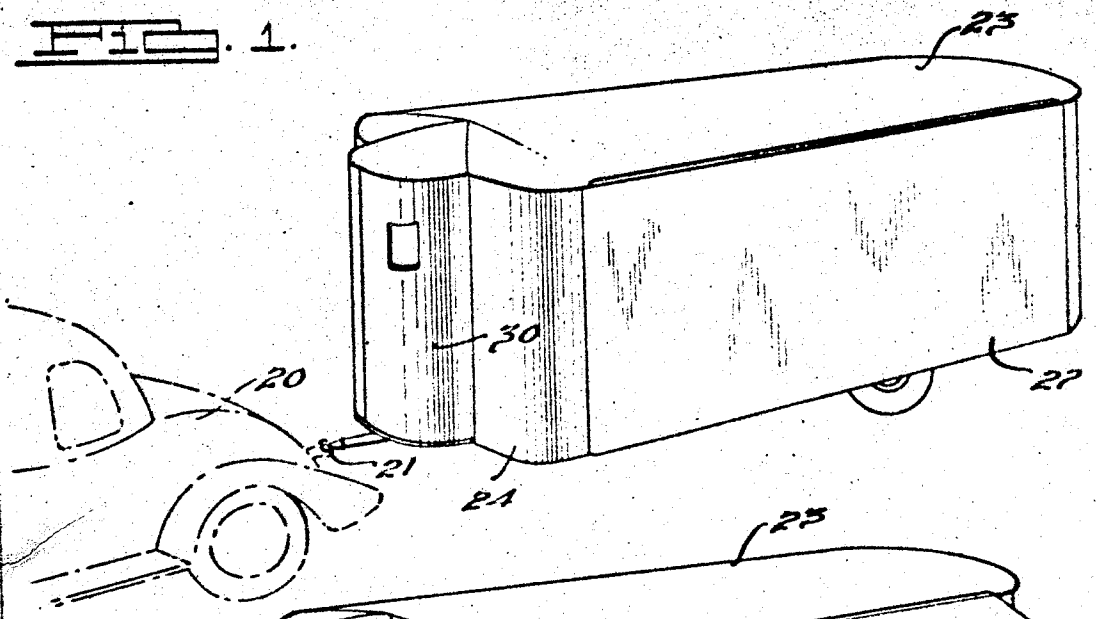
July 25, 1939. W. B. STOUT 2,167,557

FOLDING WALL CONSTRUCTION FOR TRAILERS

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Fig. 1.



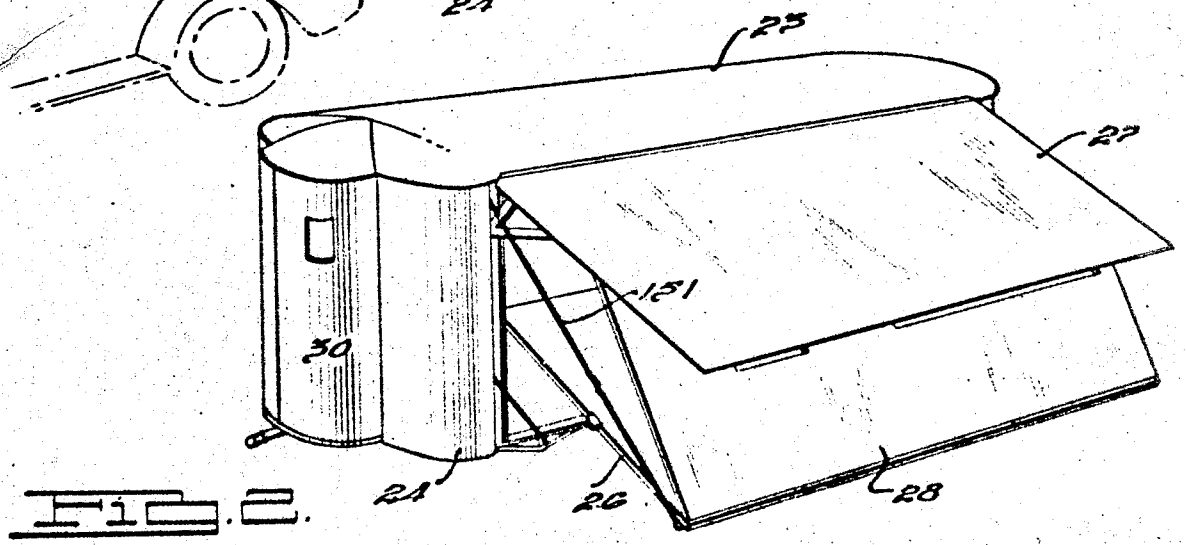


Fig. 2.

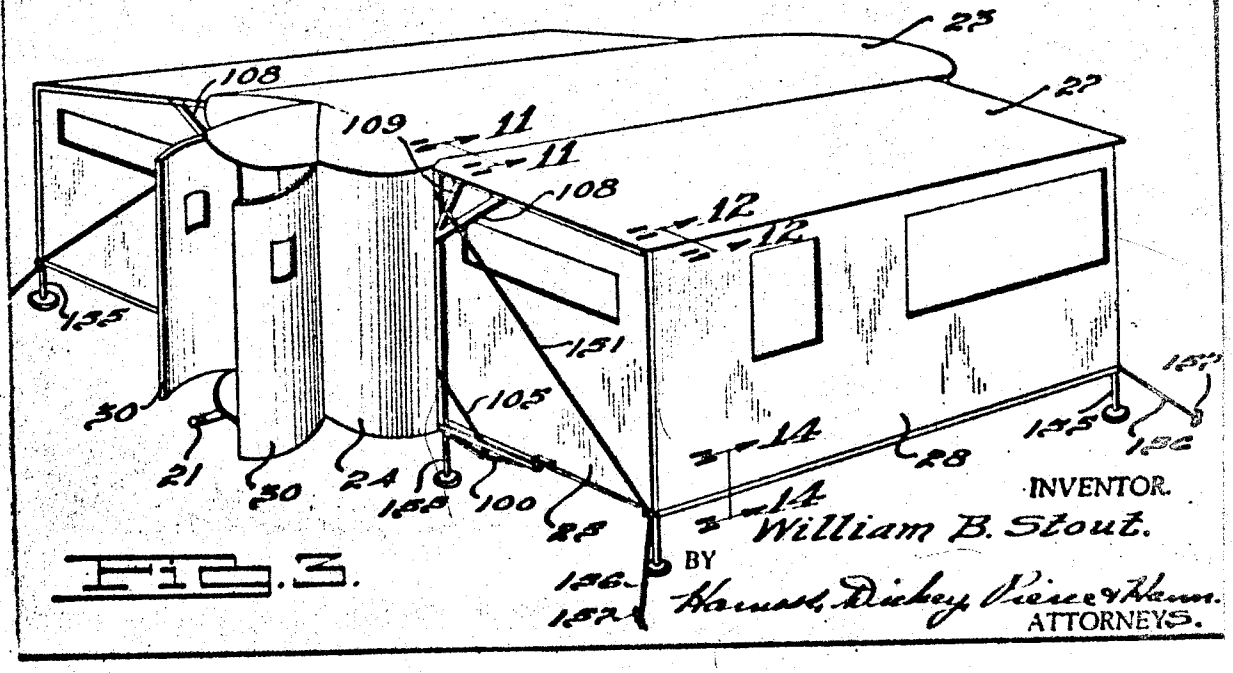


Fig. 3.

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FOLDING WALL CONSTRUCTION FOR TRAILERS

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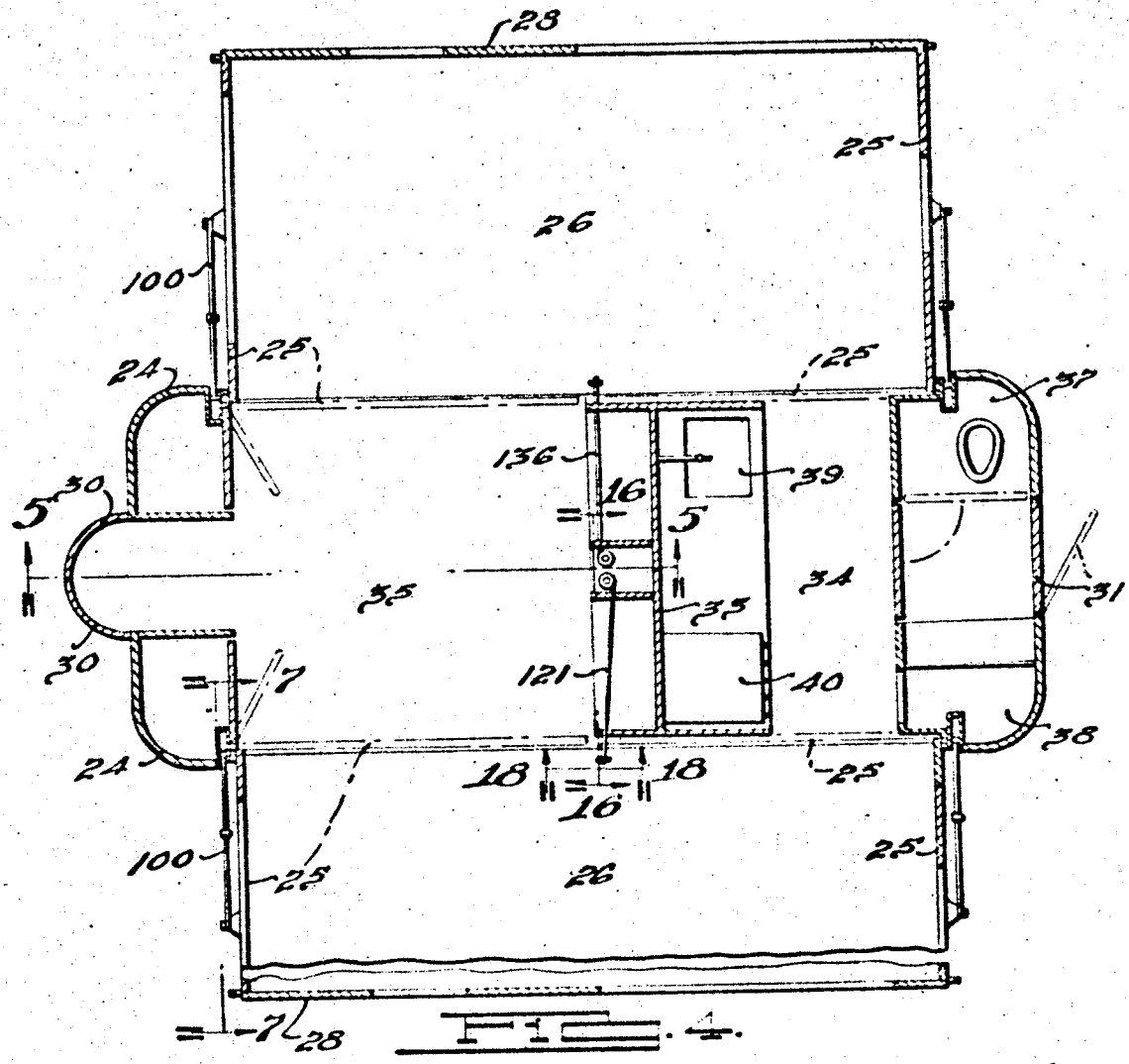


FIG. 4.

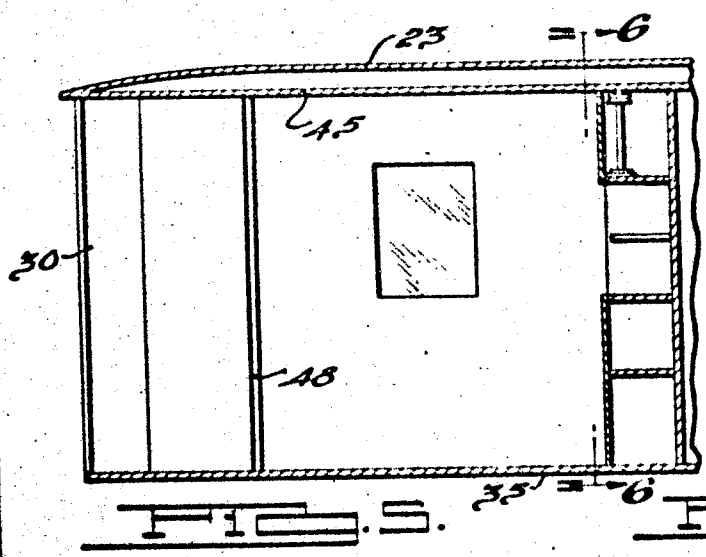


FIG. 5.

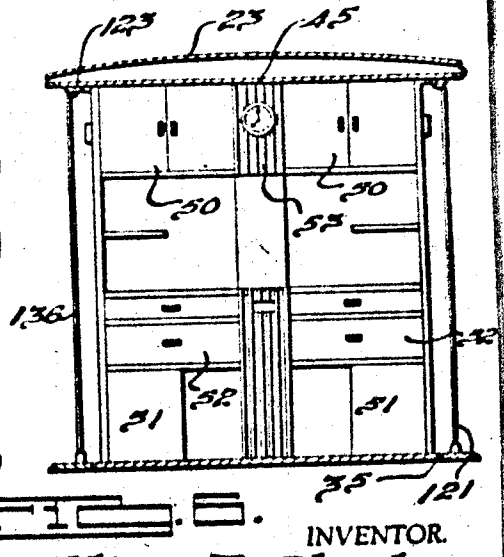


FIG. 6.

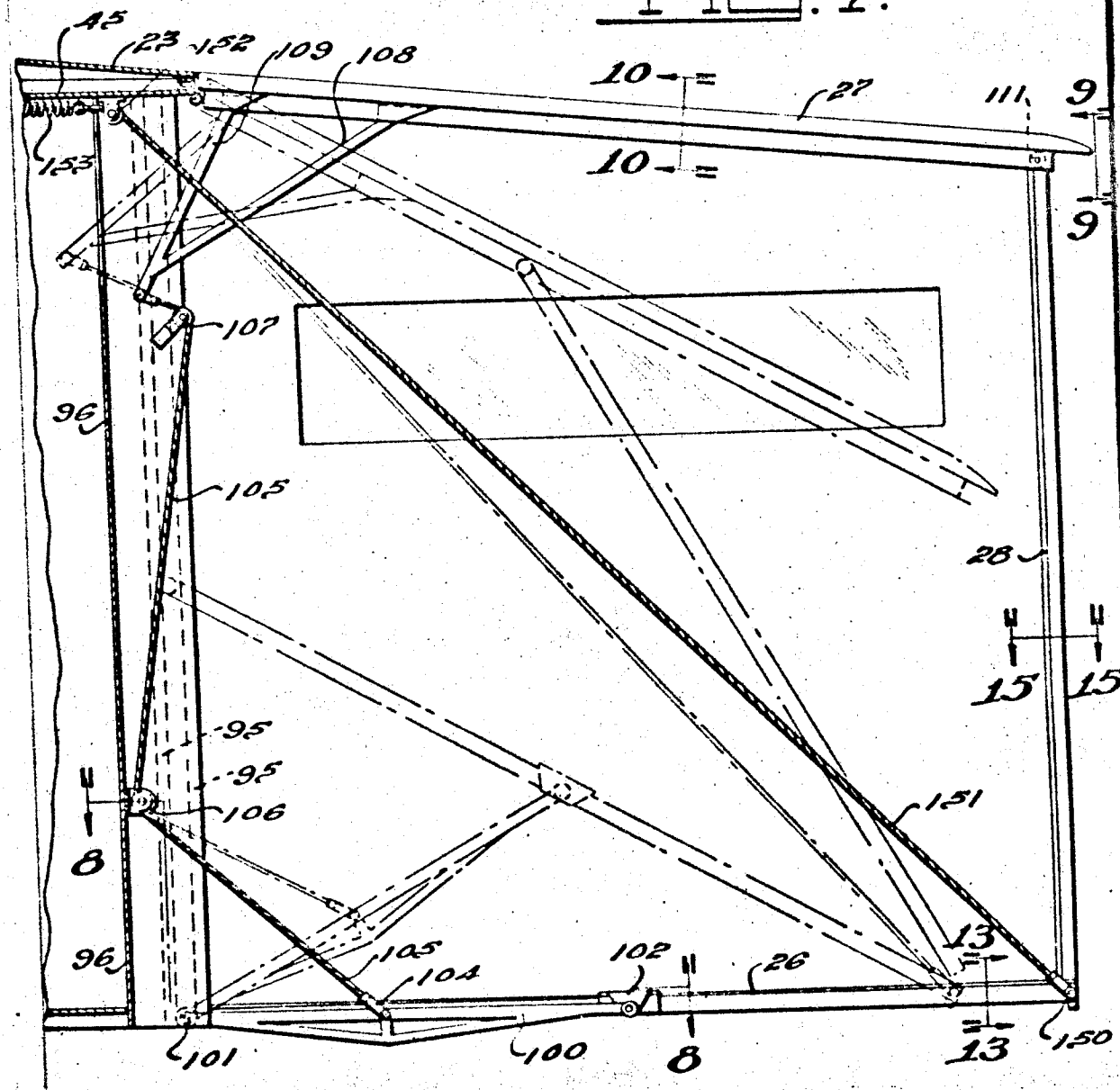
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July 25, 1939. W. B. STOUT 2,167,557

FOLDING WALL CONSTRUCTION FOR TRAILERS

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FIG. 7.



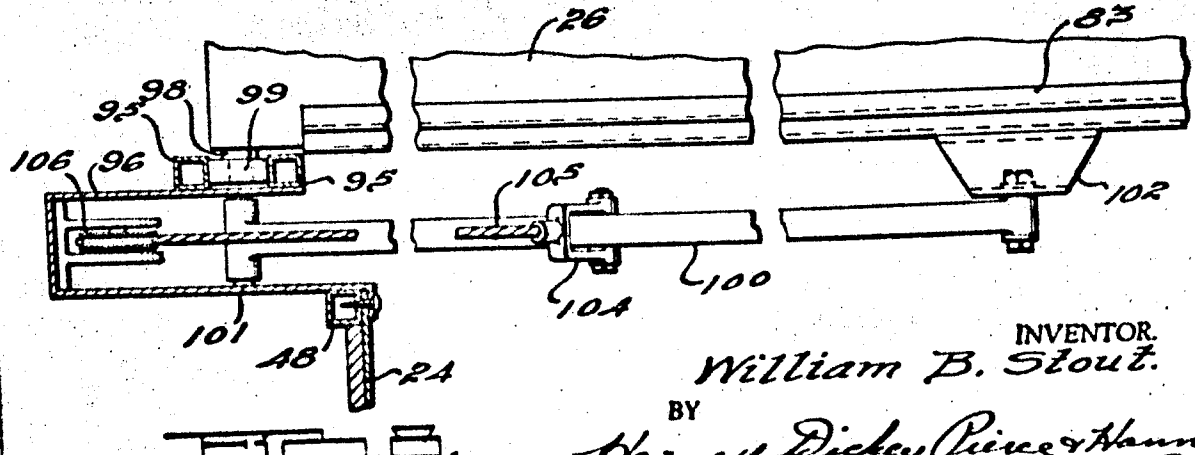


FIG. 8.

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FOLDING WALL CONSTRUCTION FOR TRAILERS

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FIG. 9.

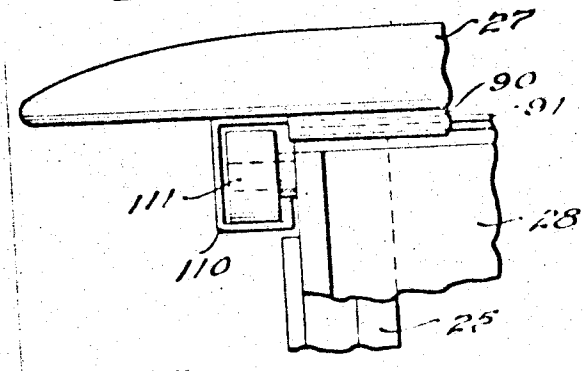
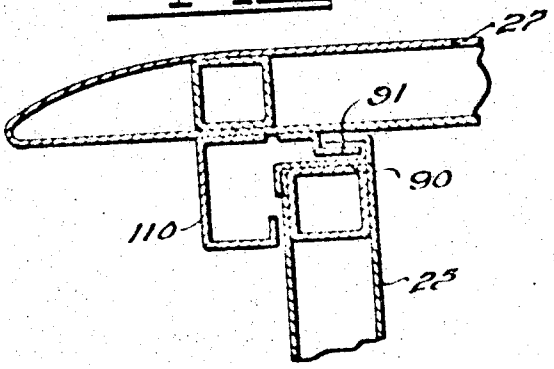


FIG. 10.



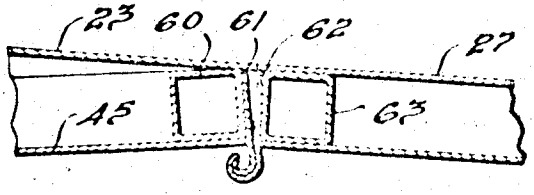


FIG. 11.

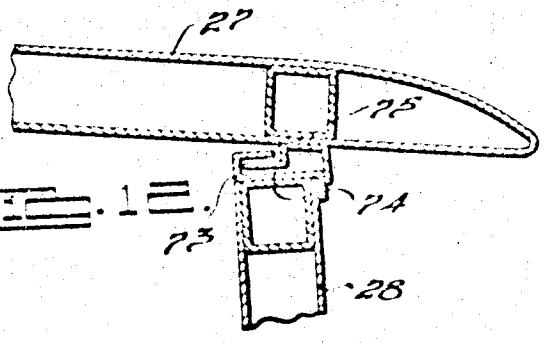


FIG. 12.

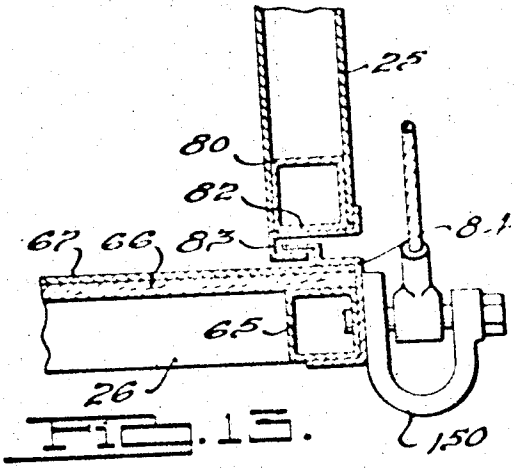


FIG. 13.

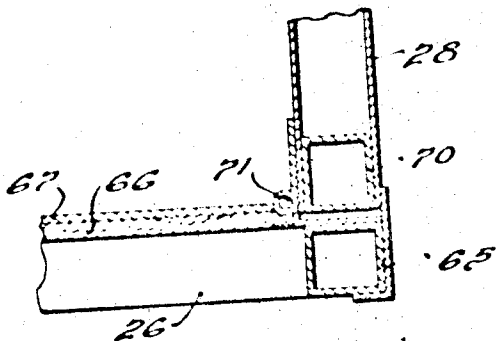


FIG. 14.

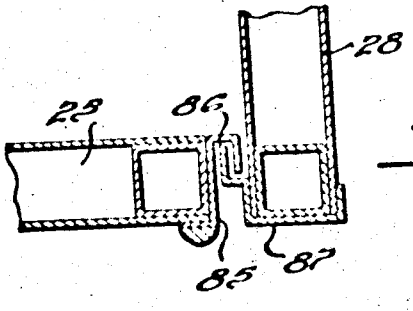


FIG. 15.

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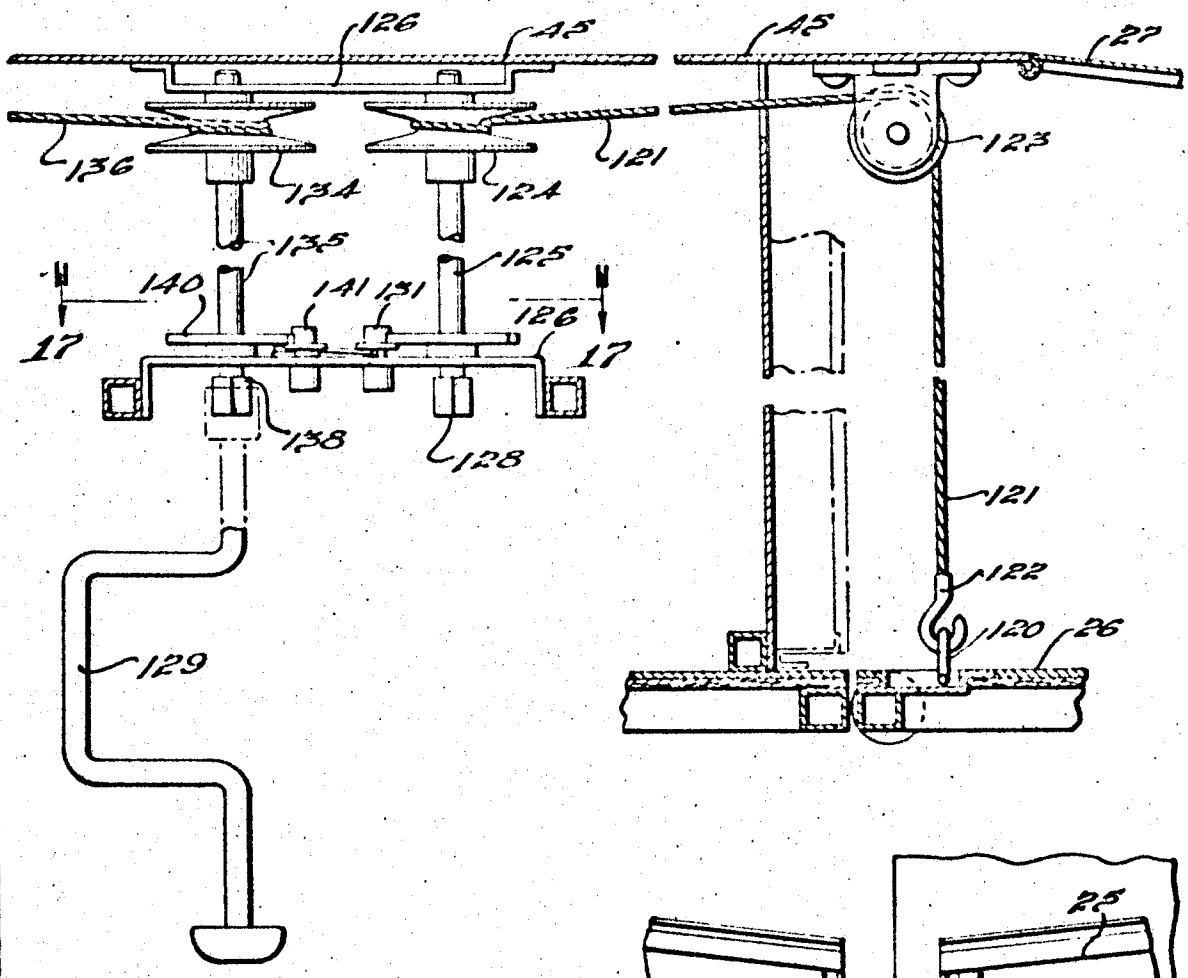
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FOLDING WALL CONSTRUCTION FOR TRAILERS

Filed Dec. 10, 1936 5 Sheets-Sheet 5

FIG. 16.



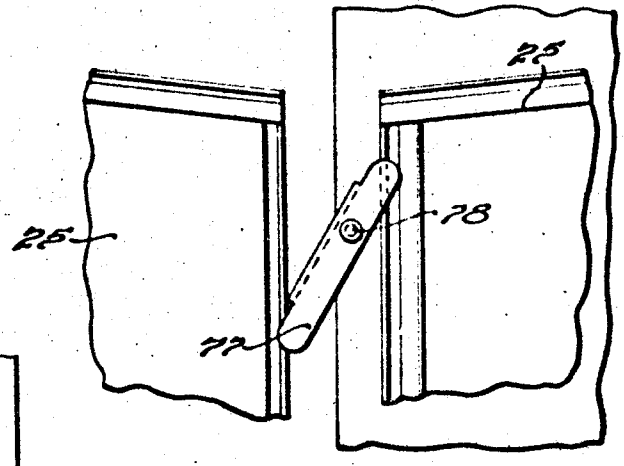


FIG. 18.

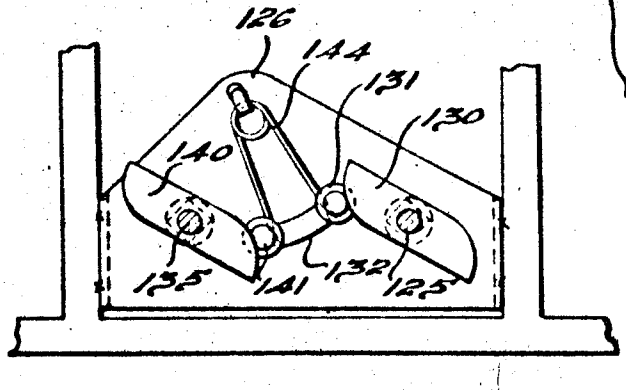


FIG. 17.

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Patented July 25, 1939 2,167,557

UNITED STATES PATENT OFFICE

2,167,557

FOLDING WALL CONSTRUCTION FOR TRAILERS

William B. Stout, Detroit, Mich., assignor, by mesne assignments, to Stout Engineering Laboratories, Inc., Dearborn, Mich., a corporation of Michigan

Application December 10, 1936, Serial No. 115,180

22 Claims. (Cl. 296—23)

This invention relates to expansible building structures. More particularly it relates to a novel and improved form of expansible building structure which is primarily adapted to be mounted upon wheels and towed from place to place by conventional automotive vehicles.

Heretofore, numerous and various types of expansible building structures have been provided, which structures may consist of a rigid framework constituting the central portion of the building and foldable lateral side portions which may be extended in order to provide additional floor space when desired. It is a primary object of the present invention to provide an expansible building structure having a central permanently constructed portion of approximately the size and shape convenient for towing behind an automotive vehicle. The invention further contemplates the provision of a novel side wall structure for buildings of this general type, which, when the vehicle is stationary, may be conveniently unfolded in order to substantially increase the floor space of the building structure as a whole.

It is a principal object of the present invention to provide a building structure of the generic type referred to above, in which the foldable wall structure of the vehicle has the various portions thereof so interconnected that these walls are in substantially balanced condition throughout all the various positions which they may assume and, consequently, greatly reduce the mechanical effort required to fold and unfold these wall structures.

Still a further object of the present invention is to provide a building structure of the generic type referred to above in which the wall structures which are folded along the side of the permanent central portion of the structure, are so constructed and arranged as to provide reinforcement for the central permanent portion of the building when said walls are in folded condition. Still further, the present invention contemplates the provision of a folding wall structure for buildings in which a floor section is slidably connected to the main portion of the building and an extensible roof section is pivotally connected thereto. The present invention contemplates the provision of means interconnecting the floor section with the roof section in such a manner that as the roof section is folded upwardly and the floor section is folded downwardly, the weight of the floor section will be utilized for the purpose of aiding in the elevation of the roof section.

Yet another object of the present invention is to provide a pivotally mounted outer wall section, which provides a positive interconnection at all times between the floor section and the roof section of the vehicle.

It is a still further object of the present invention to provide a construction of this general character in which the various foldable sections are so interconnected that the structure is substantially balanced at all times and conveniently accessible, and easily operable means are provided whereby a single person can conveniently fold or unfold the wall sections as may be desired.

Many other and further objects, advantages, and features of the present invention will become clearly apparent from the following specification when considered in connection with the accompanying drawings forming a part thereof.

In the drawings:

Figure 1 is a perspective view of an automobile trailer embodying the improvements of the present invention and illustrating the same connected to an automotive vehicle for the purpose of transporting the same;

Fig. 2 is a perspective view of the expansible building structure shown in Fig. 1 illustrating one of the side walls thereof in partially unfolded condition;

Fig. 3 is a perspective view similar to Figs. 1 and 2 illustrating the trailer shown therein in completely unfolded condition;

Fig. 4 is a more or less diagrammatic plan view of the improved collapsible trailer construction in completely unfolded condition;

Fig. 5 is a vertical, longitudinal, sectional view taken substantially on the line 5—5 of Fig. 4, illustrating in detail the cross-sectional configuration of the vehicle at the central portion thereof;

Fig. 6 is a vertical, transverse, sectional view taken substantially on the line 6—6 of Fig. 5, illustrating in detail the reinforcing structure at the central portion of the building structure;

Fig. 7 is an enlarged, detailed view with the parts in section taken substantially on the line 7—7 of Fig 4, illustrating in detail the mechanism for adjusting the foldable walls to predetermined position;

Fig. 8 is an enlarged, detailed, sectional view taken substantially on the line 8—8 of Fig. 7, illustrating the mechanism for elevating the foldable floor section;

Fig. 9 is an enlarged, fragmentary, elevational view taken substantially on the line 9—9 of Fig. 7, illustrating in detail the manner in which the

outer wall section is interconnected with the foldable roof section;

Fig. 10 is an enlarged, fragmentary, sectional view taken substantially on the line 10—10 of Fig. 7, illustrating in detail the cross-sectional configuration of the marginal portion of the roof section and the manner in which the foldable end wall section mates therewith;

Fig. 11 is an enlarged, fragmentary, sectional view taken substantially on the line 11—11 of Fig. 3, illustrating in detail the manner in which the foldable roof section is pivotally connected to the main central portion to the building structure;

Fig. 12 is an enlarged, fragmentary, sectional view taken substantially on the line 12—12 of Fig. 3, illustrating in detail the manner in which the outer wall section mates with the foldable roof section adjacent the outer marginal edge thereof;

Fig. 13 is an enlarged, fragmentary, sectional view taken substantially on the line 13—13 of Fig. 7, illustrating in detail the manner in which the foldable end wall section mates with the floor section and the manner in which the supporting cables are attached to the latter;

Fig. 14 is an enlarged, fragmentary, sectional view taken substantially on the line 14—14 of Fig. 3, illustrating in detail the manner in which the outer wall section is connected to the floor section;

Fig. 15 is an enlarged, fragmentary, sectional view taken substantially on the line 15—15 of Fig. 7, illustrating in detail the manner in which the outer wall section and the foldable end wall section are interlocked when the structure is in unfolded condition;

Fig. 16 is an enlarged, fragmentary, detailed view with parts in section taken substantially on the line 16—16 of Fig. 4 illustrating the mechanism for folding and unfolding one of the expansible portions of the building structure;

Fig. 17 is a fragmentary, detailed, sectional view taken substantially on the line 17—17 of Fig. 16, illustrating in detail the ratchet mechanism for controlling the unfolding mechanism;

Fig. 18 is an enlarged, fragmentary, elevational view taken substantially on the line 18—18 of Fig. 4, illustrating in detail the latching mechanism for securing the foldable end walls in folded condition.

With more particular reference to the drawings, it will be readily appreciated that the improvements of the present invention are described below in one particular and rather specific embodiment. From the following description and the accompanying drawings, it will be readily apparent that the single embodiment of the invention illustrated and described is merely one embodiment having the features and improvements of the present invention and that many substantial modifications thereof may be made without departing from the generic spirit of the invention as defined in the subjoined claims.

While it will be understood that the inventive features of the present application will find broad and practical utility in many other fields, the specific form of the invention is illustrated in connection with a trailer adapted to be connected to and towed from place to place by an automotive vehicle 20 which may be connected to the trailer construction by means of a conventional hitch 21. The building structure as a whole comprises a permanently constructed central body portion including a roof 23, a rounded front end construction 24, and foldable side walls described in detail below, which side walls, when in folded condition, constitute a strengthening reinforcement for the sides of the central portion of the body structure. The foldable walls of the trailer include end walls 25 for each end of the expansible portion of the building structure and, as will hereinafter be more clearly seen, these end walls are pivotally connected to the permanent central portion of the structure by means of hinges along their inner vertical edges.

In addition, the expansible portions of the building structure each include a floor section 26, foldable to a position substantially in the plane of the side walls of the permanent portion of the vehicle structure, a roof section 27 which is hinged to the marginal edge of the roof section 23 of the central portion of the building structure and an outer wall section 28 which is hinged at its lower marginal edge to the outer edge of the floor section 26, which details of construction are specifically described below. When the expansible portions of the building structure are in folded condition, it will be seen that the roof section 27 constitutes the exposed side wall of the folded structure and that the outer wall section 28 lies in substantially parallel relation with respect thereto immediately interiorly thereof. Also disposed in substantially parallel relation, when these parts are in folded condition, is the floor section 26 which lies interiorly of the outer wall section 28 and interiorly of the floor section. The end walls 25 lie in substantially the same plane and parallel to the remaining sections. It will be readily understood that these parts, when in folded condition, lie in substantially parallel, superimposed relation with respect to each other and thus provide an extremely strong reinforcement for the side of the permanent portion of the building structure.

While the permanent portion of the building structure may be formed of any suitable construction such as may be convenient and desirable, it has been found preferable to form the walls of this portion of the vehicle upon a framework of tubular steel members welded together to provide an extremely strong unitary construction. This framework preferably has secured thereto a sheathing or skin of sheet metal which is firmly attached to the framework, thus providing a reinforcement for the framework and an attractive, impermeable surface for the structure as a whole.

The various folding members constituting the expansible portions of the trailer may likewise be conveniently formed of rectangular reinforced framework constructed of square steel tubing welded together to provide a structure substantially the shape and size desired and may be covered upon one or both sides by means of a layer of sheet metal sheathing which serves to reinforce these frameworks and adds materially to the strength thereof, as well as to provide a tight wall construction as a whole. The detailed construction of these various wall members will be described below in order that a more complete understanding of one form of construction thereof may be obtained.

Access to the interior of the expansible building structure may be conveniently had either through a pair of doors 30 at the front end thereof or through a door 31 providing entrance at the rear thereof. While the specific interior construction of the building structure forms no part of the present invention, the following de-

scription thereof is merely introduced in order that a complete disclosure of the present structure may be had.

The interior of the central or permanent portion of the building structure is divided by means of a partition wall 33 into a kitchen compartment generally designated as 34 and a living room or entrance compartment 35. Access to the kitchen may conveniently be had through the door 31 as has been described above and it will be noted that a vestibule is located on either side of the entrance 31 provided a space for a toilet compartment 37 and a corresponding closet space for water tanks and similar equipment 38 upon the opposite side of this entrance. The kitchen may include a sink 39 and a stove and refrigerator 40 mounted adjacent the partition wall 33. It will be noted that these various appliances are in each instance mounted directly over the wheel housings of the trailer structure in order that the maximum weight of the structure as a whole will be conveniently carried directly over these wheel housings. The permanent central portion of the vehicle does not have any permanent side wall structures but the side walls thereof will be formed by the various foldable panels when the same are in folded condition. When these panels are in the unfolded condition, as is shown in Fig. 4, convenient access into the side or wing portions of the building structure may be conveniently had.

The roof 23 is preferably arched or crowned to shed water and has spaced therefrom, an interior ceiling 45 which provides with the roof, a dead air or insulating space in the central body portion of the structure as a whole which not only serves the purpose of insulating the interior of the vehicle but materially increases the strength thereof. This roof structure as a whole is supported upon the floor of the permanent central portion of the building structure by means of a plurality of tubular sheet metal posts 48 disposed at suitable convenient points around the marginal edge of the floor and roof of the central portion of the vehicle. A plurality of cupboards, designated as 50 and 51, may be built in on the forward side of the partition wall 33, as well as drawers 52, as may be desired. Disposed between these cupboards is a panel 53 which serves to hide and conceal the operating mechanism for folding and unfolding the expansible portions of the building structure, which operating mechanism and its construction and function will be described in detail hereinafter.

The marginal edge of the roof construction 23 is reinforced by means of a longitudinally extending square tubular steel member 60 which is preferably welded both to the ceiling 45 and roof 23 at the marginal edge thereof and this member may be conveniently supported by the posts 48 in order to provide a strong support therefor. Welded to the outboard side of the tubular member 60 is one wing of a hinge member 61 which preferably extends throughout substantially the entire length of the member 60 and serves to cooperate with a complemental hinge wing 62, welded to a reinforcing tubular member 63, constituting the marginal edge of the foldable roof section 27. The hinge construction formed by these members 61 and 62 is preferably of the water-tight interlocking variety which extends continuously throughout the length of the marginal edge of the roof section 27 and throughout a corresponding zone along the permanent roof panel 23. It will be seen that this hinge construction permits pivotal movement of the roof panel 27 throughout a zone in the neighborhood of 90 degrees, permits this roof panel to be elevated from the position shown in Fig. 1 to substantially the position shown in Fig. 3 of the drawings.

The floor panel 26 preferably comprises a rectangular framework of square steel tubing 65 which defines the marginal edge thereof and this tubing, together with suitable transverse braces, serves to support a layer of ply wood flooring 66 which may, if desired, be covered with linoleum 67 or a similar suitable floor covering material in order to provide a strong, permanent, and durable floor in the expansible portions of the building structure. The inner marginal edge of the floor panel 23 is secured to the central permanent section of the building structure in the manner hereinafter described in detail in order to facilitate the folding thereof.

The outer wall section 28 comprises a rectangular framework of tubing 70 which tubing preferably defines the marginal edge of this framework and at its lower marginal edge, this outer wall section is pivotally connected to the outer marginal edge of the floor section 23 by means of a suitable hinge 71, which hinge permits a movement of the outer wall section 28 throughout a zone of approximately 90 degrees, in order that this outer wall section may be swung from a position substantially parallel to the floor section 23 to a position substantially as is seen in Fig. 3 of the drawings. The upper marginal edge of the outer wall section 28 has an outwardly presenting channel member 73 secured thereto which is adapted to receive a flange 74 formed on a continuous sheet metal strip 75, which strip is permanently secured to the under side of the roof section 27 adjacent the outer marginal edge thereof. It has been found preferable to secure this strip member 75 slightly inwardly from the outer marginal edge of the roof section in order that a slight overhanging of the roof section will serve to provide means for shedding water and protecting the joints between the outer roof section and outer wall section from the entrance of moisture. It will be seen that the flange 74, which is received within the channel 73, serves to provide an extremely tight locking interconnection between the outer wall section 28 and the roof section 27 when these parts are brought into the position shown in Fig. 3.

The end wall sections 25 are each adapted to be mounted and swung entirely independently of the remaining sections of the foldable construction. Each of these sections comprises a framework of square steel tubing 80 which extends around the marginal edges of these members and it will be seen that each of the outer wall sections 25 may be hinged upon a vertical line at their inner marginal edges to the main body portion of the trailer structure. While these end wall sections may be mounted in any convenient fashion, it has been found preferable to hinge them directly to one of the vertical supporting posts 48 in order that an extremely strong pivotal mounting of these sections will be obtained.

The parts of the expansible building construction are preferably so proportioned that when the end wall sections 25 are swung inwardly to lie in substantially the same plane, their marginal edges will lie slightly spaced from one another. In order to secure these end wall members 25 in folded condition, a latch member 77 is provided, clearly seen in Fig. 18, which latch member is

pivotally mounted by means of a pin 78 to the main permanent central section of the building and is adapted to swing pivotally in substantially the same plane as that in which the end wall sections 25 are folded. This latch member 77 is preferably of channel shaped cross section and when swung about its pivot 78, will serve to engage the marginal edges of the end wall members 25 and retain the same in folded condition.

The end wall members 25 each have secured rigidly along the bottom marginal edges thereof, a channel element 82, one wall of which is welded directly to the tubular member 80 forming the marginal edge of these wall members. This channel member 82 is adapted to receive a flange 83 formed on a strip 84, which strip is preferably welded to the marginal edge of the floor section 23 and thus serves to provide a tight interfitting joint between the floor section and the end wall section when the parts are in the unfolded position shown in Fig. 3. The manner in which this interlocking engagement is provided is clearly seen by reference to the detailed sectional view of Fig. 13.

The outer marginal edge of the end wall section 25 has also a similar channel shaped sheet metal strip 85 secured thereto which cooperates with a flange 86 carried by a sheet metal strip 87 permanently secured to the marginal edge of the outer wall section 28, thus providing a tight interlocking engagement between the end wall member 25 and the outer wall section 28 when the section 25 is swung to the position shown in Fig. 3 of the drawings.

This end wall section 25 may have along its upper marginal edge a channel shaped strip 90 cooperating with a flange 91 secured to the roof panel 23 to provide a similar interlocking engagement at this point.

From the foregoing, it will be readily appreciated that the construction of the various foldable sections making up the expansible portion of the building structure, are so constructed and arranged that the roof section, outer wall section, and floor section must be folded to substantially their final extended position before the end wall sections 25 are swung into position. It will be readily understood that when the end wall sections are swung into position, these end wall sections will by means of the channel members 82, 85, and 90, provide a tight interlocking engagement with the panels 23, 28, and 27, thus materially strengthening the expanded portion of the building structure and providing tight waterproof and vermin proof joints at all of the interengaging edges thereof, thus sealing the joints therebetween.

Inasmuch as the floor section 26, the outer wall section 28, and the roof section 27, are all of substantial size and must be constructed sufficiently strong to withstand the stresses imposed thereon, it will be found that these sections are each of considerable weight even though light construction has been used. As has been explained above, it is a primary object of the present invention to provide means for swinging these panels from folded to unfolded position and vice versa in such a manner that the weight required to elevate one of the panels will be in some substantial measure balanced by the weight of the remaining panels which are folded in the opposite direction. In order to achieve this end, the present invention contemplates the provision of novel and extremely efficient means for accomplishing these desired results.

As is clearly seen in Fig. 8, the permanent central portion of the building structure is provided with a pair of vertically extending posts 95 which are disposed in substantially parallel spaced relation. These posts are provided at each of the opposite ends of the vehicle body construction and provide means for interconnecting the inner marginal edge of the floor member 23 with the permanent central portion of the building structure. While the construction at each of the opposite ends of the vehicle is substantially identical, the particular construction shown in Fig. 8 of the drawings is that utilized in the forward portion of the vehicle and it will be seen that in this structure, a sheet metal panel 96 is permanently secured to the forward side of the post 95 and that this panel 96 is bent to provide a vertically extending channel or well which extends from substantially the floor of the vehicle to the roof thereof and which in its forward marginal edge is connected to the forward or front wall 24 of the vehicle at the supporting post 48. The well formed by this sheet metal panel 96 serves to provide means for housing the arm utilized for elevating the floor section as hereinafter described in detail and it will be understood that the opening provided by this well 96 will be closed by the overhanging edge of the roof panel 27 when the parts are in completely folded condition, as is shown in Figure 1 of the drawings.

As will be seen by reference to Fig. 2 of the drawings, the floor panel 26 must of necessity move upwardly as the roof panel 27 swings downwardly, and inasmuch as these two members are of substantially equal weight, the present invention contemplates the utilization of force resulting from the downward movement of the roof panel, in order to raise the floor panel. In order to accomplish this end, the floor panel 23 is provided at its inner marginal edge with laterally projecting shafts 98 which carry rollers 99 adapted to seat between the vertically extending post 95 and provide a rolling engagement therewith at the inner marginal edge of the floor panel 23 upwardly. The upward movement of this floor panel 23 is accomplished by means of a truss-like lifting arm 100, which is pivotally supported at its inner end upon a stationary pin 101, the ends of which are pivotally supported in the well formed by the paneling 96, and which are disposed in a position substantially level with the floor of the permanent central portion of the building structure. The outer end of the lifting arm 100 is connected by means of a channel shaped bracket 102 to the forward marginal edge of the floor panel 26. The U-shaped channel bracket 102 will fit over the outboard vertically extending post 95 when the floor panel is raised to completely elevated folded position and permits this panel to be moved to a position substantially parallel with the superimposed panels folded upon it. Substantially midway between its inner and outer ends, this truss-like lifting arm 100 has a bracket 104 pivotally connected thereto, which bracket serves to provide means for anchoring one end of a lifting table 105. This lifting table 105 passes around a pulley or sheave 106 rigidly mounted in the base of the well 96 at a point substantially above the level of the floor of the building structure. From the sheave 106 the cable 105 passes upwardly and around a second sheave 107 which is rigidly mounted upon the paneling 96 at a point spaced substantially below the roof level of the vehicle.

A reinforced arm, comprising a pair of members 108 and 109, permanently secured at their outer ends to the roof section 27, provides means for anchoring the upper end of the cable 105.

The radius of the arms 108 and 109, which serve to anchor the upper end of the table 105, and the distance between the pivotal connection of the outer end of the lifting arm 100 and the bracket 104, is preferably so proportioned that the cable will remain taut throughout substantially all positions of movement of the various panel members. In order to effect proper corresponding movement of the outer wall section 27 as the folding and unfolding of the roof and floor section takes place, a pair of trackways 110, one disposed adjacent the forward end and one disposed adjacent the rearward end of the roof panel 27, are permanently secured by means of welding or other suitable means, to the under side of the roof panel 27. These trackway elements 110 serve to receive rollers 111 mounted on the upper corners of the outer end wall panel 28, and permit the movement of this upper marginal edge of the outer end wall panel inwardly along the interior surface of the roof panel 27 as folding movement of the various panels takes place. The manner in which these panels are folded is clearly illustrated by the dotted lines in Fig. 7 of the drawings.

It will be apparent that when the apparatus is in completely unfolded position, as shown in Fig. 3 of the drawings, if it is desired to fold the building structure, it is only necessary to swing the end panels 25 from the position shown inwardly toward the body until these panels lie in substantially the same plane, at which time they may be conveniently secured in position by means of the latch 71 described above. After the end panels 25 have been swung inwardly, the outer wall panel 28 may be started inwardly by pressing upon it from the outside, which pressing will cause a movement of the rollers 111 up the trackways 110.

It will then be apparent that the roof section 27 may be pressed downwardly, which downward pressing of the roof section will cause a further inward movement of the rollers 111 within their trackways 110, and consequently cause a further inward movement of the upper marginal edge of the wall panel 28. As this downward movement of the roof panel 27 takes place, the cable will be moved upwardly due to the fact that its upper end is anchored to the ends of the arms 108 and 109 and upward movement of the cable will cause an elevation of the inner marginal edge of the floor panel 23.

As has been explained above, the inner marginal edge of this floor panel 23 is free to move upwardly and such upward movement will be guided by means of the rollers 99 which, as has been explained above, are adapted to run between the vertically extending posts 95. The weight of the roof panel 27 moving downwardly will tend to balance the resistance of the weight of the floor panel 23 to move upwardly and the parts of the apparatus will at all times be in substantially balanced condition during all positions of folding and unfolding. The roof panel 27 may be moved downwardly until the upper marginal edge of the outer wall panel 28 has moved inwardly to a point adjacent the inner marginal edge of the roof panel 27. At this time it will be clear that the inner marginal edge of the floor panel 23 will have moved upwardly in the trackways provided by the post 95 until the roof panel, outer wall panel, and floor panel all lie in substantially parallel superimposed position shown in Fig. 1.

While it is not necessary to the operation of the structure described above, it has been found particularly desirable to provide easy and convenient means for folding the expansible portion of the building structure from the interior of the vehicle. It will be readily understood that in the specific form of the construction shown, a building structure has been provided comprising a substantially rigid permanent central portion in which each of the lateral sides is adapted to be folded to expanded condition and that while the structure of but one of these sides has been disclosed in detail, it will be readily understood that the opposite side of the vehicle is provided with substantially similar structure. In order to achieve this end, each of the floor sections 26 on the opposite sides of the vehicle are provided in substantially the central portion of their inner marginal edges with pivotally mounted eyelets 120 which may conveniently seat in suitable recesses formed therein. These eyelets 120 serve to provide means for anchoring one end of a cable 121 by means of a hook 122 permanently secured to the end of the cable. This cable passes from the eyelet 120 and around a sheave or pulley 123 secured to the ceiling or roof 45 of the permanent portion of the building structure adjacent the outer edge thereof and preferably directly above the inner marginal edge of the floor section 26. The cable 121 passes inwardly from this pulley 123 into a housing formed in the central portion of the vehicle structure preferably between the two cabinets 50 seen in Fig. 6 and described above. The inner end of the cable 121 is anchored to a drum 124 which is secured to a shaft 125 journaled for rotation in suitable brackets 126, which brackets are rigidly anchored to the framework of the permanent central of the building structure. The lower exposed ends of the shaft 125 are provided with a polygonal portion 128 which may be conveniently engaged by means of a wrench 129 to effect rotation of the shaft 125 and consequent rotation of the drum 124 carried thereby. The shaft 125 has a ratchet member 130 anchored thereto which is adapted to engage a pin 131 movable in an arcuate slot 132 formed in the lower bracket member 126. A shaft 135, similar in construction and mounting to the shaft 125, is provided adjacent thereto and serves to provide means for elevating the collapsible portion of the building structure on the opposite side of the central portion, and this central portion 135 has anchored thereto a drum or pulley 134 to which is anchored a cable 136 similar in construction and function to the cable 121 described above. Shaft 135 likewise has a polygonal projecting end 138 similar in construction and function to the polygonal end 128 formed on the shaft 125, and likewise has a ratchet member 140 securely attached thereto. This ratchet member 140 is adapted to cooperate with a pin or stud 141 which is adapted to move in the same arcuate slot 132 as the pin 131 described above. A U shaped spring member 144, anchored in its central portion to the lower bracket member 126, is provided for urging both of the pins 131 and 141 into engagement with their respective ratchet members 130 and 140. These pins 131 and 141 project through the forward face of the bracket 126 in order that they may be manually engaged in order to release

them when it is desired to lower or unfold the expansible portions of the building structure.

It will be apparent that when it is desired to collapse one side of the building structure, the wrench 129 may be engaged with the polygonal end of one of the shaft and utilized to rotate the same. The ratchet members associated with each of these shafts will preclude rotation of the shaft in the opposite direction as such rotation takes place. The wrench 129 may be utilized to effect the rotation of the shaft 125, thus winding the cable 121 upon the drum 124. This winding of the cable 121 causes a positive upward movement of the inner marginal edge of the floor member 26, which, as has been explained above, is adapted to move upwardly between the guide posts 95. It will be readily understood that as the upward movement of the inner marginal edge of the floor panel takes place, the cable 105 will permit a corresponding downward movement of the roof panel and consequently collapse the entire expansible portion of the structure in substantially the manner as has been described above.

When it is desired to unfold the building structure, the pin 131 may be moved in its slat in order to disengage the same from the ratchet member 130, and consequently the parts may be expanded into unfolded condition in substantially the manner described above.

While the above described apparatus has been found to function extremely satisfactorily, additional equipment may be used to insure positive folding of the extensible wall structures. It has been found desirable to provide auxiliary means for insuring that the initial movements during the collapsing operation are started in the proper manner. In order to achieve this end, brackets 150 are rigidly connected to the outer corners of the floor section 23. These brackets 150 serve to provide means for anchoring one end of a cable 151 which, when the structure is in unfolded condition, extends diagonally upward from this point of anchorage and passes over sheaves or pulleys 152 and has its end connected to a coil spring 153, the opposite end of which is anchored to the permanent central portion of the trailer structure.

It will be appreciated that when the folding movement of the trailer starts, the inner marginal edge of the floor panel is moving upwardly and the floor panel has a tendency to pivot about the point 102 and cause a consequent downward movement of the outer edge of this panel. The anchoring cable 151 serves to counteract this tendency to move downward and serves, in addition, to provide a bracing effect for the structure as a whole and insures proper collapse thereof when such is desired.

When the building is in the extreme unfolded condition, jacks 155 may be placed under the building structure at suitable points, such as may be desired, and while these jacks may be of any suitable desired construction, it has been found preferable to use a type of jack which conveniently telescopes within the frame members of the vehicle construction in order that these jacks will be properly positioned at all times.

In addition, in order to provide a firm and positive mounting for the building structure as a whole, ropes 156 may be connected to the brackets 150 and anchored to suitable stakes 157 driven into the ground at suitable points to insure a positive and stable mounting for the unfolded building structure.

It will be appreciated from the foregoing that only one extremely specific form of the invention has been described in detail herein. Many other and further modifications thereof, falling within the scope of the invention as defined in the subjoined claims, will become clearly apparent to those skilled in the art.

What is claimed is:

1. An expansible building including, in combination, a permanent central section, an extensible roof section pivotally connected thereto, vertically disposed trackways in said central section, an extensible floor section having the inner edge thereof mounted for movement in said trackways, and an outer wall section pivotally connected to said floor section at the outer edge thereof and slidably connected to said roof section.

2. An expansible building structure including, in combination, a permanent central section, an extensible roof section pivotally connected thereto, vertically disposed trackways in said central section, an extensible floor section having the inner edge thereof mounted for movement in said trackways, an outer wall section pivotally connected to said floor section at the outer edge thereof and connected to said roof section, and means interconnecting said floor section and roof section to effect simultaneous movement thereof.

3. An expansible building structure including, in combination, a permanent central section, an extensible roof section pivotally connected thereto, vertically disposed trackways in said central section, an extensible floor section having the inner edge thereof mounted for movement in said trackways, an outer wall section pivotally connected to said floor section at the outer edge thereof and connected to said roof section, and cables interconnecting said floor section and roof section serving to cause upward movement of said floor section as downward movement of said roof section takes place.

4. An expansible building structure including, in combination, a roof section, a floor section, and an outer wall section, all connected for simultaneous movement, means interconnecting said floor section and roof section whereby lowering of said roof section effects an elevation of said floor section, and means independent of said means for positively effecting elevation of said floor section.

5. An expansible building structure including, in combination, a permanently constructed central portion, a roof section hinged thereto, an extensible floor section having its inner edge mounted for vertical movement with respect to said central section, an outer wall section hinged to the outer edge of said floor section and connected to said roof section, means interconnecting said floor section and roof section to effect simultaneous folding movements thereof, and cable operated mechanism for effecting such movements.

6. An expansible building structure including, in combination, a permanently constructed central portion, a roof section hinged thereto, an extensible floor section having its inner edge mounted for vertical movement with respect to said central section, an outer wall section hinged to the outer edge of said floor section and connected to said roof section, means interconnecting said floor section and roof section to effect simultaneous folding movements thereof, and means interiorly of said central section for elevating the inner edge of said floor section to effect folding of said sections in superimposed relation.

7. An expansible building structure comprising a permanently constructed central section,

an extensible roof panel hinged thereto, trackways carried by said roof panel, a floor section having the inner edge thereof mounted for vertical movement with respect to the central portion of said structure, an outer wall panel hinged to the outer edge of said floor section, means mounted adjacent the upper edge of said outer wall panel adapted to move in said trackways carried by said roof section whereby said parts may be folded in superimposed relation adjacent the permanent central portion of said structure.

8. An expansible building structure comprising a permanently constructed central section, an extensible roof panel hinged thereto, trackways carried by said roof panel, a floor section having the inner edge thereof mounted for vertical movement with respect to the central portion of said structure, an outer wall panel hinged to the outer edge of said floor section, means mounted adjacent the upper edge of said outer wall panel adapted to move in said trackways carried by said roof section whereby said parts may be folded in superimposed relation adjacent the permanent central portion of said structure, and means interconnecting said floor section and roof panel whereby downward pivotal movement of said roof panel serves to effect an elevation of said floor section.

9. An expansible building structure comprising a permanently constructed central section, an extensible roof panel hinged thereto, trackways carried by said roof panel, a floor section having the inner edge thereof mounted for vertical movement with respect to the central portion of said structure, an outer wall panel hinged to the outer edge of said floor section, means mounted adjacent the upper edge of said outer wall panel adapted to move in said trackways carried by said roof section whereby said parts may be folded in superimposed relation adjacent the permanent central portion of said structure, means interconnecting said floor section and roof panel whereby downward pivotal movement of said roof panel serves to effect an elevation of said floor section, and means for elevating the inner portion of said floor section to effect folding of said panels.

10. An expansible building structure comprising a permanently constructed central section, an extensible roof panel hinged thereto, trackways carried by said roof panel, a floor section having the inner edge thereof mounted for vertical movement with respect to the central portion of said structure, an outer wall panel hinged to the outer edge of said floor section, means mounted adjacent the upper edge of said outer wall panel adapted to move in said trackways carried by said roof section whereby said parts may be folded in superimposed relation adjacent the permanent central portion of said structure, means interconnecting said floor section and roof panel whereby downward pivotal movement of said roof panel serves to effect an elevation of said floor section, and cable operated mechanism located interiorly of said central section for effecting upward movement of the inner portion of said floor section to fold said panels.

11. In an expansible building structure, a central portion having vertically disposed trackways, an extensible floor section, rollers carried by said floor section adapted for vertical movement in said trackways to effect vertical movement of the inner portion of said floor section, and means for positively elevating the inner portion of said floor section.

12. An expansible building structure including, in combination, a permanently constructed central portion, vertically disposed trackways in said central portion, an extensible floor section having the portion adjacent said central portion mounted for vertical movement in said trackways, arms pivotally connected to said central portion and connected to said floor section to guide the same during vertical movement.

13. An expansible building structure including in combination, a permanently constructed central portion, an extensible floor section having the portion adjacent said central portion slideably connected to said central portion and mounted for vertical movement with respect thereto, an arm having one end pivotally connected to said central portion and the other end pivotally connected to said floor section and means for effecting pivotal movement of said arm about said connections to effect an elevation of said floor section.

14. An expansible building structure including in combination, a permanently constructed central portion, an extensible floor section having the portion adjacent said central portion slideably connected to said central portion and mounted for vertical movement with respect thereto, an arm having one end pivotally connected to said central portion and the other end pivotally connected to said floor section and means for effecting pivotal movement of said arm about said connections to effect an elevation of said floor section, and a cable connected to said arm and extending upwardly therefrom, and means for applying tension to said cable to effect an elevation of the inner edge of said floor section.

15. An expansible building structure including in combination, a permanently constructed central portion, an extensible floor section having the portion adjacent said central portion slideably connected to said central portion and mounted for vertical movement with respect thereto, an arm having one end pivotally connected to said central portion and the other end pivotally connected to said floor section and means for effecting pivotal movement of said arm about said connections to effect an elevation of said floor section, and cables interconnecting the outer marginal edge of said floor section and the central portion of said body for supporting said floor section in predetermined position with respect to said body.

16. An expansible building structure including in combination, a permanently constructed central portion, an extensible floor section having the portion adjacent said central portion slidably connected to said central portion and mounted for vertical movement with respect thereto, an arm having one end pivotally connected to said central portion and the other end pivotally connected to said floor section and means for effecting pivotal movement of said arm about said connections to effect an elevation of said floor section, and cables interconnecting the outer marginal edge of said floor section and the central portion of said body for supporting said floor section in predetermined position with respect to said body, said cables having extensions thereon serving to provide means for anchoring said structure in stationary position when in unfolded condition.

17. In an expansible building structure a per-

manently constructed central portion, an extensible floor section movably mounted with respect thereto and adapted to be swung from a substantially horizontal unfolded position to a substantially vertical position, an arm for controlling movement of said floor section, a foldable roof section, an arm projecting from said roof section and means for interconnecting said arms to effect simultaneous movement of said floor and roof sections.

18. In an expansible building structure a permanently constructed central portion, an extensible floor section movably mounted with respect thereto and adapted to be swung from a substantially horizontal unfolded position to a substantially vertical position, an arm for controlling movement of said floor section, a foldable roof section, an arm projecting from said roof section and means for interconnecting said arms to effect simultaneous movement of said floor and roof sections, said last mentioned means comprising a flexible cable.

19. In an expansible building structure, an extensible roof section, an extensible floor section, an outer wall section having one marginal edge pivotally connected to said floor section and another marginal edge slidably connected to said roof section, cables interconnecting said floor section and roof section and serving to effect simultaneous folding movements of said sections, and end wall sections adapted to engage said three aforementioned sections and serving to lock the same in expanded condition.

20. In an expansible building structure, a permanently constructed central portion, a foldable floor section, vertically extending trackways in said central portion, means at the inner marginal edge of said floor section serving to engage said trackways and slidably interconnect said floor section with said central portion, and means within said central portion for effecting the elevation of the inner portion of said floor section in said trackways.

21. In an expansible building structure, a permanently constructed central portion, a foldable floor section, vertically extending trackways in said central portion, means at the inner marginal edge of said floor section serving to engage said trackways and slidably interconnect said floor section with said central portion, and a hoist within said central portion connected to said floor section and serving to elevate the inner marginal portion thereof in said trackways.

22. In an expansible building structure, a permanently constructed central portion, a foldable floor section, vertically extending trackways in said central portion, means at the inner marginal edge of said floor section serving to engage said trackways and slidably interconnect said floor section with said central portion, cable operated means within said central portion serving to effect movement of the inner marginal edge portion of said floor section along said trackways and releasable means for connecting said cable operated means to said floor section.

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