United States Patent

[11] 3,540,549

[72] Inventor George Harvey Emmons
11 S. 12th St., Marshalltown, Iowa 50158

[21] Appl. No. 847,099
[22] Filed Aug. 4, 1969
[45] Patented Nov. 17, 1970

[54] FOLDABLE LADDER
11 Claims, 11 Drawing Figs.

[52] U.S. Cl. 182/169, 182/172
[51] Int. Cl. E06c 1/20
[50] Field of Search 182/169, 170, 172, 104

[56] References Cited

UNITED STATES PATENTS

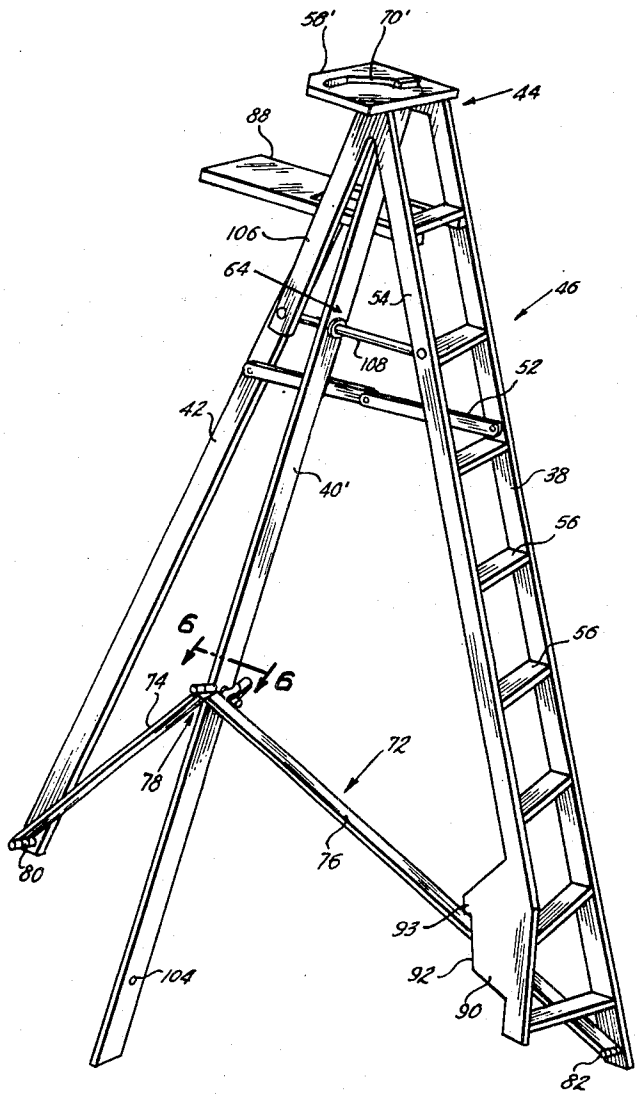
1,135,763	4/1915	Caronia	182/172
2,652,184	9/1953	Loucks	182/172

FOREIGN PATENTS

613,324	11/1948	Great Britain	182/170

Primary Examiner—Reinaldo P. Machado
Attorney—Morton S. Adler

ABSTRACT: A ladder having a foldable tripod supporting frame structure. The ladder component utilizes substantially parallel side pieces with connecting rungs with one of the legs of the tripod support serving as one of the ladder side pieces. The other side piece is not a ground engaging element but is operatively associated with the tripod structure so that weight forces on the ladder are appropriately distributed to the supporting legs.



Patented Nov. 17, 1970 3,540,549

FIG. 1

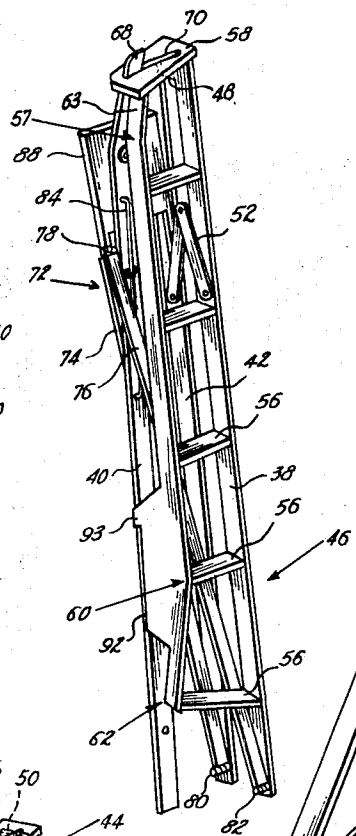


FIG. 3

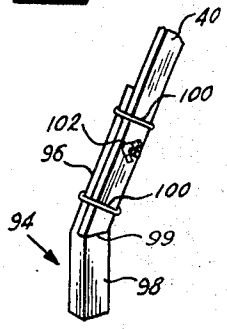


FIG. 2

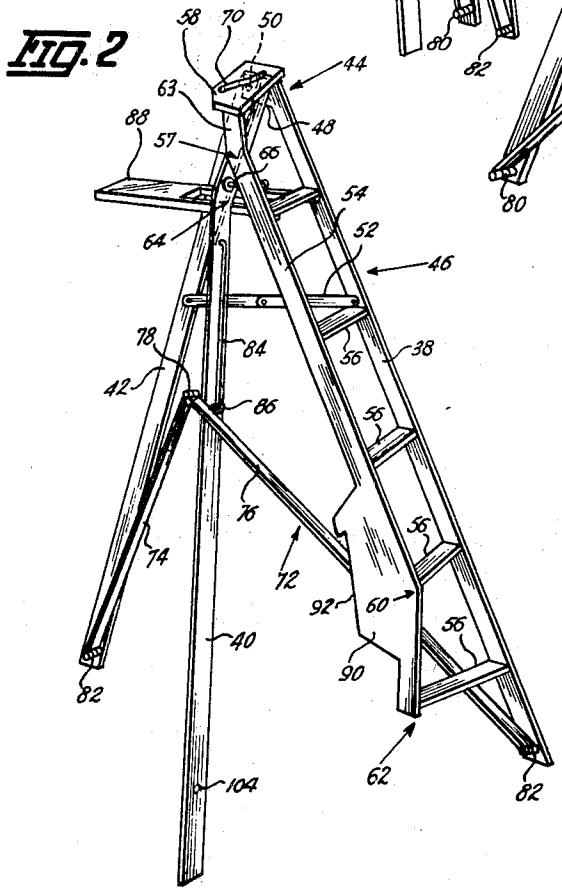


FIG. 4

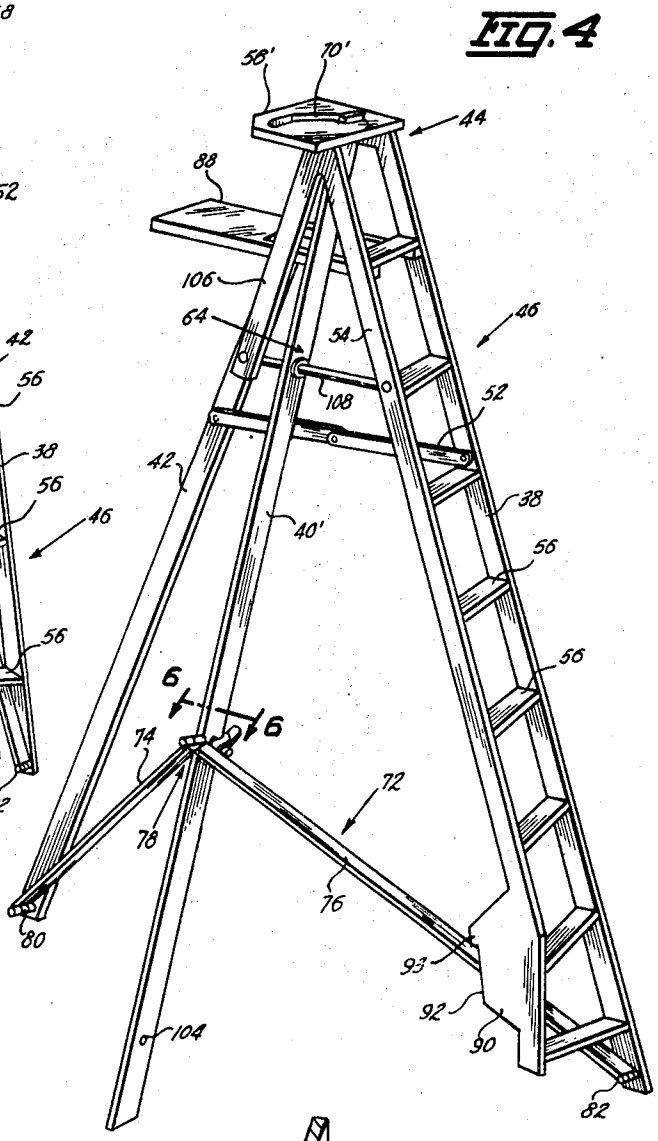
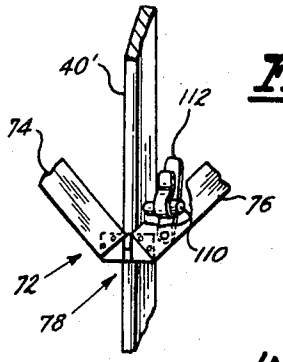


FIG. 6



INVENTOR.
GEORGE HARVEY EMMONS
BY Morton S. Adler
ATTORNEY.

Patented Nov. 17, 1970 3,540,549

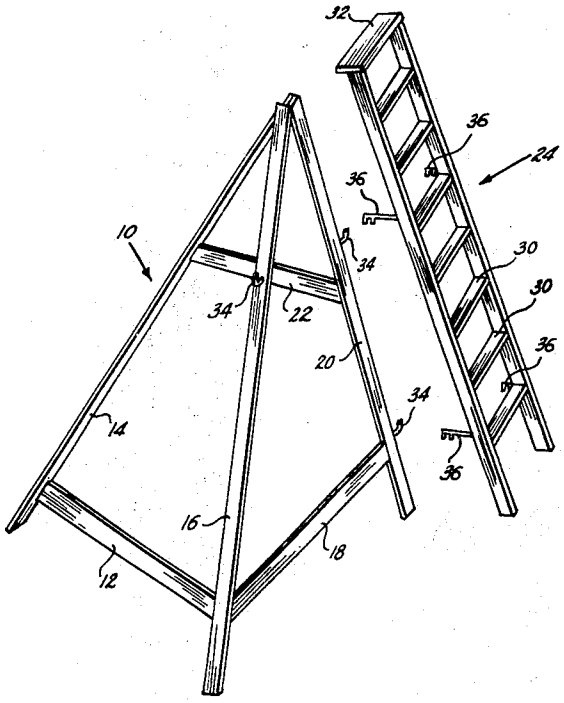


FIG. 10

FIG. 7

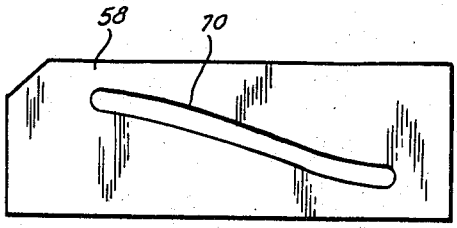


FIG. 8

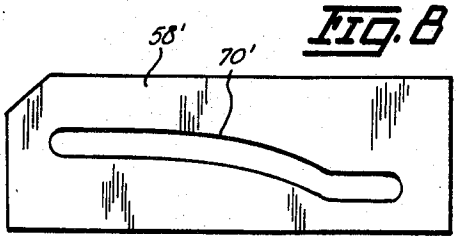


FIG. 9

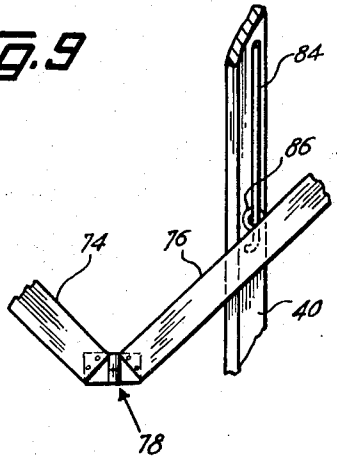


FIG. 5

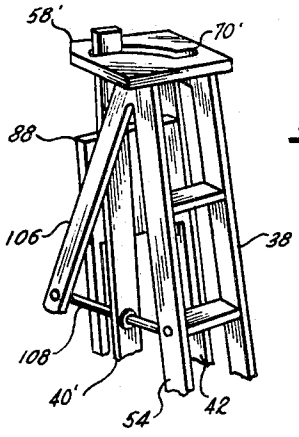
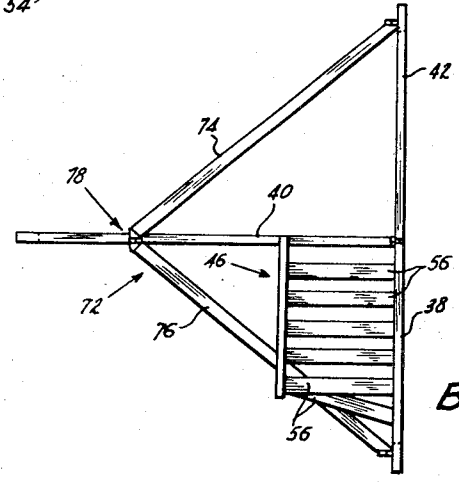


FIG. 11



INVENTOR.
GEORGE HARVEY EMMONS
BY
ATTORNEY.

FOLDABLE LADDER

BACKGROUND OF THE INVENTION

1. Field of the Invention

This invention relates to improvements in foldable ladders and combines a ladder structure with a foldable tripod supporting frame.

2. Description of the Prior Art

Foldable ladders, or step ladders as they are commonly referred to, are old and well known and include the conventional ladder structure having substantially parallel side pieces with connecting rungs to which some form of a foldable brace means of lesser sturdiness than the side pieces is hingedly attached to the top portion of the respective side pieces of the ladder so that it can be swung out into ground engaging position. So far as is known, all such step ladders are designed so that the bottom ends of both side pieces engage the ground or supporting surface and generally the brace means also includes a pair of spaced legs. In some instances, the rear supporting legs are converged to form a single ground engaging means as exemplified in U.S. Pat. Nos. 5,451 and 46,105 but in addition to the ground engaging contact of the ladder side pieces and the single point of contact of the rear leg, there is also utilized additional side leg supports.

The use of a swingable or foldable support leg for a step ladder whether having a single ground engaging arrangement or a plural ground engaging arrangement does not overcome the difficulty of using the ladder in a rigid and stable condition when both of the ladder's side rails must engage the ground or support. By virtue of the relative closeness of the side rails at the ground or support level, such ladders are quite susceptible to lateral tipping even when on a level surface and if the ground or support is not level, this susceptibility is substantially increased even though a shim or block may be placed under one of the side rails on the downhill side as is commonly done.

The present invention utilizes the principle of a tripod type supporting structure wherein three equally sturdy ground engaging legs can be extended or folded out from an apex frame point to provide an extremely rigid and stable frame. Such a structure, in and of itself, for example, would provide a rigid and stable support for a ladder if such ladder were to be mounted thereon without in any way engaging the ground surface. Utilizing this principle, the present invention, rather than having a separate ladder and a separate tripod frame support, has incorporated one of the tripod legs as one of the side pieces for the ladder and by suitably associating the other side piece which is not a ground engaging component, with the tripod frame structure, there is provided an extremely rigid and stable foldable ladder structure that substantially increases the safety and efficiency with which such a ladder may be used. An adjustment means designed for use with any one of the legs is provided for use on unlevel ground and serves primarily to suitably orient the vertical plane of the ladder side pieces.

SUMMARY

This invention is directed to foldable ladders and the primary object herein is to materially improve the rigidity of the ladder supporting structure and to substantially increase the stability of the ladder while it is being used. This ladder incorporates a ladder component with a foldable tripod supporting structure that provides a highly stable three point ground engaging support means.

The principle of this invention is illustrated by reference to FIG. 10 of the drawings herein which show basically a tripod frame and a separate ladder having only side rails and rungs which, if properly positioned on the tripod frame without the ladder itself engaging the ground, would provide an extremely rigid and stable support for the ladder. Such a tripod type support is a marked departure from the traditional means of supporting a step ladder because of the inherent stability of the tripod as compared with the considerably less stable support means on traditional step ladders.

The principle as illustrated in FIG. 10 is utilized in the present invention by using one leg of the tripod as one of the side rails of the ladder. The other side rail of the ladder which is required for supporting the rungs is not a ground engaging element but is designed to bear against an adjustably arrangeable brace element on the tripod frame so that weight carried by the ladder will be proportionally transmitted throughout the frame. Means are provided to prevent movement of said other side piece relative to the brace element while the ladder is folded out for use.

The side piece of the ladder which does not engage the ground is operatively associated with one of the tripod legs at two vertical spaced points near the upper and lower extremities of said side piece and a curved upper end portion of said side piece is designed to be in a vertical plane when the ladder is extended so that there is no lateral twisting of the ladder component when it is subjected to a weight load.

A removable foot member is adapted for use with either of the legs of the tripod frame to provide an appropriate adjustment for use of this article on uneven ground and primarily such adjustment is for the purpose of properly orienting the vertical plane of the ladder rather than for shimming up one of the legs because of unevenness of the ground as is usually the case involved with the traditional step ladder when the supporting surface is not level. In this regard, such foot is provided with a bend so that the ground engaging end portion is angularly disposed to the longitudinal plane of the leg being supported and extends in a vertical plane toward the ground. The bottom of the leg rests upon a shoulder on the vertical portion of the foot member and is suitably removably secured to such foot member.

The objects of this invention together with details of the operation outlined and the advantages of the same will be more fully described and developed in relation to the more detailed description of the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a perspective view of my new ladder in folded position,

FIG. 2 is a perspective view of this ladder in open or extended position and ready for use,

FIG. 3 is a perspective view of the lower end of one of the ladder legs showing the removable foot member attached thereto,

FIG. 4 is a perspective view of a ladder similar to but taller than the ladder in FIG. 1 and showing a second embodiment of this ladder in open position to illustrate a modified upper structure of this article,

FIG. 5 is a fragmentary perspective view of the upper portion of the ladder shown in FIG. 4 in closed position,

FIG. 6 is an enlarged perspective view taken on the line 6–6 of FIG. 4 to illustrate the latching arrangement between the leg of the ladder and the brace of the tripod frame,

FIG. 7 is a top view of the ladder shown in FIG. 1,

FIG. 8 is a top view of the ladder shown in FIG. 4,

FIG. 9 is an enlarged perspective view of a modified arrangement for attaching one of the ladder legs to the brace of the tripod frame,

FIG. 10 is an exploded perspective view for the purpose of illustrating the principle involved in this invention relative to a tripod supporting frame for a ladder, and

FIG. 11 is a top plan view of this ladder in open position and ready for use to illustrate the relative position of the ladder component to the tripod frame.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

The present invention relating to step ladders is believed to be a marked departure from traditional and conventional step ladder construction and for purposes only of illustrating the principle involved herein, reference is first made to FIG. 10

where there is shown a rigid tripod frame **10** with the lower ends of the respective legs in opened or spaced position and the upper ends of the tripod legs forming the apex of the triangular frame. A lower brace **12** is shown between legs **14** and **16** and a similar lower brace **18** is shown between legs **16** and **20**. An upper brace **22** extends between legs **14** and **20**. Thus illustrated, it will be appreciated that the tripod frame **10** by reason of its three ground engaging legs, provides an exceedingly stable and sturdy structure. The numeral **24** illustrates the conventional or traditional step portion of a step ladder which includes the standards or side pieces **26** and **28** of like length and the plurality of steps or rungs **30** together with a top plate **32**. The usual swinging legs for the conventional step ladder are omitted in FIG. **10** since the frame **10** serves as the support. For this purpose, ladder **24**, if mounted on frame **10** by any suitable means which is here illustrated by a selected arrangement of hooks **34** on the frame and complementary latch means **36** on ladder **24**, would result in an extremely sturdy and for all practical purposes nontiltable or twisting ladder arrangement. For illustration, the lowermost elongated hook **36** on ladder **24** would preferably engage brace **18** for proper orientation of the side pieces **26** and **28** and it will be appreciated that there would be no necessity for such side pieces to be in engagement with the ground. The advantages of this tripod frame support concept for a ladder as illustrated should be obvious and to provide a practical application for this principle, I have incorporated a ladder structure into a foldable tripod supporting frame which I will now describe.

Reference is first made to FIGS. **1** and **2** where the step ladder shown is a relatively short ladder in the general range of six to eight feet as distinguished from the ladder shown in FIG. **4** which is in the relatively taller or higher range. The tripod frame structure for this ladder is represented by the three leg members **38**, **40** and **42** which in their open position as shown in FIG. **2** terminate at their upper ends at the apex point **44** and thus produces the considerably more stable three legged support frame that the three legged frame of the patents referred to where two of the legs are the traditional side pieces to which lateral legs are attached. No such lateral supports are required or necessary in the present ladder. Thus arranged, legs **38**, **40** and **42** would correspond respectively with the legs **20**, **16** and **14** of the illustrative tripod frame shown in FIG. **10**.

For purposes of my foldable tripod frame ladder structure, the tripod leg **38** serves also as one of the side pieces for the ladder component, said component being designated generally by the numeral **46**. The upper end of leg or side piece **38** is preferably fixedly attached to a short cross piece **48** and the upper end of leg **42** is pivotally attached to the other end of member **48** by any suitable means such as the pin **50** so that leg **42** may be moved toward leg **38** in its folded position as shown in FIG. **1**. It will be understood that the upper end of side piece **38** may be pivotally attached if desired, but this is not necessary so long as one of the legs **38** or **42** is foldable toward and away from the other. A hinged brace means **52** connects legs **38** and **42** for stabilizing the same when the ladder is in open position and such brace **52** would correspond generally to brace **22** shown in FIG. **10**. The ladder component **46**, utilizing the frame leg **38** as one of the ladder side pieces, includes the general parallel complementary side piece **54** secured in the usual ladder relationship to side piece **38** by a plurality of spaced steps or rungs **56** and including a top plate **58**. As best seen in FIG. **2**, side piece **54** is parallel to side piece **38** from about point **57** spaced somewhat below its upper extremities and slightly above the top rung **56** only down to point **60** which corresponds to the location of the second step **56** from the bottom of the ladder structure. At point **60**, the plane of the top edge or side of side piece **54** is provided with a sufficient bend toward its underside so that when this ladder structure is in open position, the plane of side piece **54** between point **60** and the lower extremity of such side piece, point **62**, will be in a substantially vertical line relative to the ground. In this arrangement, it will be particularly noted that the lower end of side piece **54** does not engage the ground nor whatever supporting surface the ladder is on. Side piece **54** has the curved portion **63** above point **57** to its upper end that connects to the top plate **58** and such portion will be in a vertical plane when the ladder is open. Plate **58** is suitably secured to the upper end of members **38** and **54** as shown so that weight forces on plate **58** will be directly downwardly to avoid any twisting.

Leg **40** of this ladder frame, which would correspond to leg **16** of the illustration in FIG. **10**, is pivotally attached at point **64** to the upper portion of the side piece **54** by a bolt means **66**. Such bolt is located relatively high on side piece **54** just above the top step **56** and from point **64**, leg **40** is slightly angled so that in the open position of this ladder, the upper end **68** of leg **40** will bear against member **48** at the apex **44** of this tripod structure. The top plate **58**, as best seen in FIG. **7** is provided with the slot **70** to permit the free movement of the tip end **68** of leg **40** when the ladder structure is moved to folded position as shown in FIG. **1**. In the movement of leg **40** from closed to open position and for the purpose of properly orienting the ground engaging positions of the tripod frame legs, point **64** on leg **40** will move slightly away from side piece **54** as can be seen from the shape of slot **70** in FIG. **7** and to accommodate this movement, bolt **66** is provided with a suitable length for this purpose.

A foldable V-shaped brace arrangement for stabilizing legs **38**, **40** and **42** in open position corresponding to the brace elements **12** and **18** in FIG. **10** is provided by means of brace member **72** comprising the respective elongated arms **74** and **76** which are pivotally connected in endwise relationship as at **78**. The outer end of arm **74** is pivotally attached as at **80** to the lower end of leg **42** and the outer end of brace arm **76** is similarly attached as at **82** to the lower end of side piece or leg **38**. Brace arms **74** and **76** will at all times define a generally V-shape of greater or lesser degree depending upon whether the ladder is opened or closed and brace **72** is related to leg **40** in one embodiment as follows. An elongated rod **84**, as perhaps best seen in FIG. **9**, is secured to leg **40** so as to extend longitudinally thereon and in space relationship thereto and below point **64** as shown. An eye member **86** slidably journaled on rod **84** is secured to arm **76** of brace **72** near the pivot point **78**. In the open position of this ladder, the lower end of rod **84** serves as a stop means to limit the downward movement of brace **72** so that in the open position, leg **40** will be securely braced against brace member **72**. A movable paint tray **88** may be provided in any suitable manner as shown although such tray comprises no part of this invention.

Thus far described, it will be appreciated that if a weight is placed upon steps **56** of ladder component **46** when the tripod frame is opened that there would be a lateral twisting of ladder **46** toward brace element **72** in view of the fact that side piece **54** is not a ground engaging component. This would, of course, make the ladder structure unsatisfactory for use and, accordingly, such problem is overcome by providing a suitable rearward extension on side piece **54** in the area both above and below the point on side piece **54** where it would be intersected by brace arm **76**. Such extension, here designated by the numeral **90** may be in any suitable form and is here shown as a width enlargement of the lower portion of side piece **54**. Any other means which would provide a rearward extending supporting edge **92**, such as a rail or bar, for example, would serve the same purpose and the particular type of such extension would be a matter of choice. By reason of extension **90**, edge **92** will bear against brace arm **76** when the ladder is in open position as shown in FIG. **2** and it has been determined from experiments that such point of contact is approximately at point **60** which is the second step **56** from the bottom. In this regard the vertical plane of side piece **54** between points **60** and **62** provide a structure whereby when weight is first placed on the lowermost step **56**, the weight forces are directed downwardly directly against brace **72** so that the weight forces are properly transmitted and absorbed by the tripod frame structure. Preferably, the upper end of edge **92** is

provided with a shoulder **93** which is engageable with arm **76** as a precaution against edge **92** being accidentally moved out of bearing contact with such arm. Without the directional change of the plane between points **60** and **62** relative to the longitudinal plane of side piece **54** or, in other words, if the entire length of piece **54** were parallel with side piece **38**, a weight placed on the lowermost step **56** would result in some lateral twisting of ladder **46** even though a portion of the weight load would be taken by brace **72**. Likewise, the curved portion **63** at the top of side piece **54** provides for the vertical support under top plate **58** and avoids the twisting that would occur if the upper end of member **54** continued parallel to leg **38** and a weight load were applied to plate **58** at this point.

It might also be noted that in the use of this ladder, the purpose of the upper angled upper portion of leg **40** is to permit the pivot point **64** to be as high as possible relative to side piece **54** and at the same time afford the engagement of leg end **68** with the apex end **44** of the frame structure. Such arrangement, particularly on the smaller ladder as seen in FIG. **2**, has been found to provide a most adequate, stable and sturdy frame support.

With this ladder in open position, it will be seen from the top plan view in FIG. **11** that legs **38** and **42** extend in opposite directions but in the same plane and that leg **40** forms a right angle with each of the other legs. This permits the side of the ladder represented by legs **38** and **42** to be placed substantially flush against a building, for example, if work on such building requires the use of a ladder. In this regard, the arrangement and purpose of extension **92** as described above serves to maintain the ladder component **46** in a properly oriented position for use as seen in FIG. **11**.

While the unevenness of the ground upon which this ladder might be placed would not affect the stability of the tripod frame, it would, nevertheless, result in the disposition of the ladder component **46** at an inclination to the vertical and thus to assure that the ladder **46** can be properly oriented to the vertical for satisfactory use, I have provided a leg adjustment member **94** as illustrated in FIG. **3**. Member **94** includes an elongated generally rectangular body portion **96** which is formed with an angularly extending and ground engaging lower or foot portion **98**. Member **94** is designed so that body portion **96** can be removably attached to the lower ground engaging end of any one of the frame legs by any suitable means which is here illustrated by the use of a pair of spaced removable encircling clips **100** and a bolt and wing nut **102** mounted through a hole **104** in the respective legs of this ladder as illustrated on leg **40** in FIG. **2**. Foot portion **98** is somewhat wider than body portion **96** to provide the shoulder **99** at the top of portion **98** on which the bottom of the ladder leg is seated and supported and by reason of the angled foot portion **98**, such portion will be in a vertical plane relative to the ground when the ladder is extended so that with the attachment of leg adjustment member **94** to any one of the frame legs, any weight forces on the frame will be directed vertically toward the ground. It will thus be appreciated that member **94** serves primarily to properly orient the ladder frame and the ladder component and is not for the specific purpose of stabilizing the frame as is usually the situation in shimming traditional step ladders.

With reference now to FIGS. **4—6** and **8**, I show this tripod frame supported ladder structure with certain modifications particularly applicable to relatively tall ladders of this type but for those elements of this article which are the same as those previously described, like numbers will be given to like parts and to the extent that modified parts correspond substantially to parts previously described, they will be given like numerals primed.

Leg **40** having the upper curved portion as described for FIG. **2** is replaced in the structure of FIG. **4** by the straight leg **40'**. In view of the fact that the structure in FIG. **4** represents a relatively tall step ladder, the area of the triangle formed by the ground engaging legs will be relatively larger than in the shorter structure of FIG. **2** and by reason of this fact, the plane of intersection between leg **40'** and side piece **54** will be somewhat lower than point **64** in FIG. **2** and approximately on the plane of the second step **56** from the top of the ladder. To provide a support for side piece **54** relative to leg **40'**, an integral depending arm **106** is provided as shown and terminates at approximately the horizontal plane of the second step **56** from the top. Such arm **106** together with the upper portion of side piece **54** provides an inverted V side piece top portion. A rigid rod **108** is secured between the lower end of arm **106** and side piece **54** at approximately the second step **56** from the top so that rod **108** is on substantially a horizontal plane. Leg **40'** is pivotally and slidably journaled on rod **108** at point **64'** so that in the open position of the ladder as seen in FIG. **4**, the upper end of leg **40'** will be at that end of slot **70'** in top plate **58'** that is adjacent the apex point **44** of the tripod frame structure. The closed position of this upper portion of the ladder shown in FIG. **4** is illustrated in FIG. **5** where it will be noted that leg **40'**, when folded inwardly, will move on rod **108** closer to side piece **54**.

With reference now to FIG. **6**, I show a second embodiment of relating brace **72** to leg **40'** as follows. Intermediate the bottom of leg **40'** and point **64'** thereon, there is secured a transversely extending rod **110**. A snap latch means **112** is secured to brace arm **76** near the hinge point **78** so that as the ladder is opened for use, latch **112** will become removably locked onto rod **110** for stabilizing the tripod frame. In other respects, the ladder of FIG. **4** is similarly constructed and used as the ladder in FIG. **2**.

It will be appreciated that this ladder structure is considerably more stable than traditional step ladder structures due to the relatively wide spread three legs which converge to the apex **44**. The nonground engaging ladder side piece **54** is adequately and sturdily supported at two vertically spaced points on either leg **40** or leg **40'** of the tripod frame such as points **64** or **64'** and against brace arm **76** at element **90**. The effect of this arrangement is to distribute the weight load on ladder component **46** to all of the frame legs and thus provide a greatly improved and highly efficient article for its intended purpose. This ladder is easily opened and folded and may be compactly stored or transported. Accordingly, from all of the foregoing, it is thought a full understanding of the construction and operation of this invention will be had and the advantages of the same will be appreciated.

I claim:

1. A foldable ladder structure, comprising:

first and second spaced elongated side pieces having respective upper and lower ends and with a plurality of longitudinally spaced step members disposed intermediate said side pieces and secured thereto to form a ladder component;

said first side piece serving also as a first ground engaging leg of a three legged tripod frame ladder support;

said second side piece being of a shorter length than said first piece at their lower ends so that the lower end of said second side piece is free of engagement with any supporting surface for said first side piece;

a second elongated ground engaging leg having an upper and lower end and pivotally secured at its upper end to the upper end of said first leg to form an apex;

a third elongated ground engaging leg having an upper and lower end and pivotally secured near its upper end to the upper end portion of said second side piece so that when the lower end of said third leg is moved outwardly, the upper end thereof will bear against said apex;

foldable brace means connected to said first and second legs and releasably lockable to said third leg when said legs are extended into a tripod shape; and

means on the lower end portion of said second side piece for engaging said brace means.

2. A ladder structure as defined in claim **1** including:

said second side piece being provided at its lower end portion with a sufficient bend toward its underside so that when said legs are extended into tripod shape, the plane

of said second side piece below said bend is substantially perpendicular to but free of engagement with the supporting surface for said legs;

the lowermost step on said ladder component being substantially planar with the lower end of said second side piece so that a weight load on said lowermost step will be directed vertically downward; and

the point of engagement of said second side piece with said brace means being substantially at the plane of said bend.

3. A ladder structure as defined in claim 1 including:

a leg adjustment member comprising:

an elongated body portion having an integral angularly disposed ground engaging foot portion; and

means for detachably securing said body portion in longitudinal abutting relationship with the lower end portion of any one of said legs so that the bottom of said leg bears against said foot portion and when said legs are extended into tripod shape, the longitudinal plane of said foot portion will be perpendicular to its supporting surface.

4. A ladder structure as defined in claim 1 including:

said first and second legs when in extended position relative to each other being in the same plane; and

said third leg when extended being in a plane perpendicular to that of said first and second legs.

5. A ladder structure as defined in claim 1 including:

a top plate secured across the upper ends of said side pieces; and

said top plate being provided with an elongated slot to provide a passageway for the upper end of said third leg when it is moved into and out of engagement with said apex.

6. A ladder structure as defined in claim 5 including: said second side piece being provided at its upper end portion with a sufficient bend towards its upper side so that when said legs are extended into tripod shape, the longitudinal axis of said bent portion is in a substantially vertical plane when receiving any weight load on said top plate.

7. A foldable ladder structure, comprising:

a tripod-type frame defining first, second and third ground engaging support legs each having an upper and lower end;

means connecting the respective upper ends of said first and second legs to define the apex of said frame and at least one of said legs being pivotally associated with said apex for movement away from and toward said other legs;

said first leg also serving as the side piece for a ladder component;

a second side piece in spaced relationship to said first leg with a plurality of spaced step members disposed intermediate said side pieces and secured thereto to form a ladder component;

said second side piece terminating at a point spaced upwardly from the lower end of said first leg so that said second side piece is free of engagement with any supporting surface for said frame legs;

means pivotally connecting said third leg at its upper portion but spaced from the upper end thereof to the upper portion of said second side piece so that when the lower end of said third leg is moved outwardly, the upper end thereof will bear against said apex;

a foldable brace secured to said first and second legs intermediate the upper and lower ends thereof;

a pair of elongated brace arms hingedly attached together in endwise relationship to form a generally V-shaped brace;

the respective outer ends of said brace being pivotally attached to the respective lower end portions of said first and second legs;

means for releasably locking said third leg to said V-shaped brace when said legs are extended in tripod shape; and

means on the lower end portion of said second side piece for engaging said V-shaped brace when said frame is extended.

8. A foldable ladder structure as defined in claim 7 including:

said second side piece being provided at its lower end portion with a sufficient bend toward its underside so that when said legs are extended into tripod shape, the plane of said second side piece below said bend is substantially perpendicular to but free of engagement with the supporting surface for said legs;

the lowermost step on said ladder component being substantially planar with the lower end of said second side piece so that a weight load on said lowermost step will be directed vertically downward; and

the point of engagement of said second side piece with said brace means being substantially at the plane of said bend.

9. A ladder structure as defined in claim 7 including:

a leg adjustment member comprising:

an elongated body portion having an integral angularly disposed ground engaging foot portion; and

means for detachably securing said body portion in longitudinal abutting relationship with the lower end portion of any one of said legs so that the bottom of said leg bears against said foot portion and when said legs are extended into tripod shape, the longitudinal plane of said foot portion will be perpendicular to its supporting surface.

10. A ladder structure as defined in claim 7 including:

a top plate secured across the upper ends of said side pieces; and

said top plate being provided with an elongated slot to provide a passageway for the upper end of said third leg when it is moved into and out of engagement with said apex.

11. A ladder structure as defined in claim 10 including: said second side piece being provided at its upper end portion with a sufficient bend towards its upper side so that when said legs are extended into tripod shape, the longitudinal axis of said bent portion is in a substantially vertical plane when receiving any weight load on said top plate.