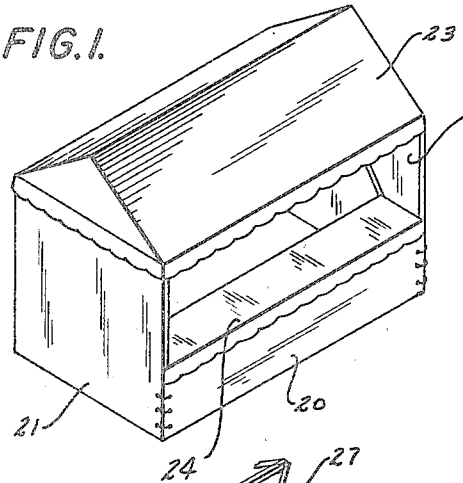
Nov. 13, 1956 H. F. MILLER 2,770,243

COLLAPSIBLE TENT FRAME

Filed June 6, 1955 2 Sheets-Sheet 1

FIG. 1.



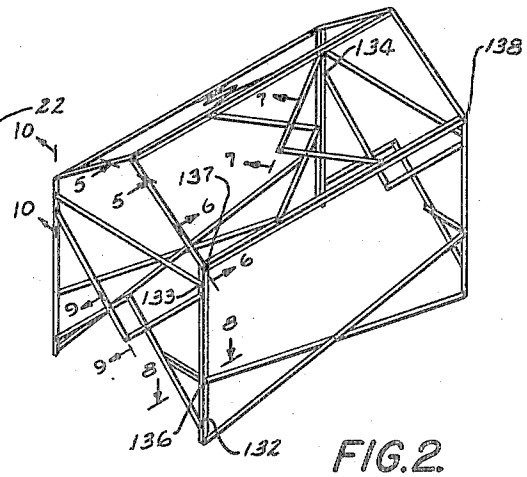


FIG. 2.

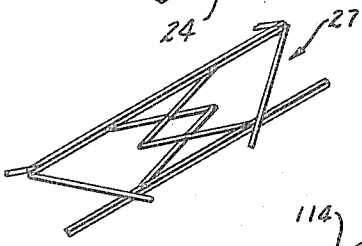


FIG. 4.

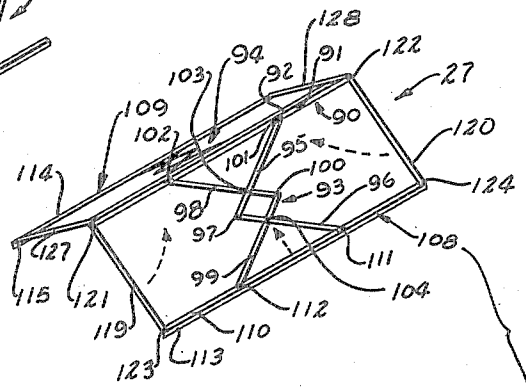
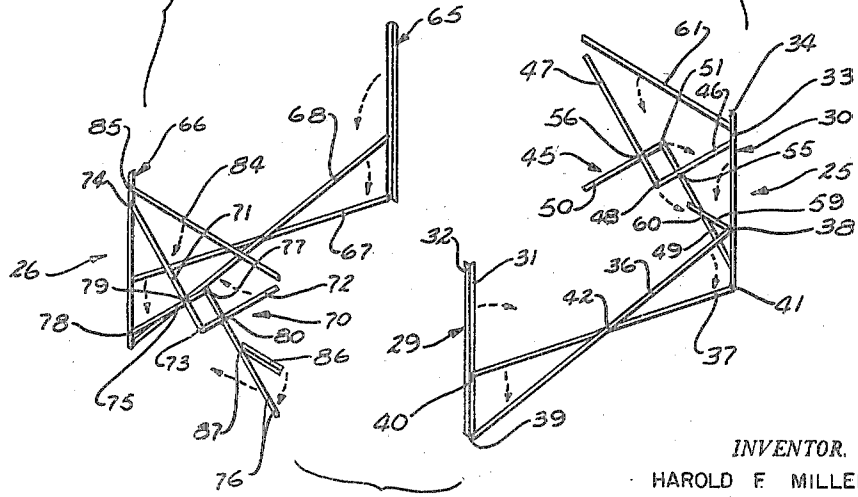


FIG. 3.



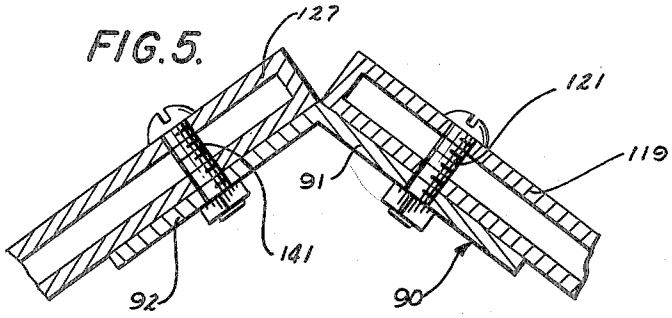
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Nov. 13, 1956 H. F. MILLER 2,770,243

COLLAPSIBLE TENT FRAME

Filed June 6, 1955 2 Sheets-Sheet 2

FIG. 5.



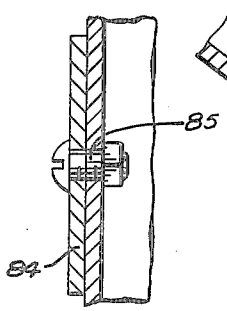
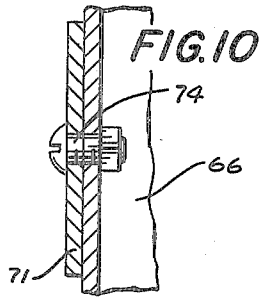


FIG. 10



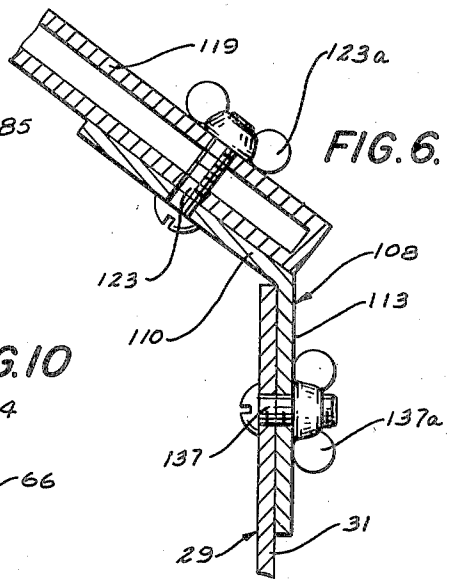


FIG. 6.

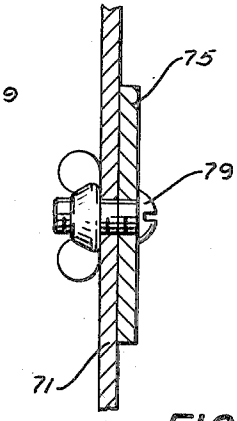
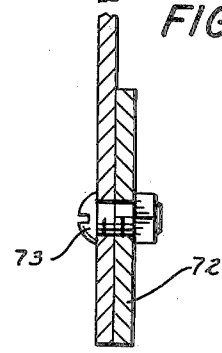


FIG. 9.



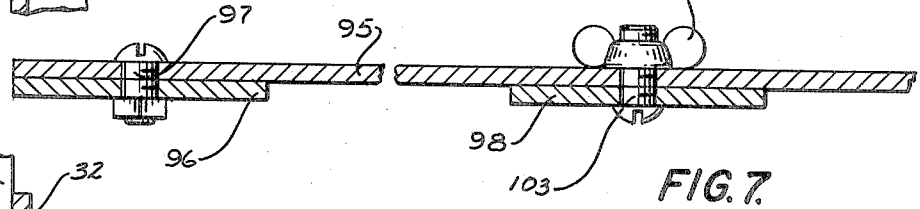


FIG. 7.

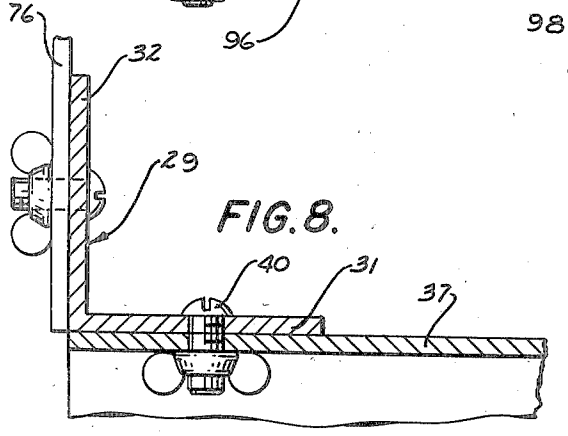


FIG. 8.

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2,770,243

COLLAPSIBLE TENT FRAME

Harold F. Miller, Springfield Gardens, N. Y.

Application June 6, 1955, Serial No. 513,199

8 Claims. (Cl. 135—4)

This invention relates generally to collapsible building constructions, and is particularly directed to a collapsible tent frame of the type adapted for use in "concession tents" at carnivals, fairs and the like.

The particular embodiment of the present invention, which is illustrated in the drawings and which will be described hereinafter in greater detail, comprises generally front, rear and side walls, and a peaked or gabled roof, the frame of which is all fabricated of elongate members pivotally connected together, and collapsible from a rigid erected condition to a relatively small bundle of the elongate members.

While collapsible tent frames for use in carnivals, fairs and the like, have been proposed in the past, such frames have been found entirely unsatisfactory for many reasons. For example, prior tent frame constructions have been relatively intricate and complex, requiring a high degree of skill and a great amount of time to effect their erection and collapse. Further, such constructions required numerous, relatively heavy parts, thus being difficult to handle, and expensive to manufacture and transport. As a result, carnival "concession tents" are generally of the "home made" variety, being fabricated of wood and nails, which, of course, involve great effort and time to erect and dismantle, are readily subject to wear and deterioration, and often present hazards to persons in the vicinity.

It is, therefore, a general object of the present invention to provide a tent frame of the type described which can be quickly and easily set up in a staunch and rigid erected condition, or dismantled to occupy a minimum of space for convenience and economy in storage and transit.

It is a further object of the present invention to provide a tent frame having the advantageous characteristics mentioned in the foregoing paragraph, which is simple in construction and durable in use, requiring a minimum number of parts, which is capable of being fabricated of relatively light weight materials, and which can be economically manufactured and maintained.

Other objects of the present invention will become apparent upon reading the following specification and referring to the accompanying drawings, which form a material part of this disclosure.

The invention accordingly consists in the features of construction, combinations of elements, and arrangements of parts, which will be exemplified in the construction hereinafter described, and of which the scope will be indicated by the appended claims.

In the drawings:

Fig. 1 is a top perspective view showing a tent, in erected condition, constructed in accordance with the present invention.

Fig. 2 is a top perspective view showing the frame of the tent of Fig. 1, with the tent covering removed.

Fig. 3 is an exploded, perspective view showing the component units of the tent frame of Fig. 2, with dashed arrows indicating the direction of collapsing movement of the parts.

Fig. 4 is a partial, perspective view showing the roof unit of the tent frame in partially collapsed condition.

Fig. 5 is a partial, sectional view, greatly enlarged, taken substantially along the line 5—5 of Fig. 2.

Fig. 6 is a partial, sectional view, greatly enlarged, taken substantially along the line 6—6 of Fig. 2.

Fig. 7 is a partial, sectional view, greatly enlarged and broken away to conserve space, taken substantially along the line 7—7 of Fig. 2.

Fig. 8 is a partial, sectional view, greatly enlarged and taken substantially along the line 8—8 of Fig. 2.

Fig. 9 is a partial, sectional view, greatly enlarged, and broken away to conserve space, taken substantially along the line 9—9 of Fig. 2.

Fig. 10 is a partial, sectional view, greatly enlarged, and broken away to conserve space, taken substantially along the line 10—10 of Fig. 2.

Referring now more particularly to the drawings, and specifically to Fig. 1 thereof, the embodiment of the invention illustrated therein comprises a vertically disposed front wall cover 20, a pair of vertically disposed side wall covers 21 and 22 extending rearwards from opposite sides of the front wall cover, a vertically disposed rear wall cover (not shown) extending between the rear ends of the side wall covers, and a roof cover 23 extending over the space defined between the front, side and rear wall covers. As is conventional in carnival tents, the side and rear walls extend vertically between the ground and roof, while the front wall is spaced from the roof to provide an opening for transacting business. A generally horizontally disposed shelf or counter 24 extends rearwards from the upper edge of the front wall cover 20 between the side wall covers 21 and 22. The wall and roof covers may all be of conventional construction, such as are formed of canvas or other suitable flexible sheet material, and form no part of the instant invention.

The wall and roof covers of Fig. 1 are distended over and supported on the frame construction of Fig. 2. As seen in Fig. 3, the frame construction includes a two wall front unit, generally designated 25, a two wall rear unit, generally designated 26, and a roof unit, generally designated 27. The front unit 25 includes a pair of parallel spaced, upstanding corner posts or standards 29 and 30 which are preferably fabricated of right angle stock. Thus, the standard or post 29 has a front flange 31 and a side flange 32, while the standard or post 30 has a front flange 33 substantially coplanar with the front flange 31, and a side flange 34 parallel to the side flange 32. A pair of elongate members 36 and 37, preferably of channel stock, are arranged in crossed relation with respect to each other and extend between the front posts 29 and 30 to rigidly connect the latter. More particularly, one of the crossed channel members 36 has one end pivotally secured, by a removable screw or other fastener, as at 38, to the front flange 33 of the post, at a point spaced above the lower end of the latter post; and, the crossed member 36 has its other end pivotally secured, by a rivet, screw or the like, as at 39, to the front flange 31 of the post 29, adjacent to the lower end thereof. The other crossed member 37 has one end pivotally and detachably secured, as by a fastener 40, to the front flange 31 at a point spaced above the lower end of the latter, and has its other end pivotally secured, as by pin 41 or the like, to the lower end portion of the post flange 33. The channel members 36 and 37 thus extend across each other, and are pivotally secured together at their cross-over point by a suitable fastener 42 which preferably extends between the webs of the channel members. While the crossed members, when their ends are connected to the corner posts,

serve to rigidly connect the latter, removal of the fasteners **38** and **40** will permit collapse of the crossed members and posts **29** and **30** as indicated by the respective dashed arrows so as to lie substantially flat on the ground or other supporting surface.

Extending rearwards from the front corner post **30** in a plane disposed at substantially right angles with respect to the plane of the front standards is an extensile and retractile lazy tong linkage, generally designated **45**. Stated otherwise, the lazy tong linkage **45** has its forward end connected to the side flange **34** of the corner post **30** for extensile and retractile movement substantially coplanar with the latter flange. The linkage includes a pair of links **46** and **47** connected together in end to end relation by a pivot **48** and having their distal ends diverging upwards. The upward or distal end of the link **46** is pivoted to the flange **34** by any suitable means (obscured in the drawings). A similar pair of links **49** and **50**, disposed generally coplanar with the links **46** and **47**, are connected in end to end relation by a pivot **51** and have their distal ends diverging downwards, the lower or distal end of the link **49** being pivoted by suitable means (obscured in the drawings) to the flange **34**. As best seen in Fig. 3, the connected ends of the upwardly diverging links, and hence the pivot **48**, are disposed below the connected ends of the downwardly diverging links and the pivot **51** so that the upwardly diverging links cross over the downwardly diverging links. More specifically, the links **46** and **49** cross each other and are pinned or connected at their cross-over point by a detachable fastener **55**, while the links **47** and **50** cross each other and are connected at their crossover point by a detachable fastener **56**. With the fasteners **55** and **56** securing their respective links together, the lazy tong linkage **45** will obviously be rigidly held in the extended condition of Fig. 3.

A shelf or counter supporting strut **59**, preferably fabricated of angle stock, is detachably secured to and extends between the side flange **34** of the front post **30** and the link **49** of the lazy tong linkage **45**. The strut **59** thus extends forwardly and rearwardly, having its rearward end pivotally secured by a fastener **60** to the link **49**, and its forward end detachably secured by suitable fastening means (not shown) to the post **30**. This permits the strut **59** to be detached from the post **30** for collapsing movement with the lazy tong linkage **45** upon retraction of the latter.

Extending generally horizontally, rearwards from the post **30** is an elongate tie member **61**, which has its front end pivoted to the side flange **34** for swinging movement between its illustrated position and a position longitudinally of the latter post, as indicated by the dashed arrow.

Thus, the lazy tong linkage **45**, strut **59**, and tie member **61**, are all collapsible toward the front post **30**, as indicated by the dashed arrows; and further, in their collapsed condition, the linkage **45**, strut **59** and tie member **61**, together with the post **30**, are collapsible toward the previously collapsed crossed members **36** and **37** to form a compact and easily handled bundle.

The rear, two wall unit **26** is substantially identical to the above described front two wall unit **25**, and includes a pair of parallel spaced, upstanding rear posts or standards **65** and **66** rigidly but collapsibly connected together by a pair of elongate, crossed members **67** and **68**. As in the front, two wall unit, the posts and crossed members of the rear two wall unit are preferably fabricated of right angle stock and channel stock, respectively. Opposite ends of the rear crossed members **67** and **67** are pivoted to the rear posts **65** and **66** and detachable therefrom to permit collapsing movement of the crossed members and posts as indicated by the dashed arrows. Extending forwards from the rear corner posts **66** in a plane substantially normal to the plane of the rear posts is an extensile and retractile lazy tong linkage, generally designated **70**, which corresponds to the oppositely disposed lazy tong

linkage **45**. The lazy tong linkage **70** has its rearward end connected to the side flange of the rear corner post **66** and is extensible and retractible in substantially the same plane as the latter.

Included in the lazy tong linkage **70** are a pair of links **71** and **72** connected in end to end relation by a pivot **73** and having their distal ends diverging upwards, with the upper or distal end of the link **71** pivoted to the side flange of the rear post **66** by a suitable fastener **74**. A similar pair of links **75** and **76**, disposed generally coplanar with the links **71** and **72**, are connected in end to end relation by a pivot **77** and have their distal ends diverging downwards, with the lower or distal end of the link **75** being pivoted to the side flange of the rear post **66** by a suitable fastener **78**. As the fastener **73** and the connected ends of the upwardly diverging links **71** and **72** are disposed below the fastener **77** and the connected ends of the downwardly diverging links **75** and **76**, the upwardly diverging links cross over the downwardly diverging links. Further, the links **71** and **75** cross each other and are pinned or connected at their cross-over point by a detachable fastener **79**, while the links **72** and **76** cross each other and are connected at their cross-over point by a detachable fastener **80**. With the fasteners **79** and **80** securing their respective links together, the lazy tong linkage **70** will obviously be rigidly held in the extended condition of Fig. 3. However, upon removal of the fasteners **79** and **80**, the lazy tong linkage **70** will be retractible or collapsible toward the rear post **66** as indicated by the dashed arrows.

Extending forwards from the rear post **66**, above the linkage **70**, is a generally horizontally disposed tie member **84**, which corresponds to the tie member **61** of the unit **25**. The tie member **84** has its rearward end pivoted by a fastener **85** to the side flange of the rear post **66** and extends generally forwards from the latter. A counter supporting strut **86**, preferably of angle stock and corresponding to the strut **59**, has its rearward end pivoted, by a fastener **87**, to the link **76**, and extends generally horizontally forwards therefrom. As indicated by the dashed arrows, the tie member **84** is collapsible toward the rear corner post **66**, and the strut **86** is collapsible together with the linkage **70** toward the rear strut **66**. Further, the tie member **84**, strut **86** and linkage **70**, together with the rear post **66** are all collapsible toward the crossed members **67** and **68**, in the same manner as described in connection with the unit **25** to form a compact bundle.

The roof unit **27** includes an elongate ridge piece **90**, preferably fabricated of angle stock and having flanges **91** and **92** disposed at the desired angle of the roof peak or gable. A pair of lazy tong linkages **93** and **94** are connected, respectively, to the flanges **91** and **92** for extension and retraction in the planes of their respective flanges. Thus, the linkage **93** is extensible and retractible substantially in the plane of the flange **91**, while the linkage **94** is extensible and retractible in substantially the same plane as the flange **92**. As the linkages **93** and **94** are identical, a detailed description of one will suffice. The linkage **93** includes a pair of links **95** and **96** pivotally connected together in end to end relation by a fastener **97** and diverging toward their distal ends generally longitudinally of the ridge piece **90**. A second pair of links **98** and **99** are pivotally connected together in end to end relation by a fastener **100** and have their distal ends diverging generally longitudinally of the ridge piece **90** in the direction opposite to that of the links **95** and **96**. The pairs of links are arranged so that the links **95** and **98** across each other, and the links **96** and **99** across each other; and further, the distal ends of the links **95** and **98** are pivoted to the flange **91** of the ridge piece **90** by fasteners **101** and **102**, respectively. A detachable fastener **103** releasably secures the links **95** and **98** together at their cross-over point, and a detachable fastener **104** releasably secures together the links **96** and **98** at their

cross-over point. Obviously, the fasteners **103** and **104** will rigidly maintain the linkage **93** in its illustrated, extended condition, while removal of such fasteners will permit retraction or collapse of the linkage toward the ridge piece **90**. The linkage **94** is similarly releasably retained in its extended position and collapsible towards the ridge piece **90**.

Secured on the extensile ends of the linkages **93** and **94** for movement therewith toward and away from the ridge piece **90**, in parallelism with the latter, are a pair of substantially identical elongate wall members **108** and **109**. Each of the wall members is preferably fabricated of angle stock, having one flange substantially coplanar with a respective flange of the ridge piece **90**, and having its other flange depending generally vertically. Thus, the wall member **108** has one flange **110** disposed generally coplanar with respect to the ridge piece flange **91** and lazy tong linkage **93**, being pivotally connected by fasteners **111** and **112** to links **96** and **99** of the latter linkage. A flange **113** depends generally vertically from the flange **110**, for reasons appearing presently.

The wall member **109** is substantially identical to the wall member **108**, and includes an upper flange **114** disposed generally coplanar with the ridge piece flange **92** and linkage **94**, and pivotally connected to the latter, and a generally vertically disposed flange **115** depending from the flange **114**. Thus, the wall members **108** and **109** are movable toward and away from the ridge piece **90**, in parallelism with the latter, upon retraction and extension of the linkages **93** and **94**.

A pair of parallel spaced rafter elements **119** and **120**, preferably of tubular stock, are disposed in the plane of the linkage **93**, each extending between the ridge piece **90** and wall member **108**. The rafter elements **119** and **120** each have one end pivoted, as by fasteners **121** and **122** to the flange **91** of the ridge piece **90**, and each have their other end detachably secured, as at **123** and **124**, to the flange **110** of the wall member **108**, by detachable bolts, or other suitable fasteners. The rafter elements **119** and **120**, of course, add to the rigidity of the ridge piece **90**, extended linkage **93** and wall member **108**, and facilitate smooth distention of the roof cover **23**. Upon detachment of the fasteners **103**, **104**, **123** and **124**, the linkage **93** will, of course, be retractible to permit collapse of the linkage and wall member **108** toward the ridge piece **90**; and, the rafter elements **119** and **120** will be swingable about their pivotal connections **121** and **122** for collapse toward the ridge piece.

A pair of parallel spaced rafter elements **127** and **128** are also disposed in the plane of the linkage **94** extending between and having their opposite ends pivoted to the ridge piece **90** and wall member **109**, and are detachably connected to the latter for swinging movement toward the ridge piece. Thus, the linkage **94**, wall member **109**, and rafter elements **127** and **128** are collapsible toward the ridge piece **90** in the same manner as illustrated in Fig. 4.

In the fully erected condition of Fig. 2, the distal ends of the links **72** and **76** are connected to the side flange **32** of the front corner post **29** by detachable fasteners **131** and **132**, respectively, and the forward end of the tie member **84** is connected to the side flange **32** by a detachable fastener **133**. Similarly, the distal ends of the links **47** and **50** are connected to the side flange of the rear corner post **65** by detachable fasteners **134** and **135**, respectively, while the rearward end of the tie member **61** is connected to the rear corner post **65** by a suitable detachable fastener (obscured in the drawings). The forward end of the strut **86** is, of course, connected to the front corner post **29** by any suitable detachable fastener **136**.

The wall member **108** extends between the upper ends of the corner posts **29** and **30**, and has its depending flange **113** secured to the front flanges **31** and **33** of the corner posts by detachable fasteners **137** and **138**. The rear wall member **109** extends between the upper ends of the rear corner posts **65** and **66** and is similarly secured to the latter by suitable detachable fastener means. As the separated units of Fig. 3 are each individually rigid in its erected or set up condition, their assembly, as in Fig. 2, will, of course, further rigidify the whole. Obviously, the wall coverings **20**, **21** and **22**, and the roof covering **23**, may be secured by any suitable means, such as straps, cord or the like, in distended condition over their respective wall frames, and the counter **24** may rest and be supported by the struts **59** and **86**.

In Fig. 5, the rafter elements **119** and **127** are illustrated as being pivotally connected to the ridge piece flanges **91** and **92** by threaded elements or screws **121** and **141**, respectively. Fig. 6 illustrates the wall member **108** having its vertical flange **113** detachably secured to the upper end of the front corner post **29** by the fastener **137** and having its upper flange **110** detachably secured to the rafter element **119** by the fastener **123**. That is, the fasteners **137** and **123** are illustrated as screws or bolts having wing nuts **137***a* and **123***a*, respectively, threadedly engaged thereon. The wing nuts, of course, facilitate rapid manual removal of the fasteners **137** and **123**.

In Fig. 7, the nut and bolt fastener **97** pivotally connects the ends of the links **95** and **96**, while the screw fastener **103** is provided with a wing nut **103***a* for readily removing the latter fastener and disconnecting the links **95** and **98**. Figs. 8 and 9 further illustrate the use of conventional polygonal nuts and bolts for a permanent pivotal connection, and a wing nut and bolt for a detachable pivotal connection. Of course, other types of pivotal fasteners may be employed without departing from the intion.

While the frame members of the instant construction are advantageously fabricated of aluminum, for minimum weight consistent with the necessary mechanical strength, it is appreciated that other materials may also be employed and are intended to be comprehended within the scope of the following claims.

From the foregoing, it is seen that the present invention provides a collapsible tent frame which fully accomplishes its intended objects, and is well adapted to meet practical conditions of manufacture and use.

Although the present invention has been described in some detail by way of illustration and example for purposes of clarity of understanding, it is understood that certain changes and modifications may be made within the spirit of the invention and scope of the appended claims.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent, is:

1. In a collapsible tent frame, a two wall unit comprising a pair of spaced standards, a pair of crossed members extending between and having their opposite ends pivoted to said standards to rigidly connect the latter, one end of each crossed member being detachable from a respective one of said standards for collapsing said standards and crossed members, a lazy tong linkage having one end connected to one of said standards for extension and retraction in a plane disposed at an angle with respect to the plane of said standards, and fasteners removably secured in said linkage to hold the latter in its extended condition, whereby a second identical two wall unit is adapted for connection to said linkage and the other of said standards to define a four wall structure.

2. A collapsible tent frame according to claim 1, said lazy tong linkage comprising a first pair of links pivotally connected in end to end upwardly diverging relation and having the distal end of one link pivoted to said one standard, and a second pair of links pivotally connected together in end to end downwardly diverging relation and having the distal end of one link pivoted to said one standard, the pivotally connected ends of said first pair of links being disposed below the pivotally connected ends

of said second pair of links so that said first links cross over said second links.

3. A collapsible tent frame according to claim 2, wherein said removably secured fasteners extend through said first and second pairs of links at said cross-over points.

4. In a collapsible tent frame, a peaked roof unit comprising an elongate ridge piece, a pair of lazy tong linkages connected to said ridge piece for extension and retraction in angularly disposed planes, a pair of elongate wall members each connected to a respective one of said linkages for movement therewith toward and away from said ridge piece in parallelism with the latter, fasteners removably secured in said linkages to hold the latter in their extended condition, and a pair of spaced rafter elements in each of said planes extending between and having their opposite ends pivoted to said ridge piece and the respective wall member when the latter is in its position of movement away from said ridge piece, said rafter elements each having one end detachable from its respective wall member for swinging movement toward said ridge piece, whereby said linkages, wall members and rafter elements are collapsible toward said ridge piece.

5. A collapsible tent frame according to claim 4, each of said lazy tong linkages comprising a first pair of links pivotally connected in end to end relation diverging toward one of said rafter elements and having the distal ends of said links pivoted to said ridge piece and wall member, respectively, and a second pair of links pivotally connected together in end to end relation diverging toward the opposite one of said rafter elements and having its distal ends pivoted to said ridge piece and the associated wall member, respectively, said first and second pairs of links being disposed in crossing relation with respect to each other when said linkage is in extended condition.

6. A tent frame comprising a pair of front corner posts, a pair of rear corner posts, a front pair of crossed members extending between and having their opposite ends pivoted to said front posts to rigidly connect the latter, one end of each front crossed member being detachable from a respective one of said front posts for collapsing the latter and said front crossed members, a rear pair of crossed members extending between and having their opposite ends pivoted to said rear posts for rigidly connecting the latter, one end of each of said rear crossed members being detachable from a respective one of said rear

posts for collapsing the latter and said rear crossed members, a pair of extensile and retractile lazy tong linkages each having its opposite end connected between an adjacent pair of said front and rear posts, one end of each lazy tonk linkage being detachable from a respective one of said front and rear posts, for collapsing said linkages against their connected posts, and fasteners removably secured in said linkages to hold the latter in their extended condition, whereby said posts, crossed members and linkages are completely collapsible from their erected condition.

7. A tent frame according to claim 6, in combination with a peaked roof unit comprising an elongate ridge piece disposed above the upper ends of said posts, a pair of lazy tong roof linkages connected to said ridge piece for extension and retraction in angularly disposed planes, a pair of elongate wall members each connected to a respective one of said roof linkages for movement therewith toward and away from said ridge piece in parallelism with the latter, said wall members having their opposite ends detachably secured, respectively, to said front and rear posts, fasteners removably secured in said roof linkages to hold the latter in their extended condition, and a pair of spaced rafter elements in each of said roof linkage planes extending between and having their opposite ends pivoted to said ridge piece and the respective wall member when the latter is in its position of movement away from said ridge piece, said rafter elements each having one end detachable from its respective wall member for swinging movement toward said ridge piece, whereby said roof linkages, wall members and rafter elements are collapsible toward said ridge piece when said wall members are detached from said corner posts.

8. A tent frame according to claim 6, in combination with a pair of generally parallel spaced, horizontally disposed struts each extending between one of said front posts and the adjacent lazy tong linkage and being detachably secured thereto, said struts being adapted to support a counter extending therebetween.

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