June 21, 1960 C. O. LARSON 2,941,618

SAWHORSE BRACKET ASSEMBLY

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FIG. 1

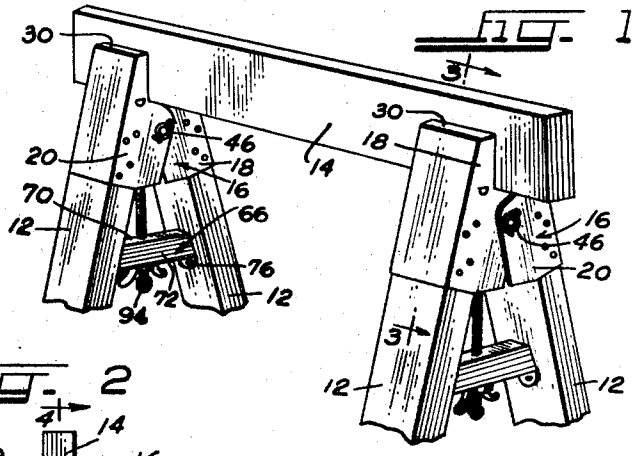


FIG. 2

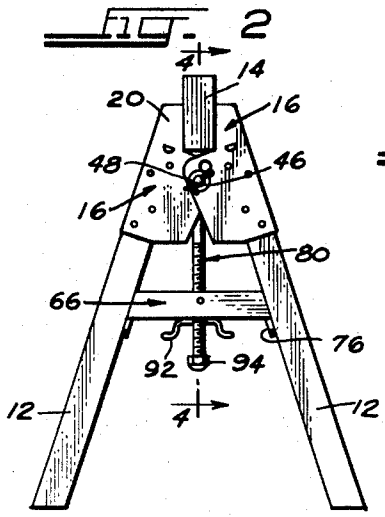


FIG. 3

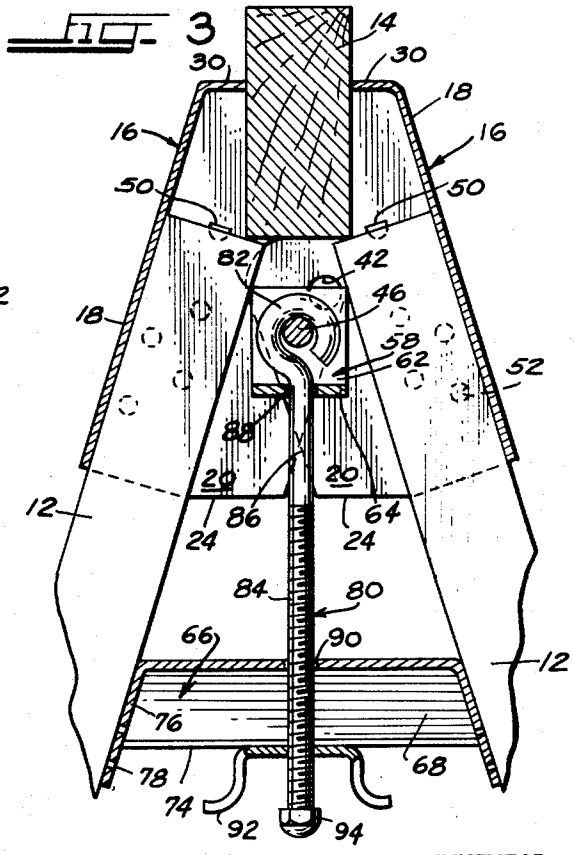
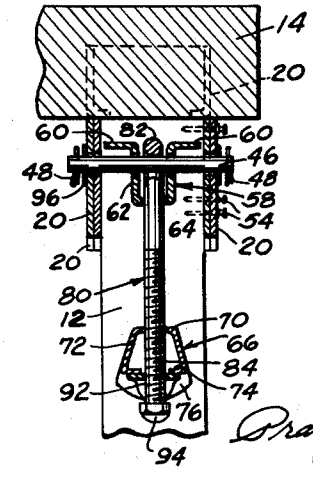


FIG. 4



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FIG. 5

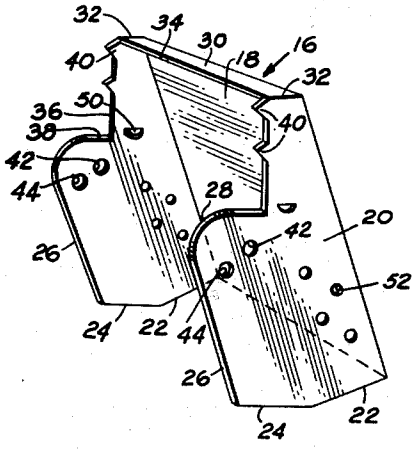


FIG. 6

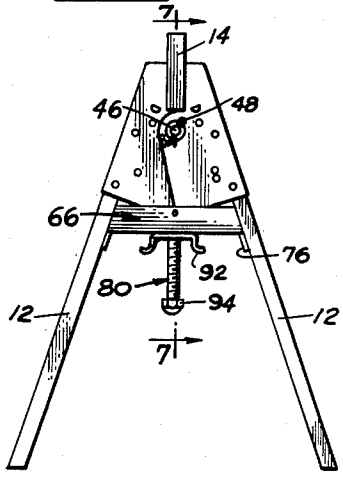
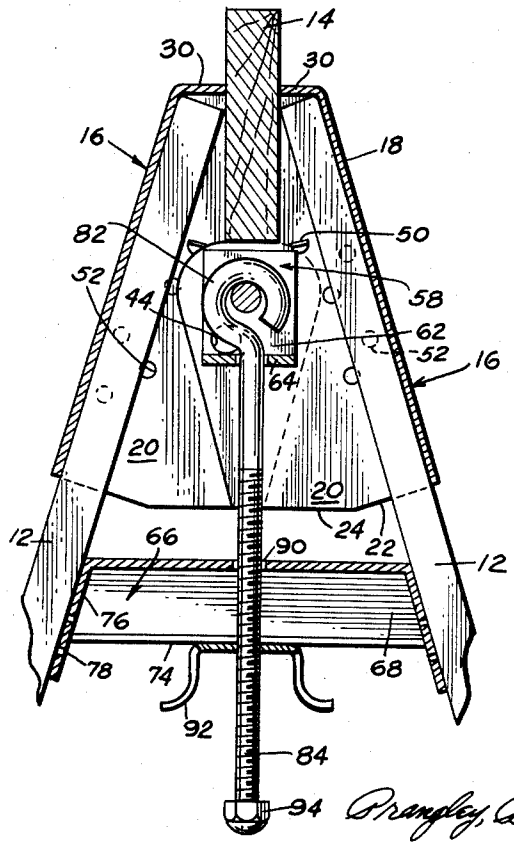


FIG. 7



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SAWHORSE BRACKET ASSEMBLY

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3 Claims. (Cl. 182—186)

This invention relates to heavy duty sawhorses, trestles and the like and particularly to a bracket assembly for making folding and demountable sawhorses and the like.

There is a substantial demand for heavy duty sawhorses, trestles and the like for use as barriers, temporary fences or other obstacles as well as sawhorses. Many of these possible uses are temporary in the sense that the sawhorses may be utilized only for short periods of time, such as for example a temporary barricade along a road under construction, after which the sawhorse is either stored or transported to another place of use. Accordingly, it is desirable to disassemble such sawhorses between periods of use and during transportation thereof so that the sawhorse will occupy as small a space as possible. When the sawhorse is to be assembled again, it must be so constructed that it can be readily placed into operative condition and when assembled be strong and rigid. It further is desirable to provide a bracket assembly which can be utilized with different sizes of lumber such as for example two inch or one inch lumber as desired whereby to give greater versatility of the bracket assembly.

Accordingly, it is an important object of the present invention to provide an improved heavy duty sawhorse bracket assembly which can be utilized quickly to assemble a sawhorse and thereafter can be quickly disassembled for dismantling the sawhorse for transportation or storage.

Another object of the invention is to provide a bracket assembly for a heavy duty sawhorse of the type set forth in which the legs of the sawhorses are firmly separated and held in position by the assembly and the crosspiece is likewise firmly clamped and positioned with respect to the bracket assembly.

Yet another object of the invention is to provide a bracket assembly for a heavy duty sawhorse of the type set forth in which the same assembly can be used with both one inch and two inch lumber to form a strong and rigid sawhorse, trestle or the like.

These and other objects and advantages of the invention will be better understood from the following description when taken in conjunction with the accompanying drawings. In the drawings wherein like reference numerals have been utilized to designate like parts throughout:

Figure 1 is a perspective view of a sawhorse of the type which can be constructed utilizing the bracket assembly of the present invention, two of the bracket assemblies of the present invention having been utilized to secure two sets of legs in converging relationship with each other and with the opposite ends, respectively, of a crosspiece;

Fig. 2 is an end view of the sawhorse of Fig. 1;

Fig. 3 is a view in vertical section on an enlarged scale through the bracket assembly and the legs and crosspiece at one end of the sawhorse substantially as seen in the direction of the arrows along the line 3—3 of Fig. 1;

Fig. 4 is a view in vertical section through the bracket assembly and the associated legs and crosspiece substantially as seen in the direction of the arrows along the line 4—4 of Fig. 2;

Fig. 5 is a perspective view on an enlarged scale of one of the brackets forming a part of the bracket assembly of the present invention;

Fig. 6 is an end view of a sawhorse constructed using the bracket assembly of the present invention wherein the legs and crosspiece thereof are formed of lumber having only half the thickness of the lumber illustrated in Figs. 1–4; and

Fig. 7 is a view on an enlarged scale in vertical section through the sawhorse of Fig. 6 substantially as seen in the direction of the arrows along the line 7—7 thereof.

There is shown in Figs. 1 through 4 of the drawings a sawhorse generally designated by the numeral **10** which has been assembled utilizing two of the bracket assemblies of the present invention to unite suitable lengths of 2" x 4" lumber. More particularly, the sawhorse **10** includes four legs **12** arranged in pairs at opposite ends of a crosspiece **14**, the upper ends of the legs **12** converging toward each other and toward the adjacent end of the crosspiece **14**. The bracket assemblies at each end of the sawhorse **10** are identical and, accordingly, only one set of parts will be described in detail. Each assembly includes a pair of separate, individual and identical brackets **16**. As may be best seen in Fig. 5 of the drawings, each of the brackets **16** includes a main wall **18** which is substantially rectangular in shape and is provided on the longer vertical edges thereof with side flanges **20** formed integral therewith and disposed substantially perpendicular thereto. The side flanges **20** are substantially parallel to each other and extend from the main wall **18** in the same direction. The lower edge **22** of each of the side flanges **20** is preferably formed substantially perpendicular to the edge joining the walls **18** and **20**. The other end of each edge **22** connects with an upwardly directed edge **24** which in turn connects with an upwardly directed edge **26** which is formed substantially parallel to the junction between the walls **18** and **20**. The upper end of the edge **26** terminates in a rounded portion **28**.

The upper edge of the main wall **18** has formed integral therewith a top flange **30** which extends therefrom in the same direction as the side flanges **20** and is disposed at an obtuse angle with respect to the main wall **18**. The side edges of the top flange **30** are suitably connected to the top of the side flanges **20** such as by welding along a junction line **32**. Extending downwardly from the forward edge **34** of the top flange **30** and substantially perpendicular thereto is a forward edge **36** on each of the side flanges **20**, the forward edges **36** connecting with the rounded portion **28** referred to above by means of a straight edge **38** which is disposed substantially perpendicular to the forward edge **36**. The edges **38** are adapted to support the crosspiece **14** and the forward edges **36** are provided with triangularly shaped teeth **40** which are adapted to engage and grip the crosspiece **14** associated with the brackets **16**. Preferably two spaced apart teeth **40** are provided on each of the forward edges **36**.

In making a sawhorse, two of the brackets **16** are interconnected and to this end each of the side flanges **20** has a pair of openings **42** and **44** formed therein, the openings in the side flanges **20** being in alignment with each other so that a connecting pin **46** can be inserted through aligned openings **42** in one position of the brackets or alternatively through aligned openings **44** in another position of the brackets when two brackets are arranged in the desired assembled relationship. The opening **44** is disposed lower than the opening **42** and

is also disposed nearer to the forward edge **26** and farther away from the main wall **18**. When utilizing 2" lumber for the sawhorse **10**, the connecting pin **46** is disposed in the lower aperture **44**, i.e., the aperture disposed away from the main wall **18** as is illustrated in Figs. 2 and 3 of the drawings and when utilizing 1" lumber, the connecting pin **46** is disposed through the apertures **42** as is illustrated in Figs. 6 and 7 of the drawings. The brackets are free to pivot about the pin **46** and are retained thereon by cotter pins **48** which are disposed in suitable apertures provided adjacent to each end of the connecting pin **46**.

When utilizing 2" lumber to assemble the sawhorse **10**, the broad side of each leg **12** is disposed against the main wall **18** of the associated bracket **16** and the upper end thereof abuts against a pair of flanges **50** struck from the side flanges **20** and extending inwardly therefrom. A plurality of holes **52** is also provided in each of the side flanges **20** to receive nails **54** or similar fasteners therethrough, if desired, whereby fixedly to mount the bracket **16** upon the associated leg **12**. Preferably four holes **52** are provided, two of the holes being arranged in a row parallel to the main wall **18** and spaced therefrom with the centers approximately ½" therefrom so that those holes can be also used to place fasteners in 1" lumber. The other two holes are spaced farther from the main flange **18** and are useful only with 2" lumber. The crosspiece **14** rests upon the edges **38** of the brackets **16** and may also rest upon the upper ends of the legs **12** and further is clamped to the bracket **16** by means of the teeth **40** engaging and entering therein.

Since each of the legs **12** is connected to the assembly only by means of its associated bracket **16**, means is provided to separate the legs **12** whereby to pivot the upper portions of the bracket **16** and particularly the teeth **40** thereof toward each other and into the sides of the crosspiece **14**. A yoke generally designated by the numeral **58** is provided to aid in separating the legs **12** (see particularly Figs. 3 and 4). The yoke **58** includes a pair of spaced apart aligned flanges **60** having a width such that they will just clear or barely contact the inner sides of the legs **12** when using 2" lumber.

Extending downwardly from the flanges **60** are two parallel members **62** connected at the lower end by a flange **64**. The members **62** have aligned apertures therein to receive the connecting pin **46** therethrough, the pin **46** serving to mount the yoke **58** in operative position. A spreader generally designated by the numeral **66** is also provided to urge the lower ends of the legs **12** away from each other. The spreader **66** includes a generally U-shaped longitudinal member **68** having an upper wall **70** adapted to be disposed horizontally in operative position. Depending downwardly from the top wall **70** are side walls **72** which are disposed at obtuse angles with respect to the top wall **70**. The lower edges of the side walls **72** are provided with inturned flanges **74** which give added rigidity to the spreader **66**. The ends of the member **68** are closed by end walls **76** which at the upper portion thereof conform to the cross section of the members **68** and further extend downwardly therefrom as can be best seen from Figs. 3 and 4 of the drawings. The end walls **76** may be apertured as at **78** to receive nails and other fasteners if desired.

Means is provided to urge the spreader **66** upwardly. More specifically, an eye bolt **80** is provided including an eye **82** at one end thereof and a threaded portion **84** on the other end thereof. The eye **82** receives the connecting pin **46** therethrough and the shank **86** of the eye bolt extends downwardly through an opening **88** in the yoke flange **64** and through an opening **90** in the top wall **70** of the spreader **66**. A speed nut **92** is provided on the threaded portion **84** and can be threaded upwardly into engagement with the inturned flanges **74** on the spreader **66** whereby to urge the spreader **68** upwardly against the legs **12** whereby to spread the lower ends of the legs **12** outwardly and to force the teeth **40** into the crosspiece **14**. The yoke **58** during the tightening process performs the important function of keeping the eye **82** of the eye bolt **80** centrally of the connecting pin **46**, the ends of the flanges **60** extending substantially to the inner sides of the bracket side flanges **20** as may be best seen in Fig. 4. In order to prevent loss of the speed nut **92** from the eye bolt **80**, a cap nut **94** is provided on the lower end of the eye bolt **80**.

Referring now to Figs. 1–4 of the drawings, the assembly of 2" x 4" lumber with the brackets **16** and the other parts of the bracket assembly to form the sawhorse **10** will be described. When using 4" width lumber, the main wall **18** of the brackets **16** is made slightly wider than 4" since one of the side flanges **20** of the associated brackets **16** must extend within the adjacent side flange **20** of the other bracket as is best illustrated in Fig. 4. The first step in assembly is to secure each of the legs **12** to its associated bracket **16**. The parts are positioned as illustrated in Fig. 3 with each of the legs **12** in abutment with the associated flanges **50**. Suitable fasteners such as the E-Z pull out nails **54** can then be driven through the holes **52** into the legs **12**. Next the brackets **16** with the legs **12** attached are arranged so that the connecting pin **46** can be put through the aligned openings **44**. If desired, washers **96** can be provided on the outer ends of the pin **46** and all the parts connected by inserting the cotter pins **48** through the ends of the connecting pin **46**. It is to be understood that the yoke **58** and the eye bolt **80** are suitably positioned within the bracket **16** so that the connecting pin **46** passes through the eye **82** of the eye bolt **80** and through the aligned openings in the yoke members **62**. Next the spreader **66** is positioned on the eye bolt **80**, the speed nut **90** is threaded into the lower threaded portion **84** and the cap nut **94** is placed in position. Then the crosspiece **14** is positioned as illustrated in Fig. 3 and the speed nut **94** is threaded upwardly whereby to force the spreader **66** upwardly. The end walls **76** of the spreader **66** slide along the inner surfaces of the legs **12** and gradually spread the lower ends of the legs **12** outwardly. Such motion of the lower ends of the legs **12** causes the upper ends of the bracket **16** to be forced toward each other and the crosspiece **14**. This presses the teeth **40** into the sides of the crosspiece **14** whereby when the parts are in the position illustrated in Fig. 3 of the drawings, the assembly is strong and rigid. The legs **12** are spread apart by the spreader **66** and also by the yoke **58**. It is to be noted that the connecting pin **46** is in the openings **44** which are spaced farthest from the main wall **18** thus permitting the widest separation of the brackets **16**. When the parts are in the final position, it may be desirable in certain instances to put fasteners through the openings **78** in the spreader **66** and into the legs **12**.

In order to dismantle the sawhorse **10**, it is necessary first to turn the speed nut **94** downwardly against the cap nut **94**. Any fasteners which have been placed in the openings **78** are removed and this permits the spreader **66** to be dropped out of engagement with the legs **12**. After the spreader **66** has been turned so that its axis is in alignment with the crosspiece **14**, the legs **12** can be pivoted about the connecting pin **46** so that the lower ends approach each other. This will immediately release the crosspiece **14**. If it is further desired to disassemble the legs **12** from the brackets **16**, this can be readily done by removing the fasteners extending through the holes **52**.

Referring to Figs. 6 and 7 of the drawings, the use of 1" lumber with the bracket assembly of the present invention will be illustrated. The legs **12** are assembled with the associated bracket **16** and it will be noted that when the broad surface of the leg is positioned against the main wall **18**, the opposite side will clear the flanges

50 thereby permitting the leg 12 to be moved upwardly against the top flange 30. Suitable fasteners may be placed through the holes 52 whereby firmly to interconnect the legs 12 with the associated brackets 16. The connecting pin 46, the yoke 58 and the eye bolt 80 are then assembled as has been explained above. Next the spreader nut 92 and the cap nut 94 are assembled as has also been explained above. The connecting pin 46, however, is placed in the upper opening 42 which permits the brackets 16 to be moved inwardly toward each other in order to engage the narrow crosspiece 14. The speed nut 94 can then be threaded upwardly whereby to spread the lower ends of the legs 12 apart and to force the teeth 40 of the brackets 16 into the sides of the crosspiece 14. When the parts are in the desired adjusted position, fasteners may be driven through the openings 78 and into the legs 12. When it is desired to dismantle the sawhorse, the above operations are reversed as has been explained above with respect to Fig. 3.

The bracket illustrated in the drawings is particularly adapted for use with lumber having a width of four inches. It is to be understood that by suitable shaping of the various parts, 2" x 2" and 2" x 6" lumber may also be utilized. The brackets 16 when thus modified can also accommodate 1" x 2" and 1" x 6" lumber, respectively, without any further change in the structure of the brackets and the other parts of the bracket assembly. More specifically, in order to accommodate varying widths of lumber, the main wall 18 and the top flange 30 of the brackets 16 need only be changed in width.

The spreader 66 is a substantial improvement over similar devices used heretofore. The shape thereof and specifically the smooth end walls 76 eliminate marring of the associated legs. Furthermore, pressure is placed on the legs and all other members simultaneously. When dismantled, the legs can fall flat for easy storing. Furthermore, the legs when folded provide a full opening to receive the crosspiece. Another important advantage of the assembly is the fact that the legs 12 provide a 100% support for the crosspiece 14 when using 2" lumber.

It will be seen that there has been provided a bracket assembly for forming heavy duty sawhorses, trestles and the like which fulfills all of the objects and advantages set forth above. Although certain preferred forms of the invention have been illustrated in the drawings and described, it is to be understood that various changes and modifications can be made therein without departing from the spirit and scope of the invention. Accordingly, the invention is to be limited only as set forth in the following claims.

I claim:

1. A bracket assembly for interconnecting a crosspiece and a pair of legs in converging relationship with each other and to the crosspiece wherein the lumber forming the crosspiece and the legs may be of a first lesser thickness and a second greater thickness, comprising a pair of separate independent and indentical brackets, each bracket including a substantially rectangular main wall and having a pair of side flanges formed integral therewith and disposed substantially perpendicular thereto, a top flange formed integral with the top edge of said main wall and interconnecting said side flanges, an abutment flange struck from each of said side flanges and extending inwardly toward the opposite side flange and spaced from said main wall a distance at least as great as the first lesser thickness, said bracket being adapted to receive the upper end of an associated leg between said side flanges and abutting against said top flange when the leg is of the first lesser thickness and the upper end of the leg abutting against said abutment flange when it is of the second greater thickness, each of said side flanges having a pair of laterally spaced apart apertures therein with corresponding apertures in said side flanges being in alignment, a pin extending through corresponding apertures and assembling said brackets in pivotal relationship thereabout, a yoke mounted on said pin between said adjacent side flanges, a bolt carried by said pin and centered between said side flanges by said yoke and extending downwardly therefrom and between a pair of associated legs, a spreader adapted to be positioned between the associated legs and having an opening therein to receive said bolt therethrough, a fastener engaging said bolt and bearing against said spreader to force said spreader toward said pin whereby to move the ends of the associated legs opposite said brackets away from each other, and gripping means formed on said side flanges and adapted to engage an associated crosspiece to hold the crosspiece upon spreading of the associated legs, one of said apertures being disposed below the other and spaced farther from said main wall than the other, second brackets accommodating the first lesser thickness of crosspiece when said pin is in the other of said apertures and said brackets accommodating the second greater thickness of crosspiece when said pin is in said one of said apertures, whereby said bracket assembly can accommodate and rigidly hold either thickness of crosspiece and legs.

2. The bracket assembly set forth in claim 1, wherein a first series of openings is provided in each of the side flanges and spaced from the main wall a distance equal substantially to one half the first lesser thickness, and a second series of openings is provided in said side flanges and spaced from said main wall a distance equal to slightly more than one half of the second greater thickness.

3. The bracket assembly set forth in claim 1, wherein the spreader includes a generally U-shaped longitudinally extending member, and walls formed integral with said U-shaped member and inclined with respect to the axis thereof at an angle thereto substantially parallel to the adjacent side of an associated leg, said U-shaped member having an opening therein to receive the bolt therethrough.

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