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Briggs

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[54] **SCREEN ENCLOSURE FOR PICNIC TABLES**

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[52] **U.S. Cl.** ..... **135/3 R**, 135/7.1

[51] **Int. Cl.** **A45f 1/00**

[58] **Field of Search** ..... 135/1 R, 3 R, 5 R, 135/7.1

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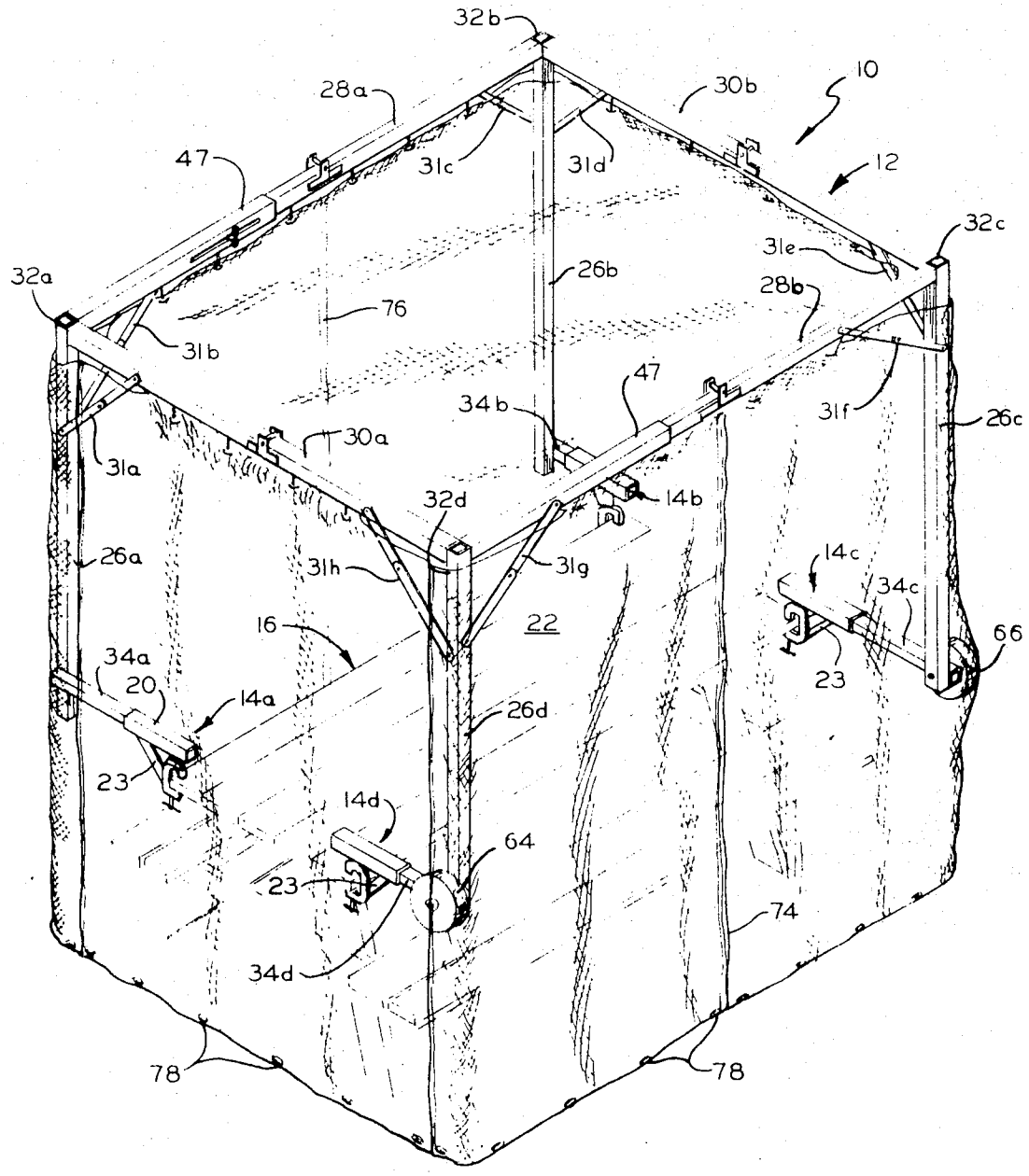
Primary Examiner—Peter M. Caun

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[57] **ABSTRACT**

A foldable, portable, light-weight, screen enclosure for picnic tables adjustable to fit tables of various lengths and widths. The enclosure framework has corner uprights with horizontally extending arms at their lower ends slidably receivable in horizontal tubular sockets in respective attachment members releasably clamped to the table corners. Horizontal members interconnecting the upper ends of the uprights are hinged at their respective ends and midpoints, permitting the framework structure to fold into a compact bundle of parallel frame elements.

11 Claims, 7 Drawing Figures



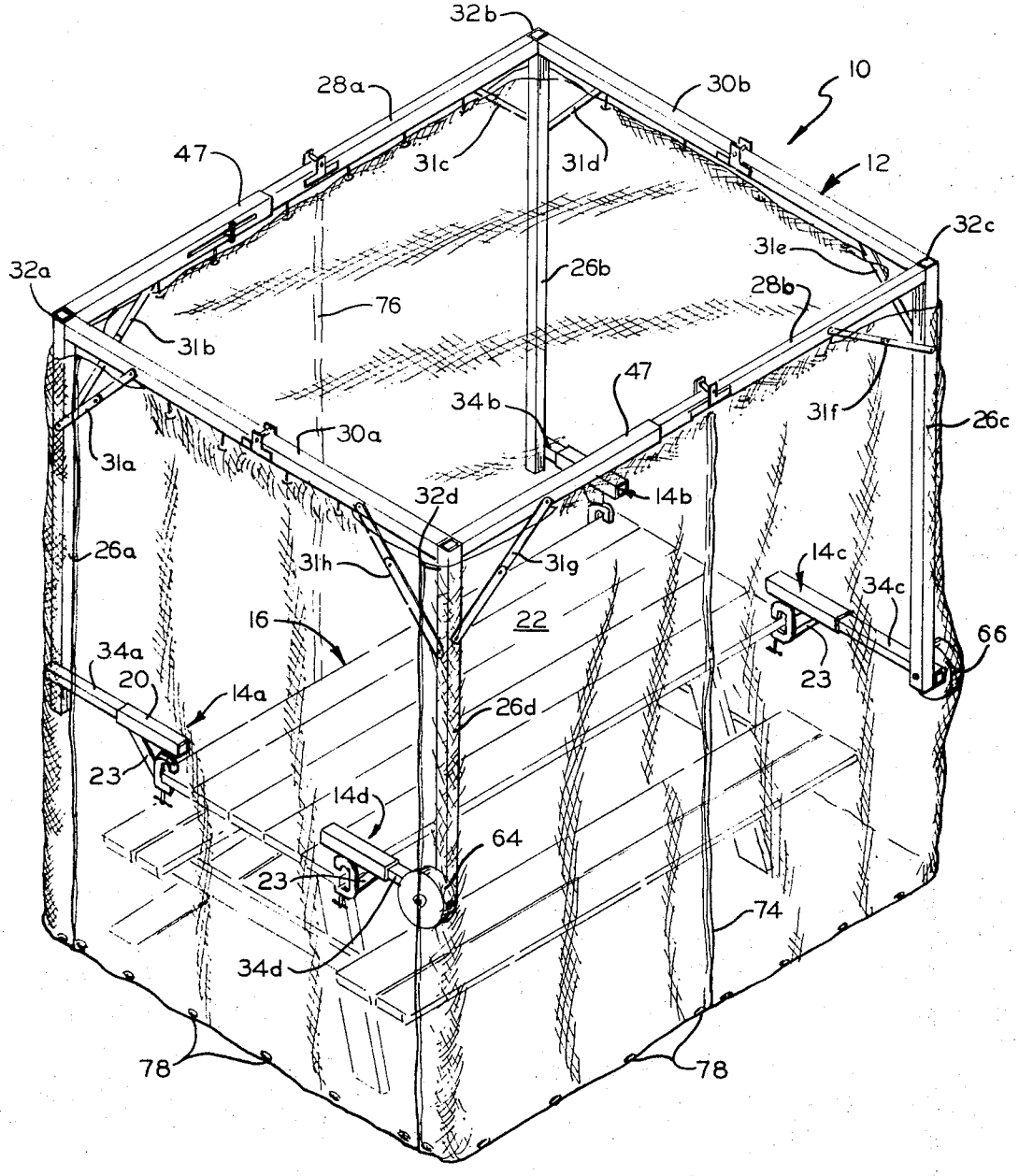


FIG. 1

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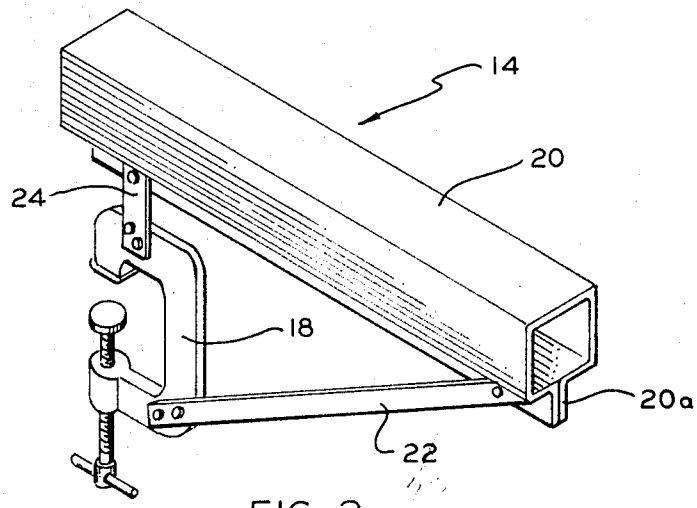


FIG. 2

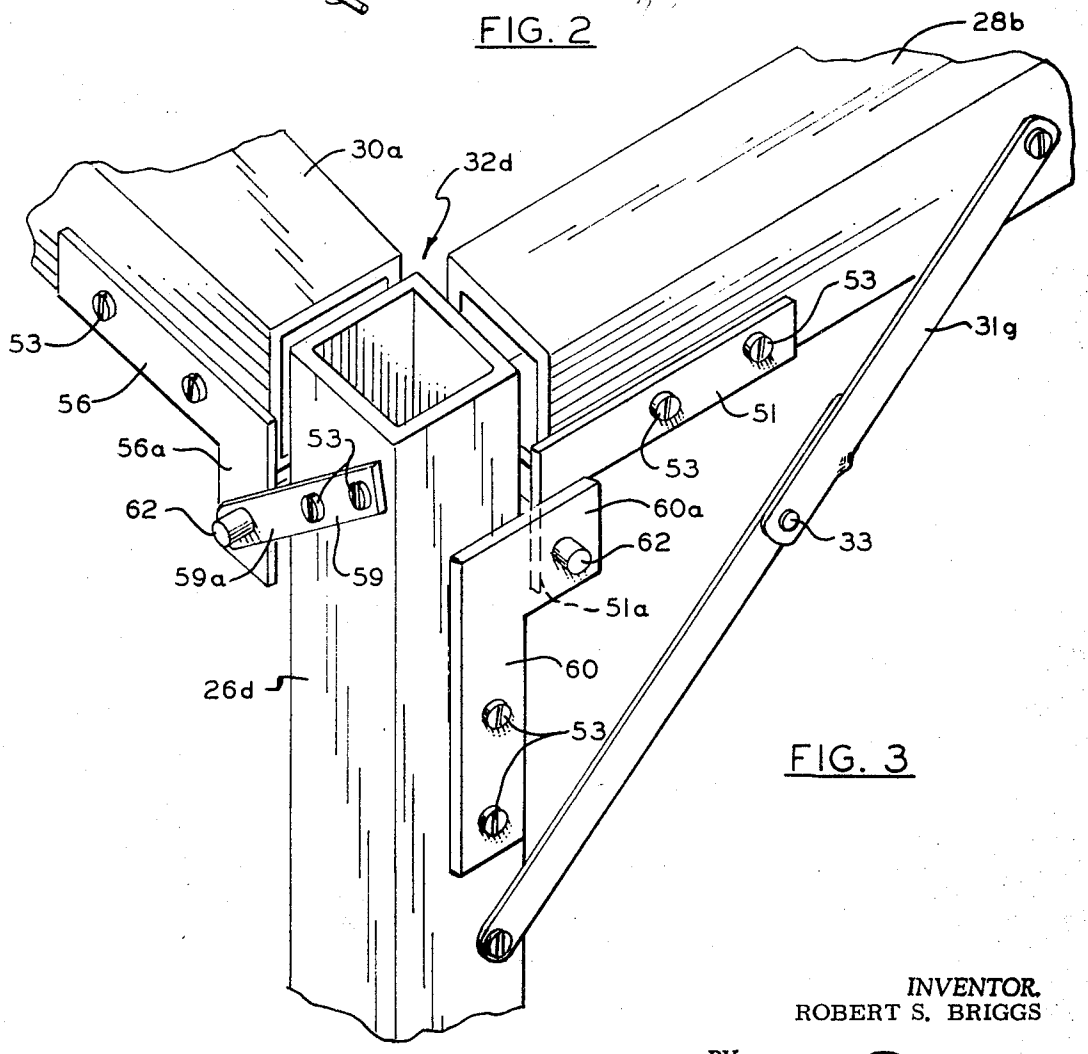


FIG. 3

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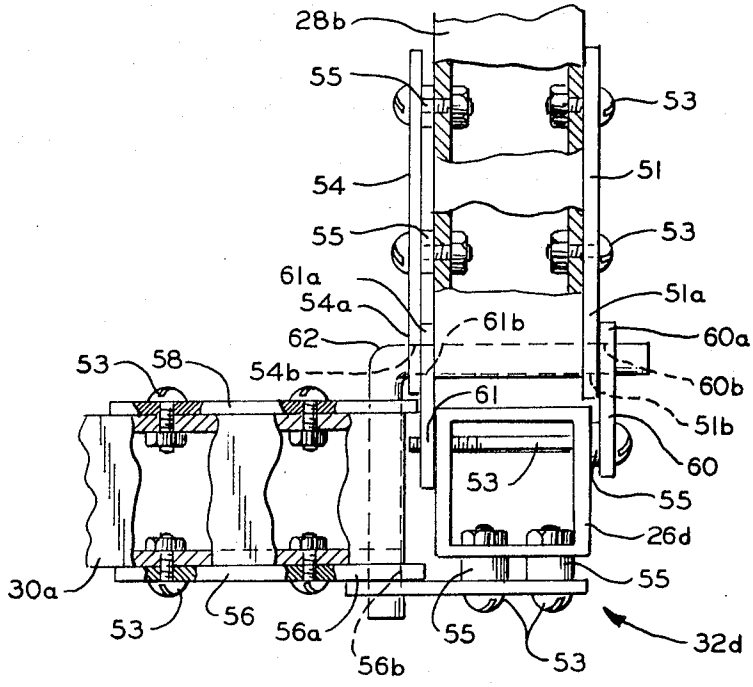


FIG. 4

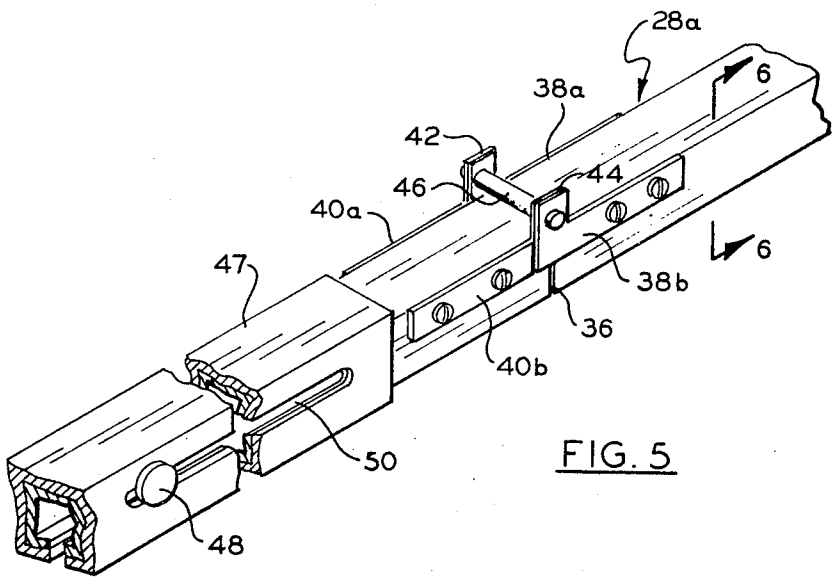


FIG. 5

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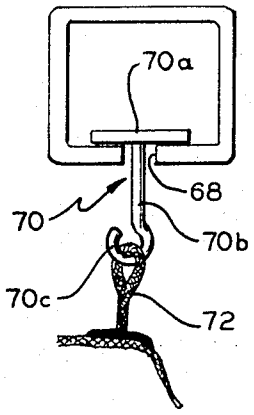


FIG. 6

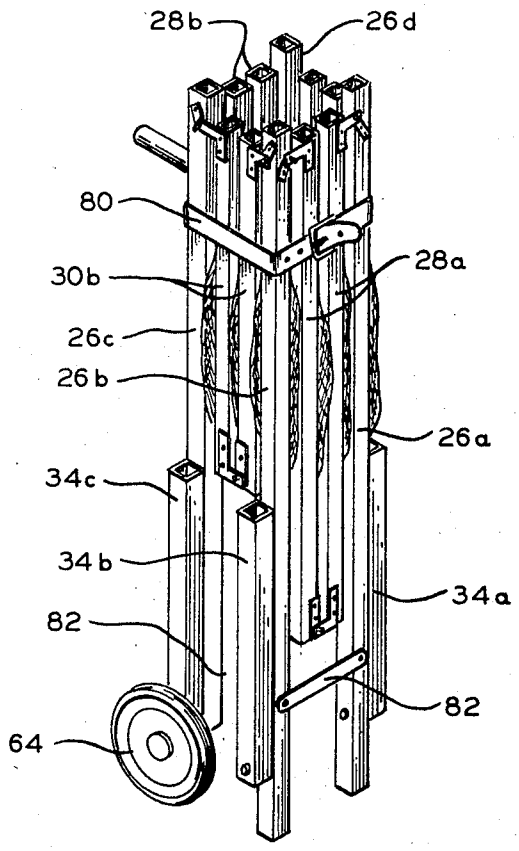


FIG. 7

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SCREEN ENCLOSURE FOR PICNIC TABLES

This invention relates to demountable and foldable enclosures and more particularly to screen enclosures for picnic tables and the like.

The unwelcome presence of insects at picnics has been endured for generations and accepted as an unavoidable concomitant of outdoor dining. While to the majority of picnickers flies and even stinging insects are only a source of aggravation and unpleasantness, for many who suffer allergic reactions, the sting of a bee or a wasp can have serious, even fatal, consequences. Despite this long-existing state of affairs, and the more or less obvious solution of providing a screen enclosure for picnic use, nothing in the way of a truly practical screen covering for picnic tables has been proposed in the prior art.

Those that are known are either too cumbersome to be conveniently carried to a picnic site and/or fail to provide for adjustment to accommodate the variety of shapes and sizes of picnic tables encountered.

The objects of the present invention are to provide a screen enclosure for picnic tables which provides complete protection from flying insects, is light in weight, is easily erected and adjusted to various sizes of picnic tables, and folds into a compact bundle for easy transport even over rough terrain and woodland paths.

To the accomplishment of the foregoing and other objects, the invention contemplates an enclosure formed of four vertical and four horizontal elongated members defining four corners and the top and side faces or panels of the structure. The vertical members have horizontally extending cantelever arms which are freely slidably received in horizontal tubular portions of respective support members secured to the four corners of a picnic table. Sliding the arms into and out of the tubular support member portions enables adjustment of one horizontal dimension. Two of the horizontal members include telescoping joints to permit adjustment of the enclosure in the other horizontal direction. All of the horizontal members are hinged at their midpoints and ends to permit the enclosure to be folded into a compact bundle which can easily be carried by one person or rolled on two wheels in the manner of a golf cart. A unique hinge joint assembly is provided at each of the four corners of the enclosure which provides high rigidity in the structure when erected. Fabric, at least selected areas of which is insect screening, covers the top and four sides of the enclosure, completely enveloping a picnic table and the seats as well.

In the drawings:

FIG. 1 is a perspective elevational view of an enclosure according to the invention fully erected and installed on a picnic table;

FIG. 2 is a perspective elevational view of one of four identical support members shown installed at the corners of the picnic table in FIG. 1;

FIG. 3 is a fragmentary enlarged perspective view of one of the corner joint assemblies appearing in FIG. 1;

FIG. 4 is a plan view of the joint assembly shown in FIG. 3;

FIG. 5 is a fragmentary elevation of a portion of the structure in FIG. 1 on an enlarged scale;

FIG. 6 is a cross-sectional view taken on line 6—6 of FIG. 5; and

FIG. 7 is a perspective elevation of the enclosure of FIG. 1 demounted and folded for transport.

Referring to FIG. 1, the enclosure, designated in its entirety by reference numeral 10, comprises a framework structure 12 and four attachment members 14*a*, 14*b*, 14*c* and 14*d* secured in series to the respective corners of a picnic table 16.

As best shown in FIG. 2, each attachment member 14 consists of a clamp, such as C-clamp 18, and a tubular portion 20 so oriented with respect to the clamp that it is disposed in a horizontal position when the clamp is secured to the edge of table top 22.

In the illustrated form attachment members 14 are of fabricated construction, the tubular portion 20 being a length of square-section metal tubing having a longitudinal flange 20*a* by means of which it is secured to clamp 18 by metal straps 22, 24. Of course, other forms of construction are possible.

Reverting to FIG. 1, framework structure 12 is made up of eight elongate members defining four corners and five contiguous faces of a rectangular parallelepiped, which faces constitute the top and side panels of the enclosure. Four of the elongate members, 26*a*, 26*b*, 26*c*, 26*d*, are disposed in mutual parallelism when the structure is erected and form the corner uprights of the framework.

The upper ends of members 26*a–d* are hingedly connected to the remaining elongate members, 28*a*, 28*b*, 30*a* and 30*b* to form corner joint assemblies 32*a*, 32*b*, 32*c*, 32*d* in a manner to be described presently. Adjacent their respective ends remote from corner joints 32 each of the vertical members 26 carries a cantelever support arm 34*a*, 34*b*, 34*c*, 34*d* pivotally secured at one end to the associated vertical member 26*a* – 26*d*, preferably by means of a nut and bolt assembly so that the resistance of the arm to pivotal movement can be adjusted; this adjustment is such as to maintain the arm against spontaneous pivotal movement while permitting it to be moved manually with relative ease.

When the framework is erect, arms 34*a* – 34*d* are positioned to project perpendicularly to the respective longitudinal axes of the vertical members with the arms 34*a* and 34*d* on one pair of vertical members 26*a* and 26*d* defining one side panel of the enclosure extending coaxially toward each other in the plane of that panel. Similarly the arms 34*b* and 34*c* on the remaining pair of vertical members 26*b* and 26*c* extend coaxially toward each in the plane of the side panel defined by said members.

The cross-sectional size and configuration of arms 34 enables a free-sliding fit into the tubular portions 20 of respective attachment members 14*a* – 14*d*, when the framework is erected. Consequently, the framework accommodates a wide range of table widths, i.e., for narrow tables only a small fraction of the length of arms 34 are received in tubular portions 20 and conversely for wider tables.

While support arms 34*a* – 34*d* have been described as disposed in the planes of parallel sides of the enclosure, it will be appreciated that they can be disposed in diagonal planes, i.e., planes defined by vertical members 26*a* and 26*c* and by 26*b* and 26*d*. In such an event, attachment members 14*a* – 14*d* would be installed correspondingly with the tubular portions on diagonal lines of the table top. With such an arrangement, particularly adapted to square top tables, sliding of arms 34*a* – 34*d* in and out of the tubular sockets on the attachment members, would effect simultaneous adjustment of both length and width dimensions of the struc-

ture as will be more fully understood as this description proceeds. Of course, the support arms **34** can also extend in planes intermediate the side planes and diagonal planes, if desired, and the attachment members **14** installed accordingly.

Each of the elongate members **28***a*, **28***b*, **30***a*, **30***b* is hinged at its midpoint and at its ends is hinged to respective pairs of adjoining vertical members **26***a* – **26***d*. The axes of the hinges in member **28***a* are parallel to each other and coaxially aligned with corresponding hinges in the opposite and parallel member **28***b*. In like manner, the hinge axes of member **30***a* are parallel and coaxially aligned with those of member **30***b*.

In order to provide maximum rigidity to the erected structure and maintain the horizontal members **28***a*,*b* and **30***a*,*b* in position foldable corner braces **31***a* to **31***h*, each of which preferably is a standard hardware item popularly known as a lid support. Each support extends diagonally across a respective corner angle and has its ends pivotally fastened, as by rivits, to a vertical member **26** and an adjoined horizontal member. At its midpoint, each lid support has a limited hinge joint **33** (shown in FIG. **3**) which permits folding in one direction and establishes a fully extended position by means of a stop which prevents angular movement in the other direction beyond the condition in which the segments form a straight angle, i.e., 180°.

The details of a hinge joint typical of those at the midpoints of members **28***a*,*b* and **30***a*,*b* are shown in FIG. **5** for member **28***a*. Thus member **28***a* is divided into two abutting length segments along parting line **36**. L-shaped plates **38***a*, **38***b* and **40***a*, **40***b* are secured in parallel pairs on opposite sides of the abutting segments of member **28***a* with one leg of each L-shaped plate projecting laterally beyond a longitudinal edge of member **28***a* to form parallel pairs of gudgeons **42** and **44** containing coaxially aligned bores receiving a gudgeon pin **46**.

Each of the elongate members **28***a* and **28***b* includes a telescoping slip joint **47** by which the length of the member may be adjusted to accommodate tables of different lengths. A pin **48** on the inner member of the slip joint **47** riding in a longitudinal slot **50** in the outer member limits the extent of adjustment and prevents the members from becoming disengaged.

While slip joints are shown and necessary only in members **28***a*,*b* of the illustrated embodiment, it will be appreciated that they can be provided in members **30***a* and **30***b* as well and this would be particularly advantageous in a variant structure, discussed above, where the mounting arms **34***a* – **34***d* are disposed on diagonals of the structure.

Referring now to FIGS. **3** and **4**, there is illustrated in detail the corner joint assembly **32***d* typical of all four such assemblies of the framework structure. With the framework erected, the respective longitudinal axes of members **30***a*, **28***b* and **26***d* are in mutually orthagonal relation. At the end of member **28***b*, an L-shaped plate **51** is secured as nut and bolt assemblies **53**, or by rivits, welding or other suitable means to one side face of the member with one leg parallel to the member's long axis and the other leg **51***a* extending laterally beyond the longitudinal edge of the member to form one of a pair of parallel gudgeons, the other being formed by a similar plate not visible in FIG. **3** but secured to the opposite face of member **28***b* and visible in FIG. **4** where it is designated as **54**. Spacing washers **55** are placed between plate **54** and member **28***b* and at other locations in the joint assembly for reasons which will be self-evident from the ensuing description. Gudgeons **51***a* and **54***a* contain coaxially aligned bores **51***b* and **54***b*.

Elongate member **30***a* is similarly equipped with plates **56**, **58**, forming gudgeons **56***a*, **58***a*, containing coaxially aligned bores **56***b*, **58***b*.

While L-shaped plates have been described, other means may be used to form gudgeons laterally off-set from the elongate members. Thus, a single gudgeon **59***a* is provided on the upper end of vertical member **26***d* by means of a rectilinear plate **59** fastened to the member at an acute angle to its long axis. Another gudgeon **60***a* containing a bore **60***b* is provided at the upper end of member **26***d* by means of L-shaped plate **60** in the manner of members **28***b* and **30***a*. At least one additional gudgeon **61***a* is provided on member **26***d*, parallel to gudgeon **60***a* by means of plate **61** having a bore **61***b* coaxial with **60***b*.

Members **28***b*, **30***a* and **26***d* are pivotally connected by means of a single gudgeon pin or pintle **62** containing a right angle bend. The end of the pintle on one side of the bend is journaled in the bores of gudgeons **60***a*, **51***a*, **61***a* and **54***a* and the other end in the bores of gudgeons **59***a*, **56***a*, **58***a*. In this manner members **28***b*, **30***a* and **26***d* can be folded relative to one another from the orthogonally related position shown in FIG. **3** to one in which the long axes of the three members is parallel. The corner joint assembly just described permits this movement while imparting to the corner joints great rigidity and resistance to twisting, not possible with conventional hinges of known design or practical construction.

At the lower ends of each of two of the vertical members, **26***c* and **26***d* in the illustrated embodiment, small, preferably rubber-tired ground-engaging wheels **64**,**66** are rotatably mounted to facilitate transport of the enclosure when folded as will be seen presently.

As shown in FIG. **1**, the framework structure **12** is covered with fabric forming panels corresponding to the top and four sides of the enclosure **10**. The fabric may consist entirely of a non-metallic (e.g., Fiberglas) insect screen or the top and one or two sides may be a closely woven material or solid plastic sheet to provide shade. The fabric is loosely attached to the horizontal members **28**, **30** in any suitable manner. In the illustrated embodiment members **28**, **30** contain longitudinal slots in their undersides as exemplified by slot **68** in the typical cross-section shown in FIG. **6**. A plurality of slide members **70** such as that shown in FIG. **6** have enlarged head portions **70***a* slidably disposed with a respective horizontal members, a shank portion **70***b* extended through slot **68** and a hook portion engaging a loop **72** on the enclosure fabric. The fabric panels are split as at **74**, **76** on opposite sides to facilitate entry into and egress from the enclosure. Small weights **78** are fastened at regular intervals along the bottom edge of the fabric covering to prevent lifting and blowing in the wind.

Prior to demounting the enclosure, the fabric covering is folded around or reefed about the horizontal members. The framework structure is then collapsed by loosening and removing attachment members **14***a* –*d* from the table and slipping them off the support arms **34***a* –*d*; these arms are then folded up alongside the respective vertical members **26***a*–*d*. By "breaking"

corner braces 31*a*–6, the horizontal members 28*a*,*b* and 30*a*,*b* can then be folded at their midpoints while moving the vertical members toward the central vertical axis of the enclosure so that all frame members assume parallel contiguous positions to form a compact bundle as shown in FIG. 7. A strap or other cincture device 80 binds the upper part of the bundle together and pivotal latch bars 82 of known design perform a similar function at the lower part. In FIG. 7 it will be apparent that the two vertical members 26*a* and b not carrying wheels 64,66 are longer than 26*c* and *d* by an amount approximately equal to the radius of the wheels to form a stand for the bundle, making it self-supporting and stable in an upright position. A handle 84 fastened to the bundle by strap 80 or in any other suitable way provides a convenient handle-hold for supporting the upper end of the bundle and pushing it when tilted back on wheels 64,66.

The demounting and folding procedure just described is reversed to erect the enclosure.

What is claimed is:

1. A demountable and foldable enclosure comprising:

four attachment members, each consisting of a tubular portion and a releasable clamp adapted to secure the attachment member to a support with said tubular portion disposed substantially horizontally, said attachment members, in normal use, being secured to a support in pairs, with the tubular portions of the respective members in substantially horizontal positions, the locus of the attachment members in normal use being at the corners of a regular plane quadrilateral;

a framework structure made up of eight elongate members interconnected with hinged joints to define, when erected for service, four corners and the planes of five contiguous faces of a rectangular parallelepiped, the faces corresponding to the top and four sides of the enclosure, four of said members which are in mutual parallelism each carrying adjacent its end remote from said corners, a perpendicularly projecting cantilever arm, each arm being slidably receivable in the tubular portion of a respective one of said attachment members; and

a fabric covering loosely attached to said framework structure, said fabric being deployable in panels corresponding to and substantially coextensive with the five contiguous faces of the parallelepiped.

2. An enclosure according to claim 1 wherein each of the remaining four elongate members, constituting edges of the parallelepiped in one of said planes corresponding to the top of the enclosure, is hinged at its ends to two of said parallel elongate members and at its midpoint for pivotal movement about parallel axes in said one plane, the pivotal axes of each of said remaining elongate members being substantially aligned with the corresponding axes of the elongate member parallel and opposite thereto, and orthogonal to the axes of the elongate members adjacent and perpendicular thereto.

3. An enclosure according to claim 2 wherein at least two parallel and opposite ones of said remaining elongate members each includes a telescoping slip joint permitting adjustment of the length of said two members.

4. An enclosure according to claim 3 including a wheel mounted at the end of two adjoining ones of said parallel elongate members for rotation about co-linear axes.

5. An enclosure according to claim 4 wherein said elongate members are fabricated of hollow stock of substantially square or rectangular cross-section, said remaining four of said elongate members contain longitudinal slots on their undersides, and said enclosure includes a plurality of slide members with enlarged heads slidably disposed in the slotted members, said slide members having shank and hook portions extending through said slots and secured in supporting relation to respective panels of said fabric.

6. An enclosure according to claim 5 wherein at least some of the panels of said fabric are formed of an insect-proof mesh.

7. An enclosure according to claim 6 wherein each of the four corners of the parallelepiped is formed of an end of one of said parallel elongate members and the respective ends of two of said remaining elongate members in mutually orthogonal relation pivotally joined by a hinge joint assembly comprising:

means defining at said one end of each of said two remaining elongate members a pair of spaced parallel gudgeons extending laterally beyond the longitudinal edges of said members and containing coaxially aligned bores;

means defining at said one end of the parallel elongate member, a first gudgeon extending laterally beyond a longitudinal edge of said member and in the plane of the face of the parallelepiped defined by the vertical and one of said two remaining elongate members;

means defining at said one end of the parallel elongate member, a second gudgeon extending laterally beyond a longitudinal edge of said parallel elongate member in the plane of the face of the parallelepiped defined by said vertical member and the other of said two remaining elongate members, said first and second gudgeons containing respective bores perpendicular to the said planes defined by the vertical member and the respective remaining elongate members, the axes of said bores lying in another plane perpendicular to the said planes, the bores in said one gudgeon and second gudgeon being coaxially aligned respectively with the bores in the parallel gudgeons on one and on the other of said two remaining elongate members; and

a pintle member containing a right angle bend, said pintle member being disposed in said other plane with the portion on one side of the bend journaled in the bore of said one gudgeon and the bores of the parallel gudgeons aligned therewith and with the portion of the pintle member on the other side of the bend journaled in the bore of the second gudgeon and the bores in the parallel gudgeons aligned therewith.

8. An enclosure according to claim 7 including means defining a third gudgeon on said parallel elongate member parallel to, and on the opposite side of the member from, one of the other gudgeons thereon and having a bore coaxially aligned with the bore of said one other gudgeon and receive said pintle member.

9. An enclosure according to claim 8 wherein said parallel gudgeons consist of flat plates secured to respective parallel faces of the elongate members with respective end portions projecting beyond the corresponding longitudinal edges of the members.

10. An enclosure according to claim 9 wherein at least some of the flat plates are L-shaped and have one

leg of the L parallel to and in surface abutment with the elongate member and the other leg constituting the projecting end portion of the plate.

11. An enclosure according to claim 9 wherein at least some of the flat plates are of substantially rectilinear configuration and extend at an acute angle to the longitudinal axes of the elongate members.

* * * * *