

- [54] **COLLAPSIBLE SKI POLE**
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[51] Int. Cl.**A63c 11/22**
[58] Field of Search.....280/11.37 R, 11.37 B, 280/11.37 L, 11.37 F; 135/15 PQ, 45 R; 343/881; 287/103

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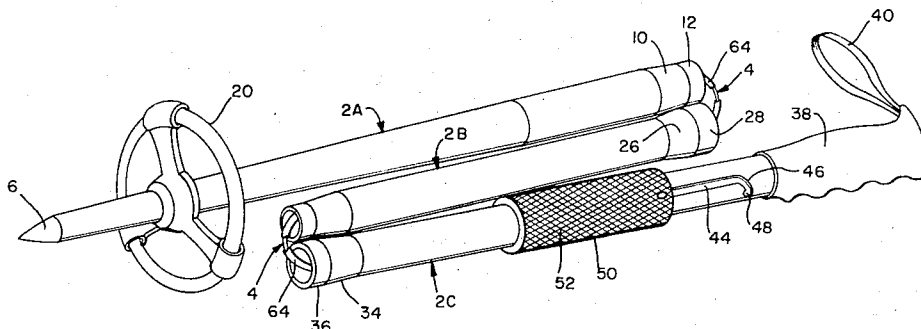
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[57] **ABSTRACT**

A collapsible ski pole comprising a plurality of interconnected tubular members held together by a flexible cord under tension, and means for releasing the tension on the cord to permit the tubular sections to be disconnected one from the other and arranged in a compact bundle.

12 Claims, 7 Drawing Figures



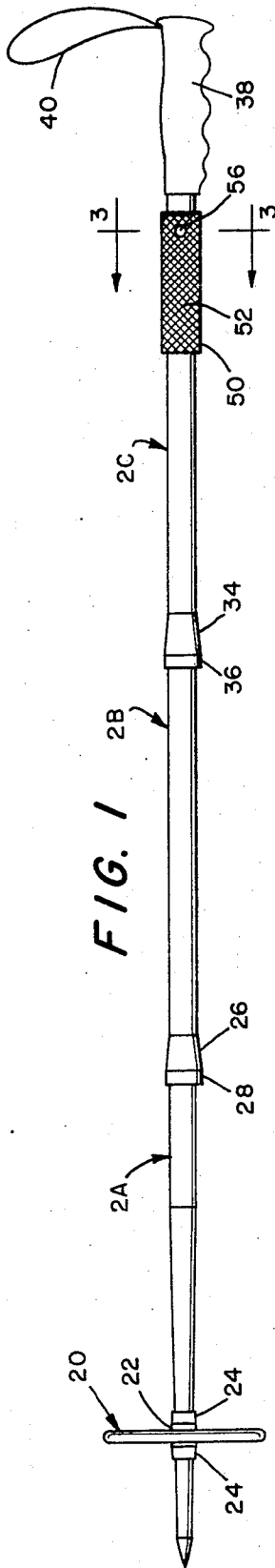


FIG. 1

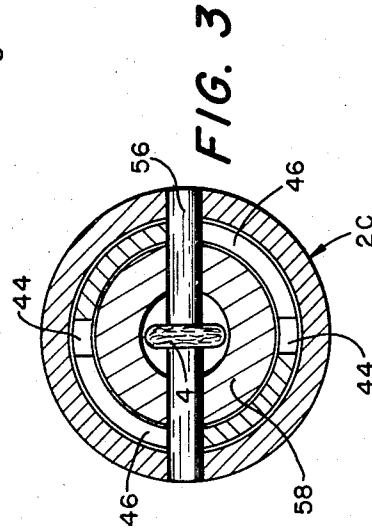


FIG. 2

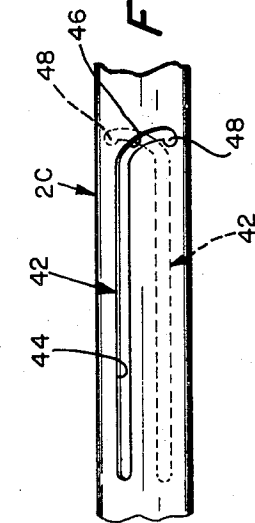


FIG. 3

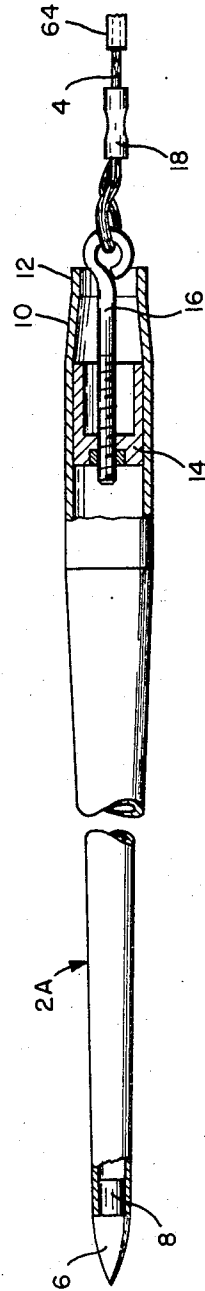


FIG. 4

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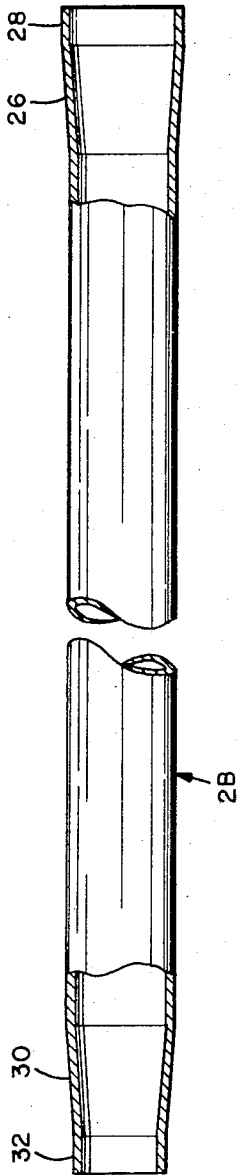


FIG. 5

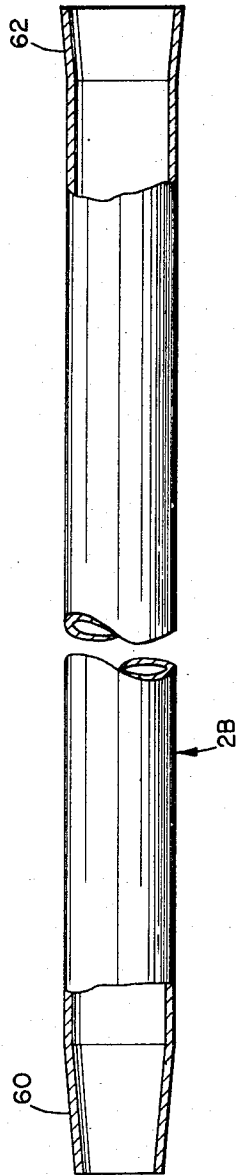


FIG. 6

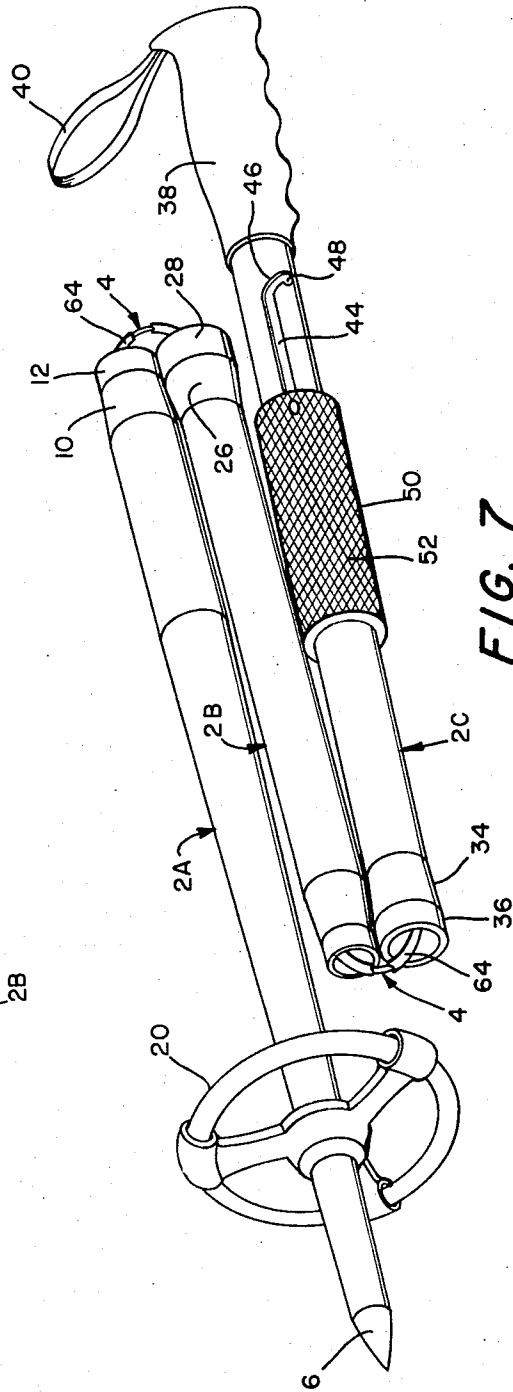


FIG. 7

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COLLAPSIBLE SKI POLE

This invention relates to collapsible rod structures and more particularly to a novel ski pole that has a sectional structure and is collapsible to form a compact portable bundle.

The primary object of this invention is to provide a new and improved sectional ski pole.

A further object is to provide a novel ski pole made up of a plurality of interlocking tubular sections which are tethered by a flexible cable or cord disposed so as to permit them to be disengaged and folded into a compact bundle.

Still another object is to provide a ski pole which comprises a plurality of members with tubular ends arranged so as to interlock in telescoping fashion and provide sufficient surface-to-surface contact to form a rigid structure.

Another object of the invention is to provide a collapsible ski pole structure that is relatively simple, can be made at modest cost, and can be collapsed with a minimum of effort to form a compact bundle that is easy to carry and store.

The foregoing and other objects are achieved by a preferred embodiment of the invention which consists of a plurality of tubular members that are strung or tethered together by a flexible cable. One member forms the bottom section of the ski pole and includes a basket member. Another member forms the top section of the ski pole and includes a grip with a wrist strap. One end of the cable is attached to the bottom end member and the other end is attached to a locking slide mounted on the top end member. The locking slide is movable between two limit positions. When the slide is in one limit position, the cable has sufficient slack to permit the three members to be disengaged from one another and to be folded into a compact bundle. When the slide is in its other limit position, the cable is drawn taut and thereby causes the three members to be held in interlocking relation with one another. The slide is attached to the top member of the pole in such a manner that when it is placed in its second limit position, the tension on the cable will cause the slide to be locked to the top member so that it cannot (except when manually released by the user) shift to its other limit position.

Other features and many of the attendant advantages of the invention are described or rendered obvious by the following detailed description which is to be considered together with the accompanying drawings wherein:

FIG. 1 is an elevational view of a ski pole constituting a preferred embodiment of the invention;

FIG. 2 is an exterior view on an enlarged scale of a portion of the top section of the ski pole;

FIG. 3 is a cross-sectional view on an enlarged scale taken along line 3—3 of FIG. 1;

FIG. 4 is an enlarged elevational view, partly in section, of the bottom section of the ski pole;

FIG. 5 is an enlarged elevational view, partly in section, of the intermediate or middle section of the ski pole;

FIG. 6 is a view similar to FIG. 5 of a modification of the invention; and

FIG. 7 illustrates the ski pole of FIG. 1 in folded condition.

Referring now to FIGS. 1, 4 and 7, the illustrated ski pole comprises three members, 2A, 2B, and 2C, and a flexible nonstretchable cord 4. Preferably the cord 4 is a metal cable.

The bottom member 2A is tubular rod and is tapered so as to have a smaller diameter at its bottom end than at its top end. Mounted in the bottom end of the bottom section 2A is a solid plug 6 which is tapered to a point. The upper end of the ferrule 6 has a reduced diameter section 8 which is force-fitted in the bottom end of the member 2A. The upper end of member 2A terminates in tapered section 10 and a reduced diameter cylindrical section 12. Mounted within member 2A at its upper end is a plug 14 in which is secured an eyebolt 16. The tapered section 10 and cylindrical section 12 are formed by swaging after plug 14 is inserted in place. Preferably plug 14 is force-fitted in place. One end of the cord 4 is secured to the eye-bolt 16. Preferably this is achieved by passing the cord through the head of eyebolt 16 and clamping its end to itself by means of a surrounding metal ferrule 18 which is swaged into tight engagement therewith.

Completing the member 2A is a standard ski pole basket 20 which may be secured in place in any one of a variety of ways known to person skilled in the art. By way of example the basket may include a sleeve 22 that fits over member 2A and is captivated between two collars 24 that are force-fitted in place.

The intermediate member 2B also is a tubular rod. As seen best in FIG. 5, the member 2B has a constant diameter throughout its length except at its ends. The lower end of the intermediate member 2B has a flared section 26 terminating in a constant diameter section 28. The flared section 26 is sized so as to accommodate and make a snug fit with the tapered section 10 of the upper end of member 2A, while its cylindrical section 28 has an, i.d., just large enough to fit over the largest diameter portion of member 2A (i.e., that portion of member 2A which is immediately contiguous with its tapered section 10). Preferably also, the, i.d., of the main constant diameter section of member 2B is just large enough to snugly accept the cylindrical section 12 of member 2A. The upper end of member 2B terminates in a decreasing diameter tapered section 30 and a constant diameter or cylindrical section 32.

The top member 2C is a tubular rod having a constant diameter throughout its length except at its bottom end which is formed with a flared section 34 and a cylindrical section 36. Flared section 34 is sized so that it can slip over and make a snug fit with the tapered section 30 of member 2B, while its cylindrical section 36 has an, i.d., which permits it to slip over and make a snug fit with that portion of the constant diameter main section of member 2B immediately contiguous with tapered section 30. Preferably also the, i.d., of the main section of member 2C is just large enough to accept the cylindrical section 32 of member 2B.

The top member 2C is provided at its upper end with a handle or grip 38 carrying a wrist or safety strap 40. The grip 38 is a staple item of commerce and is of the type generally used on ski poles. Grip 38 is slipped over the end of the member 2C and makes a tight fit therewith so that it cannot be easily pulled off. If desired, an adhesive may be used to secure grip 38 to the member 2C. The member 2C also is provided with

two diametrically opposed cam slots indicated generally by the numeral 42. The two cam slots are identical, each comprising a relatively long axially extending portion 44 and a relatively short circumferentially extending portion 46 located at the upper end of portion 44. The latter portions of the cam slots extend at an angle of approximately 30° to the axially extending portion 44. Additionally the angular portion of each cam slot terminates in a re-entry portion which provides a shoulder 48. Mounted on the section 2C is a locking slide in the form of a sleeve 50. Preferably the exterior surface of the sleeve 50 is coined or knurled as shown at 52 to facilitate gripping the sleeve to move it with respect to the tubular section 2C. Attached to the sleeve 50 is a roll pin 56. The roll pin is anchored in two diametrically opposed holes formed in the sleeve and extends through the two camming slots 42. The roll pin extends diametrically through a hollow plug 58 which is disposed within member 2C. Plug 58 is sized so as to slide freely within the tubular section 2C. The cord 4 extends through the intermediate member 2B into member 2C where its upper end extends through the hollow plug 58 and is secured to roll pin 56. Although not shown, it is to be understood that cord 4 is looped around roll pin and secured to itself by a clamping member similar to sleeve 18.

The cam slots 42 determine two limit positions for the locking slide 50. The slide is movable from a first position in which the roll pin 56 engages the lower ends of the camming slots to a second limit position where the roll pin is situated in the re-entry portion of the cam slots in engagement with the shoulders 48. The length of the cord is such that when the slide 50 is in its second limit position, i.e., when the roll pin 56 engages the shoulders 48 of the re-entry portions of the cam slots, the cord is under tension sufficient to hold the three members 2A, 2B, and 2C together in the telescoping interlocking relationship shown in FIG. 1, whereby the three members form a rigid elongate pole. On the other hand, when the sleeve 50 is moved to its other limit position where the roll pin engages the bottom ends of the two cam slots, there is sufficient slack in the cord to allow the three tubular members to be separated one from the other and the whole assembly to be folded into a compact bundle as in FIG. 7. The members may be maintained in a compact bundle by insertion into a suitable sheath such as a plastic bag or sleeve, or by means of a rubber band. Assuming that the pole is in collapsed position, when the user wishes to erect the pole, he removes the bundle from its sheath, unfolds the bundle, and pulls the slide 50 toward the grip 38 to draw up the slack in the cord and interlock the members 2A, 2B, and 2C. As the slide is moved toward the grip, the roll pin 56 moves along the two slots 42. When the roll pin reaches the angular portions 46 of the two slots, the user twists the slide so as to cause the roll pin to move into the re-entry portions of the cam slots. At this point the tension on the cord causes roll pin 56 to bear against the shoulders 48, with the result that the sleeve is locked against movement back to its original limit position by the cord tension.

FIG. 6 shows a modification of the invention. In this case the modification consists of varying the configuration of the interlocking ends of the three sections. Essentially, in this modification, the upper end of the in-

termediate member 2B is provided with a simple taper 60 while its bottom end is provided with a simple flair 62. Although not shown, corresponding tapers and flairs are provided on the upper end of member 2A and the bottom end of member 2C. This modified end configuration offers the advantage that the sections are more easily engaged with each other when the cord is drawn taut and are easier to fabricate. On the other hand, the total amount of surface-to-surface contact is less. However, sufficient surface-to-surface contact is achieved to assure that the pole will be rigid when the cord is drawn taut.

It is to be appreciated that the several tubular members 2A, 2B, and 2C may be made up of metal such as aluminum or steel but also may be made of a suitable high strength plastic material. The tip member 6 may be made of metal or plastic. Similarly, the handle or grip 20 may be made of rubber or plastic. The slide 50 may be made of plastic or metal but metal is preferred. As noted above, the cord is preferably a metal cable such as a steel or aluminum cable. However, the cord may be made of nylon or other suitable material. If a metal cable is used, it is preferred to encase the cord in a flexible abrasion-resistant sheath as shown at 64 in FIGS. 4 and 7. By way of example, the sheath may be made of rubber, polyethylene, polypropylene or other suitable material. The other essential requirement is that the plastic be resistant to abrasion and be sufficiently flexible to allow the ski pole to be collapsed and folded.

The two plugs 14 and 58 may be made of metal, wood, plastic, or other suitable material. It is to be noted also that the plug 58 may be omitted. Use of plug 58 is preferred since it has the effect of maintaining the cord centered at the point at which it is attached to the roll pin. In this connection it is to be noted that cord 4 may be attached to member 2A and slide 50 by other suitable means. Thus, for example it is possible for the roll pin to have a large enough diameter within the member 2C to permit it to be drilled with a hole large enough to allow the cord to pass through and be anchored by tying a knot in the cord. Similarly the plug 14 may be replaced by a roll pin anchored in holes in the bottom member 2A and the bottom end of the cord secured to that roll pin in a manner similar to that used to secure the cord to roll pin 56.

The invention just described offers a number of advantages. For one thing, the construction is simple and easy to make. Secondly, the ski pole may be made of a variety of materials. A third advantage is that when the cord is drawn tight, the ski pole is as strong as a conventional ski pole. A fourth advantage is that it can be separated and folded into a compact bundle that can be easily stored and carried. A further advantage of the invention is that it is possible to make multicolored ski poles by making the members 2A, 2B, and 2C in different colors.

It is to be noted also that although the illustrated embodiment is a ski pole, the invention is also applicable to the construction of walking sticks, radio antennae, or similar rod or pole-like structures.

Of course, the invention is not limited to the specific construction shown in the drawings. Thus it is contemplated that the ski pole may comprise only two sections or more than three sections. However, three sections

has been found to be well suited to provided ski poles of suitable lengths. In this connection it is to be noted that different length poles can be made using the same length sections 2A and 2C but using different length sections 2B.

Further, although it has been determined to be best from the standpoint of cost and ease of construction for the sections 2A, 2B, and 2C to have a circular cross-section, it also is possible to use tubular members having a different, e.g., a square cross-section. It also is recognized that the main portions of the members 2B and 2C may have a slight taper instead of having a constant diameter.

What is claimed is:

1. A collapsible rod comprising a plurality of tubular rod sections including first and second end rod sections, said tubular sections being assembled end to end with each section in telescopic interfitting engagement with an adjacent section, a locking slide mounted on and exterior of said first end rod sections, means connecting said slide and said first end section for limiting axial movement of said slide relative to said first end section between first and second axially spaced limit positions, a flexible cord for tethering said sections, said cord being disposed within said tubular sections, means connecting one end of said cord to said second end rod section, means connecting the opposite end of said cord to said slide, said slide being in said first limit position and said cord being under tension so as to hold said sections in said end to end assembled relation, said second limit position being spaced from said first limit position by an amount such that when said slide is moved to said second limit position said cord will become slack enough to permit said sections to be disengaged from one another and folded into a bundle.

2. A rod according to claim 1 wherein said first end section is provided with a handle and said second end section terminates in a point.

3. A rod according to claim 2 wherein said slide is a sleeve surrounding said first end section and said means connecting said slide and said first end section comprises a cam on said sleeve and a cam slot in said first end section, said cam being disposed in said slot, said slot having a first portion extending generally lengthwise of said first end section and a second portion extending generally circumferentially of said first end section, said second portion being disposed so as to determine said first limit position and being shaped so as to oppose movement of said cam and said slide relative to said first end section so long as said cord is under tension.

4. A rod according to claim 3 wherein the said first portion of said slot extends from said second portion toward said second end section.

5. A rod according to claim 4 wherein said connecting means includes a second like cam slot in said first end section, said cam slots being displaced 180° from one another with respect to the axis of said first end section, and further wherein a second cam is disposed in said second cam slot.

6. A rod according to claim 5 wherein said sleeve is tubular and has a diametrically extending pin affixed thereto, said cams comprising portions of said pin.

7. A rod according to claim 6 wherein said cord is attached to said slide by way of said pin.

8. A folding ski pole comprising first and second end rod sections each having a tubular end and at least one intermediate rod section having tubular ends, said tubular ends being shaped so that said rod sections may be assembled end-to-end in interfitting telescopic relation with one another, a handle with a strap affixed to said first end rod section at the end opposite the tubular end thereof, said second end rod section terminating in a pointed head at the end opposite to the tubular end thereof and also having a basket affixed thereto, a flexible cord for tethering said rod sections, one end of said cord being anchored within said second end rod section and extending lengthwise through said at least one intermediate rod section, means carried by said first end section and connected to the other end of said cord for taking up slack in said cord to draw all of said rod sections together in end-to-end assembled relation, said means comprising an operating member mounted exterior of and slidably surrounding said first end rod section, said member being slidable axially and circumferentially relative to said first end rod section, means connecting the other end of said cord to said operating member, and means coupling said operating member and said first end rod section for limiting movement of said operating member between a first limit position in which said cord is slack and said rod sections are separable and foldable into a bundle and a second limit position in which said cord is placed under tension sufficient to hold said rod sections in said end-to-end assembled relation.

9. A folding ski pole according to claim 8 wherein said coupling means is adapted to releasably lock said operating member in said second limit position under the influence of the tension of said cord.

10. A folding ski pole according to claim 8 wherein said coupling means comprises a cam on said operating member and a cam track on said first end rod section, said cam disposed so as to ride along said track and said track shaped so as to determine said first and second limit positions.

11. A collapsible rod comprising a plurality of tubular rod sections including first and second end rod sections, said first end section being provided with a handle and said second end section terminating in a point, said tubular sections being assembled end to end with each section in telescopic interfitting engagement with an adjacent section, a locking tubular slide surrounding said first end rod section, means connecting said slide and said first end section for limiting axial movement of said slide relative to said first end section between first and second axially spaced limit positions, said connecting means comprising a pin affixed to and extending across the interior of said tubular slide and first and second slots in said first end section, said pin also being disposed in said first and second slots, a flexible cord for tethering said sections, said cord extending along and within said tubular sections and having one end thereof connected to said second end section and the opposite end thereof connected to said slide, said slots being displaced 180° from one another with respect to the axis of said first end section, each of said slots having a first portion extending generally lengthwise of said first end section and a second portion extending generally circumferentially of said first end section, said second portions of said slots being disposed so as

7

to determine said first limit position and being shaped so as to oppose movement of said pin and said slide relative to said first end section so long as said cord is under tension, said first portions of said slots being disposed so as to determined said second limit portion, 5 said slide being in said first limit position and said cord being under tension so as to hold said sections in said end to end assembled relation, said second limit posi-

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tion being spaced from said first limit position by an amount such that when said slide is moved to said second limit position said cord will become slack enough to permit said sections to be disengaged from one another and folded into a bundle.

12. A rod according to claim 11 wherein said cord is attached to said slide by way of said pin.

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