

No. 894,828.

PATENTED AUG. 4, 1908.

H. S. HALE & J. B. KILBURN.
SEATING.

APPLICATION FILED JULY 5, 1907.

2 SHEETS—SHEET 1.

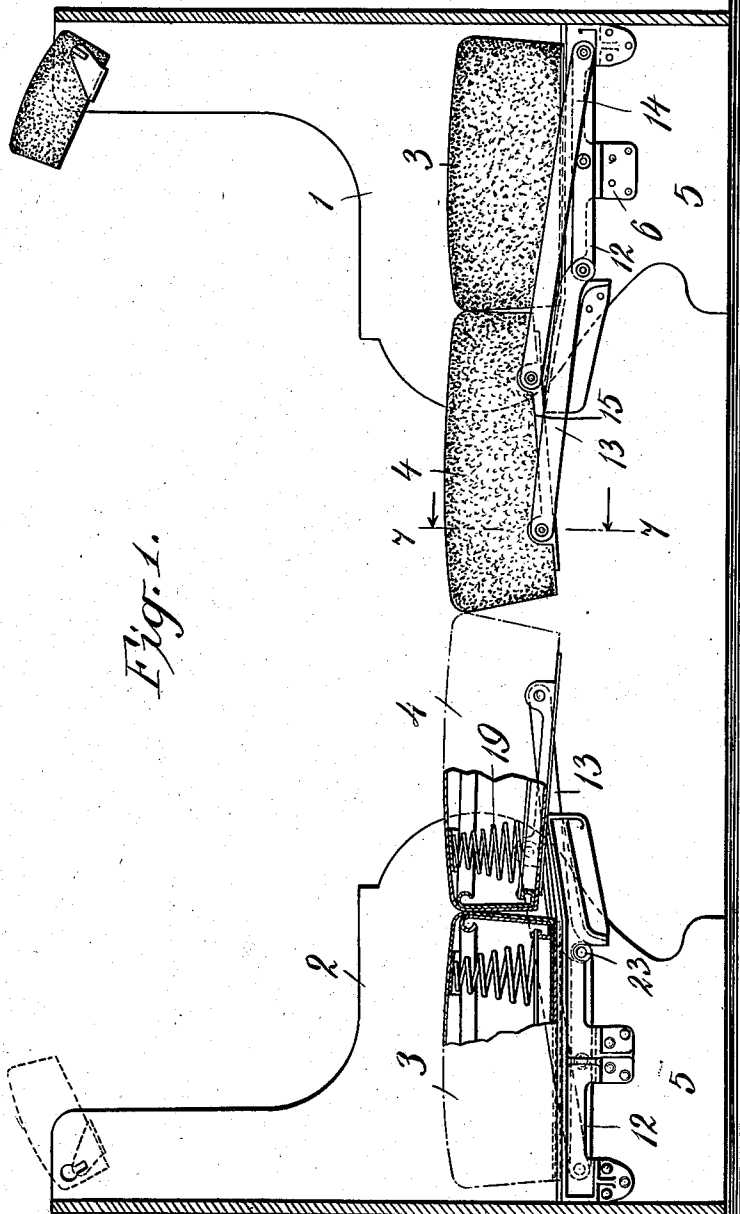


Fig. 1.

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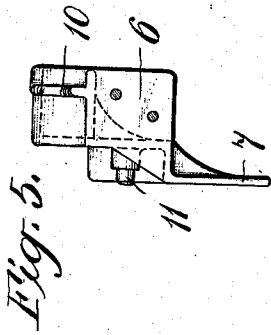


Fig. 5.

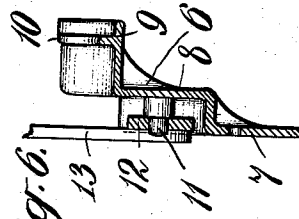


Fig. 6.

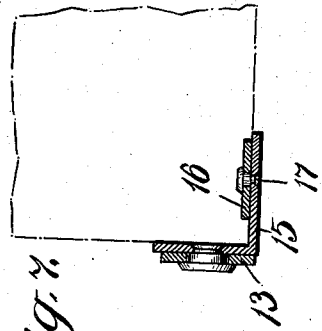


Fig. 7.

Fig. 3.

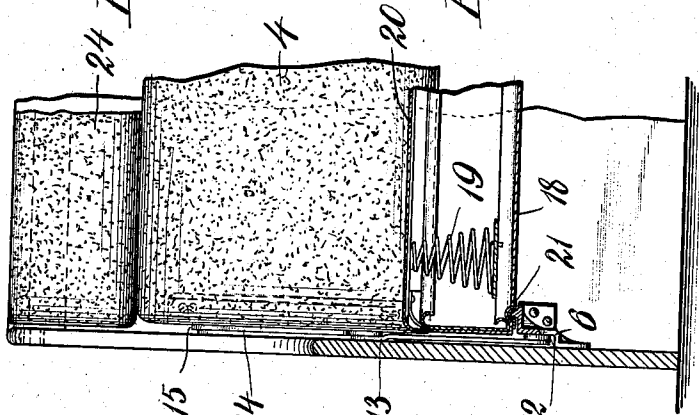


Fig. 2.

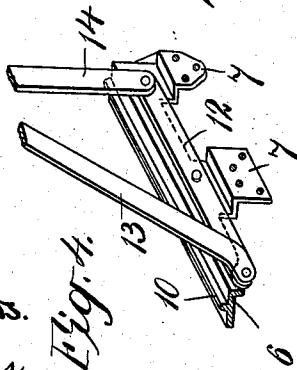
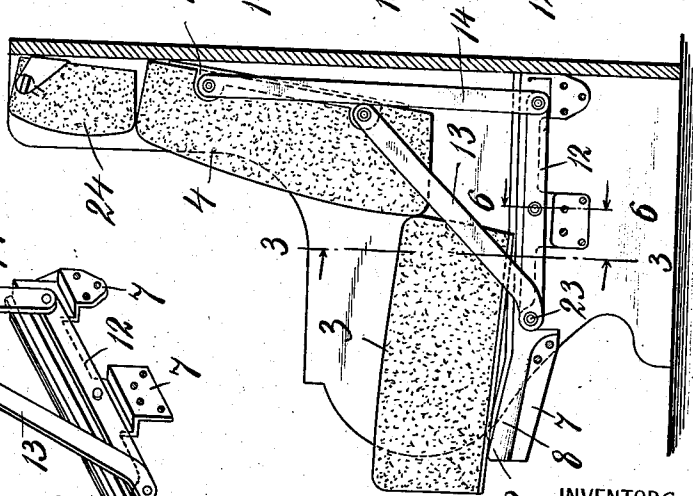


Fig. 4.

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UNITED STATES PATENT OFFICE.

HENRY S. HALE AND JOHN B. KILBURN, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNORS TO THE HALE AND KILBURN MANUFACTURING COMPANY, OF PHILADELPHIA, PENNSYLVANIA, A CORPORATION OF PENNSYLVANIA.

SEATING.

No. 894,828.

Specification of Letters Patent.

Patented Aug. 4, 1908.

Application filed July 5, 1907. Serial No. 382,135.

To all whom it may concern:

Be it known that we, HENRY S. HALE and JOHN B. KILBURN, citizens of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented a certain new and useful Improvement in Seating, of which the following is a specification.

This invention relates to seating for railway cars and has reference more particularly to seating for sleeping-cars constructed so as to constitute a seat extending transversely of the car for use in the daytime and to form a bed at night. In seating for this use as heretofore constructed, the seat-cushions of two adjacent seats facing each other have been arranged to permit drawing them toward each other until their edges meet and the back-cushions to permit moving them from substantially vertical positions to the positions formerly occupied by the seat-cushions, so that all four cushions lie in substantially the same plane to constitute the bed. As thus constructed, the bed has not possessed the softness and resiliency necessary to make it comfortable for the reason that the seat-cushions have had to be made with a firm surface since they support substantially the entire weight of the occupant of the seat during the daytime.

Our invention aims to overcome this objectionable characteristic and, in accordance therewith, we make the back-cushions of the two seats quite soft and provide means for supporting them between the seat-cushions to form the bed. Since the back-cushions support but a comparatively small proportion of the weight of occupants of the seats, they can be made with surfaces which are much more soft and resilient than the seat-cushions and the bed having such back-cushions forming the central portion thereof will be quite comfortable.

In carrying out our invention in the preferred form, we provide lever systems for shifting the back-cushions of two adjacent seats facing each other from the normal or vertical positions to positions in which they lie between the two seat-cushions and in substantially the same plane therewith.

We have illustrated one embodiment of our invention in the accompanying drawings, in which

Figure 1 is an elevation, partly in section, of two adjacent seats with the cushions thereof arranged to form a bed; Fig. 2 is an elevation of one of the seats, showing the cushions as arranged for use in the daytime; Fig. 3 is a longitudinal section on the line 3—3 of Fig. 2; Fig. 4 is a perspective view, showing one of the sets of levers; Fig. 5 is an elevation of one of the supporting plates; Fig. 6 is a section on the line 6—6 of Fig. 2; and Fig. 7 is a section on line 7—7 of Fig. 1.

Referring to the drawings, 1 and 2 indicate two adjacent seats facing each other, each having a seat-cushion 3 and a back-cushion 4. A seat-frame 5 supports each of the seats at the aisle end thereof and the opposite end may be similarly supported or may be supported upon the wall of the car.

Mounted on the frame or other support at each end of each of the seats, is a support 6, shown in Figs. 5 and 6, having portions 7 lying adjacent and secured by means of screws to the frame 5, integral portions 8 above the portions 7 formed to provide a narrow space between them and the frame, and a flanged portion 9 at the upper edge, this flanged portion 9 lying in a horizontal plane and having a rib 10 formed integral therewith on its upper face. On the portion 8, at the center of the support, is a stud 11 forming a pivot upon which is mounted a lever 12. This lever extends lengthwise of the support 6 and is adapted to rock upon the pivot 11 in the narrow space between the portions 8 and the frame at the end of the seat. Pivotaly connected to the forward and rear ends of the lever 12, are two levers 13 and 14 respectively; the opposite ends of which are pivotaly connected to the ends of an angular cushion-support 15, to which one end of the back-cushion 4 is detachably connected, as by means of studs and keyhole slots. This cushion-support is shown in detail in Fig. 7 from which it will be seen that the back-cushion 4 has a plate 16 secured to the bottom thereof, in which are cut slots adapted to receive the studs 17 on the cushion-support 15.

The seat-cushion 3 preferably consists of a metallic frame 18, supporting spiral springs 19, over which the covering 20 of the cushion is drawn, this covering being secured at its edges to the frame in any suitable manner.

Secured to the bottom of the seat-cushion, adjacent to each end thereof, is a metallic strip 21, pressed to provide a longitudinal groove therein adapted to receive the rib 10 on the support 6. At its forward end, each of the supports 6, including the flange 9 and rib 10, is turned upwardly at a slight angle to the horizontal, as shown at 22, Fig. 2, so that when the seat-cushion 3 bears upon the outer ends of the supports 6 at its forward edge and upon the horizontal portions of the supports 6 at its rearward edge, it will lie at a slight incline to the horizontal, this position being most conducive to the comfort of the occupant of the seat.

In order to synchronize the movement of each of the back-cushions 4 at the two ends thereof, the lever systems consisting of the levers 12, 13 and 14 at opposite ends of each back may be connected so as to operate together. This is preferably done by cutting away the supports 6 opposite the forward ends of the levers 12, as shown in dotted lines in Fig. 4, and securing the two levers 13 at opposite ends of the seat upon the ends of a rod 23 which extends the full length of the seat and near its ends passes through openings in the forward ends of the two levers 12. The usual movable head-rolls 24 may be provided above the back-cushions 4. As thus constructed, when the seating is to be arranged for day use, the parts are brought to the positions illustrated in Fig. 2, the backs being in substantially vertical planes at the rearward edges of the seat-cushions and supported by the levers 13 and 14. Each seat-cushion 3 is at a slight incline to the horizontal, it being supported at its forward edge upon the upwardly inclined ends of the supports 6 and backward movement thereof being prevented by the lower edge of the back-cushion 4.

If it is desired to form a bed from the four cushions of the two seats, the back-cushion 4 of each seat is drawn outwardly and swung around upon the two levers 13 and 14 until further movement is prevented by the engagement of levers 13 with the flanges joining the portions 7 and 8 at the forward ends of the supports 6. During this movement of the back-cushion, the seat-cushion 3 is moved rearwardly from the position shown in Fig. 2 to that shown in Fig. 1. This movement of the seat-cushion is readily effected, as the cushion rides down the inclined portions of supports 6 at their outer ends guided by the ribs 10. When these movements have been completed, the cushions 3 and 4 lie in substantially the same plane, with their edges close together, and form, with the cushions of the adjacent seat which have been similarly shifted, a bed consisting of the four cushions. The bed thus formed has the two seat-cushions at its ends and the

two back-cushions forming the middle portion of the bed, and the back-cushions can be so constructed that their surfaces are quite soft and resilient enough to make the bed comfortable, for the reason that when the structure is used as a seat, these cushions sustain but a small proportion of the weight.

To shift the cushions back to their original positions in order to form two seats, the back-cushions 4 are raised and turned upon the pivots of the levers 13 and 14, the inclination of the backs being varied by these levers as they turn, until the backs are in the vertical positions again. By supporting each pair of levers 13 and 14 upon a lever 12 adapted to rock about a central pivot, the edge of the cushion 4 adjacent to the cushion 3 can be raised a short distance in a plane closely approaching the vertical so that though the edges of the cushions 3 and 4 are close together when the cushions are in the same horizontal plane, the edge of the cushion 4 will clear that of the cushion 3 in transforming the structure into a seat again. With the parts in the positions shown in Fig. 1, the forward ends of the levers 6 are elevated to the extent permitted by the coaction of the rear ends of the levers with the walls of supports 6 joining the portions 7 and 8 at the rear ends of the supports. When the movement of cushion 4 to shift it back to the vertical position is begun, the levers 12 are rocked on their pivots so that the connected ends of the levers 12 and 13 and the rod 23 are depressed, and this operates both to raise and to move outwardly of the seat the pivots of the lower ends of levers 14. Cushion 4 is thus moved outwardly a short distance and when swinging around, turns about a pivot of lever 14 which is somewhat elevated, these changes in the relation of the parts being quite sufficient to permit the edge of cushion 4 to clear the edge of cushion 3.

This construction possesses the further advantage that the seats are more comfortable than those heretofore used for this purpose, as the seat-cushions are arranged at the inclination to the horizontal which has been found most conducive to comfort. In the car-seats as heretofore constructed capable of being converted into beds, the seat-cushions have been supported in a horizontal plane when used in the seats so that they can be drawn toward each other in this plane until their edges come together to form the bed. In our improved seating, this objectionable feature is avoided and the seats as well as the bed, are made more comfortable.

What we claim as new and desire to secure by Letters Patent of the United States is:—

1. The combination of two adjacent seats facing each other and each having a seat-cushion and a back-cushion, and means for supporting the two back-cushions between

the two seat-cushions with all four of the cushions in substantially the same plane, substantially as described.

2. The combination of two adjacent seats facing each other and each having a seat-cushion and a back-cushion, and means for supporting the two back-cushions between the two seat-cushions with the adjacent edges of the back-cushions close together and the non-adjacent edges thereof close to the adjacent edges of the two seat-cushions and with the yielding surfaces of the four cushions lying in a single plane, substantially as described.

3. The combination of two adjacent seats facing each other and each having a seat-cushion and a back-cushion, and means for moving the two back-cushions from substantially vertical positions to positions in which they are horizontally-disposed between the two seat-cushions with their yielding surfaces upward, substantially as described.

4. The combination of two adjacent seats facing each other and each having a substantially vertical back-cushion and a seat-cushion disposed at an incline to the horizontal and means for supporting all four of said cushions in a horizontal plane with said back cushions between said seat-cushions, substantially as described.

5. The combination of two adjacent seats facing each other and each having a substantially vertical back-cushion and a seat-cushion disposed at an incline to the horizontal, means for supporting said seat-cushions in a horizontal plane, and means for moving the two back-cushions to positions in which they are horizontally-disposed between the two seat-cushions, substantially as described.

6. The combination of two seats facing each other and each having a seat-cushion and a back-cushion, and a pair of levers for supporting each end of each of said back-cushions, said levers being adapted to move said back-cushions from positions in which they are substantially vertically disposed to positions in which they are horizontally disposed between the two seat-cushions, substantially as described.

7. A seat having a seat-cushion and a back-cushion provided with a yielding surface and levers for supporting the back-cushion and moving it from a position in which it is substantially vertically disposed at one edge of the seat-cushion with said yielding surface facing the other edge to a position in which it is horizontally disposed at the opposite edge of the seat-cushion with said yielding surface upward, substantially as described.

8. A seat having a seat-cushion and a back-cushion provided with a yielding surface and a pair of levers pivotally connected

to each end of the back-cushion for moving it from a position in which it is vertically disposed at one edge of the seat-cushion with said yielding surface facing the other edge to a position in which it is horizontally disposed at the opposite edge of the seat-cushion with said yielding surface upward, substantially as described.

9. A seat having a seat-cushion and a back-cushion provided with a yielding surface, a pair of levers pivotally connected to each end of the back-cushion for moving it from a position in which it is vertically disposed at one edge of the seat-cushion with said yielding surface facing the other edge, to a position in which it is horizontally disposed at the opposite edge of the seat-cushion with said yielding surface upward, and means for synchronizing the movement of the levers at the opposite ends of the back-cushion, substantially as described.

10. A seat having a seat-cushion and a back-cushion having a yielding surface, and means for supporting the back-cushion in the same plane with the seat-cushion and closely adjacent to one edge thereof with said yielding surface upward and in a position in which it is vertically disposed at the opposite edge of the seat-cushion with said yielding surface facing said first-named edge, substantially as described.

11. A seat having a seat-cushion and a back-cushion, a pivotally mounted lever, and back-supporting levers each pivotally connected at one end to said lever and at its other end to said back-cushion, substantially as described.

12. A seat having a seat-cushion and a back-cushion, a pivotally mounted lever, back-supporting levers pivotally connected at one end to the ends of said lever and at their opposite ends to said back-cushion, and stops for arresting movement of said levers when the back-cushion is in substantially the same plane as the seat-cushion, substantially as described.

13. A seat having a frame, a seat-cushion and a back-cushion, a lever and two back-supporting levers each pivotally connected at one end to said lever and at the other end to said back-cushion, said lever being pivoted upon the frame intermediate the points of connection of said back-supporting levers, substantially as described.

14. The combination of two adjacent seats facing each other and each having a vertically disposed back-cushion and a seat-cushion supported at an incline to the horizontal, and means for supporting the four cushions in substantially the same plane with the back-cushions between the seat-cushions, substantially as described.

15. The combination of two adjacent seats facing each other and each having a seat-

cushion and a back-cushion and means for moving the two back-cushions from substantially vertical positions to positions in which they are horizontally disposed between the two seat-cushions with the four cushions lying in substantially a single plane, substantially as described.

This specification signed and witnessed this 20th day of June, 1907.

HENRY S. HALE.
JOHN B. KILBURN.

Witnesses:

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P. J. TUCKER.