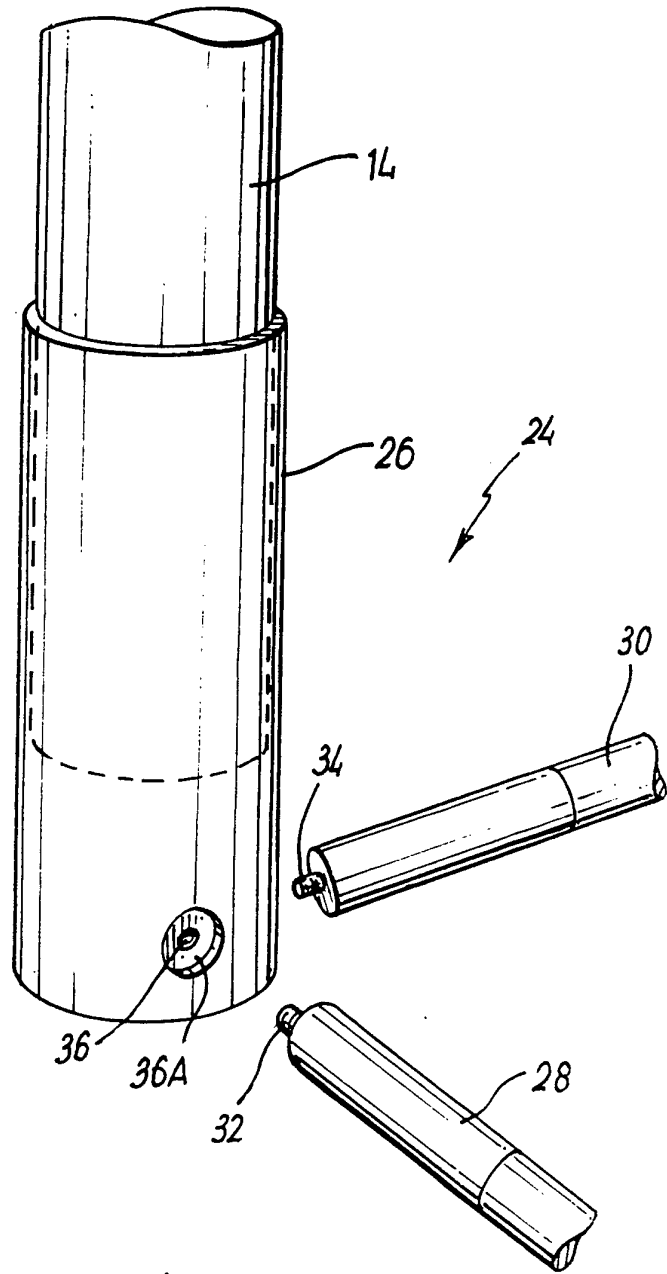
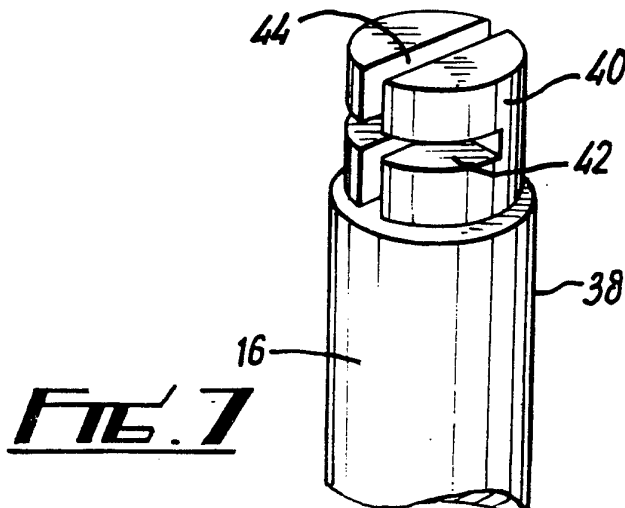
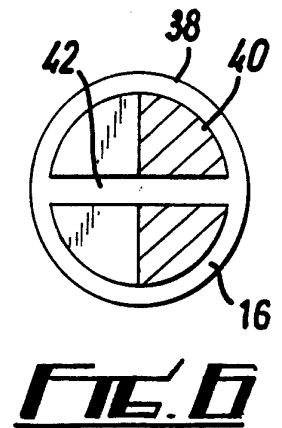
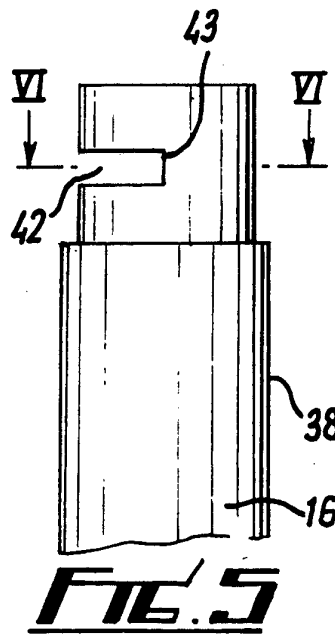
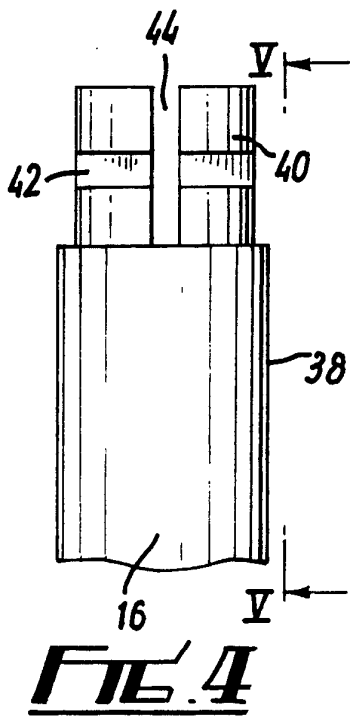
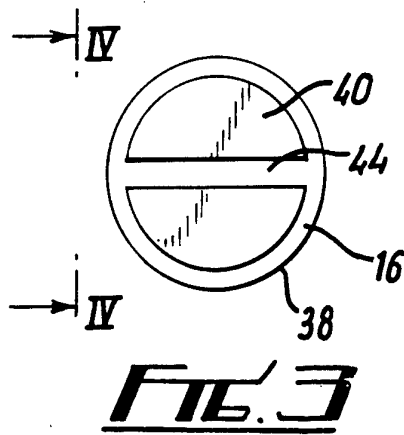


FIG. 2



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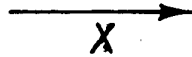
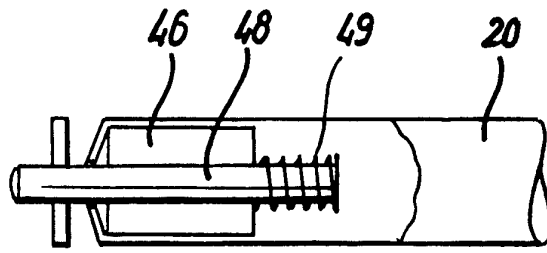


FIG. 8

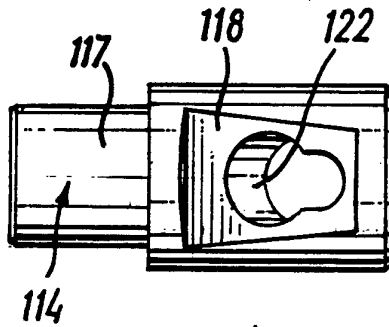


FIG. 10

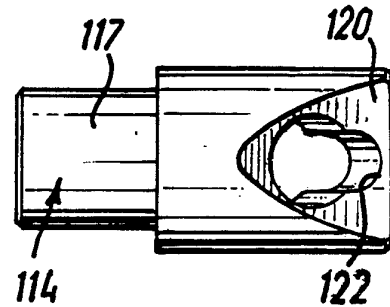


FIG. 11

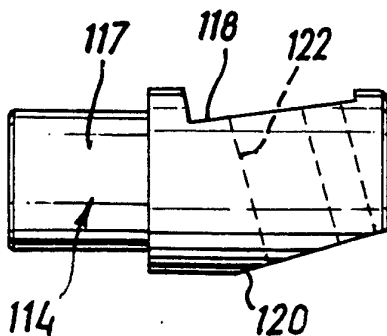
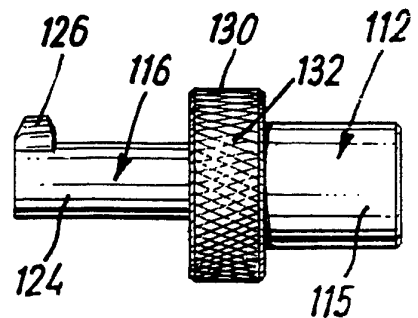


FIG. 12

FIG. 13



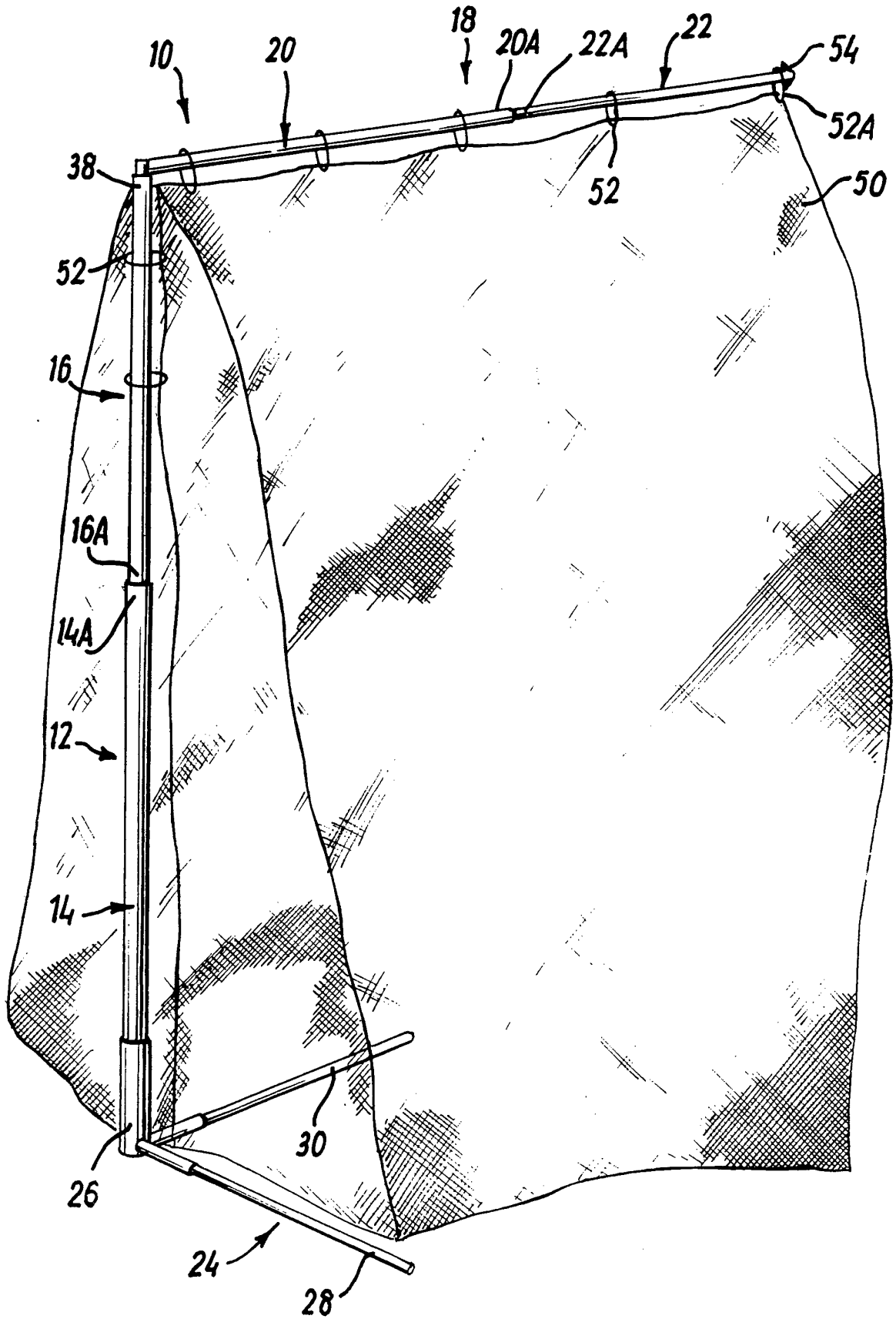


FIG 9
SUBSTITUTE SHEET

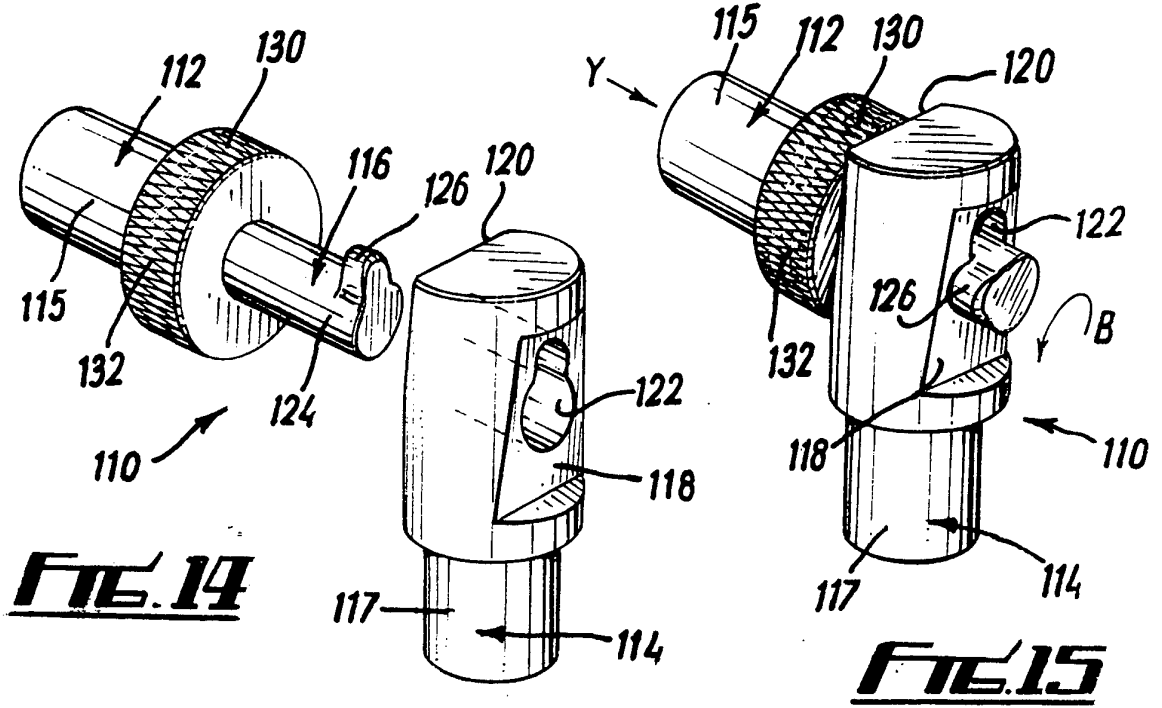


FIG. 14

FIG. 15

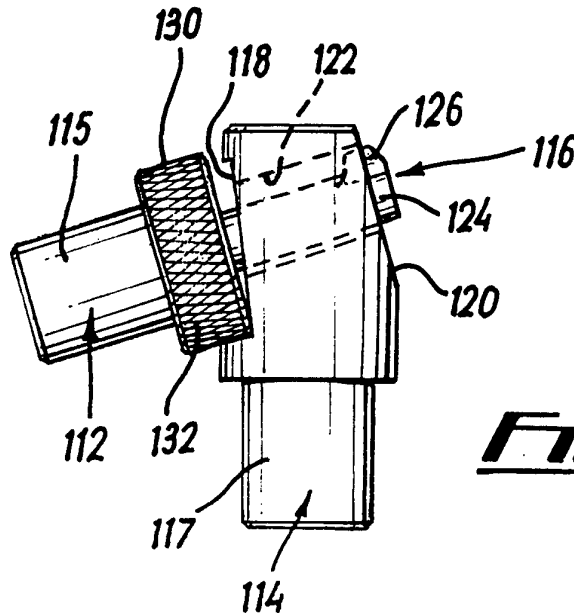


FIG. 16