

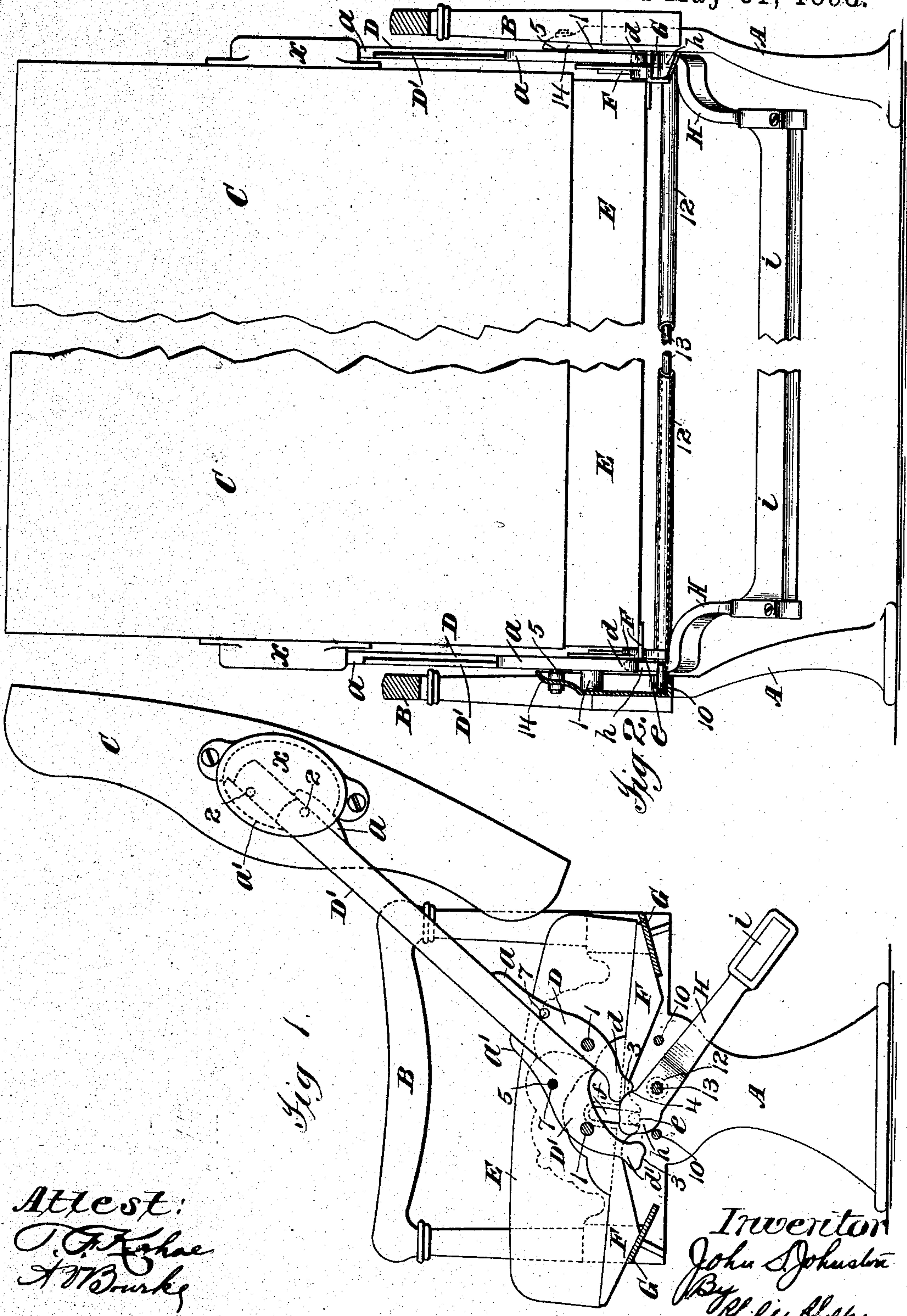
(No Model.)

2 Sheets—Sheet 1.

J. S. JOHNSTON.  
CAR SEAT.

No. 605,059.

Patented May 31, 1898.



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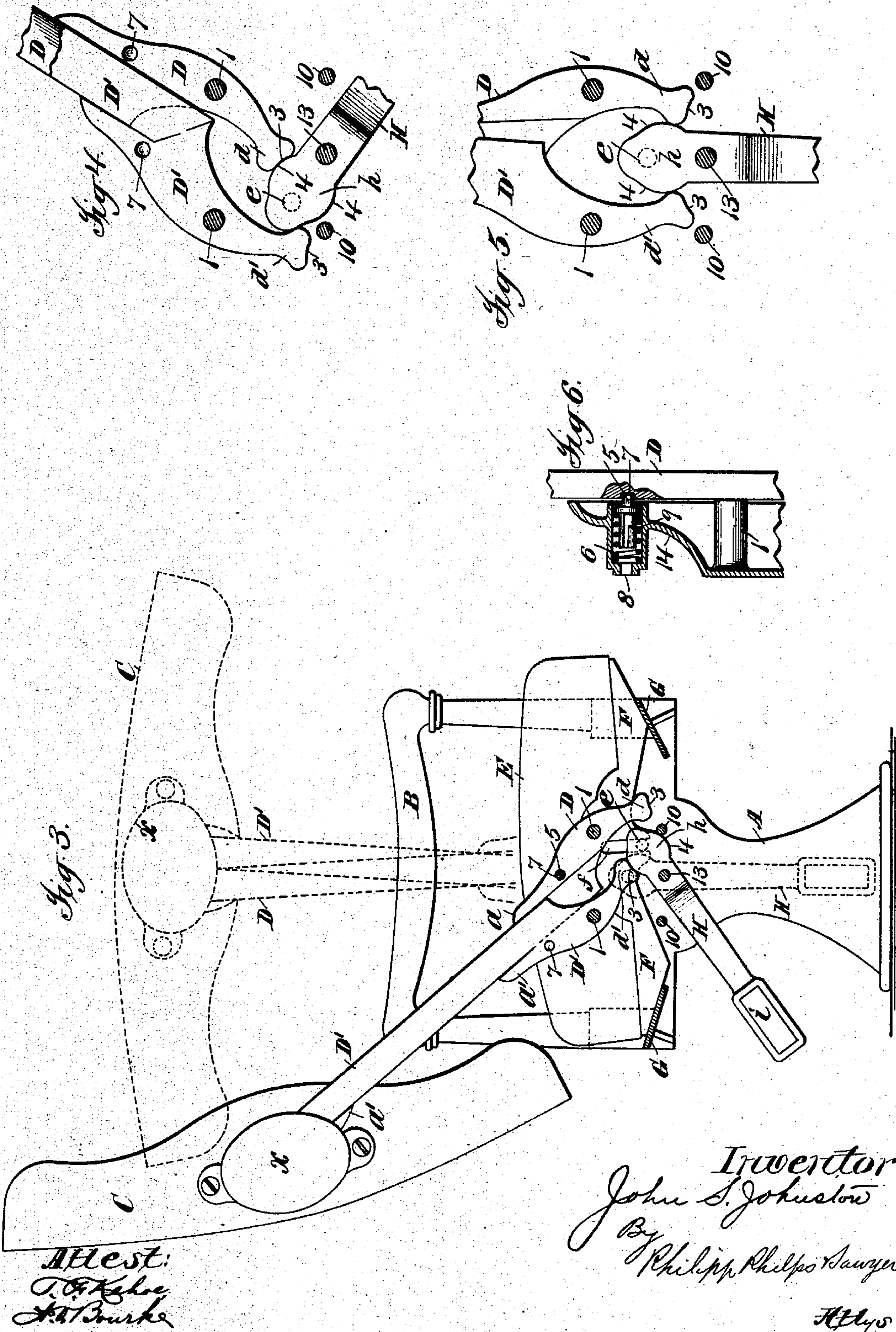
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# UNITED STATES PATENT OFFICE.

JOHNS S. JOHNSTON, OF NEW YORK, N. Y., ASSIGNOR TO THE POTTIER & STYMUS COMPANY, OF SAME PLACE.

## CAR-SEAT.

SPECIFICATION forming part of Letters Patent No. 605,059, dated May 31, 1898.

Application filed April 16, 1898. Serial No. 677,793. (No model.)

*To all whom it may concern:*

Be it known that I, JOHNS S. JOHNSTON, a citizen of the United States, residing at New York, county of New York, and State of New York, have invented certain new and useful Improvements in Car-Seats and Similar Con-

structions, fully described and represented in the following specification and the accompanying drawings, forming a part of the same.  
The object of the present invention is to provide an improved foot-rest construction for car-seats of that class in which the back may be shifted for facing in opposite directions and in which the foot-rest is automatically shifted with the back and thus brought into position for use on the rear side of the seat to which it is applied, leaving the space beneath the front side of the seat free for baggage.

The invention includes an improved construction of foot-rest and operating connections which may be applied in connection with shiftable backs and back-shifting arms of different forms and movement; but the improved foot-rest is especially designed for use in connection with seats having back-reversing movements, such as shown and described in Letters Patent Nos. 484,434, 542,398, and 542,411; and the invention consists in part of combinations including features of construction in such seats.

In Patent No. 542,411 I have shown and described a foot-rest operated by levers extending between and actuated by extensions on pairs of back-reversing arms, and the present invention consists in part of improvements on that construction by which a smoother action of the levers in connection with the reversing-arms is secured and the foot-rest held firmly in position for use, with the pressure upon the foot-rest supported by the levers and reversing-arms, but in such a manner as to prevent such pressure moving the back so as to disturb the occupant of the seat by the use of the foot-rest, these improvements being especially applicable when the foot-rest-actuating levers of said patent are used in connection with a rest-bar swinging from one side of the seat to the other, the necessary long movement of the rest-bar and the support of the foot-pressure by the reversing-

arms making it difficult to secure the desired smooth movement in reversing and the comfort of the seat occupant during the use of the foot-rest.

For a full understanding of the invention a detailed description of a construction embodying all the features of the same will now be given in connection with the accompanying drawings, showing all the features of the invention as applied in their preferred form, and the features forming the invention will then be specifically pointed out in the claims.

In the drawings, Figure 1 is a vertical cross-section of the seat, taken inside the frame. Fig. 2 is a rear view of the seat as shown in Fig. 1, with the frame cut away on one side to show the construction. Fig. 3 is a view similar to Fig. 1, showing in full lines the seat reversed from the position shown in Fig. 1 and in dotted lines the position of the back and foot-rest in central position during reversal. Figs. 4 and 5 are detail enlarged views showing two positions of the foot-rest and actuating extensions of the back-shifting arms in reversing from the position shown in Fig. 1 to that shown in Fig. 3. Fig. 6 is an enlarged detail section showing a lock that may be used.

Referring to said drawings, A represents the side frames of the seat, which are shown as metal stands with the usual wooden arms B secured thereto.

C is the shiftable seat-back; D D', the reversing-arms by which the seat-back is carried and reversed. E is the seat-cushion, provided with the inclined seat-support F, moving upon the inclined seat-supporting bars G, so as to rock the seat to secure the desired inclination as it is moved to and fro during the reversal of the back. This construction of shiftable seat-back, reversing-arms, and shifting seat is the same as that of my Patent No. 542,411, above referred to, and will be understood from said patent without a detailed description or illustration herein, the reversing-arms D D' being mounted on the frame at their lower ends by pivots 1 and pivoted to the seat-back at their upper ends by pivots 2, as shown in dotted lines in Fig. 1, beneath the cap x. One of the pivots 2 may be in the cap x and the other directly on the seat-back



C, as described in Patent No. 542,411, or the upper ends of both arms may be pivoted directly to the seat-back, as shown and described in Patent No. 542,398. The back-reversing arms are thus pivoted to the seat frame and back on opposite sides of the vertical center, and, as shown, the portions of said arms between the seat and back lie in parallel planes and overlap each other and are of such width as to avoid separation at their inner edges during the reversing operation, being preferably of equal width, as shown, so as to have the appearance of a single arm in both positions of the seat, and the arms D D' are provided, respectively, with stops *a a'* on opposite sides of the line of intersection of the arms, so that each arm by these stops acts to arrest the movement of and support the other, a self-supporting back and back-reversing arm construction thus being provided. The seat-cushion E is shifted sidewise as the back is shifted by the pin *e* entering the slot *f*, formed in the cushion-frame F, this pin *e* being carried by a lever actuated by the arms D D', as fully described hereinafter.

The present invention relates to the construction of the foot-rest and those parts of the reversing-arms D D' by which the foot-rest is actuated, the object of the invention being to provide an efficient and durable construction of foot-rest, avoiding any looseness or play of the parts and with the foot-rest moving easily and smoothly from one side of the seat to the other in reversing the back and held in position for use firmly and in such a manner as to support the foot-pressure of the user without any strain upon the back-reversing arms tending to shift or shake the back, so as not to disturb the occupant of the seat. I secure this result by the improved construction shown, as follows:

The reversing-arms D D' are provided with extensions *d d'* below the pivots 1, which engage the heads *h* on the upper ends of foot-rest-actuating levers H, which are pivoted at fixed points on the seat-frame A, as in Letters Patent No. 542,411, above referred to, except that the arrangement of the levers H relatively to the extensions *d d'* and the form of the heads and extensions are changed. These levers H preferably form in themselves the single side bars of the foot-rest and carry the single rest-bar *i*, as shown, and may be mounted in the frame A in any suitable manner; but the construction shown is preferred, in which they are secured together and stayed by sleeve 12, which is mounted upon a shaft 13, extending between and secured in the end frames, so that a long bearing for the foot-rest is thus provided, assuring a strong and durable construction and smooth movement. The shaft 13 also serves as a tie and stay for the two stands A forming the end frames of the seat.

Referring now to the arrangement and form of the heads *h* and extensions *d d'*, these are

so formed and arranged relatively to each other and to the pivots 1 of the reversing-arms D D' and the pivots 13 of the levers H that the foot-pressure upon the rest-bar *i*, transmitted through the levers H and the heads *h*, is supported by the extensions *d* or *d'* in contact therewith in a direction substantially radial to the arc of swinging movement of the extension as the arm D or D' is swung upon its pivot 1 in reversing the back, so that this pressure upon the foot-rest is supported directly by the pivots 1 and has no tendency to swing or shake the back C. The arrangement may be such that the engaging surfaces of the heads *h* and the extensions *d* or *d'* are in line with the pivots 1 2 of the arms D or D' having the extensions by which the pressure on the head *h* is then supported; but preferably the arrangement, as shown, will be such that the pivot 1 is slightly outside the line between the pivot 2 and the center of the engaging surface of the extension and head *h*, so that the foot-rest and pressure upon it tends to lock the arms D D' and back C in position when the back is fully reversed in either direction.

As shown in Figs. 1 and 3, in which the two opposite positions of use of the seat and foot-rest are shown, the heads *h* of the levers H are engaged only by the extensions *d* or *d'* on the rear side of the heads *h*, which extensions support the pressure upon the foot-rest, and the extensions *d* or *d'* on the front side of the heads *h* are out of contact with the heads *h* in these positions. There is, therefore, no pressure of the heads *h* upon the front extensions *d* or *d'* tending to move the latter and thus swing or shake the back, and the free movement of the arms D or D' carrying such extensions is thus permitted at the commencement of the reversing movement. As the reversal of the back commences, however, both extensions *d* and *d'* come into contact with the heads *h*, the levers H swinging as permitted by the movement of the engaging extensions *d* or *d'* and being held in contact with the engaging extensions by the weight of the foot-rest, so as to move smoothly, and when the other extensions *d* or *d'* come into contact with the head *h* both sets of extensions *d d'* move together and in contact with the heads *h* on opposite sides, so as to positively and smoothly carry the heads with them as the back is reversed and thus swing the levers H smoothly and uniformly to shift the foot-rest. Toward the end of the movement the extensions *d d'* at the front of the seat in its reversed position move out of contact with the heads *h*, the latter then being moved and controlled for the balance of the movement by the extensions *d* or *d'* at the rear of the seat. It is not necessary in this construction to use stops for the foot-rest or arms, as the arms D D' are self stopping and supporting, and the weight of the foot-rest H will prevent overthrow of the foot-rest; but I have shown and preferably use stops 10 in the frame A on op-



posite sides of the foot-rest, with which the heads *h* make contact on their under sides opposite the extensions *d* or *d'* in either position of use, so that the downward movement of the heads *h* is thus limited and they cannot be thrown down and out of position by accidental or mischievous raising of the foot-rest or overthrow of the foot-rest in reversal and so that these heads are held positively on both sides and against movement in either direction, securing a firmer and more rigid support of the foot-rest in position for use and a more durable construction.

The engaging surfaces of the extensions *d* *d'* and the heads *h* may be otherwise formed and secure a good action; but the best result is attained by a construction such as shown, in which the ends of the arms *D D'* are provided with curved surfaces 3 and the heads *h* with similarly-curved surfaces 4 on opposite sides, these surfaces 3 4 forming the engaging surfaces of the extensions *d d'* and the heads *h* by which the foot-rest is held in its positions of use. With these curved engaging surfaces, as shown, a long bearing of the extensions and heads is secured, so that the wear is reduced and a more efficient support of the foot-rest and more durable construction secured. A better action in reversing is thus secured also, as the engaging surfaces 3 of the arms *D D'* move around upon the surfaces 4 of the heads *h* in the first and last parts of the reversing movement, one set of the extensions *d* or *d'* making such contact in the first part of the movement and the other set of extensions in the latter part of the movement, which materially aids in securing the smooth easy action desired without looseness or play of the foot-rest relatively to the extensions *d d'* during the entire reversing movement.

This seat may be used without a lock, or a lock such as shown in either of the above-mentioned Letters Patent or of any common or suitable construction may be applied thereto. As shown, a lock is employed consisting of a spring-pressed plunger 5, mounted in the cap 14 of the frame *A* outside the reversing-arms and pressed inward by spring 6, this plunger 5 being adapted to spring into an opening 7 in one or the other of the arms *D D'* in the opposite positions of the back and hold the seat against reversal until the plunger 5 is withdrawn, which is done by inserting a key through slot 8 in the cap 14 and hollow head of the plunger and turning the key until it engages shoulder 9 on the plunger-head, so as to hold and withdraw the latter by a pull upon the key.

The operation of the construction will be readily understood from the drawings and above description, with a further brief explanation and reference to the above-mentioned Letters Patent for the action of the reversing-arms.

In the position shown in Fig. 1 it will be seen that the foot-rest is held in position and

foot-pressure upon the rest-bar *i*, supported by the engagement of the heads *h* with the extensions *d*, the opposite sides of the heads *h* bearing against stops 10, and the seat-cushion *E* has the desired projection and inclination at the front of the seat. The seat having been unlocked by withdrawing plunger 5 from opening 7 in the arm *D'*, the back is moved over and reversed from the position shown in Fig. 1 to that shown in Fig. 3, the back and foot-rest passing through the central position, (shown in dotted lines in the latter figure,) the seat being moved at the same time by the pins *e* in slots *f* from the position shown in Fig. 1 to that shown in Fig. 3, so as to secure the desired projection and inclination of the seat-cushion at the opposite side of the seat. In the reversed position shown in Fig. 3 the foot-rest and arms coact in exactly the same manner as in Fig. 1 except that the extensions *d'* engage the heads *h*, and the latter engage the stops 10 on the opposite side of the seat from those engaged thereby in Fig. 1. The operation of the arm extensions *d d'* with the heads *h* on the levers *H* as the seat-back is thus reversed is shown in detail in Figs. 4 and 5, Fig. 4 showing the position early in the reversal after the arms *D D'* and heads *h* have been moved sufficiently to bring the extensions *d'* into contact with the head *h*, and Fig. 5 showing the central position during reversal with the extensions positively moving and controlling the foot-rest. From these views it will be seen that in the preferred construction shown the engaging surfaces 3 on extensions *d* simply move around the curved bearing-surfaces 4 on the heads *h* at the commencement of the reversal, retaining a positive pressure upon the head as the foot-rest swings, so that the foot-rest is positively held and moves smoothly during this part of the movement, and the extensions *d'* on the other arms *D'* then come into contact with the heads *h*, and both extensions then press upon opposite sides of the head by their heels or inner bearing portions, the heads *h* thus being held on both sides and positively moved during the further reversal of the back until the parts are brought into a position corresponding to that of Fig. 4 at the opposite side of the seat, and curved bearing-surfaces 3 of the extensions *d'* come in contact with the bearing-surfaces 4 on their side of the heads *h* and hold the latter positively as the curved surfaces move on each other until the heads *h* are brought against stops 10, while the other extensions *d* leave the heads *h*, so as to be out of contact with them when the foot-rest is brought into the position shown in Fig. 3 by the full reversal of the back.

It will be understood that the invention is applicable to seats of other construction and movement than that shown and that it is not to be limited to the exact form or arrangement of the foot-rest and actuating devices therefor shown in the construction illustrated, but that many modifications may be made



therein by those skilled in the art while retaining the invention.

What I claim is—

1. The combination with a shiftable seat-back and a pair of back-shifting arms pivoted to the seat-frame, of a lever carrying a foot-rest bar and mounted to swing the rest-bar from one side of the seat to the other into position for use at the rear of the seat, and extensions on said arms below the frame-pivots by which the lever is rocked in opposite directions when the back is shifted and the pressure on the rest-bar supported during use, said extensions and lever being constructed and arranged to transmit the pressure on the rest-bar to the supporting extension in a direction substantially radial to the arc of movement of the extension, substantially as described.
2. The combination with a shiftable seat-back and a pair of back-shifting arms pivoted to the seat-frame, of a lever carrying a foot-rest bar and mounted to swing the rest-bar from one side of the seat to the other into position for use at the rear of the seat, extensions on said arms below the frame-pivots and on opposite sides of the lever for rocking the lever in opposite directions when the back is shifted, and stops on the frame for limiting the movement of the foot-rest in both directions, substantially as described.
3. The combination with a shiftable seat-back and a pair of back-shifting arms pivoted to the seat-frame, of a foot-rest mounted to swing from one side of the seat to the other into position for use at the rear of the seat, and extensions on the arms below the frame-pivots for actuating the foot-rest in opposite directions when the back is shifted and arranged to engage the foot-rest when in position for use by one of the extensions with the other extension out of contact with the foot-rest, substantially as described.
4. The combination with a shiftable seat-back and a pair of back-shifting arms pivoted to the seat-frame, of a foot-rest mounted to swing from one side of the seat to the other into position for use at the rear of the seat, and extensions on the arms below the frame-pivots for actuating the foot-rest in opposite directions when the back is shifted and arranged to support the pressure on the foot-rest in use by one of the extensions in a direction substantially radial to the arc of movement of the extension and with the other extension out of contact with the foot-rest, substantially as described.
5. The combination with a shiftable seat-back and a pair of back-shifting arms pivoted to the seat-frame, of a foot-rest mounted to swing from one side of the seat to the other into position for use at the rear of the seat, extensions on the arms below the frame-pivots for actuating the foot-rest in opposite directions when the back is shifted and arranged to engage the foot-rest when in position for use by one of the extensions with the

other extension out of contact with the foot-rest, and stops on the frame at opposite sides of the foot-rest, substantially as described. 70

6. The combination with the seat frame and back and reversing-arms pivoted to said seat frame and back and each having two stops thereon adapted to arrest the movement of and support the other arm, of a foot-rest mounted to swing from one side of the seat to the other into position for use at the rear of the seat, and extensions on the arms below the frame-pivots to actuate the foot-rest and arranged to engage the foot-rest when in position for use by one of the extensions with the other extension out of contact with the foot-rest, substantially as described. 80

7. The combination with the seat frame and back and reversing-arms each pivoted to the seat frame and back on opposite sides of the vertical center, the portions of said arms between the seat and back lying in parallel planes and overlapping each other and being of such width as to avoid separation at their inner edges during the reversing operation, of a foot-rest mounted to swing from one side of the seat to the other into position for use at the rear of the seat, and extensions on the arms below the frame-pivots to actuate the foot-rest and arranged to engage the foot-rest when in position for use by one of the extensions, with the other extension out of contact with the foot-rest, substantially as described. 85 90 95 100

8. The combination with a seat frame and back and reversing-arms each pivoted to the seat frame and back on opposite sides of the vertical center and having two stops thereon on opposite sides of the line of intersection with the other arm adapted to arrest the movement of and support the latter, the portions of said arms between the seat and back lying in parallel planes and overlapping each other and being of such width as to avoid separation at their inner edges during the reversing operation, of a foot-rest mounted to swing from one side of the seat to the other into position for use at the rear of the seat, and extensions on the arms below the frame-pivots to actuate the foot-rest and arranged to engage the foot-rest when in position for use by one of the extensions with the other extension out of contact with the foot-rest, substantially as described. 105 110 115 120

9. The combination with a shiftable seat-back and back-shifting arms pivoted to the seat-frame and having extensions  $d, d'$  below the frame-pivots, of levers  $H$  having heads  $h$  engaged by said extensions  $d, d'$  to swing the levers from one side of the seat to the other and toward the rear of the seat as the back is shifted and a foot-rest actuated by said levers  $H$ , said extensions  $d, d'$  and heads  $h$  being provided with concave and convex surfaces 3, 4, forming extended bearing-surfaces for the swinging and support of the foot-rest, substantially as described. 125 130

10. The combination with a shiftable seat-



back and back-shifting arms pivoted to the seat-frame and having extensions  $d, d'$  below the frame-pivots, of levers H carrying a rest-bar and having heads  $h$  engaged by said extensions  $d, d'$  to swing the rest-bar from one side of the seat to the other and into position for use at the rear of the seat, said extensions  $d, d'$  and heads  $h$  being formed with curved surfaces forming extended bearing-surfaces for the support of the foot-rest and by which the pressure of the foot-rest is supported in a direction substantially radial to the arc of movement of the extensions, substantially as described.

11. The combination with a shiftable seat-back and back-shifting arms pivoted to the seat-frame and having extensions  $d, d'$  below the frame-pivots, of levers H carrying a rest-bar and having heads  $h$  engaged by said extensions  $d, d'$  to swing the rest-bar from one side of the seat to the other and into position for use at the rear of the seat, said extensions  $d, d'$  and heads  $h$  being formed with bearing-surfaces by which the pressure of the foot-rest is supported in a direction substantially radial to the arc of movement of the extensions, substantially as described.

12. The combination with a shiftable seat-back and back-shifting arms pivoted to the seat-frame and having extensions  $d, d'$  below the frame-pivots, of levers H carrying a rest-

bar and having heads  $h$  engaged by said extensions  $d, d'$  to swing the rest-bar from one side of the seat to the other and into position for use at the rear of the seat, said extensions  $d, d'$  and levers H being constructed and arranged for engagement of the heads  $h$  by only the extension  $d$  or  $d'$  on the rear side of the seat when the foot-rest is in position for use, substantially as described.

13. The combination with a shiftable seat-back and back-shifting arms pivoted to the seat-frame and having extensions  $d, d'$  below the frame-pivots, of levers H carrying a rest-bar and having heads  $h$  engaged by said extensions  $d, d'$  to swing the rest-bar from one side of the seat to the other and into position for use at the rear of the seat, said extensions  $d, d'$  and levers H being constructed and arranged for engagement of the heads  $h$  by only the extension  $d$  or  $d'$  on the rear side of the seat when the foot-rest is in position for use, and stops 10, engaging the opposite sides of the heads from the extensions, substantially as described.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

JOHNS S. JOHNSTON.

Witnesses:

PATRICK GALLAGHER,  
FRANK FRIEDLEBEN.