J. A. WILKINSON.

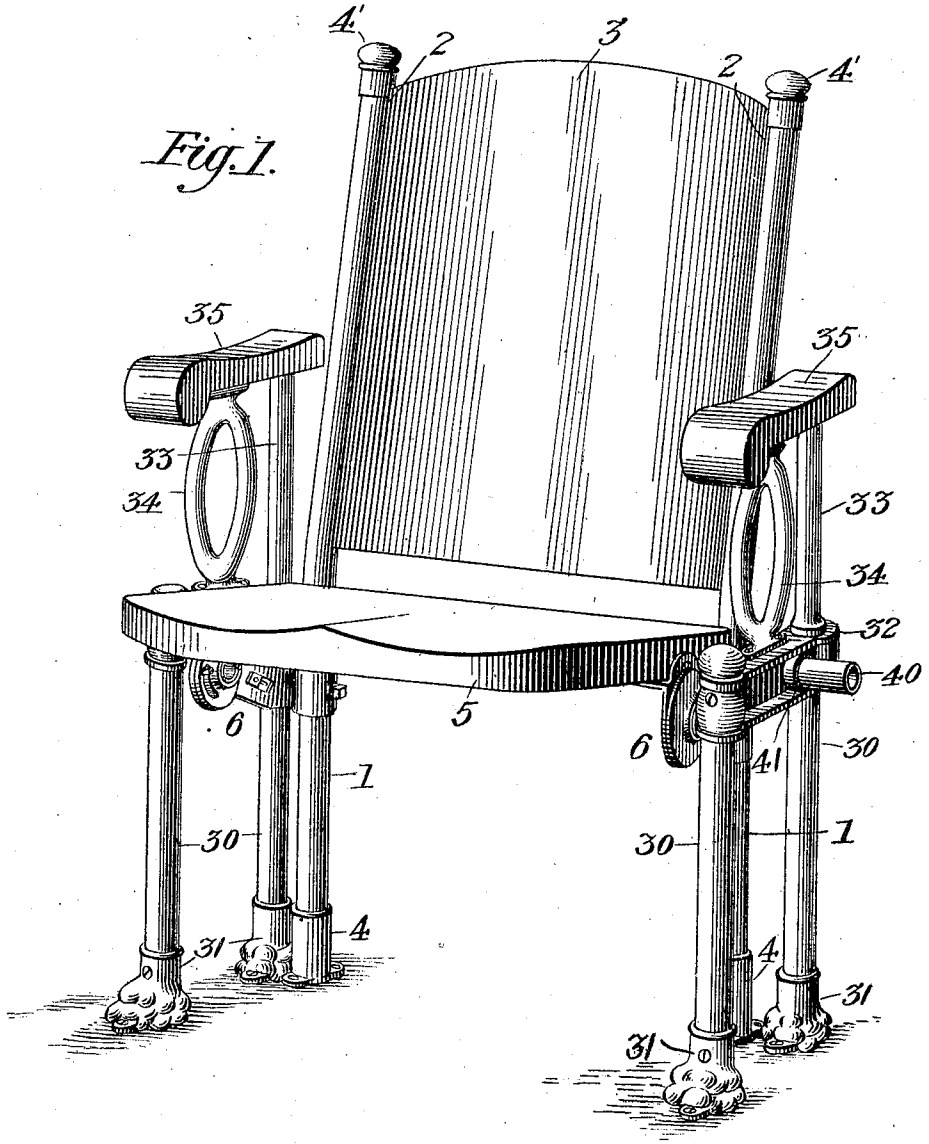
CHAIR.

APPLICATION FILED MAY 12, 1904. RENEWED FEB. 20, 1909.

972,487. **Patented Oct. 11, 1910.**

4 SHEETS—SHEET 1.

Fig. 1.



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4 SHEETS—SHEET 2.

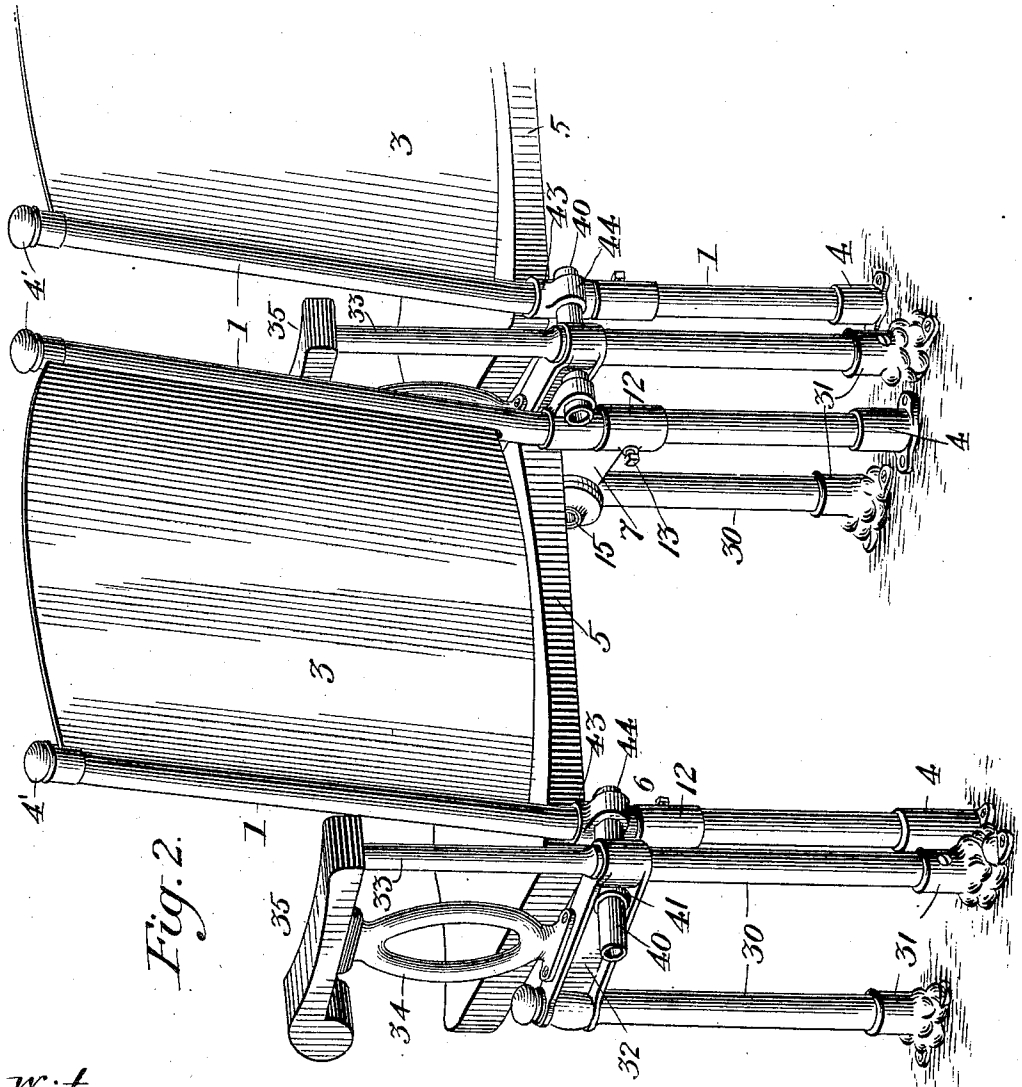

Fig. 2.

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4 SHEETS—SHEET 3.

Fig. 5.

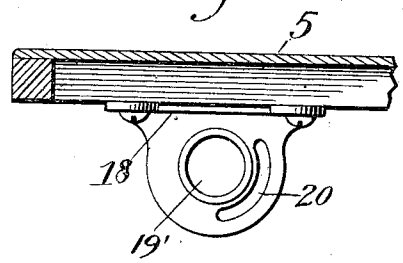


Fig. 3.

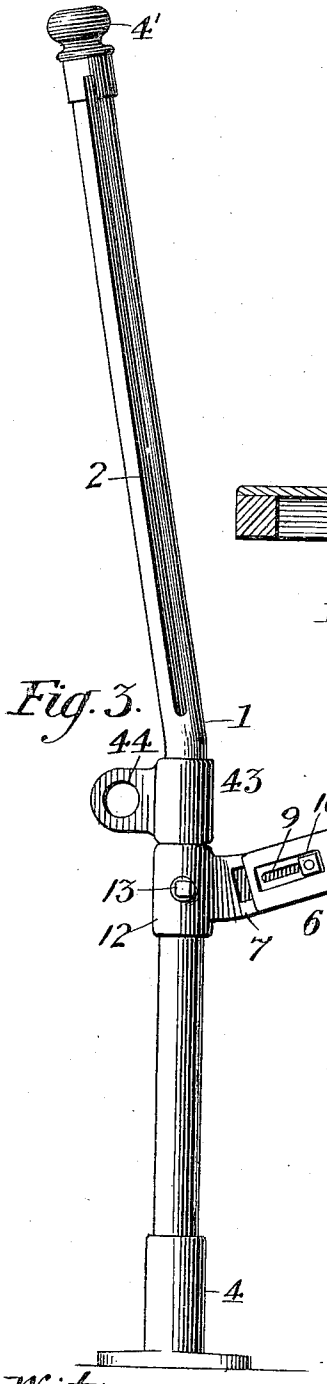


Fig. 4.

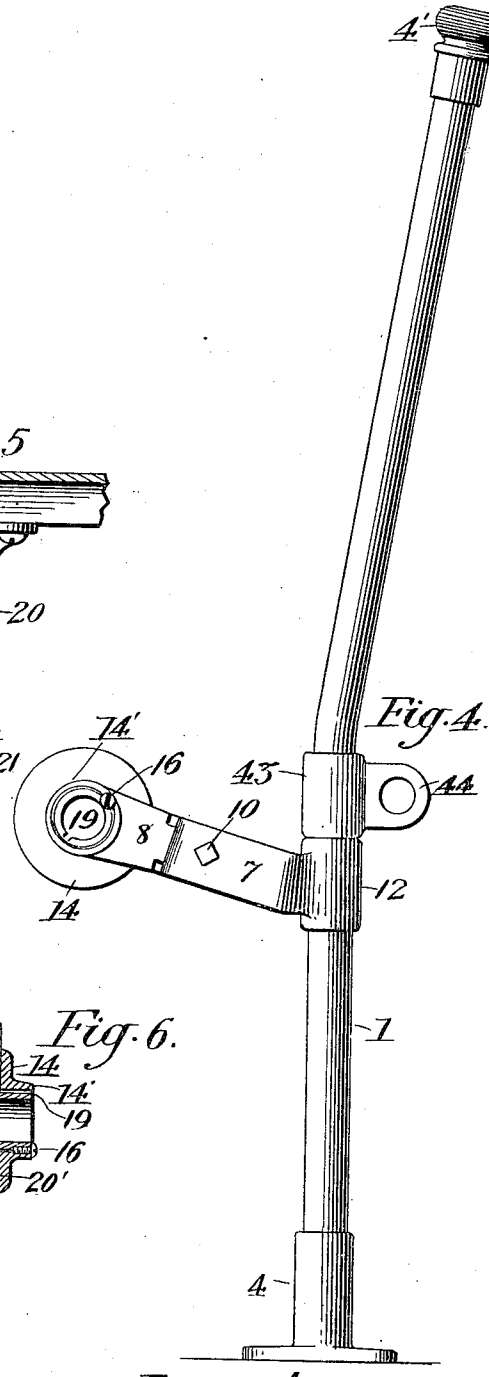
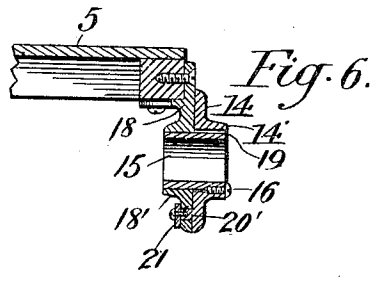


Fig. 6.



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APPLICATION FILED MAY 12, 1904. RENEWED FEB. 20, 1909.

972,487. **Patented Oct. 11, 1910.**

4 SHEETS—SHEET 4.

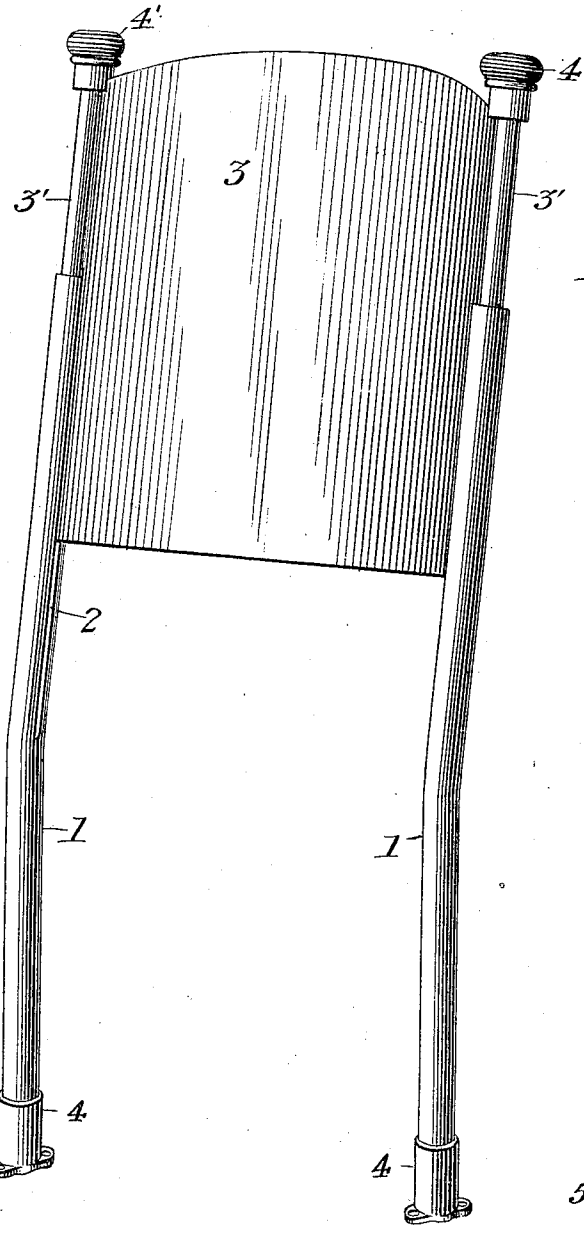
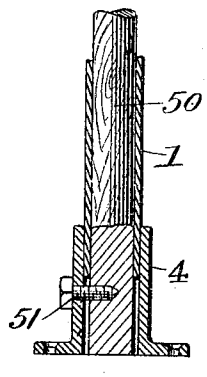


Fig. 7.

Fig. 8.



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UNITED STATES PATENT OFFICE.

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CHAIR.

972,487. Specification of Letters Patent. **Patented Oct. 11, 1910.**

Application filed May 12, 1904, Serial No. 207,588. Renewed February 20, 1909. Serial No. 479,274.

To all whom it may concern:

Be it known that I, JOHN ALLAN WILKINSON, a citizen of the United States, residing in New York city, county and State of New York, have invented certain new and useful Improvements in Chairs; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to opera chairs and the like, and has for its object to provide a chair, constructed of interchangeable parts, that is capable of ready and accurate adjustment, as one member of a series or row of similar chairs, to conform to varying inclinations of the supporting floor, and to different degrees of curvature in the individual row, or different rows, to compensate for irregular spaces between successive chairs in a given row, to permit exact alinement of the chairs according to a predetermined floor plan; and further to provide a chair that is of inexpensive, simple, strong and durable construction and that is practically noiseless in the operations of opening and closing.

To this end, the invention comprises a chair having a support or frame for the back and seat, with a special form of hinge bracket between the seat and the support or frame, and side standards so connected with the support or frame as to permit said standards to be adjusted independently of the support or frame, either laterally to compensate for irregular spaces between adjacent chairs, or pivotally, in a vertical or a horizontal plane, to conform to the varying inclination and curvature in the floor plan.

The invention also comprises various other details which will appear in the accompanying drawings, detailed description and appended claims.

In the accompanying drawings, Figure 1 is a perspective view of the preferred form of my improved chair in open position. Fig. 2 is a similar view, from the rear, showing the mode of connecting two chairs. Figs. 3 and 4 are side elevations of the uprights, which constitute the back support or frame, together with the fixed member of the hinge bracket and the coupling for securing the frame to the side standards. Fig. 5 is a detail of the hinge bracket member that is secured to the chair seat. Fig. 6 is a vertical section through one of the hinge brackets, showing the relation of the expansible pintle to the relatively movable hinge sections. Fig. 7 is a perspective view of the back support or frame, showing the mode of applying the back thereto. Fig. 8 is a fragmentary detail view of one of the uprights, illustrating the tubular construction, the wooden reinforcing filler and the adjustable foot, which are characteristic features of the various upright supporting members of the chair.

Referring to the drawings, the numerals 1, 1, indicate the two uprights or supporting members, which constitute a frame upon which the back and seat of the chair are supported. In the form of the invention illustrated, this supporting frame is formed of two tubular sections, 1, 1, having a slight rearward inclination at or near their middle points to produce the required inclination of the chair backs. Each of said uprights is provided with a longitudinal slot 2 adapted to receive the edge of the back 3 in the manner shown in Fig. 7, said back being provided along its lateral edges with reinforcing beads 3′, 3′, which snugly fit the tubular uprights and serve to lock the back and said uprights together to form a practically rigid structure. Of course, it is to be understood that the character and style of the back may be varied at will and, furthermore, that the support therefor may be variously constructed, for example, it may be formed as an arch, either of wood or metal, provided that the construction be of such character as to support the back and the seat independently of the other portions of the chair.

The lower end of the uprights 1, 1, are provided with adjustable feet, preferably in the form of cast metal sockets, provided with lugs or ears, by means of which they are secured to the floor. These sockets may be adjusted longitudinally of the uprights to vary the length of the latter and to accommodate the support as a whole to varying inclinations in the floor.

The seat, 5, which, as above described, is mounted upon and carried solely by the

back support, may also follow any preferred form of construction or finish. Said seat is of the folding type and is designed to be swung back into upright position substantially parallel with the back when the chair is not in use. To this end, the seat is pivotally connected to the back support by hinge brackets 6. Each of said brackets 6 consists of a longitudinally adjustable arm formed of two sections, 7, 8, connected together by a sliding joint, comprising mating longitudinal ribs and grooves on the respective members and a bolt 10 secured to one of said members engaging an elongated slot 9 in the other member and serving to lock the said members in adjusted position. On the rear or inner end of the section 7 is a sleeve 12 which surrounds the upright arm of the back support, and is adapted to be secured thereto, in proper adjustment by means of a set screw 13. The outer end of section 8 is provided with a substantially disklike face plate 14 having a central annular strengthening boss 14′ on its outer side, surrounding a circular orifice 19 passing through said face plate. Mounted in the orifice 19 aforesaid, is a hollow pintle 15, preferably made of spring metal, and provided with a longitudinal slot, which normally tends to open out and completely fill the orifice 19. The pintle 15 is preferably fixed in the face plate 14 and to accomplish this, and also to permit the said pintle to expand in order to take up wear between the parts, a small taper screw 16 is set in the screw-threaded socket formed half in the wall of the orifice 19 and half in the outer periphery of said pintle 15. The pin 16 therefore serves to lock the pintle securely in position and also causes said pintle to expand or to contract as the screw is relieved or turned up respectively. The mating part of the hinge bracket, which is secured to the chair seat approximately midway of the side of the latter, consists of a flanged lug secured by suitable screws or bolts to the seat edge, as shown in Figs. 5 and 6. Said lug constitutes a face plate 18 adapted to be brought into registry with the face plate 14 on the coöperating bracket, and for this purpose is provided with a central orifice 19′, slightly smaller in diameter than the orifice 19 in the opposite face plate. A reinforcing flange 18′ surrounds the orifice and forms a journal bearing for the hollow pintle 15.

When the parts of the hinge are assembled, the face plates 14 and 18 lie in close contact, and the pintle, which is fixed in the face plate 14, snugly engages the walls of the orifice 19′ in face plate 18, so that the member of the hinge to which the seat is attached, will be accurately journaled on the pintle aforesaid, and, as the wear between the pintle and the bearing 19′ in said plate is taken up by the spring pintle itself, the working parts of the hinge never become loose and the operation of said hinge is practically noiseless. In order to limit the movement of the hinge parts in both directions, I provide a pin and slot connection between the two face plates, but of course any other equivalent stop device can be substituted therefor. In the construction illustrated in Figs. 3 to 6, the face plate 18 is provided with a segmental slot 20, while the face plate 14 has a pin or lug 20′, preferably cast integral therewith, and serving to stop the rotation of the member of the hinge which is connected to the seat at the proper points in the upward and downward motion of the seat. In order to prevent the accidental displacement of the relatively movable portions of the hinge, I provide the outer face of the lug 20′ with a button or detent 21, which is secured to said lug by a suitable set screw, and is adapted to overlie the slot 20 and prevent the parts being separated.

Thus far the description has referred only to the seat and back of the chair together with the supporting frame therefor. It is essential, however, that chairs of this character be provided with suitable side standards, which, in the former construction of chairs, supported the seat and the back, as well as the arms of the chair, thereby constituting each chair a unitary structure, in which the side standards, the seat and the back were so connected as to prevent any independent adjustment of the several parts and to render any variation from the standard spacing between the centers of adjacent chairs impossible. This old construction renders it very difficult to arrange the chairs in accurate alinement in successive rows, of varying curvature, upon the usual sloping floors of auditoriums or assembly halls. The proper positioning and adjustment of the various chairs to meet the requirements of the floor plan required the utmost skill of experienced workmen, as well as the expenditure of a great amount of time, and in most instances, the structural strength of the chair had to be sacrificed, owing to the distortion of certain of the parts from their normal relation, in order that all of the chairs might conform, as nearly as possible, to the predetermined floor plan. These various difficulties are all avoided in my improved chair, which differs essentially from chairs heretofore constructed, in that the side supports and the side standards are independent of the seat and back, in so far as the spacing and relative adjustment thereof is concerned. Each of said standards consists of two legs or uprights 30 supported on longitudinally adjustable feet 31, adapted to be secured to the floor, and the cross piece 32 connecting the legs at their upper portions, and supporting in turn an arm 35 by means of a spindle 33 and a bracket 34. It

is not essential, of course, that the side standards be given the above described, or any other particular structure or form, for, as a matter of fact, said standards may be constructed after any predetermined or desired design, and it is essential only that they be made independent of the seats and back and the support therefor, and that suitable means be provided for adjusting the relative length of the front and rear portions, corresponding to the feet 31. In the form of the side standards shown, the leg members 30 consist of tubular metal sections, with a wood filler, the latter projecting some little distance beyond the lower end of the metal to receive the set screws by which the feet 31 are held in adjusted position on the legs. The cross brace 32 is preferably of cast metal, and has formed therewith the supporting bracket 34 for the arm 35, while the spindle 33 is formed of wood and fitted in the socket in which the rear leg 30 is seated.

Just forward of the socket for the rear leg in the cross brace 32, there is provided a circular bearing 41 adapted to receive a horizontal pintle 40, which is preferably formed from a short section of steel tubing, and projects on both sides of the cross brace.

As a means for connecting the back support or frame to the side standards I provide coupling connections, each of which engages one of the uprights 1 of the support or frame and the adjacent pintle 40 of the side standard. Each of said couplings consists, preferably, of an integral casting having a vertically disposed sleeve 43 surrounding the upright 1 and a horizontally disposed sleeve 44 engaging the pintle 40, so that said coupling constitutes, what is in effect, a universal joint between the side standard and the back support or frame, so that the frame may be tilted either forwardly or rearwardly on the pintles 40, and the side standards may be swung on their pivotal connection with the uprights 1, to vary their angular relation in a horizontal plane, and said side standards may furthermore be moved bodily toward or from the middle line of the chair seat by sliding the standards rearwardly on the pintles 40.

In order to assemble and set up the chairs in an auditorium according to a predetermined floor plan, the floor is marked out to indicate the various rows and tiers of seats together with the aisles and other clear spaces. The back supports or frames of the individual chairs are first placed in position by screwing the feet 4 thereof to the floor, so that the frames aforesaid will be in exact alinement in consecutive rows, and the successive frames in a given row will conform to the particular curvature assigned to that row. The side standards are then brought into parallel position and the pintles 40 are passed through the bearings 41 in the respective standards and the sleeves 44 on the coupling members attached to the uprights 1, 1. The standards are then adjusted laterally and swung horizontally to evenly divide the space between adjacent chairs, and if for any reason, the space between any two chairs is greater than that between the other chairs, the side standards may be moved along the pintles 40 to properly divide the space. To adjust the side standards to the inclination of the floor, the front feet 31 are moved down on the legs to lengthen the latter to the desired degree, or the feet on the rear legs are moved upward thereon, or, where it is desired to divide the adjustment between the front and back legs, the front feet may be moved downward and the back feet moved upward, and are then secured rigidly to the legs by the set screws, which are driven into the wood filling within the tubular legs.

It is essential that the seats of the various chairs shall face toward the stage, or other point to which the attention of the audience is directed. In order to accomplish this, when the chairs are set at various angles and on various inclinations, the hinge brackets 6 are provided with the longitudinally adjustable sections 7 and 8, hereinbefore described, so that by lengthening or shortening one or the other of said bracket arms, the seat may be shifted laterally to the right or left until it faces accurately in the desired direction.

The expansible pintle 15, connecting the fixed and movable portions of the said brackets, insures a noiseless seat and because of the avoidance of any lost motion or undue play between the pintle and its bearings, the swinging movement of the seat, as it is opened or closed, is smooth and easy.

It is to be observed that the characteristic structural features of the chair, as above described, will permit of any desired type of back or seat to be employed, and will also allow great latitude in the matter of structural design, detail, or ornamentation of the side standards or the back support, and furthermore as the several parts are removable and interchangeable, it is possible to provide parts of different characters of finish, upholstery, etc., for different seasons or occasions.

Having thus described my invention, what I claim is:—

1. A chair having a back support and a side standard comprising a front leg and a side strut secured to said front leg and having pivotal adjustment in a horizontal plane on said back support, and means for securing said strut on said back support in its adjusted position, said back support having legs for securing it to the floor independently of the side standards.

2. A folding chair having a back support, a folding seat, a side standard comprising a front leg and a side strut connecting said

leg with said support, and a bracket vertically adjustable on and secured solely to said back support for supporting said seat, said back support having legs for securing it independently upon the floor, independently of the side standards.

3. A folding chair having a back support having legs for securing it independently upon the floor, a folding seat, a side standard comprising a front leg and a side strut connecting said leg with said support, and a bracket secured solely to said back support for supporting said seat, said side strut and said bracket having independently adjustable connections with the legs of said back support.

4. A chair comprising a back support having legs for securing it independently upon the floor, a seat carried by said back support, projections extending outwardly from the back-support legs, and side supports adjustably secured to said projections.

5. A chair, comprising a back support, a folding seat carried thereby, and side standards having pivotal connection with the back support, whereby said standards may be adjusted independently of the seat and back, said back support having legs for securing it to the floor independently of the side standards.

6. A chair, comprising a back support, brackets adjustably mounted on said support, a folding seat carried by said brackets, and side standards having pivotal connection with the back support, whereby said standards may be adjusted independently of the seat and back, said back support having legs for securing it to the floor independently of the side standards.

7. A chair, having a back provided with two legs, said back and legs constituting an independent element of construction, means for securing the legs to the floor, and a side standard having means for separately securing it to the floor, said side standard being adjustably connected to one of the back legs of the chair and being adapted for adjustable connection to the back leg of an adjacent chair.

8. A chair comprising a back support, a seat carried thereby, collars on said supports, studs or projections extending outwardly from said collars, and side standards for the chairs adjustably connected to said studs, whereby the side standards may be adjusted independently of the seat and back.

9. A chair having a back support, a stud or projection extending laterally from said support and pivotally adjustable thereon, and a side support secured to said stud, whereby said support and said side standard may have relative pivotal movement.

10. A chair having a back support, a stud or projection extending laterally from said support and pivotally adjustable thereon, and a side standard secured to said stud for longitudinal adjustment thereon, whereby said support and said side standard may have relative pivotal and lateral movement.

11. A chair, comprising a back support, a folding seat carried thereby, independent side standards, and a universal connection between the respective side standards and the back support, whereby the standards and the back support may be adjusted independently of each other.

12. A chair, comprising a back support, longitudinally extensible brackets adjustably mounted on said support, a folding seat carried by said brackets, independent side standards, and a universal connection between the respective side standards and the back support, whereby the standards and the back support may be adjusted independently of each other.

13. A chair comprising a back support, a folding seat carried thereby, and independent side standards pivotally connected with the back support and having longitudinally adjustable legs, whereby the standards may be adjusted independently of the back and seat to conform to any inclination or curvature in the floor plan.

14. A chair, comprising a back support, extensible brackets adjustably mounted on said support, a seat pivoted to said brackets, independent side standards having longitudinally adjustable legs, and a universal connection between the respective side standards and the back support, whereby the standards may be adjusted independently of the back support and the seat may be adjusted vertically and horizontally, to conform to any inclination or curvature in the floor plan.

15. A chair, comprising a frame or support having uprights adapted to be secured to the floor, a back carried by said frame, brackets secured to the uprights, a folding seat carried by said brackets, side standards also adapted to be secured to the floor, and a pivotal connection between each of said standards and the adjacent upright, whereby the standards may be adjusted independently of the seat and back.

16. A chair, comprising a frame or support having uprights adapted to be secured to the floor, a back carried by said frame, longitudinally extensible brackets adjustably mounted on the uprights, a folding seat pivoted to said brackets, side standards also adapted to be secured to the floor, and a universal connection between each of said standards and the adjacent upright, whereby the side standards and the frame carrying the seat and back may be adjusted independently of each other.

17. A chair, comprising a frame or support having uprights adapted to be secured to the floor, a back carried by said frame,

longitudinally extensible brackets secured to said uprights, a folding seat pivoted to said brackets, side standards also adapted to be secured to the floor and provided with longitudinally adjustable legs, and a universal connection between each of said standards and the adjacent upright, whereby the side standards may be adjusted independently of the seat and back and the various parts of the chair adjusted to conform to any inclination or curvature in the floor plan.

18. A chair, comprising a frame having uprights supporting a back and seat and adapted to be secured to the floor, side standards also adapted to be secured to the floor, a horizontal pintle carried by each standard, and couplings for connecting the frame and the side standards, said couplings having a rotary and longitudinal adjustment on the pintles and the uprights, whereby the standards and the frame may be adjusted independently of each other.

19. A chair, comprising a frame having uprights supporting a back and seat and adapted to be secured to the floor, side standards also adapted to be secured to the floor, a removable pintle mounted transversely of each standard, and couplings connecting the standards and the frame, each of said couplings consisting of two angularly disposed sleeves engaging a pintle and an upright respectively and capable of longitudinal and rotary adjustment thereon.

20. A chair, comprising a frame having uprights supporting a back and seat, side standards adapted to be secured to the floor, a horizontal pintle carried by each standard, and couplings for connecting the frame and the side standards, said couplings having a rotary longitudinal adjustment on the pintles and the uprights, whereby the standards and the frame may be adjusted independently of each other.

21. A chair, comprising a frame having uprights supporting a back and seat, side standards adapted to be secured to the floor, a removable pintle mounted transversely of each standard, and couplings connecting the standards and the frame, each of said couplings consisting of two angularly disposed sleeves engaging a pintle and an upright respectively and capable of longitudinal and rotary adjustment thereon.

22. A chair, comprising a support for the back and the seat, and hinge brackets connecting the seat to the support, each of said brackets having a section secured to the seat and a section secured to the support, said sections having circular mating orifices, and a hollow expansible journal pin engaging the orifices in the respective members.

23. A chair, comprising a support for the back and the seat, and hinge brackets connecting the seat to the support, each of said brackets having a section secured to the seat and a section secured to the support, said sections having circular mating orifices, and a hollow expansible journal pin fixed in the orifice of one member and engaging the mating orifice in the other member.

24. A chair, comprising a support for the back and the seat, and hinge brackets connecting the seat to the support, each of said brackets having a section secured to the seat and a section secured to the support, said sections having circular mating orifices, a hollow expansible journal pin fixed in the orifice of one member and engaging the mating orifice in the other member, and a pin and slot connection between said members to limit the relative movement thereof in both directions.

25. A hinge bracket for chairs, comprising an arm to be secured to the support, a lug to be attached to the seat, face plates having mating orifices on the arm and lug respectively, and a hollow expansible journal pin engaging the respective orifices.

26. A hinge bracket for chairs, comprising an arm to be secured to the support, a lug to be attached to the seat, face plates having mating orifices on the arm and lug respectively, a hollow expansible journal pin engaging the respective orifices, and a pin and slot connection between the face plates to limit the relative movement thereof in both directions.

27. A hinge bracket for chairs, comprising an arm to be secured to the support, a lug to be attached to the seat, face plates having mating orifices on the arm and lug respectively, and a hollow expansible journal pin fixed in the orifice in one of the face plates, and engaging the orifice in the other face plate.

28. A hinge bracket for chairs, comprising an arm to be secured to the support, a lug to be attached to the seat, face plates having mating orifices on the arm and lug respectively, a hollow expansible journal pin fixed in the orifice in one of the face plates, and engaging the orifice in the other face plate, and means for locking said face plates in juxtaposition and for limiting the relative movement thereof in both directions.

29. A hinge bracket for chairs, comprising a longitudinally extensible arm to be secured to the support, a lug to be attached to the seat, face plates having mating orifices on the arm and lug respectively, and a hollow expansible journal pin engaging the respective orifices.

30. A chair, provided with tubular metallic legs or supporting members, said legs or members having a wood filler, adjustable feet which fit the metallic tubing at its lower ends, and fastening devices which pass through the adjustable feet into the wood filling, whereby a metallic joint or connection between the feet and legs is provided,

as against side strains, while the wood filler provides for longitudinal adjustment.

31. A chair, comprising a tubular frame supporting the seat and back, side standards secured to the floor, removable pintles carried by said standards, and couplings having angularly disposed sleeves connecting the tubular frame and the pintles, whereby the frame and the standards may be independently adjusted to conform to any inclination or curvature in the floor plan.

In testimony whereof I affix my signature, in presence of two witnesses.

JOHN ALLAN WILKINSON.

Witnesses:
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E. C. EVANS.