

Dec. 12, 1961

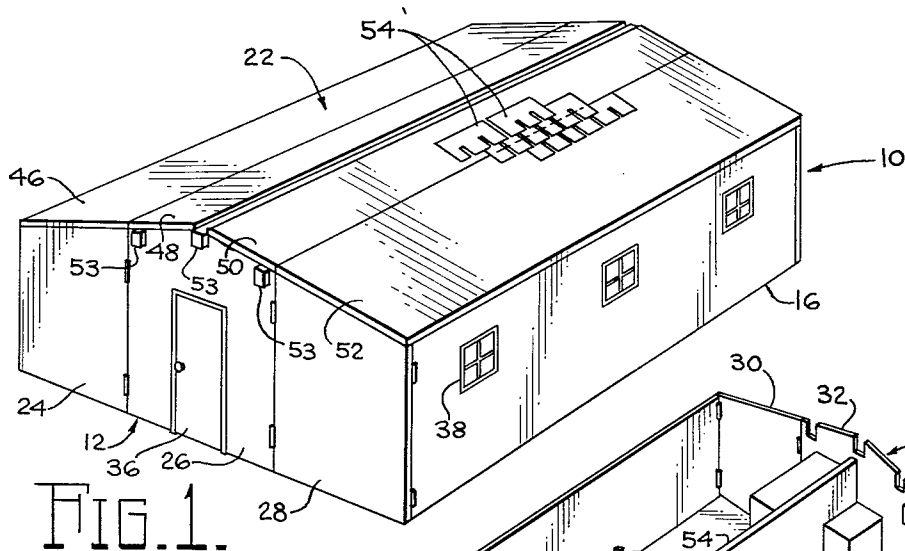
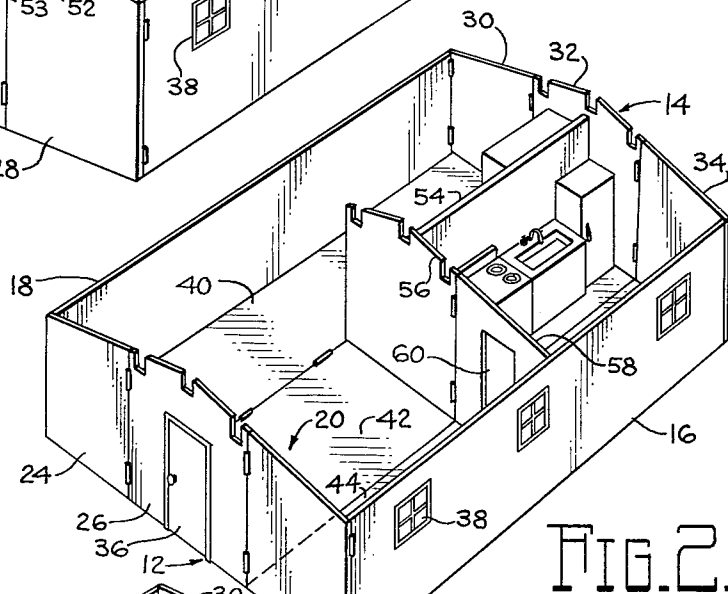
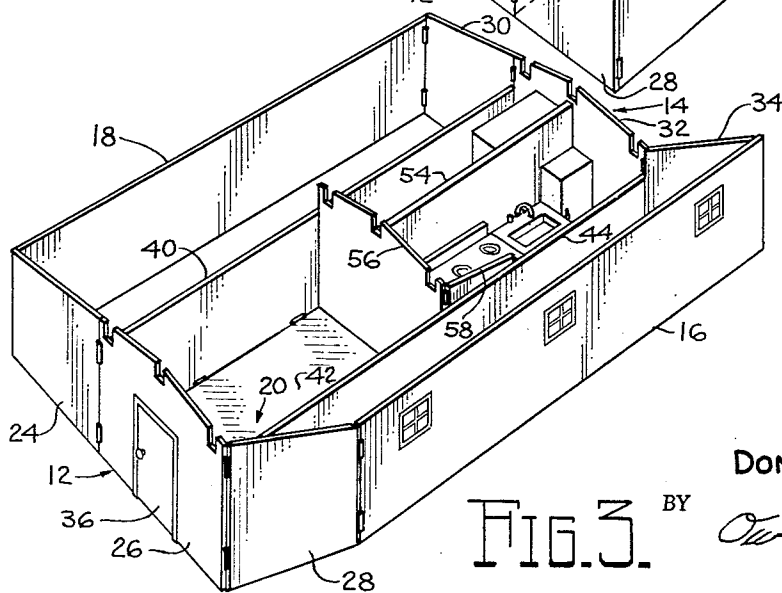
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3,012,291

COLLAPSIBLE PORTABLE BUILDING

Filed Jan. 5, 1959

2 Sheets-Sheet 1



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2 Sheets-Sheet 2

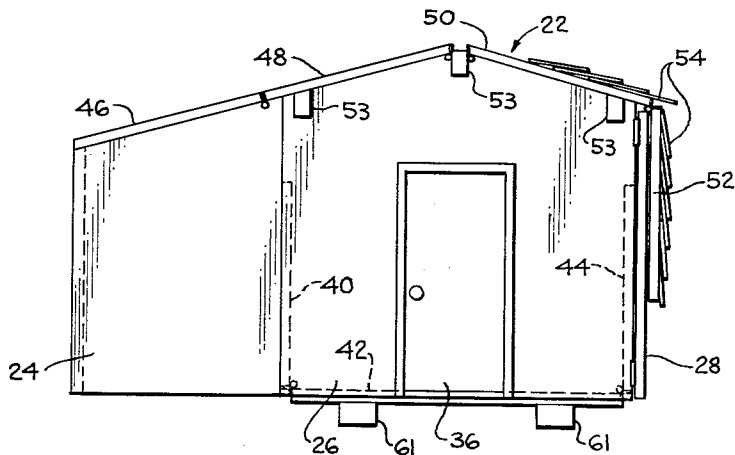


FIG. 4.

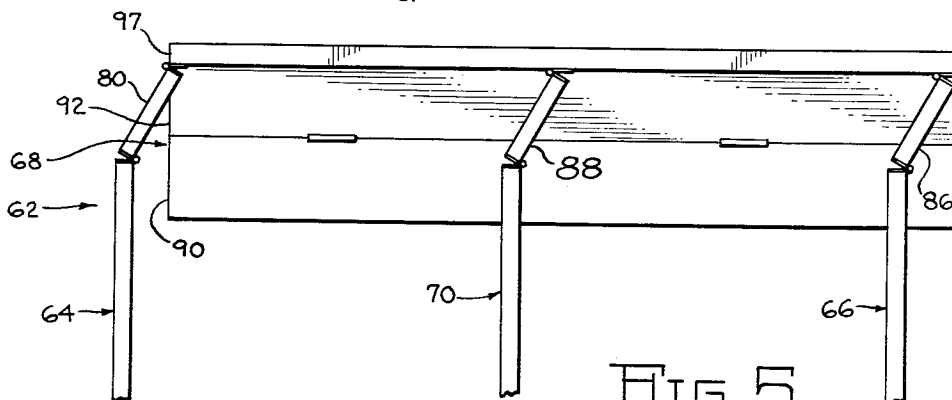


FIG. 5.

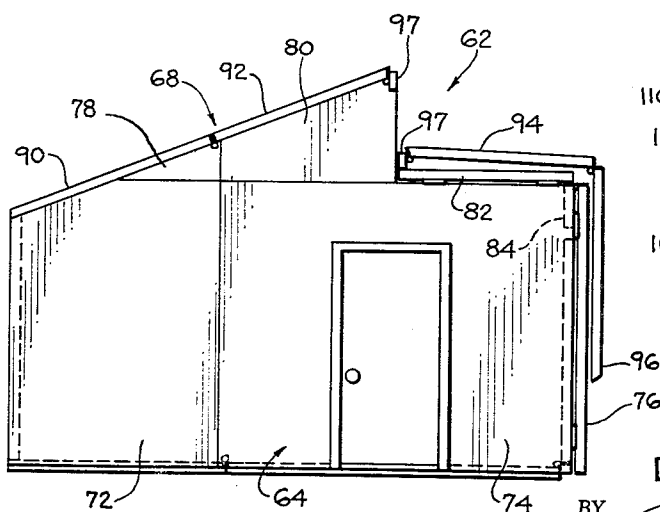


FIG. 6.

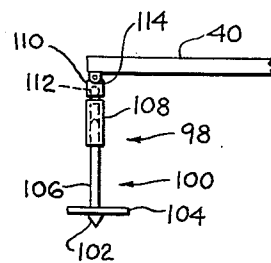


FIG. 7.

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3,012,291

COLLAPSIBLE PORTABLE BUILDING

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1 Claim. (Cl. 20—2)

This invention relates to a portable building which can be partially collapsed to reduce the size thereof while being moved.

A collapsible building according to the invention has particular applicability for house trailers which are frequently transported from place to place. The size of such trailers is limited by the roads over which they are towed and by state regulations which are in force in almost all states. A trailer according to the invention can be designed within these limits and yet provide up to three times the floor space otherwise available in a trailer of the same basic size. However, the new portable building has many other uses for which the invention is equally advantageous. For example, the building is useful as a tool shed for a contractor for the storing of tools and of materials at a job site. In such a case, the building can be provided with skids and carried on a flat bed truck or provided with wheels and pulled similarly to a house trailer. In this manner, the building can be easily transported from one job site to another. Along the same line, the building can be used for those contractors doing work within large factory buildings in which large installations are made, such as soaking pit installations, or the like. For this purpose, a tool house or building designed according to the invention can be easily brought into the factory through the ordinary doors provided and equally well towed through the usual factory aisles. The contractor thus has protection for his desks, records, and particularly for larger equipment which otherwise frequently must be left out in the open. The new structure can also be employed in multiple units to constitute a composite prefabricated, collapsible building. Used in this manner, each of the building structures is only part of the complete building.

Although collapsible buildings are known in the art, the new building according to the present invention is easier to expand and collapse because it has fewer sections which must be folded and unfolded. This results in fewer joints which, in turn, reduces the cost of the building and decreases weather proofing problems and the like.

It is, therefore, a principal object of the invention to provide an improved portable building adaptable for many uses and having many advantages as discussed above.

Numerous other advantages of a portable building according to the invention will be apparent from the following detailed description of a preferred embodiment thereof, reference being made to the accompanying drawings, in which:

FIG. 1 is a view in perspective of a building constructed in accordance with the present invention;

FIG. 2 is a view in perspective of the building shown in FIG. 1, with the roof removed;

FIG. 3 is a view in perspective of the same building with sections thereof partially collapsed;

FIG. 4 is an end view of the building including the roof, with one side thereof fully collapsed;

FIG. 5 is a fragmentary view in cross section of a modification of the building of FIG. 1 with a modified roof shown partially collapsed;

FIG. 6 is an end view of the building shown in FIG. 5, with one portion of the roof completely collapsed; and

FIG. 7 is a fragmentary view in elevation of a support for a portion of the building.

Referring to the drawings, and more particularly FIGS.

2

1-4, a collapsible, portable building according to the invention is indicated at 10 and has end walls 12 and 14, side walls 16 and 18, a floor 20, and a roof 22.

The end walls 12 and 14 comprise three main sections 24, 26, 28, and 30, 32, 34, respectively, with the outer sections 24, 28 and 30, 34 movable, being pivotally joined to the stationary center sections 26 and 32. All of the outer sections are pivotally joined to the center sections so as to pivot toward a common direction, preferably toward the rear. A door 36 is located in one of the walls or sections, such as the center section 26, and windows 38 are suitably disposed in the side walls 16 and 18 and can also be in the end walls, wherever desired.

The side walls 16 and 18 are single rigid sections pivotally joined to the outer edges of the outer sections 24, 28 and 30, 34. The joints between the side walls 16 and 18 and the outer sections 24 and 28 of the front end wall 12 enable the side walls and outer sections to be swung away from one another on a straight line, and the similar joints for the outer sections 30 and 34 of the rear end wall 14 are designed to enable the outer sections and side walls to be swung toward one another so as to overlap.

The floor 20 comprises three sections somewhat similar to those of the end walls 12 and 14, including an outer section 40, a stationary center section 42, and another outer section 44. The outer sections are pivotally joined to the stationary center section so they can be folded upwardly and assume a vertical position, parallel to the side walls 16 and 18. The outer sections 40, 44 are of approximately the same width as the end wall outer sections 24, 28 and 30, 34 with the joints between the outer sections and the center, stationary sections of the floor 20 and the end walls 12 and 14 being in approximately the same plane.

The roof 22 includes an outer movable section 46, two center, stationary sections 48 and 50, and another outer, movable section 52. The outer sections 46 and 52 are pivotally joined to the center sections 48 and 50 so as to swing upwardly onto the stationary sections or, preferably, swing downwardly, adjacent the side walls, with the joint line being approximately in the same plane as the joint lines between the center and outer sections of the end walls and floor. Three longitudinal beams 53 may be fixed to the central part of the building by dropping them in notches in the end walls and partition near the joint lines and peak of the roof sections to provide additional strength and stiffness. The center roof sections 48 and 50 can be hinged to the center beam 53 so that these sections can be swung upwardly, if desired. The roof joints can be made leakproof in various ways as by placing one row of shingles 54 so that they overlap the pivotal joint lines, as shown in FIGS. 1 and 4. The shingles 54 on the outer sections 46 and 52, when swung upwardly, will underlie portions of the shingles on the center sections 48 and 50 and thereby provide leakproof joints. Joints of the side and end walls can be made leakproof by the use of any suitable and known expedients such as aluminum extrusions and rubber moldings.

With the building expanded as shown in FIG. 1, it can be collapsed as follows: The outer floor sections 40 and 44 are swung upwardly about their pivotal joints to vertical positions, as shown in FIG. 3. Each of the side walls 16 and 18 are then pushed inwardly toward the rear until they reach a position adjacent the floor sections 40 and 44. The side wall 16 is shown in a partially collapsed position in FIG. 3. The outer roof sections 46 and 52 are then swung downwardly adjacent the side walls 16 and 18. The collapsed building thereby assumes a width only approximately one-third, more or less as desired, as much as when expanded.

Although the sections can be moved with mechanical, electrical, hydraulic, or pneumatic devices, for most build-

ings such controls are not used because they add excessively to the cost thereof for the amount they are used. To raise the floor sections 40 and 44, ropes can be affixed near the outer edges and pulled upwardly by one or more men, depending on the weight of the sections, who stand on the center, stationary section 42. The side walls 16 and 18 can be easily pushed rearwardly and inwardly and the outer roof sections 46 and 52 can be propped up until the side walls 16 and 18 are fully collapsed, at which time the sections 46 and 52 can be simply swung downwardly to a position adjacent the side walls, as illustrated by the roof section 52 in FIG. 4.

In many instances partitions will be desired in the portable building to divide it into separate spaces for different functions. For this purpose, a partition 54 is provided which extends longitudinally along the central floor section 42 from the rear end wall 14. A lateral partition 56 extends laterally to the partition 54 between the pivotal joints of the outer floor sections 40, 44 and the center section 42. At one edge of the partition 56 is a movable partition 58 which is pivotally joined to the partition 56 and can be swung inwardly so as to be positioned slightly inwardly from the joint between the floor sections 42 and 44. The movable partition 58 is swung inwardly when it is desired to fold up the floor section 44 and collapse the building. A door 60 can be located in the partition 58.

Heavy objects, such as stoves, refrigerators, and sinks, are located permanently on the center, stationary floor section 42 while other objects, normally located on the outer floor sections 40 and 44, can be moved inwardly to the center section 42 when the building is to be collapsed and transported. Wall type beds which swing upwardly into a wall adjacent the headboard are particularly effective for trailers embodying the invention because such beds can be swung upwardly adjacent a central partition, such as the partition 54, when it is desired to collapse the trailer. If the building is employed as a tool shed, all the contents, particularly heavy items, need not be removed when changing from one job site to another but can simply be located on the central floor section. It is to be understood that there is substantially no limit to the number of schemes possible for the design and location of partitions and the location of objects in a building according to the invention.

Skids 61 can be provided under the center floor section for towing the building 10 short distances, as onto the bed of a truck. The skids can be modified to serve as bearing blocks for removable wheel and axle assemblies. Further, the wheels can be rotatably mounted on the outer floor sections so that they fold under them when they are moved to horizontal positions. When the outer floor sections are moved to vertical positions the wheels will similarly move and can then rotatably support the building between the outer floor sections and the side walls.

In some instances, the portable building will be sufficiently high that it will be desirable to decrease overall height when being moved. For this purpose, a modified portable building 62 can be employed, as shown in FIGS. 5 and 6. This building includes the same floor 20 and side walls 16 and 18, but has modified end walls 64 and 66, a modified roof 68, and a lateral partition 70. The end wall 64 has outer, center, and other outer sections 72, 74, 76 and the end wall 66 has similar sections. The sections 72, 74, and 76 have upper movable segments 78, 80, 82, and 84, which are pivotally joined to the sections 72, 74, 76 so as to swing toward the rear end wall 66. The rear end wall 66 has similar movable segments only a center segment 86 of which is shown. The partition 70 has two movable segments similar to the segments 80 and 82, only one of which, segment 88, is shown. The roof 68 includes an outer section 90, two central sections 92 and 94, and another outer section 96. The outer roof sections 90 and 96 are pivotally joined to the central sec-

tions 92 and 94 near the joints between the outer end wall sections 72 and 76 and the center end wall section 74. The center roof sections 92 and 94 are pivotally attached to the peaks of the upper center segments of the end walls and partition. When the upper sections are moved to a horizontal position, the roof sections 92 and 94 similarly move to cause the joint lines between the outer sections 90 and 96 and the center sections 92 and 94 to move outwardly beyond the joints of the outer end wall sections 72 and 76 and the center end wall section 74. The outer roof sections 90 and 96 can thereby swing downwardly adjacent the side walls 16 and 18, as before. The center roof sections 86 and 88 are separate so that each half of the roof 68 can be swung downwardly separately so as to be more easily handled. If desired, however, the sections 86 and 88 can be pivotally joined at the peak and swung down to a horizontal position together, along with the outer sections 90 and 96. A split beam 97 similar to the beams 53 can be used for additional support or, when the sections 86 and 88 are joined, a single beam can be placed at the peaks of the upper, movable segments of the end walls and partition.

To collapse the building 62, the outer floor sections are raised as before. The movable upper segments 78 and 84 of the outer sections 72 and 76 and the corresponding movable segments of the rear end wall 66 are then swung downwardly and toward the rear so as to overlap the sections to which they are pivotally joined. The side walls are next collapsed as before. The center movable sections 80, 82, 86, and 88, and the others not shown, are then swung toward the rear to horizontal positions and the center roof sections are thereby similarly lowered to horizontal positions. At this time, the outer roof sections 90, 96 are swung downwardly.

When a building according to the invention is to be located at one place permanently or semi-permanently, it can be set on a concrete block foundation or the like. For temporary locations, a support 98, as shown in FIG. 7, can be employed to support the outer floor sections 40 and 44. The support includes a ground anchor 100 having a point 102, a flange 104, and a threaded shank 106. The shank is connected to member 108 which is rotatably connected to a bar 110 by a ball and socket connection 112 or the like, the parts 106 and 108 being screwed together if desired. The bar 110 is pivoted to an ear 114 attached to the lower surface of the floor section 40.

The ground anchor 100 may be detached from the member 108 when not in use, and the member 108 and the bar 110 may be swung against the floor section 40 when moved to a vertical position. When the support 98 is to be used again, the shank 106 is screwed partly into the member 108 and a shallow hole can be dug in the ground at the spot where the flange 104 will contact it. The section 40 is then moved to a horizontal position with the shank 106 and the member 108 in vertical positions. The shank 106 can then be screwed further into or out of the member 108 to level the floor section 40.

The invention basically comprises a portable building having end walls each divided into at least a stationary and a movable section, with each mobile section capable of being swung in the same direction, single side walls at least one of which is pivotally attached to the outer edges of the outer movable section, a floor divided into at least a stationary and a movable section which can be swung pivotally upwardly parallel to the side walls, and a roof having at least a stationary and a movable section which can be swung pivotally upwardly parallel to the side walls, and a roof having at least a stationary and a movable section which can pivot about the stationary section.

Various modifications will be suggested to the reader from the above detailed description and it is to be understood that such modifications can be made without departing from the scope of the invention, if within the spirit of the depending claim.

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I claim:

A collapsible building structure comprising a floor including a center stationary section and two outer, movable sections pivotally joined to said center section to pivot about the joints from generally horizontal to generally vertical positions, a front end wall including a center stationary section and two outer movable sections pivotally joined along vertical lines to the front end wall center section to pivot toward the rear of the building, a rear end wall including a center, stationary section and two outer, movable sections pivotally joined along vertical lines to the rear center section to pivot toward the rear in the same direction as the front outer sections, side walls pivotally attached to the outer edges of the front and rear outer sections, said stationary front and rear center sections having upper movable segments pivotally attached to said stationary sections along horizontal lines for movement toward the rear of said building in the same direction as said side walls, and two roof sections, each of which is pivotally attached to peaks of both of said upper segments to move therewith, for forming a pitched roof when said segments are vertical and for lying in adjacent relationship in a common plane when said segments are in horizontal position toward the rear.

zontal lines for movement toward the rear of said building in the same direction as said side walls, and two roof sections, each of which is pivotally attached to peaks of both of said upper segments to move therewith, for forming a pitched roof when said segments are vertical and for lying in adjacent relationship in a common plane when said segments are in horizontal position toward the rear.

References Cited in the file of this patent

UNITED STATES PATENTS

2,845,663 Harr ----- Aug. 5, 1958

FOREIGN PATENTS

699,753 Great Britain ----- Nov. 18, 1953