July 23, 1963 H. E. WILLIAMS 3,098,677

CHAIR SEAT OR THE LIKE HINGE

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FIG. 1

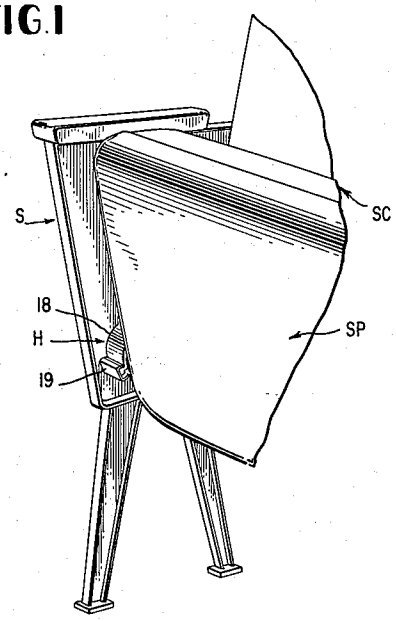


FIG. 2

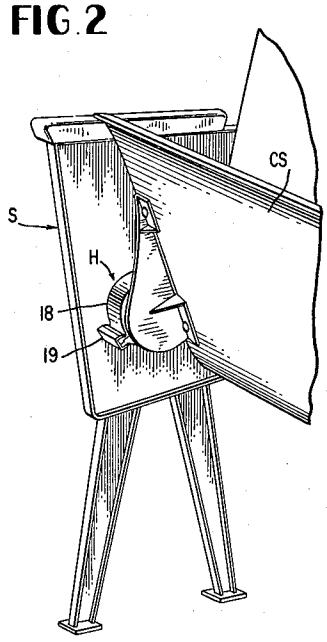
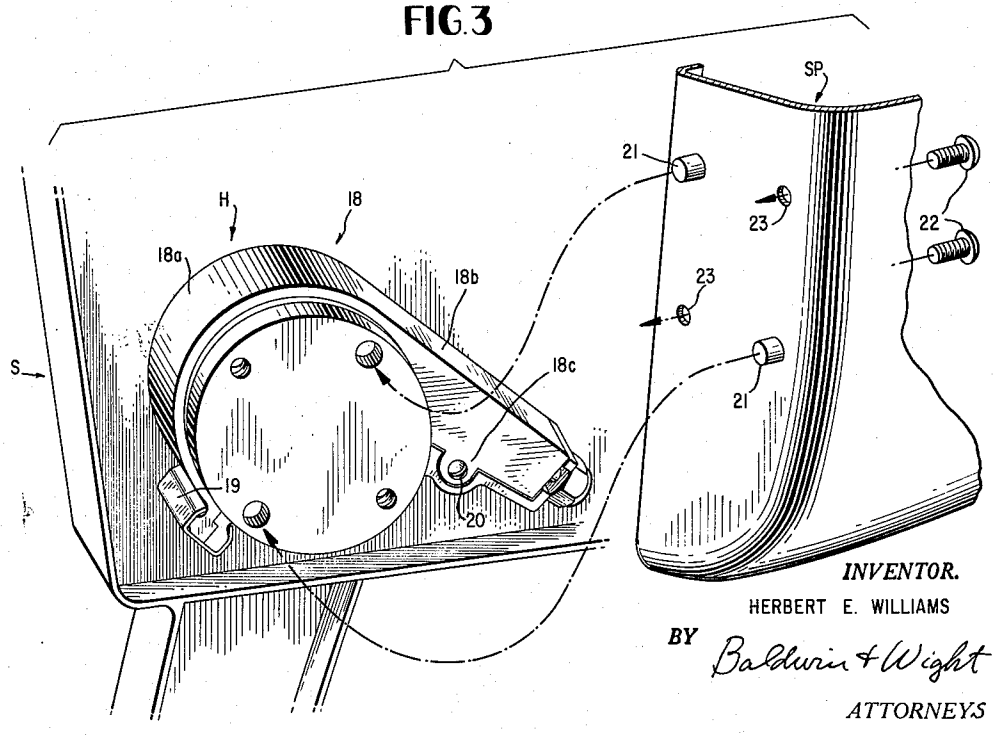


FIG. 3



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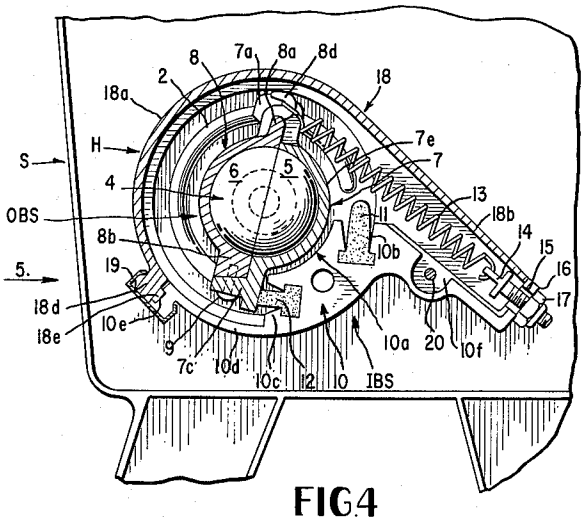

FIG.4

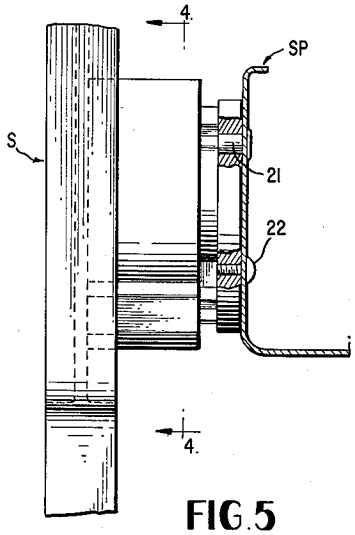

FIG.5

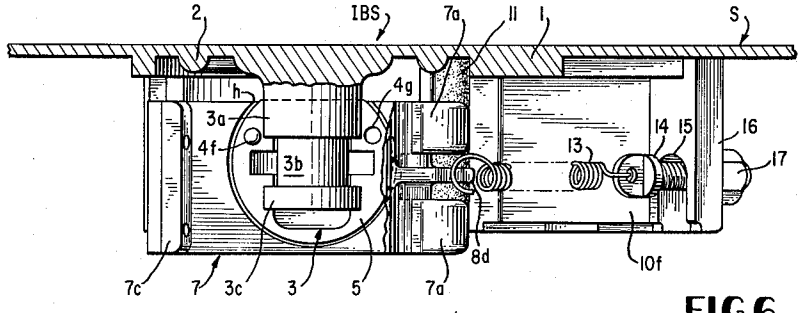

FIG.6

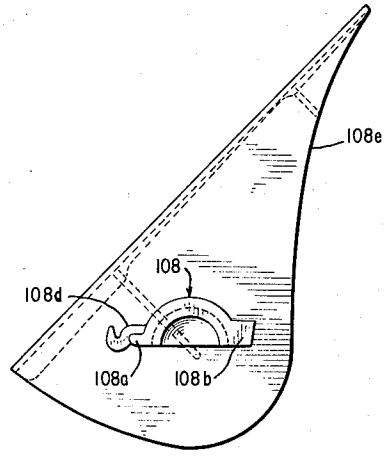

FIG.11

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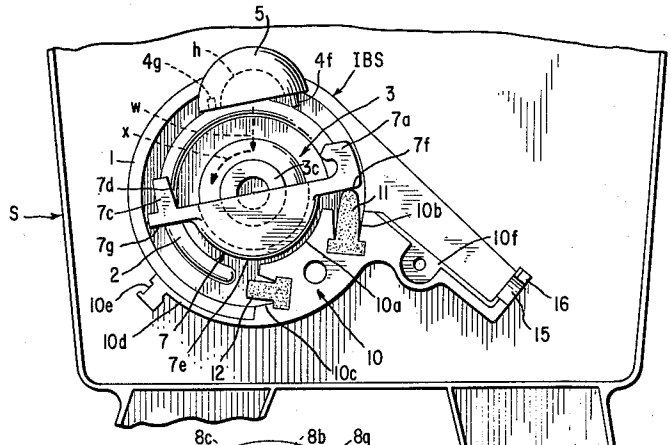

FIG. 7

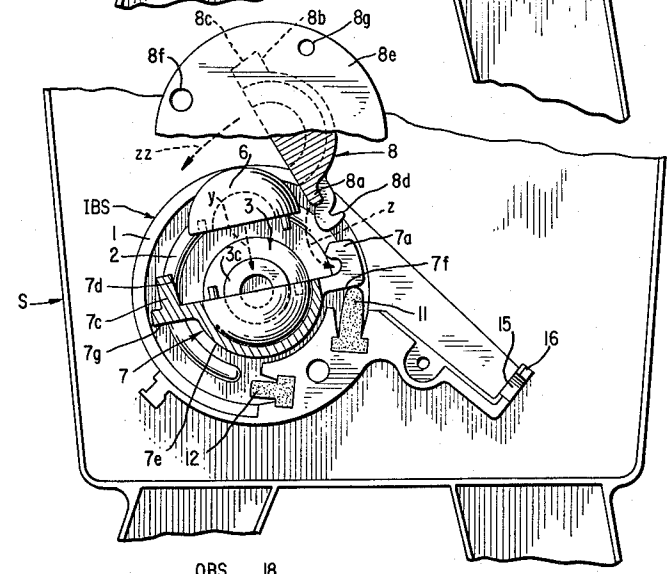

FIG. 8

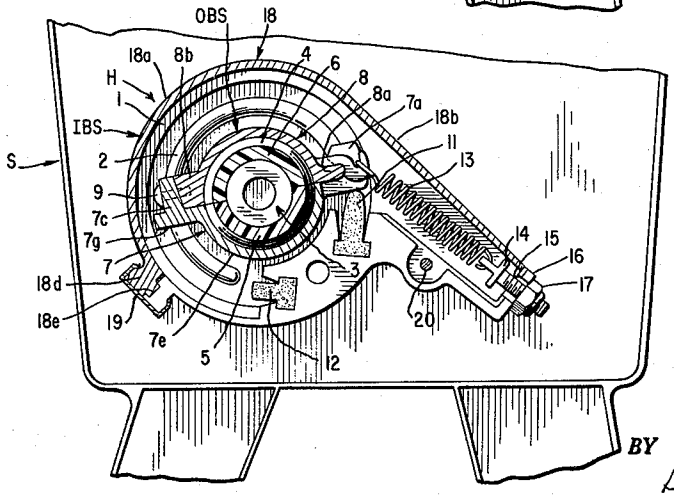

FIG. 9

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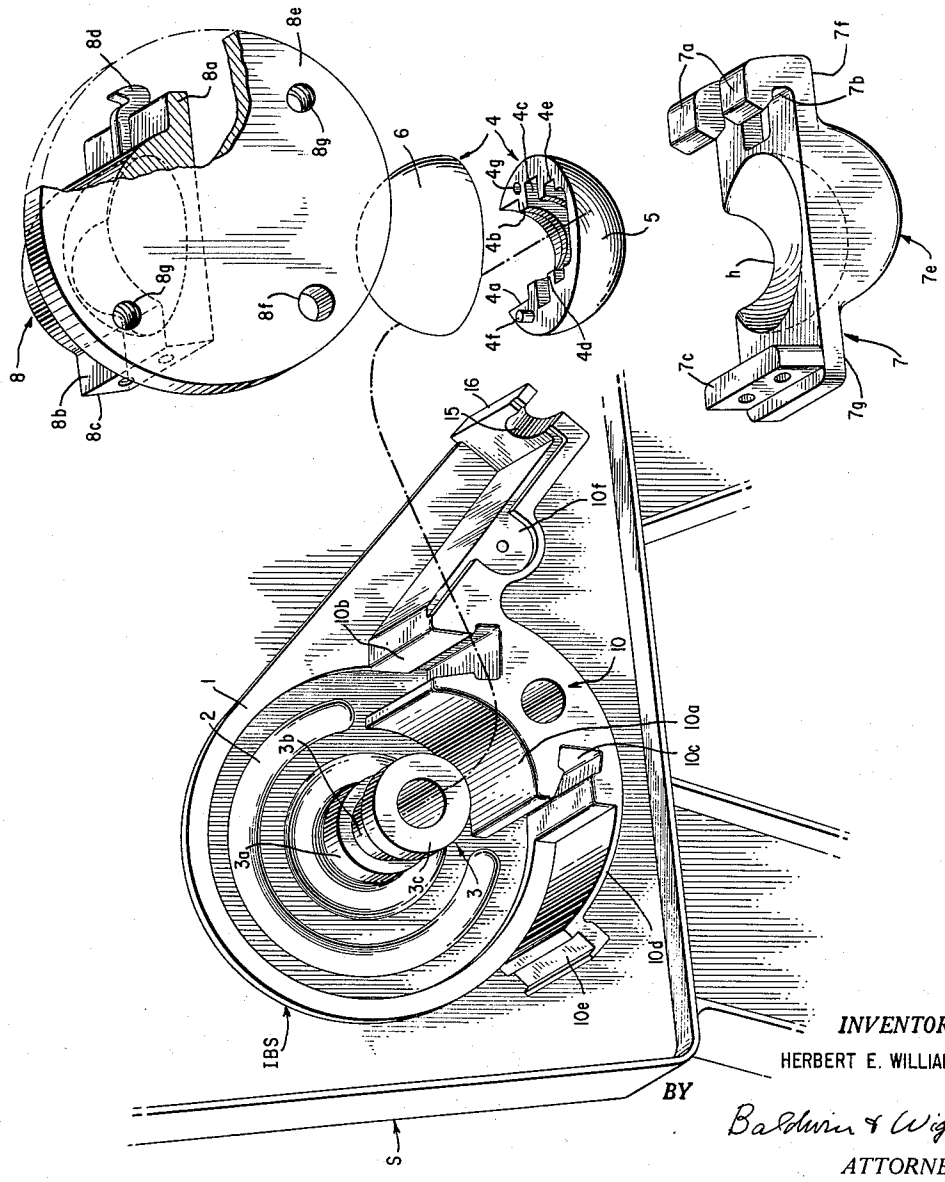
FIG.10



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United States Patent Office 3,098,677 Patented July 23, 1963

3,098,677
CHAIR SEAT OR THE LIKE HINGE

Herbert E. Williams, Temple, Tex., assignor to American Desk Manufacturing Company, Temple, Tex., a corporation of Texas

Filed Sept. 15, 1961, Ser. No. 138,389
12 Claims. (Cl. 297—332)

This invention relates to hinges, and more particularly to hinges for chair seats or the like, for example the seats of theater, auditorium or stadium chairs, especially those assembled or set up in rows.

Places for public gatherings are commonly provided with seats arranged close together in rows. The rows usually are curved on greater or lesser radii, according to the building architecture and seat layout. Hence, the hinge pivotal axes of the seats of such chairs are seldom perfectly normal to the vertical planes of the fixed standards or sides of the chairs, the axes instead being somewhat inclined to these planes to varying degrees, all according to the seat layout and curvature of the floor.

Obviously, many complications and substantial expense would be involved if the chairs for each individual installation, and for different parts of any one installation, would have to be equipped with the individually designed and manufactured seat hinges required to conform to the position of each hinge axis with respect to its associated chair side or vertical standard. It has, accordingly, been conventional in the prior art to provide such chairs or the like with hinges constructed to enable a small but sufficient universal adjustment or accommodation of the position of the hinge axes to the relative positions of the seat and the standards or chair sides on which it is mounted. Various hinge constructions, including some having bearings generally of the ball and socket type have been used for this purpose.

An object of the present invention is to provide an improved hinge construction, especially for chair seats, for example the seats of theater, auditorium and stadium chairs, having cooperating bearing elements constructed to permit, inherently, the adjustment required to adapt the construction for different layouts or deployments of chairs, or different relative positionings of a chair seat and associated chair sides or standards.

Another object of the invention is to provide a hinge construction of the class referred to which is simple and inexpensive to manufacture and install, and which nevertheless is rugged and capable of providing long service with minimum attention to repair or replacement of parts but which may easily be disassembled for repairs, for example for the replacement of bearing inserts.

Another object of the invention is to provide a hinge construction of the character stated having an improved arrangement of a central pivot, spherical bearing insert on the pintle and outer bearing construction mounted on the bearing insert.

Another object of the invention is to provide an improved arrangement for connecting together the two halves or members of a split outer bearing to provide a spherical bore cooperable with a spherical inner bearing.

Another object of the invention is to provide an improved construction and arrangement of a means for biasing a chair seat to raised position, and for cushioning the limiting or arresting of the seat when it reaches its raised or retracted position and its lowered position.

Another object of the invention is to provide an improved method of assembling a bearing construction of the kind outlined above.

Other objects of the invention will become apparent from a reading of the following description, the appended claims, and the accompanying drawings, in which:

FIGURE 1 is a fragmentary perspective view of an auditorium chair of the type including an upholstered or cushioned seat, a hinge constructed in accordance with the invention being shown interposed between the seat pan and a fixed side standard;

FIGURE 2 is a view similar to FIGURE 1, but showing the invention embodied in a different type of auditorium chair, more specifically such a chair having a thin section contoured seat;

FIGURE 3 is an exploded fragmentary perspective view illustrating the relation of certain parts before completion of the assembly;

FIGURE 4 is a vertical section of a hinge of the kind used for supporting the seat of a chair having an upholstered seat as shown in FIGURE 1, the section being taken on the line 4—4 of FIGURE 5, part of a side standard element being shown in elevation, and the hinge parts being shown in the relative positions occupied when the chair seat is in the down position for being sat upon;

FIGURE 5 is a fragmentary elevational view of the chair standard and hinge as viewed when looking in the direction of the arrow 5 in FIGURE 4, the seat pan being shown in section and in the down position;

FIGURE 6 is a generally horizontal section through the standard, drawn on an enlarged scale and showing a part of an outer bearing structure in retracted position corresponding to the raised position of the seat, showing also a half-section of a spherical bearing insert and one of two outer bearing members in elevation, the other half-section of the spherical bearing insert and the other of the two outer bearing members and a shroud or dust cover being removed for exposing the other parts to view;

FIGURE 7 is a fragmentary elevation of the bearing structure as viewed when looking in the direction of the arrow 7 in FIGURE 6, being drawn on a somewhat smaller scale than FIGURE 6 and showing the relative positions of certain of the bearing structure parts during an early stage of assembly;

FIGURES 8 and 9 are views similar to FIGURE 7, but showing bearing parts in addition to those shown in FIGURE 6, and showing the several bearing parts in the positions occupied during successive stages of assembly, certain parts being shown in section;

FIGURE 10 is an exploded perspective view drawn on an enlarged scale and showing bearing parts in detail and indicating what their relative positions will be when assembled; and

FIGURE 11 is an elevational view of a seat bracket adapted to be used in connection with a bearing structure embodying the invention for mounting a thin section seat of the kind shown in FIGURE 2.

FIGURES 1 and 2 show two quite similar applications or uses of a hinge structure embodying the invention, the construction of the hinge for use in a chair of the kind shown in FIGURE 1 being illustrated in detail in FIGURES 3–10 inclusive, and a slightly modified construction for use in a chair of the kind shown in FIGURE 2 being illustrated in FIGURE 11. Each of the constructions is characterized by permitting connection and easy assembly of the hinge with an associated chair seat element and a fixed standard or side element with the standard element being fixed in place on a floor, and is further characterized by enabling universal movement between the inner and outer bearing or hinge parts as is required to enable the seats to be hingedly mounted on the standards in different deployments or arrangements of contiguous seats on the floor. The layouts or arrangements of theater or auditorium seats in rows generally being arcuate, and the arcs generally varying according to the particular individual buildings, require the mounting of

the seats to rock on axes other than axes which are perfectly normal to the vertical planes of the fixed standards. Hinge constructions embodying the present invention enable a considerable degree of adjustment of the axes of rocking of the seats so as to conform to the arcuate deployment of the seats and consequent slight lack of parallelism between the seat standards. Hinge or bearing constructions in accordance with the invention also include biasing means, for example springs, for yieldably retaining the seats in raised positions to facilitate walking through the rows, and cushioning stops for limiting the rocking of the seats both to the down position for being sat upon and to the raised position. Broadly considered, these functional adaptations to arcuate deployment of seats in rows and biasing of seats to raised positions are well known in the art. The present invention, however, provides an improved, easily installable and in many respects simplified construction which provides these functional advantages and which at the same time is of rugged and long lasting construction.

Considering firstly the construction shown in FIGURES 1 and 3–10 inclusive, a hinge generally designated H is shown as being carried by a fixed standard S for rockably mounting a seat pan SP provided with a seat cushion SC.

The hinge H includes an inner bearing structure IBS carried by the standard S and being fitted with a spherical bearing insert hereinafter described which rockably mounts an outer bearing structure OBS connected to the seat pan SP. In the form shown, the inner bearing structure IBS is formed as a body structure including an enlarged stiffening section or part **1** preferably integral with the standard S and a circular bead or rim **2** surrounding in radially spaced relation a pintle generally designated **3** which may also be formed integrally with the standard S.

The pintle **3** is formed as a surface of revolution other than cylindrical, having parts respectively of relatively large and relatively small diameters. In the illustrative embodiment, and considered more particularly, the pintle **3** includes a cylindrical base part **3***a*, a circumferential groove **3***b* of relatively small diameter and an end rim or flange **3***c* of relatively large diameter.

The spherical bearing insert previously referred to is indicated generally at **4** as being formed of two nylon bearing halves **5** and **6** which are divided or split and joined in a plane parallel to and containing the pintle axis, the arrangement being such that the bearing halves **5** and **6** may be placed around the pintle by being moved radially inwardly toward the pintle so that the pintle will be received in a bore formed conjointly in the bearing halves **5** and **6**, the pintle being surrounded by the spherical bearing insert with a fit permitting relative rotation of the pintle and the insert. In order to prevent axial movement of the bearing insert **4** relative to the pintle **3**, the bore of the assembled insert **4** is contoured to conform to the contour of the pintle. For this purpose, the insert bore is constituted by a counterbore **4***a* adapted to fit around the pintle cylindrical base portion **3***a*, a rib **4***b*, a groove **4***c*, a rib **4***d*, and a groove **4***e*. The circumferential insert bore ribs **4***b* and **4***d* fit within the groove **3***b* in the pintle, and the insert groove **4***e* receives the pintle end flange **3***c*. With this arrangement, the bearing insert **4**, when assembled on the pintle, can rock on the pintle but cannot move axially with respect to the pintle. Preferably, the insert sections **5** and **6** are formed with cooperating pins **4***f* and holes **4***g* frictionally interfitting with one another for releasably holding the sections **5** and **6** assembled on and surrounding the pintle. For the present, it may be considered that in assembling the insert **4** on the pintle, one insert section **5** is first moved laterally radially against the pintle from one side of the latter, and the other insert section **6** is then moved radially laterally inwardly against the pintle, the retaining pins **4***f* on each insert section being entered into and frictionally held in the holes **4***g* on the other insert section. As will be explained hereinafter, the construction of the hinge or bearing is such that a movement of the first insert section **5**, in addition to its radial inward movement against the pintle, is required before the insert section **6** may be moved into place.

The outer bearing structure OBS is also split or divided in a plane parallel to and containing the axis of the pintle **3**, and is constituted by two outer bearing members **7** and **8**, each formed internally with a hemispherical bore or bearing surface fitting the spherical outer surface of the bearing insert **4**, this arrangement providing the required universal adjustability of the axis of rocking of the outer bearing structure OBS relative to the inner bearing structure IBS. The inner end of the spherical bore, provided by the assembled outer bearing members **7** and **8**, is terminated at a rim *h* which, as shown in FIGURES 6 and 10, is of smaller radius in a plane perpendicular to the pintle axis than the radius of the spherical outer surface of the bearing insert **4**. With this arrangement, once the outer bearing members **7** and **8** have been assembled to embrace the spherical insert **4**, the rim *h* will prevent the assembled bearing members **7** and **8** from being moved axially off the insert **4**. The members **7** and **8** mate with and engage each other as shown in FIGURE 4 so that spherical bore within the assembled members **7** and **8** receives the bearing insert **4** with a fit permitting movement of the outer bearing structure relative to the bearing insert.

In order to hold the outer bearing members **7** and **8** assembled together with the bore of the assembly embracing the bearing insert **4**, the bearing member **7** is formed on one side of the pintle with two spaced claws **7***a* which provide shoulders **7***b*, and the bearing member **8** is formed with a flange **8***a* adapted to be received in the claws **7***a*, that is under the shoulders **7***b*. On the other side of the pintle, the bearing member **7** is provided with a rib **7***c* formed with a tapered or inclined face **7***d*, and the bearing member **8** is provided with a flange **8***b* having a tapered or inclined face **8***c* which fits against the tapered face **7***d* on the bearing member **7**, as shown, for example, in FIGURE 9. Screws **9** extending through apertures in the rib **7***c* and threaded into the flange **8***b* cooperate with the claws **7***a* and flange **8***a* to secure the bearing members **7** and **8** in the operative positions shown in FIGURES 4 and 9.

As previously stated, means such as a spring is provided for biasing the chair seat to its raised position in which it is stopped by a limiting abutment, the construction also including abutment means for limiting the movement of the seat to its down position. In a preferred construction, the inner bearing structure, which includes the pintle **3**, also includes, in fixed relation to the pintle, an abutment block portion **10** which may be formed integrally, e.g. cast with the pintle as part of the body structure previously referred to. The block portion **10** has a surface **10***a* facing inwardly toward and being spaced from the curved outer surface **7***e* of the outer bearing member **7** and being curved similarly to the curved surface **7***e*, as shown in FIGURES 4, 7, 8 and 9. The space between the surfaces **10***a* and **7***e* provides sufficient clearance between the block portion **10** and the bearing member **7** to insure that there will be no rubbing of these parts against one another, but the space nevertheless is purposely made quite small in the interest of compactness of the construction. The block portion **10** is formed at its opposite ends with undercut slots **10***b* and **10***c* which open oppositely from one another and substantially tangentially to a circle concentric with the pintle. The slots **10***b* and **10***c* respectively receive cushioning abutments **11** and **12** which extend outwardly beyond the slots for engaging respectively abutment parts **7***f* and **7***g* on the outer bearing member **7**. FIGURE 4 shows the relative positions of the parts when the outer bearing

structure OBS has been rocked to permit the seat to move into down position. As shown in FIGURE 4, the abutment part 7*g* on the bearing member 7 is in engagement with and has been stopped by the abutment 12 with a cushioning action.

The biasing spring for rocking the seat to its raised position is shown at 13 as having one of its ends connected to a finger or hook 8*d* on the bearing member 8 extending between the claws 7*a* on the bearing member 7 and having its other end anchored in the eye of a spring anchor screw 14 received in a slot 15 in a wall 16 fixed with respect to the standard S and hence fixed with respect to the inner bearing structure IBS. A nut 17 on the screw 14 may be turned to adjust the tension of the spring 13 and hence its biasing effect.

Normally, the spring 13 holds the outer bearing structure OBS in the position shown in FIGURE 9 corresponding to the raised position of the seat, with the abutment part 7*f* of the bearing member 7 engaging and stopped by the cushioning abutment 11. The abutment 11 extends outwardly from its slot somewhat further than does the abutment 12, the purpose being to provide greater yieldability of the abutment 11. Because of its greater capacity to yield, the abutment 11 will permit the outer bearing structure OBS to rock clockwise beyond the position shown in FIGURE 9 when the front edge of the seat, then in its raised position, is pressed rearwardly by a person standing in front of the raised seat so as to provide more walk-through space between that seat and the seat immediately in front of it.

Preferably, means are provided for protecting the operative parts of the hinge described above against dust, and preventing clothing or articles from becoming caught in the operating structure. For this purpose, a dust cover or shroud 18 is fitted to the upper part of the fixed or inner bearing structure. The shroud 18 includes a curved wall 18*a* which surrounds the inner and outer bearing structures IBS and OBS where they are not surrounded by the block portion 10 and an arcuate block portion extension 10*d*. The shroud curved wall 18*a* merges with a straight wall portion 18*b* from which extends an overhanging wall 18*c*, the walls 18*b* and 18*c* covering the spring 13. For securing the shroud to the inner bearing structure IBS, the shroud is formed with a flange 18*d* having a rib 18*e* which fits into a groove 10*e* in the block extension 10*d*, shown in FIGURES 4 and 9. A channel shaped clip 19 is fitted over the flange 18*d* and the end of the block extension 10*d* as shown in FIGURES 3, 4 and 9. A screw 20 extends through an ear 18*f* on the shroud 18, as shown in FIGURE 3, and is threaded into a wall 10*f* extending from the block portion 10. Thus the screw 20 and the interfitted groove 10*e* and rib 18*e*, held together by the clip 19, hold the shroud firmly but detachably in place.

For mounting a seat of the kind shown at SP in FIGURE 1, the outer bearing member 8 described above is formed to include a disk 8*e* having holes 8*f* adapted to receive pins 21 on the seat pan SP as shown in FIGURE 3, the disk 8*e* also having threaded openings 8*g* for receiving screws 22 passed through openings 23 in the seat pan SP.

Because the compactness of the structure results in very small radial clearances between the bearing insert 4, the outer bearing members 7 and 8 and the curved surface 10*a* of the block portion 10, the bearing structure elements may be assembled most easily by following a method or procedure now to be explained with reference to FIGURES 7, 8 and 9. It is pointed out firstly that the radial dimensions of the outer bearing member 7 are so related to the distance between the bearing insert and the curved wall 10*a* of the block portion 10 that it would not be possible to place the bearing member 7 in its operative position by movement parallel to the pintle axis after the bearing insert 4 has already been assembled on the pintle. Moreover, because of the projection of the abutment parts 7*f* and 7*g* radially outwardly from the pintle axis to a greater extent than the abutments 11 and 12, it would not be possible to rotate the inner bearing member 7 to its operative position after first being placed against the insert 4 on the pintle opposite the block surface 10*a*.

However, once the correct procedure of assembling is known, the assembling can be conducted without difficulty. The first step is to place the bearing member 7 substantially in its normal position as shown in FIGURE 7 before placing either of the insert sections 5 and 6 on the pintle. This can easily be done by simply moving the bearing member 7 parallel to the pintle axis and between the pintle and the curved surface 10*a* of the body portion 10. When the bearing section has been thus positioned as shown in FIGURE 7, the insert section 5 is moved from a position spaced from the pintle 3 as shown in FIGURE 7 generally in the direction of the arrow *w* until the inner semi-bore of the section 5 fits against the upper part of the pintle. The bearing insert section 5 having thus been positioned against the pintle, the section 5 is rotated counterclockwise as viewed in FIGURE 7 as indicated by the arrow *x* until the section is disposed between the pintle and the curved wall of the bearing member 7, the insert section 5 being shown in this position in FIGURES 8 and 9. The insert section 5 having been thus positioned, the other insert section 6 may then be moved from the position shown in FIGURE 8 in the direction of the arrow *y* to embrace the top half of the pintle 3 and to mate with the companion section 5 and form a complete spherical insert. Thereafter, the other outer bearing section 8 is moved from the position shown in FIGURE 8 to position its flange 8*a* in the claws 7*a* of the bearing member 7, as indicated by the arrow *z* in FIGURE 8, after which the member 8 is rocked in the direction indicated by the curved arrow *z*—*z* in FIGURE 8 until the inclined surface 8*c* engages the inclined surface 7*d* on the bearing member 7, the fastener screws 9 then being inserted to lock the two bearing members 7 and 8 together.

The spring 13 may then be connected between the hook finger 8*d* and the screw 14, and the spring tension adjusted by the nut 17. Finally, the shroud 18 is mounted as previously described. Preferably, the seat pan SP is connected to the disk of the outer bearing structure OBS through the guidance of the pins 21 and holes 8*f* in the disk, and the seat pan secured to the disk before the disk and the associated bearing member 8 are assembled to the bearing member 7 and pintle 3 with the insert 4 on the pintle.

For use in connection with a chair of the kind shown in FIGURE 2, the bearing structure is basically the same as that described above with reference to FIGURES 3–10 inclusive with the exception that the disk 8*e* described above as being part of the bearing member 8 is replaced by a bearing bracket 108*e* connectable to the contoured seat CS shown in FIGURE 2. The close similarity of the two constructions will be apparent from consideration of the FIGURE 11 illustration of the bearing bracket 108*e* which is fast with an outer bearing member 108 corresponding to the bearing member 8 previously described and having parts 108*a*, 108*b*, and 108*d* corresponding to the parts 8*a*, 8*b*, and 8*d* described above.

It is preferred, in assembling the construction shown in FIGURE 2, to attach the seat CS to the bearing bracket 108*e* after the outer bearing member 108 has been assembled with the associated outer bearing member, bearing insert, and pintle.

The constructions and methods of assembly disclosed are representative of preferred constructions and methods in accordance with the invention, but it is intended that the disclosure be illustrative rather than definitive, the invention being defined in the claims.

I claim:

1. In a hinge construction for rockably mounting a chair seat element or the like on a relatively fixed frame

element, a body structure comprising a pintle having respective portions of relatively large and relatively small diameters, and a part having a curved surface spaced radially from and facing inwardly toward said pintle; a generally spherical bearing insert comprising mating insert sections which are conjointly formed to provide an internal bore having respective portions of relatively large and relatively small diameters interfitting with the relatively large and small diameter portions of said pintle for mounting said insert sections on said pintle with said insert being spaced radially inwardly from said inwardly facing surface of said body structure part and for preventing movement of said spherical bearing insert axially of said pintle, said insert sections being joined substantially in a plane parallel to and containing the axis of said pintle whereby said insert sections, divided at the insert joint, may be assembled together to surround said pintle by placing one of said insert sections on said pintle and moving the other of said insert sections laterally toward said pintle and said one of said insert sections in a direction normal to the pintle axis; a first outer bearing member having a generally hemispherical inner surface conforming to said spherical bearing insert and an outer surface curved similarly to said inwardly facing curved surface of said body structure part, the radial dimensions of said first outer bearing member being so related to the space between said bearing insert when on said pintle and said inwardly facing curved surface of said body structure part that said first outer bearing member can be inserted into said space by relative movement parallel to the pintle axis only when neither of said bearing insert sections is on said pintle and within said space; a second outer bearing member having a generally hemispherical inner surface conforming to said spherical bearing insert; and means for securing said first and second outer bearing members together so as conjointly to embrace said spherical bearing insert with the latter embracing said pintle.

2. Hinge construction according to claim 1 in which the means for securing said first and second outer bearing members together comprises a flange on one of said bearing members; a shoulder on the other of said bearing members engaging said flange for securing said bearing members on one side of the pintle axis; and a fastener for securing said bearing members together on the opposite side of said pintle.

3. In a hinge construction for rockably mounting a chair seat element or the like on a relatively fixed frame element, a body structure comprising a circumferentially grooved pintle, and a part having a curved surface spaced radially from and facing inwardly toward said pintle; a generally spherical bearing insert comprising mating insert sections which are conjointly formed to provide an internal circumferentially ribbed bore interfitting with said circumferentially grooved pintle for mounting said insert sections on said pintle with said insert being spaced radially inwardly from said inwardly facing surface of said body structure part and for preventing movement of said spherical bearing insert axially of said pintle, said insert sections being joined substantially in a plane parallel to and containing the axis of said pintle whereby said insert sections, divided at the insert joint, may be assembled together to surround said pintle by placing one of said insert sections on said pintle and moving the other of said insert sections laterally toward said pintle and said one of said insert sections in a direction normal to the pintle axis; a first outer bearing member having a generally hemispherical inner surface conforming to said spherical bearing insert and an outer surface curved similarly to said inwardly facing curved surface of said body structure part, the radial dimensions of said first outer bearing member being so related to the space between said bearing insert when on said pintle and said inwardly facing curved surface of said body structure part that said first outer bearing member can be inserted into said space by relative movement parallel to the pintle axis only when neither of said bearing insert sections is on said pintle and within said space; a second outer bearing member having a generally hemispherical inner surface conforming to said spherical bearing insert; and means for securing said first and second outer bearing members together so as conjointly to embrace said spherical bearing insert with the latter embracing said pintle.

4. In a hinge construction for rockably mounting a chair seat element or the like on a relatively fixed frame element, a body structure comprising a pintle having respective portions of relatively large and relatively small diameters, and a part having a curved surface spaced radially from and facing inwardly towards said pintle and having abutments at the ends of said curved surface; a generally spherical bearing insert comprising mating insert sections which are conjointly formed to provide an internal bore having respective portions of relatively large and relatively small diameters interfitting with the relatively large and small diameter portions of said pintle for mounting said insert sections on said pintle with said insert being spaced radially inwardly from said inwardly facing surface of said body structure part and for preventing movement of said spherical bearing insert axially of said pintle, said insert sections being joined substantially in a plane parallel to and containing the axis of said pintle whereby said insert sections, divided at the insert joint may be assembled together to surround said pintle by placing one of said insert sections on said pintle and moving the other of said insert sections laterally toward said pintle and said one of said insert sections in a direction normal to the pintle axis; a first outer bearing member having a generally hemispherical inner surface conforming to said spherical bearing insert, an outer surface curved similarly to said inwardly facing curved surface of said body structure part, and abutment parts projecting radially outwardly respectively from the ends of said curved outer surface and being engageable with said abutments for limiting rocking of said first outer bearing member relative to said pintle, the radial dimensions of said first outer bearing member and the distance between said abutment parts being so related respectively to the space between said bearing insert when on said pintle and said inwardly facing curved surface of said body structure part and to the distance between said abutments that said first outer bearing member can be inserted into said space only by relative movement parallel to the pintle axis when neither of said bearing insert sections is on said pintle and within said space; a second outer bearing member having a generally hemispherical inner surface conforming to said spherical bearing insert; and means for securing said first and second outer bearing members together so as conjointly to embrace said spherical bearing insert with the latter embracing said pintle.

5. In a hinge construction for rockably mounting a chair seat element or the like on a relatively fixed frame element, a body structure comprising a pintle having respective portions of relatively large and relatively small diameters, and a part having a surface spaced radially from and facing inwardly toward said pintle; a generally spherical bearing insert comprising mating insert sections which are conjointly formed to provide an internal bore having respective portions of relatively large and relatively small diameters interfitting with the relatively large and small diameter portions of said pintle for mounting said insert sections on said pintle with said insert being spaced radially inwardly from said inwardly facing surface of said body structure part and for preventing movement of said spherical bearing insert axially of said pintle, said insert sections being joined substantially in a plane parallel to and containing the axis of said pintle whereby said insert sections, divided at the insert joint, may be assembled together to surround said pintle by

placing one of said insert sections on said pintle and moving the other of said insert sections laterally toward said pintle and said one of said insert sections in a direction normal to the pintle axis; a first outer bearing member having a generally hemispherical inner surface conforming to said spherical bearing insert and an outer surface facing outwardly with respect to the pintle axis toward the inwardly facing surface of said body structure part, the radial dimensions of said first outer bearing member being so related to the space between said bearing insert when on said pintle and said inwardly facing surface of said body structure part that said first outer bearing member can be inserted into said space by relative movement parallel to the pintle axis only when neither of said bearing insert sections is on said pintle and within said space; a second outer bearing member having a generally hemispherical inner surface conforming to said spherical bearing insert; and means for securing said first and second outer bearing members together so as conjointly to embrace said spherical bearing insert with the latter embracing said pintle.

6. In a hinge construction for rockably mounting a chair seat element or the like on a relatively fixed frame element, a body structure comprising a pintle having respective portions of relatively large and relatively small diameters, and a part having a surface spaced radially from and facing inwardly toward said pintle and having abutments at the ends of said inwardly facing surface; a generally spherical bearing insert comprising mating insert sections which are conjointly formed to provide an internal bore having respective portions of relatively large and relatively small diameters interfitting with the relatively large and small diameter portions of said pintle for mounting said insert sections on said pintle with said insert being spaced radially inwardly from said inwardly facing surface of said body structure part and for preventing movement of said spherical bearing insert axially of said pintle, said insert sections being joined substantially in a plane parallel to and containing the axis of said pintle whereby said insert sections, divided at the insert joint, may be assembled together to surround said pintle by placing one of said insert sections on said pintle and moving the other of said insert sections laterally toward said pintle and said one of said insert sections in a direction normal to the pintle axis; a first outer bearing member having a generally hemispherical inner surface conforming to said spherical bearing insert, an outer surface facing outwardly away from the pintle axis toward the inwardly facing surface of said body structure part, and abutment parts projecting radially outwardly respectively from the ends of said outer surface and being engageable with said abutments for limiting rocking of said first outer bearing member relative to said pintle, the radial dimensions of said first outer bearing member and the distance between said abutment parts being so related respectively to the space between said bearing insert when on said pintle and said inwardly facing surface of said body structure part and to the distance between said abutments that said first outer bearing member can be inserted into said space only by relative movement parallel to the pintle axis when neither of said bearing insert sections is on said pintle and within said space; a second outer bearing member having a generally hemispherical inner surface conforming to said spherical bearing insert; and means for securing said first and second outer bearing members together so as conjointly to embrace said spherical bearing insert with the latter embracing said pintle.

7. Hinge construction according to claim 6 in which said abutments on said body structure part comprise yieldable cushioning stops projecting radially outwardly from the ends of said first bearing member outer surface.

8. In a hinge construction for rockably mounting a chair seat element or the like on a relatively fixed frame element, a body structure comprising a pintle having respective portions of relatively large and relatively small diameters, and a part having a surface spaced radially from and facing inwardly toward said pintle and having abutments at the ends of said inwardly facing surface; a generally spherical bearing insert comprising mating insert sections which are conjointly formed to provide an internal bore having respective portions of relatively large and relatively small diameters interfitting with the relatively large and small diameter portions of said pintle for mounting said insert sections on said pintle with said insert being spaced radially inwardly from said inwardly facing surface of said body structure part and for preventing movement of said spherical bearing insert axially of said pintle; a first outer bearing member having a generally hemispherical inner surface conforming to said spherical bearing insert, an outer surface facing outwardly away from the pintle axis toward the inwardly facing surface of said body structure part, a semi-circular rim facing inwardly toward said pintle and having a radius less than the radius of said spherical bearing insert, and abutment parts projecting radially outwardly respectively from the ends of said outer surface and being engageable with said abutments for limiting rocking of said first outer bearing member relative to said pintle, the radial distance between said rim and said outer surface of said first outer bearing member being greater than the radial distance between said spherical bearing insert and said inwardly facing surface of said body structure part; a second outer bearing member having a generally hemispherical inner surface conforming to said spherical bearing insert; and means for securing said first and said second outer bearing members together so as conjointly to embrace said spherical bearing insert with the latter embracing said pintle.

9. In a hinge construction for rockably mounting a chair seat element or the like on a relatively fixed frame element, a body structure comprising a pintle having respective portions of relatively large and relatively small diameters; a generally spherical bearing insert having an internal bore formed with respective portions of relatively large and relatively small diameters interfitting with the relatively large and small diameter portions of said pintle for preventing movement of said bearing insert axially of said pintle; a first outer bearing member formed with a generally hemispherical inner surface conformng to and receiving said spherical bearing insert and having two shoulders on one side of said pintle spaced from one another parallel to the pintle axis; a second outer bearing member formed with a generally hemispherical inner surface conforming to and receiving said spherical bearing insert and having a flange engaging said shoulders at said one side of said pintle and a finger projecting radially outwardly from said flange and between said spaced shoulders; a fastener for securing said outer bearing members together on the opposite side of said pintle; and a spring connected to said finger for biasing said outer bearing members in one direction of rocking relative to said bearing insert and pintle.

10. In a hinge construction for rockably mounting a chair seat element or the like on a relatively fixed frame element, an inner bearing structure having an inner bearing surface formed as a surface of revolution other than cylindrical; a split outer bearing structure comprising two outer bearing members formed conjointly internally to provide an outer bearing surface conforming to and embracing said inner bearing surface whereby said outer bearing structure is held against movement axially of said surface of revolution, one of said outer bearing members having two claws on one side of said inner bearing structure spaced from one another parallel to the axis of said surface of revolution, and the other of said outer bearing members having a flange received in said claws at said one side of said inner bearing structure and a finger projecting radially outwardly from said flange and between said spaced claws; a fastener for securing said outer bear-

ing members together on the opposite side of said inner bearing structure; and a spring connected to said finger for biasing said outer bearing structure in one direction of rocking relative to said inner bearing structure.

11. In a hinge construction for rockably mounting a chair seat element or the like on a relatively fixed frame element, an inner bearing structure having an inner bearing surface formed as a surface of revolution other than cylindrical; a split outer bearing structure comprising two outer bearing members formed conjointly internally to provide an outer bearing surface conforming to and embracing said inner bearing surface whereby said outer bearing structure is held against movement axially of said surface of revolution, one of said outer bearing members having two claws on one side of said inner bearing structure spaced from one another parallel to the axis of said surface of revolution, and the other of said outer bearing members having a flange received in said claws at said one side of said inner bearing structure; a fastener for securing said outer bearing members together on the opposite side of said inner bearing structure; a finger projecting radially outwardly from said flange and between said claws; a spring anchor fixed with respect to said inner bearing structure; and a spring interposed between and connected to said finger and said anchor for biasing said outer bearing structure to rock on said inner bearing structure.

12. In a hinge construction for rockably mounting a chair seat element or the like on a relatively fixed frame element, an inner bearing structure having an inner bearing surface formed as a surface of revolution other than cylindrical; a split outer bearing structure comprising two outer bearing members formed conjointly internally to provide an outer bearing surface conforming to and embracing said inner bearing surface whereby said outer bearing structure is held against movement axially of said surface of revolution, one of said outer bearing members having two claws on one side of said inner bearing structure spaced from one another parallel to the axis of said surface of revolution, and the other of said outer bearing members having a flange received in said claws at said one side of said inner bearing structure; a fastener for securing said outer bearing members together on the opposite side of said inner bearing structure; a finger projecting radially outwardly from said flange and between said claws; a spring anchor fixed with respect to said inner bearing structure; a spring interposed between and connected to said finger and said anchor for biasing said outer bearing structure to rock on said inner bearing structure; a shroud extending circumferentially around a part of said outer bearing structure and covering said spring; and means securing said shroud in fixed relation to said anchor.

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