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K. J. ROBINSON

2,861,731

FOLDING PORCH

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2 Sheets-Sheet 1

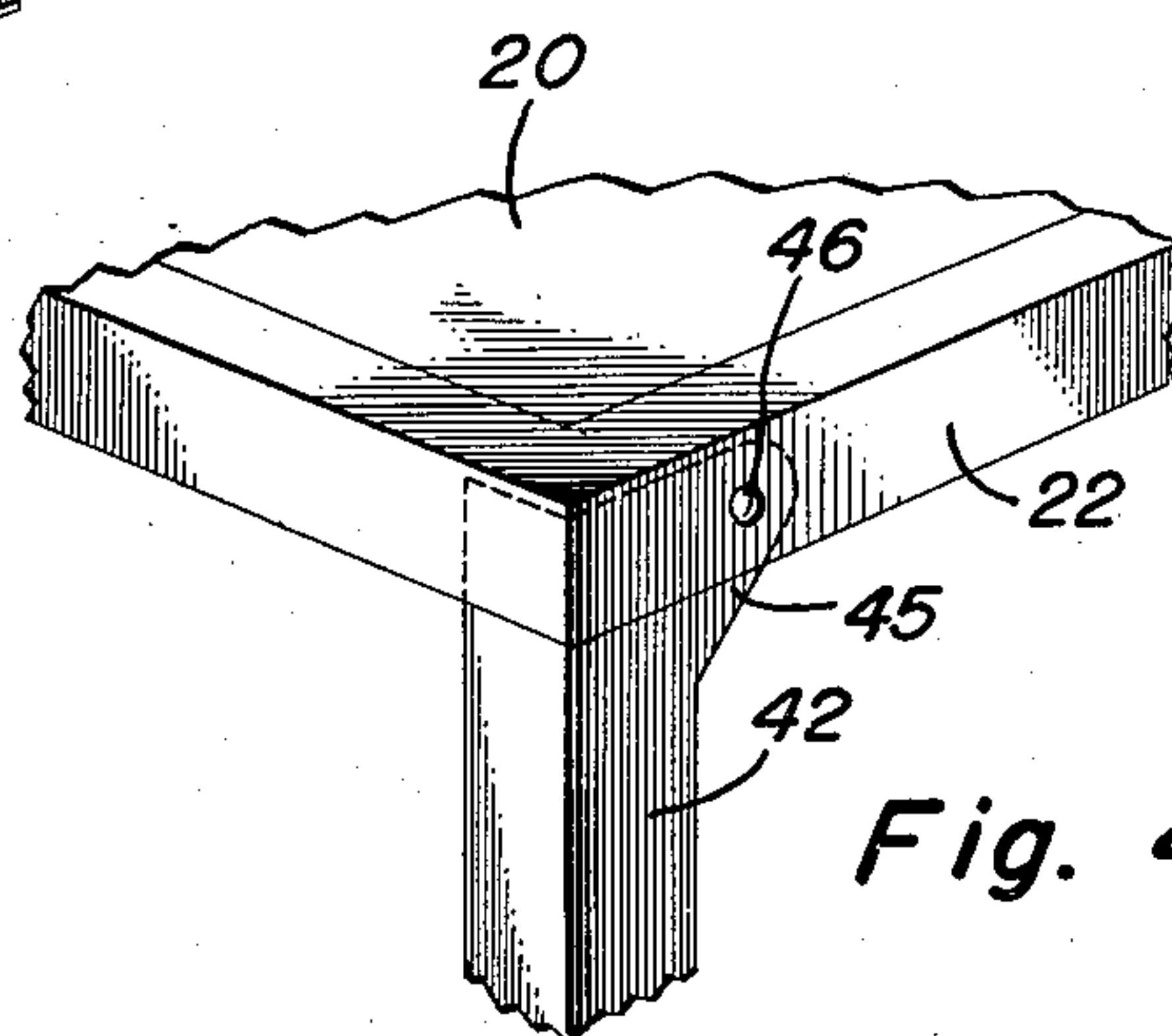
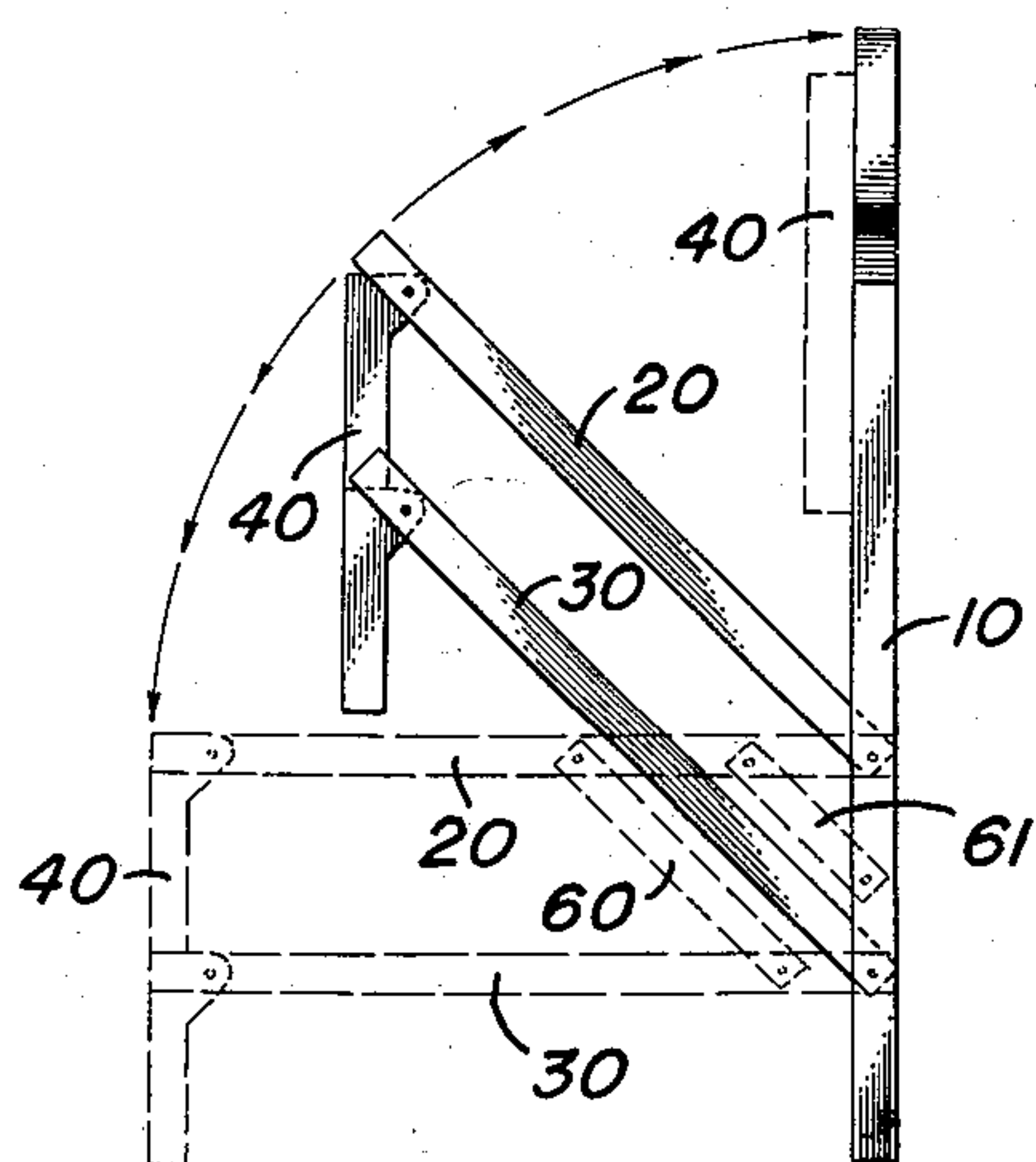
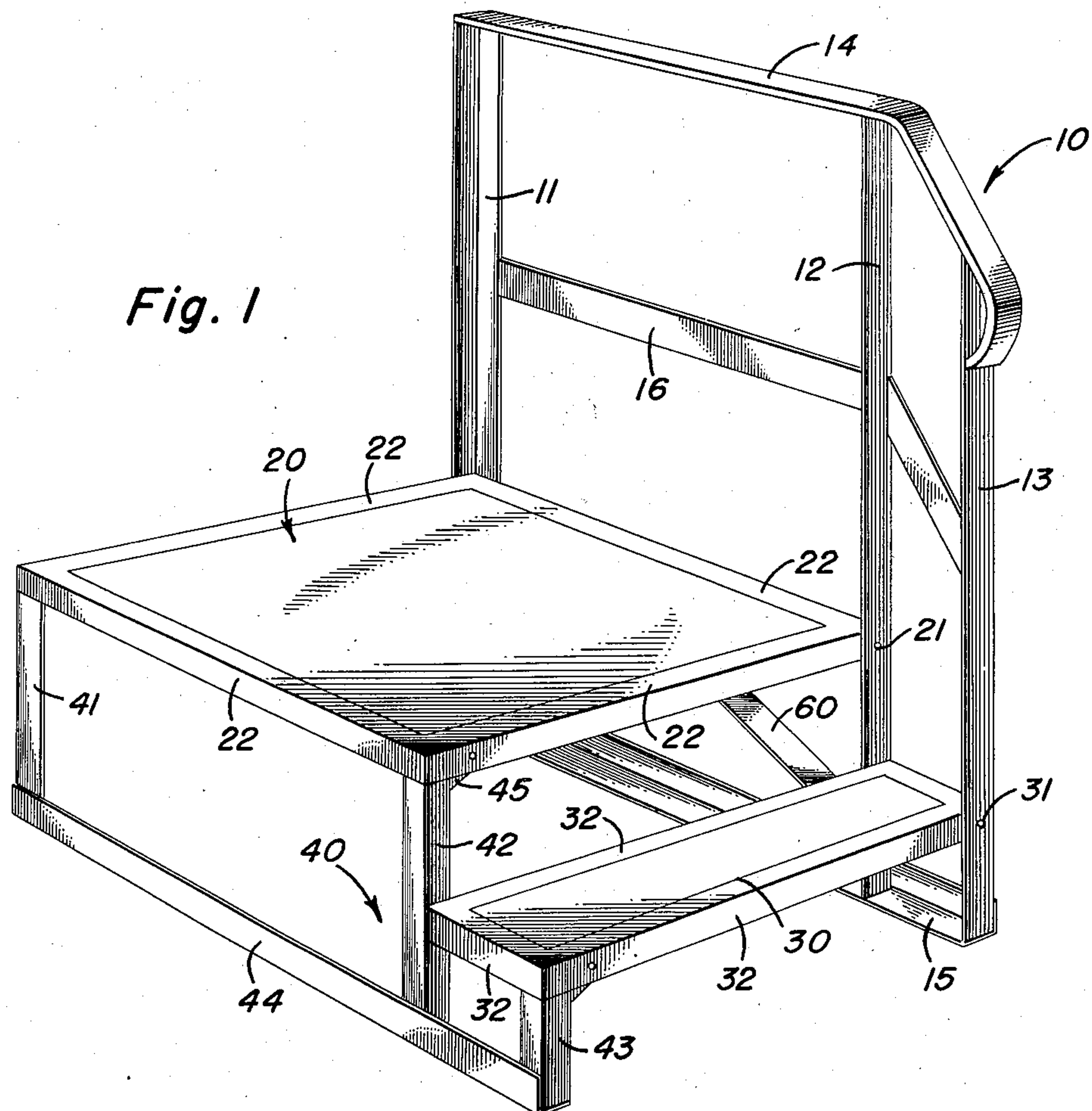


Fig. 4

Fig. 5

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Fig. 2

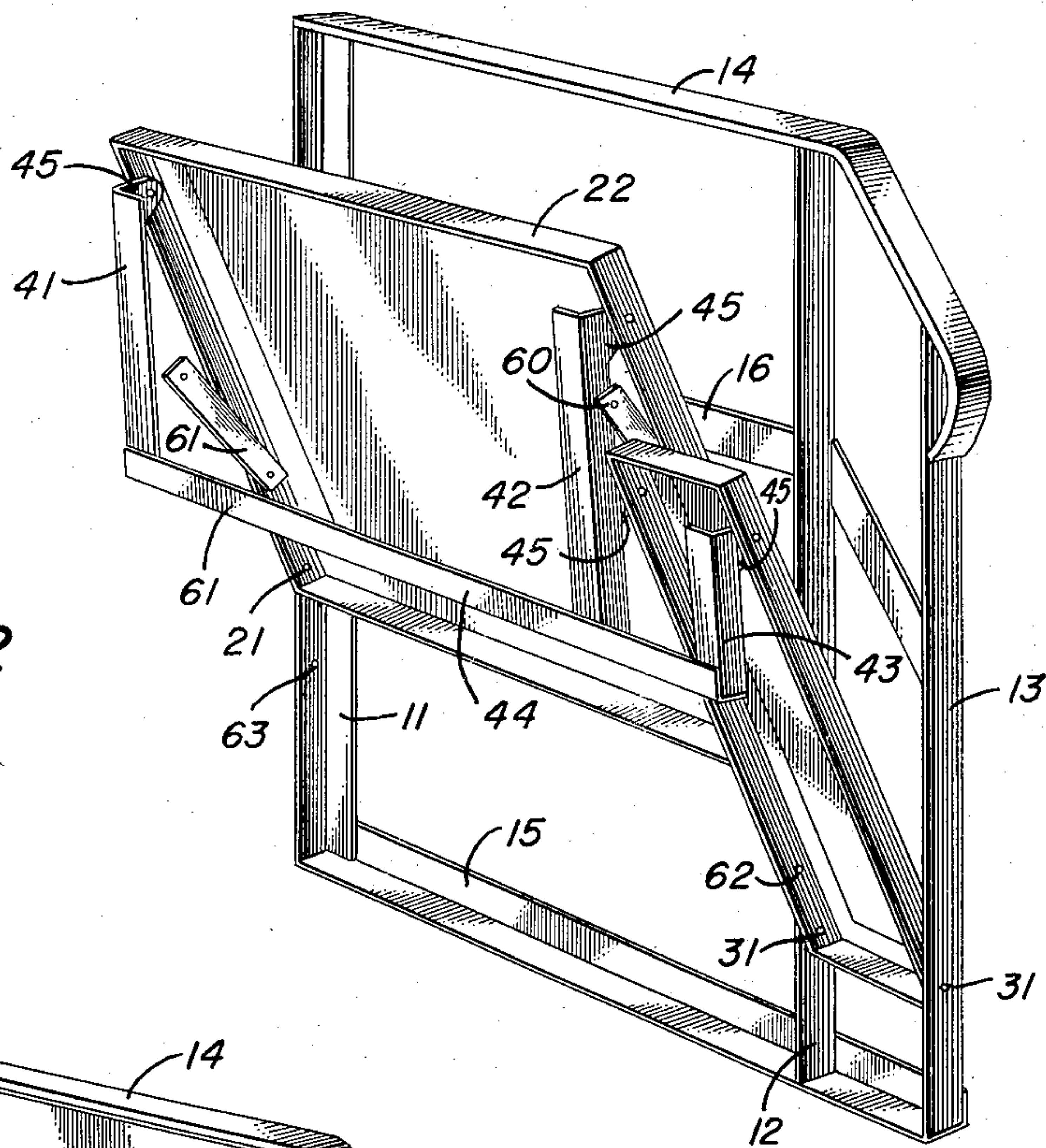
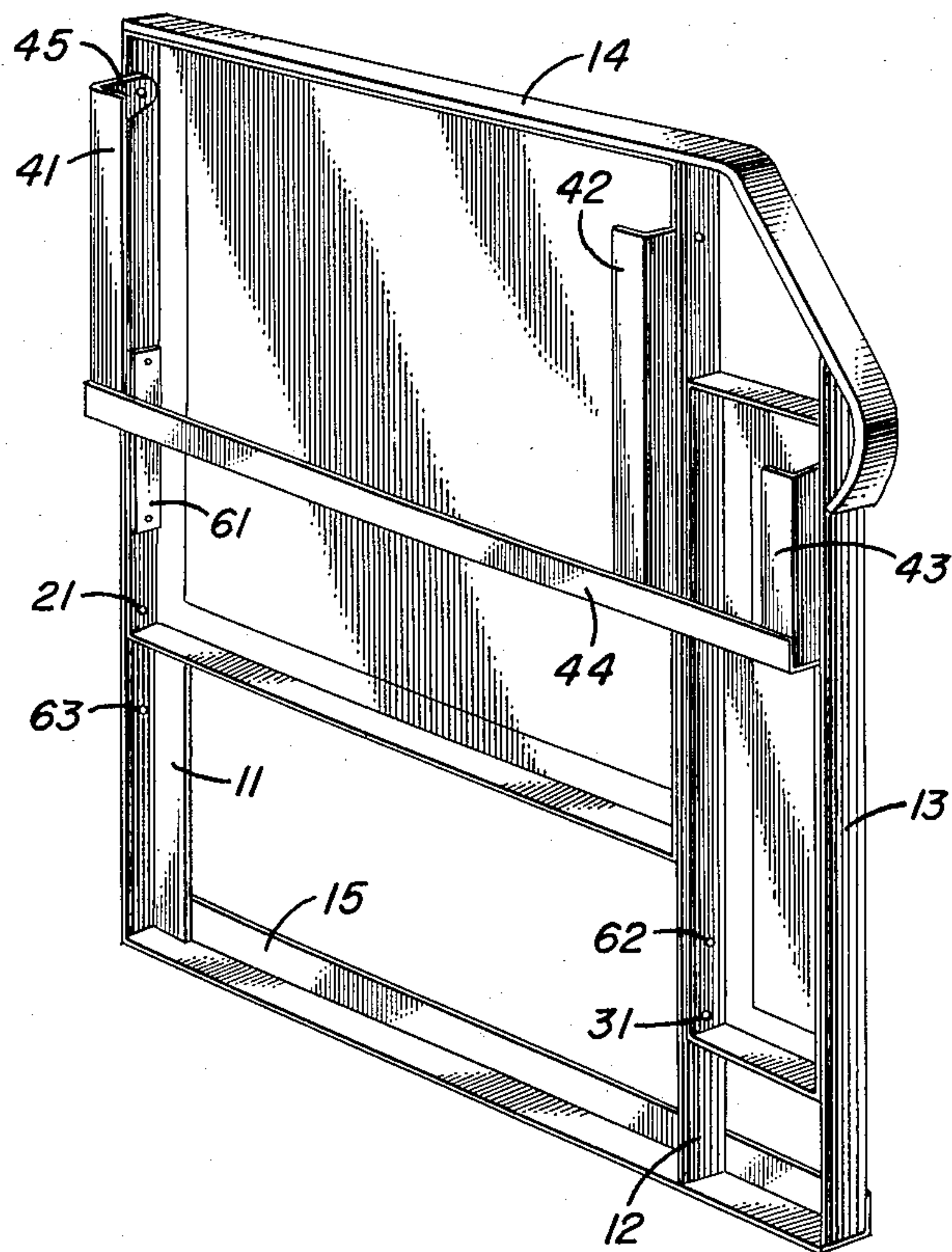


Fig. 3



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FOLDING PORCH

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6 Claims. (Cl. 228—36)

This invention relates to a folding or collapsible porch for use with house trailers, construction jobs, aircraft and the like.

Although a need for a collapsible or folding porch has existed for some time, particularly for use with house trailers and mobile homes, no satisfactory solution for such a folding porch has been discovered. The object of this invention is to provide a folding porch which can easily be folded into a very thin package.

Another object of this invention is to provide a folding porch which requires only the folding of the platform into a side rail, the rest of the components being automatically collapsed into place.

Another object of this invention is to provide a folding porch or step that can be made into various shapes and sizes to fit the particular purpose for which it is to be used.

A further object of this invention is to provide a folding porch or step that is constructed of conventional materials and is relatively inexpensive to manufacture.

Other objects of this invention will become obvious upon reading the following specification in conjunction with the accompanying drawings.

In the drawings:

Fig. 1 is a side elevational, oblique view of the folding porch in assembled position.

Fig. 2 is a side elevation, oblique view of the folding porch in partially collapsed position.

Fig. 3 is a side elevation, oblique view of the porch in entirely collapsed or folded position.

Fig. 4 is a fragmentary, oblique, side elevation view of one of the legs for supporting the steps or platform.

Fig. 5 is a front elevation view of the porch in partially collapsed position and illustrating in phantom the porch in collapsed and in assembled position ready for use.

Briefly, this invention relates to a convertible or foldable porch having rail supports on one side and a platform and a step pivotally mounted to the rail supports. Leg support means are pivotally mounted to the platform and the step oppositely from the rail supports. The pivotal mounting points of the platform step to the rail supports is preferably arranged in pantographic fashion.

In the preferred form of this invention, the side rail supports are constructed of angle irons arranged to receive the platform and step in a nested position. The leg supports are then adapted to be collapsed against the platform and step so that a very thin package is obtained. In this preferred form, it is additionally preferable that the pivotal mounting points of the platform and step on the rail supports and the pivotal mounting points of the leg supports on the platform and step be arranged in pantographic fashion so that when the platform is pivoted upwardly into nested position the leg supports automatically are collapsed against the platform and steps.

Referring to the drawings, the numeral 10 designates the side rail supports which include the upstanding, angle iron, rail support members 11, 12, and 13. These members are all parallel to each other and have outer and inner faces. The inner faces of the members 11 and 12 face each other and are spaced a sufficient distance for receiving the platform 20. The members 13 are spaced from the rail support member 12 a sufficient distance to receive the step 30.

The rail support members 11, 12 and 13 are held in

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spaced relationship by the rail member 14, angle 15 and bar 16. The rail member 14 is secured to the very top of the upstanding members. It also serves as a hand rail which a person grasps when ascending or descending the porch. The angle 15 is connected at their very lower ends of members 11, 12 and 13. The rail member 14, the intermediate support bar member 16, and the angles 15 are secured to the upstanding rail members 11, 12 and 13 by any suitable means such as welding. This, of course, depends upon the material from which the components are constructed. These members can be connected together by screws or bolts without departing from the broadest aspect of this invention.

The platform 20 is constructed of angle irons connected together to form a rectangle. These angles support an expanded metal grill having a perforated surface permitting dirt to be brushed off the shoes of persons stepping onto the porch. The platform preferably has intermediate support members between the marginal angle irons.

The platform 20 is pivotally mounted between the two angles 11 and 12 by the bolts, rivets or pins 21 extending through the one side of upstanding support members 11 and 12 and also through the marginal angles 22 on the side of the platform. The length of the platform sides correspond to the distance from the bolts 21 to the rails 14 so that the platform can be pivoted entirely upwardly to nest between angles 11 and 12 and the hand rail 14. The step 30 is pivotally mounted between upstanding rail members 12 and 13 by means of bolts, rivets or pins 31. The length of the step corresponds to the distance from the pin 31 to the rail support member 14 or vice versa. This permits the step to nest between the upstanding rail members 12 and 13 and rail 14.

The platform 20 and steps 30 are supported opposite the support rail by the leg supports 40 which include the leg support members 41, 42 and 43, each of which are secured at their lower end to the angle 44. Each of the leg members 41, 42 and 43 have an integral ear 45 at its top end, permitting legs to be pivotally mounted at a distance from the edge of the platform and step. This is provided to permit the ends of the legs to be pivoted out of the corners of the platform and step so that the legs can be entirely collapsed against the platform and step when in folded position. Fig. 4 illustrates this feature of each of the legs. The ear 45 is pivotally mounted to the angle 22 by the pin, bolt or rivet 46. This arrangement of the ear 45 with the pivotal connection at 46 arranges the point of pivotal connection off the center line of the support legs. Thus the support legs are permitted to be pivoted out of the corners formed by the angles 22 of the platform 20 and the angles 32 of the step 30. Support leg 42 also has an ear 35 intermediate its ends at the level of the step 30 (Fig. 2) for supporting the step.

The braces 60 and 61 are provided to stabilize the step when assembled. These braces are pivotally secured to side angles 22 of the platform and detachably secured by bolts (not shown) to the side rail support member 11 and the step side angle 32. Brace 60 is secured by a bolt at the hole 62 and brace 61 at the hole 63.

An important feature of a narrow aspect of this invention is the arrangement of the points of pivotal connection between the leg structure and the platform and step and also the pivotal connection between the platform and step and the upstanding rail members. This arrangement is pantographic. The pantographic is meant an arrangement in which the leg support members are always parallel to the rail support members and the platform is always parallel to the step. Thus regardless of the position of the platform and step a parallelogram is formed between the members. This is illustrated in Fig. 5 which shows (in phantom) the platform 20 and step 30 in assembled position ready for use. In this position the plat-

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form 20, step 30, side rail structure 10, and support leg structure 40 form a rectangle. In partially collapsed position illustrated by the full lines the rectangular shape is changed but these members still form a parallelogram. In collapsed position the platform nests in between the side rail structure 10 and the support leg structure 40 is collapsed against the platform and step. Figs. 1, 2 and 3 show an oblique view of the porch in these three respective positions.

Operation

The operation of this folding porch is very simple. It should be obvious from the above description. The porch is normally carried around in the collapsed position of Fig. 3. In this position the platform 20 nests between the side rail support members 11 and 12 and the step 30 nests between the members 12 and 13. The leg support structure 40 is collapsed against the platform and step. This produces a very thin package that can be stored in any convenient place.

When the porch is to be used one merely grasps the bottom bar 44 of the leg support structure pulling the platform and step out of its nest position. The platform is then pulled downwardly to the position of Fig. 1. Then the braces 60 and 61 are attached. Brace 60 is attached to the side of the inner angle member 32 and brace 61 is attached to the lower end of the rail support member 11. The attachment means comprises bolts (not shown) extending through the openings 62 and 63 (Fig. 2). After the braces are secured in place the unit is ready for use.

When the porch is to be stored the braces 60 and 61 are detached. Then the operator merely lifts upwardly on the platform 20 pushing it between the members 11 and 12. This causes the step 30 to nest in between the member 12 and 13 and the leg support structure 40 is caused to collapse against the platform and step. This is accomplished automatically without any fidgeting or arrangement of parts.

It should be evident that I have provided a folding porch that is easily held into locked position. This porch is folded into a very thin package which can be easily stored and carried. The porch is adapted to be made in any size or shape to fit the particular purpose. It can be used on trailers, construction jobs, aircraft, etc. It is sturdy and made of a small number of conventional component parts. Its operation is such that the arrangement of the component parts for storing the unit is accomplished automatically.

It should be understood that although I have shown the preferred embodiment, alterations and other modifications are possible within the broadest aspect of this invention. Therefore, this invention should be limited only as expressly set forth by the language of the appended claims.

I claim:

1. A convertible porch comprising: upstanding rail supports; a platform pivotally mounted on said supports; leg support means pivotally mounted on said platform opposite said rail supports; a step pivotally mounted on said rail supports; said leg support means being pivotally mounted on said step; the points of said pivotal mountings of said platform and step on said rail supports, and said leg supports on said platform and said step being arranged to permit collapse of said leg support against said platform and step when the platform and steps are pivoted upwardly against said rail supports.

2. A convertible porch comprising: upstanding rail supports; a platform pivotally mounted on said supports; leg support means pivotally mounted on said platform opposite said rail supports; a step pivotally mounted on said rail supports; said leg support means being pivotally mounted on said step; the points of said pivotal mountings of said platform and step on said rail supports, and said leg supports on said platform and said step being arranged in pantographic fashion whereby when said platform and steps are pivoted upwardly against said rail

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supports said leg support means is collapsed against said platform and step.

3. A convertible porch comprising: first, second and third upstanding angle iron rail supports each having inner and outer faces said first and second supports being spaced a distance from one another to receive a platform, the inner faces of said supports facing each other; the third support being spaced a distance from said second support to receive a step therebetween; a platform pivotally mounted between said first and second supports; a step pivotally mounted at a lower level than said platform between said second and third support; said platform and step when pivoted upwardly being nested in between said supports against said inner faces; leg support means pivotally mounted to said platform and step opposite from said rail supports and permitting said leg supports to collapse against said platform and step when nested between said rail supports.

4. A convertible porch comprising: first, second and third upstanding angle iron rail supports each having inner and outer faces; said first and second supports being spaced a distance from one another to receive a platform, the inner faces of said supports facing each other; the third support being spaced a distance from said second support to receive a step therebetween; a platform pivotally mounted between said first and second supports; a step pivotally mounted at a lower level than said platform between said second and third support; said platform and step when pivoted upwardly being nested in between said supports against said inner faces; leg support means pivotally mounted to said platform and step opposite from said rail supports; the pivotal mounting points of said platform and step and said leg supports being arranged in pantographic fashion whereby when said platform and step are pivoted upwardly against said rail supports said leg support means is collapsed against said platform and step.

5. A convertible porch comprising: first, second and third upstanding rail supports; said first and second supports being spaced a distance from one another to receive a platform; the third support being spaced a distance from said second support to receive a step therebetween; a platform pivotally mounted between said first and second support; a step pivotally mounted at a lower level than said platform between said second and third support; leg support means pivotally mounted to said platform and step opposite from said rail supports and permitting said leg supports to collapse against said platform and step when nested between said rail supports.

6. A convertible porch comprising: first, second and third upstanding rail supports; said first and second supports being spaced a distance from one another to receive a platform; the third support being spaced a distance from said second support to receive a step therebetween; a platform pivotally mounted between said first and second supports; a step pivotally mounted at a lower level than said platform between said second and third support; leg support means pivotally mounted to said platform and step opposite from said rail supports, the pivotal mounting points of said platform and step and said leg supports being arranged in pantographic fashion whereby when said platform and step are pivoted upwardly against said rail supports said leg support means collapsed against said platform and step.

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