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(54) **FOLDING SOCCER GOAL**

FALTBARES FUSSBALLTOR

CAGE DE BUTS PLIANTE POUR LE FOOTBALL

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(73) Proprietor: **GILL, Sukhinder Paul Timothy Singh  
Delta, British Columbia V4E 2P1 (CA)**

(72) Inventor: **GILL, Sukhinder Paul Timothy Singh  
Delta, British Columbia V4E 2P1 (CA)**

(74) Representative: **Betten & Resch  
Patentanwälte  
Postfach 10 02 51  
80076 München (DE)**

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## Description

### Background of the Invention

**[0001]** Soccer is a well known sport worldwide and is increasing in popularity. One of its appealing characteristics is its simplicity: a ball and a goal are the only required equipment. In much of the world, community parks and playgrounds commonly include permanently installed soccer goals. Yet in many areas most playgrounds, parks and other surfaces suitable for playing soccer lack soccer goals. It is therefore desirable to provide a portable soccer goal so that games of soccer may be played in such settings.

**[0002]** Some attempts have been made to develop portable soccer goals. A relatively early example is U.S. Patent No. 4,127,272 to Pennell. The Pennell goal is made of several separable units and requires at least two people for assembly and disassembly. It uses several loose fasteners, including screws, bolts and clip pins, and is "portable" only in a station wagon or pickup truck. Several later goals also require the assembly of numerous separate pieces (U.S. Patent No. 4,407,507 to Caruso, U.S. Patent No. 5,080,375 to Moosavi).

**[0003]** Soccer goals consisting of numerous pieces have the distinct disadvantage that they are difficult and stow to set up. Loose fasteners may require tools for driving or tightening, and may also become lost in transit or storage or during assembly of a goal on a turf playing field.

**[0004]** In some portable goal designs, a balance was struck between portability and ease of assembly. A goal would be broken down into few separate pieces or one piece, but the resulting piece or pieces would be large and cumbersome (U.S. Patent No. 5,431,411 to Padilla, U.S. Patent No. 5,496,040 to Amburgey et al.). Other attempts sacrificed the shape, structure, or dimensions of authentic soccer goals to enhance portability and/or ease of setup (U.S. Patent No. 4,420,158 to Klock, U.S. Patent No. 5,048,844 to Haseltine, U.S. Patent No. 5,269,527 to Noval, U.S. Patent No. 5,433,433 to Armell).

**[0005]** Several of these designs do not look or behave like a genuine soccer goal, and can provide a disadvantage when players become accustomed to attacking or defending a goal with a configuration that is different from that of the goals they will use in more standard soccer venues.

**[0006]** The several connectible net supporting arms complicate the setup and breakdown of the goal. The telescoping members provide a disadvantage if they jam or bend, because they may than fail to property telescope.

**[0007]** Base members connecting the net supports to the uprights create a significant disadvantage when the goal is installed an a playing surface that is not flat, because the uprights rise from the base members at a 90° angle. This relationship of relatively long straight base

members connected to the uprights dictates that, if the playing surface slopes, the uprights will proportionally deviate from a substantially vertical position.

**[0008]** The Pavonetti goal has the additional disadvantage that the net is attached to the goal using a plurality of hooks. Such an arrangement requires additional setup time for attaching the net and may also provide an undesirable hazard arising from numerous hooks on the frame of the goal.

**[0009]** An additional factor in considering desirable features for a portable soccer goal is the fact that many of the available playing surfaces are uneven or stoped, Goals that focus primarily on a rigid structure may not he sufficiently adaptable to mount stably in an upright position on an uneven or stoping surface.

**[0010]** Another foldable goal is disclosed by US 5,539,957 to Schmidt. The Schmidt goal comprises tubular members hinged together at their respective ends and locking means at those hinges for securing the tubular members in mutually perpendicular configurations. However, the Schmidt goal does not look like or behave like a genuine soccer goal, and it therefore suffers from the disadvantage already mentioned above.

**[0011]** DE 1 578 540 discloses a sketched version of a foldable goal for ball games. The goal comprises a goal post having two vertical posts and a crossbar, all of which might include hinges for folding. The goal further comprises a backstay structure connected to the vertical posts and the crossbar. The backstay structure can be folded together with the goal post in a plane parallel to the plane of the goal post. In a direction orthogonal to the plane of the goal post, however, the backstay structure is rigid providing stable side parts of the goal. Transport of this known goal might therefore be cumbersome.

**[0012]** WO 95/21002 and WO 95/32031 disclose further structures of portable and foldable goals for ball games. These goals, however, again suffer from the disadvantage that they do not look or behave like genuine soccer goals.

### Summary of the invention

**[0013]** In view of the above, it is an object of the present invention to provide an alternative transportable soccer goal which, on the one hand, provides the stable "look and feel" of a genuine stationary soccer goal, while, on the other, it allows easy handling in transport and erection.

**[0014]** This object is achieved by a folding soccer goal comprising a goalpost, said goalpost consisting of a horizontal crossbar having a first end and a second end, and two vertical posts each having a top end and a bottom end, wherein each vertical post is foldably attached at its top end to one end of said crossbar, and wherein the crossbar includes at least one hinge intermediate said first end and said second end, said soccer goal further comprising a backstay consisting of two backstay

bars each connected to said goalpost, and a base frame consisting of side supports and a rear support, wherein the rear support substantially contacts with a playing surface along the width of the rear part of the soccer goal.

**[0015]** The goal can be set up without tools or separate fasteners to join the segments together. Likewise there are no required tools or fasteners for attaching the net to the goal. The goal also folds to a portable size to fit in a trunk or back seat of a car, and conveniently fits into a bag for carrying.

**[0016]** In addition to the goal's light weight, ease of use, and portability, the design further allows a sturdy, safe, full-size configuration. It is also adaptable for use even on somewhat sloped playing surfaces.

**[0017]** The goalpost includes a horizontal crossbar and two vertical posts. The crossbar is hinged along its length, and the hinge may both permit folding and provide a safety feature. The safety hinge allows the crossbar to gradually collapse without breaking if a player attempts to grasp and hang from the goal. The safety hinge may be reinforced with a breakaway sleeve to prevent any tendency to sag in long configurations of the crossbar, while preserving the safety feature of allowing the crossbar to slowly collapse when a significant downward force, such as a person's body weight, is applied to the crossbar. This safety hinge feature also prevents damage to the goal that players could otherwise cause by hanging from the crossbar. The crossbar may also be equipped with a locking hinge, such as a deadbolt hinge.

**[0018]** Each vertical post connects to the crossbar via hinges or other flexible or folding attachments. Each vertical post also has at its base a hinged foot assembly, consisting of a hinge and a foot. The assembly may be integral with the post, or it may have a modular connection to the post. The hinge allows the foot to pivot so that the foot may be easily fastened to a playing surface as part of anchoring and erecting the goal. The hinges may have snap or locking features that prevent the goalpost from leaning forward after the posts are raised to the vertical position. A fixed spike, or a tracked or housed spike, may also be part of the foot assembly, allowing a mode of fastening the foot to the playing surface without the goal having any loose parts. The vertical posts may themselves fold, and may include one or more locking hinges along the length of the posts.

**[0019]** The backstay provides support to the rear of the goalpost, and consists of two backstay bars that connect to the goalpost, either on or near the joint that connects the crossbar with the vertical posts. This connection is again via hinges or other flexible or folding attachments, or it may be a modular, detachable connection. The backstay bars extend outward and downward from their attachment to the goalpost.

**[0020]** The backstay bars may each consist of two or more segments whose ends may articulate by sliding together. The segments may also be joined with locking

hinges, such as deadbolt hinges, or with other flexible or rigid joint configurations. One or more regions of a backstay bar may flex or bend to achieve the desired position and suspension of the net. Backstay bars with flexible regions may be used to allow installation of the goal on an uneven surface without displacing the goalpost from its desirable vertical position.

**[0021]** The soccer goal also has a base frame, consisting of side supports and a rear support. The side supports connect to the vertical posts and to the backstay bars, and the rear support runs between the backstay bars along the back of the goal. The base frame may be detachably connected to the soccer goal, or it may connect via hinges or other foldable attachments to the vertical posts. The side and rear supports may have contact pads for frictionally contacting a playing surface, or they may provide guides for receiving spikes or other connectors for stable attachment of the base frame to a playing surface, or the supports may provide both contact pads and connector guides.

**[0022]** The net may be of any material suitable for use in a soccer goal, and may be permanently attached to the goal. This feature eliminates the need for potentially dangerous hooks or multiple fastening steps, further enhancing the safety and simplicity of erecting and using the goal.

**[0023]** The soccer goal may be stabilized on uneven terrain by attaching a shock cord to flexible backstay bars and to the goalpost. The flexible backstay allows variable positioning of the feet of the backstay bars, depending on the contours of the playing surface, and the shock cord provides tension that stabilizes the goalpost in an upright position. The shock cord may attach near the bottom of the flexible backstay bars and to the crossbar, or near the top of the vertical posts.

#### Brief Description of the Drawings

**[0024]** The invention will be more readily understood with reference to the accompanying drawings, in which:

Figure 1 is a perspective view of a folded soccer goalpost;

Figure 2 is a perspective view of the soccer goalpost of Figure 1 partially unfolded;

Figure 3 is a detail view of one Embodiment of the hinge and foot of the vertical post;

Figure 4 is a perspective view of the soccer goalpost of Figure 1 in an intermediate stage of elevation to the vertical position;

Figure 5 is a perspective view the fully erected soccer goalpost receiving a downward force on the crossbar;

Figure 6 is a perspective view of one embodiment of the fully erected soccer goal showing the net in place; all other drawings have omitted the net to more clearly depict other structures of the goal;

Figure 7 is a detail view of an additional embodi-

ment the backstay bar wherein the segments are hinged.

Figure B is a detail view as in Figure 7, showing the flexibility of regions flanking the hinge.

Figure 9 is a detail view as in Figure 8, showing the releasably locking character of the hinge.

Figure 10 is a detail cross-sectional view of a goal member showing a deadbolt hinge.

Figure 11 is a detail cross-sectional view as in Figure 10, wherein the deadbolt is withdrawn into the upper segment of the goal member, permitting opening of the hinge.

Figure 12 is a detail view of a hinged goal member, showing the exterior of the member with the deadbolt hinge in a locked position.

Figure 13 is an elevational perspective view of the soccer goal showing the diagonal brace connecting the goalpost and the backstay.

Figure 14 is a detail view of the area described by the curved arrows in Figure 13, showing one mode of attaching the diagonal brace to the goalpost and the backstay.

Figure 15 is an elevational perspective view of the soccer goal, showing the relationship between the base frame, the goalpost, and the backstay.

Figure 16 is an elevational perspective view of the soccer goal, showing the partially folded base frame hingeably attached to the goalpost.

#### Detailed Description of the Preferred Embodiment

**[0025]** Referring now to the drawings, the portable soccer goal of the invention is generally indicated by reference numeral 10. The portable soccer goal 10 is constructed in a foldable manner, as shown in Figure 1, and can be collapsed and inserted into a carrying bag, as shown in Figure 1. The goal 10 has several hinged or articulating parts as shown in Figure 2. The goal 10 can be described as having two primary structural units: the goalpost 12 and the backstay 29. (Figures 2, 4, and 5.)

**[0026]** The goalpost 12 is the front part of the goal 10 in its fully assembled orientation, and consists of two vertical posts 14. Each vertical post has at its base a hinged foot assembly 17, that includes a post foot 18 and a base hinge 20. The foot 16 is adapted for attaching to a playing surface by receiving a spike 48, as shown in Figure 3. The vertical posts 14 are connected at their upper ends to the horizontal cross bar 22 via goalpost hinges 24. The horizontal cross bar has a safety hinge 28. (Figures 4 and 5.)

**[0027]** The backstay 29 attaches to the goalpost 12 at backstay hinges 32 that connect the backstay bars 30 to the goalpost 12. (Figure 4.) Each backstay bar 30 has an upper segment 34 and a lower segment 46. In the upper segment 34 a flexible region 38 allows adjustable bending of the backstay bars 30 to accommodate various kinds of terrain. (Figures 4 and 5.)

**[0028]** The upper segment 34 and the lower segment

46 are joined by an articulating joint 40. In one embodiment this joint 40 includes a stretch cord 42 that holds the segments together prior to their articulation and provides tension to the joint 40 after the segments are joined. (Figure 4.) The lower segment 46 of the backstay bar 30 attaches to the playing surface with a spiked foot 44.

**[0029]** In an alternative embodiment, the articulation of the upper and lower segments 34 and 46 of the backstay bars 30 is accomplished using a locking hinge 58. The locking hinge 58 is flanked by flexible regions 60 and 62 of the upper and lower backstay bar segments 34 and 46, as shown in Figures 7-9. The locking hinge 58 may also be a deadbolt hinge, as shown in Figures 10-12.

**[0030]** Setup of the goal 10 involves the steps of laying the goal 10 on the playing surface and unfolding the segments as shown in Figure 2. When the segments are unfolded and the goalpost 12 is lying flat on the playing surface, the post foot 18 is placed against the playing surface by rotating it about the base hinge 20. With the post foot 18 in full contact with the playing surface, a goalpost spike 48 may be driven through the post foot 18 to anchor it to the playing surface, as shown in Figure 3, or the foot 18 is otherwise secured to the playing surface. When both post feet 18 are securely anchored against the playing surface, the goalpost 12 is elevated to a fully upright position, as shown in Figure 4.

**[0031]** With the goalpost 12 in a thus erected, the backstay bars 30 are positioned to accommodate any irregularities of terrain. The fully anchored goal 10, as shown in Figure 5, may be further stabilized by shock cords 52 which connect the upper end of the goalpost 12 with the lower end of the backstay bars 30.

**[0032]** A breakaway sleeve 50 may be used to stabilize the safety hinge 28 of the cross bar 22 by sliding over and covering the safety hinge 28, as shown in Figures 4 and 5. If a sufficient downward force is applied to the cross bar 22 the breakaway sleeve 50 distorts and disengages the cross bar 22, falling away and allowing further gradual collapse of the cross bar 22 by the opening of the safety hinge 28.

**[0033]** Figure 6 shows the soccer goal 10 with the net 54 in place. The net 54 is permanently attached to the goalpost 12 and the backstay bars 30 and need not be separately attached with each setup. However, the net 54 has been omitted from the other Figures in order to facilitate an explanation of the parts and their interactions.

**[0034]** The goal 10 may be further stabilized with use of a diagonal brace 80, connecting the goalpost 12 and the backstay bar 30, as shown in Figure 13 and 14.

**[0035]** An embodiment of the invention provides a base frame 90, as shown in Figures 15 and 16. The base frame 90 has side supports 92 and a rear support 98. The rear support 98 includes two joining segments 96 that meet and articulate at their joining ends 97. Both the side supports 92 and the rear support 98 may have

contact pads 93, for frictionally contacting a playing surface, or connector guides 94, for receiving connectors such as spikes. Alternatively, the base frame may have both contact pads 93 and connector guides 94.

**[0036]** The invention contemplates several possible size configurations of the goal 10, including as preferred embodiments a 5 foot by 8 foot configuration, a 6 foot by 12 foot configuration, and an 8 foot by 24 foot configuration. Dimensions provided are height by width of the goalpost 12. It is further contemplated that other uses, e.g., sand soccer, youth soccer, field hockey, lacrosse, street hockey, ice hockey, and handball may require different dimensional configurations. However, the invention encompasses these varied sizes and configurations and uses. The preferred use of square beams for the goalpost 12 provides great structural rigidity even with the use of lightweight materials such as aluminum or plastic.

**[0037]** The goalpost 12 includes a horizontal crossbar 22 and two vertical posts 14. The crossbar 22 may be hinged along its length; the hinge allows the crossbar 22 to be folded and also may function as a safety feature. The preferred embodiment has a safety hinge 28 in the center of the crossbar 22. The safety hinge 28 opens downward in a gradual fashion, with resistance to opening being provided either by a counter force-type spring, or by a series of stop positions on the hinge 28, each of which must be overcome by additional force. Resistance to opening may also be provided by an alternative hinge structure that includes a shock cord or a flexible or deformable material.

**[0038]** The preferred safety hinge configuration allows for the goal 10 to gradually collapse upon application of a significant downward force, e.g., when a player attempts to grasp and hang from the goalpost 12. Because the safety hinge 28 opens downward, the crossbar 22 collapses, mitigating the pressure applied by the force.

**[0039]** The optimal amount of resistance to opening to be provided by the safety hinge 28 is determined based on the weight of the crossbar 22, the rigidity of the material, and the likely weight range of players using a given goal size. The resistance is selected to not allow the safety hinge 28 to open under the normal torque of the crossbar's hanging weight alone, but to collapse under the addition of a force less than the force that would be required to distort the structure of the crossbar 22 in the absence of such a safety hinge 28. Appropriate values for any particular combination of hinge 28 and crossbar 22 can be calculated or readily determined by empirical methods. Therefore, any downward force applied will either be insufficient to damage the crossbar 22 or will cause the crossbar 22 to gradually collapse. A useful range of downward forces, depending on the dimensions and materials of the goal, may be from about 5 pounds to about 200 pounds. A preferred range is from about 10 pounds to about 150 pounds. A more preferred range is from about 15 pounds to about 100

pounds. Most preferred is a range from about 20 pounds to about 50 pounds.

**[0040]** In one preferred embodiment of the invention the crossbar 22 is 12 feet long, and the torque at the central hinge 28 of a hanging crossbar 22 of that length may create difficulties with reaching the desired force compromise discussed above. This can be overcome with use a breakaway sleeve 50, made of an elastic material such as nylon, polyethylene, polypropylene, polyvinylchloride, steel, aluminum, or other material that is capable of temporary partial distortion of its original shape. The breakaway sleeve 50 is designed to wrap around part of the crossbar 22 while leaving a portion thereof uncovered.

**[0041]** In a preferred embodiment where the crossbar 22 is a square beam, the breakaway sleeve 50 has three sides that reach around three sides of the square beam. On the fourth side of the square beam the breakaway sleeve 50 provides flanges that extend partially across the fourth side without entirely covering the fourth side. This sleeve 50 is slidable on the crossbar 22; during set-up and breakdown the sleeve 50 can be positioned at an end of the crossbar 22 near one of the vertical posts 14, and then can be moved into place to cover the safety hinge 28 when the crossbar 22 is straightened and before the goalpost 12 is erected.

**[0042]** The breakaway sleeve 50, by fitting over the safety hinge 28, thus counteracts the sagging tendency that may exist in longer configurations of the crossbar 22. Its distortability characteristics, the tightness of its fit around the crossbar 22, and the length of the flanges that extend onto the fourth uncovered side of the crossbar 22, all combine to determine the load resistance of the crossbar 22 with the sleeve 50 in place. A useful range of load resistances provided by the breakaway sleeve 50, depending on the dimensions of the goal, may be from about 20 pounds to about 250 pounds. A preferred range is from about 25 pounds to about 180 pounds. A more preferred range is from about 30 pounds to about 120 pounds. Most preferred is a range from about 35 pounds to about 70 pounds.

**[0043]** The invention contemplates the use of similar breakaway sleeves in other embodiments, such as with a tubular cylindrical configuration of the crossbar. In such a tubular configuration, the breakaway sleeve can be a partial cylinder, and the angular proportion of the crossbar left uncovered will in part determine the load resistance of the cylindrical crossbar. The invention also contemplates other uses of the breakaway sleeve 50, including on folding vertical posts 14 and on backstay bars 30, where required by the various embodiments of this invention. The breakaway sleeve 50 is easily repositioned on the crossbar 22 as part of re-erecting a collapsed crossbar 22. The invention also contemplates other configurations of the breakaway sleeve 50, such as a breakaway sleeve that only contacts the square beam along the underside for most of its length and has rings at either end or positioned along its length to grasp

the remainder of the crossbar 22. Additionally, the invention contemplates configurations of the breakaway sleeve 50 wherein a first end of the sleeve 59 grasps the crossbar 22 less tightly than the second end of the sleeve 50. In such a configuration, application of a sufficient downward force causes the first end to release from the crossbar 22, while the second end remains attached. In this way, the sleeve 50 breaks away from surrounding the safety hinge 28, allowing the crossbar 22 to gradually collapse, but the sleeve 50 does not become fully detached from the crossbar 22.

**[0044]** The breakaway sleeve 50 may also be adapted for use in stabilizing other hinges of the soccer goal 10. For example, in an embodiment of the goal in which the vertical post 14 includes two or more segments, it is desirable that the vertical post 14, once erected, be stable in its hinged regions. Accordingly, a breakaway sleeve 50 may be positioned over such hinges to stabilize them, and to provide strength to the vertical post 14. The load resistance parameters of breakaway sleeves 50 to be used on, for example, vertical posts 14 and backstay bars 30, may be determined according to the particular dimensions and intended use of a given goal 10. Such determinations may be routinely made by a person of ordinary skill in the art. A useful range of load resistances provided by this embodiment of the breakaway sleeve 50, depending on the dimensions of the goal 10, and the particular goal member whose hinges are reinforced by a particular sleeve, may be from about 20 pounds to about 250 pounds. A preferred range is from about 25 pounds to about 180 pounds. A more preferred range is from about 30 pounds to about 120 pounds. Most preferred is a range from about 35 pounds to about 70 pounds.

**[0045]** An embodiment of the invention provides a hinged crossbar 22 wherein the hinge is a releasably locking hinge. The hinge of this embodiment is locked to stabilize the crossbar 22, and may be released to facilitate breakdown and folding of the goal 10 after use. A preferred releasably locking hinge has a deadbolt 70 configuration. (See Figures 10, 11, and 12.) The deadbolt 70 consists of a solid or rigid hollow structure slidably mounted within the hollow square beam or round beam of the crossbar 22. In one position, the deadbolt 70 is withdrawn into a region of the crossbar 22 on one side of the hinge, such that, with the crossbar 22 in a fully or partially folded position, the deadbolt 70 does not protrude from inside the crossbar 22. Upon straightening of the crossbar 22 and alignment of the folding segments of the crossbar 22, the deadbolt 70 is advanced through the hinged portion such that it lies within the hollow center of both segments of the crossbar 22 on both sides of the hinge. Thus the sliding deadbolt 70 locks the hinge and prevents the crossbar 22 from folding.

**[0046]** Another preferred form of releasable lock on the crossbar hinge is a structure similar to the breakaway sleeve mentioned above, but of a more rigid con-

struction. This locking sleeve is slidably mounted on the crossbar, and is adapted to slide along the crossbar to cover the hinge region when the crossbar segments are straightened and aligned. By sliding over the hinge, the sleeve prevents the hinge from pivoting, thus locking it into place. Because the locking sleeve is of a configuration and material that will not normally distort, the sleeve locks the hinge and stabilizes the crossbar under a wide range of forces that may be applied to the crossbar. In addition to the deadbolt hinge and the locking sleeve configurations of releasably locking hinges, there are several other kinds of releasably locking hinges known in the art, and a person of ordinary skill in the art will appreciate the types of hinges that may be applied to this embodiment of the invention.

**[0047]** The vertical posts 14 connect to the crossbar 22 via hinges 24 or other flexible or folding attachments. In one configuration, the crossbar 22 rests fully upon the vertical posts 14, with an outside hinge connecting the crossbar 22 to the vertical posts 14. In another configuration, the vertical posts 14 are hinged across their tops to the crossbar 22 which is thereby suspended from the hinges 24 attaching the crossbar 22 to the vertical posts 14. In a preferred embodiment, the crossbar 22 and the vertical posts 14 meet at a 45° angle with a hinge 24 in the angle. The hinges 24 may be locking or spring hinges. Other connections between the crossbar 22 and the vertical posts 14 are also contemplated as are other positions of attachment between the crossbar 22 and the vertical post 14. Such other connections include a shock cord or a length of other deformable or flexible material, a leather strap, or a strap composed of nylon or canvas webbing material.

**[0048]** The vertical posts 14 may be one-piece, or they may consist of multiple segments, hingeably connected together. Where the vertical posts 14 include post hinges 16, the hinges 16 may be releasably locking hinges, such as, for example, deadbolt hinges. Alternatively, the hinges 16 may be reinforced and locked by being encased in a sliding sleeve.

**[0049]** The vertical post 14 may have at its base a hinged foot assembly 17. This assembly 17 includes a base hinge 20 and a foot 18. The base hinge 20 allows the foot 18 to pivot so that the foot 18 may be easily fastened to a playing surface as part of erecting and anchoring the goal 10. The base hinge 20 allows for rotation of the foot 18 up to greater than 90°. The foot 18 must have sufficient dimensions to allow stable attachment to the playing surface.

**[0050]** In an alternative embodiment, the hinged foot assembly 17 is detachably connected to the bottom end of the vertical post 14. The detachable connection is preferably a modular snap-lock articulation. In this embodiment the foot 18 may be attached to the playing surface before the assembly 17 is attached to the vertical post 14, or the assembly 17 may be attached to the vertical post 14 prior to attachment of the foot 18 to the playing surface. Whether the hinged foot assembly 17 is in-

tegral with the vertical post 14 or is detachably connected thereto, the hinge 20 may be a locking hinge to stabilize the goalpost 12 in a substantially vertical position.

**[0051]** The feet 18 of the assembly 17 may be attached to the playing surface in a variety of ways. In a preferred embodiment, a spike 48 is driven through an opening in the foot 18 into the playing surface. In another preferred embodiment of the invention, the spike 48 is tracked in the foot 18 to allow the vertical movement of the spike 48 through the foot 18 for anchoring, so that the spike 48 is part of an integrated foot 18 assembly. The orientation of the base hinge 20 provides stability to the goal 10. As demonstrated in Figure 4, the preferred base hinge 20 opens toward the back of the goal 10, so that any impact on the front of the goal 10 will not cause the goal 10 to tip. In other embodiments, multiple spikes may be driven through the foot 18, or screws or augers may be driven through the foot 18 to anchor it to the playing surface. An additional embodiment of the hinged foot assembly 17 provides a foot 18 with a fixed spike or a plurality of fixed spikes protruding therefrom.

**[0052]** Also contemplated is attachment of the foot 18 to playing surfaces with buttons or bolt heads that are integral to the surface. Such attachment points are positioned to facilitate repeated setup and use of the soccer goal 10 of this invention in a particular spot on a playing surface. Such button or bolt head attachments may also be placed in ice for use of an embodiment of this invention in ice hockey, and may also be placed in playing surfaces such as hardwood, cement or asphalt for use in other games of soccer or hockey, e.g., in a gymnasium, in a street, or on a "blacktop" playground. Alternative button or bolt head attachments may be connected to an anchor structure and buried in sand or snow for quick and repeatable attachment of the goal to playing surfaces that may be insufficiently solid for stable attachment using spikes or augers.

**[0053]** The backstay 29 provides support to the rear of the goalpost 12, and consists of two backstay bars 30 that connect to the goalpost 12 with a backstay hinge 32, either on or near the joint that connects the crossbar 22 with the vertical posts 14. The backstay hinges 32 may be releasably locking hinges. The invention therefore contemplates attachment of the backstay bars 30 either onto the crossbar 22 or onto the vertical posts 14 or onto the junction of the crossbar 22 with the vertical posts 14. In same embodiments, the backstay bars 30 may attach to a portion of the vertical posts 14 below their uppermost end. In addition to the connection provided by the backstay hinge 32, the invention contemplates that the backstay bars 30 may also be connected to the goalpost by non-hinge connections such as detachably connecting modular snap-lock attachments, a shock cord, a length of other flexible or deformable material, and the like. The backstay 29 provides depth to the goal 10 for suspending the net 54 and also provides structural support for the goalpost 12 against impacts to the front of the goalpost 12.

**[0054]** The backstay bars 30 may consist of two or more segments whose ends may articulate by sliding together at an articulating joint 40. In one embodiment, the internal diameter of the lower segment 46 is matched with the external diameter of the upper segment 34 allowing a small gap sufficient for the articulation of the segments 34, 46. In such a configuration, a stretch cord 42 is contained inside the tubular structure of the backstay bars 30 to hold the segments 34, 46 together prior to assembly and also to provide tension on the joint 40 after assembly.

**[0055]** In another embodiment, the segments 34, 46 of the backstay bars 30 are hinged together. A preferred embodiment of this hinge feature provides a releasable locking hinge 58, being flanked on either side by a flexible region 38 that allows flexing of the backstay bars 30 around the hinge 58, as shown in Figures 7-9. This flexing permits positioning of the backstay bar feet 44 in an optimal location on uneven terrain, as well as providing some ability to withstand a lateral impact on the hinge 58 by a player or a ball. As an alternative, the hinges 58 connecting the upper and lower segments of the backstay bars 30 may be deadbolt hinges, as discussed above, and as depicted in Figures 10, 11 and 12. The deadbolt-type hinges may also be flanked by flexible regions to allow the advantageous iterative positioning of the backstay bars 30, as discussed above.

**[0056]** In a preferred embodiment of the invention the upper segment 34 of the backstay bar 30 also has a flexible region 38. The flexible region 38 in the upper segment 34 allows the backstay bar 30 to connect to the vertical posts 14 at an angle that is not undesirably acute, and provides an internal dimension to the goal 10 very similar to regulation-type goals of the non-portable variety used at dedicated soccer venues. An additional advantage of the flexibility in the various regions of the backstay bars 30 is that the feet may be "walked" about to find an optimal position on a particular playing surface, to achieve the proper backstay 29 support and tension on the vertical posts 14.

**[0057]** The flexible regions 38 contemplated in a preferred embodiment include a ribbed structure of plastic, rubber, or a like flexible or deformable material, wherein rigid ribs are separated by thinner lengths of the material, allowing for the ribs to be closely aligned or to spread apart and create a flex. Additional strength and stability may be achieved by placing a hinge inside the ribbed structure. Flexibility in the backstay bars 30 may also be accomplished, for example, with use of a mechanical hinge with or without a flanking flexible region, a shock cord, a spring, or a length of flexible or deformable material.

**[0058]** Embodiments of the present invention include a base frame 90. The base frame 90 has two side supports 92 and a rear support 98. The side supports 92 may attach at one end to the goalpost 12, while attaching at another end to the backstay 29. This attachment may be via hinges connecting the side supports 92 to

the bottom and of the vertical posts 14. Alternatively, the base frame 90 may be modular, detachably connecting with the vertical posts 14 and the backstay 29. With a modular base frame 90, the connection of the base frame 90 to the vertical posts 14 may be part of the hinged foot assembly 17, or the connection may replace the hinged foot assembly 17, or the connection may be made directly to the vertical post 14 above the hinged foot assembly 17.

**[0059]** The rear support 98 preferably has two joining segments 96. Each segment 96 may have a pivoting end that connects with the one of the side supports 92. This connection allows one joining segment 96 of the base frame 90 to pivot from a position parallel to the side support 92 to a position at about a 90° angle to the side support 92. Since this pivoting position constitutes a rear corner of the base frame 90, the preferred embodiment provides an articulation with the bottom end of one of the backstay bars 30 at or near the pivoting junction between the side support 92 and the joining segments 96 of the rear support 98 of the base frame 90. This articulation may provide a guide 94 through which a spiked foot 44 of the backstay 29 may pass, or it may, for example, provide a snap-lock receptacle into which an adapted bottom end of a backstay bar 30 may be inserted and releasably locked.

**[0060]** Each joining segment 96 of the rear support 98 thus, at one end, connects with and pivots about one end of one of the side support 92. At the other end of each joining segment 96 is a joining end 97 that is adapted to articulate with the corresponding joining end 97 of the other joining segment 96. such that when the two joining segments 96 are articulated at their joining ends 97, the rear support 98 provides a connection between the two backstay bars 30, and substantially contacts with the playing surface along the width of the rear part of the soccer goal 10.

**[0061]** The base frame 90, including both side supports 92 and the rear support 98, may contact the selected playing surface in a multiplicity of ways. In one embodiment, the contact with the playing surface is via spikes, and the base frame 90 provides guides 94 through which the spikes may be driven into the playing surface. When such spikes are driven through the guides 94, the base frame 90 is secured to the playing surface, thus likewise securing the soccer goal 10 thereto. In another embodiment, the contact with the playing surface is via contact pads 93. The contact pads 93 may adhere to the playing surface, for example by providing a hook and loop interaction with an appropriate playing surface such as a carpet. Alternatively, the contact pads 93 may frictionally contact the playing surface, such as with flexible rubber contact pads 93 on asphalt or hardwood. In another embodiment, the contact pads 93 may provide slots for articulating with buttons or bolt heads in a playing surface such as, for example, hardwood, synthetic, court material, ice, asphalt, and the like. The contact pads 93 may also themselves display bolt heads

or buttons for articulating with receptacles in a playing surface designed to receive such bolt heads or buttons.

**[0062]** The net 54 may be of any material suitable for use in a soccer goal 10, and may be permanently attached to the goal 10. In a preferred embodiment the net 54 may be of nylon, polypropylene, or polyester material, and can be attached in six positions on the goal 10: one attachment near each of the feet of the backstay bars 30, one near the junction of the upper segment 34 of the backstay bar 30 with the goalpost 12, and one on each side of the crossbar 22 lateral to the safety hinge 28.

**[0063]** The permanent attachment of the net 54, according to this embodiment, facilitates ease and speed of setup and breakdown of the goal 10. The material of the net 54 does not add significant bulk to the soccer goal 10 in its folded configuration, and is compatible with inserting the soccer goal 10 into a carrying bag.

## Claims

1. A folding soccer goal, comprising a goalpost (12), said goalpost (12) consisting of a horizontal crossbar (22) having a first end and a second end, and two vertical posts (14) each having a top end and a bottom end, wherein each vertical post (14) is foldably attached at its top end to one end of said crossbar (22), and wherein the crossbar (22) includes at least one hinge (28) intermediate said first end and said second end, said soccer goal further comprising a backstay (29) consisting of two backstay bars (30) each connected to said goalpost (12), and a base frame (90) consisting of side supports (92) and a rear support (98), wherein the rear support (98) substantially contacts with a playing surface along the width of the rear part of the soccer goal.
2. The soccer goal of claim 1, wherein the side supports (92) connect to the vertical posts (14) and to the backstay bars (30).
3. The soccer goal of claim 1 or 2, wherein the base frame (90) detachably connects with the vertical posts (14) and the backstay bars (30).
4. The soccer goal of claim 1 or 2, wherein the side supports (92) are connected to the bottom end of the vertical posts (14) via hinges.
5. The soccer goal of any of claims 1 to 4, wherein the rear support (98) has two joining segments (96), each of which preferably having a pivoting end that connects with one of the side supports (92).
6. The soccer goal of any of claims 1 to 5, wherein the base frame (90) including both side supports (92) and the rear support (98) contacts the selected



playing surface via spikes or via adhering contact pads (93).

7. The soccer goal of any of claims 1 to 6, further comprising a net (54) that is permanently affixed to said goal.
8. The soccer goal of any of claims 1 to 7, wherein the goalpost (12), the backstay (29), and the base frame (90) are adapted to be set up and joined without tools or separate fasteners.

#### Patentansprüche

1. Faltbares Fußballtor mit einem Torrahmen (12), der Torrahmen (12) bestehend aus einem horizontalen Querbalken (22) mit einem ersten und einem zweiten Ende und aus zwei vertikalen Pfosten (14) jeweils mit einem oberen und einem unteren Ende, wobei jeder vertikale Pfosten (14) an seinem oberen Ende faltbar an einem Ende des Querbalkens (22) angeordnet ist und wobei der Querbalken (22) zwischen seinem ersten und seinem zweiten Ende mindestens ein Gelenk (28) aufweist, wobei das Fußballtor ferner eine Stützvorrichtung (29) bestehend aus zwei jeweils mit dem Torrahmen (12) verbundenen Stützstangen (30) sowie einen Grundrahmen (90) bestehend aus Seitenstützen (92) und einer rückwärtigen Stütze (98) aufweist, wobei die rückwärtige Stütze (98) entlang der Breite des rückwärtigen Teils des Fußballtors mit einer Spieloberfläche weitgehend in Kontakt steht.
2. Fußballtor nach Anspruch 1, wobei die Seitenstützen (92) mit den vertikalen Pfosten (14) und mit den Stützstangen (30) verbunden sind.
3. Fußballtor nach Anspruch 1 oder 2, wobei der Grundrahmen (90) lösbar mit den vertikalen Pfosten (14) und mit den Stützstangen (30) verbunden ist.
4. Fußballtor nach Anspruch 1 oder 2, wobei die Seitenstützen (92) über Gelenke mit dem unteren Ende der vertikalen Pfosten (14) verbunden sind.
5. Fußballtor nach einem der Ansprüche 1 bis 4, wobei die rückwärtige Stütze (98) zwei verbindende Abschnitte (96) aufweist, von denen jeder vorzugsweise ein schwenkbares Ende aufweist, welches mit einem der Seitenstützen (92) verbunden ist.
6. Fußballtor nach einem der Ansprüche 1 bis 5, wobei der Grundrahmen (90) einschließlich beider Seitenstützen (92) und der rückwärtigen Stütze (98) mittels Dornen oder haftenden Kontaktfeldern (93) mit der ausgewählten Spieloberfläche in Kontakt steht.

7. Fußballtor nach einem der Ansprüche 1 bis 6, ferner mit einem Netz (54), welches permanent am Fußballtor angebracht ist.

8. Fußballtor nach einem der Ansprüche 1 bis 7, wobei der Torrahmen (12), die Stützvorrichtung (29) und der Grundrahmen (90) derart ausgeführt sind, dass sie ohne Werkzeuge und separate Befestigungen aufgebaut und zusammengesetzt werden können.

#### Revendications

1. Cage de buts pliante pour le football, comprenant un poteau de but (12), ledit poteau de but (12) se composant d'une traverse horizontale (22) dotée d'une première extrémité et d'une seconde extrémité, et de deux poteaux verticaux (14) ayant chacun une extrémité supérieure et une extrémité inférieure, dans laquelle chaque poteau vertical (14) est fixé de manière pliable au niveau de son extrémité supérieure à une extrémité de ladite traverse (22), et dans laquelle la traverse (22) comprend au moins une charnière (28) entre ladite première extrémité et ladite seconde extrémité, ladite cage de buts pour le football comprenant en outre un renfort arrière (29) se composant de deux barres (30) de renfort arrière, chacune raccordée audit poteau de but (12), et un châssis de base (90) se composant de supports latéraux (92) et d'un support arrière (98), dans laquelle le support arrière (98) est sensiblement en contact avec une surface de jeu le long de la largeur de la partie arrière de la cage de buts pour le football.
2. Cage de buts pour le football selon la revendication 1, dans laquelle les supports latéraux (92) se raccordent aux poteaux verticaux (14) et aux barres (30) de renfort arrière.
3. Cage de buts pour le football selon la revendication 1 ou 2, dans laquelle le châssis de base (90) est raccordé de manière amovible avec les poteaux verticaux (14) et les barres (30) de renfort arrière.
4. Cage de buts pour le football selon la revendication 1 ou 2, dans laquelle les supports latéraux (92) sont raccordés à l'extrémité inférieure des poteaux verticaux (14) par des charnières.
5. Cage de buts pour le football selon les revendications 1 à 4, dans laquelle le support arrière (98) possède deux segments d'assemblage (96), dont chacun a de préférence une extrémité pivotante qui se raccorde avec l'un des supports latéraux (92).
6. Cage de buts pour le football selon l'une quelconque des revendications 1 à 5, dans laquelle le châs-

sis de base (90) comprenant les deux supports latéraux (92) et le support arrière (98) est en contact avec la surface de jeu sélectionnée via des clous ou via des tampons de contact adhérents (93).

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7. Cage de buts pour le football selon l'une quelconque des revendications 1 à 6, comprenant en outre un filet (54) qui est fixé de manière permanente à ladite cage de buts.

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8. Cage de buts pour le football selon l'une quelconque des revendications 1 à 7, dans laquelle le poteau de but (12), le renfort arrière (29) et le châssis de base (90) sont adaptés pour être installés et assemblés sans outils ou sans dispositifs de fixation séparés.

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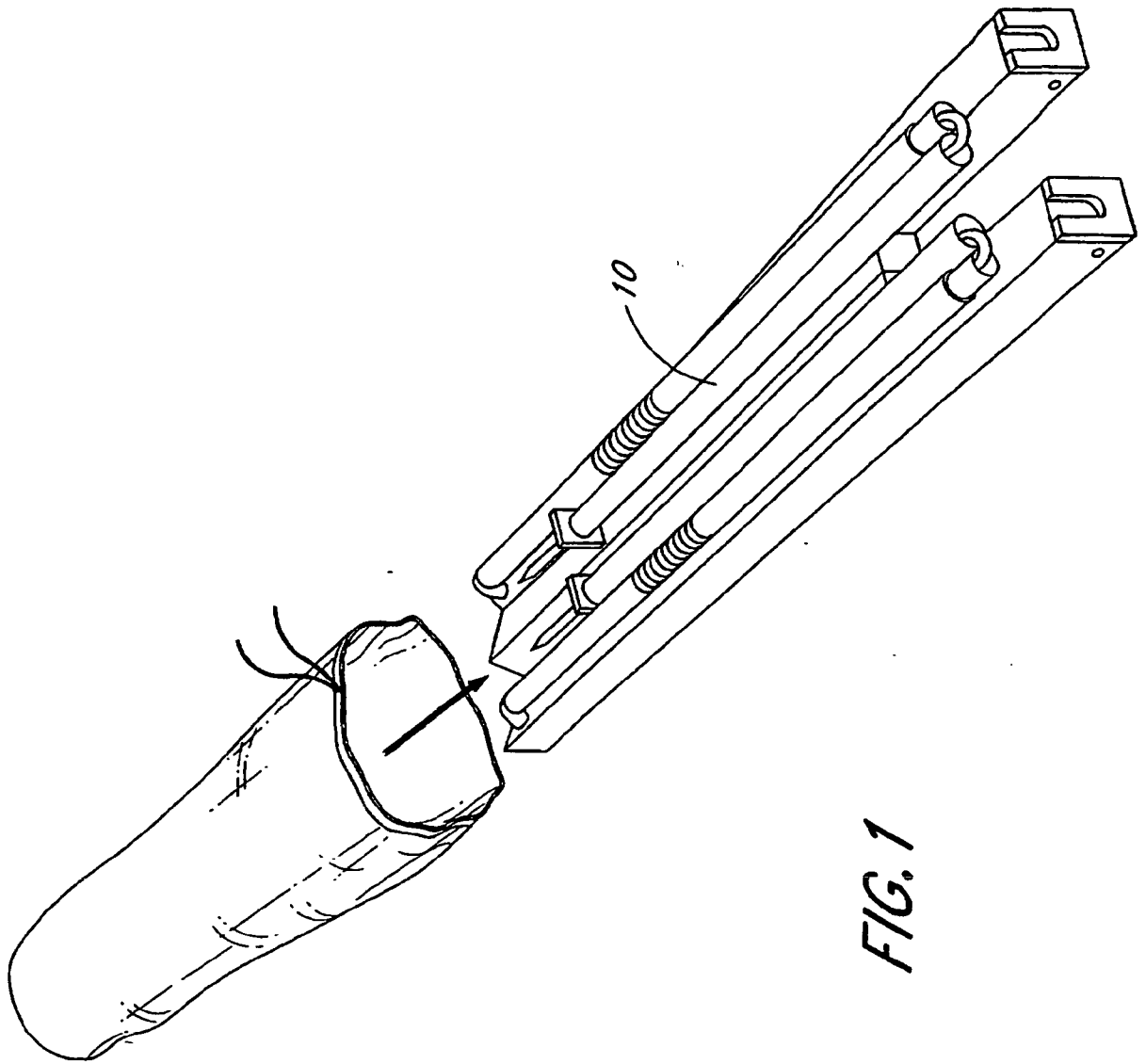
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*FIG. 1*

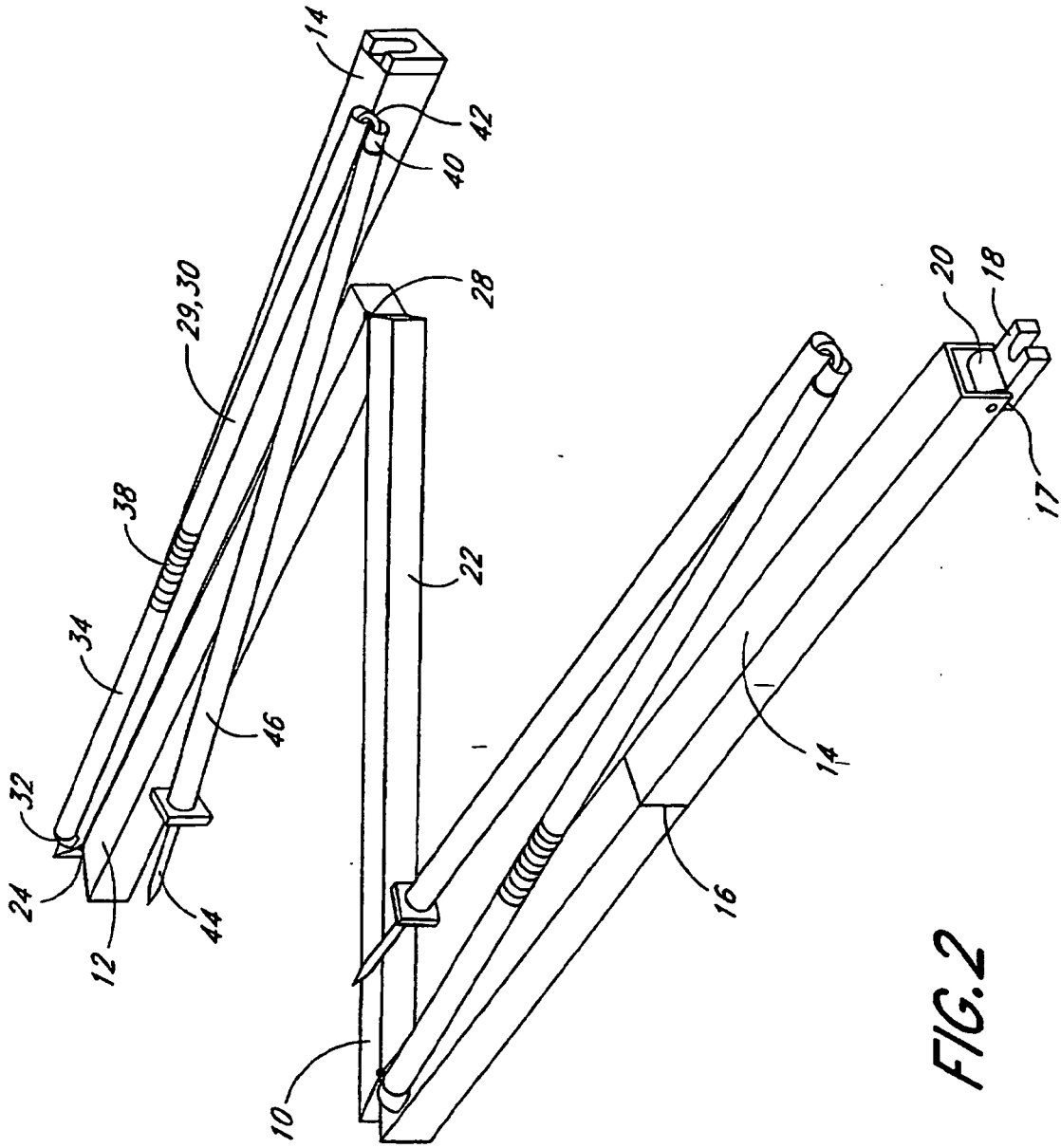


FIG. 2

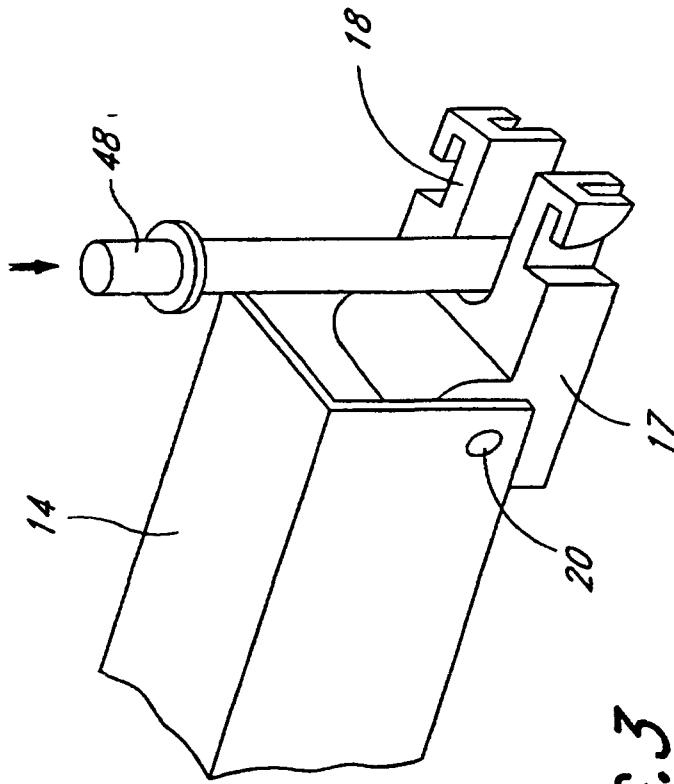


FIG. 3

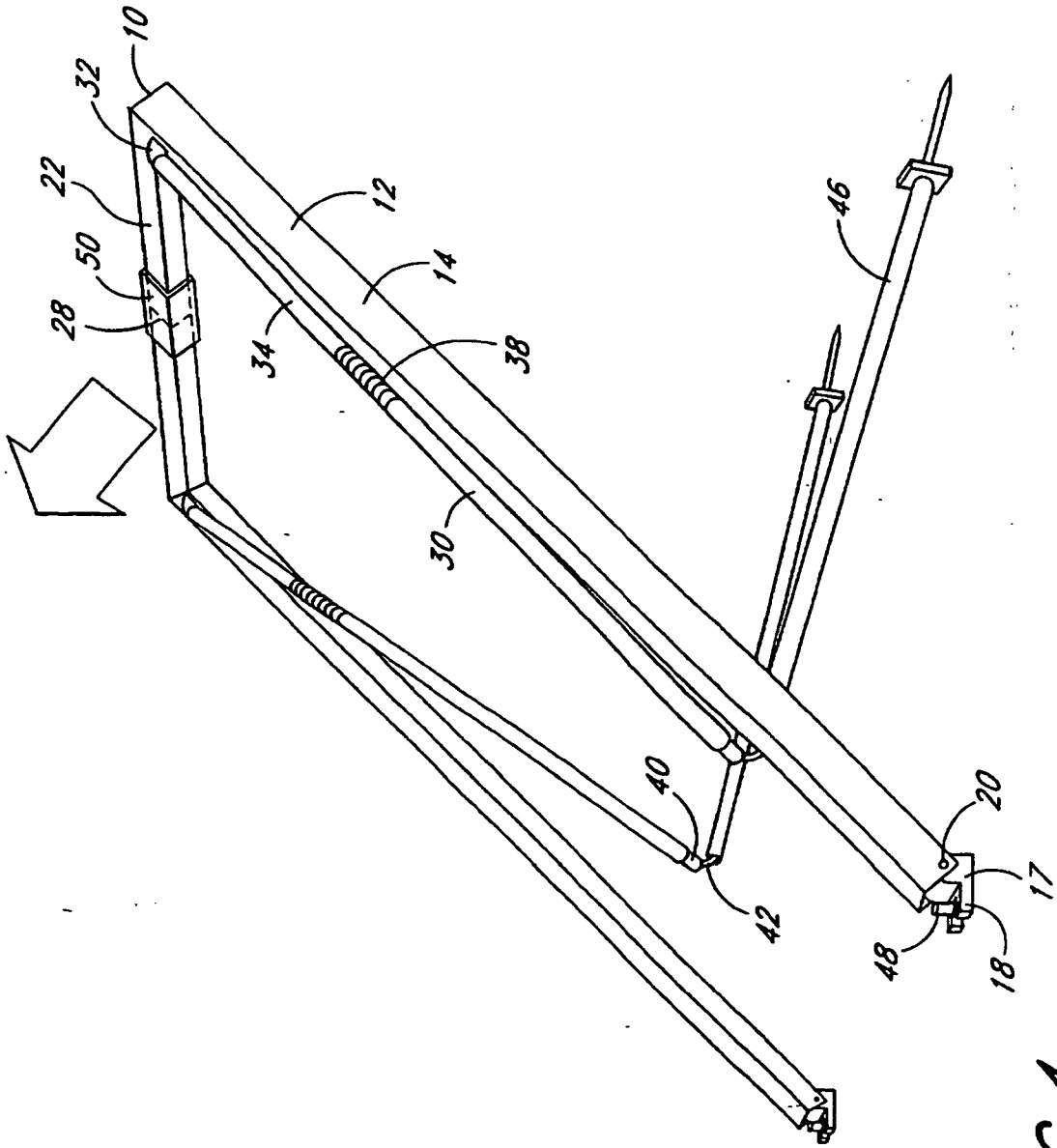


FIG. 4

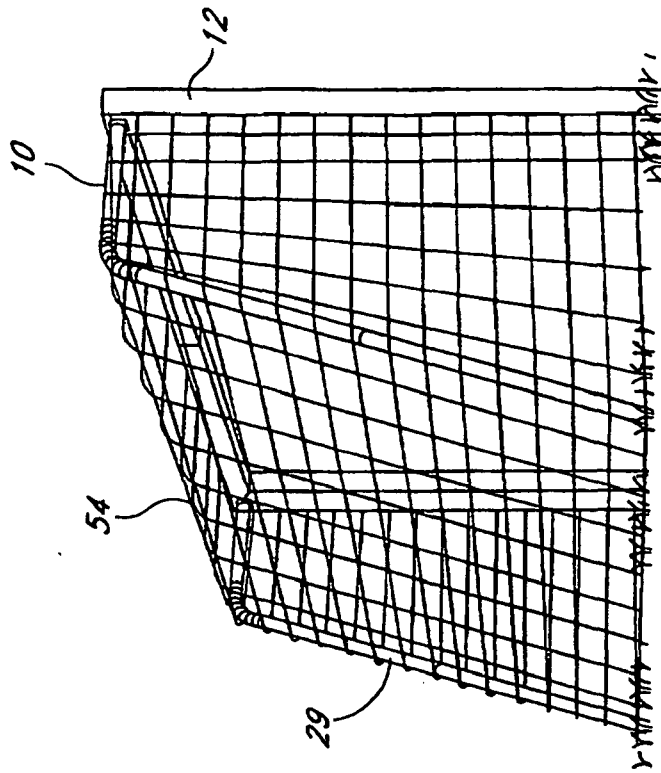


FIG. 5

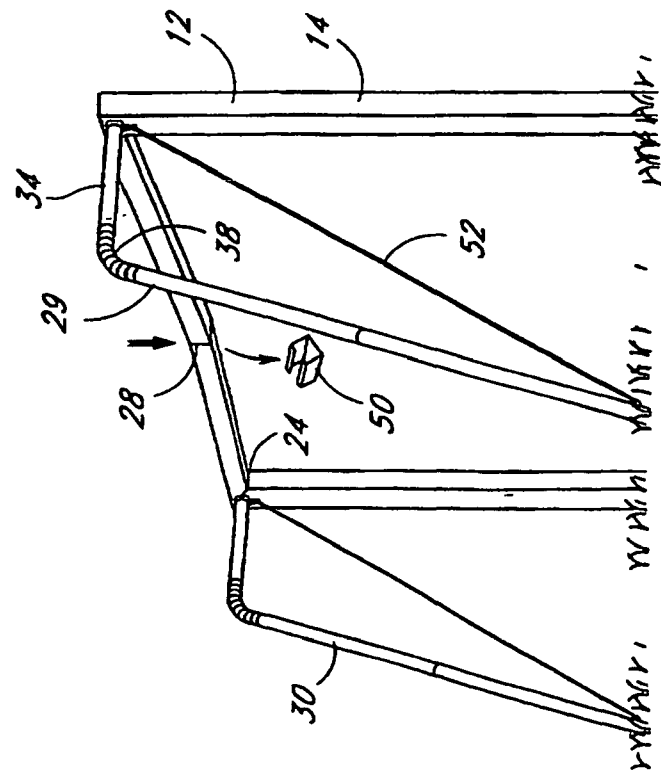
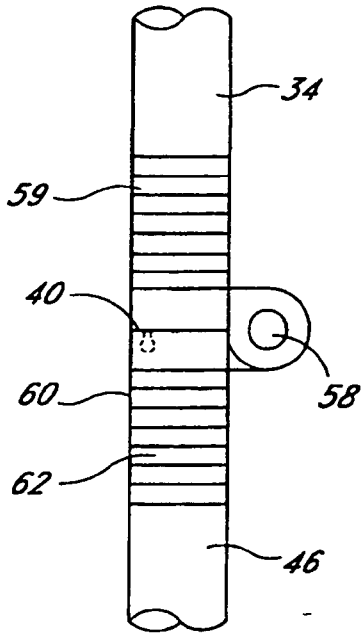
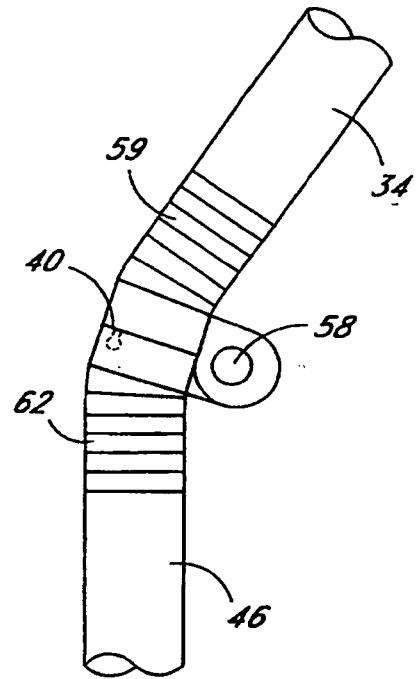


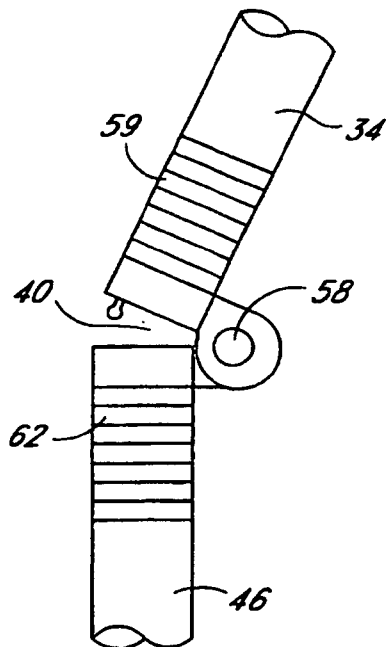
FIG. 6



**FIG. 7**

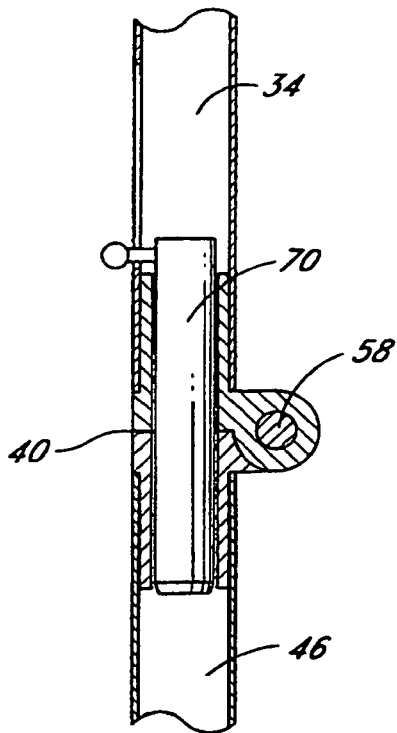


**FIG. 8**

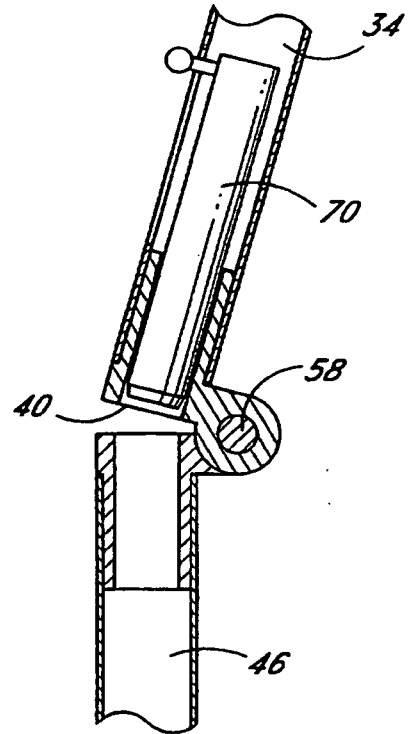


**FIG. 9**

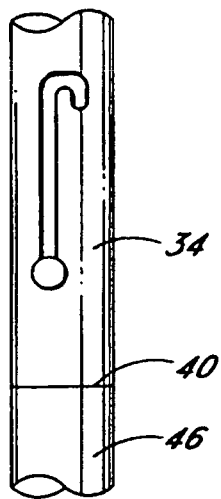




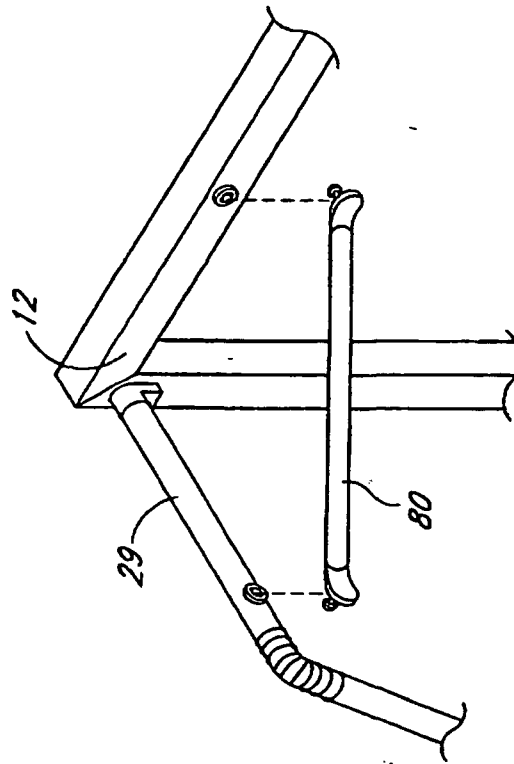
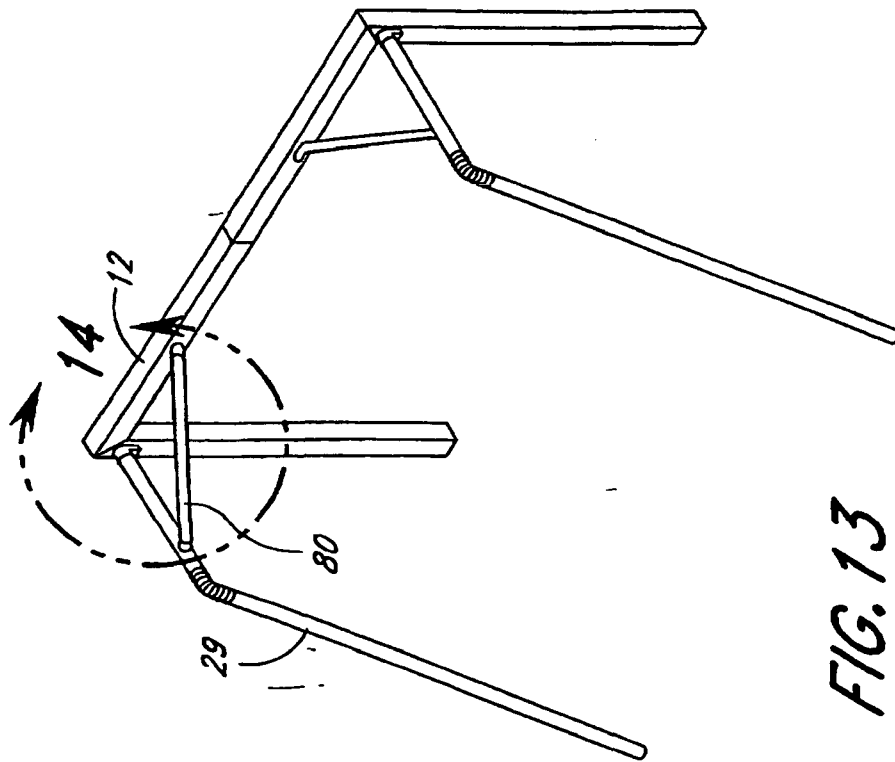
*FIG. 10*

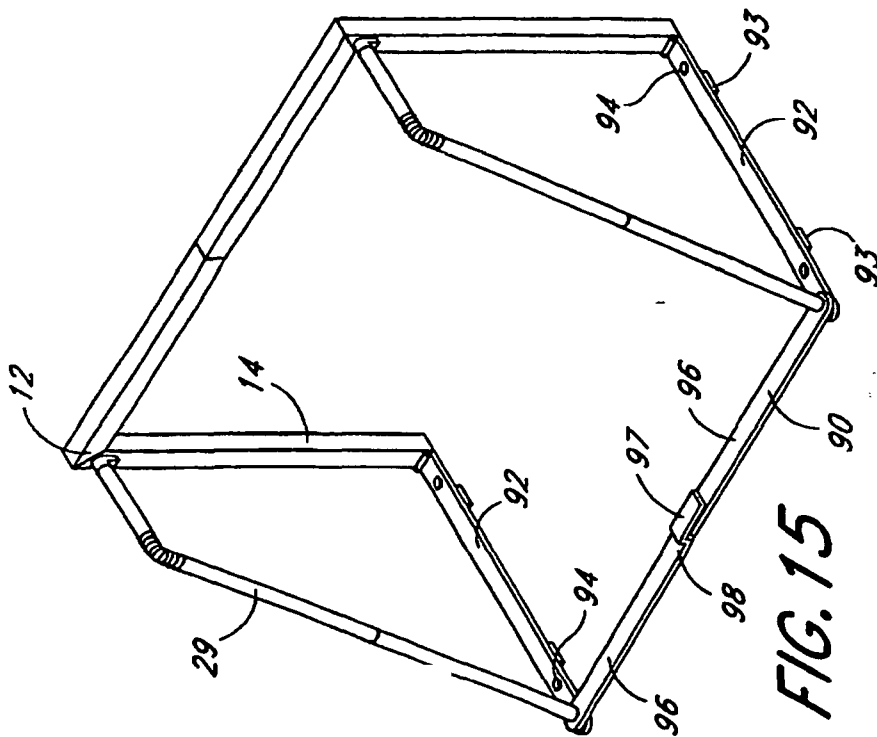


*FIG. 11*

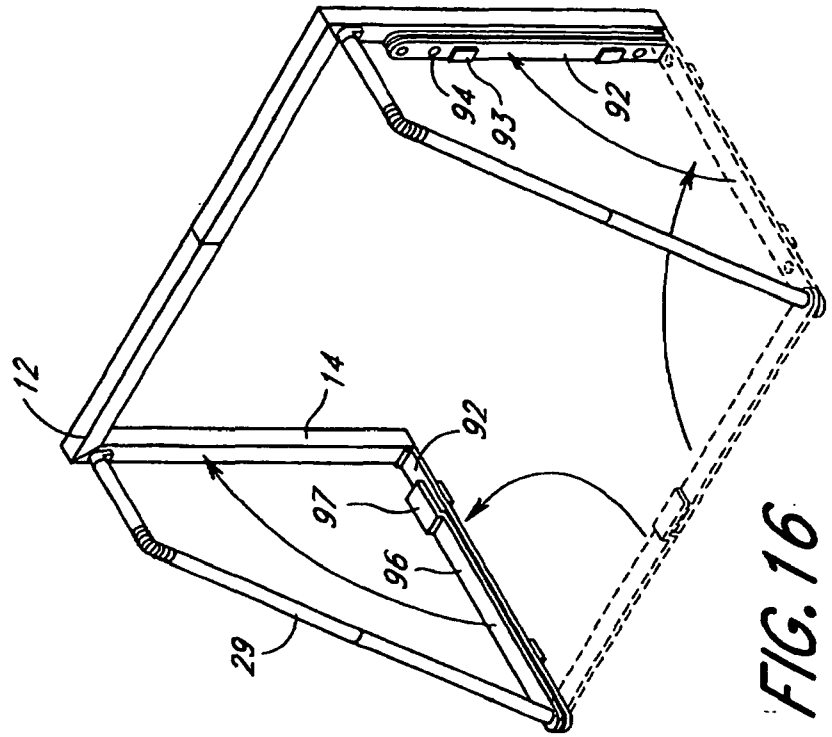


*FIG. 12*





**FIG. 15**



**FIG. 16**