

Aug. 19, 1969

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3,461,626

HINGED, COLLAPSIBLE, STRUCTURAL COVER

Filed Dec. 7, 1966

4 Sheets-Sheet 1

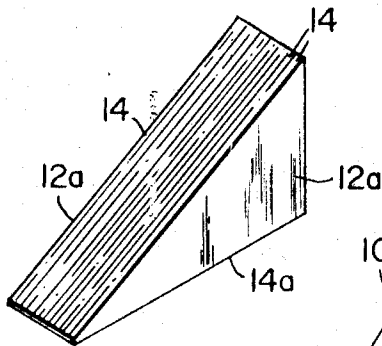


FIG_1

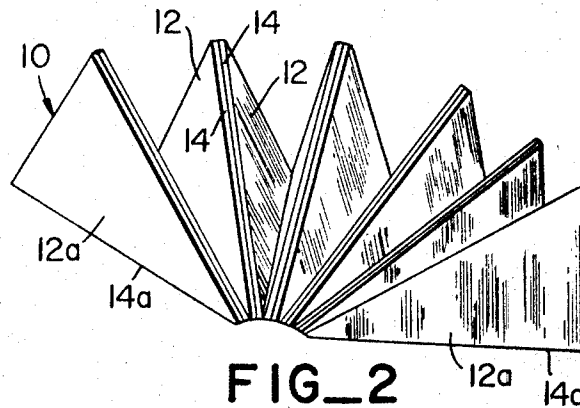


FIG_2

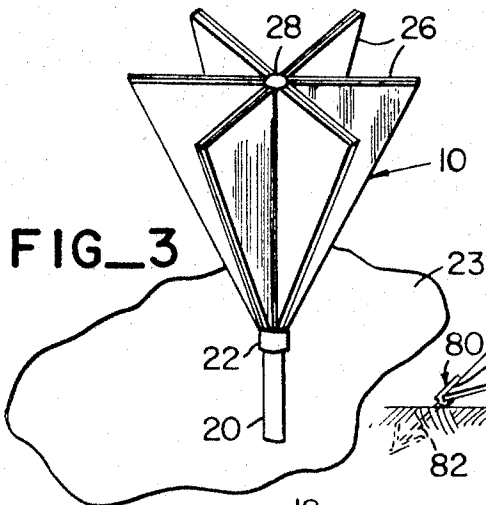


FIG_3

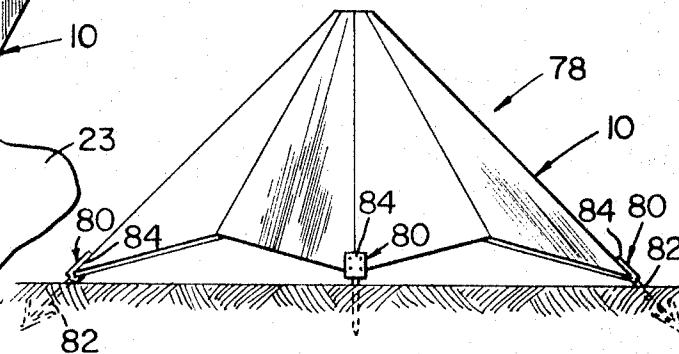


FIG_15

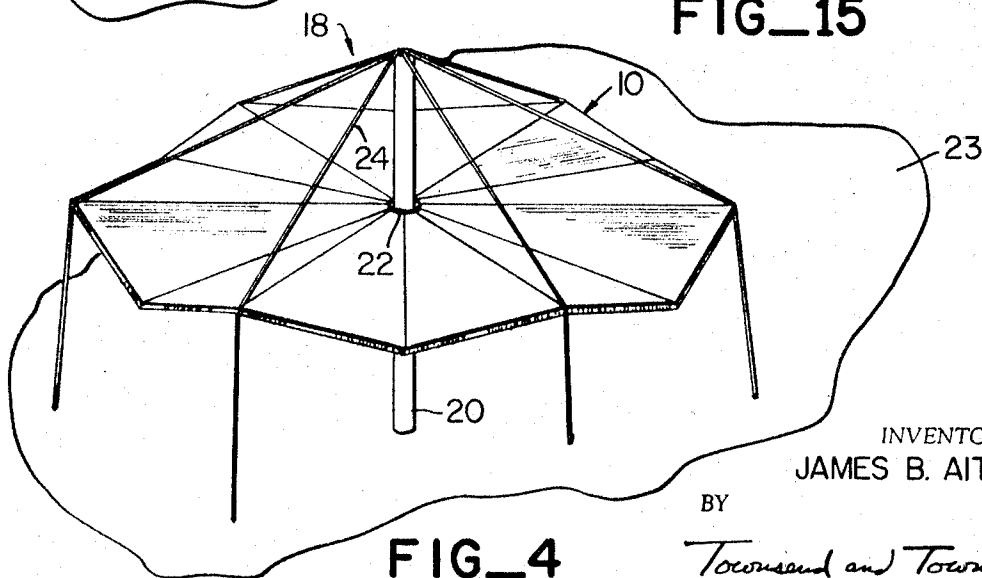


FIG_4

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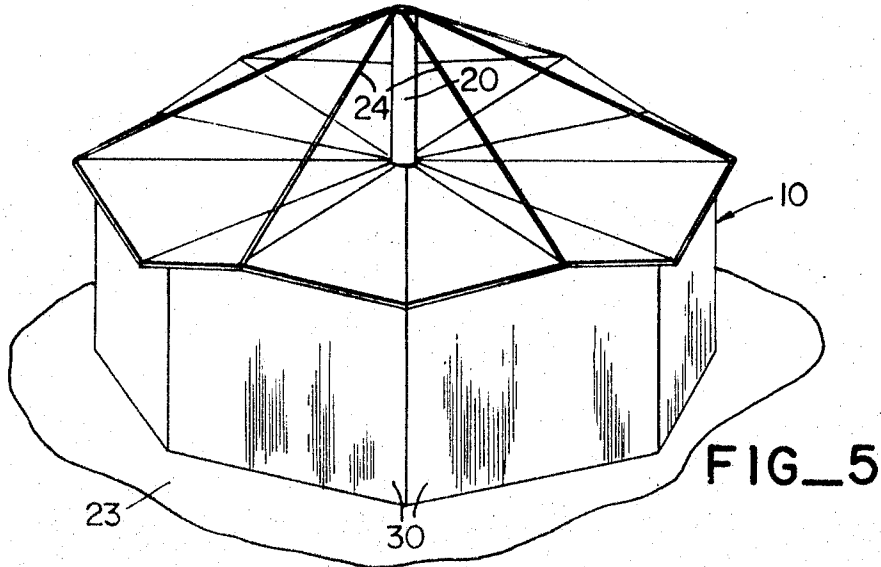
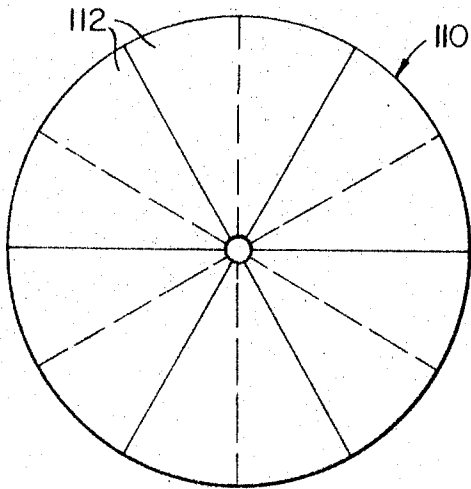
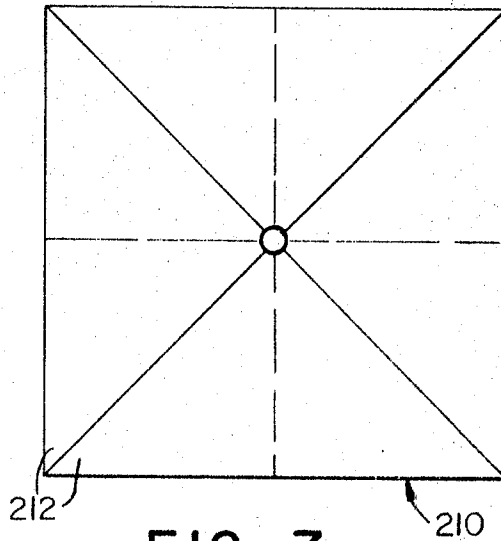
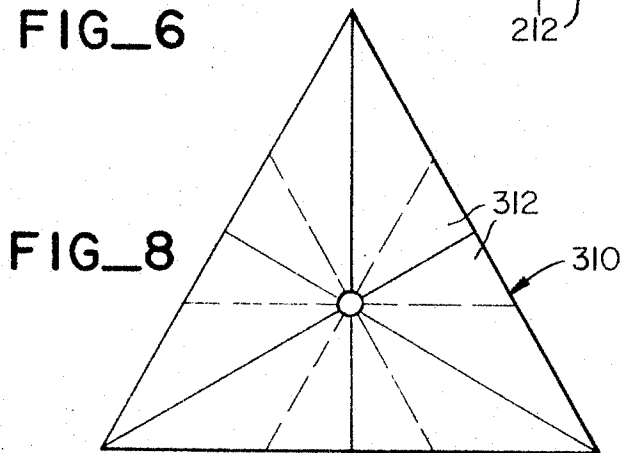
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4 Sheets-Sheet 2



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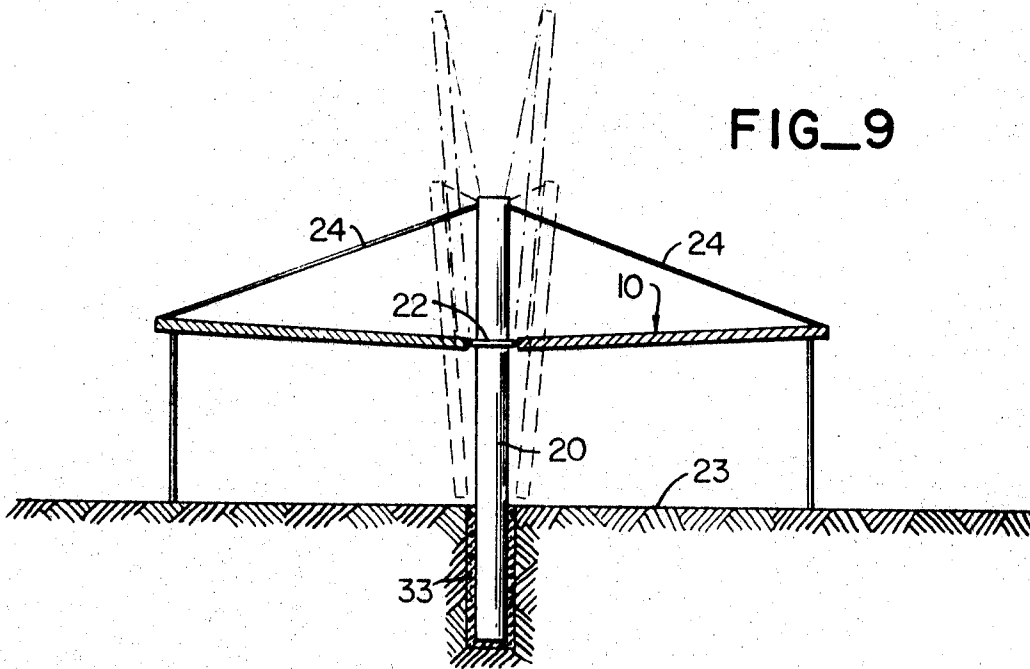
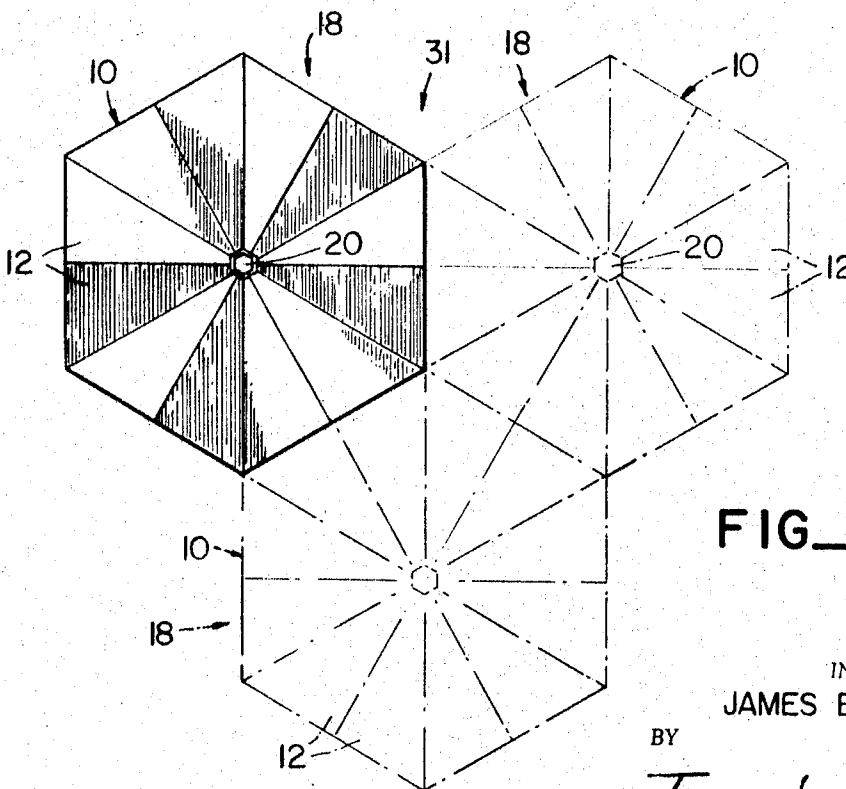
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4 Sheets-Sheet 3



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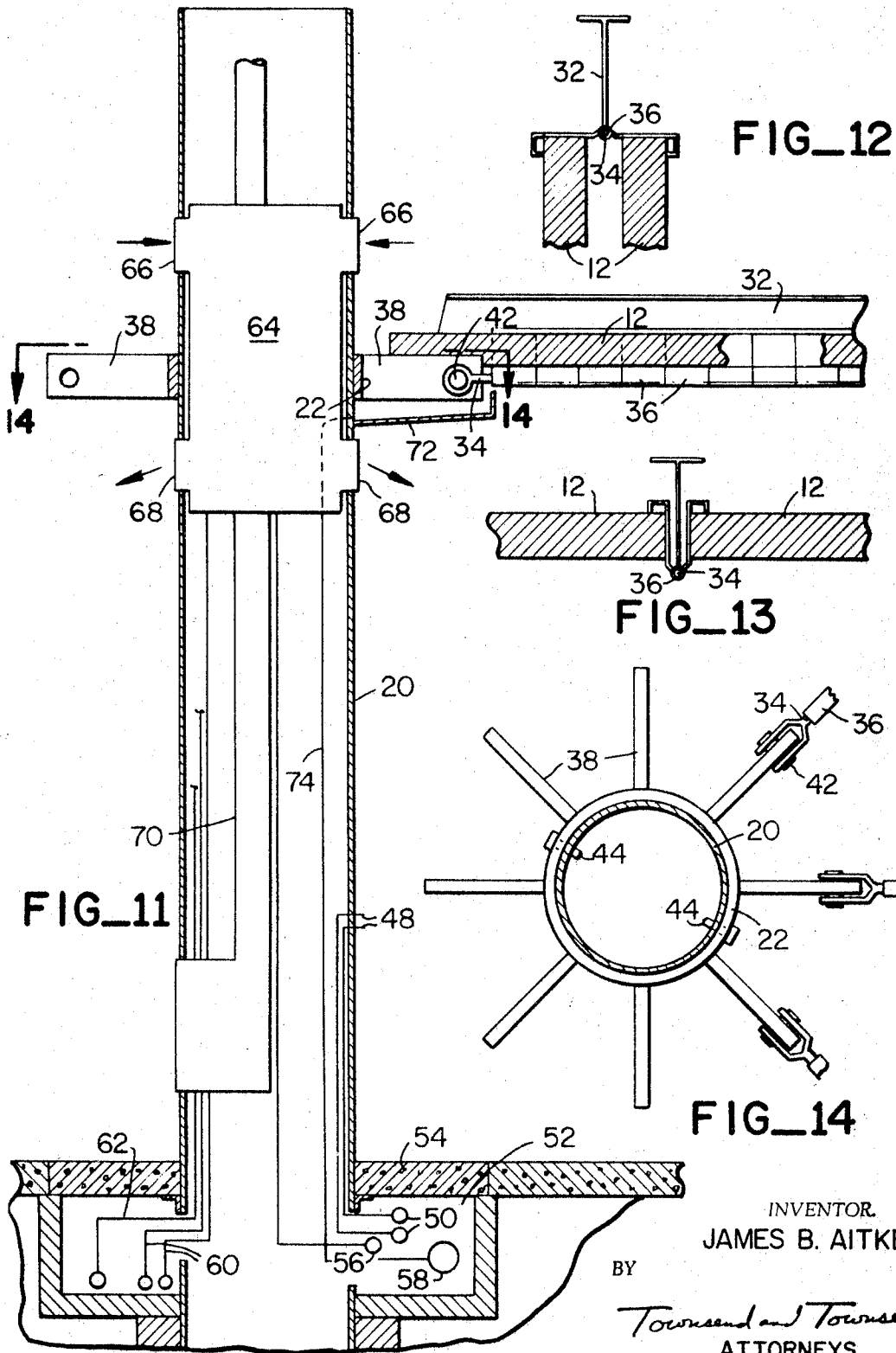
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4 Sheets-Sheet 4



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12 Claims

ABSTRACT OF THE DISCLOSURE

A building and method of making the same wherein a plurality of hingedly interconnected sections are movable from stacked positions into expanded positions whereby the sections can form a building when they are secured to a supporting surface. One type of building that can be formed with the expanded sections utilizes an upright shaft for supporting the expanded sections in an elevated position, whereby sidewall means may depend from locations adjacent to the outer peripheries of the sections. Another type of building utilizing the invention includes fastening means for securing the outer peripheries of the sections to a supporting surface when the inner peripheries of the sections are above the supporting surface.

This invention relates to improvements in building construction and has as its primary object the provision of an improved portable building construction and method wherein the construction is comprised of a plurality of identical, hingedly interconnected rigid sections which can be moved from stacked positions with the sections in a compact form to expanded positions with the sections swung away from each other whereby the construction can be easily transported in its stacked condition from a manufacturing site to an erection site and readily moved into its expanded form at the building site and which can be combined with a central support member for overlying a space to be enclosed to thereby serve as a building unit.

The sections comprising the construction are generally triangular in configuration to define a pair of convergent side edges. The side edges of each section are coupled to corresponding side edges of adjacent sections so that the sections fold like an accordion as they are moved into their stacked positions. Since the sections are identical, their side edges are alignable with each other so that it is possible to maintain the hinged connection between adjacent sections when they are stacked together. When the sections are expanded, the free side edges of the outer sections of the stack can be hingedly connected together to complete the construction and allow the sections to pivot relative to each other. This pivoting movement permits the sections to be oriented in a desired configuration before the sections are made rigid relative to each other. After the sections are made rigid with respect to each other, the construction defined by the sections represents, in a preferred form, the roof of a building.

Although various means may be employed for securing the construction in a fixed position relative to supporting surface, in the preferred embodiment of this invention, the construction is combined with an upright support shaft.

In mounting the sections on the shaft, a ring or collar is provided within a central aperture defined by the inner extremities of the sections when the latter are in their expanded positions. The ring is placed over one end of the shaft, preferably after the shaft has been mounted in its upright position. The ring is slidable along the shaft and, when the desired operative location is reached, the ring is secured in some suitable manner to the shaft. Ca-

bles are used to secure the outer extremities of the sections to the shaft above the ring.

If the installation is at ground level, an open top sleeve is formed in the ground and the lower end of the shaft is inserted in the sleeve. The sleeve, therefore, provides a simple, inexpensive and practical means of mounting the shaft uprightly. Side walls can then be placed below the sections to at least partially enclose the space therebelow.

The construction may also be utilized in another manner by expanding the sections and interconnecting the free side edges of the outer sections with the central portion of the construction spaced above the outer periphery thereof. Then, the outer periphery of the construction is secured by fasteners to the ground with the sections in enclosing relationship to the space between the section and the ground. This manner of using the construction provides a simple and rugged enclosure which is highly portable because of the way in which the sections can be stacked for movement to a building site.

While the construction is suitable for a number of different purposes, it is especially adapted to fill the need for portable classrooms required by school districts or by other educational organizations. It is, therefore, a further object of this invention to provide a building and a method of making the same which satisfies this need at minimum cost and with a minimum expenditure of time and effort in manufacture of the building components and erection of the same.

For the most part, prefabricated or portable buildings utilized in the past have been either costly to manufacture or to erect. Moreover, these buildings oftentimes are made from wall panels of relatively large sizes to provide the necessary structural support so that, if the panels are fabricated at a manufacturing site, transportation of the panels to the building site immediately becomes a problem.

The construction of the present invention overcomes the limitations of prior structures by reliance on the simplicity of the hinged panel sections which keep manufacturing and erection costs to a minimum and allow a building of relatively large size to be partially fabricated at a manufacturing site. Also, the time required for erection is greatly shortened since site preparation can be done at the same time that the construction and support shaft are being made.

The configuration of the building will be governed by the configuration of the construction. Thus, different building configurations can be provided and fall within the scope of this invention because it is a simple matter to choose between a number of different designs. There is no change in erection procedures or in the basic construction of the center shaft.

Another object of this invention is to provide a building of the type described which can have any one of a number of different external configurations to meet specifications as well as to satisfy the aesthetic tastes of particular communities.

A further object of the invention is to provide a portable building construction made from a number of panel sections shiftably mounted on and symmetrically located about a tubular support shaft wherein the shaft is provided with water and electrical conduits and heating and cooling devices so that utility services are readily made available by connecting the utility components in the shaft to underground and/or overhead utility lines as soon as the shaft is erected in place.

An important object of the invention is to provide a portable building construction and a method of erecting the same to form an enclosure wherein the unit is comprised of a number of rigid, initially interconnected panel sections arranged to have a continuous lowermost periphery about an enclosed space above the periphery when

the latter is in proximity to a supporting surface whereby suitable fasteners can be used to rigidly attach the lowermost periphery to the supporting surface while the remaining portions of the section define the sides and top of the enclosure.

A feature of the invention is that the construction can be disposed with its outer periphery above its central portion when the construction is mounted on the central support shaft to thereby allow for drainage. Thus, another object of the invention is to provide a building construction which allows for central drainage.

Other objects of this invention will become apparent as the following specification progresses, reference being had to the accompanying drawings wherein:

FIG. 1 is a perspective view of the construction in a compact form with the panel sections stacked;

FIG. 2 is a perspective view of the construction as it is partially expanded;

FIG. 3 is a perspective view of the construction as it is mounted in a collapsed condition on a center support shaft;

FIG. 4 is a view similar to FIG. 3 but showing the construction in an expanded condition;

FIG. 5 is a view similar to FIG. 4 but showing side walls extending downwardly from the construction;

FIGS. 6, 7 and 8 are top plan views of constructions of different configurations;

FIG. 9 is a side view of a building unit, partly in section, showing the way in which the support shaft is mounted in an upright position and the way in which the construction is mounted on the shaft;

FIG. 10 is a top plan view of a composite building made from several building units of the type shown in FIG. 1;

FIG. 11 is a vertical section through center support shaft and a portion of the roof;

FIG. 12 is a fragmentary cross sectional view of a pair of roof sections and the hinged connection therebetween with the sections being in their collapsed conditions;

FIG. 13 is a view similar to FIG. 12 but showing roof sections in their expanded conditions;

FIG. 14 is a cross sectional view taken along line 14-14 of FIG. 11; and

FIG. 15 is a side elevational view of another building made from the construction.

Portable building construction 10 is shown in FIGS. 1 and 2 and includes a plurality of hingedly interconnected, rigid panel sections 12 of generally triangular configuration. The panel sections are substantially identical in size and shape and each has a pair of convergent side edges 14 and an end edge 16. Sections 12 are hingedly interconnected at their side edges 14 so as to be able to be moved into an expanded condition as shown in FIG. 4. To this end, one side edge 14 of each panel 12 is connected to the corresponding side edge of a first adjacent panel 12 and the other side edge is connected to the corresponding side edge of the other adjacent panel 12. Connected in this way, the sections can be folded like an accordion into the stacked or compact form shown in FIG. 1. The outer panel sections 12a of the stack have a free side edge 14a and these free side edges are joinable when it is desired to maintain the sections in their expanded positions. When expanded, as shown in FIG. 4, construction 10 has a substantially continuous outer periphery defined by end edges 16.

By making construction 10 so that it may assume the form of FIG. 1, it is capable of being easily transported from a manufacturing site to a building site. It can be carried on the bed of a truck notwithstanding the relatively large dimensions which it has when it is expanded. Moreover, all hinged connections as well as the fabrication of the panel section can be accomplished at a manufacturing site to minimize overall building costs.

For purposes of illustration only, construction 10 has a generally hexagonal configuration when it is expanded

in the form of FIG. 4. However, it can have other configurations to satisfy structural or aesthetic requirements. For instance, FIG. 6 illustrates a construction 110 having a plurality of hingedly interconnected sections 112 which form a circular configuration when expanded. FIG. 7 shows a construction 210 having hingedly interconnected sections 212 which provide a square configuration. In FIG. 8, a construction 310 has sections 312 forming a triangular configuration. In each of the latter three configurations, the panel sections are substantially identical and are hinged at locations permitting them to be moved into a compact form similar to that shown in FIG. 1. Thus, the entire construction is capable of being easily transported as described above.

With respect to construction 10, it is to be noted that the inner extremities of sections 12 define a central aperture when the sections are in their expanded positions. Similarly, the construction of FIGS. 6-8 have central apertures in the same manner. The purpose of the aperture is set forth hereinafter.

Construction 10 is suitable for use in forming a building unit 18 which includes a center support shaft 20 mounted on a supporting surface 21 in an upright position. To accomplish this, a ring or collar 22 is pivotally secured to the inner extremities of sections 12 in a manner hereinafter described. Thus, collar 22 is disposed in the central aperture of construction 10 and provides a mounting device for coupling construction 10 to shaft 20.

Collar 22 is shiftably mounted on shaft 20 and can be located at any one of a number of operative positions along the same. When the desired operative location is reached, the collar is rigidly secured in any suitable manner to the shaft and this fixes the location of the inner extremities of the panel sections on the shaft. A number of cables 24 connect the outer periphery of construction 10 to shaft 20 near the top thereof. Cables 24, therefore, support the weight of construction 10 while collar 22 prevents downward movement of the inner extremities of the sections. The cables can extend downwardly to surface 22 and can be connected to the surface to prevent rotation of construction 10 on shaft 20 until a more permanent tie-down means can be provided.

Sections 12 are disposed so that they may be shifted into the collapsed configuration shown in FIG. 3 wherein the sections are grouped into pairs 26. The sections of each pair are in face-to-face relationship and the various pairs radiate from a common axis. Means 28 is provided on sections 12 to releasably hold them in the collapsed condition of FIG. 3. In this condition, construction 10 can be lifted and placed onto shaft 20 after the latter has been mounted uprightly on surface 21. Collar 22 is slipped onto the shaft and construction 10 is lowered into place.

In the alternative, construction 10 can be coupled to shaft 20 before the latter is erected. Then, the construction and the shaft are put into place as a unit with construction 10 remaining at all times in the collapsed condition of FIG. 3.

After the shaft is mounted in place and construction 10 is positioned thereon, the construction is expanded into the configuration of FIG. 4 and this is preferably done in the following manner. The holding means 28 is released and cables 24 can be utilized to lower the sections simultaneously into their operative positions. For purposes of illustration, sections 12 form crests and troughs in the manner shown in FIG. 4 when construction 10 is in its expanded condition. Any suitable structure may be used to secure the upper ends of cables 24 to the upper end of shaft 20.

It is to be emphasized that building unit 18 is highly portable in that building unit 18 can be disassembled and construction 10 and shaft 20 can be then transported to a new building site. The construction is removable from the shaft and the shaft is removable from its mount-

ing structure hereinafter described. These features allow building unit 18 to be used over and over again without any substantial modification thereto.

After building unit 18 is put into place, side walls 30 can be erected between construction 10 and the supporting surface 21. Thus, the space below construction 10 can be partially or totally enclosed. Also, inner partitions can be used within the space below construction 10 to divide the space into a number of rooms or other compartments.

A composite building 32 (FIG. 10) can be made from a number of interconnected building units 18. Building 32 can have any desired dimensions since it is made up of a plurality of easily transported components. Also, the configuration of the building allows it to be erected in irregularly shaped areas to avoid having to eliminate objects of natural beauty adjacent to the building site.

FIG. 9 illustrates one way of mounting shaft 20 in an upright position on the ground. A recess is formed in the ground and concrete is poured in forms placed in the recess to provide a sleeve 33 having an open top which removably receives the lower end of the shaft. The height of sleeve 33 will be determined by the length and weight of the shaft as well as the soil conditions.

Preparation of surface 22 need not be extensive. Generally, all that is required is that the surface be leveled and paved with some suitable material, such as blacktop material. This can be accomplished while sleeve 33 is being formed and while construction 10 and shaft 20 are being transported to the building site. After the building is erected, the surface can be covered in any suitable manner, such as by inexpensive carpeting or flooring materials so that the building is ready for occupancy as soon as the side walls are in place.

Sections 12 are made at a manufacturing site remote from the building site and are preferably hinged together at the manufacturing site to minimize production and installation costs. One manner of hinging adjacent sections together is shown in FIGS. 11-14 wherein a T-beam 32 has means for mounting a hinge pin 34 which extends through tubular hinge members 36 of the adjacent sections 12. The sections are, thus, capable of being pivoted about the axis of pin 34 from the positions shown in FIG. 12 to the positions shown in FIG. 13. These two figures represent the collapsed and expanded conditions respectively of construction 10. Two different locations of construction 10 in its collapsed condition are shown in dashed lines in FIG. 9.

Each hinge pin is connected at its inner end to a strut 38 rigidly secured to and extending radially from collar 22. Each hinge pin 34 is pivotally mounted by means of a pin 42 on the respective strut so that it can pivot about the axis of pin 42. Thus, sections 12 have two degrees of freedom, namely, pivotal movement about the axis of hinge pin 34 and pivotal movement about the axis of pin 42. This allows the sections to be shifted into desired positions with respect to shaft 20. One way of positioning the sections is shown in FIGS. 4 and 5 wherein adjacent sections are at an angle relative to each other to form crests and troughs at respective hinge lines. The particular configuration formed when the construction is expanded will be determined by the dimensions and configurations of the sections themselves.

Collar 22 is initially slideable on shaft 20 and, after it is moved into its operative position, it is secured in place in any suitable manner such as by a number of pins 44 (FIG. 14). Fixing of collar 22 on shaft 20 will ordinarily be before the sections are swung into their operative positions.

Shaft 20 is tubular to permit public utility conduits and the like to extend through the shaft to locations at which outlets are desired. For instance, the construction will ordinarily be provided with overhead lights and possibly an overhead sprinkling system. For these requirements, electricity and water must be supplied. Con-

duits for these utilities will extend through the shaft from above or below the construction, preferably from the area adjacent to the ground surface since underground utility lines are preferred to overhead lines.

For purposes of illustration, utility conduits are shown schematically in FIG. 11 including a pair of hot and cold water conduits 46 which have outlets 48 intermediate the ends of the shaft. These conduits extend downwardly and connect to corresponding underground conduits 50 which terminate in a recess 52 formed in the ground adjacent to the upper end of sleeve 23. A closure 54 covers recess 52 and thereby conceals the underground utility lines.

Other utility lines shown in FIG. 11 includes a gas conduit 56, a sewer line 58, electrical power main 60 and a telephone line 62. The underground conduits are all coupled to corresponding internal conduits of shaft 22 by suitable connectors (not shown). Connections can, therefore, readily be made to provide for utility service in the space below construction 10 as soon as shaft 20 is put into place.

For purposes of illustration, shaft 22 has a heating and cooling source 64 which is operated by gas from conduit 56. Source 64 has air inlet openings 66 above the construction and air outlet openings 68 below the construction. One or more air return ducts 70 are also provided to effect circulation of the air within the space below construction 10. The various conduits and outlets are provided in and on the shaft so that connections of overhead and underground lines can be made as soon as the shaft is put into place in sleeve 33.

Provision is also made for draining precipitation from the upper surface of the construction. To this end, an open top, tray-like collector 72 is carried on shaft 20 and is disposed to receive rain water or other drainage liquid from the upper surface of construction 10. This drainage liquid is then conveyed into a conduit 74 within shaft 20 for disposal in the usual manner in a sewer line or the like.

To erect building unit 18, shaft 20 is first lifted and inserted into sleeve 33. Construction 10 with collar 22 connected thereto is then lifted and the collar is put over the shaft and the construction is lowered with the collar surrounding the shaft. A crane or other suitable load lifting vehicle is used for this purpose. The construction 10 will be in the collapsed condition shown in FIG. 3 until it is ready to be expanded into the condition shown in FIG. 4.

The construction is expanded by allowing adjacent sections 12 to swing away from each other while they are pivoted downwardly. Cables 26 control the lowering of the sections and when they are at their desired operative dispositions, the lowering is stopped and the upper ends of the cables are secured in some suitable manner to shaft 22 adjacent to its upper end.

In the expanded condition of the construction, the pivots coupling the sections to struts 38 actually become hinges. While the construction is expanded, these pivots are load bearing members and their strength characteristics will be determined by the weight of construction 10. The sections, after they have been expanded, are made rigid with respect to each other. This can be done in any suitable manner, such as by braces mechanically connected to adjacent sections.

After the construction has been made rigid relative to the shaft, side walls 30 may be put into place. These side walls will enclose the building and will be provided with desired doors and windows. Partitions can also be added to the building to divide it into a desired number of rooms.

Since the method of erecting building unit 18 requires only a minimum number of steps, the building unit can be put up in a minimum of time. This erection time is greatly minimized by preparing the roof and shaft at the manufacturing site. The completion of most work on the building unit may be accomplished within a matter of hours

since the individual steps in the erection of the building can be performed in a minimum of time and without interruption. One step can follow a previous step since the building components are prefabricated and can readily be connected together without delay.

These features render the building especially adapted for use where a portable building is required to be erected in a relatively short time. In particular, the building satisfies the need for portable classrooms which can be readied for student classes within several days at the most, including finish work. The minimum ground surface preparation at the building site and the prefabricated character of the building components allow this objective to be attained. The building can be maintained portable so that, when it is no longer needed, it can be moved to another site or stored until needed again. In the alternative, the building can be considered a permanent installation because the sections are rigidly interconnected to each other and to the center shaft.

Building unit 18 has aesthetic qualities as well as functional characteristics so that community interests are served if the building unit is to be considered a permanent installation. Since construction 10 is not limited to a single configuration but can have any one of a number of different configurations as exemplified by those of FIGS. 5-8, the building may satisfy different requirements which may vary from one community to another. It is conceivable also that the sections can be interchanged if such is decided. The center shaft would not require modification nor would the utility and conduit means therein need to be changed.

Construction 10 can be utilized to construct another type of building. This building is shown in FIG. 15 and is denoted by the numeral 78. Building 78 is suitable for satisfying the need for a portable shelter such as would be required on camping trips or the like. Since construction 10 can be collapsed and can be made lightweight in character, it can be carried to a camp site and erected quickly and easily as will be made clear hereinafter.

Panel sections 12 are, as described above, hingedly interconnected so that they may be collapsed into the configuration shown in FIG. 1 for transportation to an erection site. Also, the sections can be swung away from each other as shown in FIG. 2 and made to have a continuous outer periphery. The outer periphery is then provided with fastening devices 80 wherein a shank 82 having a bracket 84 at its upper end is driven into the ground to connect one portion of the outer periphery of construction 10 in a fixed disposition. Brackets 84 are secured by suitable fasteners to respective sections 12. This can be done either before or after the shanks 82 have been driven into the ground. The construction in its operative disposition has its outer periphery adjacent to the ground and its central portion is spaced above the ground whereby the construction effectively overlies the space which is to define the interior of the desired enclosure. All open spaces can then be closed such as with rigid panels or the like. Door and window openings will preferably have been made in construction 10 at a manufacturing site and provision will be made for closing the upper open extremity of the construction when the latter is erected as shown in FIG. 15.

Building 78 can have any one of a number of different configurations depending upon the configuration of construction 10. To this end, the brackets of fastening devices 80 may be different to conform to the sections 12 of a respective construction.

While several embodiments of this invention have been shown and described, it will be apparent that other adaptations and modifications can be made without departing from the true spirit and scope of the invention.

What is claimed is:

1. A portable building construction comprising: a plurality of rigid panel sections of generally triangular shape, each section hingedly connected along two opposite adjacent side edges to a pair of adjacent sections for move-

ment from a stacked position with the opposite adjacent side edges in alignment with corresponding side edges of the other sections to an expanded position swung away from adjacent sections, said construction, when in its stacked condition, having two outermost sections each of which includes a free side edge, said free side edge being adjacent to each other when said construction is in its expanded condition, means hingedly interconnecting said free side edges when the construction is in its expanded condition, said sections having inner extremities defining a central aperture when the sections are in their expanded positions, a mounting device positionable within said aperture, and means connecting the inner extremities of each of said sections to said mounting device when the latter is positioned within said aperture.

2. A portable building construction as set forth in claim 1, wherein said mounting device includes a collar.

3. A portable building construction comprising: a plurality of identical rigid panel sections of generally triangular shape, each section hingedly connected along two opposite adjacent side edges to a pair of adjacent sections for movement from a stacked position with the opposite adjacent side edges in alignment with corresponding side edges of the other sections to an expanded position swung away from adjacent sections, said construction, when in its stacked condition, having two outermost sections each of which includes a free side edge, said free side edges being adjacent to each other when said construction is in its expanded condition, means hingedly interconnecting said free side edges when the construction is in its expanded condition, said sections having inner extremities defining a central aperture when the sections are in said expanded positions, a collar positionable within said aperture, means for pivotally mounting said inner extremities of the sections on the collar, a shaft extendable through the collar and permitting the latter to move longitudinally of the shaft, and means for releasably securing the collar to the shaft at any one of a number of operative locations thereon.

4. In the art of portable building construction, the method comprising the steps of: forming a plurality of identical, rigid panel sections of generally triangular shape; hingedly securing said sections together for foldable movement into stacked positions with corresponding side edges of the sections in alignment to form a compact, transportable unit; transporting said unit to a building site; pivoting said sections to an expanded position by swinging adjacent sections away from each other; mounting said expanded sections relative to a support surface and in an elevated location on a tubular, upright shaft; placing side wall structure between the sections and a surface therebelow to at least partially enclose the space below said sections; and connecting conduit means in said shaft to conduit structure externally of the shaft.

5. In the art of portable building construction, the method comprising the steps of: forming a plurality of identical, rigid panel sections of generally triangular shape; hingedly securing said sections together for foldable movement into stacked positions with corresponding side edges of the sections in alignment to form a compact, transportable unit; transporting said unit to a building site; pivoting said sections to an expanded position by swinging adjacent sections away from each other; mounting said expanded sections relative to a support surface; and canting at least certain of the sections to position the outer peripheries thereof above their central portions to allow for drainage toward said central portions.

6. A portable building construction comprising: a plurality of rigid panel sections of generally triangular shape, each section hingedly connected along two opposite adjacent side edges to a pair of adjacent sections for movement from a stacked position with the opposite adjacent side edges in alignment with corresponding side edges of the other sections to an expanded position swung away from adjacent sections, said construction, when in

its stacked condition, having two outermost sections each of which includes a free side edge, said free side edges being adjacent to each other when said construction is in its expanded condition, means hingedly interconnecting said free side edges when the construction is in its expanded condition, said sections having inner extremities defining a central aperture when the sections are in their expanded positions, said sections being grouped into pairs with the sections of each pair being in face-to-face relationship and radiating from a common axis passing through said aperture when the sections are stacked; a shaft; and means secured to said shaft and positionable in said aperture for interconnecting said inner extremities.

7. A portable building construction comprising: a plurality of rigid panel sections of generally triangular shape, each section hingedly connected along two opposite adjacent side edges to a pair of adjacent sections for movement from a stacked position with the opposite adjacent side edges in alignment with corresponding side edges of the other sections to an expanded position swung away from adjacent sections, said construction, when in its stacked condition, having two outermost sections each of which includes a free side edge, said free side edges being adjacent to each other when said construction is in its expanded condition, means hingedly interconnecting said free side edges when the construction is in its expanded condition, said sections having inner extremities defining a central aperture when the sections are in their expanded positions, and a ring positionable in said aperture for pivotally interconnecting said inner extremities.

8. A portable building construction comprising: a plurality of rigid panel sections of generally triangular shape, each section hingedly connected along two opposite adjacent side edges to a pair of adjacent sections for movement from a stacked position with the opposite adjacent side edges in alignment with corresponding side edges of the other sections to an expanded position swung away from adjacent sections, said construction, when in its stacked condition, having two outermost sections each of which includes a free side edge, said free side edges being adjacent to each other when said construction is in its expanded condition, means hingedly interconnecting said free side edges when the construction is in its expanded condition, said sections having inner extremities defining a central aperture when the sections are in their expanded positions; a shaft; means coupled with the shaft for mounting the same in an upright position on a supporting surface; means positionable in said aperture and mounted for movement along the shaft for interconnecting said inner extremities; and means for securing said interconnecting means to said shaft.

9. A portable building construction comprising: a plurality of rigid panel sections of generally triangular shape, each section hingedly connected along two opposite adjacent side edges to a pair of adjacent sections for movement from a stacked position with the opposite adjacent side edges in alignment with corresponding side edges of the other sections to an expanded position swung away from adjacent sections, said construction when in its stacked condition, having two outermost sections each of which includes a free side edge, said free side edges being adjacent to each other when said construction is in its expanded condition, means hingedly interconnecting said free side edges when the construction is in its expanded condition, said sections having inner extremities defining a central aperture when the sections are in their expanded positions, a shaft capable of extending through said aperture, means coupling said outer extremities to said shaft when the latter extends through said aperture, and means securing said coupling means to said shaft.

10. A portable building construction as set forth in claim 9, wherein is provided means coupled with the outer peripheries of said sections for securing the same to a supporting surface.

11. A portable building construction comprising: a plurality of rigid panel sections of generally triangular shape, each section hingedly connected along two opposite adjacent side edges to a pair of adjacent sections for movement from a stacked position with the opposite adjacent side edges in alignment with corresponding side edges of the other sections to an expanded position swung away from adjacent sections, said construction, when in its stacked condition, having two outermost sections each of which includes a free side edge, said free side edges being adjacent to each other when said construction is in its expanded condition, means hingedly interconnecting said free side edges when the construction is in its expanded condition, said sections having inner extremities defining a central aperture when the sections are in their expanded positions, means positionable in said aperture for interconnecting said inner extremities, and an upright, tubular shaft capable of extending through said aperture and secured to said interconnecting means, said shaft having conduit means therein, and conduit structure adjacent to and exteriorly of the shaft, said conduit structure being connected to said conduit means.

12. A portable building construction comprising: a plurality of rigid panel sections of generally triangular shape, each section hingedly connected along two opposite adjacent side edges to a pair of adjacent sections for movement from a stacked position with the opposite adjacent side edges in alignment with corresponding side edges of the other sections to an expanded position swung away from adjacent sections, said construction, when in its stacked condition, having two outermost sections each of which includes a free side edge, said free side edges being adjacent to each other when said construction is in its expanded condition, means hingedly interconnecting said free side edges when the construction is in its expanded condition, said sections having inner extremities defining a central aperture when the sections are in their expanded positions, means positionable in said aperture for interconnecting said inner extremities, means for mounting and supporting said roof sections in an elevated location above a supporting surface, and side wall means extending downwardly from said sections to at least partially enclose the space therebeneath.

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HENRY C. SUTHERLAND, Primary Examiner

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