Sept. 23, 1930. W. S. ALLEN 1,776,534

KNOCKDOWN CHAIR

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Fig. 1.

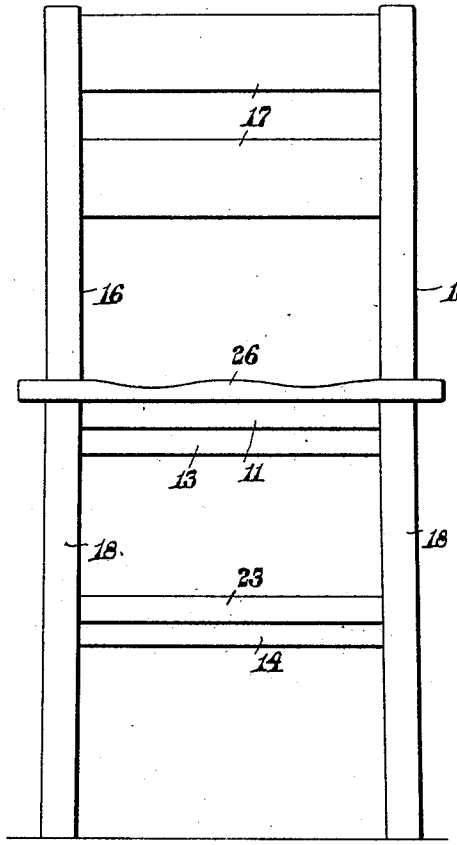



Fig. 2.

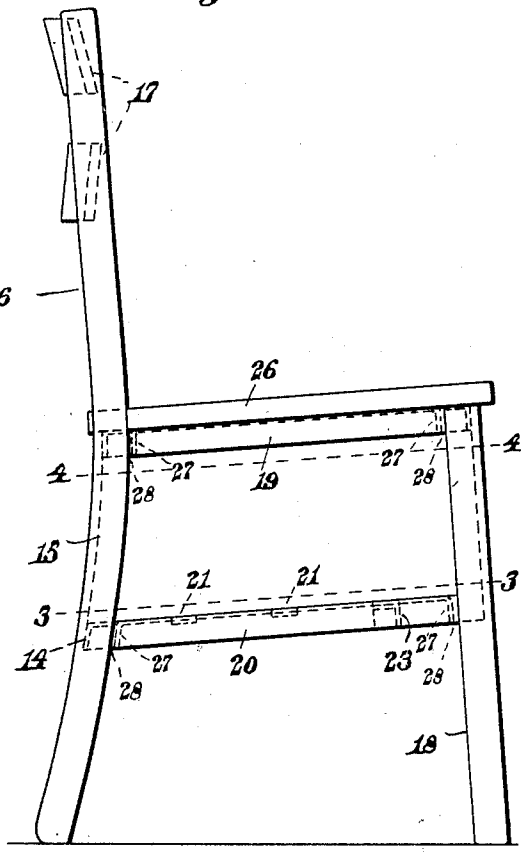



Fig. 4.

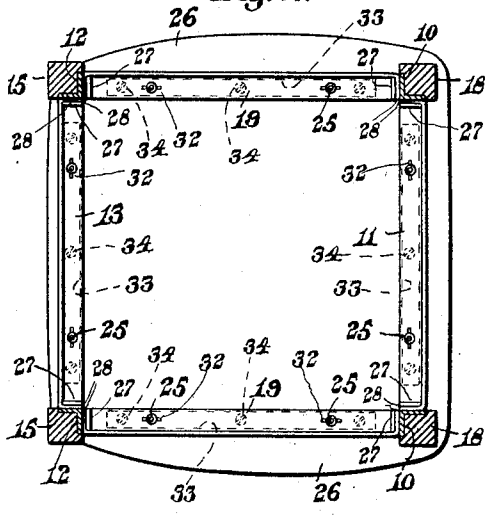
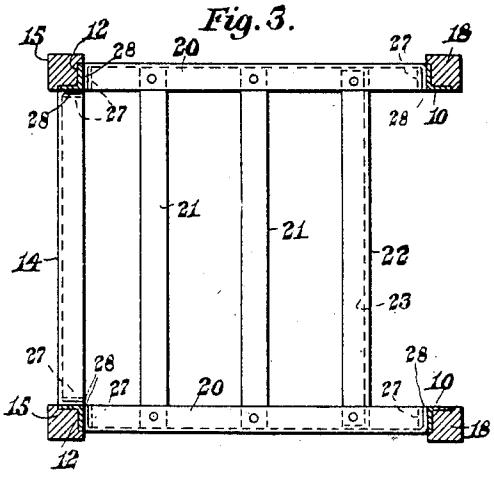



Fig. 3.




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Fig. 6.

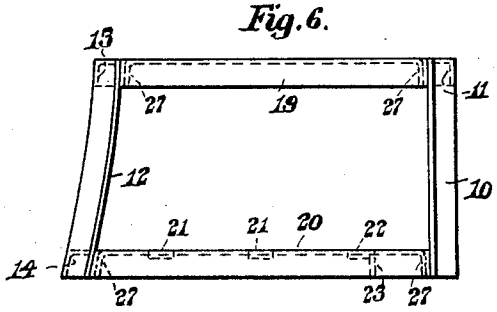



Fig. 5.

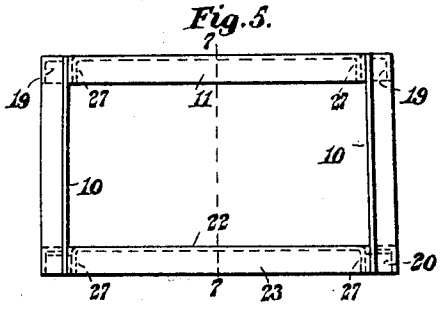



Fig. 7.

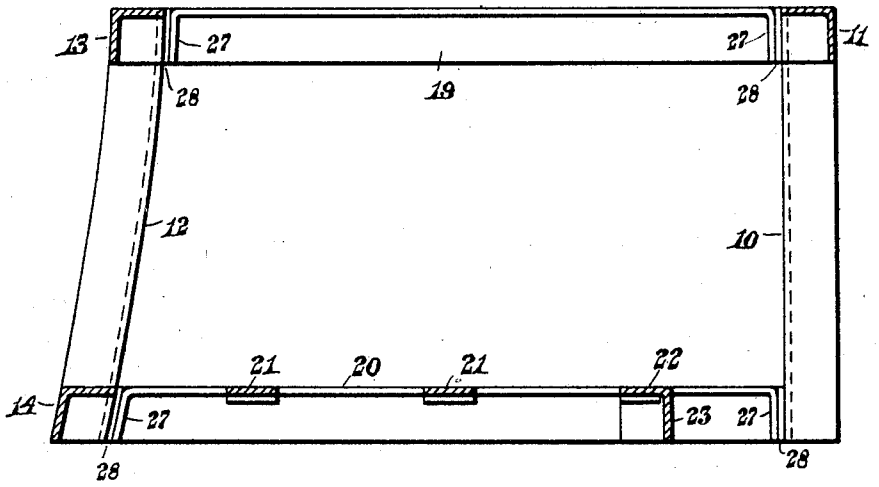



Fig. 8.

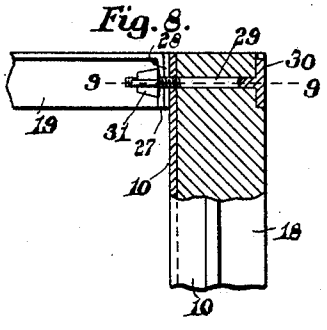



Fig. 9.

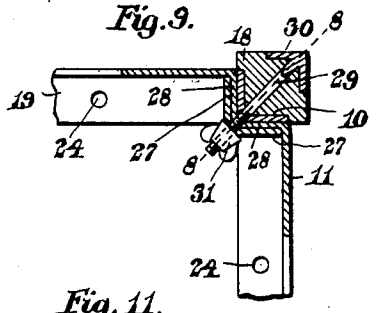



Fig. 10.

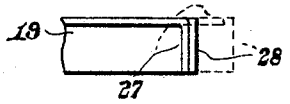
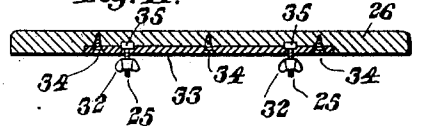



Fig. 11.




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Patented Sept. 23, 1930

1,776,534

# UNITED STATES PATENT OFFICE

WILLARD STUART ALLEN, OF ACTON, MASSACHUSETTS

## KNOCKDOWN CHAIR

Application filed July 3, 1929. Serial No. 375,716.

This invention relates to knockdown chairs and has for its object the production of a rigid chair particularly adapted for the use of schools, said chair having a braced metal framework to which the back, seat and legs may be readily secured.

This object is attained by the mechanism illustrated in the accompanying drawings.

For the purpose of illustrating the invention, one preferred form thereof is illustrated in the drawings, this form having been found to give satisfactory and reliable results, although it is to be understood that the various instrumentalities of which the invention consists can be variously arranged and organized, and the invention is not limited to the precise arrangement and organization of these instrumentalities as herein shown and described except as required by the scope of the appended claims.

Of the drawings:

Figure 1 represents a front elevation of a chair embodying the principles of the invention.

Figure 2 represents a side elevation of the same.

Figure 3 represents a horizontal section on line 3, 3, on Fig. 2.

Figure 4 represents a horizontal section on line 4, 4, on Fig. 2 and looking upward.

Figure 5 represents a front elevation of the metal frame to which the back, seat and legs are adapted to be secured.

Figure 6 represents a side elevation of said frame.

Figure 7 represents an enlarged vertical section of said frame, the cutting plane being on line 7, 7, on Fig. 5.

Figure 8 represents a vertical section showing the means of securing the legs to the metal frame, the cutting plane being on line 8, 8, on Fig. 9.

Figure 9 represents a horizontal section of the same, the cutting plane being on line 9, 9, on Fig. 8.

Figure 10 represents an elevation of one end of one of the chair rails, and

Figure 11 represents a section of the chair seat.

Similar characters indicate like parts throughout the several figures of the drawings.

In the drawings, 10, 10 are two uprights formed of metal angle plates and having interposed between their upper ends and secured thereto the metal rail or angle plate 11.

To the rear of the uprights 10, 10 are a pair of uprights 12, 12 also formed of metal angle plates having a slight curvature as indicated in Figs. 6 and 7 of the drawings.

Between these angle plates 12 and secured to the upper and lower ends thereof are the metal angle plates or rails 13 and 14.

Each angle plate 12 is adapted to receive a rear leg 15 and back member 16 of the chair, preferably made in one piece and of wood.

Between the upper ends of the back members 16 are secured the rails 17 which form a back rest.

The angle plates 10 are adapted to receive the front legs 18 of the chair.

Between the upper ends of the angle plates 10 and the upper ends of the angle plates 12 are interposed the side rails 19 also formed of metal angle plates, and between the lower end of the angle plates 10 and 12 are interposed similar rails 20 formed of metal angle plates.

The opposite ends of these side rails 19 and 20 are permanently secured to the uprights 10 and 12.

The rails 20 are connected by the brace bars 21 and 22, the opposite ends of which are permanently secured to the horizontal flange of said rails 20.

The bar 22 has a downwardly extending flange 23 set back some distance from the uprights 10, as shown in Fig. 7 of the drawings.

Preferably the wooden legs 15 and 18 are provided with recesses to receive the angle plates 10 and 12, as clearly shown in Figs. 3, 4 and 9, thereby giving greater rigidity to the legs when secured to the uprights of the metal framework.

Additional rigidity is given to the chair legs by making the uprights 10, 12 of a length substantially a half of the length of said legs and connecting their lower ends by suitable braces.

The horizontal flanges of the side angle plate 19, the front angle plate 11, and rear angle plate 13, are provided with holes 24 to receive bolts 25 extending downwardly through these flanges from the wooden seat 26.

To give rigidity to the frame the ends 27, 28 of the flanges of the members 11, 13, 19 and 20 are turned over into contact with each other (see Fig. 10) and also with the inner faces of the vertical members 10 and 12.

These ends 27, 28 are then spot welded to the members 10 and 12 forming a very rigid frame to which the legs 18 and back frame 15, 16 may be secured.

The means for securing the legs 18 and back frame 15, 16 to the uprights 10 and 12 is shown more clearly in Figs. 8 and 9.

A bolt 29 is used having an angular head 30 fitted into a recess in the outer corner of each leg 18 and back member 15, 16.

This bolt extends diagonally across the leg 18 or back member 15, 16 and has a winged nut 31 secured thereto.

This nut may be adjusted to securely lock the members 15, 16 and 18 to the upright angle plates 10 and 12.

The cross bars 21 and 22 not only form braces to give ample rigidity to the frame but also serve as a support for the hat or clothing of the student occupying the chair.

The bolts 25 are provided with winged clamping nuts 32 by which the seat 26 may be secured to the rails 11, 13 and 19.

Set into the under face of the seat 26 are four metal bars 33 secured to said seat by screws 34.

The upper ends of the bolts 25 have heads 35 in recesses formed in the bars 33 to prevent the bolts 25 from turning.

The set-back of the bar 22 gives ample room for the legs.

When it is desired to ship the chair the nuts 32 are removed from the bolts 25 and then the seat 26 may be removed from the metal frame after which the nuts 32 are again threaded to said bolts.

By removing the nuts 31 from the bolts 29, the legs 18 and the back frame 15, 16 may be removed from the upright angle plates 10, 12.

When this has been done the disassembled parts may be packed in small space for shipment.

It is obvious the chair may again be assembled quickly and when assembled will be very firm and withstand very hard usage.

The corners of the upright angle plates 10, 12 are on the inside of the metal framework and when the legs 18, and back frame 15, 16 are secured to these uprights very little of these uprights are exposed to view.

The outer surfaces of the various angle plates may be finished in harmony with the wooden legs, seats, and back frame, thus giving the appearance of a chair made entirely of wood.

The bars 33 set into the seat 26 prevent said seat from splitting.

It is believed that the operation and many advantages of the invention will be understood without further description.

Having thus described my invention, I claim:

1. As a new article of manufacture, a chair provided with a rectangular metal framework having at the corners thereof elongated upright angular depressions, a chair leg disposed in each angular depression and secured to said framework, a seat secured to the top of said metal framework, side rails at the lower end of said framework, and cross bars between said side rails with their ends connected thereto.

2. As a new article of manufacture, a chair provided with a rectangular metal framework having at the corners thereof elongated upright angular depressions, a chair leg disposed in each angular depression and secured to said framework, a seat secured to the top of said metal framework, side rails at the lower end of said framework, and cross bars between said side rails with their ends connected thereto, the front cross bar being set back from the front of said framework and provided with a downwardly extending flange.

3. As a new article of manufacture, a chair provided with a rectangular metal framework having at the corners thereof upright angle plates, legs disposed between the flanges of the forward uprights and secured thereto, a back frame including a pair of legs disposed between the flanges of the rear uprights and secured thereto, rails interposed between the upper and lower ends of said uprights and welded thereto, and a seat secured to the top rails of said metal framework.

4. As a new article of manufacture, a rectangular metal framework for use in the manufacture of chairs having at the corners thereof upright angle plates with tie members between the lower ends thereof, said angle plates being adapted to having chair legs secured thereto between the flanges thereof.

5. As a new article of manufacture, a rectangular metal framework for use in the manufacture of chairs having at the corners thereof upright angle plates with tie members between the upper and lower ends thereof, said angle plates being adapted to have chair legs secured thereto between the flanges thereof.

6. As a new article of manufacture, a rectangular metal framework for use in the manufacture of chairs having at the corners thereof elongated upright angle plates with horizontal angle plates between the upper ends thereof and secured thereto, said upright angle plates being adapted to have chair legs secured thereto between the flanges thereof.

7. As a new article of manufacture, a rectangular metal framework for use in the manufacture of chairs having at the corners thereof upright angle plates with two side rails between the upper ends of the front and rear uprights, said angle plates being adapted to have chair legs secured thereto between the flanges thereof and the lower side rails having secured thereto cross members.

8. As a new article of manufacture, a rectangular metal framework for use in the manufacture of chairs having at the corners thereof upright angle plates with two side rails between the upper ends of the front and rear uprights, said angle plates being adapted to have chair legs secured thereto between the flanges thereof and the lower side rails having secured thereto cross members, the front cross member being set back from the front uprights and provided with a downwardly extending flange.

9. As a new article of manufacture, a chair provided with a rectangular metal framework having at the corners thereof upright angle plates and connecting top rails interposed between said uprights, a leg disposed between the flanges of each upright and secured thereto, a seat having recesses in the under face thereof, metal bars disposed in said recesses and secured to the seat, headed bolts extending downwardly from said bars through perforations in said top rails, and clamping nuts threaded to said bolts.

Signed by me at 294 Washington St., Boston, Mass., this 1st day of July, 1929.

WILLARD STUART ALLEN.