PATENT SPECIFICATION

DRAWINGS ATTACHED

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829,687

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COMPLETE SPECIFICATION

Improvements in or relating to Chairs

We, D. SEBEL & COMPANY LIMITED, of 177, West Street, Erith, Kent, a British Company, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

The present invention relates to non-collapsible chairs that can be stacked, and has for an object to provide an improved construction of stackable non-collapsible chair.

Broadly a stackable non-collapsible chair according to the invention comprises a framework supporting a seat and a back-rest, the said framework including a pair of X frames at each side of the chair and laterally spaced from the seat and the back-rest to permit vertical stacking, the lower ends of the X frames forming the front and rear legs respectively of the chair, the upper ends of the rear legs extending forwardly to support the seat of the chair and the upper ends of the front legs extending upwardly and rearwardly to provide a back-rest frame which supports the back-rest, and wherein the seat projects rearwardly of the back rest frame for connection with the back-rest at a location rearwardly of the back-rest frame.

In one construction of the invention the seat and the back-rest member are both made of sheet material, the back rest member and the seat tapering to the point where they are connected together to allow the legs of the chair to be stacked to pass between the seat and back-rest member and the back-rest frame.

In another embodiment the back rest is formed by a number of spaced members, for example rods or tubes, the lower ends of which are secured to the rear edge of the seat member and the upper ends of which are secured to the back rest frame.

The invention will now be described with reference to the accompanying drawings in which:—

[*Price 3s. 4d.*]

Figure 1 shows a chair constructed in accordance with the present invention in a perspective view;

Figure 2 shows a cross section of the chair shown in Figure 1;

Figure 3 shows a perspective view of another construction of chair in accordance with the present invention;

Figure 4 shows in side elevation a chair as shown in Figure 3 with a similar chair stacked upon it; and

Figure 5 shows a fragmentary view of a detail of construction of chair shown in Figures 3 and 4.

Referring to Figures 1 and 2 the framework is constructed of tubular metal and comprises an inverted U-shaped member 1 the lower ends of the legs of which form the front legs 2 of the chair and the closed upper end forms the back rest frame 3 which supports the back-rest member 4 of the chair. The said inverted U-shaped member slopes upwardly and rearwardly from the floor engaging ends of the legs thereof, and to each leg 2 of the said inverted U-shaped member there is secured a tubular member 5 in crossed relation therewith thereby to provide an X frame at each side of the chair. The connection of the said tubular member 5 to the leg 2 of the inverted U-shaped member 1 is positioned longitudinally thereof so that each said tubular member inclines rearwardly and downwardly from the point of connection 6 to provide a rear leg of the chair, and upwardly and forwardly from the point of connection to support the seat 7 of the chair at the forward upper end portion thereof.

The seat 7 is in the form of a metal pressing having a downwardly extending peripheral flanged edge 8 to which the upper ends of the tubular members are secured as by bolts 9 (or rivets for example), the said upper ends lying behind the edge flange 8 and thereby normally obscured from view. The seat 7 re-

duces in width towards the rear end thereof so that the rear end of the seat extends between the legs of the inverted U shaped member 1 in spaced relation therewith. The said rear end of the seat 7 is supported from the closed end 3 of the inverted U shaped member 1 by the back-rest member 4 in the form of a metal pressing which is secured to the flanged edge at the rear of the seat by screws or rivets 11 and inclines upwardly and rearwardly therefrom to be supported at its upper end by straps 12 secured around the closed end of the inverted U shaped member or by lugs extending inwardly from the said closed end. The back-rest 4 tapers towards its lower end to a width equal to the width of the rear end of the seat 7 and at its upper end is spaced from the closed end of the inverted U shaped member by means of the aforementioned straps 12.

The lower ends of the front and rear legs 2 and 5 are respectively curved forwardly and rearwardly so as to lie substantially along the floor or other supporting surface and the chair can be stacked with a chair of like construction by inserting the legs of one chair in the space between the seat and the inverted U shaped member at each side of the seat.

In order to provide for truly vertical stacking of the chairs one upon the other, it is a requirement that the back-rest slopes upwardly and rearwardly from the rear of the seat as hereinbefore described, and furthermore that the respective angles of slope of the components of the back-rest be such that they do not prevent the seat portions stacking closely together. Thus the thicker the component the greater the angle of slope. This also applies to the legs 2 and 5. Furthermore the legs when they cross must subtend equal angles to the surface upon which the chair rests.

In the construction of chair above described, this may be achieved by bending forwardly the depending flanged edge at the rear of the seat at an angle with respect to the surface of the seat so that when the lower portion of the backrest 4 is secured to the said flanged edge, the backrest slopes upwardly and rearwardly at an angle which meets the above mentioned requirements. Alternatively the backrest 4 may be creased transversely level with the seat surface and inclined backwardly at the required angle.

The invention is of course not limited to the above described construction. For example, the framework may be formed of other than tubular members, and the seat and backrest need not necessarily be metal stampings. They could be of moulded plastic construction for example, and the lower or floor engaging ends of the legs of the chair may be provided with rubber or like resilient ferrules.

An alternative construction of chair in accordance with the present invention is shown in Figures 3 to 5. In this construction the back-rest is formed by a plurality of separate members to give a railed effect.

Referring to the drawings a pair of inverted metal tubular members 13 and 14 serve as the framework, the inverted U shaped members being assembled so that their legs cross at each side of the chair the front legs 15 extending rearwardly and upwardly to form a back rest frame 16 for supporting the back rest members 17 and the rear legs 18 extending upwardly and forwardly to serve as the support for the front of the seat member 19. The inverted U member 14 serving as the rear legs 18 is disposed inside the inverted U member 13, forming the front legs 15 and at their intersection the members are connected rigidly as for example by welding. Conveniently to allow ease of stacking the inner legs 18 are bulged outwardly at the point of intersection 20 to allow a good clearance for the rear legs of the chairs stacked upon it.

The seat member 19 consists of a metal pressing the front end of which is supported upon the horizontal base 21 of the U member 14 forming the rear legs and conveniently secured thereto by depending lugs 22 on the underneath of the metal seat pan and which are apertured to take bolts or rivets (not shown) which extend into the metal tube of the inverted U member.

The rear of the seat pan is apertured to receive the lower turned ends 24 of a number of rods 17 which extend upwardly and are turned at their upper ends 25 to pass through apertures in the back rest frame 16. The apertures in the tubular back rest frame are so positioned ~~that the rods lie at a tangent~~ with respect to the tubular back rest frame.

The rods 17 are assembled in the back rest frame 16 by turning over their upper ends 25 at such an angle that when inserted into the tubular back rest frame member 16 and their lower ends 24 inserted into the seat pan member the upper end cannot leave the frame member 16. The lower ends 24 may be secured to the seat pan member by any convenient means as by swelling the ends after insertion through the apertures or by applying metal washers 26 which automatically lock upon the rod when applied.

In order for the chair to stack vertically with chairs of a like type the slopes of the back rest frame and the rods or other back rest members must be such that the chairs can stack closely together and the angles of the legs when they cross must subtend equal angles to the surface upon which the chairs stack.

Both embodiments described above show a feature of the invention which is that by using a back-rest member which is thinner than the back-rest frame which has to be of robust construction, it is possible for the seat to be extended rearwardly of the back-rest frame to give a deeper seating area and for the back-

rest member to be at a steeper and a more natural sitting angle since being of thinner material it can be at a steeper angle without impeding the vertical stacking.

WHAT WE CLAIM IS:—

1. A stackable non-collapsible chair, comprising a framework supporting a seat and backrest the framework including a pair of X frames at each side of the chair and laterally spaced from the seat and the back rest to permit vertical stacking the lower ends of the X frames forming the front and rear legs respectively of the chair the upper ends of the rear legs extending forwardly to support the seat of the chair and the upper ends of the front legs extending upwardly and rearwardly to provide a back rest frame which supports the back rest, and wherein the seat projects rearwardly of the back rest frame for connection with the back-rest at a location rearwardly of the back rest frame.

2. A chair as claimed in claim 1 in which the seat and back rest are both made of sheet material the back rest and the seat tapering to the line of contact where they are connected together to allow the legs of the chair to be stacked above to pass between the seat and back rest and the back rest frame.

3. A chair as claimed in claim 1, in which the seat comprises a metal pressing having a downwardly extending flange and the back rest is formed from a number of spaced members the lower ends of which are secured to the depending flange at the rear of the seat and the upper ends of which are secured to the back rest frame.

4. A chair as claimed in any of claims 1 to 3 in which the framework of the chair comprises a pair of inverted U shaped tubular members rigidly connected at their intersection the U member forming the rear legs passing between the legs of the U member forming the front legs the first mentioned U member having its base straightened to support the forward end of the seat and the second mentioned U member extending upwardly and rearwardly to serve as the back rest frame.

5. A chair as claimed in any of claims 1 to 3 in which the front legs are formed from an inverted U member the upper end of which extends upwardly and rearwardly to act as the back rest frame and the rear legs are formed by separate members which extend beyond the point of intersection with the front legs to engage the seat at each side and secured thereto by a fixing element.

6. A chair as claimed in any of the preceding claims 1 to 5 in which the back rest is made of thinner material than the back rest frame and makes a smaller angle to the vertical than the back rest frame.

7. A chair as claimed in claim 3 in which the back rest comprises a plurality of rods the lower ends of which are secured to the rear of the seat and the upper ends of which are secured to the back rest frame.

8. A chair as claimed in claim 7 in which the rods are turned forwardly at their lower ends and rearwardly at their upper ends in relation to the chair the lower ends being inserted through apertures in a depending flange at the rear of the seat and secured therein and the upper ends being inserted through apertures in the back rest frame at such an angle that after the lower ends have been inserted into the seat flange the upper ends cannot leave the back rest frame.

9. A chair as claimed in claim 8 in which the back rest frame is of tubular material the apertures in the wall of the tube being so positioned that when the rods are inserted each rod lies flush with the forward face of the tubular back rest frame.

10. A chair as claimed in any of the preceding claims 8 to 10 in which the rods are replaced by tubular members.

11. A stackable non-collapsible chair substantially as described with reference to Figures 1 and 2 of the accompanying drawings.

12. A stackable non-collapsible chair substantially as described with reference to Figures 2 to 5 of the accompanying drawings.

For the Applicants:
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PROVISIONAL SPECIFICATION
No. 25477 A.D. 1956.

Improvements in or relating to Chairs

We, D. SEBEL & COMPANY LIMITED, a British Company, of 177 West Street, Erith, Kent, do hereby declare this invention to be described in the following statement:—

The present invention relates to chairs more particularly non-collapsible chairs that can be stacked, and has for an object to provide an improved construction of stackable non-collapsible chair.

Broadly a stackable non-collapsible chair according to the invention comprises a framework supporting a seat and a back-rest in such manner to permit the chair to be stacked with a chair of like construction, and in which the seat extends substantially horizontally and the back-rest inclines upwardly therefrom at an angle such as to permit vertical stacking of the chairs.

Conveniently the said framework comprises a pair of X frames at each side of the chair and laterally spaced from the seat and the back-rest to permit stacking, the lower ends

rest member to be at a steeper and a more natural sitting angle since being of thinner material it can be at a steeper angle without impeding the vertical stacking.

WHAT WE CLAIM IS:—

1. A stackable non-collapsible chair, comprising a framework supporting a seat and backrest the framework including a pair of X frames at each side of the chair and laterally spaced from the seat and the back rest to permit vertical stacking the lower ends of the X frames forming the front and rear legs respectively of the chair the upper ends of the rear legs extending forwardly to support the seat of the chair and the upper ends of the front legs extending upwardly and rearwardly to provide a back rest frame which supports the back rest, and wherein the seat projects rearwardly of the back rest frame for connection with the back-rest at a location rearwardly of the back rest frame.

2. A chair as claimed in claim 1 in which the seat and back rest are both made of sheet material the back rest and the seat tapering to the line of contact where they are connected together to allow the legs of the chair to be stacked above to pass between the seat and back rest and the back rest frame.

3. A chair as claimed in claim 1, in which the seat comprises a metal pressing having a downwardly extending flange and the back rest is formed from a number of spaced members the lower ends of which are secured to the depending flange at the rear of the seat and the upper ends of which are secured to the back rest frame.

4. A chair as claimed in any of claims 1 to 3 in which the framework of the chair comprises a pair of inverted U shaped tubular members rigidly connected at their intersection the U member forming the rear legs passing between the legs of the U member forming the front legs the first mentioned U member having its base straightened to support the forward end of the seat and the second mentioned U member extending upwardly and rearwardly to serve as the back rest frame.

5. A chair as claimed in any of claims 1 to 3 in which the front legs are formed from an inverted U member the upper end of which extends upwardly and rearwardly to act as the back rest frame and the rear legs are formed by separate members which extend beyond the point of intersection with the front legs to engage the seat at each side and secured thereto by a fixing element.

6. A chair as claimed in any of the preceding claims 1 to 5 in which the back rest is made of thinner material than the back rest frame and makes a smaller angle to the vertical than the back rest frame.

7. A chair as claimed in claim 3 in which the back rest comprises a plurality of rods the lower ends of which are secured to the rear of the seat and the upper ends of which are secured to the back rest frame.

8. A chair as claimed in claim 7 in which the rods are turned forwardly at their lower ends and rearwardly at their upper ends in relation to the chair the lower ends being inserted through apertures in a depending flange at the rear of the seat and secured therein and the upper ends being inserted through apertures in the back rest frame at such an angle that after the lower ends have been inserted into the seat flange the upper ends cannot leave the back rest frame.

9. A chair as claimed in claim 8 in which the back rest frame is of tubular material the apertures in the wall of the tube being so positioned that when the rods are inserted each rod lies flush with the forward face of the tubular back rest frame.

10. A chair as claimed in any of the preceding claims 8 to 10 in which the rods are replaced by tubular members.

11. A stackable non-collapsible chair substantially as described with reference to Figures 1 and 2 of the accompanying drawings.

12. A stackable non-collapsible chair substantially as described with reference to Figures 2 to 5 of the accompanying drawings.

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PROVISIONAL SPECIFICATION
No. 25477 A.D. 1956.

Improvements in or relating to Chairs

We, D. SEBEL & COMPANY LIMITED, a British Company, of 177 West Street, Erith, Kent, do hereby declare this invention to be described in the following statement:—

The present invention relates to chairs more particularly non-collapsible chairs that can be stacked, and has for an object to provide an improved construction of stackable non-collapsible chair.

Broadly a stackable non-collapsible chair according to the invention comprises a framework supporting a seat and a back-rest in such manner to permit the chair to be stacked with a chair of like construction, and in which the seat extends substantially horizontally and the back-rest inclines upwardly therefrom at an angle such as to permit vertical stacking of the chairs.

Conveniently the said framework comprises a pair of X frames at each side of the chair and laterally spaced from the seat and the back-rest to permit stacking, the lower ends

* C L M S *

of the X frames forming the front and rear legs respectively of the chair, the upper ends of the rear legs extending forwardly to support the seat of the chair and the upper ends of the front legs extending upwardly and rearwardly to support the back-rest.

According to one embodiment of the invention the framework is constructed of tubular metal and comprises an inverted U-shaped member the lower ends of the legs of which form the front legs of the chair and the closed upper end of which supports the back-rest of the chair. The said inverted U-shaped member slopes upwardly and rearwardly from the floor engaging ends of the legs thereof, and to each leg of the said inverted U-shaped member there is secured a tubular member in crossed relation therewith thereby to provide an X frame at each side of the chair. The connection of the said tubular member to the leg of the inverted U-shaped member is positioned longitudinally thereof so that each said tubular member inclines rearwardly and downwardly from the point of connection to provide a rear leg of the chair, and upwardly and forwardly from the point of connection to support the seat of the chair at the forward end portion thereof.

The seat is in the form of a metal pressing having a downwardly extending peripheral flanged edge to which the upper ends of the tubular members are secured as by bolts or rivets for example, the said upper ends lying behind the edge flange and thereby normally obscured from view. The seat reduces in width towards the rear end thereof so that the rear end of the seat extends between the legs of the inverted U shaped member in spaced relation therewith. The said rear end of the seat is supported from the closed end of the inverted U shaped member by the back-rest in the form of a metal pressing which is secured to the flanged edge at the rear of the seat by screws or rivets and inclines upwardly and rearwardly therefrom to be supported at its upper end by straps secured around the closed end of the inverted U shaped member or by lugs extending inwardly from the said closed end. The back-rest ~~type~~ tapers towards its lower end to a width equal to the width of the rear end of the seat and at its upper end is spaced from the closed end of the inverted U shaped member by means of the aforementioned straps.

The lower ends of the front and rear legs are respectively curved forwardly and rearwardly so as to lie substantially along the floor or other supporting surface and the chair can be stacked with a chair of like construction by inserting the legs of one chair in the space between the seat and the inverted U shaped member at each side of the seat.

In order to provide for truly vertical stacking of the chairs one upon the other, it is a requirement that the back-rest slope upwardly and rearwardly from the rear of the seat as hereinbefore described, and furthermore that the slope of the backrest be such that the amount of rearward slope of the backrest over the thickness of the seat is equal to or greater than the thickness of the backrest. In the construction of chair above described, this is achieved by bending forwardly the depending flanged edge at the rear of the seat at an angle with respect to the surface of the seat so that when the lower portion of the backrest is secured to the said flanged edge, the backrest slopes upwardly and rearwardly at an angle which meets the above mentioned requirements.

The invention is of course not limited to the above described construction. For example the framework may be formed of other than tubular members, ~~and the seat and back-rest~~ need not necessarily be metal stampings. They could be of moulded plastic construction for example, and the lower or floor engaging ends of the legs of the chair may be provided with rubber or like resilient ferrules.

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PROVISIONAL SPECIFICATION
No. 25490 A.D. 1957.

Furniture

We, D. SEBEL & COMPANY LIMITED, of 177 West Street, Erith, Kent, a British Company, do hereby declare this invention to be described in the following statement:—

The present invention relates to chairs which can be stacked.

According to the present invention a stackable non-collapsible chair comprises a framework supporting a seat and a back rest in such a manner to permit the chair to be stacked with a chair of like construction and in which the seat extends substantially horizontally and the back rest inclined upwardly therefrom at an angle such as to permit the vertical stacking of the chair, the said back rest comprising a plurality of independent members extending from the seat portion upwardly to the framework of the chair to form the support for the rear of the seat portion as well as to serve as the back rest.

Conveniently the back rest may be formed by a number of rods or tubular members which are secured to the seat portion in spaced relationship and which extend upwardly either parallel to one another or converging or diverging to be secured at their upper ends to

the framework of the chair.

According to one embodiment of the invention a pair of inverted metal tubular members serve as the framework, the inverted U shaped members being assembled so that their legs cross at each side of the chair the front legs extending rearwardly and upwardly to form a back rest frame for supporting the back rest members and the rear legs extending upwardly and forwardly to serve as the support for the front of the seat member. The inverted U member serving as the rear legs is disposed inside the inverted U member forming the front legs and at their intersection the members are connected rigidly as for example by welding. Conveniently to allow ease of stacking the inner legs are bulged outwardly at the point of intersection to allow a good clearance for the rear legs of the chairs stacked upon it.

The seat member consists of a metal pressing the front end of which is supported upon the horizontal base of the U member forming the rear legs and conveniently secured thereto by depending lugs on the underneath of the metal seat pan and which are apertured to take bolts or rivets which extend into the metal tube of the inverted U member.

The rear of the seat pan is apertured to receive the lower turned ends of a number of rods which extend upwardly and are turned at their upper ends to pass through apertures in the back rest frame. The apertures in the tubular back rest frame are so positioned that the rods lie at a tangent with respect to the tubular back rest frame.

The rods are assembled in the back rest frame by turning over their upper ends at such an angle that when inserted into the tubular back rest frame member and their lower ends inserted into the seat pan member the upper end cannot leave the frame member. The lower ends may be secured to the seat pan member by any convenient means as by swelling the ends after insertion through the apertures or by applying metal washers which automatically lock upon the rod when applied.

In order for the chair to stack vertically with chairs of a like type the slopes of the back rest frame, and the rods or other back rest members must be such that the chairs can stack closely together and the angles of the legs when they cross must subtend equal angles to the surface upon which the chairs stack.

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