

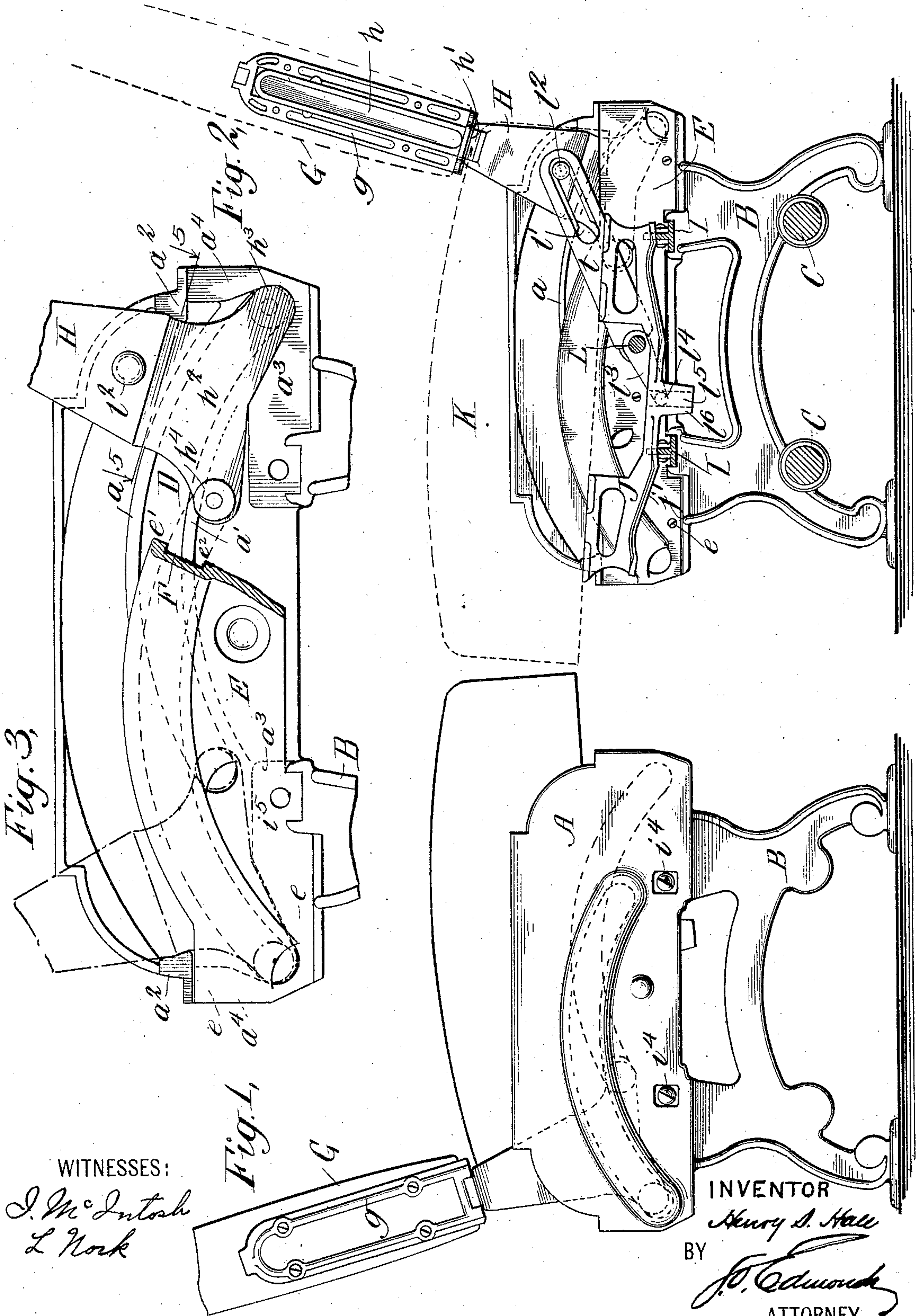
No. 785,421.

PATENTED MAR. 21, 1905.

H. S. HALE.
CAR SEAT.

APPLICATION FILED APR. 29, 1904.

2 SHEETS—SHEET 1.



WITNESSES:

J. McIntosh
L. Nork

INVENTOR

Henry S. Hale

BY

J. P. Edwards
ATTORNEY

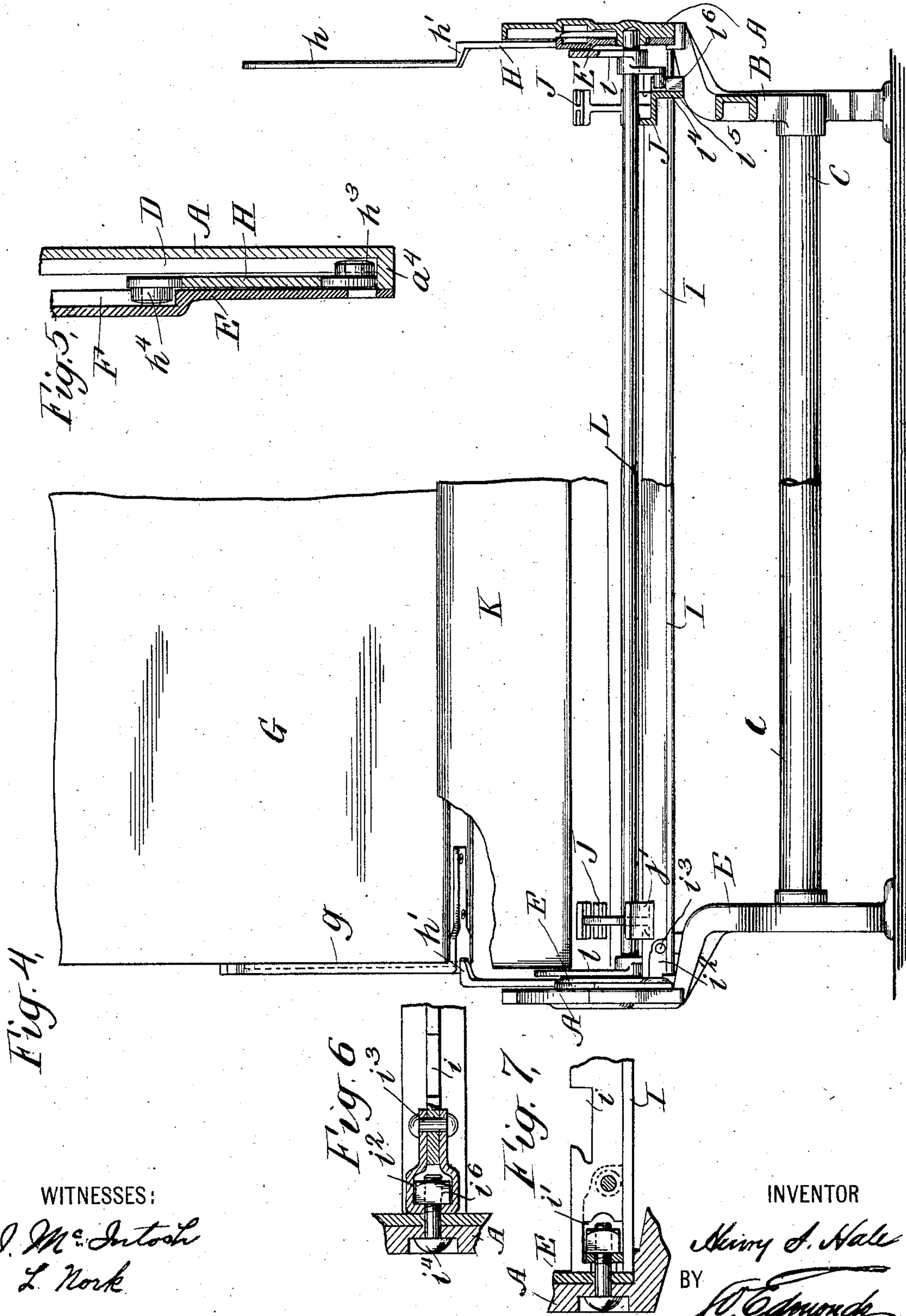
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INVENTOR

Henry S. Hale
BY *J. P. Edmunds*
ATTORNEY

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J. M. Intosh
L. Nork

UNITED STATES PATENT OFFICE.

HENRY S. HALE, OF PHILADELPHIA, PENNSYLVANIA.

CAR-SEAT.

SPECIFICATION forming part of Letters Patent No. 785,421, dated March 21, 1905.

Application filed April 29, 1904. Serial No. 205,469.

To all whom it may concern.

Be it known that I, HENRY S. HALE, a citizen 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 Car-Seats, of which the following is a specification.

The invention applies particularly to that type of car-seat in which is employed a back of the "walk-over" variety, such back not being turned completely over in the process of reversal, but being moved from one edge of the seat-cushion to the other, with the same edge of such back always adjacent to such cushion, one or the other side of such back being employed, according to the facing direction to which the parts are moved.

One of the objects of the invention is to provide mechanism for supporting the back and permitting the reversal thereof and the consequent shifting of the seat-cushion, which mechanism shall be strong and durable in operation, which shall in and of itself determine the proper inclination of the back, which shall maintain the proper relation between the back and cushion, and which shall be capable of an even and uniform movement in the reversing operation, which results in changing the facing direction of the seat structure.

In carrying out the invention I provide the back with depending arms, preferably detachable from said back, and end frames, with which such depending arms coact. Combined with each such end frame I provide a plate or supplemental frame, and in each such end frame and plate I provide guideways adapted to receive and determine the movement of sheaves, studs, or other projections formed upon the depending arms supporting said back. One of the sheaves, studs, or other projections upon one of said depending arms coacts with the guideway in the end frame, while the other, formed, preferably, on the opposite side of said arm, coacts with the guideway in said plate or supplemental frame. The guideways at each end of the seat, instead of forming together a continuous arc, are preferably arranged upon arcs having different centers.

As a result whereof, since the back-plate is influenced by one guideway at one time and

by the other guideway at another time during the reversing operation, the movement of a given point upon the back-plate or the back supported thereby is not in the true arc of a circle, but upon a slightly-flattened arc, whereby not only is the proper inclination of the back assured in its ultimate position after the reversing operation, but the proper relativity between the lower edge thereof and the surface of the seat-cushion is maintained, not only during such operation, but in either ultimate position of the mechanism. Extending between and connecting the end frames are sills upon which operate rockers supporting the seat-cushion, and intermediate of such rockers and the back-arms are arranged levers or other suitable connections whereby the movement of such back-arms is transmitted to such rockers to move the same coincidently with the reversal of the back. Such movement may be utilized both to bodily shift and tilt the seat-cushion or merely to tilt the same without bodily shift, as desired.

In the drawings, Figure 1 is a side elevation of a reversible seat embodying my improvement. Fig. 2 is a central vertical section, the seat and back cushions being removed. Fig. 3 is an enlarged view of one of the end frames and its coacting plate or supplemental frame. Fig. 4 is a front elevation, partly in section. Fig. 5 is a sectional view on the line 5 5, Fig. 3; and Figs. 6 and 7 are enlarged details illustrating a preferred method of connecting the sills to the end frames, as hereinafter described.

Referring to the drawings, in which similar letters denote corresponding parts, it will be observed that I have illustrated the invention in connection with a back of the walk-over type, although without the intention of thereby limiting the invention in this regard, as the movement between the back and seat-frame may be adapted for use with a back of the "turn-over" or other type. It will also be observed that each end of the seat is substantially the same as the other end, although in practice the supporting-legs of the frame (and perhaps other parts) may be somewhat modified at the wall end of the seat for the accommodation of heating-pipes, &c. A descrip-

tion of the mechanism at one end of the seat will therefore be sufficient for the purpose of the present disclosure.

A designates one of the end frames, and B the supporting-legs formed integral therewith or secured thereto. Said supporting-legs may, if desired, be provided with foot-rests C, extending from one end of the seat to the other.

a, a' designate parallel ribs extending over a portion of the inner surface of the end frame A and forming thereby the guideway D. These ribs are preferably formed integral with said end frame A, although, if desired, they may be separately formed and secured thereto by riveting, brazing, or in other suitable manner. Also secured to or formed integral with the internal face of the end frame A are shoulders or stops a^2 and a^3 and raised portions a^4 , the purpose whereof will be presently explained.

E designates a plate or supplementary end frame, here shown as secured to the end frame A by means of bolts e . The inner face of this plate E is provided with parallel ribs e', e^2 , forming a guideway F. The stops or shoulders a^3, a^3 and raised portions a^4, a^4 project from the inner surface of the end frame A to such a distance as that when the plate E is laid upon the same and the bolts e made fast the proper relation will be secured between the end frame A and said plate E.

G designates the back-cushion. At either end this is provided with a socket g , adapted to detachably receive the upwardly-extending end h of the back-supporting arm H. This arm is preferably provided with the shoulder or offset h' and with the enlarged head h^2 , provided at its corners and on opposite sides with sheaves h^3, h^4 , the former coacting with the guideway D in the end frame A and the latter coacting with the guideway F in the plate E. As clearly shown in Fig. 3, the head h^2 of the back-arm H coacts in either operative position with a stop a^2 and with a stop or shoulder a^3 , said head reaching the extreme end of the guideways D and F at the same moment that contact is made with said stops or shoulders. By reason of this construction a firm, strong, and positive support is afforded for the back-arm, and in consequence the back-cushion supported thereby.

I I designate the sills extending between and connecting the two end frames A. These are here shown as formed of T-iron, the web of the T projecting upwardly and said web being recessed at i to receive rockers J, said rockers being flanged on either side and the flange upon one side coacting with the notched portions of said recesses i to prevent upward displacement of said rockers when the cushion is removed. In securing the sills I to the end frame I recess the same near each end at i' , and within this recess I arrange a clip i^2 , secured to the upwardly-extending web by means of bolt or rivet i^3 . The bolts i^4 pro-

ject through the end frame A and through perforations i^5 in the plate E, passing thence through a perforation in said clip i^2 , the ends of said bolts i^4 being engaged by nuts i^6 within said clips. By this means a firm and positive mechanical connection is made between the various parts and one which permits the ready and uniform use of such material as T-iron for the sills.

The rockers J may be provided with any suitable means for coaction with the seat-cushion K—such, for instance, as dowel-pins projecting upwardly from said rockers and coacting with apertures in the under side of said cushion. Where it is desired to both bodily shift the cushion and tilt upwardly the forward edge thereof as well, I accomplish this by forming inclines j' upon the under sides of the rockers and provide a connection between said rockers and the reversible back. In the present instance I have illustrated a tie-rod L extending between and connecting the end frames A, but journaled loosely in said end frames. Keyed or otherwise secured at each end to this tie-rod L is a lever l , the upper end whereof is provided with an elongated slot l' , coacting with a pin or boss l^2 , formed upon the inner face of the back-arm H. Also keyed or otherwise secured upon the tie-rod L is a link l^3 , the end whereof is provided with an inwardly-projecting pin l^4 , coacting with a slot l^5 , formed in the depending ear l^6 , preferably cast integral with the rocker J. As will be seen, the movement of the back and back-arm is transmitted, through the lever l , to the tie-rod L and thence to the link l^3 , which by the coaction of its pin l^4 with the slot l^5 on the rocker causes the simultaneous movement of said rocker. The arrangement described accomplishes more than this, however, for in addition to shifting the rockers simultaneously with the movement of the back, the movements of the back-arms at each side of the seat are synchronized and undue wrenching thereof (as when reversing the back by the application of power to one edge thereof only) avoided.

The operation of the invention has been described to some extent in connection with the description of the mechanism. The movement of the back from one edge of the seat-cushion to the other causes the sheaves h^3, h^4 to traverse their respective guideways D and F, passing from one end of said guideways to the other. By reason of the arrangement of said guideways above described, the same being on arcs struck from different centers, the movement imparted to the back is not a truly circular movement, but a movement upon a slightly-flattened curve, and during this movement and from start to finish thereof the inclination of the back-arms is effected in such manner as that when said back-arms come to a stop by coaction with the stops or shoulders above described an inclination is given the seat-

back corresponding to but the reverse of the inclination which characterizes it in the other operative position. Due to this movement of the seat-back a very advantageous relation may be maintained between the lower edge thereof and the surface of the seat-cushion. Of course it is desirable that in either operative position of the parts the seat-cushion and the lower edge of the seat-back be almost in contact. A difficulty which has characterized other constructions heretofore suggested has resided in the fact that to get this relation of the seat cushion and back in the operative positions of the parts it was necessary to raise the back considerably above the cushion during its transition from one operative position to the other in order that the same might free the surface of such cushion in its movement. In my invention, however, this objection is avoided, since without materially (or, in fact, at all) varying the contour of the upholstered surface of the cushion the arrangement of the guideways may be such as that substantially the same relation (and that a close one) may be maintained between the lower edge of the seat-back and the upper surface of the seat-cushion, not only in both operative positions of the mechanism, but during the operation of reversal from one such position to the other.

Although I have described in detail a preferred embodiment of the invention, I desire it to be understood that such invention is not limited to that specific embodiment, as modifications may readily be made without departing from the spirit thereof. As an instance of this I refer to the construction of the guideways herein shown and described. These may be formed in the manner above referred to, or they may be formed by pressure and without the separate or integral ribs bounding the upper and lower edges of such guideways.

Having now described my invention, what I claim as new therein, and desire to secure by Letters Patent, is as follows:

1. In a seat, the combination with a frame, a seat cushion and a back, of a back-arm, and coacting guideways arranged below said back on arcs having independent centers, substantially as described.

2. In a seat, the combination with a frame, a seat cushion and a back, of a back-arm and oppositely-disposed coacting guideways arranged below said back on arcs having independent centers, substantially as described.

3. In a seat, the combination with a frame, a seat cushion and a back, of a back-arm having projections on opposite sides thereof and coacting guideways arranged below said back on arcs having independent centers, substantially as described.

4. In a seat, the combination with a frame, a seat cushion and a back, of a back-arm and coacting guideways supported by said frame

below said back and arranged on arcs having independent centers, substantially as described. 65

5. In a seat, the combination with a frame including an end plate and a supplemental end plate, of a back-arm and coacting guideways formed in said plates, and arranged on arcs having different centers, substantially as set forth. 70

6. In a seat, the combination with a frame including an end plate and a supplemental end plate, of a back-arm having sheaves or projections on opposite sides thereof, and coacting guideways formed in said plates, and arranged on arcs having different centers, substantially as set forth. 75

7. In a seat, the combination with a frame and a back, of a back-arm having a sheave or projection formed on either side thereof below said back, each of said sheaves or projections coacting with a guideway supported by said frame, said guideways being arranged on arcs having independent centers, substantially as set forth. 80 85

8. In a seat, the combination with a frame including an end plate and a supplemental end plate, of guideways formed in said plates on arcs having different centers, and a back-arm arranged between said plates and having sheaves or projections coacting with the guideways therein, substantially as set forth. 90

9. In a seat, the combination with a frame including an end plate, a supplemental end plate and stops or shoulders, of guideways formed in said plates on arcs having different centers, and a back-arm arranged between said plates and having sheaves or projections coacting with the guideways therein and with said stops or shoulders, substantially as set forth. 95 100

10. In a seat, the combination with a frame including two parallel plates each having a guideway, such guideways being arranged on arcs having different centers, of a back-arm having a projection near the forward portion of one side and another projection near the rearward portion of the other side, said projections coacting with said guideways to influence its inclination, substantially as set forth. 105 110

11. In a seat, the combination with a frame including parallel end plates having guideways arranged on arcs of different centers, of a back-support operating between said plates and coacting with said guideways, substantially as set forth. 115

12. In a seat, the combination with a frame including at each end parallel plates having guideways arranged on arcs having different centers, of a walk-over back, and back-supporting arms operating between said parallel plates and influenced in their inclination by said guideways, substantially as set forth. 120 125

13. In a seat, the combination with a frame including at each end parallel plates having guideways arranged on arcs having different

centers, of a walk-over back, back-supporting arms operating between said parallel plates and influenced in their inclination by said guideways, movably-supported rockers, and
5 a connection between the same and said back-supporting arms, substantially as set forth.

14. In a seat, the combination with a frame including an end plate having a guideway and stops and a supplemental plate parallel there-
10 to and also provided with a guideway, said guideways being arranged on arcs having different centers, of a back-supporting arm provided with a sheave on one side coacting with the guideway in said end plate and on the
15 other side with a sheave coacting with the guideway in said supplemental plate, a back supported at one end by said arm, and means for supporting the other end of said back and

permitting reversal thereof, substantially as set forth.

15. In a seat, the combination with a frame including end plates, a back and a seat cushion, of sills extending between said plates and formed of T-iron, clips secured to the ends of said sills by bolts extending through the vertical webs of said sills, and bolts projecting through said plates and coacting with said clips, said last-named bolts being in line with said vertical webs, substantially as set forth.

This specification signed and witnessed this 8th day of March, 1904.

HENRY S. HALE.

Witnesses:

L. NORK,

I. MCINTOSH.