

(No Model.)

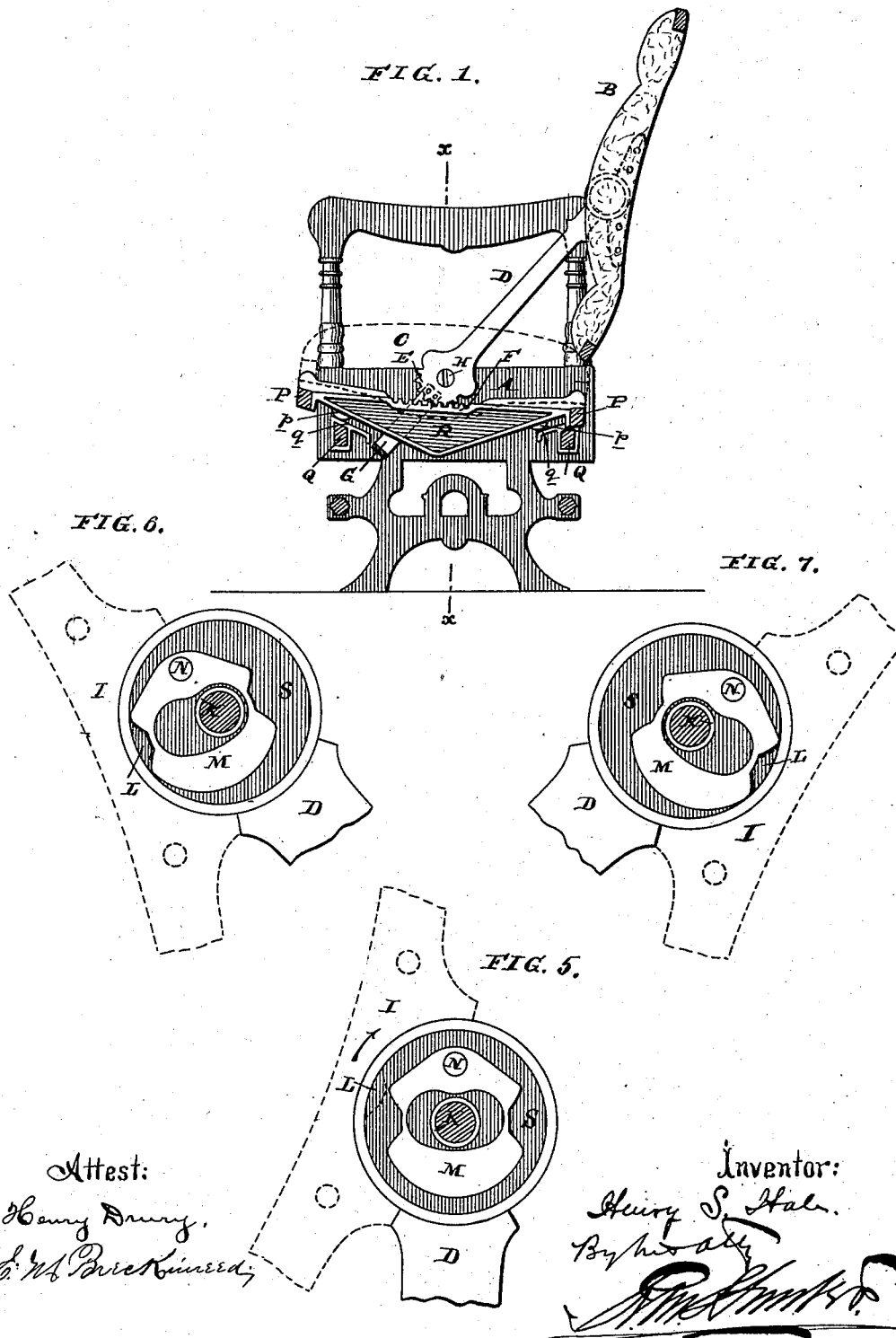
2 Sheets—Sheet 1.

H. S. HALE.

CAR SEAT.

No. 384,153.

Patented June 5, 1888.



(No Model.)

2 Sheets—Sheet 2.

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FIG. 2.

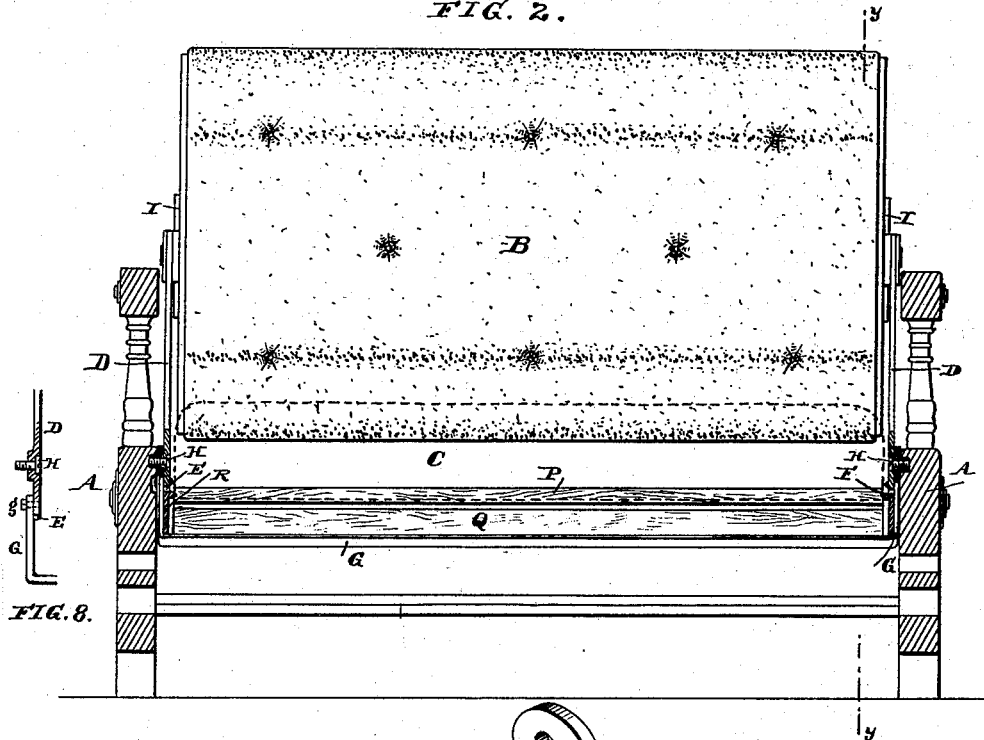


FIG. 3.

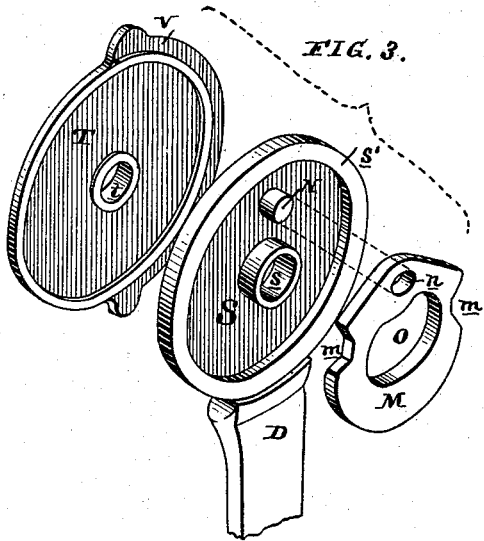
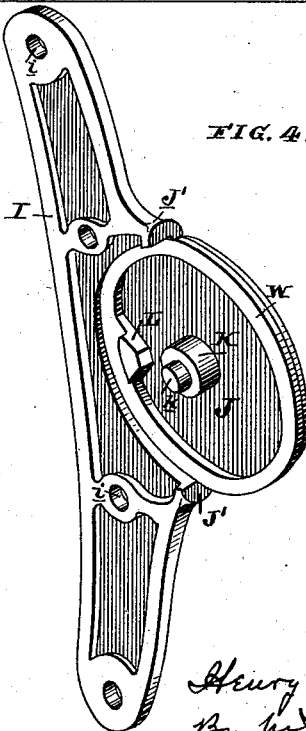


FIG. 4.



Attest:

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UNITED STATES PATENT OFFICE.

HENRY S. HALE, OF PHILADELPHIA, PENNSYLVANIA.

CAR-SEAT.

SPECIFICATION forming part of Letters Patent No. 384,153, dated June 5, 1888.

Application filed November 16, 1887. Serial No. 255,307. (No model.)

To all whom it may concern:

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

My invention relates to car-seats; and it consists of certain improvements which are fully set forth in the following specification and shown in the accompanying drawings, which form part thereof.

One of the objects of my invention is to provide the seats of cars with suitable mechanism to automatically lock the backs of the seats when in their extreme positions to the arms upon which they oscillate in reversing. This locking device is so constructed that it will lock the seat-back in its extreme or lowest position on either side of the car-seat; but when the seat-back arm has been raised to a vertical or substantially vertical position, so that the back is over the seat, the arm and back are automatically unlocked again and the back is free to oscillate on the arms, and may be reversed to bring the front part of the seat back into position upon the opposite side of the seat, and when it is lowered it is again automatically locked to the arm. This result I accomplish by the use of a peculiar slotted pawl, which acts by means of the force of gravity, and which pawl and its connections are more fully explained hereinafter.

My object is also to increase the ease with which the seat-back may be reversed, and to provide it with greater firmness and rigidity by uniting the two hinge-arms upon which the back oscillates to each other below the seat, forming a U-shaped frame, the upper parts of the legs of which are the hinge-arms. I prefer, also, to pivot the seat-back arms close to the seat, and connect them, by means of a rack-and-pinion device, with the seat-carrying frame, whereby the movement of the seat-back will shift the seat in the proper direction with a uniform movement, and will at the same time hold the seat-frame in place; and I also prefer to have the seat-frame run upon cam-faces to make the shifting motion move easy and uniform; but I do not claim these particular improvements as parts of my present invention, as they are shown and

claimed in Letters Patent of the United States Nos. 359,354 and 364,011, granted to me respectively the 15th day of March and the 31st day of May, 1887.

Referring to the drawings, the details of my invention and its operation will be more clear.

Figure 1 is a side sectional elevation on line *y y*, Fig. 2, of a railway-car seat embodying the principles of my invention. Fig. 2 is a longitudinal sectional elevation of the same through the line *x x*, Fig. 1. Fig. 3 is a perspective view in detail of the locking devices on the seat-back hinge-arms. Fig. 4 is a perspective view of locking device on the hinge-plate of the seat-back. Figs. 5, 6, and 7 are plan views of the locking mechanism, illustrating its operation during the reversing of the seat-back; and Fig. 8 is an elevation of the hinge-arm, showing connection with connecting-frame leading to the other hinge-arm.

A is the seat-frame.

B is the car-seat back, and C is the seat proper.

D are the seat-back hinged arms, pivoted at H to the seat-frame A, and connected with the seat-back B by means of the hinged arms I. These arms D are provided on their lower extremities below the pivotal points H with pinions E.

F are two racks upon the ends of the seat-carrying frames R, the teeth of which mesh with those of the pinions E.

G is a connecting rod or frame, the two short arms of which are secured to the seat-back arms D and form a U-shaped frame. These two short arms of the connecting-rod G extend down between the seat-carrying frame R and the car-seat frame A, and are free to oscillate, so that when the seat-back is reversed and one of the seat-back arms D is rotated in the rack F the other arm D is moved with an equal degree of force and firmness on account of the connecting rod or frame G.

I are hinged plates secured to the seat-back by rivets or screws through the holes *i*. These plates I are provided with disk-extensions J, recessed in the central part and having a surrounding raised rim, W. These disks J have pins or studs K in their centers, and these pins or studs K terminate in smaller pins, *k*.

L is a lug located on each of these disks at

about the center of the arc in which the disks J are united with the arms or plates I, and extend outward, preferably, in a substantially trapezoidal shape; but the shape of this lug is not vital, as the object of it is merely to act as a catch or lock, and any shape which is found convenient may be used.

J' is a flange extending along the edge of the arm I in the arc where the disk J is united to it, and is suited to receive and hold the other parts of the locking device, which are hereinafter described.

M is a pawl having two notches, *m*, almost diametrically opposite and adapted to receive the lug L on the disk J. This pawl is also provided with a curved slot, *o*, to receive the stud K, and has also a hole, *n*, by which it is pivoted.

S is a circular disk secured to the end of the seat-back hinged arm D, or made integral with it, having a central recessed portion surrounded by a raised rim or edge, *s'*.

s is a cylindrical tubular portion in the center of the disk S, and N is a pin located on the disk S on the side opposite the place where the arms D and disk S are united. The pawl M is hung upon this pin N by means of the hole *n*, through which the pin N extends. Through the slot *o* of the pawl M the tubular portion *s* extends.

T is a flat circular disk, preferably having a flange, V, extending about one-half of its edge. This flange is intended to hold the disk T, which is the cover of the locking mechanism, more securely to the arm I. It is only a preferred construction, and is not to be considered a limitation of the invention. This disk T is provided with a small hole, *t*, in its center, adapted to receive the small head *k* of the pin K. These parts are fitted together as follows: The pawl M is hung on the pin N, and the disk S is then fitted upon the disk J, the pin or stud K extending through the cylinder *s*, so that the head *k* protrudes, and the disk T is fitted over the disk S, the head *k* fitting into hole *t*. The flange V fits into the flange-extension J', and is thus prevented from rotating, and the pin *k* is riveted down to hold the parts together.

Now it is evident that when the seat-back arm D is lowered to its extreme position, and the seat-back B, to which the hinged arm I is secured, is at rest, the weight of the pawl M will throw it over until the lug L engages in one of the recesses or notches *m*, and this will lock the arm D securely to the hinged arm I and the seat-back B, to which it is secured.

To reverse the seat-back, it is lifted together with its arms D, which are locked to it, and which work in racks F, as described. When the arms D have been raised to a vertical position and the back is over the seat, the weight of the pawl will release it from the lug L and throw it over, swinging on the pin N, the slot *o* allowing it to move freely. The seat-back B is now unlocked, and may be freely rocked or oscillated on the arms D until its face is

presented in the opposite direction to that in which it was when the back was locked on the other side of the car-seat. As the arms D and the back B descend to reverse the seat, the weight of the pawl swings it over, and the other recess *m* engages with the other lug L, and the parts are again locked together. This operation is shown in Figs. 5, 6, and 7.

It will be observed that the lug L, when the back is unlocked, is equidistant from the notches *m* and above the pin N, and such lug is made tapering and with its lateral edges curved from N as a center when the lug is in locking position, and the notches *m* on the pawl M are made to correspond, and thereby receive or relieve the lug without appreciable friction. The lug L is so located that it can be engaged with but one notch *m* at one time, and may be out of contact with both notches. It is also evident that the pawl M need not be slotted, and, if desired, the lug might be on the disk S and the pawl hinged to the disk J.

While I prefer the use of the frame connecting the hinged arms of the seat-back, it is evident that so far as the locking device and the connection between the back and arms are concerned this frame might be dispensed with entirely.

The ends R of the seat-carrying frame are united by wooden ties P, upon which the seat C rests. These ends R have projections *p* upon their lower parts, which work upon the cam-faces *q* on the longitudinal frame Q, so that when the seat-back is reversed the seat or cushion C will be tilted and shifted slightly forward. This particular mechanism, applying to the tilting and shifting of the seat or cushion when the back is reversed, is set out more especially in my Letters Patent Nos. 359,354 and 364,011, above referred to.

The mere details of construction herein set out are those which suggest themselves as best exemplifying the principles of my invention; but it is clear that they may be varied in many ways without departing from it.

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

1. In a seat, the combination of a main frame, a reversible seat-back, connecting-arms hinged at one end to the main frame and at the other to the seat-back by a hinge-joint, a lug on the back and close to the hinge-joint, and a pivoted swinging gravity-pawl with two points, which automatically engage on opposite sides of the lug in its two extreme positions, said pawl being carried on the connecting-arms, the said pawl and lug being adapted to lock the seat-back and connecting-arms in their two extreme positions and unlock them in their highest position.

2. In a seat, the combination of the main frame, the seat-back, connecting-arms hinged at one end to the main frame and at the other to the seat-back by a positive hinged joint, a single independent pivoted pawl, M, having two oppositely-located points to engage on op-

posite sides of a lug on the seat-back, a weighted portion and an open central portion to allow the passage of the hinge between the connecting-arms and back, and carried by each of said connecting-arms and operating by gravity to automatically lock and unlock the said back and arms in reversing the seat-back, and a lug or projection on each end of the seat-back and close to the hinged joints to work in connection with the gravity-pawl.

3. In a seat, the combination of the main frame, the back, connecting-arms hinged at one end to the main frame and at the other to the seat-back, and provided with recessed parts, an independent locking device on each arm and arranged in the said recessed part, consisting of a single pawl, M, having notches *m*, pivoted to said connecting-arms at N, and a lug located on each of the seat-back hinges and projecting into said recessed parts of the connecting-arms to engage with the notches of the pawl and enable it to lock the seat-back on its connecting-arms, by the operation of gravity when the back is reversed.

4. In a seat, the combination of the main frame A, seat-back B, connecting-arms D, pawls M, carried by said arms D and having the two recesses or notches *m*, and hinge-plate I of the back, having the lug L on its disk-extension J, adapted to engage in the recesses *m* and lock the arm and seat-back together by

the force of gravity when in their lowest positions.

5. In a seat, the combination of main frame A, seat-back B, hinged connecting-arms D between the seat-back and main frame, and each having the disk-extension S, provided with the pin N, the hinge-plates I, each having the disk-extension J, and secured to the seat-back and provided with the lug L, and the gravity-pawl M, pivoted upon the pin N, and having the recesses or notches *m* to receive the lug L, substantially as and for the purpose specified.

6. In a seat, the combination of the main frame A, seat-back B, hinged connecting-arms D between the seat-back and main frame, and each having the disk-extension S, the pawls M, pivoted to and contained within said disk-extensions, and having the notches *m* on opposite sides of their pivotal point, the hinge-plates I, secured to the back, and each having the disk-extension J and lug L to engage with the notches *m* in the pawls, the hinge-pivot K, and the cover or cap-plate T, to hold said disk-extension J to the disk-extension S.

In testimony of which invention I hereunto set my hand.

HENRY S. HALE.

Witnesses:

R. M. HUNTER,
GEO. W. REED.