June 19, 1928.

1,674,220

C. F. PERCIVAL

ARTICLE OF FURNITURE

Filed Jan. 19, 1923

2 Sheets-Sheet 1

Fig. 1

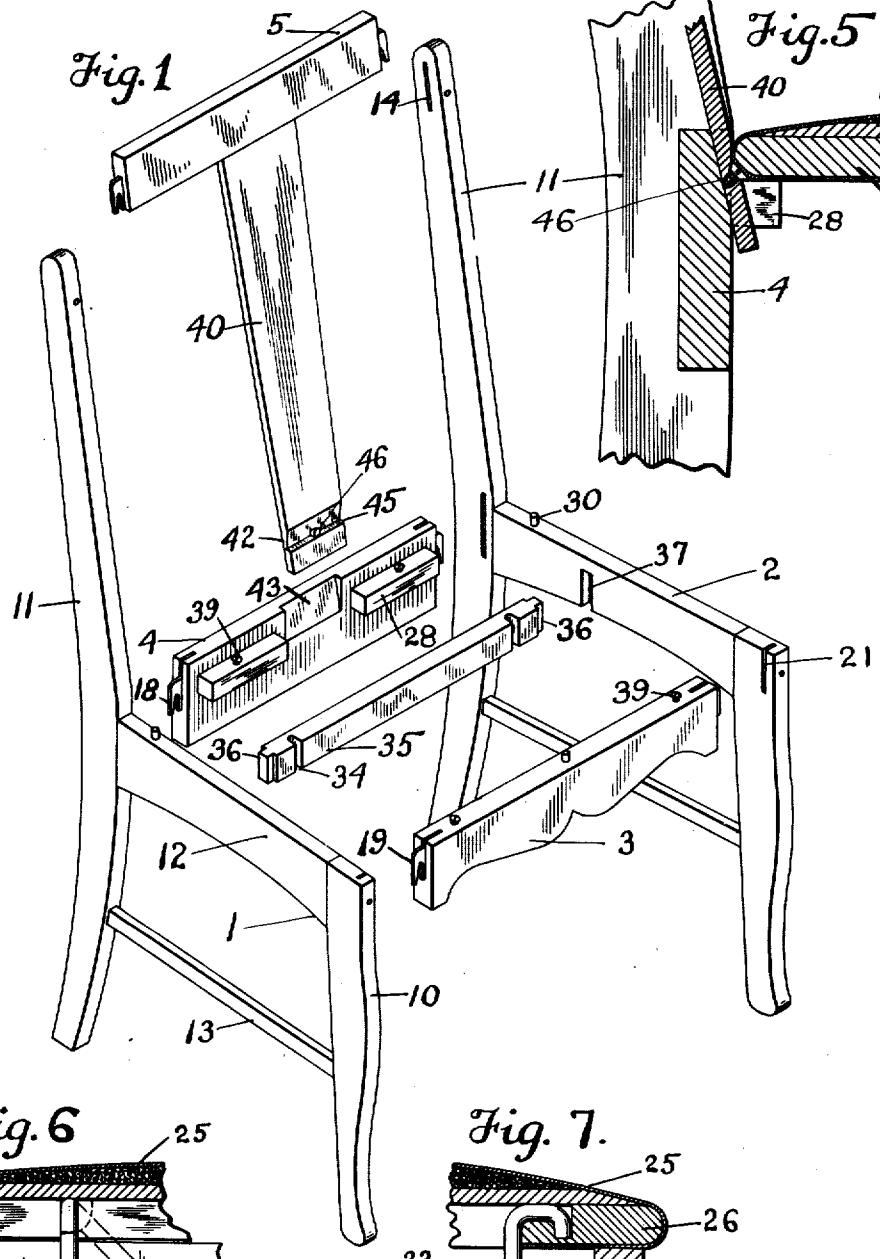


Fig. 5

Fig. 6

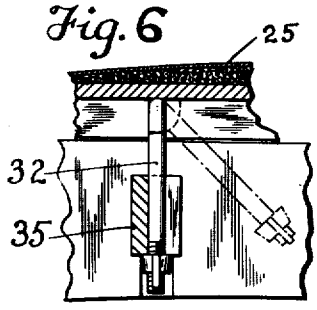
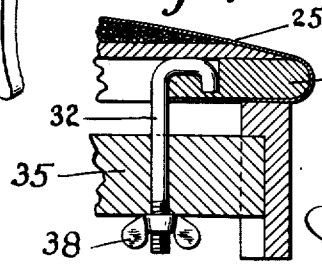


Fig. 7.



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2 Sheets-Sheet 2

Fig. 4

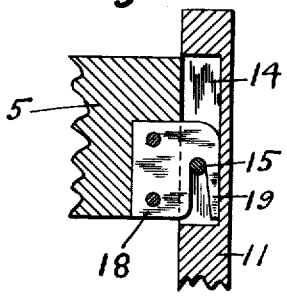
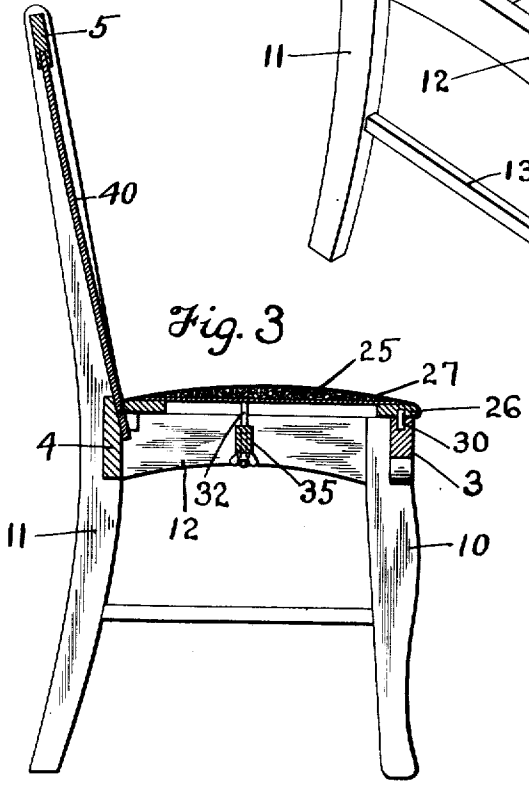


Fig. 2

Fig. 3



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UNITED STATES PATENT OFFICE.

CHARLES F. PERCIVAL, OF SPRINGFIELD, MASSACHUSETTS, ASSIGNOR, BY DIRECT AND MESNE ASSIGNMENTS, TO ROYALTON MANUFACTURING COMPANY, INC., OF SPRINGFIELD, MASSACHUSETTS, A CORPORATION OF MASSACHUSETTS.

ARTICLE OF FURNITURE.

Application filed January 19, 1923. Serial No. 613,694.

My invention relates to furniture and more particularly to articles of furniture capable of being transported in a knocked down condition and readily assembled without requiring the services of a skilled wood working artisan.

It has heretofore been the custom for the makers of furniture to assemble the article completely at the manufacturing plant and then ship it in its final condition to the distributing house. Owing to its bulkiness as compared with its weight, such furniture is classified in the freight schedules at a rate largely in excess of the normal freight rates, so that the expense of shipment forms a large portion of the initial cost of the article. In this field, competition is very keen and a reduction in freight rates may mean a decided commercial advantage. As a further expense in the furniture business, the rental value of storage space in urban ware rooms is high, hence ways of economizing space are eagerly sought. Also, from the time the furniture leaves the factory until it finally reaches the purchaser's home, its finished surface is in danger of being marred or otherwise injured due to the number of handlings to which it is necessarily subjected. It is therefore highly desirable that furniture be shipped in a knocked down condition and if possible remain unassembled until it has been sold at retail and has finally reached the home. In this form it may be securely wrapped and packed in shipping cases and thus fully protected from injury, and it may be easily handled by truckmen and at a minimum of expense in delivery costs.

Various types of knocked down furniture have heretofore been proposed but they have not met with large commercial success due among other causes to various defects in construction, inconvenience in handling and assembling, and particularly to the inherent danger that the detachable parts may become loosened at their joints and the article become rickety, pulled apart or broken by hard usage.

It is accordingly the prime object of my invention to overcome such difficulties and to provide an article of furniture which may be shipped in a knocked down condition and readily assembled by unskilled workers with the minimum expenditure of effort and time and which although made up of detachable parts will be rigid and durable and its joints cannot become loosened inadvertently.

A further object is to provide in an article of this type means for adjustably clamping the various detachable parts together so that conditions of shrinkage and warpage may be overcome and the joints of the article may be easily tightened if they should become loosened as the result of severe usage.

Another object is to make an article of furniture having a top, and particularly a chair, of detachable parts in which the top or chair seat may be correctly positioned and removably clamped in such relation to the other detachable parts of the article as to hold them rigidly in place.

A still further object is to provide such an article of furniture with adjustable devices adapted to support and hold the furniture top, such as a chair seat, on the standards and make it unnecessary to build the furniture parts to an exact size and assemble them accurately, but permit the article to be quickly and roughly constructed and then the parts adjusted to a correct position for maintaining rigidity in the joints.

With these and other objects as will be apparent in the following disclosure, my invention resides in the combination of parts set forth in the specification and covered by the claims appended hereto.

Referring to the drawings illustrating one embodiment of my invention, in which like reference numerals indicate like parts:—

Fig. 1 is a perspective view of the various parts of a chair except the seat, which are separated from one another but arranged in the proper positions for assembling;

Fig. 2 is a perspective view of the chair after the parts have been assembled;

Fig. 3 is a vertical central section of the chair;

Fig. 4 is a fragmentary sectional detail showing one of the connecting joints on an enlarged scale;

Fig. 5 is a similar fragmentary sectional detail showing the relation of the seat, back rest and supporting cross rail; and

Figs. 6 and 7 are fragmentary sectional details showing the manner of clamping the seat to the chair standards.

In accordance with my invention, I propose to make knock down articles of furni-

ture of separable pieces of wood or other material which may be packed flat in a very small storage space and quickly assembled and clamped together as a rigid and substantial structure. Since the bulkier pieces of furniture, such as tables, chairs, bureaus, etc., comprise standards and a horizontal top which normally occupy a considerable space, I propose to make the tops separable from but capable of being securely clamped to their supports, and to form the supports of opposed and separable standards adapted to be connected in suitable spaced relation by releasable joining devices. The standards are preferably made of two legs integrally joined by a connecting rail, although these parts may be likewise made detachable and assembled in a rigid relationship by means of suitable joining devices. Two standards thus made are spaced apart and rigidly connected by detachable cross rails which combine therewith to form a supporting frame for the top piece of the furniture. The top is mounted upon this frame and preferably so adjustably clamped to the standards that the cross rails are held rigidly in position.

Referring to the drawings, I have there illustrated one embodiment of my invention which comprises a knock-down chair having standards 1 and 2, connecting by cross rails 3, 4 and 5 to form a chair body upon which the seat 6 is detachably fastened. In my preferred form each of the standards comprises a front leg 10, a back post 11 and a connecting rail 12 suitably joined together by methods well known in the woodworking art. For the sake of strength and rigidity a further cross member 13 may be employed to join the leg 10 and the post 11. The cross rails 3 and 4 are so arranged relative to the connecting rails 12 of the standards as to form a seat frame. The top cross rail 5 likewise connects the upper ends of the posts 11 and forms a back support in accordance with the usual chair construction.

In order to form a rigid but detachable connection between the cross rails and the standards, I may make use of various constructions but prefer to employ a joining device which is releasable upwardly and which when forced down in position will form a rigid connection. As shown in Fig. 4 which illustrates the manner of connecting the top cross rails with the post 11, the latter is provided with a slot 14 and a pin 15 is driven transversely through the central portion of the slot to provide a locking member. Suitably pinned in a groove cut into the cross rail 5 is a metal piece 18 which has an outwardly and downwardly projecting lug 19. This lug, as illustrated, is slightly tapered, its inner face standing at a slight angle to a vertical line so as to provide a cam or wedging action as will be understood. The pin 15 is so located in the slot and the cam or wedge face of the lug 19 so formed that when the lug 19 is inserted in the upper part of the slot 14 and then forced downwardly, the chair parts will be drawn rigidly together by the wedging action of the tapered lug 19 on the pin and the cross bar 5 will be held firmly against the upright post 11. Similar connecting devices may be employed to hold the cross rails 3 and 4 in place. For convenience in assembling, the slots 21 in the legs 10 are made open at their upper ends so that the cross rail 3 may be easily put in position after the members 4 and 5 have been properly located.

It will be understood that so far as now described the standards and cross rails may serve as a supporting frame for the top of a bench, table, bureau or the like, providing the parts are properly shaped and proportioned according to the intended use of the article. Since there is a danger of the wedging joints becoming loosened, I preferably utilize the top to maintain them rigid and immovable. This is best accomplished by having the cross rails upwardly releasable as above described, and so locating the top thereon that the rail joints cannot become loosened without moving the top. If the weight of the top is insufficient to maintain the various pieces securely in place, I provide a clamping device which holds the top down, and I preferably provide adjustments which permit one to get the right degree of clamping pressure.

Referring particularly to the drawings, the chair seat 25, which may be made of suitable design and construction as is well known in this art, may comprises a wooden rectangular form 26 having a seat of upholstered material 27 supported thereby. This seat is supported directly on the cross rails 3 and 4 in order to hold them down in position. As a matter of convenience in manufacture I support the rear of the seat on two wooden blocks 28 fastened to the inner side of the cross rail 4 with their upper surfaces substantially in the same plane as the upper surface of cross rail 3.

Since the weight of a chair seat would ordinarily be insufficient to hold the chair structure together under severe usage, I provide a clamping device, which may comprise suitable constructions involving cams, screws and the like, adapted to secure the seat to the chair standards. As a simplified construction I have shown screw threaded bolts 32 attached to the chair seat and adapted to be locked to the chair standards. These bolts as shown in Figs. 6 and 7 may have their upper ends formed U-shaped and engaging a slotted portion cut in one of the boards 26, which are inserted in place be-

fore the chair upholstery is added. This construction permits the bolts to swing up against the under side of the seat for packing in a small compass. The lower end of each bolt is adapted to swing downwardly into a slot 34 formed in a cross member 35 which has its ends fastened to the side members 12 of the standards.

As a simple means for fastening the bar to the side rails 12, the bar may have its ends 36 dovetailed and fitted in the similar dovetailed grooves 37 cut only part way through the rails 12, so that upward movement of the bar is limited. The wing nut 38 is adapted to engage the sides of the slot 34 and be adjustably tightened to draw the chair seat down firmly on its supporting rails 3 and 4. While the seat supports, comprising the cross rail 3 and the blocks 28, may be made slightly higher than the side members 12, I preferably, as illustrated in the drawings, provide screws or other adjustable devices 39 which may be adjusted in height as found desirable, thus making it unnecessary to form the chair parts with any degree of precision, but leaving it to the adjustment of these screws to properly position the seat and hold the various detachable joints rigidly together. These vertically adjustable devices on the supporting frame serve to provide firm contact of the top piece of the furniture with the supporting members at each intended point of support, in spite of any inequality in the size or shape of the various parts. I have illustrated one of the clamping bolts 32 at each side of the seat but it will be clear that a single device is sufficient or that various other constructions may be employed for this purpose.

In order to fasten a set of spindles or a single back rest to the chair, I may utilize the simplified construction illustrated. As shown, the back rest 40 is a single member fastened rigidly to the upper cross bar 5 by suitable mortise and tenon joints and depends vertically with its lower end 42 freely suspended in a position in front of the back cross rail 4. Since a chair back normally slopes rearwardly as shown in the drawings, I may cut out the center portion 43 of the cross rail 4 on a bevel to form a slot to hold the back rest. As shown particularly in Fig. 5, the back rest 40 is prevented from lateral movement by the chair seat 25, these parts being of such size and shape that when the seat 25 is in position it holds the back rest 40 firmly against the rail 4.

As a further means for providing rigidity in the chair construction I prefer to utilize the seat clamping device to hold the back rail 5 down in position. To this end I provide the lower end 42 of the back rest with a shoulder, or other means upon which the seat may rest so that when the seat is clamped down the member 40 cannot move upwardly. As a manufacturing expedient, I prefer to form a groove 45 in the back rest and place a screw 46 therein to serve as a vertically adjustable shoulder so that the heads of the screws 39 and of the screw 46 may be positioned in substantially the same plane, whereby clamping the seat thereagainst will draw all of the chair parts firmly into position and form a rigid structure.

In order to assemble this chair, the standards 1 and 2 are held in a vertical position and the cross rails 3, 4 and 5 inserted in place in the obvious manner. Then the ends of the cross bar 35 are placed in the slots 37 and the chair seat 25 is located on the pins 30, the screws 39 and 46 having been previously adjusted for height, after which the clamps 32 are swung down into engagement with the cross bar 35 and the nuts 38 tightened until the parts are held rigidly together. Any play in the chair parts may be quickly adjusted by manipulation of screws 39 and 46 and tightening the nut 38.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:—

1. An article of furniture comprising two separable, opposed standards, each having legs joined with a connecting rail, detachable cross rails disposed between said standards and forming therewith a frame, upwardly releasable joining devices rigidly connecting said rails and standards together, a top resting on the frame and an adjustable clamping device detachably fastening said top to said frame which urges the joining devices together and prevents upward movement thereof.

2. A knock-down chair comprising two opposed standards, each having a front leg, a back post and a connecting rail rigidly joined together, separable cross rails cooperating with said connecting rails to form a seat frame, a chair seat resting on said frame, upwardly releasable devices connecting the cross rails and standards together, a removable back rest detachably secured to said back posts and bearing against the seat at its lower end, and an adjustable clamping device securing said seat to the standards, said parts being so constructed and arranged that the back rest and the frame are held rigidly together by the seat clamped to the standards.

3. A chair comprising a seat frame, front legs and back posts secured together, a cross member secured to the upper ends of said posts, a back rest attached to said cross member and depending freely to a position between the seat and seat frame, a chair seat on said frame and arranged to hold the back rest in position, and means for clamping said seat on the frame.

4. A chair comprising separable opposed

standards, each having a leg and a back post secured together, detachable cross rails cooperating with the standards to form a seat frame, a chair seat thereon, a cross member detachably secured to the upper ends of said posts, a vertical back rest attached to said cross member and having its lower end between and engaging said frame and seat, and means for detachably clamping said seat on the frame which secures the frame and back rest rigidly in position.

5. A knock-down chair comprising front legs, back posts, and rails connected together and forming a seat frame, a back member detachably secured to and upwardly releasable from the upper ends of said posts, a vertical back rest connected to said member and depending to a position adjacent to the seat frame, a shoulder on said back rest and a seat secured on the frame which rests on said shoulder and holds said back rest rigidly in position.

6. An article of furniture comprising opposed, separable standards, cross rails detachably connecting said standards, a top, vertically adjustable devices on said rails supporting said top and means to clamp the top on said devices and hold the rails rigidly connected to said standards.

7. A knock-down chair comprising a seat frame, front legs and back posts supporting the frame, an upwardly releasable cross member secured to the upper ends of said posts, a back rest depending from said member, a vertically adjustable device on the lower end of the back rest, a chair seat engaging said device and means to clamp the seat on the frame and prevent upward movement of the back rest.

8. A knock-down chair comprising opposed, separable standards having front legs and back posts, upwardly releasable cross rails connecting said standards, an upwardly releasable cross member connecting the tops of the posts, a back rest vertically depending therefrom, vertically adjustable devices on the lower end of the back rest and the cross rails, a seat resting on said devices and means to clamp the seat on the standard and hold said cross rails and member rigidly in position.

9. A knock down chair comprising separable opposed standards having connecting rails, cross rails forming therewith a seat frame, releasable devices connecting the rails together and permitting upward movement of the cross rails relative to the standards, a back connected to the standards, a seat resting on the cross rails, and an adjustable clamping device mounted on a standard and connected with the seat to clamp it down in place and urge the rail connecting devices into tighter relationship.

Signed at Springfield, Massachusetts, this 23rd day of December, 1922.

CHARLES F. PERCIVAL.

CERTIFICATE OF CORRECTION.

Patent No. 1,674,220. **Granted June 19, 1928, to**

CHARLES F. PERCIVAL.

It is hereby certified that error appears in the printed specification of the above numbered patent requiring correction as follows: Page 2, line 106, for the word "comprises" read "comprise"; same page, after line 116, insert the sentence "One simple means of locating the seat on the chair frame and holding it from lateral movement comprises pins 30 adapted to fit into holes bored in the underside of the boards which make up the form 26."; and that the said Letters Patent should be read with these corrections therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 31st day of July, A. D. 1928.

(Seal)

M. J. Moore,
Acting Commissioner of Patents.

standards, each having a leg and a back post secured together, detachable cross rails cooperating with the standards to form a seat frame, a chair seat thereon, a cross member detachably secured to the upper ends of said posts, a vertical back rest attached to said cross member and having its lower end between and engaging said frame and seat, and means for detachably clamping said seat on the frame which secures the frame and back rest rigidly in position.

5. A knock-down chair comprising front legs, back posts, and rails connected together and forming a seat frame, a back member detachably secured to and upwardly releasable from the upper ends of said posts, a vertical back rest connected to said member and depending to a position adjacent to the seat frame, a shoulder on said back rest and a seat secured on the frame which rests on said shoulder and holds said back rest rigidly in position.

6. An article of furniture comprising opposed, separable standards, cross rails detachably connecting said standards, a top, vertically adjustable devices on said rails supporting said top and means to clamp the top on said devices and hold the rails rigidly connected to said standards.

7. A knock-down chair comprising a seat frame, front legs and back posts supporting the frame, an upwardly releasable cross member secured to the upper ends of said posts, a back rest depending from said member, a vertically adjustable device on the lower end of the back rest, a chair seat engaging said device and means to clamp the seat on the frame and prevent upward movement of the back rest.

8. A knock-down chair comprising opposed, separable standards having front legs and back posts, upwardly releasable cross rails connecting said standards, an upwardly releasable cross member connecting the tops of the posts, a back rest vertically depending therefrom, vertically adjustable devices on the lower end of the back rest and the cross rails, a seat resting on said devices and means to clamp the seat on the standard and hold said cross rails and member rigidly in position.

9. A knock down chair comprising separable opposed standards having connecting rails, cross rails forming therewith a seat frame, releasable devices connecting the rails together and permitting upward movement of the cross rails relative to the standards, a back connected to the standards, a seat resting on the cross rails, and an adjustable clamping device mounted on a standard and connected with the seat to clamp it down in place and urge the rail connecting devices into tighter relationship.

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