

(No Model.)

3 Sheets—Sheet 1.

G. M. BENNETT.
FOLDING CHAIR.

No. 531,583.

Patented Dec. 25, 1894.

Fig. 1.

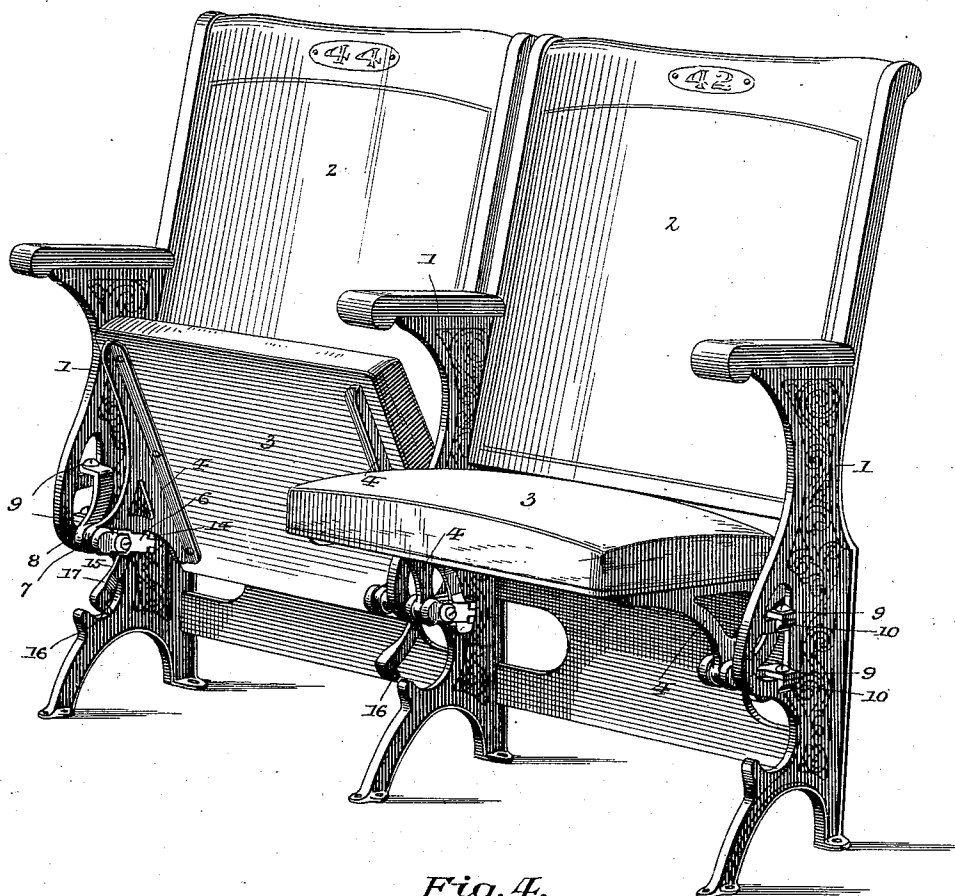
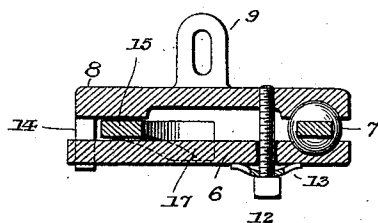


Fig. 4.



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Fig. 2.

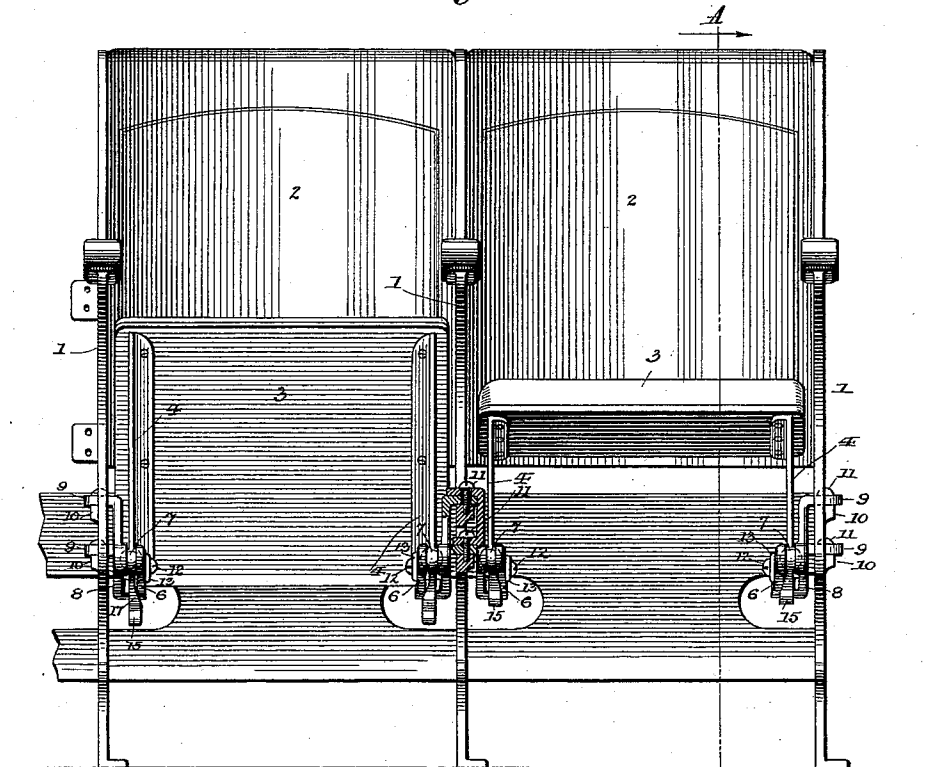
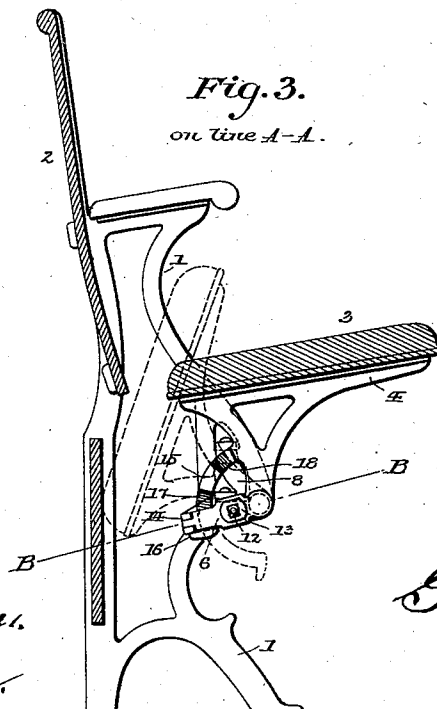


Fig. 3.
on line A-A.



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3 Sheets—Sheet 3.

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Fig. 5.

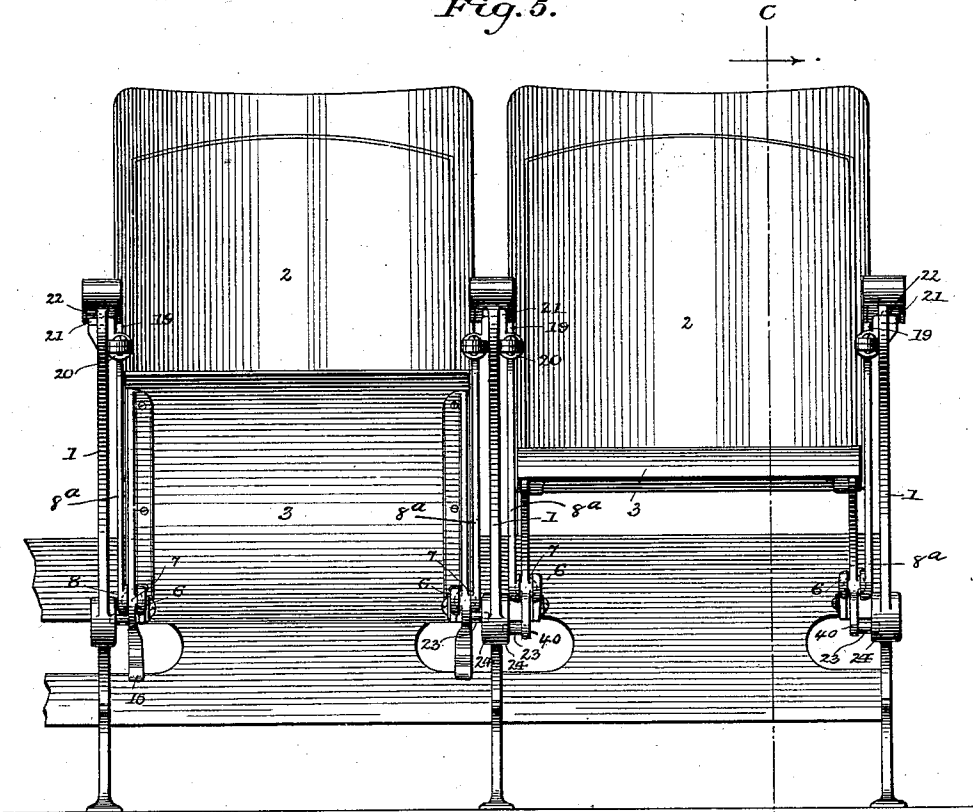
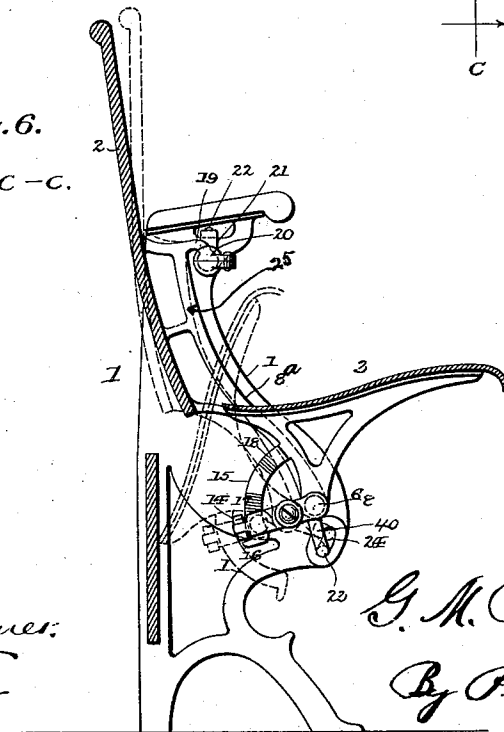


Fig. 6.

on line C-C.



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UNITED STATES PATENT OFFICE.

GEORGE MERRIT BENNETT, OF GRAND RAPIDS, MICHIGAN, ASSIGNOR, BY
DIRECT AND MESNE ASSIGNMENTS, TO THE GRAND RAPIDS SEATING
COMPANY, OF SAME PLACE.

FOLDING CHAIR.

SPECIFICATION forming part of Letters Patent No. 531,583, dated December 25, 1894.

Application filed August 12, 1893. Serial No. 482,994. (No model.)

To all whom it may concern:

Be it known that I, GEORGE MERRIT BENNETT, of Grand Rapids, county of Kent, and State of Michigan, have invented a new and useful Improvement in Folding Chairs, of which the following is a specification.

My invention has reference to chairs with folding seats, such as are now universally used in theaters and public halls, and refers more particularly to the joint by which the seat proper is connected to the standards.

In seats of this character trouble has been caused on account of the parts of the joint becoming loose from wear which caused the seat to rattle as it was raised or lowered, and to operate imperfectly and unsatisfactorily.

The aim of the present invention is to overcome this objection, and it consists in mounting the seat bracket between bearings of such construction that the parts of the bearing will be caused to automatically embrace the bracket with a clamping action as the seat is raised or lowered.

The invention also consists in so connecting the seat brackets with the seat backs and in so sustaining the latter, that as the seat proper is raised or lowered, the seat back will be caused to assume a greater or less degree of inclination as the case may be.

The invention also consists in the details of construction and combination of parts hereinafter described and claimed.

In the accompanying drawings, Figure 1, is a perspective view of two connected chairs having my invention embodied therein, the said chairs being provided with rigid backs. Fig. 2, is a front elevation of the same, partly in section. Fig. 3, is a vertical sectional elevation on the line A—A of the preceding figure. Fig. 4, is a horizontal section on the line B—B of Fig. 3; looking upward from below. Fig. 5, is a front elevation of two connecting chairs having my invention embodied therein, the said chairs being provided with tilting backs. Fig. 6, is a vertical sectional elevation on the line C—C of Fig. 5.

Referring to Figs. 1, 2, and 3, 1 represents the seat standards between which seat backs 2 and seats proper 3 are sustained as usual.

4 represents seat brackets to which the seats

proper are secured at opposite ends in any appropriate manner. These brackets are pivoted to the standards by means of the peculiar joint now to be described, and as the joints for both brackets are identical, the description of one will suffice.

The joint comprises a fixed member 8 provided with a semi-circular socket, and a movable member 6 also provided with a semi-circular socket, between which sockets a globular head or ball bearing enlargement 7 on the seat bracket is mounted to turn therein. The fixed member of the joint is in the form of a vertical bracket and is provided with two laterally extending ears 9, adapted to extend through openings in the seat standard and to be seated on laterally extending lugs 10, the brackets being adjustably secured to the lugs by means of bolts 11, extending through vertical slots in the ears and into the lugs.

When the chairs are set in rows as illustrated, it will be seen that one standard answers for two seats, so that in connecting the brackets as described, the ears of the adjacent brackets will overlap, those on one bracket being seated upon the ears on the other bracket as plainly shown in Fig. 2.

The connection of the brackets with the standards in the manner set forth, is deemed of importance, in that when the standards are set at an angle as on a curve, the brackets may be set parallel to receive the seat proper. The connection is also of importance for the reason that it will not be necessary to accurately set each standard, as the distance may be approximated, and the brackets thereafter accurately set to receive the seats.

In shipping the seat proper may be attached to the seat brackets, and the hanging bracket 8 will also be attached to the seat brackets. So, when the standards are in place it will only be necessary to connect the lugs 9 to the standards.

The movable member of the joint is in the form of a plate, which extends in an approximately horizontal position a slight distance from the bracket, it being sustained thereby so as to be capable of a limited yielding lateral movement by means of a bolt 12, and a spring washer 13 seated around the bolt, be-

neath its head and arranged to bear on the plate. This washer tends to hold the plate against the seat bracket, and acts as a nut lock to prevent the bolt from unscrewing, and also admits of the yielding of the plate laterally when pressure is applied, as more fully described hereinafter.

The rear end of the movable plate is seated in an open notch formed in the laterally bent end 14 of the fixed member or bracket 8, the arrangement being such that the end of the plate will be guided within the notch as it is moved on the bolt.

From the foregoing description it will be seen that by moving the rear end of the plate away from the bracket, its opposite end containing the socket will be caused to approach the fixed member of the bearing, and will act to clamp the globular enlargement or ball bearing on the seat bracket tightly within the socket. In order that this clamping action may be effected automatically when the seat is raised to a folded position, and also when it is lowered to a horizontal or extended position for use, to the end that when the seat is in these positions, the parts of the joint will be tight to prevent rattling, I provide the seat bracket with a curved depending arm 15, arranged to extend within the space between the yielding plate and the bracket 8. This arm is provided at its free end with a lip or stop 16, in position to encounter the laterally bent end 14 of the bracket, when the seat is in an extended position, and serves to limit the extension of the seat. The arm is also formed at its free end on its side with an inclined shoulder 17, which is of such form that as the seat is extended, the shoulder will engage the inner face of the yielding plate and on the continued movement of the seat, will act to move the end of the plate 6 away from the bracket 8 with a wedging action, and cause its front end to act with a clamping effect on the globular enlargement on the seat bracket. Where it joins the seat bracket, the arm is provided with an inclined shoulder 18, which when the seat is raised will engage the inner face of the plate, and act also on the bearing in a manner similar to the shoulder on the free end of the arm.

In Figs. 5 and 6 I have represented my improved joint applied to a chair having a tilting back. In this construction the form and operation of the joint are the same as above described, but the brackets 8^a (which take the place of the brackets 8 shown in Figs. 1, 2 and 3) are of different form, and instead of being supported as above described, they extend upward approximately to the tops of the seat standards where they are connected in such manner as to be capable of swinging backward and forward at their lower ends. They are rigidly connected to the seat backs 2, and sustain the latter.

At its upper end, each swinging member 8^a is provided with a depending finger 19, having on its end a ball or globular enlargement

20, which is seated loosely in a correspondingly shaped socket formed in a bracket or hanger 21 adjustably connected by means of a bolt 22 to the seat standard in a manner similar to the connection of the bracket 8 in the case first described.

The seat bracket is provided with a downwardly projecting arm 40 which extends beyond the globular enlargement thereon, and is bent laterally in the form of a spindle 23, which is mounted in an elongated socket 24, formed in the seat standard as shown. This arm forms a lever which, when the seat is turned, causes the swinging member 8^a to swing backward or forward (according to the direction in which the seat is turned) changing the positions of the connected parts as indicated in full and broken lines in Fig. 6. From this it will be understood that as the seat is raised or lowered, the lower ends of the swinging members 8^a of the bearing between which the seat back is mounted together with the clamping plates and seat joints will be moved back and forth, the seat brackets turning on the spindles 23, as centers, which action will cause the seat back to assume a greater or less degree of inclination according to the movement of the seat proper.

In applying my invention to a school desk where there is no necessity for providing for the adjustment of the bearings between which the seat proper is mounted, the fixed member of the bearing will be formed integral with the standard, instead of being made a separate part as in the cases above described. The clamping action of the joint, however, will be the same. On account of the construction of the seat hinge, as the occupant rises from the seat, his limbs will encounter the front edge of the seat and will cause it to fold back automatically.

Having thus described my invention, I claim—

1. In a folding chair the combination of the seat bracket provided with an enlargement, a bearing for said enlargement, said bearing comprising a fixed and a relatively movable member adapted to clamp the enlargement between them, and means controlled by the bracket for moving the movable member of the bearing toward the fixed member when the seat is turned.

2. In a folding chair the combination with the seat standard and with the seat bracket provided with an arm having an enlargement thereon, of the bearing within which said enlargement is mounted, said bearing comprising a fixed and a relatively movable member coupled together to permit a swinging or vibrating movement of the movable member relatively to the fixed member, and means controlled by the seat bracket for vibrating said movable member.

3. The seat bracket provided with a globular enlargement or head and with an arm having inclined shoulders, in combination with a fixed member provided with a socket, and

a laterally yielding plate coupled with the fixed member, and also provided with a socket, the enlargement on the bracket being seated between said members, in the sockets thereof, and the shoulders on the arm arranged to engage and move the plate laterally as the seat is raised or lowered.

4. In a folding seat the combination with the seat bracket formed with an enlargement, the seat standard provided with a fixed or rigid bearing for said enlargement, a clamping plate coupled at one side of the axis of movement of the seat bracket, and arranged to clamp the enlargement in its bearing, and a cam arm on the seat bracket to engage and rock the clamping plate on its coupling to move the clamping end toward the fixed bearing when the seat is turned.

5. The combination with the fixed seat standards, of the brackets 8^a jointed at their upper ends to the standards, the seat back connected rigidly to said brackets, the bearings sustained at the lower ends of said brackets and comprising each two members, and the seat brackets 4 pivoted between the members of said bearings and extended downward beyond the same, and having their ends mounted in elongated slots in the standards; whereby when the seat is folded upward it will swing the lower ends of the brackets 8^a rearward and the ends of the seat brackets rising in the elongated slots will admit of a

corresponding downward movement of the seat.

6. The combination of the standards, the seat back, the brackets sustaining the back and mounted to tip back and forth with respect to the standards and provided at their lower ends with sockets, the relatively movable plates sustained by the brackets and provided with sockets, the seat brackets pivoted between the standards and provided with enlargements seated in the sockets, and the arms carried by the seat brackets and arranged to engage and move the movable plates as the seat is raised or lowered.

7. In a folding seat the combination of the joint comprising a fixed and a relatively movable member each provided with a complementary socket bearing, the seat bracket provided with an enlargement seated in said bearings and a curved arm carried by the bracket and arranged to engage and move the movable member of the bearing, said arm having a stop lug adapted to engage the seat support and limit the forward movement of the seat.

In testimony whereof I hereunto set my hand, this 22d day of May, 1893, in the presence of two attesting witnesses.

GEORGE MERRIT BENNETT.

Witnesses:

CHAS. A. RENWICK,
ERNST E. KASPER.