(No Model.)

# E. G. DURANT & E. SHUPE.

## FOLDING SEAT.

No. 278,691. Patented June 5, 1883.

Fig. 1.

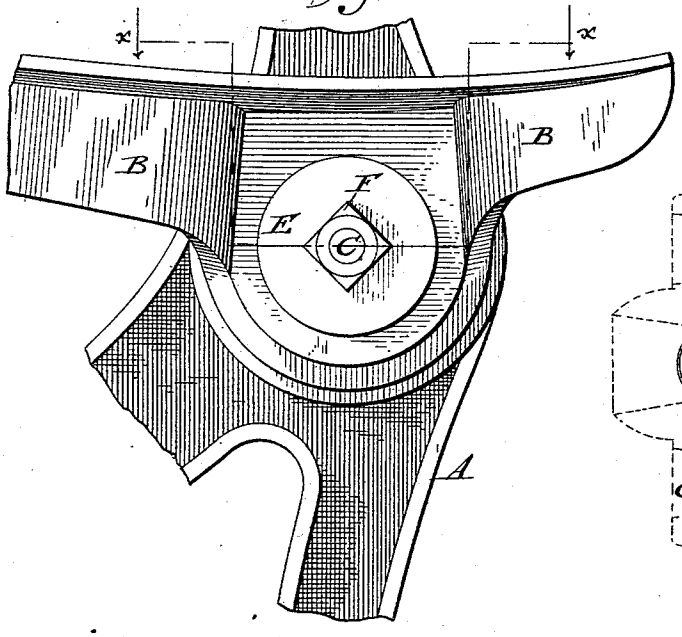



Fig. 2.

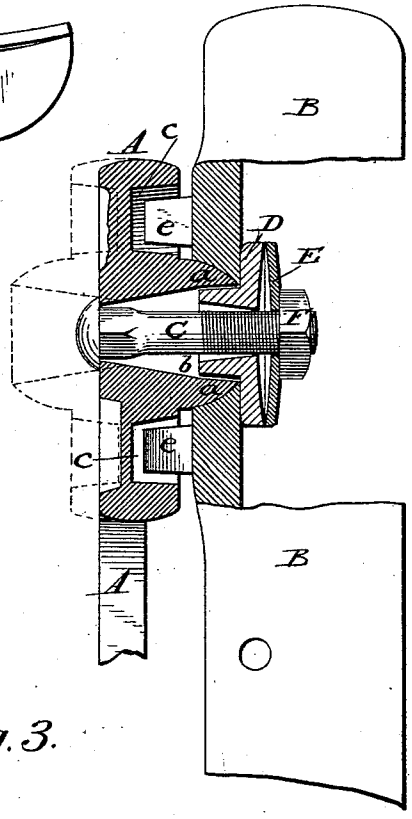



Fig. 3.

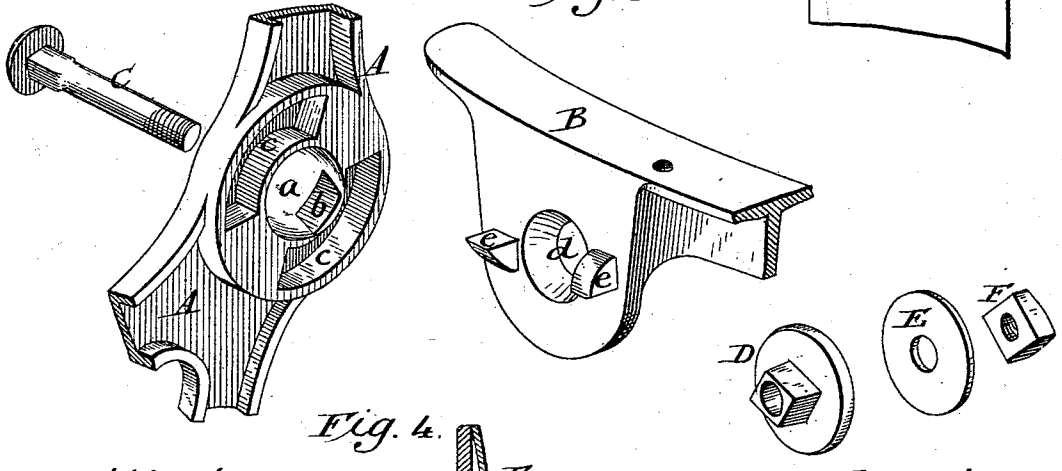
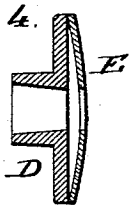



Fig. 4.




Attest.

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# UNITED STATES PATENT OFFICE.

EDWARD G. DURANT AND ELI SHUPE, OF RACINE, WISCONSIN.

## FOLDING SEAT.

SPECIFICATION forming part of Letters Patent No. 278,691, dated June 5, 1883.

Application filed January 6, 1883. (No model.)

*To all whom it may concern:*

Be it known that we, EDWARD G. DURANT and ELI SHUPE, of Racine, Racine county, Wisconsin, have invented certain Improvements in Folding Seats, of which the following is a specification.

This invention relates to that class of school-seats, opera-chairs, and other furniture wherein the seat proper is hinged to swing upward and backward out of the way when not required for use.

The main object of the present invention is to provide a joint wherein there shall be sufficient friction applied to prevent the seat from falling in a noisy manner when released; and to this end it consists in a peculiar arrangement of an elastic washer and supporting-hub therefor, as hereinafter described.

Referring to the accompanying drawings, Figure 1 represents a side elevation of a portion of a seat-supporting standard with the seat-arm attached thereto in accordance with our invention. Fig. 2 represents a horizontal section of the same on the line $x\,x$, the seat-arm being in an operative position. Fig. 3 is a perspective view, showing the various members separated from each other. Fig. 4 is a sectional view, showing a modified form of the spring-washer and its support.

Referring to the drawings, A represents a rigid standard, designed to be bolted to the floor, as usual, and which will be of any suitable form or configuration, except in the particulars hereinafter recited.

B represents one of the seat-supporting arms hinged to the standard. It is to be understood that each chair or seat will embrace two standards and two corresponding arms, the latter giving support to opposite sides of the seat proper, as usual in this class of furniture, this general mode of construction being well understood by all persons skilled in the art. When the seats are arranged in rows, as in opera-houses and other places of public entertainment, a single standard will give support to the adjacent edges of two seats located on opposite sides thereof, this arrangement being a common one and well understood by those familiar with the subject.

Referring now to the peculiarities of our joint, it will be observed that the standard A is provided on its side face with a projecting hub or journal, *a*, of a hemispheric or substantially hemispheric form, through the center of which there extends a tapered opening, *b*, of angular form in cross-section, the smaller end of said opening being at the outer side of the standard. The inner face of the standard is also provided, concentric with the stud, with curved slots *c*, the ends of which serve as stops or shoulders to engage with corresponding lugs for sustaining the seat-arm, as in other chairs of this class.

The seat-arm B is constructed, as particularly shown in Figs. 2 and 3, with a pivotal cavity or recess, *d*, made of suitable form to fit closely upon the end of the hemispheric journal *a*, upon which the arm is sustained. The arm is also provided, as shown in Fig. 3, on opposite sides of the opening, with two studs, *e*, designed to enter the slots in the standard and engage with its ends or shoulders, as before mentioned, for the purpose of limiting the motion of the seat and sustaining the same in an operative position.

It is to be particularly understood that the hemispheric journal *a* is made of such length and the faces of the standard and arm constructed in such form that the arm is permitted a limited rocking or tipping action in a lateral direction upon the journal, or, in other words, a motion in planes lying in line with the axis of the journal. The object of this tipping or rocking motion is to permit the standards, when used in series, to be placed in such position as may be required by the curved lines in which the seats are arranged.

Through the central opening, *b*, in the journal *a* and through the hole in the seat-arm, we extend a pivot-bolt, C, the outer end of which is headed, and preferably, but not necessarily, provided with an angular neck fitting the outer end of the opening, so as to prevent the rotation of the bolt therein. Upon the inner end of this bolt we mount a plate, D, such as represented in Figs. 2 and 3, having an angular neck to enter the corresponding cavity in the journal, and a flat, circular face surrounding said neck and bearing against the inner face of the arm B.

The neck of the plate D is made of such size and form as to admit of its rocking or tipping on the journal, to follow the lateral or tipping motion of the arm B; but the neck is in all cases to be of such character as to prevent the plate from rotating with the arm around the bolt. The outer surface of the plate D is dished or made concave, and against this concave surface we mount a steel washer or spring-plate, E, which is provided with a central opening to admit of the bolt securing said washer in place by means of a nut, F, applied to the end of the bolt, as plainly represented in Figs. 1 and 2.

It will be observed that the bolt and nut, applied as above described, serve to retain the several parts together, and that by tightening the nut, so as to apply tension to the spring-washer, the latter may be caused to force the plate D against the arm B, and the latter against the trunnion in such manner as to produce between said parts a friction sufficient to hold the arm B in any position in which it may be placed. In this manner the danger of the arm falling and producing a disturbing noise is avoided.

It will also be observed that inasmuch as the plate and washer against which the bolt and nut act are prevented from rotating by engagement with the standard, that the motion of the arm has no tendency whatever to turn the bolt or nut, and that, consequently, the rising and falling movement of the seat will not cause the unscrewing of the friction devices, as in many other contrivances for the purpose.

While it is preferred to employ the concave disk D in connection with a flat washer, it is manifest that the outer face of the disk may be made flat, and the spring-washer made dished or concave, as represented in Fig. 4.

Aside from the journal and friction devices, the means for supporting the arm may be modified without departing from the limits of our invention, the studs and slots by which the arm is sustained being common devices in the art, which may be replaced by other equivalent devices known in the art for the same purpose.

When a single standard is to be employed to sustain two seats, it will be provided with the journals on both faces, as indicated by dotted lines in Fig. 2, so as to permit a seat-arm to be applied on each side. When two arms are thus arranged, the single bolt will be continued through the standard and both arms.

It is also obvious that the spring-washer and its supporting-plate may be employed in connection with a seat having a straight or a tapered journal, in place of the spheroidal journal represented herein, in which case the required friction would be produced to prevent the arm from falling; but the seat would be without the provision for permitting lateral movement of the seat-arm.

It is obvious that in place of the metal washer E, a disk of india-rubber or equivalent elastic material may be substituted as an equivalent therefor; but the employment of the metal disk is, for various reasons, preferable.

Having thus described our invention, what we claim is—

1. In combination with the standard having the journal *a*, provided with the angular recess, the seat-arm B, mounted thereon, the plate D, having the frictional surface to bear against said arm, and an angular neck to engage in the recess of the journal, and a central bolt applied substantially as described and shown.

2. In combination with the standard A, the seat-arm B, the central bolt, the plate D, having a loose interlocking connection with the standard, and the spring-plate E, said parts constructed, as described, to permit the arm B to rock or tip in a horizontal direction.

3. In combination with the standard A, having a hemispheric trunnion, *a*, with the angular opening *b* therein, the swinging arm B, seated upon the trunnion, the plate D, provided with the angular neck engaging loosely in the opening of the trunnion, as described, the spring E, and the central bolt, C, as described and shown, whereby the seat-arm is permitted to move both vertically and horizontally, and the frictional devices permitted to adapt themselves to the varying position of the arm.

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