

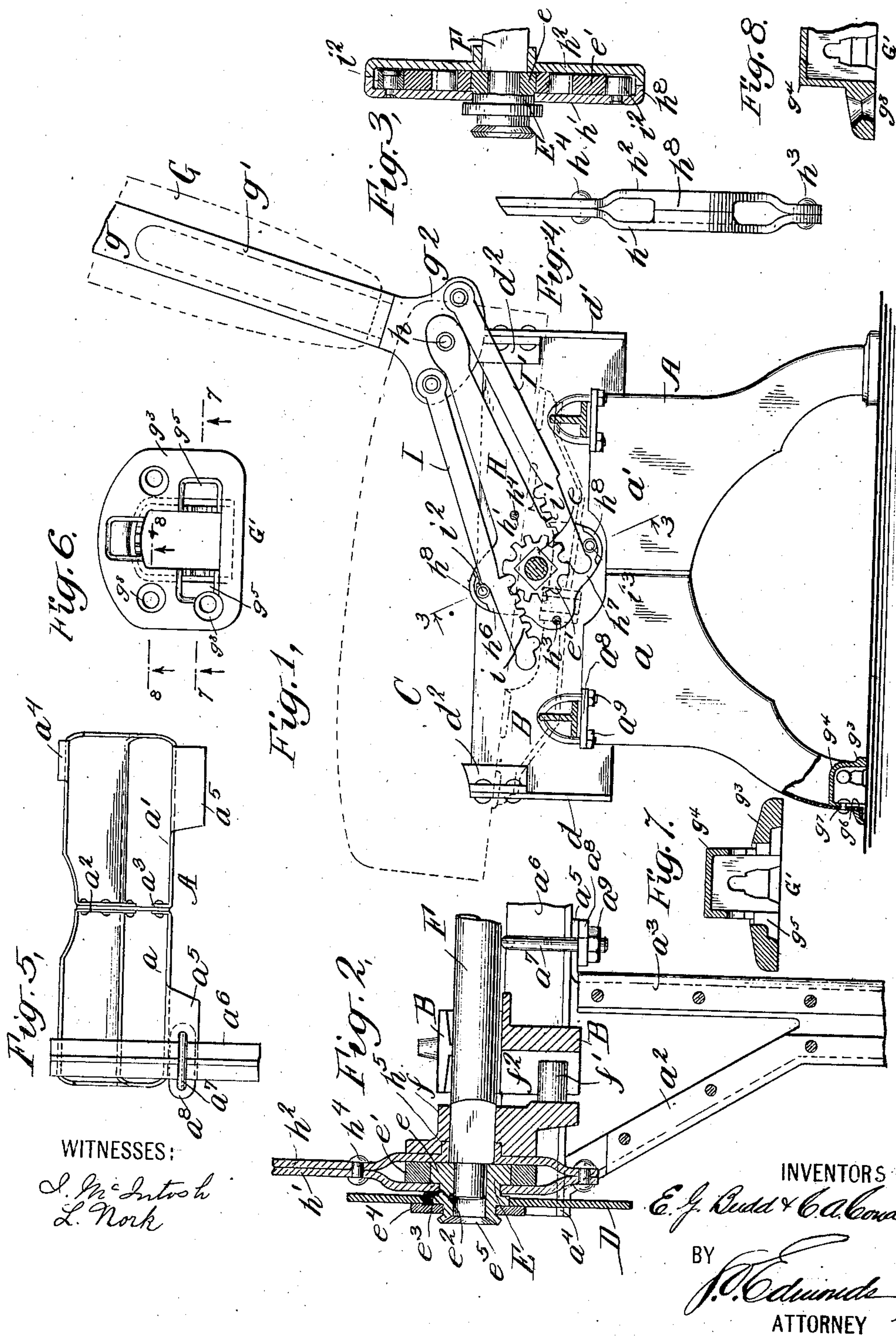
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PATENTED JAN. 29, 1907.

E. G. BUDD & C. A. CONDÉ.  
CAR SEAT.

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APPLICATION FILED MAY 25, 1905.





# UNITED STATES PATENT OFFICE.

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## CAR-SEAT.

No. 842,298.

Specification of Letters Patent.

Patented Jan. 29, 1907.

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*To all whom it may concern:*

Be it known that we, EDWARD G. BUDD and CHARLES A. CONDÉ, both citizens of the United States and both residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented a certain new and useful Improvement in Car-Seats, (Case C,) of which the following is a specification.

10 The object of the present invention is to provide a car-seat of the reversible type employing preferably a "walk-over" back reversible from one edge of the seat-cushion to the other, such back being supported by 15 means of the seat-frame and guided by means of connections between the same and said seat-frame, so as to automatically effect the proper inclination of the back in its movement of reversal.

20 A further object is to provide such structure with a supporting and guiding mechanism comprising parts so correlated as to insure positive and reliable coaction in the operation of said mechanism due to the reversal 25 of the seat-back from one facing direction to the other.

In carrying out the invention we employ at one or both ends of the structure a sectional frame, preferably of pressed steel, 30 upon which are secured the connecting rails or sills for the seat-rockers and an end plate upon which are movably supported levers coacting with the back or with an arm depending therefrom to afford adequate support for said back. Carried also by said end 35 plate, preferably upon a revoluble tie-rod extending therefrom to the other end plate, are stationary pinions, with which coact racks formed on guide-bars whose other ends are 40 pivoted to said back or to an appurtenance thereof. In the movement of the seat-back from one to the other facing direction the weight thereof may be borne either wholly or partly by the back-supporting levers, and 45 by the coaction of said pinions with said racks the same is given its proper inclination in either of the ultimate directions to which the back may be moved.

50 The invention is illustrated in the accompanying drawings, in which—

Figure 1 is a central cross-section of a car-seat embodying our improvement, the back

and seat cushions and the rockers supporting the seat-cushion being shown in dotted lines. Fig. 2 is an enlarged central vertical section 55 of a portion of the mechanism illustrated in Fig. 1, the back-supporting arms being midway between their two operative positions, and therefore vertically disposed. Fig. 3 is an enlarged cross-section on the line 3 3, Fig. 60 1. Fig. 4 is an enlarged detail illustrating a portion of the back-supporting arm at one or both ends of the seat. Fig. 5 is a plan view illustrating the sectional supporting fixture 65 or pedestal. Fig. 6 is a similar view illustrating one of the feet of said fixture. Fig. 7 is a section on the line 7 7, Fig. 6; and Fig. 8 is a similar section on the line 8 8, Fig. 6. Referring to the drawings, in which similar letters denote corresponding parts, A designates the supporting fixture or pedestal, of 70 which there may be but one, located at the aisle end of the seat, (the inner end of the seat mechanism being mounted upon the car-wall,) or two, as desired. As here shown, this fixture or pedestal is formed in two sections  $a a'$  of pressed or stamped sheet-steel. 75 The adjacent edges of these sections may be overlapped and riveted or otherwise secured together, or such edges may be inwardly flanged and secured to an intermediate tie-piece, as clearly shown in Fig. 5. The upper 80 portion of said fixture or pedestal is forked, as shown in Fig. 2 at  $a^2 a^3$ , one or both of such portions being provided with a flange  $a^4$  or  $a^5$ , adapted to support the T-iron sill or connecting-rail  $a^6$ , which may be secured to one or both of said flanges by the yokes  $a^7$ , plates  $a^8$ , and nuts  $a^9$ .

85 G' designates a foot for each of the fixture-sections, the same being preferably of malleable iron. Said foot is preferably hollow and provided with the ledge  $g^3$  and the raised portion  $g^4$ , of such size as to snugly fit within the end of the leg of the fixture, as shown in 95 section in Fig. 1. Said foot is also provided with orifices  $g^5$ , cored down therethrough to receive tangs  $g^6$ , preferably formed integral with and extending downwardly from the fixture-leg. Said tangs after being passed 100 into said orifices are pressed outwardly, as shown in Fig. 1, to effect a firm union with said foot. In addition said foot may, if desired, be riveted in position as shown at  $g^7$ .



The ledge  $g^3$  is preferably perforated, as at  $g^8$ , to receive screws whereby the foot may be secured to the car-floor.

Mounted in suitable rocker-runs in the sills or connecting-rails  $a^6$  are rockers B, supporting the cushion-frame C. Said cushion-frame and its rockers may be stationary or may have lateral shifting movement governed by the reversal of the back, as hereinafter described more in detail.

We shall describe the seat supporting and reversing mechanism at but one end of the seat—for instance, the aisle end—since this may be duplicated at the other—for instance, the wall end—or such mechanism employed at the latter end as not to interfere with the operation of that at the aisle end.

D designates an end plate forming part of the seat-frame and secured to the supporting fixture or pedestal or to the sills or connecting-rails in any suitable manner. Carried by said end plate is a trunnion E, a part whereof,  $e$ , is preferably square in cross-section, adapting it to coact with and securely hold a pinion  $e'$ . On one side of said part  $e$  (to the left in Fig. 2) said trunnion is circumferentially recessed at  $e^2$ , and beyond that it is provided with an annular extension  $e^3$ , engaging with the end plate D. Outside said end plate said trunnion is provided with a washer  $e^4$ , over which the head  $e^5$  of said trunnion is crimped or otherwise expanded to hold said trunnion in position. Within said trunnion E is journaled the end of the tie-rod F, extending between and connecting the end plates at both ends of the seat, and secured to said tie-rod in any suitable manner—as, for instance, by a pin or key—is a block  $f$ , carrying a pin  $f'$ , projecting inwardly toward the center of the seat and coacting with a recess  $f^2$ , formed upon the rocker B. As will readily be seen, the movement of said tie-rod involves also the movement of said block  $f$  and pin  $f'$ , and said pin coacting with said recess transmits sliding movement in lateral direction to the rocker B, and therefore to the seat-cushion C, supported thereby. It will be understood that said trunnion E is rigidly secured to the end plate D and that, therefore, neither said trunnion nor the pinion  $e'$ , carried thereby, is moved by the reversal of either the seat back or cushion.

G designates the seat-back, here shown as of the walk-over type and provided with an edge-socket with which engages a back-arm  $g'$ , the lower end whereof is provided with a head  $g^2$ .

H designates a back-supporting lever pivoted at  $h$  to the head  $g^2$  in a position corresponding with the longitudinal center of the back-arm  $g'$  and at its other end to the seat-frame. Said back-supporting lever H is preferably formed in two parts  $h'$   $h^2$ , as

shown in Figs. 2 and 4, riveted or otherwise secured together at their ends, as shown at  $h^3$ , and intermediate of their ends, as shown at  $h^4$ . It desired, however, the upper ends of the sections may be slightly separated, so as to extend on either side of the head  $g^2$ , the pivot extending through said head and through a section of said arm on each side of said head. Adjacent to its point of coaction with the seat-frame the sections  $h'$   $h^2$  of said back-supporting lever H are separated, as shown in the figures last named, extending on either side of the pinion  $e'$ , the section  $h'$  being provided with an orifice through which the trunnion E extends and the section  $h^2$  being provided with a hub  $h^5$ , through which extends the squared tie-rod F. Each of said sections  $h'$   $h^2$  of said back-supporting lever H is provided with laterally-extending ears  $h^6$   $h^7$ , one on either side of the pivotal point of said arm, and in addition said members are provided with lips  $h^8$ , of such width or inward extension from said parts as to permit coaction of said lips, as shown in detail in Fig. 4, this construction permitting the housing between said parts  $h'$   $h^2$  of the pinion  $e'$  and of the racks coacting therewith, as presently described. I I' designate guide-racks coacting with the back and with said pinion  $e'$ . Each of said guide-racks is pivoted at its upper end to the head  $g^2$ , depending from the back-arm  $g'$ , the pivotal points being on either side of the pivotal point  $h$  and arranged in a direction at a right angle to the longitude of said back-arm  $g'$ . The adjacent edges of said guide-racks I I' are toothed, as shown at  $i$ , the teeth thereof coacting with said pinion  $e'$ .  $i^2$   $i^3$  designate studs or sheaves formed integral with or secured to the member  $h'$  of the back-supporting lever H and coacting with said guide-racks to maintain the same in coaction with said pinion  $e'$ .

Any suitable stop may be employed for determining the extreme movement of the reversible back G. In the present instance we have shown the end plate D as provided with angular forward and rear edges  $d$   $d'$  and, secured to these, stops  $d^2$ , so arranged as to coact with the lower edge of the head  $g^2$  when said head is in either of its two ultimate positions. If desired, the angularly-shaped edges  $d$   $d'$  of the end plate D may be utilized for the attachment of a cover-plate (not shown) lying parallel with the plate D, the mechanism above described whereby the back is supported and guided in its movement from one position to the other being arranged between such cover-plate and the plate D. This, however, is not regarded as essential in view of the fact that the pinion  $e'$  and its coacting guide-racks I I' are covered almost wholly and adequately protected by the inner section  $h^2$  of the back-supporting lever H.



As will be readily understood, the sectional back-supporting levers H carry the weight of the seat-back in its movement of reversal from one facing direction to the other and are well adapted to meet this demand upon them by reason of their sectional construction, adequate strength being furnished thereby. As the back is so moved the guide-racks I I' are brought into coaction with the pinion e', so that during such movement this coaction results in changing the inclination of the back, such inclination being the same in either of the ultimate positions of such back. This coaction between said pinion and the guide-racks is a positive coaction, there being no lost motion, and therefore the movement of the back from one facing direction to the other is smooth and continuous. Additionally the covering of the pinion e' and the toothed portions of the guide-racks I I' not only excludes these from sight, but also precludes the catching of the clothing therein.

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

1. In a seat, the combination with a frame, a cushion and a reversible back having a back-arm, of means for supporting and effecting the proper inclination of said back in its movement from one position to the other including a back-supporting lever pivotally connected to said back and said frame and formed to provide a housing and a stationarily-mounted pinion within said housing, substantially as described.

2. In a seat, the combination with a frame, a cushion and a reversible back having a back-arm, of means for supporting and effecting the proper inclination of said back in its movement from one position to the other including a back-supporting lever pivotally connected to said back and said frame and formed to provide a housing having an opening to the interior thereof, a pinion mounted within said housing and a rack entering the housing through said opening and coacting with said pinion, substantially as described.

3. In a seat, the combination with a frame, a cushion and a reversible back having a back-arm, of means for effecting the inclination of said back in its movement from one position to the other, and a back-supporting lever pivoted to said frame and to said back-arm, said lever being formed in two substantially similar sections and said sections being secured together side by side throughout the major portion of their lengths but separated adjacent to the point of connection with said frame, substantially as set forth.

4. In a seat, the combination with a frame, a cushion and a reversible back having a back-arm, of a sectional back-supporting lever pivoted at one end to said frame and at

the other end to said back-arm, a pinion supported in said frame between the sections of said back-supporting lever, and guide-racks coacting with said pinion and pivoted at their ends to said back-arm, substantially as set forth.

5. In a seat, the combination with a frame, a cushion and a reversible back having a back-arm, of a back-supporting lever pivoted to said back-arm and to said frame and formed to provide a housing, a pinion supported in said frame and lying within said housing, guide-racks pivoted to said back-arm and coacting with said pinion, and means for maintaining said guide-racks in coaction with said pinion, substantially as set forth.

6. In a seat, the combination with a frame, a cushion and a reversible back having a back-arm, of a back-supporting lever pivoted to said back-arm and to said frame and formed to provide a housing, a pinion supported by said frame within said housing, guide-racks entering said housing and coacting with said pinion and pivoted at their upper ends to said back-arm, and means carried by said back-supporting lever for maintaining said guide-racks in coaction with said pinion, substantially as set forth.

7. In a seat, the combination with a frame, a cushion and a reversible back having a back-arm, of means for effecting the proper inclination of said back during its movement of reversal, and a back-supporting lever pivoted to said back-arm and to said frame, said lever being formed in two sections secured together intermediate of their ends, and one of said sections being provided with lips coacting with the other section, substantially as set forth.

8. In a seat, the combination with a frame, a cushion and a reversible back having a back-arm, of means for effecting the proper inclination of said back during its movement of reversal, such means including a pinion carried by said frame, and a back-supporting lever pivoted at one end to said back-arm and at the other end to said frame, said lever being formed in two sections secured together, said sections inclosing said pinion, substantially as set forth.

9. In a seat, the combination with a frame, a cushion and a reversible back having a back-arm, of means for effecting the proper inclination of said back during its movement of reversal, said means including a pinion carried by said frame and racks coacting therewith, and a back-supporting lever pivoted at one end to said back-arm and at the other end to said frame, said lever being formed in two sections secured together and said sections inclosing said pinion and said racks at their point of coaction with said pinion, substantially as set forth.

10. In a seat, the combination with a frame, a cushion and a reversible back hav-



ing a back-arm, of means for effecting the proper inclination of said back during its movement of reversal, said means including a pinion carried by said frame and racks co-acting therewith, a back-supporting lever pivoted at one end to said back-arm and at the other end to said frame, said lever being formed in two sections secured together and said sections inclosing said pinion and said racks at their point of coaction with said pinion, and means carried by one of said sections for maintaining said racks in position, substantially as set forth.

11. In a seat, the combination of a cushion, a reversible back, means for supporting and guiding said back, and a frame for said cushion, said back and said means comprising two hollow sections each having a body portion and a leg portion integral therewith, and means securing said sections together, said sections each constituting substantially half of the frame and the division between them being transverse to the general plane of the frame, substantially as set forth.

12. A seat-frame comprising two hollow sections, each having a body portion and a leg portion integral therewith, means secur-

ing said sections together, and angularly-extending flanges for the support of superposed seat and frame elements, said sections each constituting substantially half of the frame and the division between them being transverse to the general plane of the frame, substantially as set forth.

13. A seat-frame including a supporting member forked at its upper portion and having two separated supporting-surfaces for overlying frame members in alignment lengthwise of the seat, substantially as set forth.

14. A seat-frame including a supporting member forked at its upper portion and having two separated supporting-surfaces, and a connecting-rail carried upon said supporting-surfaces and having a rocker-run intermediate of its points of support, substantially as set forth.

This specification signed and witnessed this 16th day of May, 1905.

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Witnesses:

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