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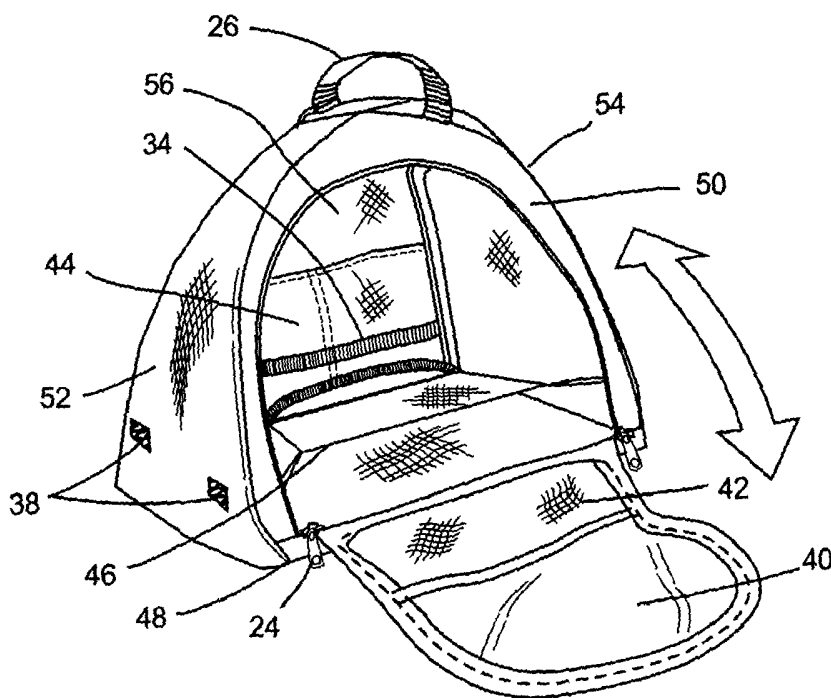
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(54) Title: POP-UP ELECTRONIC EQUIPMENT ENCLOSURE



(57) Abstract: A collapsible electronic equipment enclosure surrounds portable or tabletop electronic equipment, such as a laptop computer, with opaque protective sheeting (48, 52, 54, 50, 56) supported by flexible struts (20, 22). An opening (24) is provided that may include a transparent window (40) and provision for hand entry to permit use of the contained equipment while it is protected from environmental hazards. Provision is made for equipment display visibility in bright sunshine and lighting. Restricting visibility of the equipment display enhances privacy. The enclosure collapses to store in a narrow space, is lightweight, and can be used to transport the contained equipment either by a carry handle or as a backpack. The enclosure can be anchored to a tabletop for motion protection. It can also be locked

closed and the contained equipment fastened by a security cable and lock (28) to provide theft and tamper protection for the contained equipment and the enclosure when unattended.



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*For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*

## Patent Cooperation Treaty Application

## TECHNICAL FIELD

**[0001]** This invention relates to a collapsible, lightweight, portable electronic equipment enclosure or container, specifically to an enclosure for table-top or in-lap use capable of providing ease of access to the equipment, equipment protection, display visibility and privacy while the equipment is in use, security when the user is away from the equipment, and equipment portability and protection when transporting the equipment.

## BACKGROUND ART

**[0002]** Portable electronic equipment, especially the portable computer, is widely used in many environments in addition to the home or office. Using such equipment in public places indoors and outdoors and on transportation vehicles such as airplanes, trains, buses, vans, presents a number of issues. These issues involve convenience of equipment transport; privacy of the information displayed on the portable equipment; equipment security if left unattended; equipment protection from hazards such as direct sunlight, wind-blown debris, air-born dust, and moisture; and visibility of the equipment display in sunlight or in very brightly lit indoor areas. Using portable electronic equipment in industrial environments can also present equipment protection issues. In industrial environments portable electronic equipment may be used to supplement or back-up installed monitoring and test equipment, or for special calculations, measurements, or tests of equipment and process variables, or for control of process variables.

**[0003]** Currently available cases or covers for portable electronic equipment primarily provide protection during transport of the equipment and storage for accessories or office supplies. Once the equipment is in use the sensitive portions of the equipment are open to the environment and subject to dust, dirt, and moisture intrusion; observation by the casual passer-by; and poor visibility of the display in sunlight or brightly lit indoor areas. US Patent Number 6,149,001 (Akins) shows such a case. Attempts to address these issues have resulted in carrying cases that address only one or two of these issues. An example is US Patent Number 5,325,970 (Dillon) that addresses visibility of the display in bright light. Another example is US Patent Number 5,400,903 (Cooley), which primarily addresses equipment protection and privacy, although it additionally addresses the use of glare reducing coatings to assist in display visibility in sunlight, a less effective solution than simply providing shade for the display. These cases

have the undesirable property of requiring the user to carry the substantial additional weight of the case when transporting the equipment. These cases also present their own storage problem when it is desired to use the electronic equipment without the case, such as when the user is home or in the office. Since the case is rigid and of substantial size, it presents a storage problem, taking up valuable space. These cases also are limited to use with a laptop computer or similarly configured electronic equipment. They could not easily be used with other electronic equipment, such as portable industrial measurement and test equipment, or a portable television.

**[0004]** Collapsible hoods have been proposed to address the issues of visibility of the portable electronic equipment display in sunlight or brightly lit areas and privacy in public areas. US Patent Number 5,988,823 (Wong) describes such a hood. Such hoods do not provide total enclosure of the equipment and thus provide little equipment environmental hazard protection or security when the equipment is unattended.

**[0005]** Thus there is a need for a portable electronic equipment enclosure that can be carried in multiple ways making transport easier, is easily stored, yet provides privacy of the information on the equipment display, gives security to the equipment when unattended, protection to the equipment from environment hazards, provides clear visibility of the display even in bright sunlight, and is light in weight.

#### DISCLOSURE OF INVENTION

**[0006]** This invention is a collapsible lightweight electronic equipment enclosure for tabletop or in-lap use providing ease of equipment access, equipment protection, display visibility, and privacy while the equipment is in use, security, and portability and equipment protection when transporting the equipment. It has application both to consumers using portable computing and entertainment equipment and to industrial users of electronic testing and inspection equipment; particularly equipment that is portable computer based, or is of similar size and weight.

#### Objects and Advantages

**[0007]** Several objects and advantages of this invention are that it solves a multiplicity of problems with using electronic equipment in natural or harsh environments, or in a transportation vehicle.

**[0008]** Specifically, one object of the invention is to provide enhanced visibility of electronic equipment displays when used in locations that are in sunlight or have bright artificial light. A computer display can be difficult to see in a brightly lit environment as the bright light overwhelms the luminescence of the display. The pop-up equipment enclosure overcomes this problem by providing a dark, shaded location for the equipment where the luminescence of the

display may be viewed against the dark interior of the enclosure. In addition a rectangle of soft fabric, called a glare guard, suspended at an angle inside the unit blocks the light that can be reflected from the user's hands, arms, trunk, or shirt sleeves.

**[0009]** A second object of the invention is to protect electronic equipment from weather or hazards of a harsh environment. The pop-up equipment enclosure solves this problem by totally surrounding the equipment with sheeting. The sheeting is chosen with properties to prevent the anticipated environmental hazard from penetrating into the enclosure. The equipment is thus in a hazard-free environment.

**[00010]** A third object of the invention is to provide portability of the enclosure with the equipment inside. The pop-up equipment enclosure is lightweight due to its construction. This enhances portability. The enclosure further enhances portability by providing, as desired, a carry handle, straps to enable carrying as a backpack, and equipment support within the enclosure. The enclosure is designed to fit snugly around and transport an electronic device while in the collapsed position. However, the resilience of the bent struts maintains tension against the sheeting of the enclosure, give the enclosure structural stability. A portable electronic device may be transported inside the open-position enclosure while being carried by the handle, similar to carrying a birdcage.

**[00011]** A fourth object of the invention is to take minimal storage space when not in use. The pop-up equipment enclosure provides this by its ability to collapse almost flat. Storage of the collapsed enclosure takes minimal space. Straps with fasteners of velcro patches or mechanical fasteners secure the bottom of the unit in the folded position, and fasteners, such as velcro patches, secure the sides of the unit in the folded position, thus preventing the collapsed enclosure from opening when stored flat and empty, or when collapsed around an enclosed electronic device. The embodiment of the invention in which the struts are constructed of several strut segments that are joined by strut connectors may be very compactly stored. Placing the disassembled enclosure struts in the disassembled enclosure and rolling the sheeting around the struts to form a cylindrical shape allows the enclosure to be compactly stored or packaged for shipment.

**[00012]** A fifth object of the invention is to enhance security of the contained equipment. The pop-up equipment enclosure can have the ability to lock the opening(s) that are large enough to remove the equipment. The enclosure further has a cable entry to allow applying a security cable to the equipment. With a security cable maintaining the equipment at the desired location, and the enclosure openings locked, theft and tampering are both deterred.

**[00013]** A sixth object of the invention is to restrict access to the electronic equipment display by a casual observer. The pop-up equipment enclosure provides this by being constructed of opaque sheeting with a viewing window or opening that can be shielded by the user's body to preclude casual observers from observing the display. In addition, the glare guard inside the unit further restricts unwanted viewing by blocking the lower part of the equipment display from all but the user's eyes.

#### BRIEF DESCRIPTION OF DRAWINGS

**[00014]** A more complete understanding of the invention can be obtained by considering the detailed description of the invention in conjunction with the accompanying drawings, in which:

**[00015]** Figure 1 is a perspective view of the pop-up equipment enclosure with the opening closure in the open position, thus illustrating the internal arrangement of the enclosure in a preferred embodiment. This embodiment provides the ability to manipulate equipment such as a portable or laptop computer while maintaining environmental protection.

**[00016]** Figure 2 is a perspective view of a cutaway of the pop-up equipment enclosure in the open position illustrating the arrangement of the independent struts in relation to the flexible sheeting.

**[00017]** Figure 3 is a perspective view of a cutaway of the pop-up equipment enclosure in the collapsed position illustrating the arrangement of the independent struts in relation to the flexible sheeting. This collapsed position is used for storage, or for carrying as a briefcase, or for use as a backpack.

**[00018]** Figure 4 illustrates the front view of the pop-up equipment enclosure. This view illustrates the parts of the enclosure.

**[00019]** Figure 5 is a side view of the pop-up equipment enclosure showing the handle and an embodiment with straps for carrying the enclosure as a backpack.

**[00020]** Figure 6 is a back view of the pop-up equipment enclosure illustrating the parts of the enclosure.

**[00021]** Figure 7 is a top view of the pop-up equipment enclosure illustrating the parts of the enclosure.

**[00022]** Figure 8 is a perspective view of the pop-up equipment enclosure with the opening closure in the closed position.

**[00023]** Figure 9 is a perspective view illustrating the pop-up equipment enclosure in the collapsed position being used as a means of transporting the enclosure and contained equipment as a backpack.

**[00024]** Figure 10 is a perspective view illustrating the pop-up equipment enclosure being used to manipulate a laptop computer contained in the enclosure.

**[00025]** Figure 11 is a perspective view illustrating the pop-up equipment enclosure with the opening flap open and rolled up to provide a wrist rest for use of a laptop computer keyboard.

**[00026]** Figure 12 illustrates the construction and assembly of segmented struts in an embodiment of the pop-up equipment enclosure.

**[00027]** Figure 13 illustrates the use of segmented struts for the frame of a pop-up equipment enclosure.

#### Reference Numerals in Drawings

- 20. First strut
- 22. Second strut
- 24. Opening closure
- 26. Handle
- 28. Lock attachment points
- 29. Cable entry
- 30. Collapsed position retainer straps
- 31. Collapsed position retainer strap attachment points
- 32. Tabletop attachment point
- 33. Tabletop attachment ring
- 34. Equipment transport belt
- 36. Backpack strap attachments
- 38. Side collapsed position retainer
- 40. Transparent viewing window
- 42. Hand entry
- 44. Storage
- 46. Glare guard
- 48. Flexible sheeting bottom portion
- 50. Flexible sheeting front piece
- 52. Flexible sheeting left side piece
- 54. Flexible sheeting right side piece
- 56. Flexible sheeting back piece
- 60. Strut segment
- 62. Strut connector

## 64. Strut end coating or tip

## MODE(S) FOR CARRYING OUT THE INVENTION

## Preferred Embodiment

**[00028]** Figure 1 shows the preferred embodiment of the pop-up equipment enclosure. In the preferred embodiment, the enclosure is equipped to contain and operate a portable (laptop) computer. The sheeting shown is an opaque lightweight or waterproof fabric. Portions of the sheeting (example the back piece and front piece) may be multi-layered to contain protective padding between the layers. The sheeting is composed of a rectangular bottom portion (48), and an upper portion substantially in a conic section dome shape. The upper dome portion consists of two side pieces (52) (54), a front piece (50) and a back piece (56). Some pieces of the upper portion and the bottom portion sheeting may be cut from a single piece of sheeting as desired to reduce the number of joints. Sheeting portions and pieces are attached by sewing the joints. Alternately an adhesive joining method, or a combination of methods as will provide a flexible and durable joint may be used. The exterior color of the sheeting may be varied to suit the desires and needs of the user. Black is the preferred color of the interior to provide contrast with the equipment display.

**[00029]** A collapsible tension frame of two independent crossed struts (20) (22) supports the sheeting as shown in Figure 2. The tension struts are substantially straight, 3/16-inch fiberglass rods, but other materials, dimensions and cross-sections may be used to provide the desired tension on the sheeting. The strut length is sized to maintain the enclosure sheeting under a tension when the struts are bent into a conic arc and positioned within the sheeting. A conic arc is one that approximates a mathematical conic section, such as a hyperbola, a parabola or a circular section. Each strut is positioned to tension at opposing corners of the enclosure sheeting. The corners being formed by the joint of the rectangular bottom sheeting portion and the front, left side, back, and right side sheeting pieces. The sheeting portions are shaped so the corners of the enclosure follow the conic arc of the struts. The strut ends are coated to provide a soft resilient end or are equipped with separate tips with rounded ends so there are no sharp edges in contact with the sheeting. The position of the struts in the sheeting corners permits the enclosure to be easily collapsed front-to-back into the position shown in Figure 3. Exerting a force on the front of the enclosure to move the struts at both sides of the enclosure towards the back collapses the enclosure. In the collapsing process shown in Figure 3, the sheeting sides and bottom fold and the struts come close together, but are separated by the folded side sheeting.



**[00030]** Provision is made to retain the enclosure in the collapsed position for storage and when transporting the enclosure. Figure 5 shows the collapsed position retainers (38) on the side sheeting, which may be velcro patches, or other easily engaged fastening device. These retainers maintain the enclosure sides in the collapsed position when desired. Similarly collapsed position retainer straps (30) are attached at the rear of the enclosure bottom as shown on figures 4, 5, 6 and 9. These may have velcro patches or other easily engaged fastening device near the end of the straps. The fastening devices secure these straps to matching fastening devices on the lower front panel of the enclosure when the enclosure is in the collapsed position. Fastening these straps retains the enclosure bottom in the collapsed position, and also provides support for equipment carried in the collapsed enclosure.

**[00031]** Figure 1 shows an opening flap with an opening closure (24) in the open position in the front piece (50) of the sheeting. The opening allows entry for assembly of the struts and for equipment insertion or removal. This opening incorporates most of the area of the sheeting front piece as shown in Figure 1, and is sized to allow for installation of the struts (20) (22) and for equipment installation and removal. The opening closure (24) is a zipper or other sliding tab closure device. It is shown in the closed position on Figure 8.

**[00032]** Figure 1 also shows the sheeting back piece (56) with provision on the interior side for storage (44) of computer accessories, such as earphones or data storage disks. An equipment transport belt (34) is also provided to give means to secure the enclosed equipment to the sheeting back piece (56) when the enclosure is collapsed for transport as a backpack or briefcase. This belt is an elastic material that is stretched around the enclosed equipment to keep it against the sheeting back piece during transport.

**[00033]** The sheeting front piece (50) opening closure (24) is shown in Figure 8 with dual opening closure operating mechanisms to provide a means to apply a lock at these attachment points (28). This feature can also be provided with a single operating mechanism and a separate fixed ring for lock attachment in proximity to the closed position of the opening closure operating mechanism. A stiffening member may be used across the lower portion of the back piece to enhance the geometric stability of the enclosure.

**[00034]** A flexible transparent viewing window (40) is provided in the upper area of the opening flap as shown in Figures 1, 4, and 8. The combination of enclosing the equipment in opaque sheeting and providing a single transparent viewing window provides a benefit of enhancing privacy in the use of the enclosed equipment. Visibility of the equipment display is restricted to the user and persons directly behind the user.

[00035] Figures 8, 10, and 11 show a separate hand entry (42) opening is provided in the lower area of the opening flap for manipulation of the computer while observing the computer display and keyboard through the transparent window. The zipper or other sliding tab closure device on the hand entry also has dual operating mechanisms as shown on Figures 4 and 8 to provide lock attachment points (28). This feature can also be provided with a separate fixed ring for lock attachment in proximity to the closed position of the closure device operating mechanism.

[00036] The transparent viewing window (40) and the hand entry (42) together allow safely using the contained computer or other electronic device in rainy or other inclement weather, or harsh environments, such as at the beach, without any unwanted materials such as moisture, dust, or debris entering the enclosure.

[00037] A great majority of the time the enclosure will be utilized open fronted; that is with the opening closure open so the opening flap, including the viewing window and the hand entry, is unzipped so as to be completely open on both sides of the unit. The opening flap can then be rolled tightly away from the user and tucked snugly in front of the laptop computer or other contained device and used as a hand rest while manipulating the device keyboard. Figure 11 illustrates this use.

[00038] The glare guard (46) is shown on Figures 1, 2 and 3. This is a movable opaque rectangle of sheeting suspended at the front of the enclosure from the struts by hooks attached to loops of elastic so its position may be adjusted, and secured at the rear either by hooks on loops of elastic, similar to the front, or by an elastic strap which supports the glare guard at the hinge of a laptop computer which is in the enclosure. The glare guard precludes direct lighting on the hands, arms, or trunk from reflecting onto the display and thereby interfering with viewing the display. Such a reflection can occur when overhead light, such as sunlight, comes through the transparent viewing window, or the open front opening, and impinges on the hands and keyboard. The resulting reflection of light onto the screen can interfere with the user's view of the display. The glare guard shades the hands and keyboard and provides a light barrier precluding this interference with the user's view of the display.

[00039] The glare guard is adjusted by sliding the hooks on the elastic loops along the struts, thus moving its suspension points on the struts. The case of the enclosed computer is first opened to the operating position, which places the display at approximately a right angle with the keyboard. The edge of the glare guard away from the user is positioned so it is at the corner of the computer case formed between the computer display and keyboard. The edge of the glare guard towards the user is then adjusted at an angle so the guard is viewed at its thinnest point,

along its near edge. Figure 2 illustrates the adjustment of the glare guard. With the guard properly adjusted, the user may view the entire display above the glare guard and view the keyboard below the glare guard.

**[00040]** Figure 4 demonstrates carrying the pop-up equipment enclosure with the handle (26) used as one means of transporting the enclosure. The handle is attached to the upper portion of the enclosure at the joints between the sheeting side pieces (52) (54) and the front (50) and back (56) pieces as shown in figure 7. Figures 5, 6 and 7 show the backpack strap attachments (36) provided in the lower back joint of the enclosure and also provided in the upper back piece joints with the left and right side pieces. The straps are a second means of transporting the enclosure. The strap attachments shown are common metal hooks with a spring closure to prevent accidental disconnection from the metal rings. Common quick disconnect plastic clips or other attachment device may be used instead of the metal rings and hooks for the attachment points. Figure 9 demonstrates use of the left and right backpack straps in carrying the enclosure.

**[00041]** The cable entry (29) is shown on figure 6. This is a small opening in the sheeting back piece sized for the expected external cable connections which would pass through the opening. The opening may be covered by a flap as shown, or left open. The cable entry may be centrally located as shown in figure 6, located toward one side or the other, or there may be multiple cable entries. This opening may be used to pass a security cable through the connection on the enclosed equipment. The security cable could then be safeguarded with a lock so as to prevent unauthorized taking of the equipment. Placing locks on the lock attachment points (28) of the enclosure as shown in figure 4 also inhibits tampering. The cable entry also may pass data communication cables and/or external power cables to the enclosed equipment. An example of such a use may be to charge the battery on a laptop computer or to operate it on external power. Another use may be for data communications cables to pass between adjacent enclosures one of which houses signal processing equipment and the second of which houses a computer recording and displaying the data.

**[00042]** Figures 5 and 7 show the side collapsed position retainers (38) positioned on the sheeting left and right side pieces. These serve to retain the enclosure in the collapsed position when desired, such as when the enclosure is transported as a backpack. The retainers are fasteners (example velcro or plastic or metal snaps) attached to the sheeting side pieces near the front and back of the side piece. With the enclosure in the collapsed position these side collapsed position retainers maintain the sheeting side pieces folded in the collapsed position.

**[00043]** There are fasteners (example velcro) attached near the corners of the pop-top enclosure bottom sheeting (32) for use as tabletop attachment points, as shown in Figures 4, 5,

and 6. These attachment points can be aligned with an adhesive fastener (example velcro) applied to the tabletop at locations to mate with the enclosure attachment points. As an alternate anchoring method, the fasteners may be two metal or plastic rings (33) attached at the joint of the bottom sheeting and front sheeting piece. These front rings in conjunction with the existing backpack strap attachment rings on the lower back of the enclosure will enable a user to tie the unit down onto a work surface if the velcro fasteners are not workable. The enclosure and its contents are then protected against movement caused by wind, turbulence in an airplane, pitching in a boat, or seismic events.

#### Additional Embodiments

**[00044]** The pop-up equipment enclosure may be used to protect a variety of electronic equipment in a multitude of environments. Depending on the size of the equipment to be enclosed, an additional embodiment is to vary the dimensions of the enclosure to accommodate the desired equipment.

**[00045]** Depending on the environment to be encountered, the sheeting material may be varied in different embodiments. The sheeting material is selected with properties to provide a lightweight enclosure, the desired environmental protection, and the desired color.

**[00046]** The enclosure may also be used for electronic equipment that performs a monitoring function, thus requiring only periodic manipulation that can be accomplished by opening the front panel. This embodiment of the enclosure would not require a hand entry. The elimination of the hand entry also makes the use of the glare guard unnecessary, further reducing the cost to manufacture.

**[00047]** Another embodiment would be to eliminate not only the hand entry and glare guard but also the transparent viewing window. This would require opening the sheeting front piece opening flap to observe the status of the equipment, and to manipulate the equipment. This embodiment would be less expensive to manufacture. This embodiment still allows the front panel access flap to be rolled into the interior of the enclosure and used as a wrist rest when manipulating the equipment.

**[00048]** The need for security, privacy, or complete environmental protection may not be an issue for some users and another even less expensive embodiment would be to eliminate the opening closure on the front of the unit and simply have an unclosed opening.

**[00049]** Removable backpack straps may not be desirable for some users, and an enclosure that had straps permanently joined at the enclosure joint is another embodiment.

**[00050]** Alternately, backpack straps may not be desirable for other users and an enclosure that did not accommodate use of the straps is another embodiment.

**[00051]** The use of the tabletop attachment points may not be needed for some users of the enclosure and this feature could be eliminated as another embodiment. The use of the side collapsed position retainers is sufficient to retain the enclosure in the collapsed position for storage.

**[00052]** The struts may not be constructed of a continuous piece of fiberglass, but instead constructed of several strut segments that are joined by strut connectors to form a single complete strut as illustrated in figures 12 and 13. In this embodiment the strut segments and disassembled enclosure may be compactly stored or packaged in an cylindrical shape for shipment or transport by placing the disassembled strut segments and connectors in the enclosure sheeting and rolling the sheeting around the segments and connectors to form a cylindrical shape. The rolled enclosure cylinder may be stored in a separate cylindrical or rectangular container, or maintained in the cylindrical configuration by a strap, elastic, or a tie. Assembly is by inserting one end of the strut segment (60) into the opening in the strut connector (62), as shown in figure 12, then inserting an end of a second strut segment in the other end of the strut connector. The other end of the second strut connector is then inserted into the opening in the second strut connector and this continues until the strut segments are joined to form a complete strut of the desired length as illustrated in figure 13. The completed strut ends are coated or equipped with a tip (64) as illustrated in figure 13.

**[00053]** The struts may be externally attached to the sheeting in another embodiment. In this embodiment the sheeting outside surface has attachment loops spaced periodically along the enclosure corners from the bottom to the top. The struts then provide tension on the sheeting through the attachment loops. The attachment loops may be separate pieces attached to the corners, or may be holes in the sheeting that are arranged along the corner to permit threading the strut into and out of the sheeting at periodic intervals. The external struts may be continuous, or segmented. The enclosure with the external frame collapses similar to the internal frame, and similarly will pop-up to the un-collapsed configuration.

#### Operation

**[00054]** An operation of the pop-up equipment enclosure that is not previously described is the assembly and disassembly of the enclosure. The enclosure may be packaged disassembled to reduce shipping and packaging costs. Assembly requires laying the sheeting out flat and unzipping the sheeting front piece opening flap. The first strut is then bent into an arc and one

end is positioned against the bottom of the enclosure in a back corner. The apex of the strut is then pressed to the top of the enclosure and the second end then positioned in the opposing front corner as shown in Figure 2. The second strut is then similarly positioned in the remaining corners as shown in Figure 2. If segmented struts are used, the strut segments must first be joined to form the two complete struts before assembly in the enclosure. Attachment of the backpack straps (if provided and detachable) to their attachment points is the only other assembly required. If external struts are used the struts are inserted into the attachment loops rather than the inside of the enclosure. Disassembly is the reverse of assembly.

## Claims

I claim:

1. A collapsible equipment enclosure comprising:
  - a. a tension frame comprising an independent flexible first strut with a first end and a second end and an independent flexible second strut with a first end and a second end, said first strut resiliently bent into a conic shape arc and said second strut resiliently bent into a conic shape arc and said first strut and said second strut positioned to cross each other at the apex of their respective arcs with the ends of the struts positioned in the down direction;
  - b. a flexible sheeting bottom portion configured to substantially form a rectangular periphery with four corners, an inside surface, and an outside surface;
  - c. a flexible, substantially opaque, sheeting upper portion with an inside surface and an outside surface, including at least one opening, said sheeting upper portion joined to and contiguous to the bottom portion at the bottom periphery such that said sheeting bottom portion inside surface and said sheeting upper portion inside surface completely surround the enclosure interior with the sheeting upper portion configured to substantially form a conic shape with a substantially rectangular shape forming a front, back, left, and right sides at the attachment to the bottom;
  - d. said tension frame arranged within the sheeting upper portion with the ends positioned on the inside surface of the sheeting bottom portion at said four corners, the resilience of said first and second struts providing a tension force against the sheeting inner surface which maintains the sheeting substantially in a conic dome shape with four corners so that the frame struts may be moved relative to each other to permit folding the sheeting upper portion sides and bottom portion to a substantially flat position while the frame struts maintain tension on the sheeting to permit unfolding the enclosure substantially to the original shape; and
  - e. an opening in said sheeting upper portion front side arranged to allow entry and positioning of said tension frame and said equipment.
2. The collapsible equipment enclosure of claim 1 wherein the first strut and second strut are comprised of a multitude of strut segments and a multitude of strut connectors, the strut segments having a first end and a second end and the strut connectors having a cylindrical body with a first opening and a second opening arranged opposite the first opening, the strut segment first end arranged to allow joining to a first strut connector by insertion in a strut connector first opening, and a second strut segment first end arranged to allow joining to the

first strut connector by insertion in the strut connector second opening, the joining of strut segments and strut connectors being repeating until the complete strut is of the desired length.

3. The collapsible equipment enclosure of claim 1 wherein said tension frame is arranged external to the sheeting and attached to attachment loops spaced periodically on the sheeting corners so as to provide tension to the sheeting through the attachment loops.
4. The collapsible equipment enclosure of claim 1 further comprising:
  - a. a handle attached to said sheeting upper portion arranged to permit carrying the enclosure;
  - b. a flexible sheeting flap removably covering said sheeting upper portion front opening, said flexible sheeting flap positioned by an opening closure device arranged to permit applying a lock to secure the flap in the closed position; and
  - c. a cable entry opening on said sheeting upper portion arranged opposed to said sheeting upper portion front opening so that a cable may enter the enclosure through the sheeting back piece.
5. The collapsible equipment enclosure of claim 4 further comprising a plurality of fasteners attached to the outside of said sheeting bottom portion and arranged to allow securing the enclosure to a horizontal surface.
6. The collapsible equipment enclosure of claim 5 wherein said sheeting upper portion opening includes a transparent viewing window for viewing the enclosure interior.
7. The collapsible equipment enclosure of claim 6 further comprising:
  - a. an elastic equipment transport belt attached to said sheeting upper portion inside surface configured opposite said sheeting upper portion opening and arranged to retain said equipment against the sheeting inside surface when transporting the enclosure;
  - b. a plurality of attachment devices arranged to detachably install backpack straps to the enclosure;
  - c. a plurality of collapsed position retainer straps attached to said sheeting bottom portion rear outside surface each arranged with attachment devices wherein the retainer straps engage attachment devices on said sheeting upper portion front;
  - d. a side collapsed position retainer comprising a plurality of attachment devices arranged to maintain said sheeting left and right sides in a folded position.
8. The collapsible equipment enclosure of claim 7 further including:



- a. a hand entry comprising a flexible flap arranged with a straight upper edge attached to the lower portion of said flexible sheeting flap covering having a substantially curved lower and left and right side edges forming an inverted U shape which is removably attached to said flexible sheeting flap covering allowing entry of the hands into the enclosure, and
  - b. a glare guard comprising a flexible sheeting piece configured to form a rectangular periphery with four corners, an inside surface, and an outside surface flexibly and adjustably mounted at the four corners to said tension frame struts wherein said glare guard is adjustably mounted to allow viewing of the equipment in the enclosure while shielding the portion of the equipment above said glare guard from light reflected from the portion of the equipment or said hands or other body part positioned below said glare guard.
9. The collapsible equipment enclosure of claim 8 further comprising:
- a. a handle attached to said sheeting upper portion arranged to permit carrying the enclosure;
  - b. a flexible sheeting flap removably covering said sheeting upper portion front opening, said flexible sheeting flap positioned by an opening closure device arranged to permit applying a lock to secure the flap in the closed position; and
  - c. a cable entry opening on said sheeting upper portion arranged opposed to said sheeting upper portion front opening so that a cable may enter the enclosure through the sheeting back piece.
10. The collapsible equipment enclosure of claim 9 further comprising a plurality of fasteners attached to the outside of said sheeting bottom portion and arranged to allow securing the enclosure to a horizontal surface.
11. The collapsible equipment enclosure of claim 10 wherein said sheeting upper portion opening includes a transparent viewing window for viewing the enclosure interior.
12. The collapsible equipment enclosure of claim 11 further comprising:
- a. an elastic equipment transport belt attached to said sheeting upper portion inside surface configured opposite said sheeting upper portion opening and arranged to retain said equipment against the sheeting inside surface when transporting the enclosure;
  - b. a plurality of attachment devices arranged to detachably install backpack straps to the enclosure;

- c. a plurality of collapsed position retainer straps attached to said sheeting bottom portion rear outside surface each arranged with attachment devices wherein the retainer straps engage attachment devices on said sheeting upper portion front;
  - d. a side collapsed position retainer comprising a plurality of attachment devices arranged to maintain said sheeting left and right sides in a folded position.
13. The collapsible equipment enclosure of claim 12 further including:
- a. a hand entry comprising a flexible flap arranged with a straight upper edge attached to the lower portion of said flexible sheeting flap covering having a substantially curved lower and left and right side edges forming an inverted U shape which is removably attached to said flexible sheeting flap covering allowing entry of the hands into the enclosure, and
  - b. a glare guard comprising a flexible sheeting piece configured to form a rectangular periphery with four corners, an inside surface, and an outside surface flexibly and adjustably mounted at the four corners to said tension frame struts wherein said glare guard is adjustably mounted to allow viewing of the equipment in the enclosure while shielding the portion of the equipment above said glare guard from light reflected from the portion of the equipment or said hands or other body part positioned below said glare guard.
14. A pop-up backpack configured to operatively contain a portable electronic device and protect said device from environmental hazards comprising:
- a. flexible sheeting arranged as a conic section dome portion with an exterior side and an interior side and a rectangular bottom portion arranged to provide a front, rear, left side, and right side;
  - b. a plurality of independent tension struts to support said flexible sheeting arranged to permit collapsing the enclosure to a flattened position; and
  - c. said sheeting conic section dome portion contains an opening arranged to permit assembly of the struts.
15. The pop-up backpack of claim 14 further comprising said sheeting conic section dome portion contains a multitude of attachment loops on the exterior side arranged such that the tension struts are attached to and tension the flexible sheeting through the external attachment loops
16. The pop-up backpack of claim 14 further comprising:
- a. a flexible sheeting closure flap arranged to securely cover said conic section dome sheeting portion opening;

- b. a cable entry opening arranged opposing said conic section dome sheeting portion opening on the rear, wherein cables enter the enclosure for attachment to said device;
  - c. a flexible sheeting closure flap arranged to cover said cable entry opening;
  - d. a handle arranged on the exterior upper portion of said conic section dome sheeting portion whereby said enclosure and backpack may be carried by hand;
  - e. an elastic equipment transport belt arranged in the interior of said flexible sheeting conic section dome portion whereby said device may be retained against the flexible sheeting by the belt;
  - f. a plurality of fasteners attached to the exterior of said sheeting and arranged to permit attachment of at least two straps configured to allow a person to comfortably wear the backpack;
  - g. a plurality of collapsed position retainer straps attached at the exterior of said sheeting bottom rear side and arranged so that the straps may be removably attached to a plurality of collapsed position retainer strap attachment points on said dome section adjacent to the sheeting bottom front side to maintain the backpack in the collapsed position; and
  - h. a plurality of side collapsed position retainers arranged on said sheeting conic section dome portion adjacent to the bottom portion sides wherein said retainers are used for maintaining the backpack in a collapsed position.
17. The pop-up backpack of claim 16 further comprising a plurality of fasteners attached to said sheeting bottom portion exterior and arranged to allow securing the enclosure and backpack to a horizontal surface.
18. The pop-up backpack of claim 17 further comprising a transparent viewing window arranged in the upper portion of said sheeting conic section dome opening.
19. The pop-up backpack of claim 18 further comprising:
- a. a hand opening arranged below said transparent viewing window wherein said device may be manipulated while observing said device in the transparent viewing window; and
  - b. a glare guard adjustably mounted to the struts and arranged wherein it shades the display from light reflected from the hands, arms and trunk of the user manipulating said device through said hand opening.
20. The pop-up backpack of claim 19 further comprising:

- a. a flexible sheeting closure flap arranged to securely cover said conic section dome sheeting portion opening;
  - b. a cable entry opening arranged opposing said conic section dome sheeting portion opening on the rear, wherein cables enter the enclosure for attachment to said device;
  - c. a flexible sheeting closure flap arranged to cover said cable entry opening;
  - d. a handle arranged on the exterior upper portion of said conic section dome sheeting portion whereby said enclosure and backpack may be carried by hand;
  - e. an elastic equipment transport belt arranged in the interior of said flexible sheeting conic section dome portion whereby said device may be retained against the flexible sheeting by the belt;
  - f. a plurality of fasteners attached to the exterior of said sheeting and arranged to permit attachment of at least two straps configured to allow a person to comfortably wear the backpack;
  - g. a plurality of collapsed position retainer straps attached at the exterior of said sheeting bottom rear side and arranged so that the straps may be removably attached to a plurality of collapsed position retainer strap attachment points on said dome section adjacent to the sheeting bottom front side to maintain the backpack in the collapsed position; and
  - h. a plurality of side collapsed position retainers arranged on said sheeting conic section dome portion adjacent to the bottom portion sides wherein said retainers are used for maintaining the backpack in a collapsed position.
21. The pop-up backpack of claim 20 further comprising a plurality of fasteners attached to said sheeting bottom portion exterior and arranged to allow securing the enclosure and backpack to a horizontal surface.
22. The pop-up backpack of claim 21 further comprising a transparent viewing window arranged in the upper portion of said sheeting conic section dome opening.
23. The pop-up backpack of claim 22 further comprising:
- a. a hand opening arranged below said transparent viewing window wherein said device may be manipulated while observing said device in the transparent viewing window; and
  - b. a glare guard adjustably mounted to the struts and arranged wherein it shades the display from light reflected from the hands, arms and trunk of the user manipulating said device through said hand opening.

24. The pop-up backpack of claim 14 wherein the independent tension struts comprise a multitude of strut segments and strut connectors joined to form a complete strut.
25. The pop-up backpack of claim 24 further comprising:
- a. a flexible sheeting closure flap arranged to securely cover said conic section dome sheeting portion opening;
  - b. a cable entry opening arranged opposing said conic section dome sheeting portion opening on the rear, wherein cables enter the enclosure for attachment to said device;
  - c. a flexible sheeting closure flap arranged to cover said cable entry opening;
  - d. a handle arranged on the exterior upper portion of said conic section dome sheeting portion whereby said enclosure and backpack may be carried by hand;
  - e. an elastic equipment transport belt arranged in the interior of said flexible sheeting conic section dome portion whereby said device may be retained against the flexible sheeting by the belt;
  - f. a plurality of fasteners attached to the exterior of said sheeting and arranged to permit attachment of at least two straps configured to allow a person to comfortably wear the backpack;
  - g. a plurality of collapsed position retainer straps attached at the exterior of said sheeting bottom rear side and arranged so that the straps may be removably attached to a plurality of collapsed position retainer strap attachment points on said dome section adjacent to the sheeting bottom front side to maintain the backpack in the collapsed position; and
  - h. a plurality of side collapsed position retainers arranged on said sheeting conic section dome portion adjacent to the bottom portion sides wherein said retainers are used for maintaining the backpack in a collapsed position.
26. The pop-up backpack of claim 25 further comprising a plurality of fasteners attached to said sheeting bottom portion exterior and arranged to allow securing the enclosure and backpack to a horizontal surface.
27. The pop-up backpack of claim 26 further comprising a transparent viewing window arranged in the upper portion of said sheeting conic section dome opening.
28. The pop-up backpack of claim 27 further comprising:
- a. a hand opening arranged below said transparent viewing window wherein said device may be manipulated while observing said device in the transparent viewing window; and

- b. a glare guard adjustably mounted to the struts and arranged wherein it shades the display from light reflected from the hands, arms and trunk of the user manipulating said device through said hand opening.

29. The pop-up backpack of claim 28 further comprising:

- a. a flexible sheeting closure flap arranged to securely cover said conic section dome sheeting portion opening;
- b. a cable entry opening arranged opposing said conic section dome sheeting portion opening on the rear, wherein cables enter the enclosure for attachment to said device;
- c. a flexible sheeting closure flap arranged to cover said cable entry opening;
- d. a handle arranged on the exterior upper portion of said conic section dome sheeting portion whereby said enclosure and backpack may be carried by hand;
- e. an elastic equipment transport belt arranged in the interior of said flexible sheeting conic section dome portion whereby said device may be retained against the flexible sheeting by the belt;
- f. a plurality of fasteners attached to the exterior of said sheeting and arranged to permit attachment of at least two straps configured to allow a person to comfortably wear the backpack;
- g. a plurality of collapsed position retainer straps attached at the exterior of said sheeting bottom rear side and arranged so that the straps may be removably attached to a plurality of collapsed position retainer strap attachment points on said dome section adjacent to the sheeting bottom front side to maintain the backpack in the collapsed position; and
- h. a plurality of side collapsed position retainers arranged on said sheeting conic section dome portion adjacent to the bottom portion sides wherein said retainers are used for maintaining the backpack in a collapsed position.

30. The pop-up backpack of claim 29 further comprising a plurality of fasteners attached to said sheeting bottom portion exterior and arranged to allow securing the enclosure and backpack to a horizontal surface.

31. The pop-up backpack of claim 30 further comprising a transparent viewing window arranged in the upper portion of said sheeting conic section dome opening.

32. The pop-up backpack of claim 31 further comprising:

- a. a hand opening arranged below said transparent viewing window wherein said device may be manipulated while observing said device in the transparent viewing window; and
  - b. a glare guard adjustably mounted to the struts and arranged wherein it shades the display from light reflected from the hands, arms and trunk of the user manipulating said device through said hand opening.
33. An equipment enclosure comprising:
- a. means for enclosing the equipment in sheeting,
  - b. means for collapsibly supporting the sheeting, and
  - c. means for entering support means and equipment in the enclosure.
34. The equipment enclosure of claim 33 further comprising means for retaining the enclosure in the collapsed position.
35. The equipment enclosure of claim 34 further comprising means for transporting the enclosure.
36. The equipment enclosure of claim 35 further comprising means for supporting the contained equipment.
37. The equipment enclosure of claim 36 further comprising means for storing equipment accessories.
38. The equipment enclosure of claim 37 further comprising means for viewing the contained equipment.
39. The equipment enclosure of claim 38 further comprising means for manipulating the contained equipment.
40. The equipment enclosure of claim 39 further comprising means for reducing glare on the contained equipment display.
41. The equipment enclosure of claim 40 further comprising means for attaching the enclosure to a surface.

## AMENDED CLAIMS

Claims 1–9, 11–32 replaced by amended claims 1–3, 6–10, 12 and 13;  
claim 10 is canceled; claims 33–41 unchanged but renumbered as claims  
14–22; new claims 4, 5, 11 and 23–26 added.

I claim:

1. A collapsible equipment enclosure comprising:
  - a. a tension frame comprising an independent flexible first strut with a first end and a second end and an independent flexible second strut with a first end and a second end, said first strut resiliently bent into a conic shape arc and said second strut resiliently bent into a conic shape arc and said first strut and said second strut positioned to cross each other at the apex of their respective arcs with the ends of the struts positioned in the down direction;
  - b. a flexible sheeting bottom portion configured to substantially form a rectangular periphery with four corners, an inside surface, and an outside surface;
  - c. a flexible, substantially opaque, sheeting upper portion with an inside surface and an outside surface, including at least one opening, said sheeting upper portion joined to and contiguous to the bottom portion at the bottom periphery such that said sheeting bottom portion inside surface and said sheeting upper portion inside surface completely surround the enclosure interior with the sheeting upper portion configured to substantially form a conic shape with a substantially rectangular shape forming a front, back, left, and right sides at the attachment to the bottom;
  - d. said tension frame arranged within the sheeting upper portion with the ends positioned on the inside surface of the sheeting bottom portion at said four corners, the resilience of said first and second struts providing a tension force against the sheeting inner surface which maintains the sheeting substantially in a conic dome shape with four corners so that the frame struts may be moved relative to each other with external force to permit folding the sheeting upper portion sides and bottom portion to a substantially flat position while the frame struts maintain tension on the sheeting to permit the enclosure to unfold substantially to the original shape; and
  - e. an opening in said sheeting upper portion front side arranged to allow entry and positioning of said tension frame and said equipment.
2. The collapsible equipment enclosure of claim 1 further comprising:



- a. the tension frame is arranged external to the sheeting and attached to attachment loops spaced periodically on the sheeting corners so as to provide tension to the sheeting through the attachment loops;
  - b. a handle, attached to said sheeting upper portion, arranged to permit carrying the enclosure;
  - c. a flexible sheeting flap removably covering said sheeting upper portion front opening, said flexible sheeting flap positioned by an opening closure device arranged to permit applying a lock to secure the flap in the closed position; and
  - d. a cable entry opening on said sheeting upper portion and arranged opposed to said sheeting upper portion front opening so that a cable may enter the enclosure through the sheeting back piece;
  - e. the sheeting upper portion opening includes a transparent viewing window for viewing the enclosure interior;
  - f. an equipment transport belt attached to said sheeting upper portion inside surface configured opposite said sheeting upper portion opening and arranged to retain said equipment against the sheeting inside surface when transporting the enclosure;
  - g. a plurality of attachment devices arranged to detachably install backpack straps to the enclosure;
  - h. a plurality of collapsed position retainer straps attached to said sheeting bottom portion rear outside surface each arranged with attachment devices wherein the retainer straps engage attachment devices on said sheeting upper portion front; and
  - i. a side collapsed position retainer comprising a plurality of attachment devices arranged to maintain said sheeting left and right sides in a folded position.
3. The collapsible equipment enclosure of claim 1 further comprising:
- a. the first strut and second strut are comprised of a multitude of strut segments and a multitude of strut connectors, the strut segments having a first end and a second end and the strut connectors having a cylindrical body with a first opening and a second opening arranged opposite the first opening, the strut segment first end arranged to allow joining to a first strut connector by insertion in a strut connector first opening, and a second strut segment first end arranged to allow joining to the first strut

- connector by insertion in the strut connector second opening, the joining of strut segments and strut connectors being repeated until the complete strut is of the desired length;
- b. a handle attached to said sheeting upper portion arranged to permit carrying the enclosure;
  - c. a flexible sheeting flap removably covering said sheeting upper portion front opening, said flexible sheeting flap positioned by an opening closure device arranged to permit applying a lock to secure the flap in the closed position;
  - d. a cable entry opening on said sheeting upper portion and arranged opposed to said sheeting upper portion front opening so that a cable may enter the enclosure through the sheeting back piece;
  - e. the sheeting upper portion opening includes a transparent viewing window for viewing the enclosure interior;
  - f. an equipment transport belt attached to said sheeting upper portion inside surface configured opposite said sheeting upper portion opening and arranged to retain said equipment against the sheeting inside surface when transporting the enclosure;
  - g. a plurality of attachment devices arranged to detachably install backpack straps to the enclosure;
  - h. a plurality of collapsed position retainer straps attached to said sheeting bottom portion rear outside surface each arranged with attachment devices wherein the retainer straps engage attachment devices on said sheeting upper portion front; and
  - i. a side collapsed position retainer comprising a plurality of attachment devices arranged to maintain said sheeting left and right sides in a folded position.
4. The collapsible equipment enclosure of claim 1 further comprising the sheeting bottom portion rectangular periphery with four corners is so dimensioned so as to allow a laptop computer to rest on the bottom portion inside surface, and the sheeting upper portion conic dome is so dimensioned above the sheeting bottom so as to allow a laptop computer display to be opened to the operative position, and the upper portion opening is so dimensioned so as to allow a laptop computer to be inserted in the enclosure.
5. The collapsible equipment enclosure of claim 4 further comprising:

- a. a handle attached to said sheeting upper portion arranged to permit carrying the enclosure;
  - b. a flexible sheeting flap removably covering said sheeting upper portion front opening, said flexible sheeting flap positioned by an opening closure device arranged to permit applying a lock to secure the flap in the closed position; and
  - c. a cable entry opening on said sheeting upper portion arranged opposed to said sheeting upper portion front opening so that a cable may enter the enclosure through the sheeting back piece;
  - d. an equipment transport belt attached to said sheeting upper portion inside surface configured opposite said sheeting upper portion opening and arranged to retain said equipment against the sheeting inside surface when transporting the enclosure;
  - e. a plurality of attachment devices arranged to detachably install backpack straps to the enclosure;
  - f. a plurality of collapsed position retainer straps attached to said sheeting bottom portion rear outside surface each arranged with attachment devices wherein the retainer straps engage attachment devices on said sheeting upper portion front;
  - g. a side collapsed position retainer comprising a plurality of attachment devices arranged to maintain said sheeting left and right sides in a folded position.
6. The collapsible equipment enclosure of claims 2, 3 or 5 further comprising:
- a. a transparent viewing window comprising a transparent portion of said flexible sheeting flap;
  - b. a hand entry comprising a flexible flap arranged with a straight upper edge attached to the lower portion of said flexible sheeting flap covering having a substantially curved lower and left and right side edges forming an inverted U shape which is removably attached to said flexible sheeting flap covering allowing entry of the hands into the enclosure; and
  - c. a glare guard comprising a flexible sheeting piece configured to form a rectangular periphery with four corners, an inside surface, and an outside surface flexibly and adjustably mounted at the four corners to said tension frame struts wherein said glare guard is adjustably mounted to allow viewing of the equipment in the enclosure

while shielding the portion of the equipment above said glare guard from light reflected from the portion of the equipment or said hands or other body part positioned below said glare guard.

7. A pop-up backpack configured to operatively contain a portable electronic device and protect said device from environmental hazards comprising:
  - a. flexible sheeting arranged as a conic section dome portion with an exterior side and an interior side and a rectangular bottom portion arranged to provide a front, rear, left side, and right side;
  - b. a plurality of independent tension struts to support said flexible sheeting arranged to permit collapsing the enclosure to a flattened position by external force; and
  - c. said sheeting conic section dome portion contains an opening arranged to permit assembly of the struts.
8. The pop-up backpack of claim 7 further comprising:
  - a. a flexible sheeting closure flap arranged to securely cover said conic section dome sheeting portion opening;
  - b. a cable entry opening arranged opposing said conic section dome sheeting portion opening on the rear, wherein cables enter the enclosure for attachment to said device;
  - c. a flexible sheeting closure flap arranged to cover said cable entry opening;
  - d. a handle arranged on the exterior upper portion of said conic section dome sheeting portion whereby said enclosure and backpack may be carried by hand;
  - e. an equipment transport belt arranged in the interior of said flexible sheeting conic section dome portion whereby said device may be retained against the flexible sheeting by the belt;
  - f. a plurality of fasteners attached to the exterior of said sheeting and arranged to permit attachment of at least two straps configured to allow a person to comfortably wear the backpack;
  - g. a plurality of collapsed position retainer straps attached at the exterior of said sheeting bottom rear side and arranged so that the straps may be removably attached to a plurality of collapsed position retainer strap attachment points on said dome

section adjacent to the sheeting bottom front side to maintain the backpack in the collapsed position; and

- h. a plurality of side collapsed position retainers arranged on said sheeting conic section dome portion adjacent to the bottom portion sides wherein said retainers are used for maintaining the backpack in a collapsed position.
9. The pop-up backpack of claim 7 further comprising:
- a. said sheeting conic section dome portion contains a multitude of attachment loops on the exterior side arranged such that the tension struts are attached to and tension the flexible sheeting through the external attachment loops;
  - b. a flexible sheeting closure flap arranged to securely cover said conic section dome sheeting portion opening;
  - c. a cable entry opening arranged opposing said conic section dome sheeting portion opening on the rear, wherein cables enter the enclosure for attachment to said device;
  - d. a flexible sheeting closure flap arranged to cover said cable entry opening;
  - e. a handle arranged on the exterior upper portion of said conic section dome sheeting portion whereby said enclosure and backpack may be carried by hand;
  - f. an equipment transport belt arranged in the interior of said flexible sheeting conic section dome portion whereby said device may be retained against the flexible sheeting by the belt;
  - g. a plurality of fasteners attached to the exterior of said sheeting and arranged to permit attachment of at least two straps configured to allow a person to comfortably wear the backpack;
  - h. a plurality of collapsed position retainer straps attached at the exterior of said sheeting bottom rear side and arranged so that the straps may be removably attached to a plurality of collapsed position retainer strap attachment points on said dome section adjacent to the sheeting bottom front side to maintain the backpack in the collapsed position; and

- i. a plurality of side collapsed position retainers arranged on said sheeting conic section dome portion adjacent to the bottom portion sides wherein said retainers are used for maintaining the backpack in a collapsed position.
10. The pop-up backpack of claim 7 further comprising:
- a. the independent tension struts comprise a multitude of strut segments and strut connectors joined to form a complete strut;
  - b. a flexible sheeting closure flap arranged to securely cover said conic section dome sheeting portion opening;
  - c. a cable entry opening arranged opposing said conic section dome sheeting portion opening on the rear, wherein cables enter the enclosure for attachment to said device;
  - d. a flexible sheeting closure flap arranged to cover said cable entry opening;
  - e. a handle arranged on the exterior upper portion of said conic section dome sheeting portion whereby said enclosure and backpack may be carried by hand;
  - f. an equipment transport belt arranged in the interior of said flexible sheeting conic section dome portion whereby said device may be retained against the flexible sheeting by the belt;
  - g. a plurality of fasteners attached to the exterior of said sheeting and arranged to permit attachment of at least two straps configured to allow a person to comfortably wear the backpack;
  - h. a plurality of collapsed position retainer straps attached at the exterior of said sheeting bottom rear side and arranged so that the straps may be removably attached to a plurality of collapsed position retainer strap attachment points on said dome section adjacent to the sheeting bottom front side to maintain the backpack in the collapsed position; and
  - i. a plurality of side collapsed position retainers arranged on said sheeting conic section dome portion adjacent to the bottom portion sides wherein said retainers are used for maintaining the backpack in a collapsed position.
11. The pop-up backpack of claim 7 further comprising the sheeting rectangular bottom portion is so dimensioned so as to allow a laptop computer to rest on the bottom portion, and the

sheeting conic section dome portion is so dimensioned above the sheeting bottom portion as to allow a laptop computer display to be opened to the operative position, and the conic section dome portion opening is so dimensioned so as to allow a laptop computer to be inserted in the enclosure.

12. The pop-up backpack as in one of claims 8, 9, 10, or 11 further comprising:
  - a. a transparent viewing window arranged in the upper portion of said sheeting conic section dome opening;
  - b. a hand opening arranged below said transparent viewing window wherein said device may be manipulated while observing said device in the transparent viewing window; and
  - c. a glare guard adjustably mounted to the struts and arranged wherein it shades the display from light reflected from the hands, arms and trunk of the user manipulating said device through said hand opening.
13. The pop-up backpack of claim 17 further comprising a plurality of fasteners attached to said sheeting bottom portion exterior and arranged to allow securing the enclosure and backpack to a horizontal surface.
14. . An equipment enclosure comprising:
  - a. means for enclosing the equipment in sheeting;
  - b. means for collapsibly supporting the sheeting with application of external force; and
  - c. means for entering support means and equipment in the enclosure.
15. The equipment enclosure of claim 14 further comprising means for retaining the enclosure in the collapsed position.
16. The equipment enclosure of claim 15 further comprising means for transporting the enclosure.
17. The equipment enclosure of claim 16 further comprising means for supporting the contained equipment.
18. The equipment enclosure of claim 17 further comprising means for storing equipment accessories.
19. The equipment enclosure of claim 18 further comprising means for viewing the contained equipment.

20. The equipment enclosure of claim 19 further comprising means for manipulating the contained equipment.
21. The equipment enclosure of claim 20 further comprising means for reducing glare on the contained equipment display.
22. The equipment enclosure of claim 21 further comprising means for attaching the enclosure to a surface.
23. A laptop computer protective enclosure and backpack comprising:
  - a. a tension frame comprising an independent flexible first strut with a first end and a second end and an independent flexible second strut with a first end and a second end, said first strut resiliently bent into a conic shape arc and said second strut resiliently bent into a conic shape arc and said first strut and said second strut positioned to cross each other at the apex of their respective arcs with the ends of the struts positioned in the down direction;
  - b. a flexible sheeting bottom portion configured to substantially form a rectangular periphery with four corners, an inside surface, and an outside surface;
  - c. a flexible, substantially opaque, sheeting upper portion with an inside surface and an outside surface, including at least one opening, said sheeting upper portion joined to and contiguous to the bottom portion at the bottom periphery such that said sheeting bottom portion inside surface and said sheeting upper portion inside surface completely surround the enclosure interior with the sheeting upper portion configured to substantially form a conic shape with a substantially rectangular shape forming a front, back, left, and right sides at the attachment to the bottom;
  - d. said tension frame arranged within the sheeting upper portion with the ends positioned on the inside surface of the sheeting bottom portion at said four corners, the resilience of said first and second struts providing a tension force against the sheeting inner surface which maintains the sheeting substantially in a conic dome shape with four corners so that the frame struts may be moved relative to each other by external force to permit folding the sheeting upper portion sides and bottom portion to a substantially flat position while the frame struts maintain tension on the sheeting to permit the enclosure substantially to unfold to the original shape; and;



- e. a plurality of attachment devices arranged to detachably install backpack straps to the enclosure.
24. The laptop computer protective enclosure and backpack of claim 23 further comprising:
- a. an equipment transport belt attached to said sheeting upper portion inside surface configured opposite said sheeting upper portion opening and arranged to retain said laptop computer against the sheeting inside surface when transporting the enclosure;
  - b. a plurality of collapsed position retainer straps attached to said sheeting rear outside surface each arranged with attachment devices wherein the retainer straps engage attachment devices on said sheeting front outside surface arranged to maintain said sheeting and said tension frame in a folded position.
25. The laptop computer protective enclosure and backpack of claim 24 further comprising:
- a. said sheeting upper portion opening includes a transparent viewing window for viewing the enclosure interior;
  - b. a hand opening arranged below said transparent viewing window wherein said laptop computer may be manipulated while observing said computer in the transparent viewing window; and
  - c. a glare guard adjustably mounted to the struts and arranged wherein it shades the display from light reflected from the hands, arms and trunk of the user manipulating said device through said hand opening.
26. A method of shielding the reflection of bright light on a laptop computer keys and the users' hands, arms and trunk from the users view of the laptop computer display comprising:
- a. placing the laptop into a structure covered with opaque sheeting containing an opening;
  - b. orienting the opaque sheeting structure to allow a user to manipulate the computer keys and view the computer display;
  - c. mounting a movable opaque rectangle of sheeting in an orientation that shields the keys from bright light and simultaneously allows viewing the display.

## Statement under Article 19(1)

The present invention is based upon a fundamental novel characteristic of an enclosure that folds flat with only external force applied to the front of the enclosure, requiring no disassembly (see application page 6/22 paragraph [00029] lines 13-15 and figure 3). It also has the characteristic of unfolding by itself or “pop-up” as the act of compressing the struts when applying external force stores energy in the struts. This energy maintains tension on the sheeting such that the invention will return from the flattened position to substantially its original shape when the external force is removed. The Bishop patent (US 5,078,096) discloses a collapsible container for housing, confinement and transport of small domestic pets requiring internal disassembly of the bottom rods (14) in order to be able to collapse the container, and reassembly of the bottom rods to regain the original container shape (see column 7 line 52 – 54). Claims are amended to more clearly discern this novel characteristic of the present invention and to claim the novel method of shielding unwanted reflections from a laptop computer screen. The amended claims are disclosed in the international application as filed.

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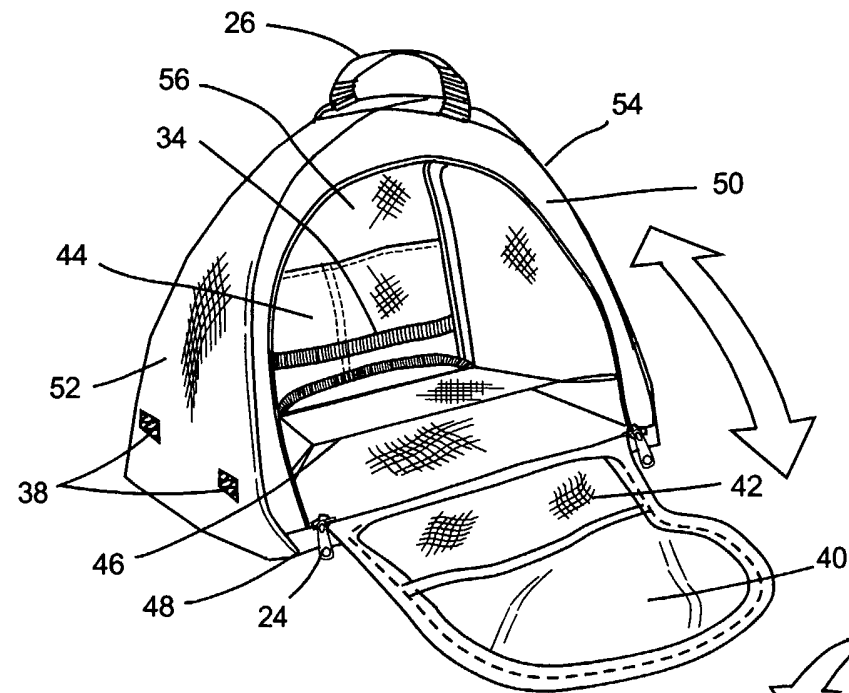


Fig.1

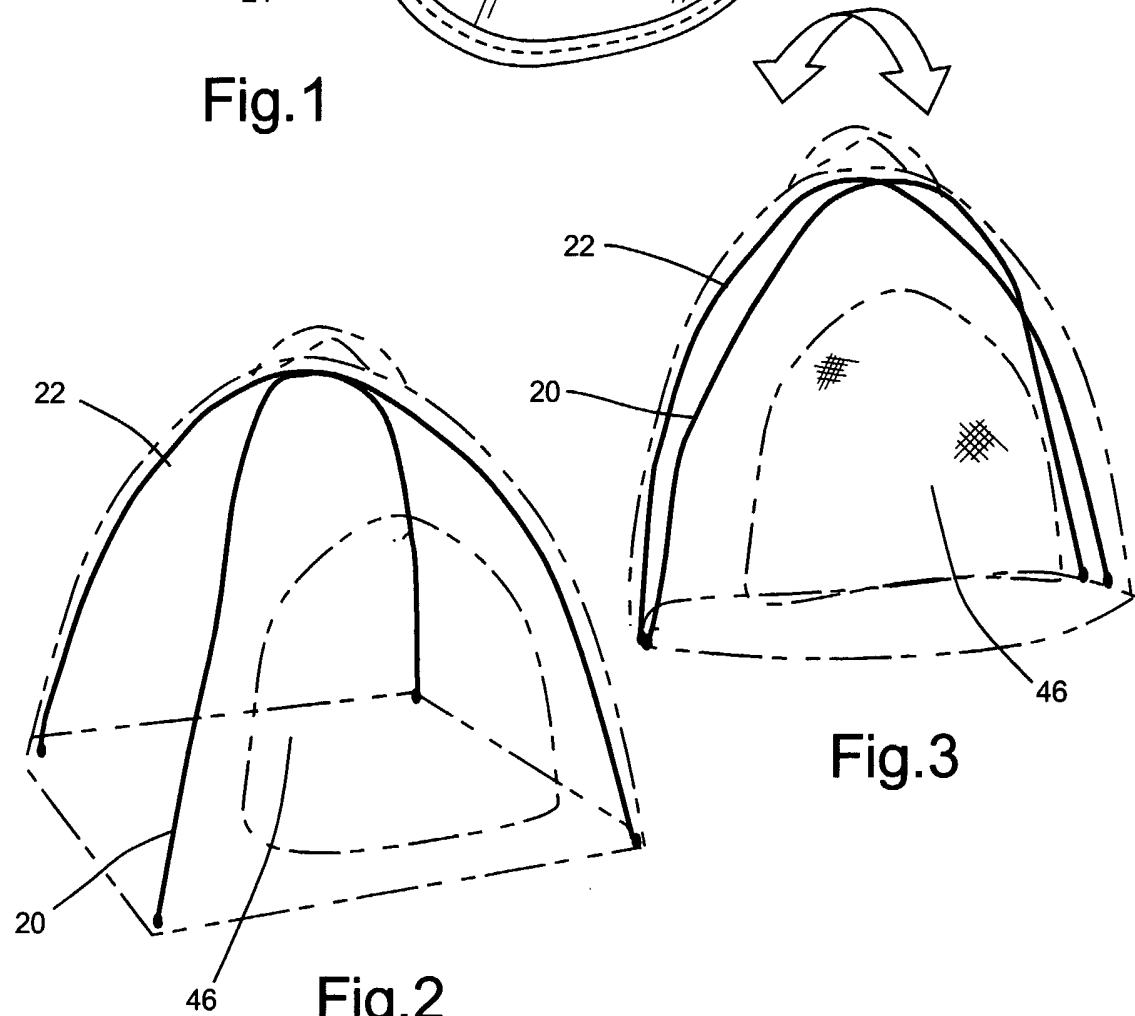


Fig.2

Fig.3

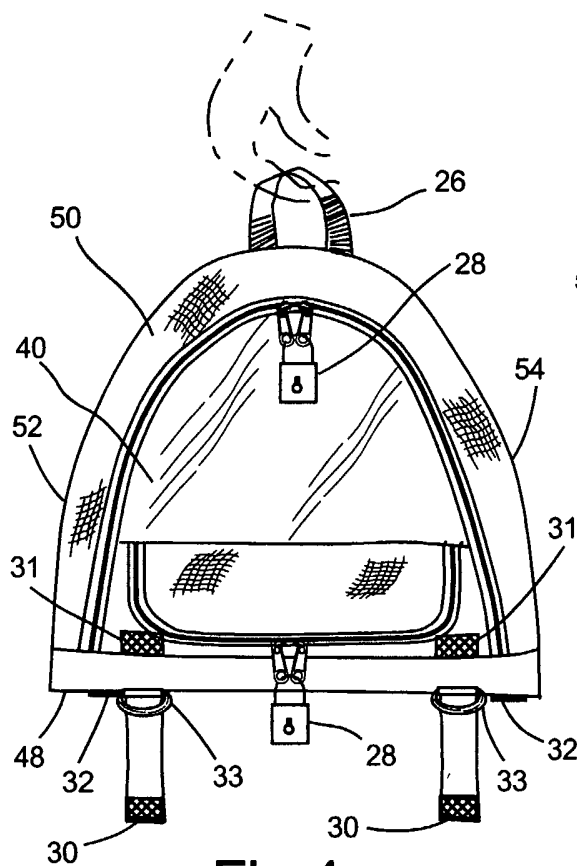


Fig. 4

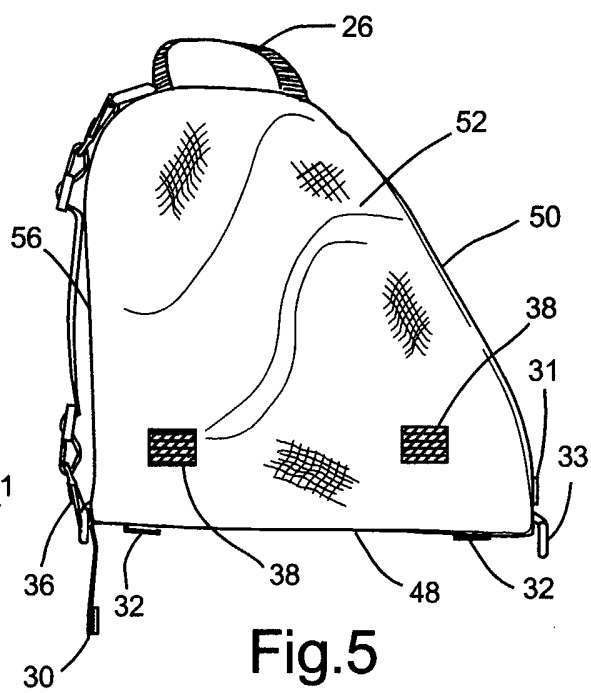


Fig. 5

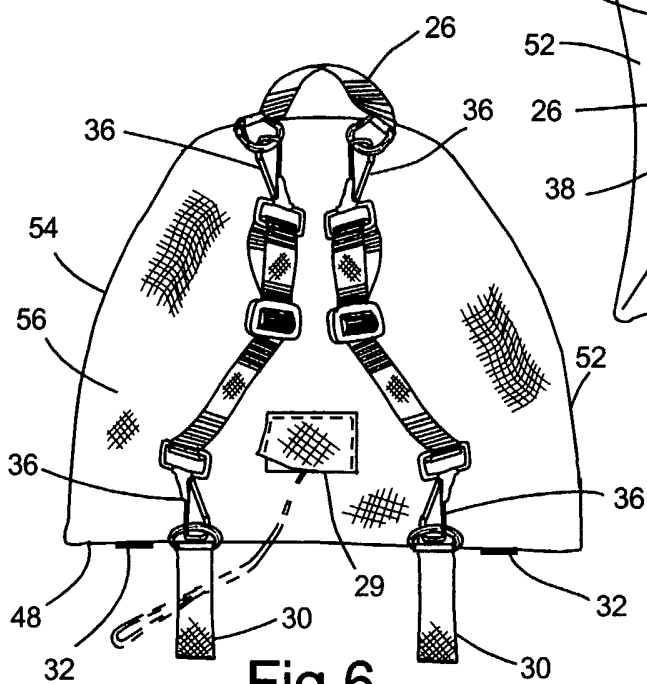


Fig. 6

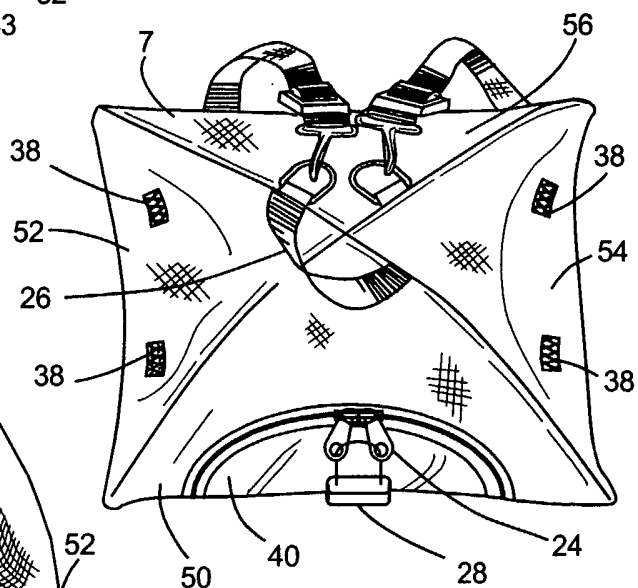


Fig. 7

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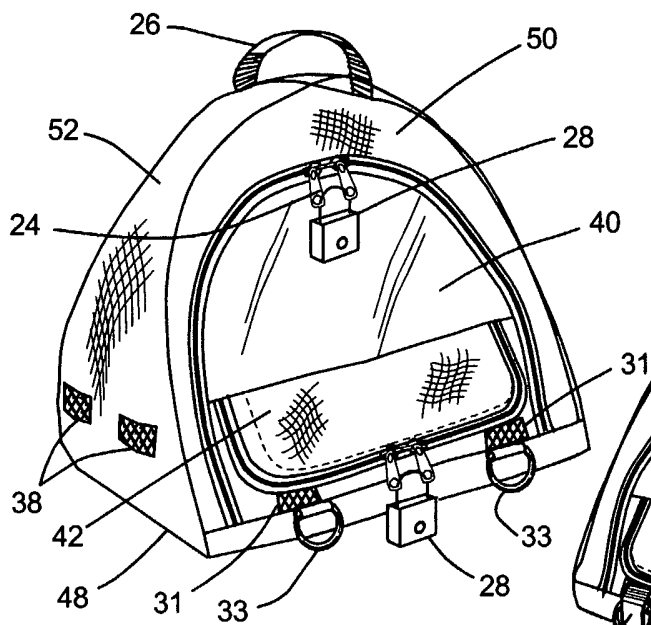


Fig. 8

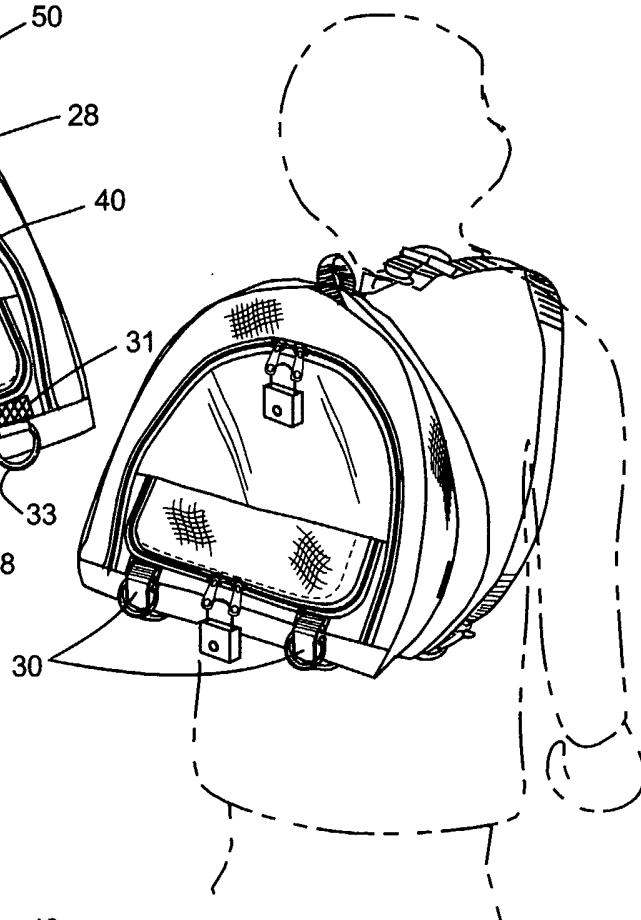


Fig. 9

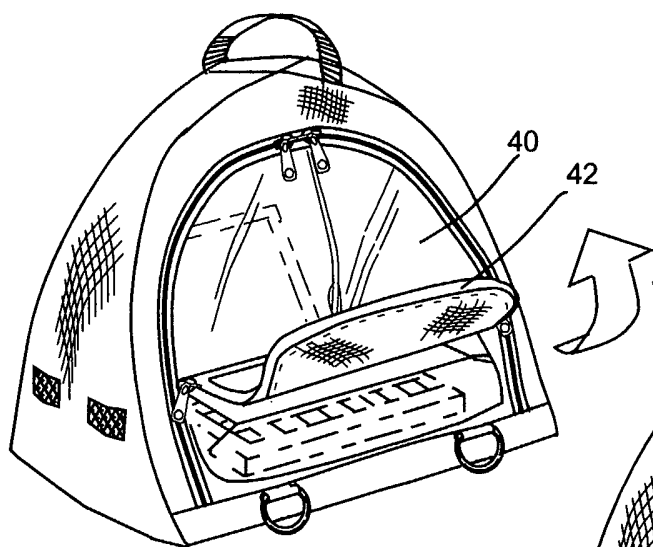


Fig. 10

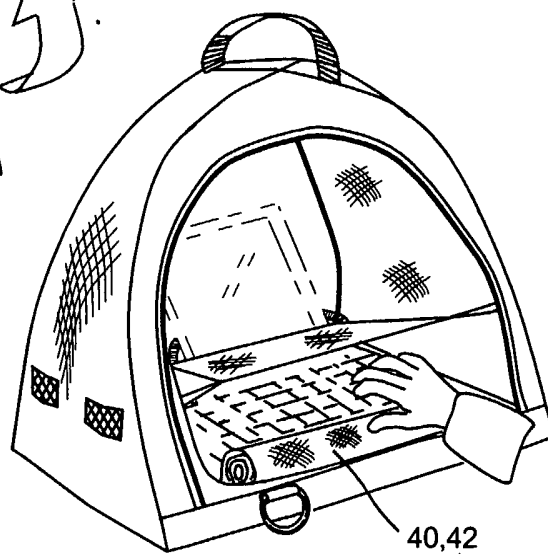


Fig. 11

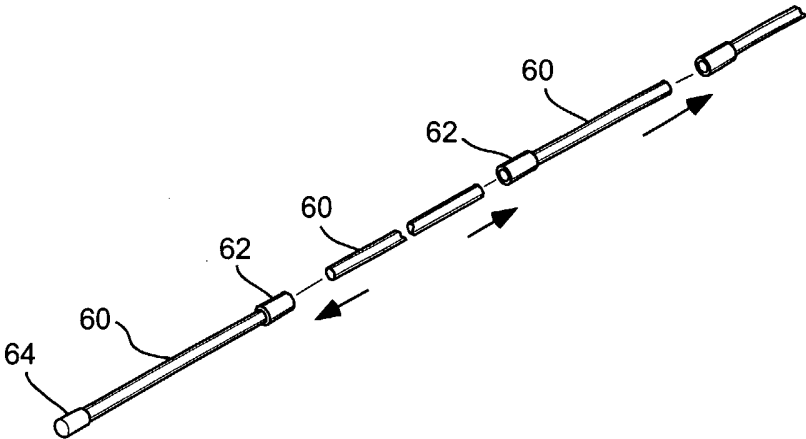


Fig. 12

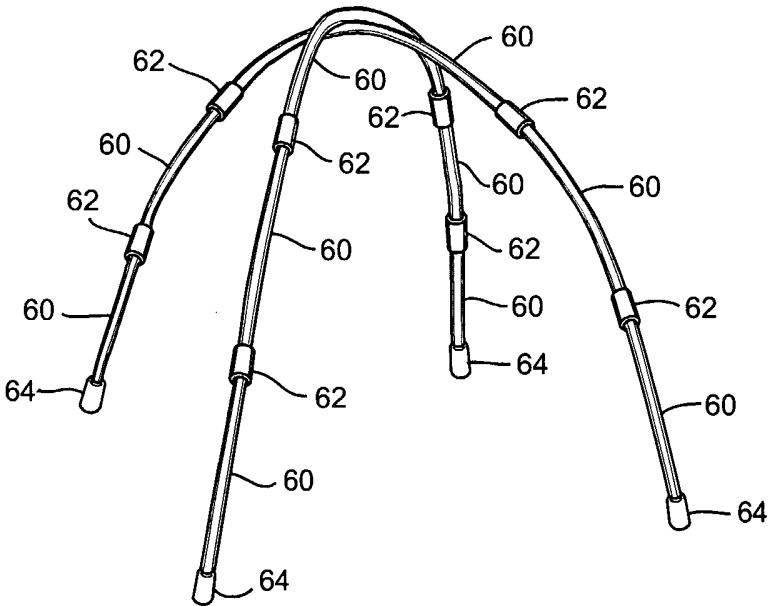


Fig. 13

# INTERNATIONAL SEARCH REPORT

International application No.

PCT/US02/16916

## A. CLASSIFICATION OF SUBJECT MATTER

IPC(7) : B65D 85/00

US CL : 206/320, 576, 701, 720, 721, 305; 150/154, 165; 190/107, 903; 383/907

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 206/320, 576, 701, 720, 721, 305; 150/154, 165; 190/107,903

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched  
NONE

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)  
EAST BRS TEXT SEARCH

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5,078,096 A (BISHOP et al.) 07 January 1992, entire document.	1, 14 and 33
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Y		2-7, 15 and 34-41
A	US 5,273,142 A (WEBER) 28 December 1993, Figures 1-5 embodiments.	1, 14 and 33
A	US 4,665,935 A (NICHOLS) 19 May 1987, entire document.	All
A	US 5,311,813 A (FAIRBANKS et al.) 17 May 1994, entire document.	1, 14 and 33
A	US 4,003,508 A (HOOPS) 18 January 1977, Figure 2 embodiment.	5 and 17

☐ Further documents are listed in the continuation of Box C.

☐ See patent family annex.

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Date of the actual completion of the international search

25 July 2002 (25.07.2002)

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