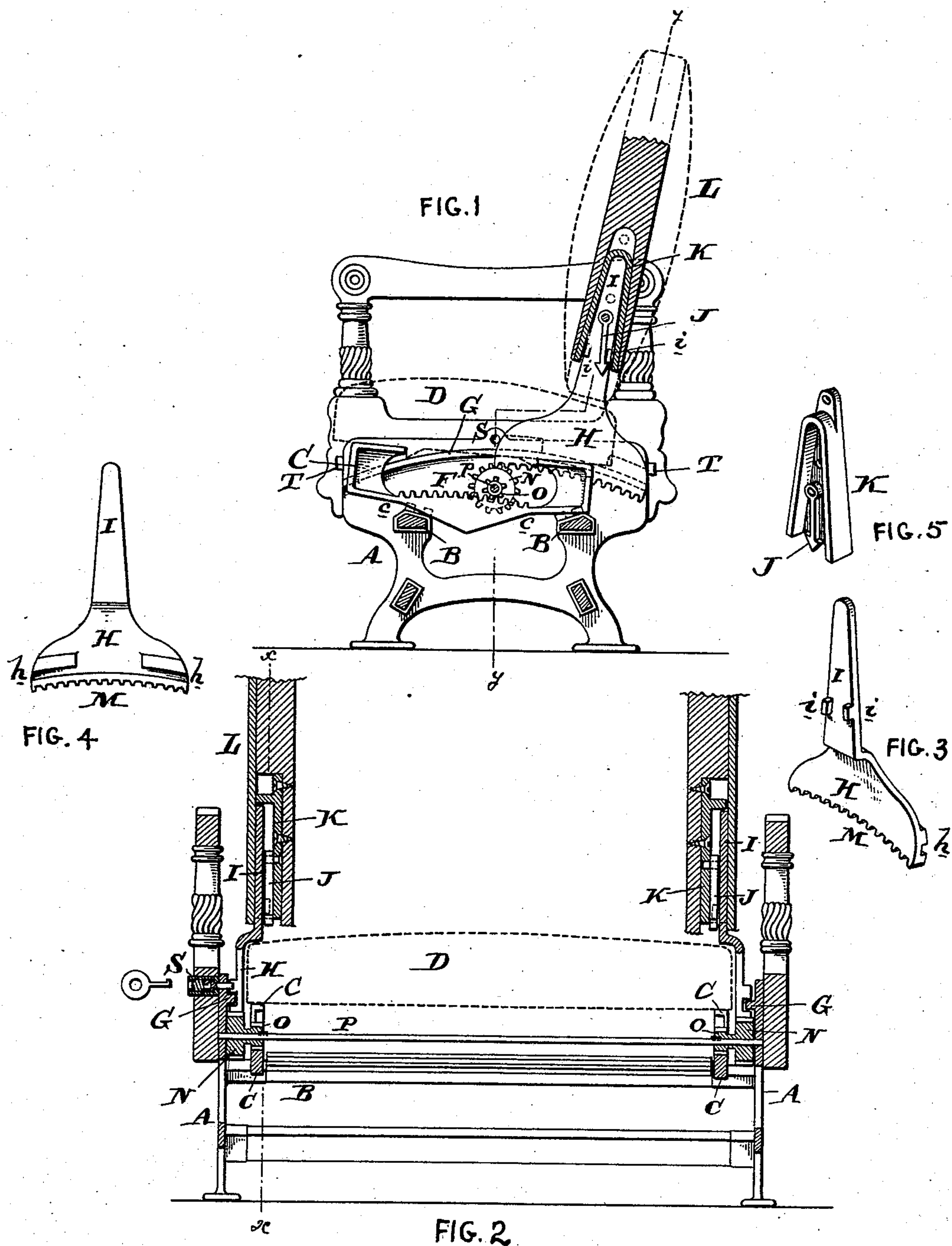


(No Model.)

H. S. HALE.
CAR SEAT.

No. 572,655.

Patented Dec. 8, 1896.



WITNESSES:

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UNITED STATES PATENT OFFICE.

HENRY S. HALE, OF PHILADELPHIA, PENNSYLVANIA.

CAR-SEAT.

SPECIFICATION forming part of Letters Patent No. 572,655, dated December 8, 1896.

Application filed June 14, 1895. Serial No. 552,796. (No model.)

To all whom it may concern:

Be it known that I, HENRY S. HALE, of the city and county of Philadelphia, State of Pennsylvania, have invented an Improvement in Car-Seats, of which the following is a specification.

My invention has reference to car-seats; and it consists of certain improvements which are described in the following specification, and shown in the accompanying drawings, which form a part thereof.

My improvements comprehend certain features of construction for dispensing with the striker-arm and yet permitting the reversal of the seat and back in a positive and uniform manner. This I accomplish by the employment of a rotary shaft journaled in the main frame and provided with pinions at each end meshing with a segmental rack at each end of the seat and back and guided upon suitable guideways, whereby the back is uniformly moved at the same velocity. To secure a movement of the seat-cushion simultaneously with the said back, I provide the cushion-frame with a rack meshing with a pinion upon the aforesaid rotating shaft. The seat-cushion is also provided with cam or suitable guides, which, while it is being shifted, insures the cushion being lowered as the back is being moved to a position directly above the seat-cushion, and vice versa, the object being to enable the guides for the back being only slightly curved, whereby the back may have the requisite upright inclination for comfort and at the same time be firmly secured to the side arms, which move in the guides. This construction is such that all pivoted levers are dispensed with and the simplest construction alone relied on to secure the objects desired.

My invention further comprehends certain improvements whereby the seat-back may be attached to or detached from the segmental racks, so that it may be adjusted in position or removed therefrom for repairs.

Other features of improvement, comprising details of construction, are also comprehended in my improved car-seat and will be better understood by reference to the accompanying drawings, in which—

Figure 1 is a cross-sectional elevation of a car-seat embodying my improvements, taken

on line *xx* of Fig. 2. Fig. 2 is a sectional front elevation of same, taken on line *yy* of Fig. 1. Fig. 3 is a perspective view of the segmental racks. Fig. 4 is a front elevation of same, and Fig. 5 is a perspective view of one of the sockets for attaching the back to the segmental racks.

A is the main frame, and may be of any suitable construction. It is commonly provided with the longitudinal bars B B, the parts adjacent to the end frames acting as supports for the seat-cushion shifting and tilting frame.

The ends of the main frame A are provided with guides G, preferably curved, as shown in Fig. 1. Fitted to these guides are segmental racks H, having upright arms I and grooved guides *h*. The teeth of the rack are indicated at M.

The seat-back L is made with cushion-surfaces similar in shape upon both sides, and the end frames thereof are provided with socket-pieces K, which are adapted to fit over the upright arms I of the segmental racks H, as is clearly shown in Figs. 1 and 2. To insure the back being locked under ordinary conditions to the arms of the segmental racks, I provide a pivoted pawl J upon the pieces K, which is adapted to fall to one side or the other of a vertical line and lock with the lugs *i* of the arms I, as is clearly shown in Fig. 1. It is evident that the back can only be removed from the segmental racks when it is brought to an intermediate or vertical position. The extreme position of the segmental racks H upon the guides G is limited by the stops T on the main frame. The segmental racks, as shown in Fig. 1, are exactly one-half the distance between the stops T T, and hence the lock S is arranged in the center of the guide and between these stops T T, so as to lock the back in either of its extreme positions. In this manner a single lock insures the locking of the back under all conditions.

P is a longitudinal shaft journaled in the main frame and has secured upon it at each end pinions N and O. The pinions N are preferably larger than the pinions O. The pinions N mesh with the teeth M of the segmental racks, so that when either rack is moved by a direct pressure the other rack of the seat-back is caused to simultaneously

move with it and at the same velocity. This prevents any possibility of binding or necessity of racks on the main frame or movable pinions and shafts.

5 D is the seat-cushion, and is supported upon the shifting frames C C, having cam-surfaces c c, adapted to move upon the transverse bars or guides B B. The operation of these frames C C in being shifted is to move
10 the seat-cushion D forward or in the reverse direction to the movement of the seat-back, and at the same time tilt and raise and lower it. The frames C C are provided with racks F, which mesh with the under side of the pinions O, so that as the shaft P is rotated under the action of the seat-back and its segmental racks the seat-cushion is simultaneously moved in an opposite direction, but to a less distance. The rack F is so shaped that the
20 teeth properly mesh under the tilting actions of the frame C by the cam-surfaces and the supports for the seat-cushion in such manner that when the seat-back is in vertical position the seat-cushion has been lowered to the greatest extent and so as to just pass below the seat-back. This enables the guide G to be but slightly curved and the consequent securing of the right degree of obliquity to the seat-back at its extreme positions. This
30 lowering of the seat-cushion at its center while the seat-back is passing over it is accomplished by the cam-guides c, formed with swell and non-swell portions on each side, so disposed that when the seat-cushion is being shifted the non-swell portion on one side is acting simultaneously with the swell portion on the other side.

I do not confine myself to the mere details of construction, as they may be modified in various ways without departing from the spirit of my invention.

What I claim as new, and desire to secure by Letters Patent, is—

1. In a car-seat, the combination of the
45 main frame a shifting seat-back, segmental racks carried by the shifting seat-back and moving therewith, a shaft journaled in the main frame in stationary bearings, and pinions carried by the shaft and meshing with the movable racks carried by the shifting
50 seat-back.

2. In a car-seat, the combination of the main frame of the shifting seat-back provided on its ends with sockets, segmental racks provided with upwardly-extending arms engaging the sockets on the ends of the shifting seat-back whereby the seat-back is carried by the movable racks and moves therewith, a shaft journaled in the main frame, and pinions carried by the shaft and meshing with the movable racks which carry the shifting seat-back.

3. In a car-seat, the combination of the main frame having transverse guides at each
65 end, shifting arms guided in said transverse guides and movable bodily from one side of the main frame to the other, a seat-back de-

tachably secured to the shifting arms by means of socket-pieces fitting upon the arms, and an automatic locking device for locking
70 the back to the said arms at the extreme position of the back and unlocking it when in an intermediate position.

4. In a car-seat, the combination of the main frame having transverse guides at each
75 end, a longitudinal shaft journaled in said main frame and provided at each end with a pinion, a segmental rack guided upon the guides at each end of the main frame and meshing with the pinions, a seat-back secured
80 to the segmental racks and movable with them, and a lock located between the extreme positions occupied by the seat-back and adapted to engage the segmental rack in either of its extreme positions upon the main frame. 85

5. In a car-seat, the combination of the main frame having transverse guides at each end, a longitudinal shaft journaled in said main frame and provided at each end with a pinion, a segmental rack guided upon the
90 guides at each end of the main frame and meshing with the pinions, a seat-back secured to the segmental racks and movable with them, a seat-cushion, a reciprocating and tilting frame for the seat-cushion provided with
95 a rack, and a pinion upon the longitudinal shaft meshing with the said rack for moving it and the cushion in a direction opposite to the movement of the back and simultaneously therewith. 100

6. In a car-seat, the combination of the main frame having transverse guides at each end, a longitudinal shaft journaled in said main frame and provided at each end with a pinion, a segmental rack guided upon the
105 guides at each end of the main frame meshing with the pinions, a seat-back secured to the segmental racks and movable with them, a seat-cushion, a frame at each end of the main frame supporting the cushion when being
110 shifted provided with a rack near the lower part, and pinions upon the longitudinal shaft meshing with the rack of the seat-frames.

7. In a car-seat, the combination of the main frame, a longitudinal shaft journaled
115 in the main frame and provided at each end with a large and small pinion, a seat-back provided with racks located on one side of the longitudinal shaft and meshing with the large pinions thereon, a seat-cushion, and shifting
120 frames for said seat-cushions provided with racks located upon the opposite side of said longitudinal shaft and meshing with the small pinions thereon, whereby the seat-back and seat-cushion are simultaneously moved in
125 opposite directions and to different extents.

8. In a car-seat, the combination of the main frame, a longitudinal shaft journaled on the main frame and provided at each end with a large and small pinion, a seat-back
130 provided with racks located on one side of the longitudinal shaft and meshing with the large pinions thereon, a seat-cushion, and shifting frames for said seat-cushion provided

with racks located upon the opposite side of said longitudinal shaft and meshing with the small pinions thereon whereby the seat-back and seat-cushion are simultaneously moved
5 in opposite directions and to different extents, and a lock for locking the seat-back in its extreme positions.

9. In a car-seat the combination with the main frame and movable side arms carried
10 thereby, of a seat-back detachably carried by said side arms by means of socket-pieces receiving the arms, and an automatic gravity-actuated lock between the socket-pieces and the side arms for locking the back to the arms
15 when the back is in an inclined position and unlocking it and permitting the back to be detached and removed when in an upright position.

10. In a car-seat, the combination with the
20 side arms provided with racks, the seat-back carried by the side arms, a shaft journaled in the main frame and pinions on the shaft meshing with the racks carried by the side arms, of a shifting seat-cushion and power-
25 transmitting connections between the seat-cushion and the shaft on the main frame, whereby the rotation of the shaft through the rack and pinions when the back is moved will shift the seat-cushion.

30 11. In a car-seat the combination of the main frame, a shifting seat-back, segmental racks carried by the shifting seat-back one at each end thereof and moving therewith, and pinions journaled on stationary bearings
35 at approximately the middle of the sides of the main frame and engaging the movable racks carried by the shifting seat-back.

12. In a car-seat, the back-shifting mechanism, embracing a segmental rack, of less
40 than the width of the car-seat, carried by the shifting back and moving therewith, and a pinion meshing with the segmental rack and carried in stationary bearings in the car-seat frame, whereby, when the seat-back is shifted,
45 the segmental rack travels upon the toothed pinion and rotates it in its stationary bearings.

13. In a car-seat the main frame, the back-shifting mechanism embracing a segmental
50 rack structure of less width than the width of the car-seat carried by the shifting back and moving therewith, and a pinion structure meshing with the segmental-rack structure and carried by the main frame, in combination with a movable seat-cushion, and
55 means controlled by the pinion-and-rack mechanism for lowering said seat-cushion upon moving the back over it.

14. In a car-seat the combination of the
60 main frame, a shifting seat-back, segmental racks carried by the shifting seat-back one

at each end thereof and moving therewith, pinions journaled on stationary bearings at approximately the middle of the sides of the main frame and engaging the movable racks
65 carried by the shifting seat-back, a movable seat-cushion, racks meshing with the pinions for shifting the seat-cushion, and guides for lowering the seat-cushion when the back is being moved toward a vertical position above
70 the seat-cushion and vice versa.

15. In a car-seat, the combination with the side arms provided with racks, the seat-back carried by the side arms, a shaft journaled in the main frame and pinions on the shaft
75 meshing with the racks carried by the side arms, of a shifting seat-cushion and power-transmitting connections between the seat-cushion and the shaft on the main frame, whereby the rotation of the shaft through the
80 rack and pinions when the back is moved will shift the seat-cushion, and suitable guides for lowering the seat-cushion when the back is being moved toward a vertical position above the seat-cushion and vice versa.
85

16. In a car-seat, the combination of the main frame having transverse guides at each end, a longitudinal shaft journaled in said main frame and provided at each end with a pinion, a segmental rack guided upon the
90 guides at each end of the main frame and meshing with the pinions, a seat-back secured to the segmental racks and movable with them, a lock located between the extreme positions occupied by the seat-back and adapted to en-
95 gage the segmental rack in either of its extreme positions upon the main frame, and suitable guides for lowering the seat-cushion when the back is being moved toward a vertical position above the seat-cushion and vice
100 versa.

17. In a car-seat, the combination of the main frame, the shifting back, a shifting seat-cushion supported by the main frame, connections between the shifting back and seat-
105 cushion for shifting the latter when the former is moved, and cam-guides between the seat-cushion and main frame having swell and non-swell portions on each side so disposed that when the seat-cushion is being
110 shifted the non-swell portion on one side is acting simultaneously with the swell portion on the other side, whereby the seat-cushion is lowered bodily at the center while the seat-back is being shifted over it.
115

In testimony of which invention I hereunto set my hand.

HENRY S. HALE.

Witnesses:

R. M. HUNTER,

H. WARREN K. HALE.