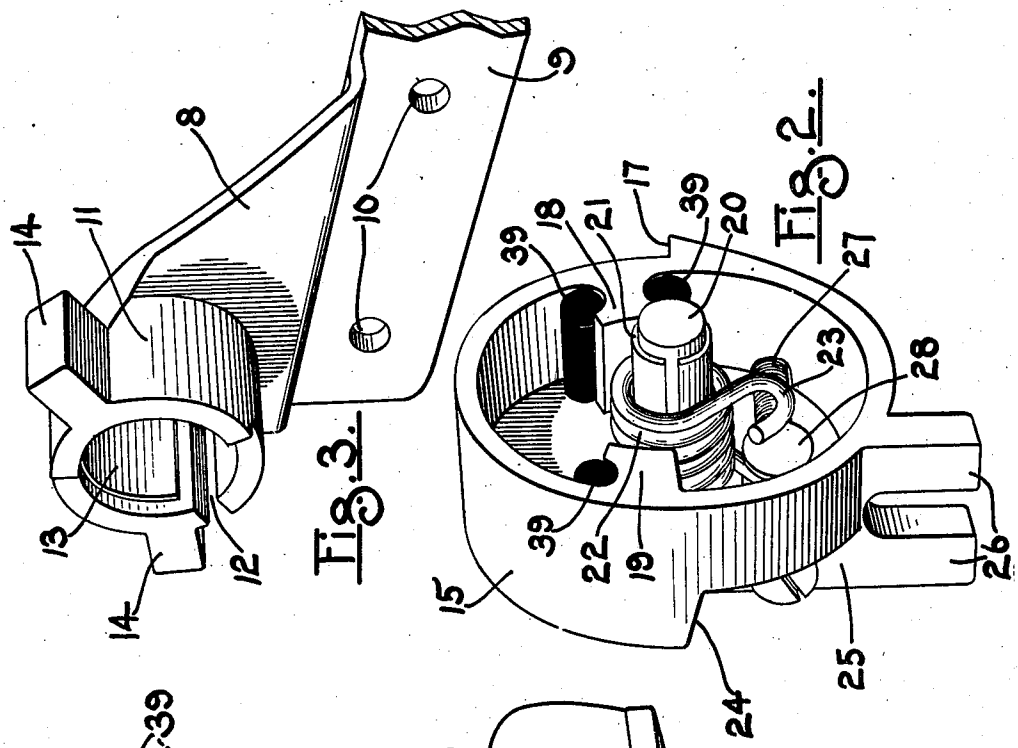
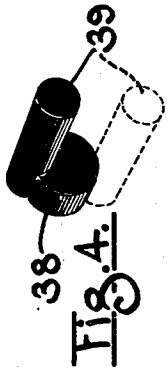
March 2, 1943. S. J. GEDRIS 2,312,638

THEATER SEAT HINGE

Filed Jan. 8, 1940 2 Sheets-Sheet 1





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THEATER SEAT HINGE

Filed Jan. 8, 1940 2 Sheets-Sheet 2

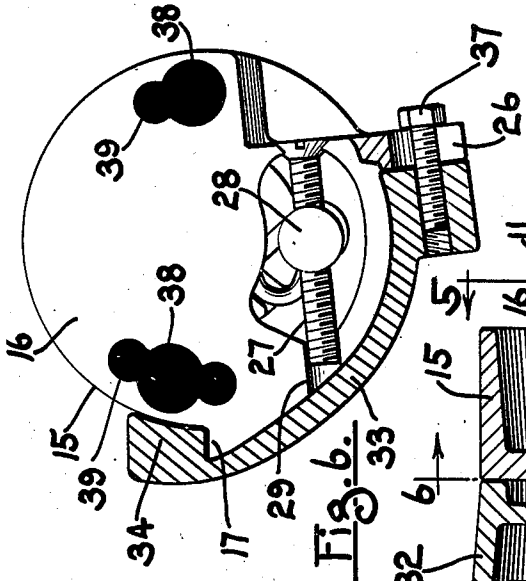


Fig. 6.

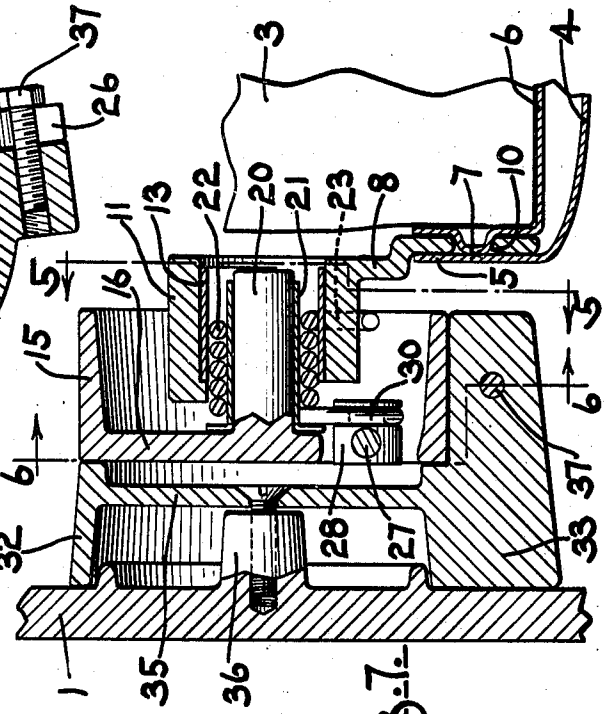


Fig. 7.

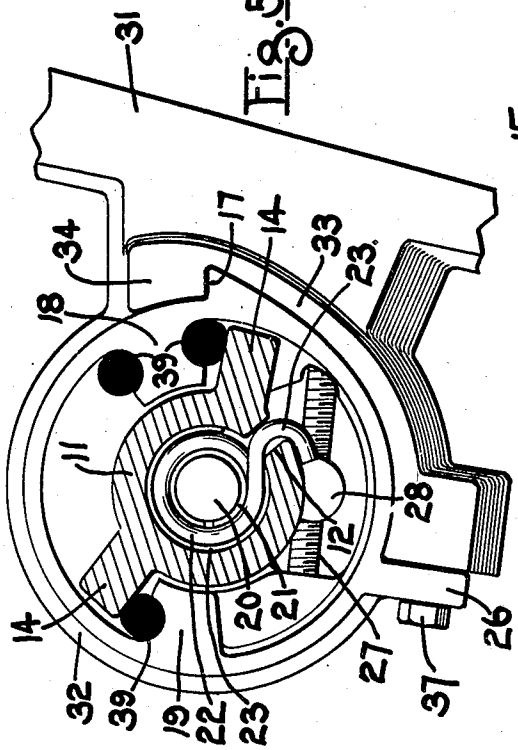


Fig. 5.

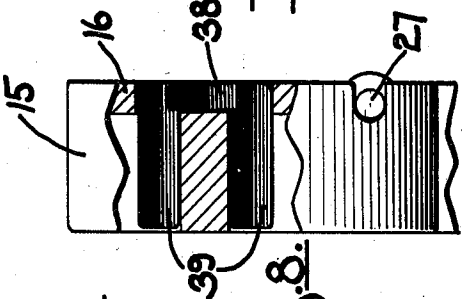


Fig. 8.



Fig. 9.

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UNITED STATES PATENT OFFICE

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THEATER SEAT HINGE

Stanley James Gedris, Grand Rapids, Mich., assignor to Ideal Seating Company, Grand Rapids, Mich., a corporation of Michigan

Application January 8, 1940, Serial No. 312,889

8 Claims. (Cl. 155—85)

This invention relates to hinges for seats and particularly for theater seats. It is an object and purpose of the present invention to provide a strong, durable and economically produced hinge of novel construction for theater seats, and one which can be readily manufactured and assembled at low cost.

The invention is fully described in the following description, taken in connection with the accompanying drawings, in which,

Fig. 1 is a vertical section and side elevation illustrating a theater seat to which my invention is applied.

Fig. 2 is a perspective view of an element of the hinge which is inserted between the standard and the seat.

Fig. 3 is a perspective view showing the hinge element which is mounted upon the standard in connection with the construction shown in Fig. 2.

Fig. 4 is a fragmentary perspective view of one form of rubber bumpers inserted in the element of Fig. 2.

Fig. 5 is a vertical section partly in elevation through the hinge substantially on the plane of line 5—5 of Fig. 7.

Fig. 6 is a vertical section substantially on the plane of line 6—6, of Fig. 7.

Fig. 7 is an enlarged section substantially on the plane of line 7—7 of Fig. 1.

Fig. 8 is a partial section through the element of Fig. 2 showing the double bumper in side elevation, and

Fig. 9 is a perspective view of the fiber sleeve used in connection with the element of Fig. 2.

Like reference characters refer to like parts in the different figures of the drawings.

In a theater seat a pair of vertical standards 1 (Fig. 1) are spaced apart from each other and between them, at the rear, is a back 2 while in front of the lower portion of the back 1 is the immediate seat 3 which is hingedly mounted on and between the standards.

The seat itself is provided with a bottom plate 4 which extends substantially vertically upwardly at each side thereof as at 5. Within the outer plate 4 is an inner plate 6 which also extends upwardly at the sides of the seat and is provided with a plurality of outwardly extending portions 7 all as clearly shown in Fig. 7.

To this seat structure at the rear portion and at each side thereof a hinge member is connected which includes a substantially vertical plate portion 8 provided at its lower side with an offset portion 9 which extends for a distance along each side of the seat member and which is provided with a plurality of openings 10. The portion 9 of this member is adapted to be inserted between the upwardly extending portions of each of the plates 4 and 6 at each side of the seat member, the outwardly extending portions 7 of the inner plate 6 being adapted to be received in the openings 10 and abut against the vertical portion 5 and be secured thereto such as by welding or the like. This obviously rigidly secures this portion of the hinge member to the seat and will be movable therewith to its upper inoperative position and its lowered or operative position.

At the upper part of the plate 8 an outwardly extending cylindrical portion 11 is provided which has a longitudinal slot 12 therein the purpose of which will be hereinafter more fully described. The outer end of the cylindrical portion 11 is offset for a portion of its periphery so that a portion of the cylinder is longer than the remainder. Within the cylindrical portion 11 a sleeve 13 is inserted which is preferably formed of fiber, while at the outer sides of the cylinder it is provided with two integral stop lugs 14. It is to be understood that one of these hinge members just described is connected at each side of the seat 3.

An intermediate hinge element, which is adapted to be positioned between one side of the seat member 3 and one of the standards is clearly shown in Fig. 2 and includes a substantially cylindrical member 15 having a face or cover portion 16 at one end thereof which is adapted to be located toward a standard 1. At one point along the outer surface of the cylindrical portion 15 is a projection or offset portion 17. The inner portion of this cylinder is provided at one point with an inwardly extending lug 18 and at another point substantially opposite thereto with a second lug 19. Between these lugs a cylindrical stud 20 extends outwardly from the face 16 a distance beyond the edge of the cylinder. A sleeve 21, preferably of fiber surrounds the stud 20, around which sleeve is a coiled torsion spring 22 which has one end thereof which is positioned nearest the seat 3 continued in an arm which is bent back upon itself to form a loop 23.

The opposite end of the cylindrical portion 15 is provided with an offset as at 24 which terminates in a substantially vertical face 25 which extends downwardly below the cylindrical portion and is slotted or bifurcated to form the two arms 26. In the face 25 a bolt 27 is adapted to be inserted and extend within the member 15. This bolt threads through a floating member 28 which is inserted into the cylindrical member 15 through

an opening provided therefor in the rear face 16 thereof.

An offset portion 29 (Fig. 6) is provided in the face 16 of the cylinder beneath which one end of the bolt 27 is adapted to be placed and prevents any dislodgement thereof. The opposite end of the coil spring 22 also terminates in an arm which is bent back upon itself to form a hook 30 which is adapted to be received in an annular groove in the floating member 28. In the complete assembly of the hinge itself the cylindrical portion 11 is adapted to be inserted within the cylinder 15 and the slot 12 receives the hook 23 on the coil spring 22 so that when the seat is in its raised position only a slight amount of tension will be present. It will be evident that an adjustment of the bolt 27 will result in varying the tension on the coil spring 22. When the seat is lowered the tension of the spring 22 becomes greater and tends to raise the seat when it is not occupied.

At the inner side of each of the standards 1 at the proper distance between its front and rear edges a cast member is secured having a configuration most easily understood by viewing Figs. 5 and 7. This cast member is provided with a substantially vertical portion 31 which is provided with a substantially cylindrical portion 32 integral therewith which is considerably wider throughout a portion thereof as at 33. The upper terminal of this arcuate enlarged portion is provided with an inwardly extending lug 34. A web 35 extends across this cylindrical portion and has an opening therethrough adapted to receive a screw whereby the entire cast member may be rigidly secured to an abutment 36 integral with the standard 1.

A cross-section of the complete assembly as shown in Fig. 7 discloses that the cylindrical member 15 abuts against the cylindrical portion 32 of the cast member 31 in such a manner that the offset 17 thereon abuts against the underside of the lug 34. The two members are secured together by inserting a screw 37 through the slot between the legs 26 which is threadedly received in an opening in the lower portion in the enlargement (Figs. 5 and 6).

The cylindrical portion 11 on the plate 8 is then received within the cylindrical housing 15 and the slot 12 receives the hook 23 of the coil spring 22 as shown in Fig. 5. Rubber bumpers 38 are inserted in the member 15 one of which is provided with but a single elongated portion 39 and the other of which is provided with two of such elongated portions. Fig. 4 shows the configuration of one of these bumpers having a single extension thereon while the dotted lines indicate the construction of a bumper having two such extensions. Openings are provided in the face 16 of the member 15 for the reception of these bumpers. A double bumper being inserted so that each arm extends along opposite sides of the inwardly extending lug 18, and the single bumper extending along one side of the lug 19.

The stop lugs 14 are adapted to bear against these bumpers as shown in Fig. 5 in such a way so that when the seat is down one arm of each of the bumpers is contacted by the lugs 14, but when the seat is in raised position only one arm of the double bumper has one of the lugs 14 abutting thereagainst.

By the use of the respective inner and outer fiber sleeves 21 and 13, a much quieter action of the seat is obtained. The springs 22 being torsion springs under tension will serve to balance at least a part of the weight of seat 3 and aid in lifting it to upper inoperative position, but will yield to permit the seat to lower to its operative position. The heads of the bolts 27 are accessible after the various elements have been completely assembled so that they may be engaged by a screw driver to tension the springs 22 to greater or less tension as may be desired.

With this construction described, the hinge is readily manufactured, completely assembled in its entirety with the seat 3 and then connected with the standards at 1. The standards are usually located in position first and since such standards are not inserted at a distance apart with any particular degree of accuracy there will invariably be discrepancies and some standards will be spaced farther apart than others by as much as one-half inch. With this construction, allowance has been made by means of the offset portion around the outer end of the cylinder 11 to provide for such discrepancies. If the standards are unusually close together, the cylindrical portion 11 may be inserted within the cylinder 15 until the lower arm 30 of the spring 22 rides against said offset portion, whereas if the standards are unusually far apart, the construction permits of the spacing of the cylinder 11 at a considerable distance away from the bottom 16 of the cylinder 15.

The construction in the main is of cast metal readily produced and easily machined. The parts are quickly assembled, are strong and durable and the hinge construction in practice has proved particularly successful and amply strong to sustain the service to which it is subjected.

The invention is defined in the appended claims and is to be considered comprehensive of all forms of structure coming within their scope.

I claim:

1. In a theater seat or the like, a seat, a hinge member permanently secured thereto at the rear portion and at each side thereof, a second hinged member mounted upon the first hinge member, said two hinge members having interengaging means permitting relative rotative movement of the hinge members with respect to each other about a horizontal axis, standards, and a supporting means projecting inwardly from the inner side of each standard being open at one side and having a lug projecting radially inwardly therefrom, the second hinge member being inserted into said supporting means by endwise movement thereof and held against rotative movement by means thereon engaging said lug, and means for releasably holding the second hinge member from endwise movement and in connection with said supporting means.

2. In a construction of the class described, a standard, a supporting member projecting inwardly from a side of the standard, at one side being open and at one end portion thereof having a radially inwardly projecting lug, a seat, a hinge member secured at a side thereof, a second hinge member mounted upon the first hinge member whereby the first hinge member may be rotated about a horizontal axis with respect to the second hinge member, said second hinge member being shaped as its outer portions to be received within the supporting member on the standard and having a recess at one side to receive said inwardly extending lug, and means at the other end of said supporting means adapted

to engage with the second hinge member to secure it in position.

3. In a construction of the class described, a standard, a supporting member of substantially semi-circular form projecting laterally from the inner side of the standard, said supporting member at its upper end having a radially inwardly extending lug and at its opposite end having a short radial extension, a seat, a hinge member attached to the seat at a side thereof, a second hinge member mounted over the first mentioned hinge member and having an outwardly projecting stud to be received in said first hinge member, said second hinge member being shaped at its outer surfaces to be received within said supporting member on the standard and having a recess to receive the lug thereon, said second hinge member having a projecting portion adapted to lie against said radial extension, and means for securing said second hinge member to said supporting member.

4. A construction containing the elements in combination defined in claim 3, combined with a torsion spring surrounding said stud and connected at opposite ends with the hinge members, said first hinge member having a sleeve bearing surrounding said spring.

5. A construction containing the elements in combination defined in claim 3, combined with a torsion spring located around said stud and having its opposite ends connected respectively with the two hinge members, and inner and outer fiber sleeves between which the torsion spring is placed, the inner sleeve being located around the pivot stud and the outer sleeve within said first hinge member, as specified.

6. A hinge construction for chairs comprising, a hinge member adapted to be attached at a side of a seat including a vertical plate, a horizontally projecting cylindrical portion, lugs extending radially outwardly therefrom, and a horizontal slot therein, a second hinge member adapted to be mounted upon a seat standard comprising, a body having a horizontally projecting stud, a coiled torsion spring surrounding said stud and located between the stud and the cylindrical portion, one end of the spring being inserted in the slot of said first hinge member, and means adjustably connecting the other end of the spring to the other hinge member.

7. A hinge for theater seats comprising, a hinge member adapted to be secured to a side of a seat including, a vertical side plate and a cylindrical portion projecting laterally therefrom, a second hinge member comprising a substantially cylindrical body having a central stud projecting laterally therefrom adapted to be received within said cylindrical portion, said body at the side thereof nearest the first hinge member having diametrically opposed arcuate recesses, and at its opposite side having a recessed face, stop lugs projecting from said cylindrical portion within said arcuate recesses, a coiled torsion spring surrounding said stud having a connection at one end to said first hinge member, a floating member in the recess at the opposite side of the second hinge member having an annular recess, the opposite end of said coiled spring being looped and received in said annular recess, and a bolt passing through said body and said floating member and having a head adapted to be engaged by a tool for turning the same to thereby tension the spring.

8. The combination of elements defined in claim 7, said cylindrical portion on the vertical side plate being slotted for the reception of one end of said spring.

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