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(54) **SUN SHELTER**

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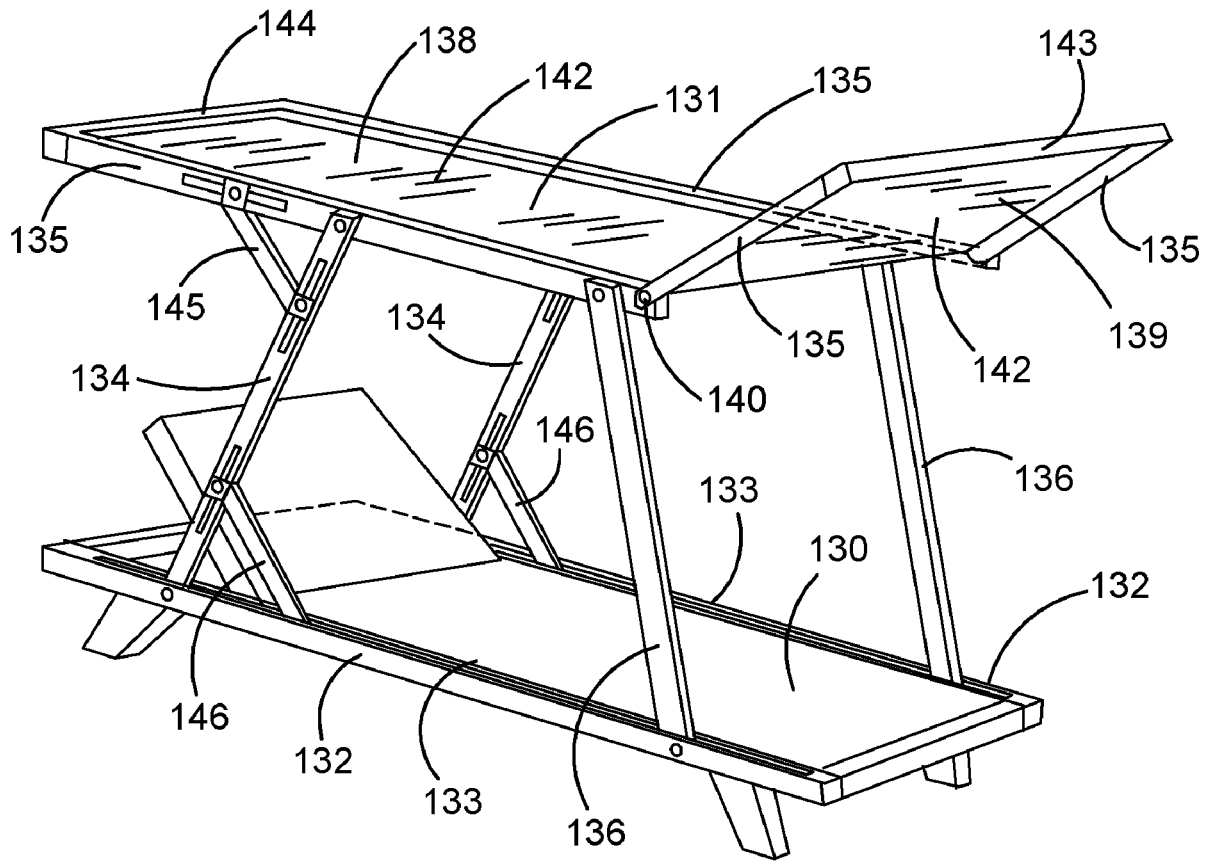
(57) **ABSTRACT**

An adjustable personal sun shelter to overlie a free-standing or integrated sun lounge or deck chair of the kind commonly occupied by a user while sunbathing beside a swimming pool. The adjustable personal sun shelter includes a base and a support structure that suspends a shade canopy in a cantilevered state above an underlying sun lounge at an optimal height to project shade over the sun lounge. The shade canopy is adjustable by a user to vary the amount of sunlight or shade received when occupying the underlying sun lounge. The shade canopy is adjustable by an extendable central member or by two or more parallel extendable side members, to which shade material is fastened. The shade canopy has a moveable leading end and a fixed trailing end. In the operational condition of the sun shelter, the length of the shade canopy can be increased by extending the leading end of the shade canopy relative to the trailing end, or the length can be decreased by retracted the leading end.



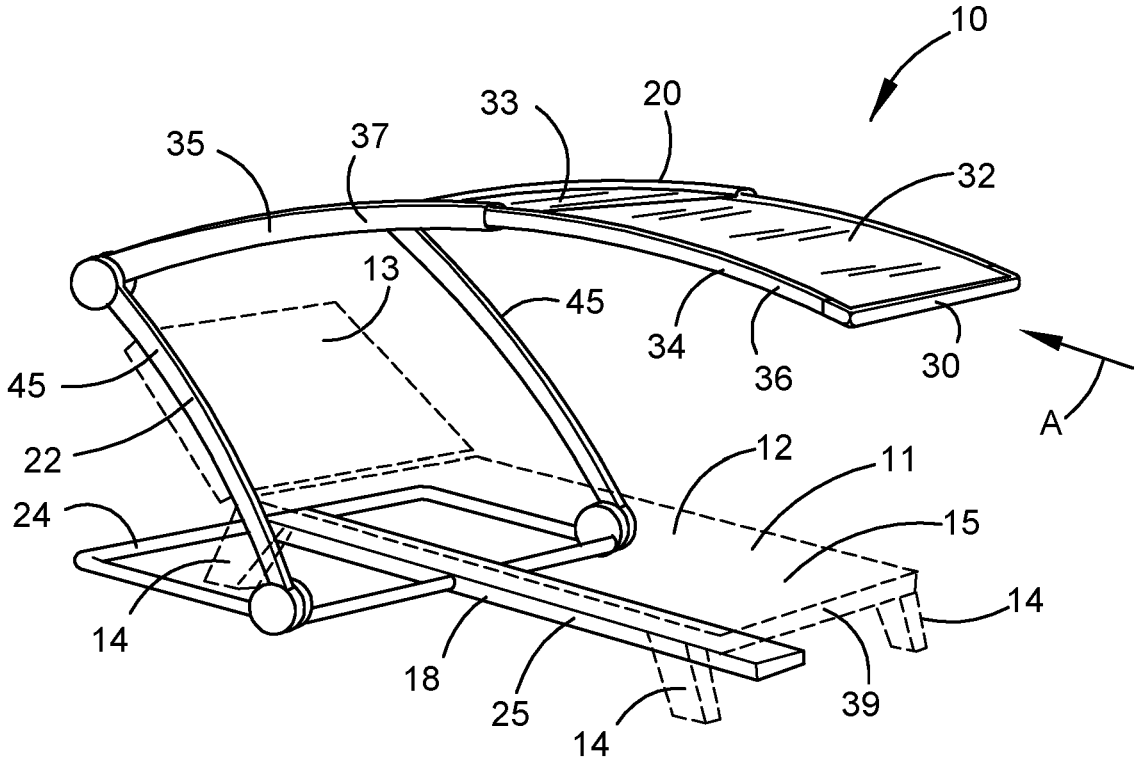

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FIG. 1

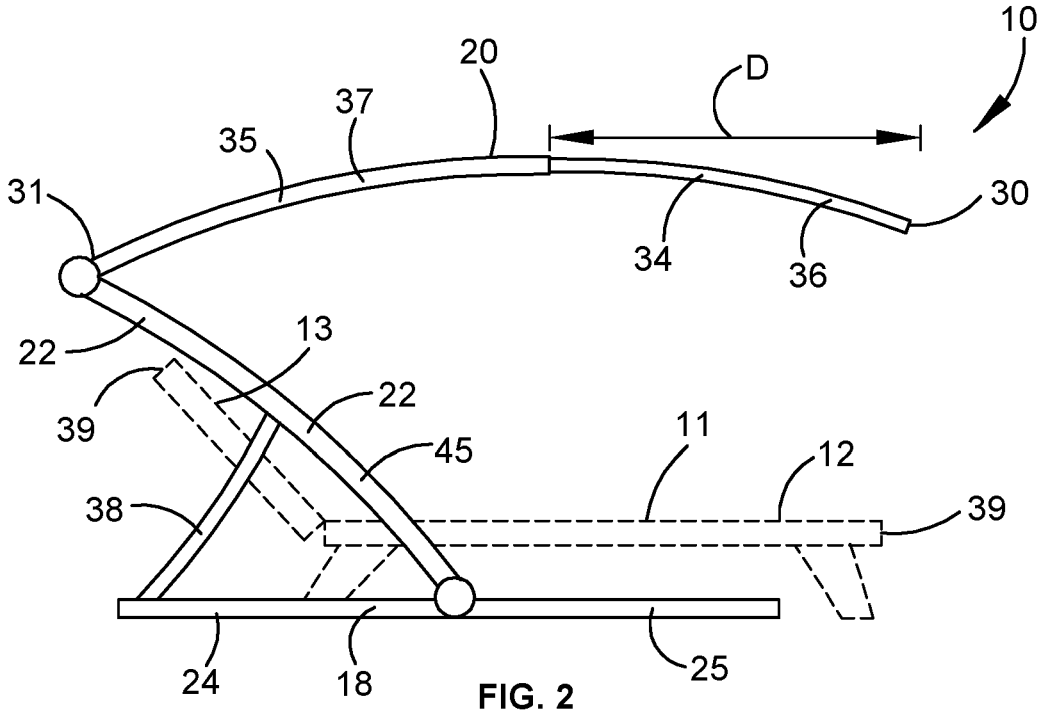
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FIG. 2

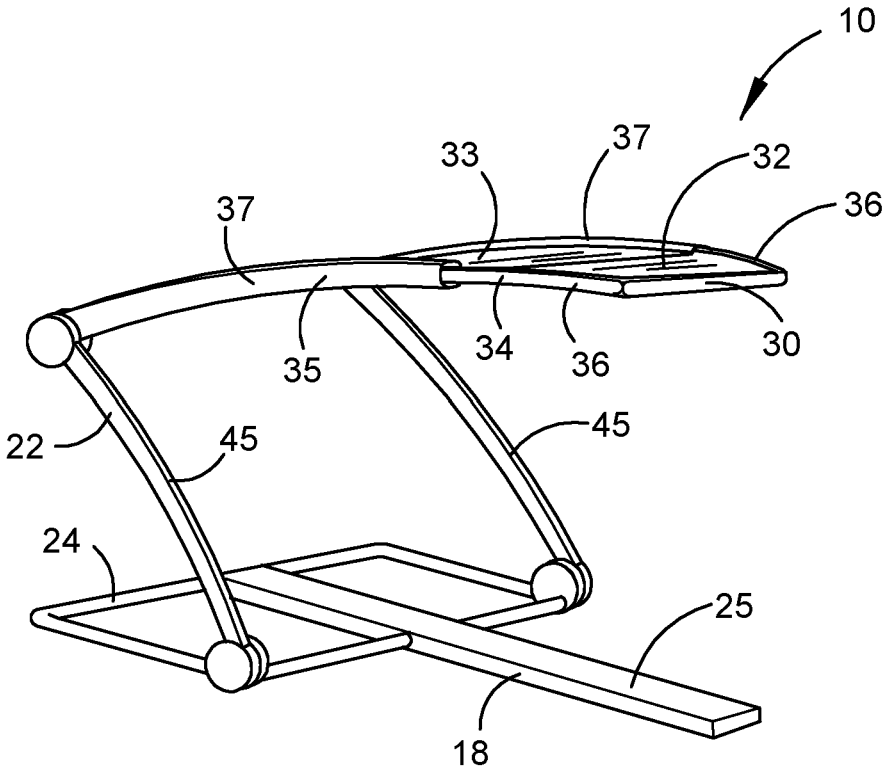
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FIG. 3

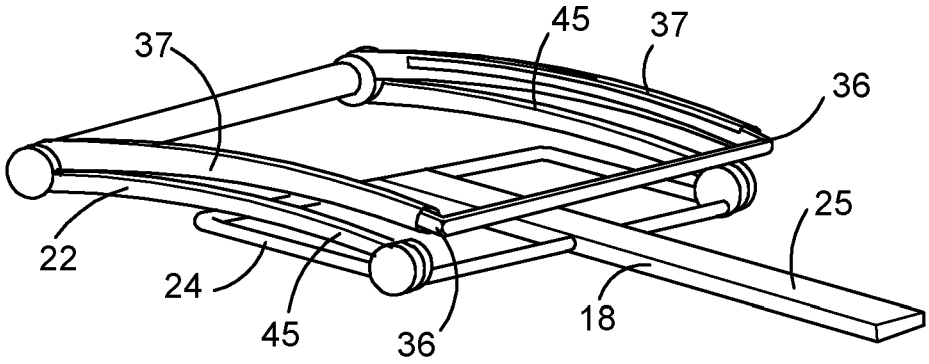
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FIG. 4

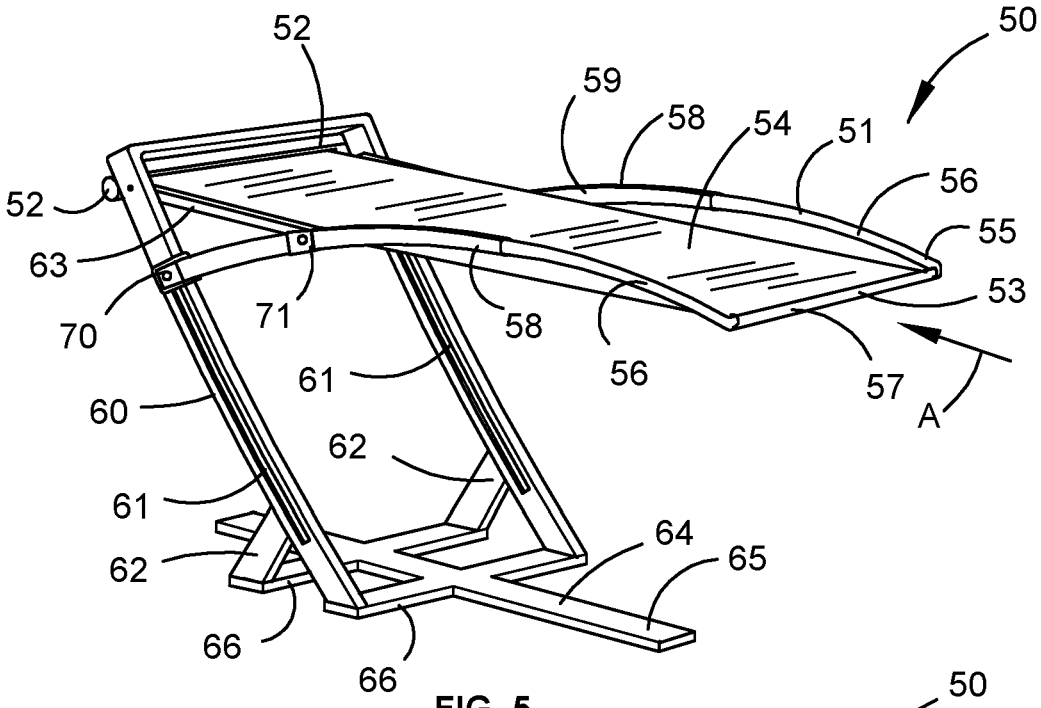

FIG. 5

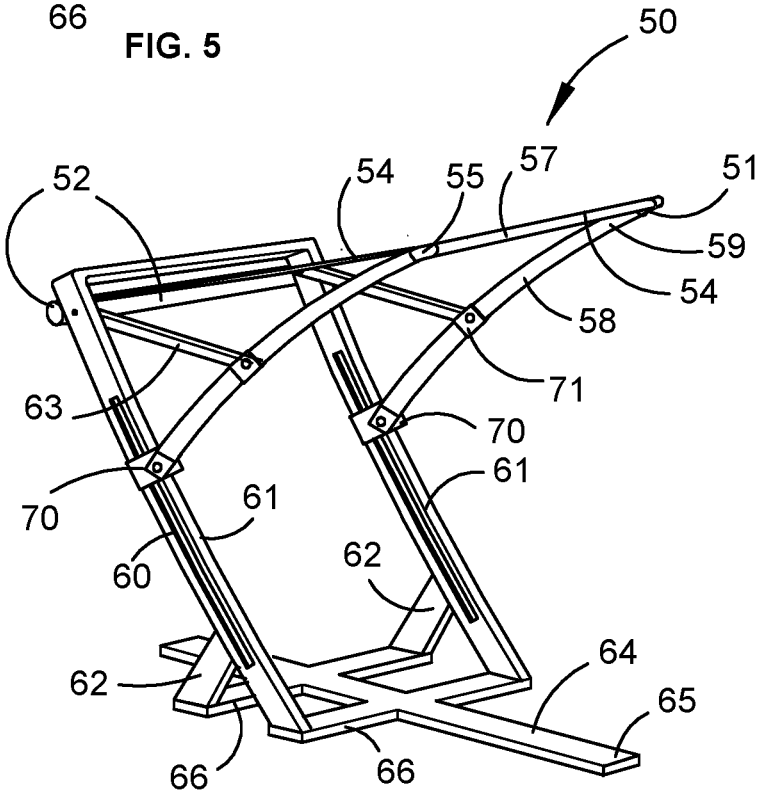

FIG. 6

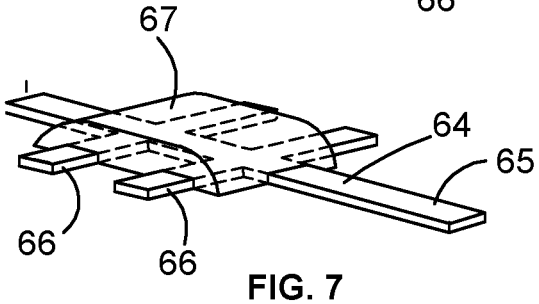

FIG. 7

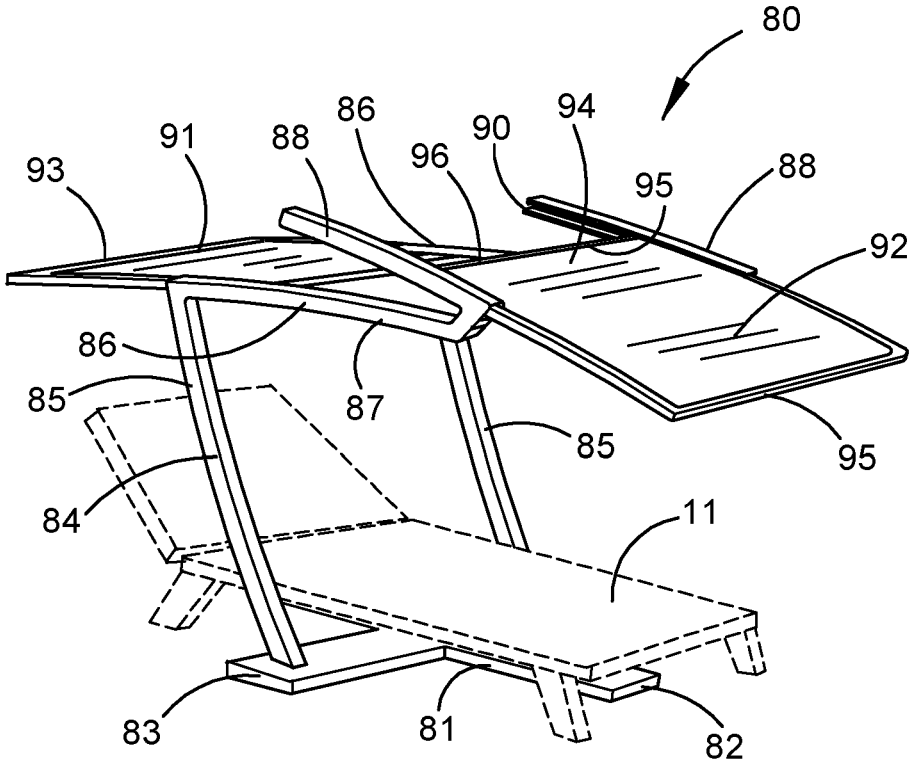
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FIG. 8

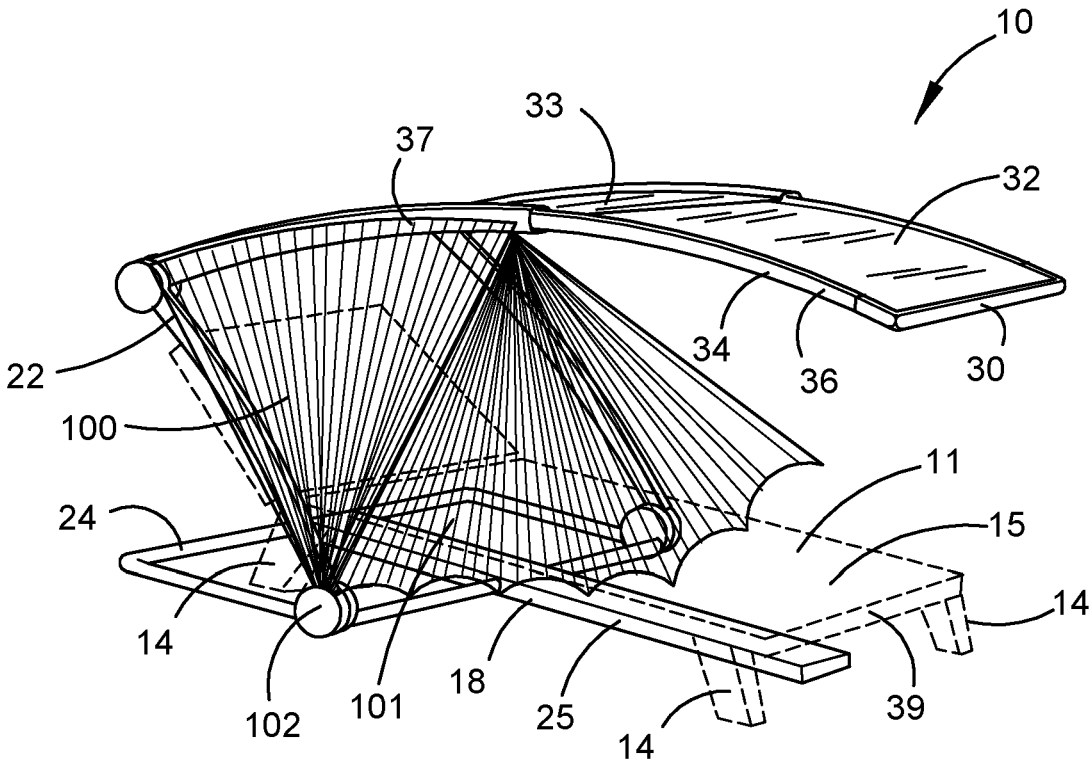
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FIG. 9

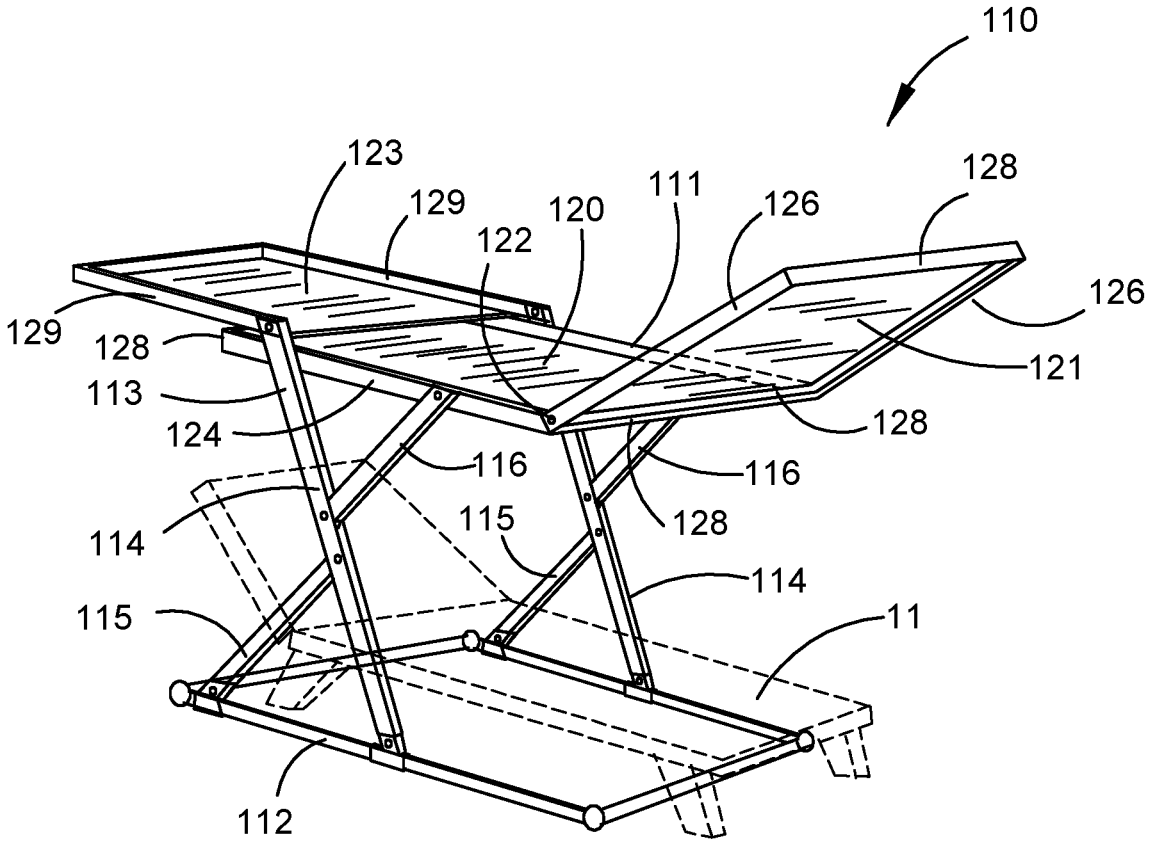
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FIG. 10

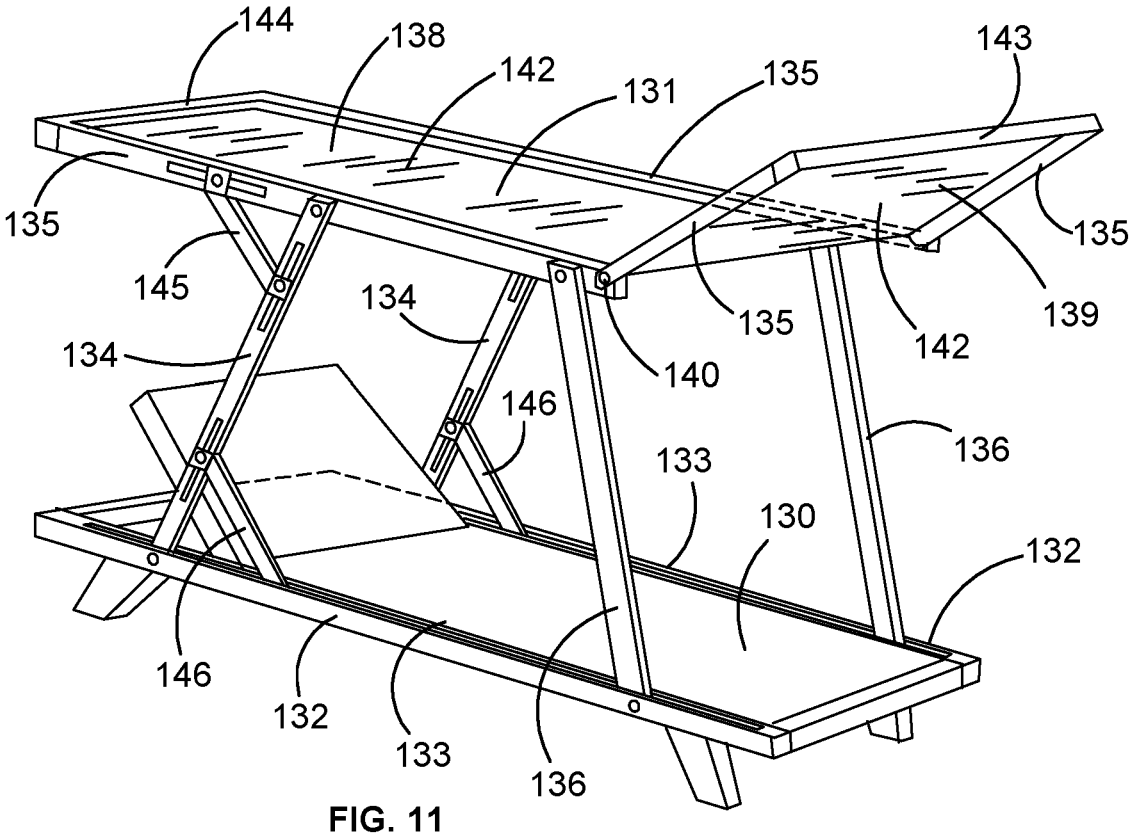
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FIG. 11

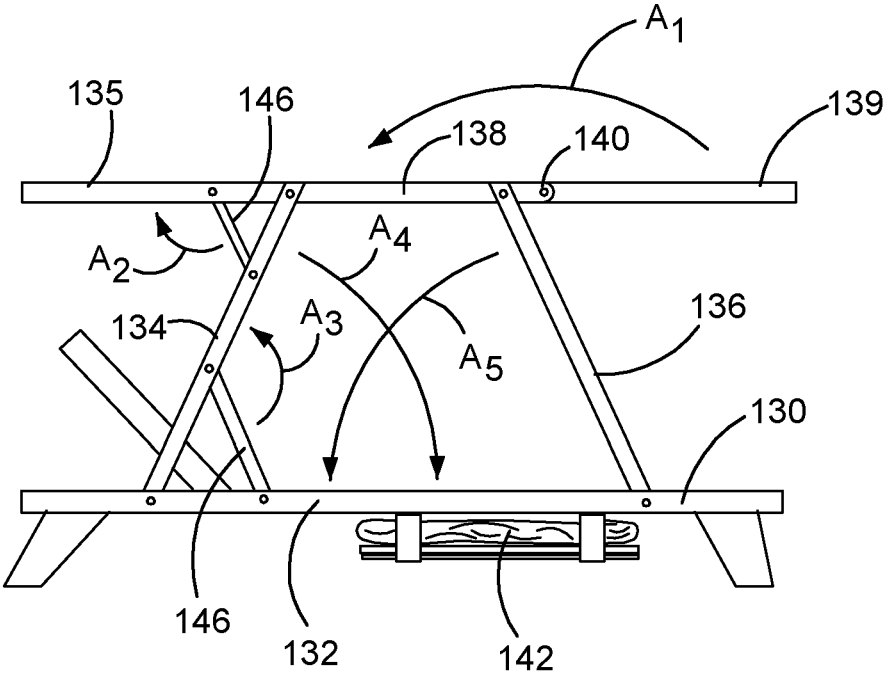
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FIG. 12

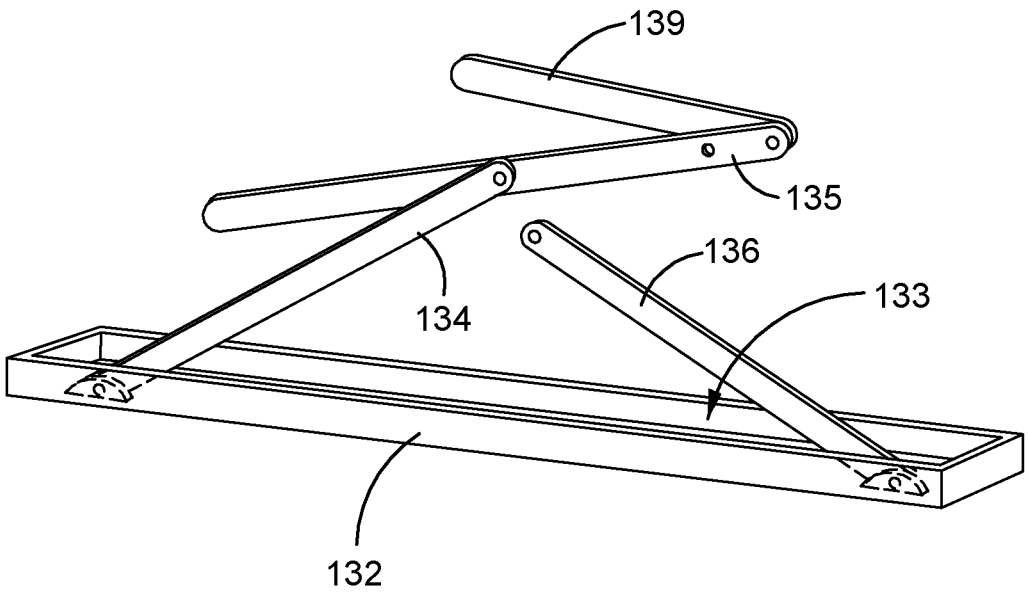

FIG. 12A

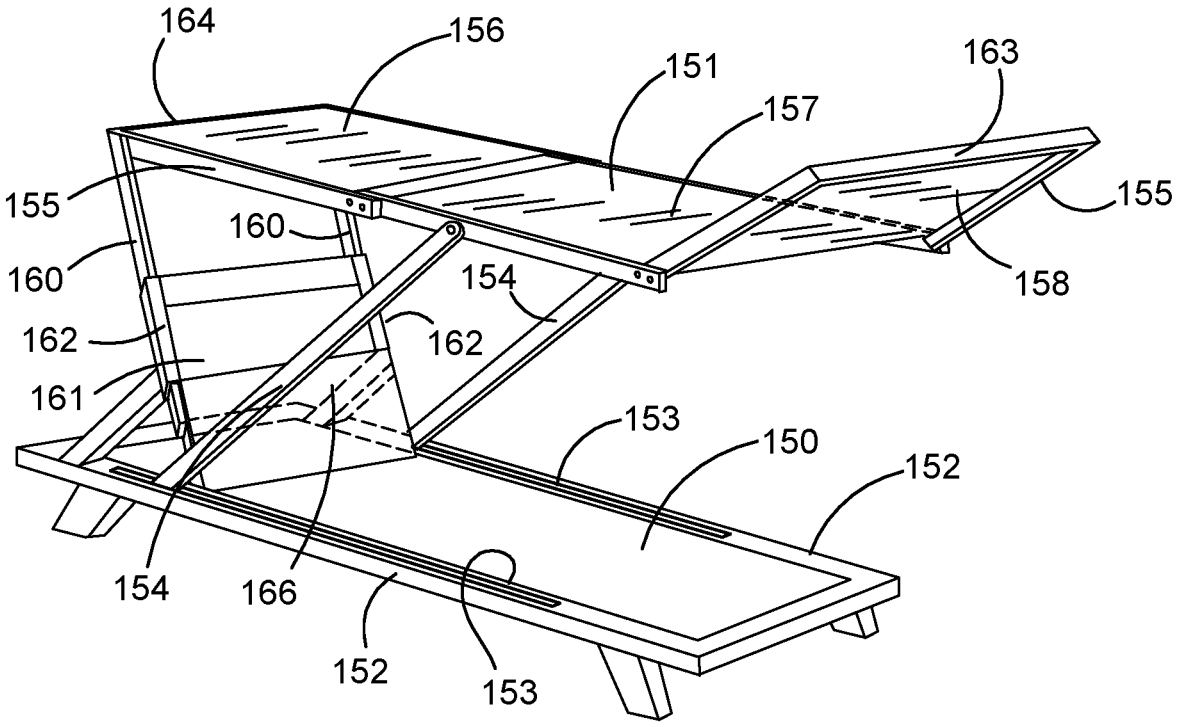
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FIG. 13

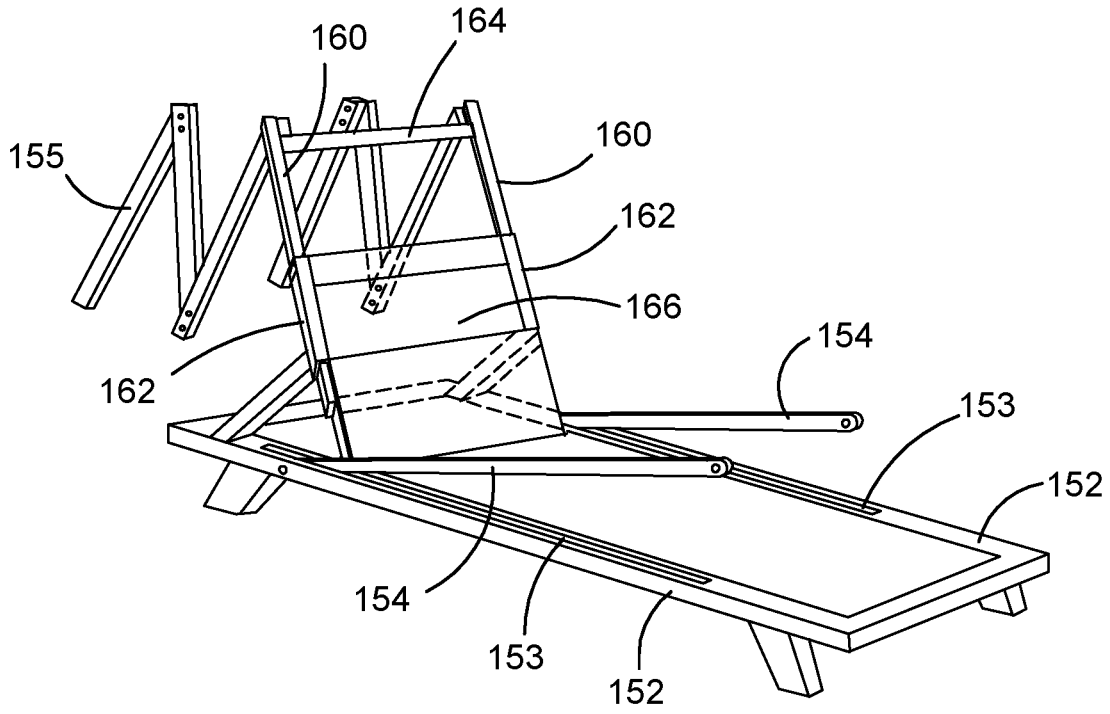

FIG. 14

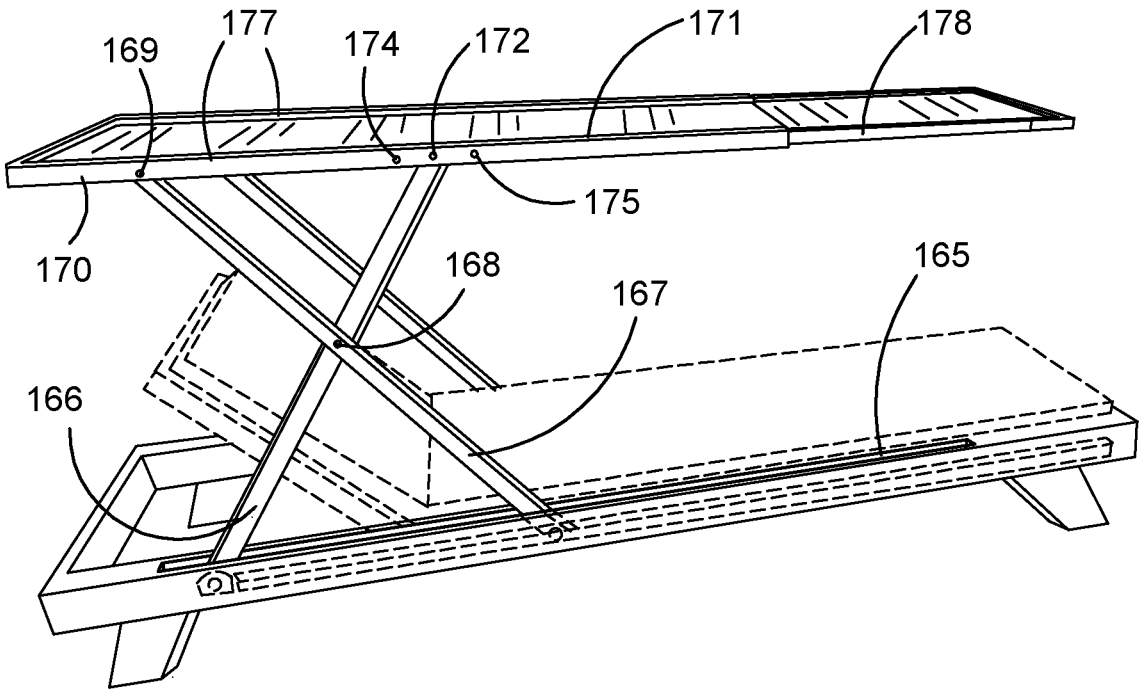

FIG. 15

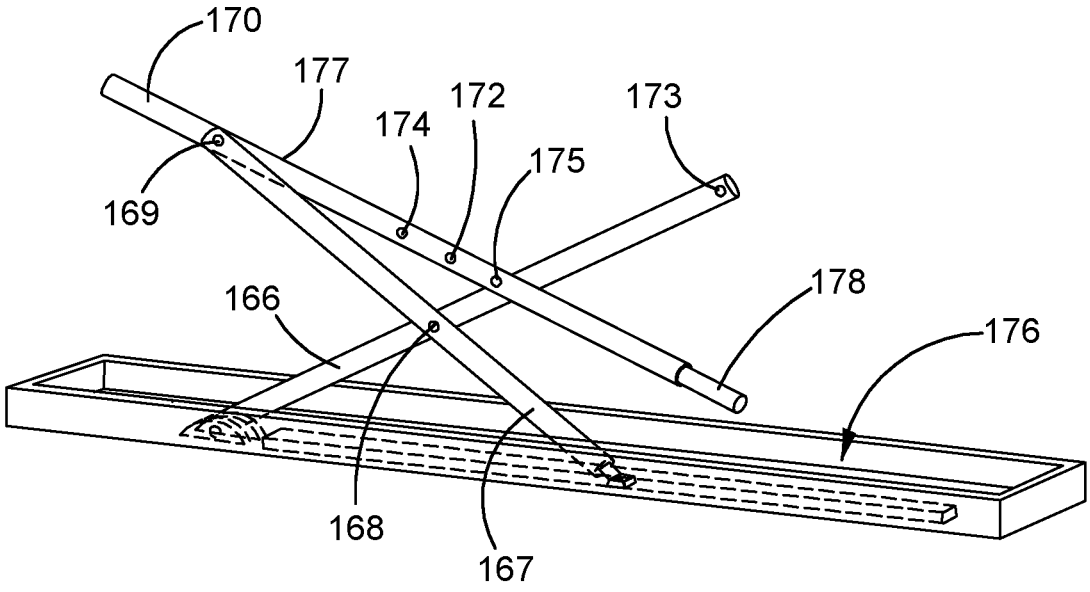

FIG. 16

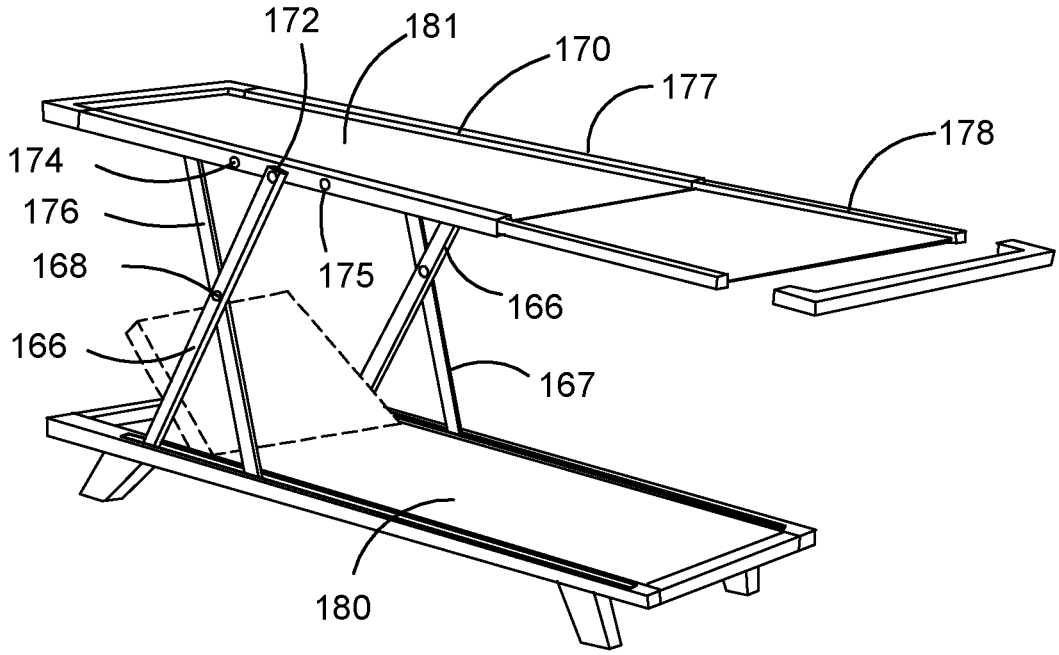

FIG. 17

SUN SHELTER

CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] This application is the U.S. National Phase under 35. U.S.C. § 371 of International Application PCT/AU2020/050764, filed Jul. 27, 2020, which claims priority to Australian Application No. 2019902696, filed Jul. 29, 2019, and to Australian Application No. 2019904312, filed Nov. 15, 2019. The disclosures of the above described applications are hereby incorporated by reference in their entirety and made a part of this specification.

BACKGROUND

Field

[0002] The present invention relates to a sun shelter for the application of shade to outdoor lounges and chairs, such as are typically used on sun decks, or about swimming pools or on beaches. It will be convenient to describe the invention in relation to its particular use with sun lounges supplied for guests of hotels, resorts and cruise ships, although it needs to be appreciated that the invention could be used with other outdoor reclining or seating furniture, such as deck chairs.

Related Art

[0003] The discussion of the background to the invention that follows is intended to facilitate an understanding of the invention. However, it should be appreciated that the discussion is not an acknowledgement or admission that any aspect of the discussion was part of the common general knowledge as at the priority date of the application.

[0004] Sun lounges are usually simplified bedding structures providing full body reclining support. Sun lounges can take different forms, but basically they have a flat section for supporting the lower body from the feet to the hips, and an inclined section for supporting the mid and upper body from the hips to the head. Sun lounges for individual use are generally rectangular.

[0005] Relevant to the present invention is that sun lounges are used for relaxing outdoors and allow users to read, sleep, socialize or relax for extended periods, particularly when on vacation. This occurs in residential dwellings, such as around a backyard swimming pool or in commercial settings such as swimming pool facilities in hotels, resorts, cruise ships and public aquatic centres.

[0006] While obtaining a sun tan on a sun lounge remains a desirable pastime, it is now readily accepted that owing to a higher incidence of melanoma and non-melanoma skin cancer through increased exposure to ultraviolet radiation due to depletion of ozone in the atmosphere, the providing and obtaining of adequate shelter to avoid sunburn when outdoors is of growing importance. Sun shelters that have a shade forming canopy are used with sun lounges to provide shade over a sun lounge.

[0007] Importantly, the position of the sun in the sky and the height and size of the canopy of a sun shelter significantly affects how much useful shade falls directly beneath the canopy for the benefit of a person occupying a sun lounge below the canopy, and how much additional shade is projected to areas beyond directly beneath the canopy's perimeter and which is generally superfluous in terms of protecting a person using a sun lounge against exposure to ultraviolet radiation.

[0008] This is of particular relevance when providing or obtaining sun shelter in the described setting, namely hotels, resorts and cruise ships, where available space surrounding swimming pools, for example, is usually limited, often resulting in multiple sun lounges being arranged side-by-side so as to accommodate large numbers of people simultaneously in a confined space.

[0009] A conventional outdoor umbrella of the type most commonly used in association with sun lounges to provide shade over the surface of the sun lounge on which an individual lies, typically comprises a center pole and an expandable canopy that has two operational states, that being fully opened or fully closed. The expanded canopy is usually square or circular.

[0010] As such, the amount and direction of shade created by the canopy when open is largely fixed in nature, thus preventing the user of the sun lounge from making any incremental adjustments regarding the amount or position of the shade provided.

[0011] Further, the existence of the center pole dictates that one or two underlying sun lounges must be located on either side of the pole. This commonly results in a person using the sun lounge being forced to receive more or less sun or shade than desired for extended periods throughout the day depending on their position relative to the sun and the center pole. This occurs because, where two sun lounges share a single umbrella positioned between them, this uneven distribution of shade often results in the sun lounge on the side nearest the sun being exposed to more direct and reflected sunlight than the other.

[0012] This problem is more pronounced during morning and afternoon when the sun is lower in the sky, whereby the sun's rays can readily penetrate diagonally beneath the elevated canopy. At these times, the shade is cast over a wider area which is not directly below the canopy and is in a direction that is determined by the time of day. This has the effect of reducing or eliminating the ability of the umbrella to provide users with lateral protection from solar radiation, even though the sun lounge and the user are located directly beneath the canopy.

[0013] Conversely, locating the central pole at the rear of a sun lounge automatically results in less of a sun lounge being positioned under the canopy, i.e. the feet end of the sun lounge is less likely to directly underlie the canopy, thereby reducing or minimizing access to useable shade.

[0014] Some umbrellas of the above kind have a center pole comprised of two parts that are joined by a fastening knuckle midway along its length so that the upper pole and canopy can be tilted at an angle relative to the lower pole. This limited degree of adjustability is generally unsatisfactory because the canopy can become more oblique in its orientation relative to the sun, thereby producing a smaller amount of narrow shade, while significantly increasing resistance to wind load.

[0015] Additionally, a conventional umbrella must be of a suitable height above the ground so that it provides sufficient head clearance for pedestrian traffic to avoid injury through contact with the canopy, typically requiring a center pole to be in the vicinity of 2.5 m or 8' high. This pole height has an associated negative consequence in that the greater the

elevation of the canopy above the ground, the greater the scope for more sun light to penetrate underneath the umbrella.

[0016] Accordingly, this necessitates the size and shape of the shade canopy to extend horizontally well beyond the physical dimensions of the sun lounge it overlies in order to resolve the angle of incidence of the sun's rays and generate at least partial shade for the user. A relatively standard umbrella canopy of 2.4 m in width (7'10") and of circular or square shape, for example, has over 5.5 square meters (or 60 square feet) of surface area compared to the standard dimensions of an underlying sun lounge, being approximately 2 m long and 0.8 m wide, which equates to 1.6 square meters (or 17 square feet).

[0017] Many of the limitations discussed above also restrict the suitability of side-mounted umbrellas (for example, wall-mounted or cantilevered umbrellas that do not have a central pole) and often result in unsatisfactory shade performance in situations where mobility and limited space are a consideration.

[0018] The close proximity of adjacent sun lounges in the settings described above where available space is limited, exacerbates the aforementioned problems associated with the height of conventional umbrellas and the necessarily large relative surface area of their canopies, which together cause shade to be projected over a significantly greater space than that occupied by the intended sun lounge or lounges they overlie. Conventional umbrellas also indiscriminately project shade over neighbouring guests occupying adjoining sun lounges that can force them to receive more or less sun exposure or shade cover than they would otherwise prefer.

[0019] Further, in such circumstances there is little or no scope to reposition sun lounges that are arranged in close proximity to one another or to adjust the placement of the umbrella to negate the shifting of shade due to the sun's movement across the sky. As such, one or two guests sharing a single umbrella typically have little or no control over the amount of sun light or shade they receive, such that parts of their body may often be exposed or covered contrary to the user's preferences.

[0020] Moreover, two guests using sun lounges with a single shared umbrella will frequently have differing personal requirements in relation to the amount of sun or shade they prefer to receive at any given point in time.

[0021] These limitations can combine to reduce the enjoyment of hotel, resort and cruise ship guests and detrimentally affect poolside food and beverage revenues.

[0022] Some prior art attempts have been made to provide improved or at least different forms of sun shelter. U.S. Pat. No. 6,823,883 is an example of a collapsible and portable sun-screen apparatus which includes a flexible shade canopy that is supported on a collapsible frame. The frame is composed of connectable tubular members that connect together to form a U-shaped base, a canopy support and a pair of uprights that space the canopy support above the base. The flexible shade canopy is fitted to the canopy support but is not fixed in place, but rather, is simply draped over the canopy support. This allows the whole canopy to be shifted on the canopy support so as to provide some adjustment for sun movement or user shade preference. The sun-screen apparatus of U.S. Pat. No. 6,823,883 is rudimentary in construction principally due to the requirement for portability. Adjustment of the shade canopy requires it to be completely lifted and repositioned on the canopy support. This is not a simple exercise and likely requires a basic level of skill to properly fit the canopy to a new position and thus the user does not have a quick and convenient way of adjusting shade levels. The extent of adjustment is also limited by the canopy being formed to have a single, generally square shape.

[0023] The difficulty of providing suitable shade for persons using sun lounges has been recognised by the present applicant. The present applicant has thus sought to develop an alternative form of sun shelter that overcomes or at least alleviates one or more of the above stated disadvantages.

[0024] Moreover, by virtue of this invention, the applicant aims to reduce the prospect of a person experiencing a cancer-causing sunburn by creating shade in a form that provides more effective protection from ultraviolet radiation through improved regulation of the amount of sunlight received when using an individual sun lounge.

SUMMARY

[0025] According to one form of the embodiment of the invention, there is provided an adjustable, sun shelter for use with a deck chair or sun lounge, comprising:

[0026] a. a base,

[0027] b. a shade canopy,

[0028] c. a support structure,

[0029] the support structure extending upwardly from the base and supporting the shade canopy in an operational condition spaced above the base at a height at which in use, the shade canopy overlies a deck chair or sun lounge,

[0030] in the operational condition, the shade canopy having a leading end and a fixed trailing end and having an extended state and a retracted state, the leading and trailing ends being spaced apart a greater distance in the extended state than in the retracted state, and the shade canopy being adjustable between the respective extended and retracted states to adjust the extent to which shade cast by the shade canopy falls on a deck chair or sun lounge by adjusting the spacing between the leading and trailing ends by movement of the leading end relative to the fixed trailing end.

[0031] A sun shelter according to the above form of the embodiment is a free-standing sun shelter that advantageously has been developed for specific use with an individual sun lounge, or with two or more sun lounges, although as stated above, a sun shelter of the embodiment could be used with other outdoor reclining or seating furniture, such as deck chairs.

[0032] It is an intention of the embodiment to provide shade in a more versatile and effective form that is commensurate with the individual needs of a person using a sun lounge. It will be apparent from the discussion that follows, that the construction of the sun shelter according to this embodiment provides the user with significantly greater ability to control, modify or manage the amount of direct and/or reflected sunlight they receive over as much or as little of their body as they choose, as compared to prior art arrangements. Extending the leading end of the shade canopy in a forward direction away from the trailing end increases the length of the canopy in order to cover more of the sun lounge, and retracting the leading end of the shade canopy in a backward or rearward direction shortens the length of the canopy to cover less of the sun lounge.

[0033] It is to be noted that the word "shade" has been selected for use throughout this specification but that the word "shadow" could equally have been used.

[0034] A sun shelter according to the embodiment includes an adjustable shade canopy so that advantageously, the shade that is cast on the reclining surface of the sun lounge can be adjusted. Advantageously, this allows a person who is reclining on a sun lounge to periodically increase or decrease the portion of shade that is cast on to the surface of the sun lounge according to their own individual preferences such that, for example, the person can decide to be in complete or partial shade or in full sun, at their discretion. A user wanting a sun tan can, with some forms of the embodiment, elect to expose the full length of their body to direct sun light (that is head to toe), or to limit their exposure to the torso and legs while simultaneously protecting their face, for example. It will therefore be apparent that a sun shelter according to this embodiment provides sun bathers with greater flexibility to selectively control or determine the level of sun light and ultraviolet radiation to which their bodies are exposed while being outdoors on a sun lounge.

[0035] Moreover, adjustment can be made at any time of day, so that, for example, a user can expand the canopy to obtain full cover and maximum protection at midday when UV radiation is at its peak, and can contract the canopy for partial or no shelter in the morning or afternoon when the sun's energy is typically less intense. It will be apparent that the amount of shade can therefore be better regulated to avoid or reduce sun burn or to cool down in the event of overheating, or to warm up after extended time in the shade.

[0036] A sun shelter according to the embodiment can provide a lower elevation sun barrier (the barrier being the canopy) that advantageously can be positioned in significantly closer proximity to the reclining surface of the sun lounge than conventional umbrellas, with the canopy surface area and shape when in the extended state more closely replicating the physical dimensions of the underlying sun lounge, such that the shelter projects shade in a more confined space, thereby significantly improving the user's ability to self-manage the amount of sunlight or shade they receive.

[0037] It will also be apparent from the discussion herein that a sun shelter according to the embodiment that has a significantly smaller canopy and that is closer to the ground than conventional outdoor umbrellas, can therefore more accurately focus shade in a more compact area as opposed to broadly projecting shade on to surrounding surfaces and potentially interfering with and negatively impacting the experience of neighbouring sun bathers.

[0038] Further, the availability of a substantially lower height of the shade canopy, the smaller surface area and its location immediately above a sun lounge poses a far less prevalent obstacle and threat of injury to passing pedestrian traffic than the canopy of conventional outdoor umbrellas.

[0039] The reduced size and configuration of the canopy available in a sun shelter according to the embodiment means the canopy is also less affected by wind and so flapping and noise is substantially reduced or eliminated. Moreover, in addition to enhanced wind resistance, the aesthetic appearance of the sun shelter can be significantly improved. Moreover, the generally convex shape of a conventional umbrella canopy when in an opened state, is also prone to poor wind resistance when experiencing an updraft, often causing an umbrella to be lifted and propelled in the direction of the wind and presenting a danger to anyone in its path.

[0040] An important distinguishing feature of the embodiment, is that, by the adjustable functionality, the adjustable shade canopy can provide a more effective physical barrier to direct and reflected sunlight. In some forms of the embodiment, the canopy can comprise either 1) a single extendable central member, or 2) two or more parallel extendable side members and shade material that can be maintained in a preferred position (selected or adjusted by the user) directly above an underlying sun lounge, the shade material being maintained in the preferred position predominantly through attachment to the one or more extendable members by way of connecting arrangements that may include suitable fastening devices or tensioning mechanisms.

[0041] In an operational condition, the extendable member or members can protrude from a position proximate to the rear or side of a sun lounge in a cantilevered manner and extend and retract over a sun lounge up to the full length of or partially beyond the length of the sun lounge and where two or more side members are provided, these can form outer longitudinal edges of a shade canopy frame to which the shade material is attached and from which the shade material of the shade canopy is suspended and adjusted.

[0042] According to the embodiment the extendable members may be provided in any suitable form and may include:

[0043] Telescopic arms or beams whereby an elongated rear outer tube telescopically accepts a second front inner tube such as through a surface to surface frictional sliding movement, rolling movement or other telescopic movement;

[0044] Folding arms or beams in which, for example, a front portion of the shade canopy frame is hingedly attached to a rear portion for folding movement of the front portion relative to the rear portion about the hinge connection;

[0045] Other forms of sliding arms or beams, such as non-telescopic sliding arms, whereby a front portion of the shade canopy frame is slidable relative to a rear portion by connection of the front portion to a rail or track, whereby the rail can incorporate rollers for rolling movement of the front portion relative to the rear portion, and whereby the rail or track can incorporate guides, or a pair of spaced apart channels or grooves that slidably support opposite side edges of the front portion.

[0046] According to the embodiment the shade material and fastening devices or tensioning mechanisms may include:

[0047] A screen of shade material in the form of a sheet that can be releasably attached to one or more extendable members by way of fastening or attachment devices (for example, press studs), provided at specific points around the perimeter of the shade screen that connect to co-operating respective fastening or attachment devices located on the respective extendable member; and/or

[0048] A screen of shade material in the form of a panel that is stretched and enclosed within a rigid frame that is co-operatively engaged along the length of the respective extendable member by way of a receiving guide, channel, rail or track upon which or within which the screen or panel can slide in a backwards and forwards motion, and/or

[0049] A roll of shade material the length of which encircles a rotating shaft and roller mechanism housed at or toward the rear of one or more extendable members, whereby the leading end of the shade material is releasably attached to the front end of the extendable member, and/or

[0050] A detachable side sheet of shade material temporarily attached to the side of the sun shelter to provide a vertical barrier to direct and/or reflected lateral sunlight by way of connection to the base, the support structure and/or one or more of the extendable members forming the shade canopy frame using co-operating respective fastening or attachment devices, and/or

[0051] A shell of shade material of a substantially rigid, non-fabric substance such as acrylic, polycarbonate, fiberglass, wood or other composition releasably attached to the respective extendable member.

[0052] According to some forms of the embodiment of the invention, a sun shelter includes an adjustable shade canopy comprising one or more extendable members that can form a cantilevered frame that maintains sections of shade material in a generally horizontal orientation and suspended directly above a sun lounge, in close proximity to the reclining surface of the sun lounge, so that advantageously, the shade that is cast by the shade canopy is cast (or is more likely to be cast) predominantly onto the reclining surface of the sun lounge and can be frequently and easily adjusted throughout the day as either the shade requirements of the user change, or the position of the sun and thus the direction of the sunlight changes.

[0053] More specific forms of the embodiment will be described hereinafter.

[0054] The shade canopy of the embodiment can be of any suitable shape in the extended and retracted states. In some forms of the embodiment, the canopy has a generally rectangular or oval shape in the extended state. In a generally rectangular shape the sides of the shade canopy can be formed by a pair of parallel and spaced apart extendable side members that shade material extends between. The canopy can retain a generally rectangular or oval shape in the retracted state, or it can assume a generally square shape if the degree or extent of retraction is sufficient.

[0055] The shade canopy can be formed in any suitable manner. In some forms of the embodiment, the shade canopy can include a sheet of shade material which is supported about its edges. This edge support includes at the leading and trailing ends of the shade material and at the side edges between the leading and trailing ends. Alternatively, the shade material can be supported just at the leading and trailing ends and not along its side edges. Alternatively, the shade canopy can include one or more shade screens comprising shade material that is supported in a frame, i.e. the shade screen is a composite of a frame and shade material. The screens can be removably supported for cleaning or for damage replacement for example. Side frame members of two or more screens can be connected to form extendable members so that the screens can be adjusted between the respective extended and retracted states, such as by sliding or folding of one screen relative to another.

[0056] The shade material can be of any suitable material and can include cloth or fabric, or more solid or rigid non-fabric materials.

[0057] In the extended state, the shade canopy can be generally flat or planar, or it can be curved. In the extended state, the shade canopy can be generally horizontal. This reference to generally horizontal can include a small curve from the trailing end to the leading end of the shade canopy. If curved, the canopy can be slightly concave when viewed from underneath the canopy.

[0058] Retraction of the canopy from the extended state to the retracted state can be by any suitable mechanism. Sliding and telescoping arrangements can be employed as can folding arrangements and roller arrangements.

[0059] Sliding and telescoping arrangements can be embodied in canopies that employ two or more extendable members. The shade material connected between the extendable members can form separate sheets or panels of shade material that are offset slightly vertically so that retraction of the canopy from the extended state to the retracted state involves a forward section of shade material overlying or underlying the shade material of a rear section of the shade material.

[0060] In some forms of the embodiment of the invention, the shade canopy can be formed of two shade screens that telescopically connect together. A first of the screens can be fixed and a trailing end of that screen can form the fixed trailing end of the shade canopy. A second screen of the two screens can be movable so that movement of the second screen relative to the first screen retracts or extends the shade canopy. In these forms of the embodiment, the edges of the shade material of each screen can be supported within a frame. Side frame members of one shade screen can telescopically connect to side frame members of an adjacent screen for telescopic movement between the respective screens to retract or extend the canopy. These side frame members can form respective extendable members. The frame of the shade screens can be U-shaped so that the shade material is supported along three edges and so that a leading end of the first screen and a trailing end of the second screen have no frame member and are thus unsupported. This arrangement enables the shade material of each screen to have a very close overlying relationship in the retracted state.

[0061] In other forms of the embodiment, the shade canopy can be formed of three or more shade screens that telescopically connect together. One screen can be fixed and the other screens can be movable relative to the first screen, with a second of the screens telescopically connected to the first screen and a third of the screens telescopically connected to the second screen. Movement of the screens can be manual by pushing or pulling a screen relative to another screen or the screens can be motor driven.

[0062] Other forms of sliding arrangements include a guide, channel, rail or track connection between two or more screens, whereby the respective screens include cooperating rail or track structures that connect the screens. For example, in a shade canopy that is formed of two shade screens in which one screen is fixed and the other screen is relatively movable, each of the screens can include a frame that has a rail or track structure applied to opposite side frame members, and the respective rail or track structures can slidably connect together to form side frame extendable members.

[0063] The respective screens are not required to be connected by a guide, channel, rail or track connection to embody a sliding arrangement. In some forms of the embodiment, the shade canopy can include shade screens

that are slidably supported by the support structure without connection between them. The shade screens can be spaced apart, such as vertically spaced. Thus, the support structure can, for example, include separate groove or channel structures that separately support a respective shade screen. A first of the shade screens can have the leading end of the shade canopy and a second of the screens can have the fixed trailing end and movement of the first screen relative to the second screen shifts the shade canopy between the extended and retracted states.

[0064] The present embodiment also covers an arrangement in which each of the first and second screens described above are slideable for shade adjustment. In this form of the embodiment, an adjustable sun shelter is provided for use with a deck chair or sun lounge, and comprises a base, a shade canopy formed by the first and second screens and a support structure. The support structure extends upwardly from the base and supports the shade canopy in an operational condition spaced above the base at a height at which in use, the shade canopy overlies a deck chair or sun lounge. In the operational condition, the shade canopy has a leading end formed by the first screen and a trailing end formed by the second screen, which can be fixed. In the operational condition, the shade canopy has an extended state and a retracted state in which the leading and trailing ends are spaced apart a greater distance in the extended state than in the retracted state. The shade canopy is adjustable between the respective extended and retracted states to adjust the extent to which shade cast by the shade canopy falls on a deck chair or sun lounge by adjusting the spacing between the leading and trailing ends by sliding movement of the first and second screens relative to each other.

[0065] The second of the screens can have an operational position in which it is fixed relative to the first screen, but it can also be slidable for collapsing of the sun shelter.

[0066] Sliding arrangements of the above kinds can advantageously accommodate shade canopies that are either generally flat or planar, or curved.

[0067] Sliding arrangements can alternatively incorporate a retraction roller about which shade material of the shade canopy is gathered to retract the shade material from the extended state. The retraction roller can be spring biased or motor driven, or manually rotatable by a handle. A spring biased roller can be manually extended and automatically retracted to the desired retracted position. A motor driven roller can be driven forward or back, for example, causing one or more extendable members to longitudinally extend or retract the canopy such as by operation of an activating switch or button. Obviously a motor driven roller requires an electrical supply and might for example, be battery driven.

[0068] Sliding arrangements that incorporate a retraction roller will have a section of shade material in the shade canopy that can roll or gather about the roller. The shade material must therefore be free of structural support that would otherwise prevent this. In some forms of the embodiment, the shade material is supported by extendable members at the leading end of the shade canopy. The extendable members can have sliding members such as telescopic or track connected members as described above, so that the shade canopy can be retracted and extended by relative movement of the extendable members. With retraction or extension of the shade canopy, the free or unsupported section of shade material can roll onto or off the retraction roller.

[0069] In the above forms of the embodiment of the invention, the retraction roller forms the fixed trailing end of the shade canopy.

[0070] In other forms of the embodiment, the shade canopy can be formed of two shade screens that hingedly or rotatably connect together. In these forms of the embodiment, a first of the screens can be fixed and a trailing end of that screen can form the fixed trailing end of the shade canopy. The trailing end of a second screen of the screens can be hingedly or rotatably connected to a leading end of the first screen so that rotation of the second screen relative to the first screen retracts or extends the shade canopy. In this arrangement, the extended state of the shade canopy can be when the second screen rotates to a position in which it is coplanar with the first screen and in which the leading end of the second screen is spaced a maximum distance from the trailing end of the first screen. In that arrangement, the shade canopy will be generally flat or planar in the extended state. In an alternative arrangement, the extended state of the shade canopy can be when the second screen rotates to a position in which it is generally parallel with the first screen and in which the leading end of the second screen is spaced a maximum distance from the trailing end of the first screen. Alternatively, the extended state of the shade canopy can be when the second screen rotates to a position at an angle to the first screen. In that arrangement, the shade canopy can form a shallow V-shape that is convex or concave in the extended state. The retracted state of the shade canopy can be when the second screen rotates to a position in which it overlies the first screen. In this arrangement, the hinge or rotatable connection between the first and second screens can allow the second screen to adopt multiple positions between the extended and retracted states, such as by the use of a Hirth indexing mechanism or 'dog clutch' with cam release, a ratchet catch or other releasably engaged rotating joint, in the hinge connection.

[0071] The shade canopy can take alternative forms in order to facilitate movement between the extended and retracted states. A concertina arrangement can be adopted whereby a sheet of shade material can be retracted by being folded laterally into a repeating W-shape and expanded from that shape. For example, the shade canopy could be formed with extendable members, such as telescopic or guide, channel, rail or track connected extendable members as described above, and a sheet of shade material that is supported or suspended between the extendable members by way of a series of slidably engaged transverse rods or ribs spaced apart at equal intervals longitudinally for the length of the shade sheet. The sheet of shade material can be formed to concertina as the extendable members are extended or retracted.

[0072] The shade canopy can include additional and separate shade sections, sheets, panels or screens. In some forms of the embodiment, an additional shade section is provided at the fixed trailing end of the shade canopy. The additional shade section can be an additional shade sheet, panel or screen that extends rearwardly of the fixed trailing end of the shade canopy. The additional shade sheet, panel or screen can overlap with the fixed trailing end of the shade canopy so that there is generally no interruption of the shade cast by the sun shelter and the additional shade sheet, panel or screen can be adjustable in position, such as through sliding or rotational movement, to adjust the shade cast by the additional shade sheet or screen.

[0073] In addition to the shade canopy that overlies a deck chair or sun lounge, further or additional shade can be provided by side and/or end shade sheets. Such shade sheets can provide protection from both direct and reflected sun light that would otherwise enter the space below the shade canopy laterally. The shade sheets can be detachable so that they can be attached and removed as required.

[0074] In some forms of the embodiment of the invention, a side shade sheet can connect to the shade canopy, such as to an extendable member of the shade canopy and can extend downwardly from the shade canopy towards or to the base. The lower end of the shade sheet can be weighted or it can include a connection facility for connection to the base of the sun shelter, or to a different structure, for example the legs of a sun lounge, or eyelets fixed into an underlying deck.

[0075] Alternatively, the lower end of the side shade sheet can include a retraction facility to retract the shade sheet for storage and transport. The retraction facility can comprise a roller. The retraction facility can weight or anchor the lower end of the shade sheet when the shade sheet is in operation. In this form of the embodiment, the upper end of the shade sheet can be removably or releasably connected to the shade canopy, such as to an extendable member of the shade canopy, in the operational condition of the shade sheet and can be retractable to or into the retraction facility once the upper end of the shade sheet is released from connection with the shade canopy.

[0076] Alternatively, the upper end of the side shade sheet can include a retraction facility to retract the shade sheet for storage and transport. The retraction facility can be fixed to or be part of the shade canopy, such as to an extendable member of the shade canopy, or it can be removably or releasably connected to the shade canopy. Where the retraction facility is fixed to or part of the shade canopy, the retraction facility can be arranged to collapse with the shade canopy. The lower end of the shade sheet can be weighted or it can include a connection facility so that when the shade sheet is extended from the retraction facility, it can be connected to the base of the sun shelter, or to a different structure, for example the legs of a sun lounge, or eyelets fixed into an underlying deck.

[0077] In the above forms of embodiment of the invention that include a retraction facility, the side shade sheet can be arranged to extend and retract generally up and down, for example vertically. However, in alternative forms of the embodiment, the shade sheet can extend and retract sideways, along the length of a sun lounge with which the sun shelter is used. In some forms of the embodiment, the shade sheet can be formed to concertina between extended and retracted conditions. In some forms of the embodiment, the side shade sheet can be of a semi-circular shape comprising shade material attached to ribs that revolve around a pivot so that the shade material can open and close like a hand fan, so as to have an apex at one end and to have a concertina, generally triangular configuration when open. The apex can be mounted to the base, and two point connections can be made to the shade canopy, such as to an extendable member of the shade canopy, in the open condition of the shade sheet. Alternatively, instead of point connections, the base of the shade sheet can be slidably fixed to the shade canopy so that shade sheet can be opened and closed by sliding movement of the base relative to the shade canopy.

[0078] In some forms of the embodiment, one side edge of the side shade sheet is attached to the support structure, such as the post of the support structure as hereinafter described.

[0079] The side shade sheet can extend for the full length of the sun lounge with which the sun shelter is used, or it can extend for a reduced length. The shade sheet can extend for the full height of the sun shelter between the shade canopy and the base or it can extend for a reduced height. A shade sheet can be provided on one or each side of the sun shelter and/or one or each end of the sun shelter.

[0080] The support structure can take any suitable form. In many forms of the embodiment, the support structure supports the shade canopy in a cantilevered manner, or in other words, the support structure forms a cantilever support for the shade canopy. This advantageously allows the shade canopy to be supported toward one end of the shade canopy and to extend from the support structure free from further frontal support. In these forms of the embodiment, the shade canopy is preferably supported at or toward the fixed trailing end of the shade canopy. This means that the support structure can extend upwardly from the base to the shade canopy in the region of where the head or shoulders of a person reclining on a sun lounge would ordinarily be located. Advantageously, this allows unfettered access to the remaining area of the sun lounge for easy ingress to or egress from the sun lounge and for the placement for example, of a food and drinks table between adjacent sun lounges.

[0081] A support structure is preferably provided on each side of the sun shelter. The support structures are preferably spaced apart so that a sun lounge can fit between them with a small or narrow amount of clearance on either side of the sun lounge. In the above example providing cantilevered support, the support structures can be spaced apart on each side of the sun shelter at or toward the fixed trailing end of the shade canopy.

[0082] In these forms of the embodiment of the invention, the support structure can connect directly between the base and the shade canopy, such as to the central or side extendable members of the shade canopy. In these forms of the embodiment, the support structure can comprise a post that connects to the base at one end and to the shade canopy at the other end. The post can extend from the base direct to the fixed trailing end of the shade canopy. This arrangement can be provided symmetrically on each side of the sun shelter, to connect to each side of the base and the shade canopy. The post can be supported by bracing members that extend between the post and the base and/or the post and the shade canopy to maximise or increase the structural integrity of the support structure.

[0083] In alternative forms of the embodiment, the support structure connects to the shade canopy inboard of the trailing end. The connection can for example be in the region of a mid-point of the shade canopy when the shade canopy is in the extended state. In these forms of the embodiment, to retain unfettered access to the sun lounge as described above, the support structure can comprise a post that connects to the base at a first end and that extends upwardly from the base in the region of where the head or shoulders of a person reclining on a sun lounge would ordinarily be located. The post can be generally straight and the opposite and second end of the post can connect to a beam that extends laterally from the post into supporting connection with the shade canopy. As an example, the post can extend from the base at an angle to vertical, such as 10° to 20° from

vertical and in a direction that is away from the leading end of the shade canopy and the beam can extend from at or adjacent the second end of the post in a direction that is toward the leading end of the shade canopy and into connection with the shade canopy approximately mid-way along the shade canopy in the extended state of the shade canopy. The beam can extend generally perpendicular to the post. This "dog-leg" arrangement maintains the clearance for unfettered access to a sun lounge in use with the sun shelter.

[0084] The post can comprise a first generally upright arm and the beam can comprise a generally angled arm that comprises first and second arm portions. In this form of the embodiment, the shade canopy can comprise two shade screens with a first shade screen slidably supported in the first arm portion and the second shade screen slidably supported in the second arm portion.

[0085] The first shade screen can be fixed to the first arm portion so that it has a fixed trailing end. The second shade screen can be slidably received within guides, channels, rails, tracks or grooves of the second arm portion so that the leading end of the second shade screen can slide relative to the fixed trailing end of the first shade screen.

[0086] The trailing end of the second shade screen can overlap with the leading end of the first shade screen in the extended state of the shade canopy so as to prevent or minimise passage of sunlight between the respective screens. Similar to the other sun shelters described herein, the leading end of the second shade screen can be retracted to adjust the extent to which the sun shelter shades a sun lounge with which the sun shelter is used.

[0087] The first shade screen can be movable, such as for collapsing purposes or shade adjustment. Thus, the first shade screen can also be slidably received within guides, channels, rails, tracks or grooves of the first arm portion.

[0088] The beam can connect to the post for movement relative to the post to facilitate adjustment of the shade canopy and/or to facilitate collapse of the sun shelter. For example, the beam can connect to the post for sliding movement relative to the post. For example, one end of the beam can include a sleeve or other sliding connection that engages the post and that is slidable along the post. The beam can connect to the shade canopy in any suitable manner and for example, can connect to a shade screen of the shade canopy, or the beam can extend to a lateral support of the shade canopy.

[0089] In alternative arrangements, the post can be curved in either a convex or concave manner, or include a curved section, so that a portion of the post can extend upwardly and away from the base and the post can curve into connection with the shade canopy.

[0090] In the above forms of the embodiment, the support structure is preferably provided symmetrically on each side of the sun shelter, to connect to each side of the base and the shade canopy.

[0091] Where the support structure comprises a single post that extends from the base into connection with the shade canopy, the post can extend from any part of the base and connect to any part of the shade canopy, such as to extendable members of the shade canopy. For example, the post can extend from one side of the sun shelter or centrally of the sun shelter.

[0092] For structural stability, bracing members can connect between the post or posts and the shade canopy and/or the base.

[0093] For structural stability, more than a single post can be provided at one side or at each side of the sun shelter. In these forms of the embodiment, a pair of posts can extend from the base and either both can connect with the shade canopy, or the pair of posts can connect with each other at a point along their length with only one of the arms connecting with the shade canopy.

[0094] The connection of the support structure to the base and/or the shade canopy can be a connection that facilitates collapsing of the support structure relative to the base and/or the shade canopy for the purpose of collapsing the sun shelter, such as for storage and transport. In some forms of the embodiment, the connection can be a rotational or hinged connection between an end of a post or beam and the base or shade canopy. Alternatively, the connection can be a sliding connection between an end of a post or beam and the base or shade canopy. In each of these forms, a locking facility can be provided to lock or to releasably engage the post or beam relative to the base or shade canopy against rotational or sliding movement once the sun shelter has been expanded such that the shade canopy is in the preferred operational condition. The locking facility can take any suitable form and can for example include bracing members that connect between the post or beam and the base or shade canopy, or pins that are inserted through an end of a post or beam and the base or shade canopy.

[0095] The base can take any suitable form. The base is required to provide a fastening point to securely anchor the support structure and the shade canopy to the ground as well as to provide ballast to support the sun shelter in a stable manner against lifting or tipping under wind loading, or tilting forwards or downwards under other loads, such as a person leaning against the shade canopy. For this, physical properties such as weight and size or footprint of the base can be relevant. Where the shade canopy is supported in a cantilevered manner, the base can have a length that is greater than its width and the length dimension can extend in the same direction as the length dimension of the shade canopy when the shade canopy is in the extended state. Thus, the base can underlie the shade canopy. The base can also have a length dimension which is similar to the length dimension of the shade canopy when the shade canopy is in the extended state, thus the base can underlie substantially the full length of the shade canopy frame. In some forms of the embodiment, the base has a length dimension which is similar to but shorter than the length dimension of the shade canopy in the extended state. The base advantageously can be arranged so that in use, it is substantially positioned beneath a sun lounge with which the sun shelter is used. The base is required to connect to the support structure and so in some forms of the embodiment, base will extend from beneath the sun lounge to the support structure but that part or portion can be a relatively small portion of the base. Alternatively, a part or portion of the support structure can extend to the base.

[0096] The base can be formed as a square, rectangular, oval or circular frame. The base frame can be formed from interconnecting components. The support structure can connect to and extend from one end of the base frame, or one or both of the sides of the base frame. One end of the base

frame can have a lateral extent beyond the sides of the base frame to connect to the support structure.

[0097] Alternatively, the base can have a central spine and cross-members extending laterally to the spine.

[0098] For increasing the weight of the base for the purpose of maximising wind resistance and stability of the sun shelter when in an operational condition, the base can be arranged to accept weighting mediums. For example, the base can be at least partially hollow and can include a closable inlet for introducing water into the base. Alternatively, the base can be arranged to cooperate with a separate weight so that until the separate weight is applied to the base, the base does not necessarily meet the requirement to support the sun shelter in a stable manner. Alternatively, the separate weight might only be required when excessive wind conditions are such as to potentially make the sun shelter unstable.

[0099] The separate weight can be composed of a material of high relative density such as sand, stone, metal or concrete, for example. Alternatively, the separate weight can be a hollow vessel for containing water. In this form of the embodiment, the separate weight can be filled with water when required and placed into a position of cooperation with the base. This can involve simply placing the weight to overlie a suitable part of the base. Alternatively, the weight vessel can be formed to have a mating connection with the base so that proper positioning of the weight overlaying the base occurs. For example, the base can include the spine discussed above and the weight can include a channel to accept the spine and to locate the weight on the spine.

[0100] Throughout this description, the shade canopy has generally been described as being adjustable longitudinally of an underlying sun lounge, so that in most forms of the embodiment of the invention, the shade canopy is adjustable to extend towards or retract back from the foot end of an underlying sun lounge. However, it is within the scope of the present invention that the shade canopy be adjustable across or laterally to the longitudinal extent of an underlying sun lounge. In that arrangement the fixed trailing end will be at one side of an underlying sun lounge and the leading end will be on the opposite side of the underlying sun lounge when the shade canopy is in the extended state.

[0101] The present embodiment of the invention has been described above as an adjustable sun shelter of a free-standing nature for use with a pre-existing, independent deck chair or sun lounge. Thus, the present embodiment has been described above as being separate from a pre-existing deck chair or sun lounge. However, in other forms of the embodiment of the invention, a combination of deck chair or sun lounge (hereinafter "sun lounge") and a fully integrated adjustable sun shelter can be provided. In these forms of the embodiment, the base described above will be a sun lounge. Thus, in these forms of the embodiment, the combination can comprise:

[0102] a. a base in the form of a sun lounge,

[0103] b. a shade canopy, and

[0104] c. a support structure,

[0105] the support structure extending upwardly from the sun lounge and supporting the shade canopy in an operational condition spaced above the sun lounge at a height at which in use, the shade canopy at least partly overlies the reclining surface of the sun lounge,

[0106] in the operational condition, the shade canopy having a leading end and a fixed trailing end and having an extended state and a retracted state, the leading and trailing ends being spaced apart a greater distance in the extended state than in the retracted state, and the shade canopy being adjustable between the respective extended and retracted states to adjust the extent to which shade cast by the shade canopy falls on the sun lounge by adjusting the spacing between the leading and trailing ends by movement of the leading end relative to the fixed trailing end.

[0107] A combination of the above kind advantageously provides a deck chair or sun lounge with an integral shade canopy so that a user can purchase the combined product rather than acquiring the deck chair or sun lounge separately from the sun shelter. This is considered to be particularly relevant for hotels, resorts and cruise ships that often invest heavily in creating indoor and outdoor spaces that are attractive to guests. This typically involves coordinating various elements such as physical shape, style of decoration, method of construction and type of materials to produce furnishings that are tastefully integrated in an appealing design aesthetic that is of a consistent build quality and visual appearance. This would be in contrast to a collection of outdoor furnishings assembled from a variety of diverse, unrelated sources which will adversely result in an eclectic, disjointed mix of decor that is less than pleasing to the eye.

[0108] Accordingly, the pairing of a free-standing adjustable sun shelter with a pre-existing deck chair or sun lounge where each separate item may be of a contrasting physical appearance, will be unsatisfactory for many hotel, resort and cruise ship operators seeking to provide outdoor furnishings of a consistent quality and visual appearance.

[0109] As such, in this embodiment of the invention a combination sun lounge and matching adjustable sun shelter physically combined into a composite structure, could have advantageous commercial application due to the components of the combination being tastefully and sympathetically integrated in an appealing design aesthetic that is of a consistent quality and visual appearance.

[0110] Further, because the sight of shade canopies above sun lounges in some environments may be considered unattractive, for example detracting from the ambience of a swimming pool precinct, some forms of this embodiment of the invention provide for adjustment to retract the shade canopy and the support structure from overlying the sun lounge. The shade canopy frame and the support structure can be designed to conveniently rotate and retract away from overlying the sun lounge such as into an in-built storage compartment so as to completely conceal the presence of the shade canopy and the support structure without the need to physically detach the shade canopy frame and support structure from the sun lounge.

[0111] The above feature allows the combined sun lounge and shade canopy to have a footprint that is no greater than the physical dimensions of the sun lounge base itself and slightly smaller than that of the free-standing embodiment described above. This results in significant additional space savings for hotels, resorts and cruise ships, where available floor space surrounding swimming pools is usually limited, often resulting in multiple sun lounges being arranged side-by-side so as to accommodate large numbers of people simultaneously in a confined area.

[0112] The shade canopy can be adjustable between the respective extended and retracted states in any suitable manner including in the same manners as discussed previously for the free-standing sun shelter. In addition, the support structure can be adjustable to allow the full shade canopy to move relative to the sun lounge, again to adjust the extent to which shade cast by the shade canopy falls on the sun lounge. Thus, in some forms of the embodiment, the sun lounge can have a pair of spaced apart side frame members with the reclining surface located between the frame members, and the shade canopy can have a pair of spaced apart side frame members and a shade material bridging between the frame members. In this form of the embodiment, the support structure can comprise a pair of support posts one each of which is connected to a respective side frame member of the sun lounge and each of which extends to a respective side frame member of the shade canopy to space the shade canopy above the sun lounge.

[0113] In the above form of the embodiment, the support posts can be pivotably connected to the side frame members of the sun lounge and the shade canopy, so that rotation of the support posts about the pivot connection with the side frame members of the sun lounge shifts the shade canopy relative to the sun lounge, forward and back relative to the reclining surface of the sun lounge. To fix the support posts in place, bracing struts can be releasably connected to the support posts to connect between the support posts and the sun lounge and the shade canopy. The bracing struts can comprise upper and lower struts at upper and lower positions of the support posts and the arrangement can be such that the support posts can be fixed in different orientations and supported by the bracing struts depending on the needs of the person reclining on the sun lounge. The connection of the bracing struts to the sun lounge and the shade canopy can be to the side frame members of the sun lounge and the shade canopy and the connection can be adjustable to allow the support posts to be rotated or tilted towards either the front or rear of the sun lounge, facilitating forward or backward movement of the shade canopy relative to the sun lounge.

[0114] An alternative combination sun lounge and adjustable sun shelter can comprise:

[0115] a. a base in the form of a sun lounge,

[0116] b. a shade canopy, and

[0117] c. a support structure,

[0118] the support structure extending upwardly from the sun lounge and supporting the shade canopy in an operational condition spaced above the sun lounge at a height at which in use, the shade canopy at least partly overlies the reclining surface of the sun lounge,

[0119] in the operational condition, the support structure being adjustable to allow the shade canopy to move relative to the sun lounge to adjust the extent to which shade cast by the shade canopy falls on the sun lounge.

[0120] The above combination can also have a sun lounge and shade canopy having spaced apart side frame members and which are connected together by a pair of support posts as described above.

[0121] In each of the combinations described above in which the support structure includes pivotally connected support posts, the shade canopy can be shifted away from overlying the sun lounge so that a person using the sun lounge can increase or decrease the amount of sun exposure. Advantageously, the shade canopy can be formed so that the shade material can be removed and, optionally, conveniently stored beneath the sun lounge, and the support posts and the side frame members can be retracted and/or collapsed into storage cavities, receptacles or compartments formed adjacent to or incorporated within the side frame members of the sun lounge base. Where bracing struts are employed, these can also be accommodated within the storage areas of the sun lounge.

[0122] The storage areas can simply be the position at which the support posts and side frame members of the shade canopy rotate, retract or collapse to, or alternatively, the storage cavities, receptacles or compartments can be open channels into which the support posts and side frame members of the shade canopy can be rotated into or retracted or collapsed.

[0123] The shade canopy can be of the form discussed above which includes a frame, such as a modular frame with side members, having a front portion hingedly attached to a rear portion for folding movement of the front portion relative to the rear portion about the hinge connection. The front portion can be shorter in length than a longer rear portion. This arrangement as previously discussed can facilitate adjustment of the extent to which shade cast by the shade canopy falls on the sun lounge, but also, in the combination forms of the embodiment, where the support posts are hingedly connected to the side frame members of the sun lounge, the folding movement of the front portion of the side frame members over the rear portion means that the overall length of the side frame members can be substantially reduced. This is advantageous in that forward rotation of the support posts shifts the side frame members of the shade canopy forward relative to the sun lounge and would, without folding of the side frame members rearwardly to shorten their overall length, cause the side frame members of the shade canopy to extend beyond the front end of the sun lounge. However, with rearward folding movement reducing the overall length of the side frame members, the folded side frame members of the shade canopy can rotate or collapse with the support posts directly into the storage cavities, receptacles or compartments of the sun lounge.

[0124] The storage areas can be open channels and can have a lid, such as a hinged lid to close over the channels as required.

[0125] The side frame members of the shade canopy can include leading and trailing cross members that connect between opposing side frame members. These can be removably connected to the front and rear ends of the side frame members so that they can be detatched when the shade canopy is to be removed, such as because the user prefers full or partial sun exposure. With the cross members detached, the shade material can also be removed and the support posts and side members can be rotated or retracted into suitable storage areas, such as recessed storage compartments. The cross beams can improve the rigidity of the shade canopy.

[0126] Alternative support structures can be adopted for the combination sun lounge and adjustable sun shelter discussed above. An alternative form comprises a scissor style arrangement comprising a first support post that is pivotably anchored at a lower end thereof to the sun lounge, such as within a storage receptacle (for example a compartment, cavity or channel of the sun lounge) and a second support post that is pivotably connected to the first support post so that the support posts are pivotally connected

between opposite ends of the support posts, such as approximately half way along the length of the respective support posts.

[0127] The lower end of the second support post can slide, such as within the storage receptacle towards and away from the anchored lower end of the first support post as the first support post rotates about its lower anchor between collapsed and expanded conditions. In the expanded condition, the two support posts form an 'X' configuration. That configuration can be reached by raising the two support posts in unison vertically to form the appropriate 'X' configuration. The lower end of the second support post can slide in connection with a track, so that for example, the lower end can be slidably secured within the storage receptacle, and/or that the position of the lower end can be fixed in place when it has reached the desired position within the storage receptacle.

[0128] When the two support posts are raised to form the 'X' configuration, they form a rigid brace to support the shade canopy. The two support posts connect to the shade canopy as follows.

[0129] The upper end of the first support post is pivotably connected to the side frame member of the shade canopy, such as by a removable pin connection so that an upper end of the first support post can be released from connection with the side frame member to collapse the support structure. The upper end of the second support post is permanently and pivotably connected to the side frame member of the shade canopy, such as by a fixed pin or rivet or the like. By this arrangement, the side frame member of the shade canopy can be rotated into a horizontal position or orientation as the two support posts are rotated from a collapsed condition to an expanded or erected condition and once the two support posts are at the preferred position the upper end of the first support post can be connected to the side frame member of the shade canopy.

[0130] With the connection made between the upper end of the first support post and the side frame member of the shade canopy, the first and second support posts are temporarily fixed in a crossed 'X' configuration or scissor manner and the side frame member of the shade canopy is fixed horizontally. While the lower end of the second support post need not be fixed in place when the support structure is in the collapsed condition, the preference is that temporary fixing does occur once the two support posts have been raised in the operational condition. Accordingly, the lower end of the second support post can be fixed by engagement with a track, or by pin connection, or a ratchet or other arrangement can be employed. Once erected, the shade canopy and any front and rear cross members can be attached and the combination sun lounge and shade canopy is ready for use.

[0131] To collapse the scissor style arrangement discussed above, the shade material of the shade canopy and any front and rear cross members are removed and the connection with the upper end of the first support post and the side frame member of the shade canopy is removed or disengaged. The support structure can then be collapsed by rotation of the first support post downwardly. This rotation also rotates the second support post, the lower end of which slides away from the lower end of the first support post within the storage receptacle. The side frame member of the shade canopy can rotate about the pivot connection with the upper end of the second support post downwardly, so that all of the support structure and the of the shade canopy can fold down or collapse into the storage receptacle with the respective support posts and side frame members arranged in a generally parallel configuration. In the preferred arrangement, the two support posts are spaced apart laterally in the storage receptacle so that the side frame member of the shade canopy can collapse to a position between the two support posts in the storage receptacle. This means that the side frame member of the shade canopy connects to the inside or inboard of the first support post and temporarily to the outside or outbound side of the second support and the pivotal connection of the two support posts is by an axle that spaces the support posts apart to accommodate the side frame member of the shade canopy between them in the collapsed condition.

[0132] The side frame members of the shade canopy can be extendable, telescopically for example, or otherwise length adjustable in the same manner as described for the free-standing shade canopies described earlier herein. Likewise, the shade material can be roller mounted in the same manner as described for the free-standing shade canopies described earlier herein.

[0133] The scissor style support structure described above can advantageously provide robust and rigid or stiff support for the shade canopy by virtue of the scissor configuration of the first and second support posts.

[0134] The shade canopy can alternatively take other forms such as the same forms as discussed previously for the free-standing sun shelter.

BRIEF DESCRIPTION OF THE DRAWINGS

[0135] In order that the invention may be more fully understood, some embodiments will now be described with reference to the figures in which:

[0136] FIG. **1** illustrates one form of a free-standing personal sun shelter according to the embodiment of the present invention with the shade canopy of the sun shelter in an extended state, whereby sheets of shade material are releasably attached to one or more extendable members.

[0137] FIG. **2** is a side view of the sun shelter of FIG. **1**.

[0138] FIG. **3** is a perspective view of the sun shelter of FIG. **1** in a retracted state.

[0139] FIG. **4** is a perspective view of the sun shelter of FIG. **1** in a collapsed state but with the shade material of the shade canopy removed for clarity.

[0140] FIG. **5** illustrates an alternative form of a free-standing personal sun shelter according to the embodiment with the shade canopy of the sun shelter in an extended state, whereby the leading end of a roll of shade material is releasably attached to the front end of the extendable member.

[0141] FIG. **6** is a perspective view of the sun shelter of FIG. **5** in a retracted state.

[0142] FIG. **7** shows the base of the sun shelter of FIG. **5** with a weight applied to the base.

[0143] FIG. **8** illustrates an alternative form of a free-standing personal sun shelter according to the embodiment with the shade canopy of the sun shelter in an extended state, whereby a screen or panel of shade material enclosed within a rigid frame is co-operatively engaged along the length of respective extendable members by way of a receiving guide, channel, rail or track.

[0144] FIG. **9** illustrates the sun shelter of FIG. **1** with side shade sheets applied to one side of the sun shelter.

[0145] FIG. **10** illustrates an alternative form of a free-standing personal sun shelter according to the embodiment with the shade canopy of the sun shelter in a partially retracted state, whereby sheets of shade material are releasably attached to one or more extendable side frame members.

[0146] FIG. **11** illustrates a combination sun lounge and adjustable sun shelter according to the embodiment with the shade canopy of the sun shelter in a partially retracted state.

[0147] FIG. **12** is a side view of the combination sun lounge and adjustable sun shelter of FIG. **11**.

[0148] FIG. **12***a* shows the collapsing sequence of the support structure of FIG. **12**.

[0149] FIG. **13** shows a combination sun lounge and adjustable sun shelter according to the embodiment with the shade canopy of the sun shelter in a partially retracted state, whereby sheets of shade material are releasably attached to one or more extendable side frame members.

[0150] FIG. **14** illustrates the combination sun lounge and adjustable sun shelter of FIG. **13** in a partially retracted condition.

[0151] FIGS. **15** and **16** show a support structure for use with the combination sun lounge and adjustable sun shelter of FIGS. **11** to **14**, whereby in FIG. **15**, sheets of shade material are releasably attached to one or more telescopically extendable side frame members.

[0152] FIG. **17** shows the arrangement of FIGS. **15** and **16** as employed in a full combination of sun lounge **180** and shade canopy **181**.

DETAILED DESCRIPTION

[0153] FIG. **1** illustrates one form of personal sun shelter **10** according to the embodiment. The sun shelter **10** is shown in place relative to a sun lounge **11** that is shown in broken line. The sun lounge **11** takes a standard form in which it includes a flat bed section **12** and an inclined head section **13**. Legs **14** elevate the sun lounge **11** above the ground. The upper surface **15** of the bed section **12** and the head section **13** is a reclining surface for a person to sit or recline on.

[0154] The sun shelter **10** is customised for use with the single sun lounge **11**. The shelter **10** is therefore constructed for the provision of shade substantially just to the sun lounge **11** and as will become apparent from the discussion that follows, more accurately cast or projected shade can be provided by sun shelters according to the embodiment as compared to the traditional form of umbrellas discussed above.

[0155] The sun shelter **10** includes a base **18**, a shade canopy **20** and a support structure **22**. The base **18** is formed to have a rectangular back end **24** and a central spine **25**. The corners of the rectangular back end **24** can be permanently connected, or alternatively, the corners can be disconnectable so that the components of the base **18** can be disassembled.

[0156] The shade canopy **20** has a leading end **30** and a fixed trailing end **31** (see FIG. **2**). In FIG. **1**, the shade canopy **20** is shown in an extended state, in which the leading end **30** is spaced at a maximum distance from the trailing end **31**. The shade canopy **20** casts maximum shade in this extended state.

[0157] The shade canopy **20** includes two curved sheets or sections of shade material **32**, **33** that are generally parallel but slightly offset vertically so that in a retracted state of the shade canopy **20**, the section **33** overlies the section **32**. The shade sections **32** and **33** could alternatively be flat sections and still overlap in the same manner. The shade sections **32** and **33** are each supported within a respective frame **34** and **35** which are telescopically connected. Thus, the side frame members **36** of the frame **34** are telescopically received within the side frame members **37** of the frame **35** to form extendable members on either side of the shade material **32**, **33**. It is to be noted that the frames **34** and **35** are U-shaped, so that the trailing edge of the material section **32** and the leading edge of the material section **33** are able to closely overlap in the extended state of the shade canopy **20** as illustrated, without the interposition of frame components between them.

[0158] It will be readily understood that by pushing the leading end **30** in the direction arrow A, the side frame members **36** of the frame **34** will be telescopically received within the side frame members **37** of the frame **35**, so that the spacing between the leading end **30** and the trailing end **31** reduces. The effect is that the shade producing area of the shade canopy **20** also reduces. Thus, the shade that is cast on or applied to the sun lounge **11** can be reduced.

[0159] The extent to which the side frame members **36** are telescopically received within the side frame members **37** is at the discretion of a person using the sun lounge **11**. The leading end **30** can be pushed inwardly to bring the shade canopy **20** to a fully retracted state or to a position short of that state. In some forms of the embodiment of the invention, in the fully extended state, the shade canopy has a length of about 2 m from the leading end **30** to the trailing end **31**, and the leading end **30** can be pushed inwardly a distance of approximately 0.75 m, but it is at the discretion of the person using the sun lounge **11** as to whether they retract the shade canopy **20** fully that distance, or whether they retract a lesser distance. The telescopic connection between the respective side frame members **36** and **37** can have a frictional component, so that the frame **34** will retain the retracted position once retracting pressure applied to the leading end **30** is removed. Types of telescopic connections have been described earlier herein and those forms of connections can be applied to the telescopic connection between the side frame members **36** and **37**.

[0160] FIG. **2** is a side view of the FIG. **1** arrangement with the sun lounge **11** shown in broken line, and shows the distance D that the frame **34** can be shifted inwardly into the frame **35** for retracting the shade canopy **20**. FIG. **2** also shows an optional bracing member **38** that can be applied to bridge between the back end **24** of the base **18** and the support structure **22** to stiffen the support structure **22**.

[0161] FIG. **3** shows the same side view as FIG. **2**, but with the frame **34** partially retracted into the frame **35**. The retraction is about two thirds of the full distance D.

[0162] FIG. **2** clearly shows that in the extended state of the shade canopy **20**, the leading end **30** extends slightly beyond the feet end **39** of the bed section **12**, while the trailing end **31** extends beyond the free edge **39** of the head section **13**.

[0163] Moreover, it will be readily apparent from the dimensions of FIGS. **1** to **3**, that the spacing of the shade canopy **20** from the reclining surface **15** is much closer than in traditional umbrellas, which typically place the canopy at well over a 2 m spacing from the reclining surface **15**. In

contrast, the spacing between the reclining surface **15** and the shade canopy **20** in the sun shelter **10** is more likely to be in the region of 1 m.

[0164] FIGS. **1** to **3** also illustrate the support structure **22** which extends upwardly from the base **18** to support the shade canopy **20** in the operational condition overlying the reclining surface **15** of the sun lounge **11**. The support structure **22** supports the shade canopy **20** in a cantilevered manner. As shown in the figures, the support structure **22** extends at the region of the bed section **12** which is adjacent the head section **13**. Thus, as clearly shown in FIG. **2**, the remaining area of the bed section **12** is free of the supporting structure **22** so that a person using the sun lounge **11** is freely able to access the sun lounge **11**. Moreover, the position of the support structure **22** allows a table or the like to be positioned to the side of the bed section **12** without being impeded by the support structure **22**.

[0165] In FIGS. **1** and **2**, the support structure **22** comprises arms or posts **45** that connect at a lower end to the base **18** and at an upper end to the fixed trailing end **31** of the canopy **20**. The support structure **22**, comprising only the arms **45**, can be built or constructed in a manner that is sufficiently robust to support the canopy **20**. However, the bracing member **38** can be added if further support is required. Further bracing members can be applied if required, such as between the arms **45** and the side frame members **37** of the frame **35**.

[0166] A unique advantage of the embodiment is the ability to provide cantilevered support to the sun canopy **20** so as to provide the access advantages discussed above and to provide full length shade coverage of the sun lounge **11**. To facilitate this and to prevent tipping of the sun shelter **10**, the base **18** extends through the spine **25** for a substantial portion of the length of the canopy **20** in the extended state so as to provide an upwards resistant force to any downward pressure inadvertently applied to the front end of the shade canopy. This is evident from FIG. **2**, in which the base **18** extends to a position to underlie the frame **34** of the shade canopy **20**. While the extent to which the spine **25** needs to underlie the shade canopy **20** will vary depending on other parameters such as the weight of the base **18**, a combination of size or foot print and weight can determine the forward extent to which the spine **25** needs to extend to provide stable support of the sun shelter **10**.

[0167] It is also apparent from the figures, that the base **18** fits closely to the side edges of the sun lounge **11** so that the projection of the base **18** beyond the sides of the sun lounge **11** is minor and somewhat dependant on connecting with the support structure **22**. The base **18** does not extend beyond the foot end **38** of the sun lounge **11**, but rather, extends beneath the bed section **12** of the sun lounge **11**. This of course is dependent on the position of the sun lounge **11** relative to the base **18**.

[0168] The sun shelter **10** is intended to collapse, principally for storage. Thus the connections between the arms **45** and the side frame members **37** and the back end **24**, are rotatable connections comprising ratchet arrangements or releasably engaged rotating joints, such as a Hirth indexing mechanism or 'dog clutch' with cam release. These connections can be sufficiently robust to maintain the arms **45** in the position shown in FIGS. **1** to **3** (with the bracing member **38** added if required). The connections are thus of the kind in which the arms **45** can be rotated relative to the back end **24** to an upright position which can be maintained and the frames **35** can be rotated relative to the arms **45** to a relatively horizontal position which can be maintained, as shown in FIGS. **1** to **3**. With respect to FIGS. **3** and **4**, to achieve the collapsed condition shown in FIG. **4**, the frame **34** is telescopically retracted into the frame **35**, and the arms **45** and the frames **35** are rotated relative to each other and to the back end **24**, In FIG. **4**, the shade material of the canopy **20** has been releasably detached for clarity, but the side frame members **36** are shown fully telescopically received within the side frame members **37**.

[0169] As will be apparent from FIG. **4**, the sun shelter **10** can collapse significantly into a relatively flat form for storage when not required. Given the flat collapsed form, multiple sun shelters can be stacked beside each other or on top of each other.

[0170] FIGS. **5** and **6** show an alternative sun shelter **50** which includes a shade canopy **51** that includes a retraction roller **52**. The shade canopy **51** further includes a leading end **53** and a fixed trailing end which comprises the retraction roller **52**. Shade material **54** is secured at one end to the leading end **53** and at the other end the shade material **54** wraps about the retraction roller **52**. The shade canopy **51** includes a leading frame **55** which includes extendable side frame members **56** and end frame member **57**, to which the shade material **54** is secured. The extendable side frame members **56** are telescopically received within side frame members **58** of a trailing frame **59** and the shade material **54** is not secured to the side frame members **56** or **58**.

[0171] A support structure **60**, comprising upstanding arms or posts **61** and bracing members **62** and **63** supports the shade canopy **51**, while the ends of the upstanding arms **61** remote from the base **64** supports the retraction roller **52**.

[0172] The sun shelter **50** includes a base **64** that comprises a central spine **65** and a pair of cross-members **66**. Lower or bottom ends of the upstanding arms **61** and the bracing members **62** connect to the cross-members **66** in any suitable manner.

[0173] FIG. **7** illustrates a form of ballast that can be applied to the base **64** where additional weight is required to stabilise the sun shelter **50**. In FIG. **7**, a weight vessel **67** is configured to be placed over and nest with the base **64**. The weight vessel **67** can be hollow for receiving liquid, such as water and the vessel can include a port through which water can be introduced and emptied. Alternatively, the weight vessel **105** can be solid, such as of concrete.

[0174] In use, the retraction roller **52** can be activated to retract the shade material **54** and by movement of the shade material **54** in the direction of arrow A, the extendable side frame members **56** of the leading frame **55** retract telescopically into the side frame members **58** of the trailing frame **59** as the shade material **54** wraps about the roller **52** as shown in FIG. **6**. In FIG. **6**, the leading frame **55** has retracted fully telescopically into the trailing frame **59**, so that FIG. **6** illustrates the fully retracted condition of the sun shelter **50**.

[0175] Conversely, extension of the leading frame **55** telescopically out of the trailing frame **59** extends the shade material **54** back to the position shown in FIG. **5**.

[0176] As described earlier herein, the retraction roller **52** can be spring biased or motor driven, or a manual handle could be provided for its rotation. A ratchet arrangement or a releasably engaged rotating joint within the retraction roller **52** could be provided to enable the leading frame **55** to be retracted to positions intermediate the fully retracted

position, which is the position at which the end frame member **57** engages the openings of the side frame members **58**.

[0177] With reference to FIG. **5**, this shows that the shade material **54** is free of structural support along the side edges.

[0178] FIGS. **5** and **6** also show slidable and pivotable connections **70** between the side frame members **58** and the upstanding arms **61** and further slidable and pivotable connections **71** between the side frame members **58** and the bracing members **63**. These slidable and pivotable connections **70** and **71** facilitate the movement shown in FIGS. **5** and **6** that allows the leading end **53** to move relative to the fixed trailing end **52**. As seen in FIGS. **5** and **6**, the end frame member **57** rises upwardly as the shade material **54** is retracted onto the retraction roller **52**.

[0179] FIG. **8** shows an alternative form of sun shelter **80** which is shown in an overlying position relative to the sun lounge **11** of the earlier figures. The sun shelter **80** includes a base **81** which is partly obscured but which includes a central spine **82** and a lateral cross member **83**. A support structure **84** comprises a first generally upright post **85** and a second generally angled beam **86**. The angled beam **86** comprises first and second portions **87** and **88**. The post **85** and the beam **86** are provided on either side of the sun shelter **80**.

[0180] The support structure **84** supports a shade canopy **90**. The shade canopy **90** comprises shade screens or panels **91** and **92**. The shade screen **91** is slidably supported in the first portion **87** and the shade screen **92** is slidably supported in the second portion **88**.

[0181] The lower end of the post **85** connects to the lateral cross member **83** and that connection can be a disconnectable connection for dismantling purposes.

[0182] The shade screen **91** of the shade canopy **90** is fixed to the first portion **87** so that it has a fixed trailing end **93**. The shade screen **92** is slidably received within tracks or grooves **94** of the second portion **88** so that the leading end **95** of the shade screen **92** can slide relative to the fixed trailing end **93** of the shade screen **91**. The shade screen **92** can be frictionally received within the tracks or grooves **94** so as to maintain the selected position of the screen **92** within the tracks or grooves **94**, or pin openings can be employed in the second portion **88** and the frame of the screen **92** for receipt of a locating pin. Other arrangements can be employed.

[0183] The trailing end **96** of the shade screen **92** can overlap with the leading end (which is obscured) of the shade screen **91** in the extended state of the shade canopy **90** so as to prevent or minimise passage of sunlight between the respective screens **91** and **92**. Similar to the other sun shelters described herein, the leading end **95** of the shade screen **92** can be retracted to adjust the extent to which the sun shelter **80** shades the sun lounge **11**.

[0184] The shade screen **91** can be movable within the first portion **87** for collapsing purposes. Thus, it can be arranged to shift forward within the first portion **87** for the purposes of collapsing the sun shelter **80** for storage.

[0185] The respective screens **91** and **92** are shown at an angle to each other. This is not essential and in alternative arrangements, the screens **91** and **92** can be parallel for example, so that retraction of the screen **92** causes it to partially or fully overlie the screen **91**.

[0186] FIG. **9** illustrates the sun lounge **10** of FIGS. **1** to **4**, but includes additional detachable side shade sheets **100** and **101**. These shade sheets **100** and **101** can provide protection from both direct and reflected sun light that would otherwise enter the space below the shade canopy **20** laterally.

[0187] The shade sheet **100** connects to the side frame member **37** of the frame **35** at a top end and extends downwardly from the shade canopy **20** and into connection with the rotating joint **102** of the base **18**. The connection with the shade canopy **20** can be a removable or releasable connection, so that the shade sheet **100** can be connected or added to the sun shelter **20** only when required and the shade sheet **100** can be connected to either side of the sun shelter **20** depending on the direction of incoming sunlight. The connection with the shade canopy **20** and the form of the shade sheet **100** can also allow the shade sheet **100** to extend and retract sideways in a concertina form. As illustrated, the shade sheet **100** can be arranged to open and close like a hand fan, so as to have an apex at the rotating joint **102** and to have a concertina, generally triangular configuration when open.

[0188] The shade sheet **101** is fitted in the opposite direction to the shade sheet **100**, so that the apex is at the side frame member **37** and the shade sheet **101** can fan out in a concertina form, with one end of the triangular form being attached to the rotating joint **102**.

[0189] The shade sheets **100** and **101** can be provided on each side of the sun shelter **10**, or they can be disconnectable so that they can be interchanged from one side of the sun shelter **10** to the other.

[0190] FIG. **10** is a further embodiment of the present invention. FIG. **10** illustrates a sun shelter **110** that employs a different form of shade canopy **111**. The sun shelter **110** employs a base **112** and a support structure **113** comprising a main upright **114** and bracing members **115** and **116**.

[0191] The shade canopy **111** is formed of two shade sheets **120** and **121** that are suspended between side frame members **124** and **126**, and end members **128** respectively. The shade sheets **120** and **121** are hingedly connected at hinge connection **122**. The shade canopy **111** also includes an additional shade screen **123** which is connected to the main upright **114** by its respective side frame members **129**.

[0192] Retraction of the shade canopy **111** is by rotating the shade sheet **121** about the hinge connection **122**. In the sun shelter **110**, the shade sheet **121** can be rotated through approximately **180°** from a position in which it is coplanar with the shade screen **120** and in which it thus forms an overall generally flat or planar canopy **111**, to a position in which it substantially overlies the shade sheet **120**. A ratchet arrangement or a releasably engaged rotating joint can be incorporated in the hinge connection **122** so that the shade sheet **121** can be positioned at an angle to the shade sheet **120**, such as shown in FIG. **10**, and which the angle of inclination is about 35°.

[0193] The various bases that have been illustrated in the drawings can themselves be telescopic to provide added length. In the base **18**, which is shown in several figures, the central spine **25** (see FIG. **1**) can be made telescopic so that its length can be adjusted by retraction or extension. This can be useful for collapsing the sun shelter or for increasing the resistance to tipping.

[0194] FIG. **11** illustrates an alternative form of the embodiment in which a combination of a sun lounge **130** and an adjustable sun shelter comprising a shade canopy **131** is provided in a single integrated unit. In FIG. **11** and the

figures that follow, the sun lounge forms a base rather than the separate bases that are shown in the arrangements of FIGS. **1** to **10**.

[0195] The sun lounge **130** is of a similar kind to the sun lounges illustrated earlier herein, except that the side frame members **132** each include receptacles in the form of elongate open channels or cavities **133** for storage purposes as will be described later herein.

[0196] A support structure for the shade canopy **131** is provided comprising support posts **134** and **136** that extend from the side frame members **132** of the sun lounge **130** to the side frame members **135** of the shade canopy **131**. The support posts **136** are optional but are intended to increase overall rigidity. The support posts **134** are pivotably connected to the side frame members **132** and **135** so that rotation of the support posts **134** about the pivot connection with the side frame members **132** of the sun lounge **130** shifts or repositions the shade canopy **131** relative to the sun lounge **130**. FIG. **11** shows the shade canopy **131** in an operational condition spaced above the sun lounge **130** at a height at which in use, the shade canopy **131** at least partly overlies the reclining surface of the sun lounge.

[0197] The shade canopy **131** is formed like the shade canopy **111** and has two shade screens **138** and **139** that comprise side frame members **135**, respective leading and trailing end cross-members **143** and **144** and shade material **142** extending between the side frame members **135**. The side frame members **135** of the shade screens **138** and **139** are hingedly connected at hinge connection **140**. The shade canopy **131** is adjustable in the same manner as the shade canopy **111** to adjust the extent to which shade cast by the shade canopy **131** falls on the sun **130**. Each of the shade screens **138** and **139** have shade material **142** extending between the side frame members **135** and the shade material **142** can be continuous from the leading end **143** to the trailing end **144**, or separate sections of shade material of equal or differing dimensions can be included in the respective shade screens **138** and **139**. The shade material **142** can be releasably attached to the side frame members **135** by way of fastening or attachment devices (for example, press studs), provided at specific points around the perimeter of the shade material **142** that connect to co-operating respective fastening or attachment devices located on the respective side members **135**. The releasable attachment of the shade material **142** to the side frame members **135** facilitates collapse or retraction of the shade canopy **131** as described later herein. The leading and trailing ends **143** and **144** are cross members that are removably connected to opposite ends of the side frame members **135** and that provide structural rigidity to the shade canopy **131**.

[0198] Upper and lower bracing struts **146** hingedly connect between the support posts **134** and the respective side frame members **132** and **135** of the sun lounge **130** and the shade canopy **131** to brace the support posts **134** in position. The connections are adjustable so that the angle of the support posts **134** to vertical can be adjusted as preferred by a user of the sun lounge **130**, by tilting the support posts **134** towards the rear or front of the sun lounge **130**. This enables in the shade canopy **131** to move relative to the sun lounge **130** horizontally back and forward, to adjust the extent to which shade cast by the shade canopy **131** falls on the sun lounge **130**. This arrangement can be complementary to the adjustment provided by rotating the shade screen **139** about the hinge **140**, or it can be the sole form of adjustment if the shade canopy is formed of a single shade screen, or roll of shade material, without a hinged portion. The connections can be adjustable in any suitable manner and for example, the bracing struts **146** can be releasably pin connected to the side frame members **132** and **135**, with the side frame members **132** and **135** including a plurality of openings to accept a pin that extends through an end of the bracing struts **146**. The lower bracing strut **146** that connects to the side frame member **132** can be shifted or repositioned to either the forward or rear side of the support post **134** depending on the desired angle or tilt of the support post **134** relative to the side frame member **132**.

[0199] A benefit of the combination of FIG. **11** is that the shade canopy **131** can be readily detached and removed, or collapsed or retracted and the support structure folded away into the channel **133** so that a person using the sun lounge can have full sun exposure without any visible physical presence of the support structure of the shade canopy **131**. Accordingly, the shade canopy **131** can be formed so that the shade material **142** and the cross members **143** and **144** can be removed and optionally stored beneath the sun lounge (see FIG. **12**). The lower bracing struts **146** can be folded relative to the support posts **134** to a storage position, while the upper bracing struts **145** can also be folded into a storage position relative to the side frame members **135**. The support posts **134** and the side frame members **135** can be rotated into a mutually parallel position and collapsed downwards into the open storage channels **133** for storage, while the support posts **136** can be detached from hinged connection with the side frame member **135** and rotated and collapsed downwards into the open storage channels **133** for storage. Alternatively, the upper and lower bracing struts can be disconnected from the respective support posts **134** and side frame members **135** and also be stored in the open channels **133**. The channels **133** can be covered or closed by a lid if provided, to conceal the components stowed within them from view.

[0200] In the combination of FIG. **11**, with the shade material **142** and the cross members **143** and **144** removed, and with the side frame members **135** of the shade screen **139** fully folded over the side frame members **135** of the shade screen **138** to shorten the overall length of the side frame members **135**, the support posts **134** can pivot about the lower pivot into the open storage channels **133**, while remaining pivotally connected to the side frame members **132** and **135**. The arrows shown in FIG. **12** show the sequence of retraction and collapse of the side frame members **135** of the shade canopy **131** and support structure with 1) the arrow A_1 showing side frame member **135** of the shade screen **139** being folded backwards over the side frame member **135** of the shade screen **138**, 2) the arrow A_2 showing the upper bracing strut **146** being folded upwardly parallel to the side frame member **135** following the pin connection to the support post **134** being released, 3) arrow A_3 showing the lower bracing strut **146** being folded upwardly parallel to the support post **134** following the pin connection to the side frame member **132** being released, the 4) arrow A_4 showing the support post **134** and the corresponding side frame members **135** of the shade screens **138** and **139** being folded downwardly into the open storage channel **133** (which is not visible in the side view of FIGS. **12**) and 5) the arrow A_5 showing the support post **136** being folded downwardly in the opposite direction to the support

post **134** into the open storage channel **133**, following the pin connection to the side frame member **135** being released.

[0201] FIG. **12***a* shows the collapsing sequence described above in relation to FIG. **12** in more detail, but only in respect of the side frame member **135** and the support post **134** FIG. **12***a* shows the open storage channel **133** formed in the side frame member **132** of the sun lounge **130**, which has a width, depth and length to accommodate the support post **134** and the side frame member **135** of the shade screens **138** and **139** in a folded state. The upper and lower bracing struts **146** have been omitted for clarity. Thus, FIG. **12***a* shows in side view, the side frame member **135** of the shade screen **139** partially folded backwards over the side frame member **135** of the shade screen **138** according to the arrow A_1 shown in FIG. **12** and the support post **134** and the corresponding side frame members **138** and **139** being folded downwardly according to the arrow A_4 of FIG. **12**. Upon further folding or collapsing, each of the support post **134** and the corresponding side frame members **138** and **139** are accommodated within the channel **133**.

[0202] The combination comprising an integrated sun lounge and adjustable sun shelter shown FIGS. **11** and **12** provides an alternative to the separate free-standing and adjustable sun shelter of FIGS. **1** to **10** but advantageously, still provides for shade adjustment and similarly practical, facile and convenient operation.

[0203] FIGS. **13** and **14** show a further combination of a sun lounge **150** and an adjustable sun shelter comprising a shade canopy **151** which is provided in a single integrated unit.

[0204] The sun lounge **150** is of a similar kind to the sun lounges illustrated earlier herein, and the side frame members **152** each include receptacles in the form of elongate open channels **153** for storage purposes as will be described later herein.

[0205] A support structure comprising a pair of support posts **154** extend from the side frame members **152** of the sun lounge **150** to the side frame members **155** of the shade canopy **151**. The support posts **154** are pivotably connected to the side frame members **152** and **155**. The side frame members **155** are articulated members, so that they can be folded for storage purposes as described later herein. Rotation of the support posts **154** about the pivot connection with the side frame members **152** of the sun lounge **150** can shift or reposition the shade canopy **151** backwards or forwards and will lift or lower the shade canopy **151** in that movement. This allows the height of the shade canopy **151** to be adjusted. The shade canopy **151** can remain in a horizontal plane in the backwards or forwards movement. FIG. **14** shows the shade canopy **151** in an operational condition spaced above the sun lounge **150** at a height at which in use, the shade canopy **151** at least partly overlies the reclining surface of the sun lounge.

[0206] The shade canopy **151** is formed like the shade canopy **111** and has three shade screens **156** to **158**, with the side frame members **155** of the shade screens **156** and **158** hingedly connected to opposite ends of the shade screen **157**. The shade screens **156** to **158** can be locked together longitudinally in the position shown in any suitable manner such as by removable pins to form a rigid horizontal canopy. The shade screens **156** to **158** can also hinge or pivot relative to each other as the side frames **155** thereof are connected to each other by suitable hinges. Each of the shade screens **156** to **158** comprises separate side frame members that make up the full side frame members **155** and each of the shade screens **156** to **158** has a separate sheet of shade material resiliently stretched between the side frame members and removably connected thereto, so that the shade material can be removed when required for storage, such as beneath the sun lounge **150** in the same manner as shown in FIG. **12**. The shade material can be releasably attached to the side frame members **155** in the same way as described above including fastening or attachment devices (for example, press studs), provided at specific points around the perimeter of the shade screens**156** to **158**.

[0207] The shade canopy **151** is adjustable in the same manner as the shade canopy **111** of FIG. **10** to adjust the extent to which shade cast by the shade canopy **151** falls on the sun **150** by rotation of the shade screen **158** upwardly relative to the shade screen **157**.

[0208] Further rear support posts **160** are pivotally connected to the rear or trailing end of the side frame members **155** and slidingly engage the side edges of the head section **161** of the sun lounge **150**. The sliding engagement between the rear support posts **160** and the head section **161** comprises the head section **161** including guiding sleeves, brackets or tubes **162** into which the support posts **160** extend, for sliding movement upwardly or downwardly so as to raise or lower the height of the shade canopy **151**.

[0209] The leading and trailing ends **163** and **164** are cross members that are removably connected to opposite ends of the side frame members **155** and that provide structural rigidity to the shade canopy **151**. The cross members**163** and **164** are removable for the purpose of collapsing the support structure for storage purposes.

[0210] The rear support posts **160** can be positioned at predetermined points in the sleeves, brackets or tubes **162**, such as by pins that extend though the posts **160** and the sleeves **162**. In that locked condition, the support posts **154** are also fixed in the selected orientation. Lowering or raising the rear support posts **160** within the sleeves, brackets or tubes **162** can facilitate rotation of the support posts **154** for selecting the desired position of the shade canopy **151**.

[0211] Bracing struts similar to those shown in FIG. **12** can be employed with the support posts **154**.

[0212] The shade canopy **151** and the structure supporting it can be retracted or disassembled so that a person using the sun lounge **150** can have full sun exposure without any visible presence of the support structure or the shade canopy **151**. Accordingly, the shade canopy **151** can be formed so that the shade material of the shade screens **156** to **158** and the cross member **163** can be removed and optionally stored beneath the sun lounge, for example as shown in FIG. **12**. FIG. **14** shows the components of the shade canopy **151** and the supporting structure with the shade material of the shade screens **156** to **158** and the cross member **163** removed, so that the side frame member **155** can be folded. The support posts **160** are slidably lowered within the guide sleeves, brackets or tubes **162** and the side frame members **155** are folded to a position behind the head section, where they are unobtrusive and generally out of view. The support posts **154** can be rotated and collapsed downwards into the open channels **133** for storage. The channels **153** can be covered or closed by a lid if provided, to conceal the components stowed within them from view.

[0213] FIGS. **15** and **16** show an alternative support structure that is proposed for combination sun lounges and adjustable sun shelters similar to the type shown in FIGS. **11**

to **14**. The support structure illustrated in FIGS. **15** and **16** is shown associated with an open storage channel **165** that will be formed in side frame members of a sun lounge, such as the side frame members **132** of the sun lounge **130**.

[0214] The support structure of FIGS. **15** to **17** comprises a scissor style arrangement comprising a support post **166** that is pivotably anchored at a lower end thereof within the channel **165** and a support post **167** that is pivotably connected to the support post **166** at pivot connection **168**. The pivot connection **168** is approximately half way along the length of the respective support posts **166** and **167**, although the position of the pivot connection can change as required. The pivot connection **168** is by an axle that separates the support post **166** from the support post **167** so that in a folded or collapsed condition of the support structure, the side frame member **170** (to be hereinafter described) can be positioned between the posts **166** and **167**.

[0215] The lower end of the support post **167** can slide within the storage channel **165** towards and away from the anchored lower end of the support post **166** as the support post **166** rotates about the lower anchor.

[0216] The upper end of the support post **167** is pivotably connected at **169** to the side frame member **170** of the shade canopy **171** that the support posts **166** and **167** support, such as by a fixed pin or rivet or the like. The upper end of the support post **166** is pivotably connected to the side frame member **170** by a removable pin connection **169** so that the upper end of the support post **166** can be released from connection with the side frame member **170** to collapse the support structure.

[0217] FIG. **15** shows the support structure fully expanded and with a pin connection made between the upper end of the support post **166** and a pin connector (not shown) at the opening **172** in the side frame member **170** and the opening **173** of the support post **166** (see FIG. **16**). For adjustment purposes, the pin connector can be inserted through alternative openings **174** or **175** in the side frame member **170**. This will raise or lower the shade canopy **171**. Further openings can be provided for further height adjustment.

[0218] With the pin connection made between the upper end of the support post **166** and the opening **172** in the side frame member **170**, the support posts **166** and **167** are fixed in the crossed manner shown. While the lower end of the support post **167** need not be fixed in place, the preference is that fixing does occur. Accordingly, the lower end of the support post **167** can be fixed by pin connection, or a ratchet arrangement can be employed. Alternatively, other forms of fixing can be employed.

[0219] The side frame member **170** is a telescopic member comprising a main section **177** and a telescopic front section **178**. The telescopic front section **178** can telescope rearwardly into the main section **177** for collapse of the support structure. Also, the telescopic front section **178** can extended or retracted to adjust the forward length of the shade canopy **171** to adjust the shade that is cast on the sun lounge below the shade canopy.

[0220] FIG. **16** shows the support structure of FIG. **15** in a partly collapsed condition. In FIG. **16**, the shade material of the shade canopy and any front and rear cross members have been removed and the pin connection with the upper end of the support post **166** and the side frame member **170** has been removed. The telescopic front section **178** has been telescoped rearwardly into the main section **177**. The support structure can now be collapsed and as shown in FIG. **16**, the support post **166** can be rotated downwardly, which also rotates the support post **167**, the lower end of which slides away from the lower end of the support post **166** within the storage channel **165**. The side frame member **170** can rotate about the pivot connection with the upper end of the support post **167** downwardly, so that all of the support structure can collapse into the storage channel **165**.

[0221] The support structure of FIGS. **15** to **17** can advantageously provide robust and rigid or stiff support for the shade canopy by virtue of the scissor configuration of the support posts **166** and **167**. This is particularly the case if the lower end of the support post **167** is fixed in place in the erected condition. Further, expansion and collapse of the support structure is simple.

[0222] The shade canopies of FIGS. **11** to **14** are hingedly connected as shown, but it is to be appreciated sliding mechanisms could also be employed, such as shown in FIGS. **1** and **2**, or rails or tracks can be employed, whereby the rail or track can incorporate rollers, as previously described herein.

[0223] Where any or all of the terms "comprise", "comprises", "comprised" or "comprising" are used in this specification (including the claims) they are to be interpreted as specifying the presence of the stated features, integers, steps or components, but not precluding the presence of one or more other features, integers, steps or components.

[0224] Those skilled in the art will appreciate that the embodiment described herein is susceptible to variations and modifications other than those specifically described. It is understood that the invention includes all such variations and modifications which fall within the spirit and scope of the present invention.

[0225] Future patent applications may be filed in Australia or overseas on the basis of or claiming priority from the present application. It is to be understood that the following provisional claims are provided by way of example only, and are not intended to limit the scope of what may be claimed in any such future application. Features may be added to or omitted from the provisional claims at a later date so as to further define or re-define the invention or inventions.

1. An adjustable sun shelter for use with a deck chair or sun lounge, comprising:

a. a base,

b. a shade canopy, and

c. a support structure,

the support structure extending upwardly from the base and supporting the shade canopy in an operational condition spaced above the base at a height at which in use, the shade canopy overlies a deck chair or sun lounge,

in the operational condition, the shade canopy having a leading end and a fixed trailing end and having an extended state and a retracted state, the leading and trailing ends being spaced apart a greater distance in the extended state than in the retracted state, and the shade canopy being adjustable between the respective extended and retracted states to adjust the extent to which shade cast by the shade canopy falls on a deck chair or sun lounge by adjusting the spacing between the leading and trailing ends by movement of the leading end relative to the fixed trailing end.

2.-**3**. (canceled)

4. A sun shelter according to claim **1**, the shade canopy including a shade material which is supported about its edges within a frame.

5.-**7**. (canceled)

8. A sun shelter according to claim **1**, retraction of the canopy from the extended state to the retracted state being by sliding or telescoping movement.

9. A sun shelter according to claim **8**, the shade canopy comprising two shade screens, a first of the screens being fixed and a trailing end of the fixed screen forming the fixed trailing end of the shade canopy, and a second of the screens being movable so that movement of the second screen relative to the first screen retracts or extends the shade canopy.

10. A sun shelter according to claim **9**, each of two shade screens including shade material and the shade material of the screens being offset so that retraction of the shade canopy from the extended state to the retracted state involves the shade material of one screen overlying the shade material of the other screen.

11.-**16**. (canceled)

17. A sun shelter according to claim **1**, retraction of the canopy from the extended state to the retracted state being by folding movement of a leading section of the shade canopy relative to a trailing section.

18. A sun shelter according to claim **1**, retraction of the canopy from the extended state to the retracted state being by roller retraction and the shade canopy including a section of shade material in the shade canopy that is configured to be rolled about the roller, the section of shade material being free of structural support.

19. A sun shelter according to claim **18**, the shade material of the shade canopy being supported within a frame except towards the fixed trailing end of the shade canopy, the frame having two or more sliding sections, so that the shade canopy is configured to be retracted and extended by relative movement of the sliding sections and by the shade material rolling onto or off the retraction roller.

20. A sun shelter according to claim **18**, the retraction roller forming the fixed trailing end of the shade canopy.

21. A sun shelter according to claim **1**, the shade canopy being generally flat or planar, or curved.

22.-**25**. (canceled)

26. A sun shelter according to claim **1**, the support structure supporting the shade canopy in a cantilevered manner.

27. (canceled)

28. A sun shelter according to claim **1**, the support structure comprising a pair of arms that extend from the base into connection with the shade canopy and the respective arms of the pair of arms being provided on opposite sides of the sun shelter.

29. A sun shelter according to claim **1**, the base having a length that is greater than its width and the base being arranged to cooperate with a weight to support the sun shelter in a stable.

30.-**34**. (canceled)

35. A combination sun lounge and adjustable sun shelter, comprising:

a. a sun lounge,

b. a shade canopy, and

c. a support structure,

the support structure extending upwardly from the sun lounge and supporting the shade canopy in an operational condition spaced above the sun lounge at a height at which in use, the shade canopy at least partly overlies a reclining surface of the sun lounge,

in the operational condition, the shade canopy having a leading end and a fixed trailing end and having an extended state and a retracted state, the leading and trailing ends being spaced apart a greater distance in the extended state than in the retracted state, and the shade canopy being adjustable between the respective extended and retracted states to adjust the extent to which shade cast by the shade canopy falls on the sun lounge by adjusting the spacing between the leading and trailing ends by movement of the leading end relative to the fixed trailing end.

36. (canceled)

37. A combination according to claim **35**, the sun lounge having a pair of spaced apart side frame members and the reclining surface being between the frame members, and the shade canopy having a pair of spaced apart side frame members and a shade material bridging between the frame members, the support structure comprising a pair of support posts one each of which is connected to a respective side frame member of the sun lounge and each of which extends to a respective side frame member of the shade canopy to space the shade canopy above the sun lounge.

38. A combination according to claim **37**, the support posts being pivotably connected to the side frame members of the sun lounge and the shade canopy, so that rotation of the support posts about the pivot connection with the side frame members of the sun lounge shifts the shade canopy relative to the sun lounge.

39.-**42**. (canceled)

43. A combination according to claim **37**, the support structure further including a pair of rear support posts extending from opposite sides of the shade canopy at or adjacent the trailing end of the shade canopy and extending into engagement with the sun lounge, the rear support posts being adjustably connectable to the sun lounge.

44. A combination according to claim **43**, the rear support posts being telescopically received in guide sleeves and the position of the rear support posts within the sleeves being adjustable.

45. A combination according to claim **37**, the shade canopy being formed with removable shade material and the support posts and the side frame members being collapsible into storage areas formed adjacent to or in the side frame members of the sun lounge.

46. A combination according to claim **45**, the storage areas being open channels into which the support posts and side frame members of the shade canopy are configured to be rotated.

47.-**59**. (canceled)

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