No. 675,367. Patented May 28, 1901.

E. N. GILFILLAN.

CAR SEAT.

(Application filed June 2, 1898.)

(No Model.)

Fig. 5

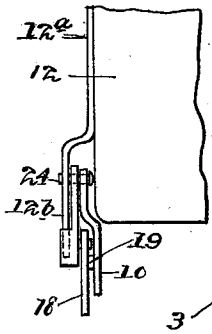


Fig. 1

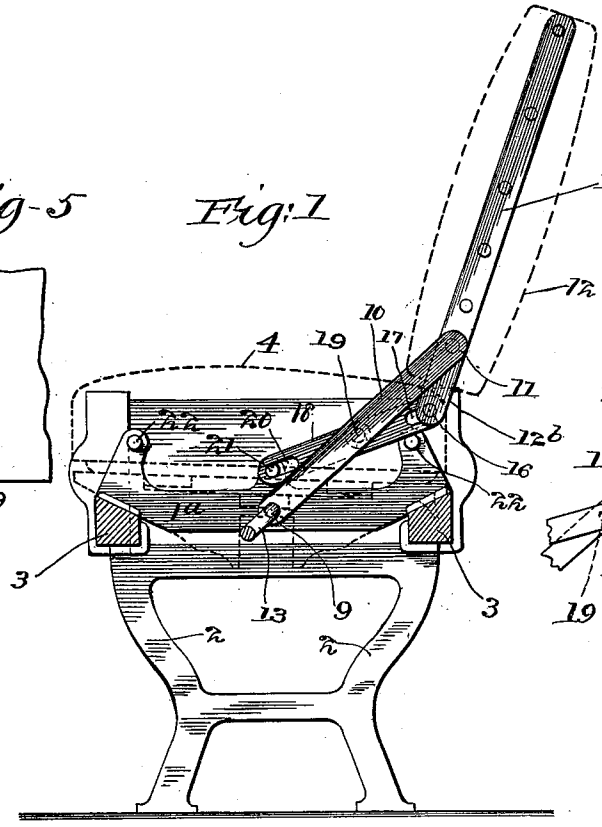


Fig. 4

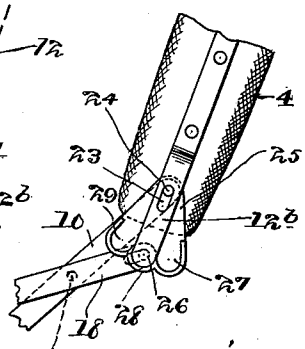


Fig. 6

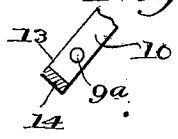


Fig. 2

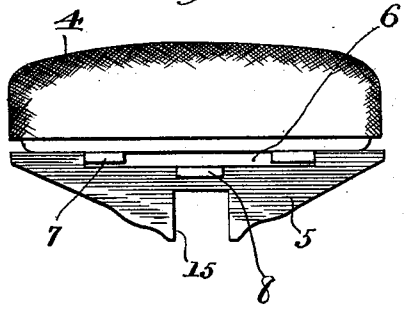
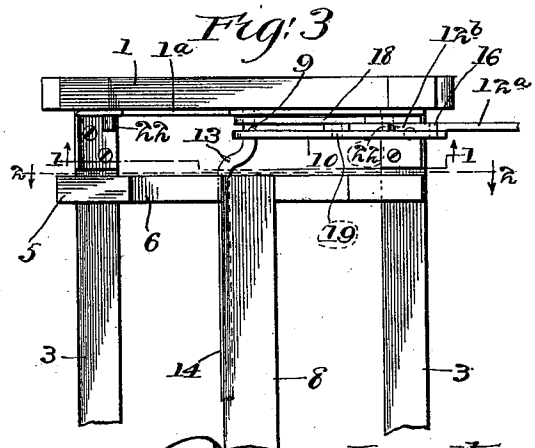


Fig. 3



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UNITED STATES PATENT OFFICE.

ESSINGTON N. GILFILLAN, OF CHICAGO, ILLINOIS.

CAR-SEAT.

SPECIFICATION forming part of Letters Patent No. 675,367, dated May 28, 1901.

Application filed June 2, 1898. Serial No. 682,333. (No model.)

To all whom it may concern:

Be it known that I, ESSINGTON N. GILFILLAN, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Car-Seats, of which the following is a full, clear, and exact specification.

My invention relates to that class of seats employed in cars and other places which have a shiftable back and seat-cushion, whereby the facing direction of the seat and the inclination of the cushion may be changed at will.

The primary object of my invention is to provide an improved, simple, and durable construction whereby the seat-back may be readily shifted forward and back to change the facing direction and, if desired, also simultaneously alter the inclination of the seat-cushion to suit either position.

Another object of my invention is to have the construction of such a character that the parts which are liable to severe shock and strain may be composed of ordinary bar-steel or forgings, and thus avoid the use of castings liable to break, while at the same time lightening and cheapening the construction.

Another object of my invention is to cause the bodily throw of the back by a comparatively short arm pivoted far up under the seat-cushion and to prevent the seat-back from inclining to too great a degree by causing its upper edge to automatically recede toward the seat or in a direction opposite to that in which such arm moves when the back is being shifted, whereby the upper end of the arm may move throughout a greater degree of a circle than does the top or upper edge of the back, and the arm may consequently undergo a sufficient movement to throw the lower edge of the back from side to side of the cushion without imparting too great a movement to the upper edge of the back.

A further object of my invention is to provide improved and simple means whereby the seat-back may be readily adjusted for either a sitting or a reclining posture; and a still further object of my invention is to provide an improved seat of the reversible character which shall be of such a construction that the seat-cushions thereof during storage or shipment may be stacked in a compact pile or form notwithstanding the necessity for the employment of the usual rockers under such cushions for supporting them in the position for use on the seat-frame.

With these ends in view my invention consists in certain features of novelty in the construction, combination, and arrangement of parts by which the said objects and certain other objects hereinafter appearing are attained, all as fully described with reference to the accompanying drawings, and more particularly pointed out in the claims.

In the said drawings, Figure 1 is a vertical transverse section of a car-seat embodying my improvements, the section being taken on the line 1 1, Fig. 3, the seat-cushion and its supporting-rockers being shown in dotted lines. Fig. 2 is an end elevation of the seat-cushion and its supporting-sills looking from the line 2 2, Fig. 3. Fig. 3 is a plan view of the seat-frame with the back and cushion removed, one end of such frame being broken away. Fig. 4 is an end elevation of the back, showing a modification, whereby the inclination of the back may be varied at will. Fig. 5 is a rear elevation thereof looking from the right in Fig. 4, and Fig. 6 is a detail of a modification hereinafter described.

In illustrating my invention I have shown one end of the seat only; but it will be understood that the mechanism is the same at both ends, and therefore the description of one end will suffice for the two.

1 represents one of the end frames of the seat supported upon suitable legs or standards 2, having longitudinal sills 3, which connect the end frames of the seat together and support the seat-cushion 4 in a well-known or any suitable manner. The seat-cushion 4, which is shown in dotted lines in Fig. 1 and in full lines in Fig. 3, is made detachable from and rests upon the usual rockers 5, one of which is arranged at or near each end of the cushion and extends across the beveled edges of the sills 3 in the usual manner; but instead of securing the cushion 4 permanently to the rockers 5 I provide such rockers in their upper edges with a recess or notch 6, while the bottom of the seat-cushion is provided with one or more longitudinal ribs or blocks 7, which fit into the recess 6 of the rockers

5, and thus securely hold the seat-cushion from sliding out of place. In order that the rockers 5, which rest loosely upon the sills 3, may be compelled to retain their relative positions, I connect them together by a cross-bar 8. With this construction it will be seen that when it is desired to take the cushion off and stack it up with others of like construction for shipment or storage it may be readily lifted off the seat and disposed in a compact and neat pile without having the rockers, which have heretofore been attached, defeat this desirable end.

Pivoted at 9 to the inner side of each of the end frames 1, or, as shown in this particular form, to a plate 1^a, secured to such frame 1, is an arm 10, whose extreme upper end is pivoted at 11 to the end of the back 12 or to an arm 12^a, forming a part of the end frame of such back. The lower end of each of the arms 10 is secured to a crank-shaft having a cranked portion 13, journaled at 9 in the plates 1^a of the end frames, and a longitudinal portion 14, extending from end to end of the seat and engaging in a yoke or notch 15, formed in the under side of each of the rockers 5, so that as the arms 10 are shifted or oscillated on their pivots 9 the portion 14 will shift the rockers 5 forward and back on their sills 3, and consequently project the seat-cushion to the right or to the left, according to the direction in which the back is shifted, and simultaneously cause its projected edge to rise, and thereby impart to the cushion a comfortable inclination. The arm 10 is preferably composed of a more or less flat bar of steel or forging, so as to occupy but little space between the end frame 1 and the cushion, and such arm is comparatively short and its pivot 9 located far up under the seat-cushion, so that the lower end of the arm will be substantially excluded from view and prevented from causing injury; but in order that the upper edge of the seat-back may not travel through the same degree of a circle as does the upper end of the arm 10, which would cause too great an inclination of the back for sitting posture, I cause the upper edge of the back to swing on a greater radius than the distance between such upper edge and the pivotal point 9, and in doing this the upper edge of the back is compelled to recede toward the seat-cushion in a direction the opposite of the direction in which its lower edge moves. To accomplish this movement, I resort to the mechanism which I will now describe and which not only effects this desired end, but is compact, simple, durable, and inexpensive. The lower end of the frame 12^a is extended slightly below the lower edge of the back in the form of an arm 12^b and is provided with a pivot or stud 16, which engages in a slot 17, formed in the upper end of a lever 18, which is pivoted at 19 to the arm 10 at about its mid-length, while its lower end is provided with a slot 20, engaging over a stud 21, fixed to the end frame 1 or, as shown in this specific form of the invention, to the plate 1^a, thus providing the lever 18 with sliding connection at its lower end with the fixed stud and sliding connection at its upper end with the lower edge of the back.

When power is applied to the back 12 for shifting it to the opposite side of the seat, the arm 10 on one side will transmit such power through the intermediary of the cranked shaft 13 14 to the arm 10 at the other end of the seat, both of such arms 10 being rigidly secured to the said cranked shaft 13 14, and both ends of the back will consequently move in unison without torsional strain. The parts are so proportioned and arranged that when the arm 10 reaches a vertical position all of the centers 9, 21, 19, 16, and 11 will be substantially in line; but as soon as the arm 10 is shifted from a vertical position the lever 18, by virtue of its pivotal connection at 19 with the arm 10 and the fixed pivotal connection at its lower end, will begin to shift the center 16 to the right or to the left of such straight line, according to the direction in which the arm 10 is moving, it being always in the direction of movement of the arm 10, but at a greater rate of speed than that portion of the arm 10 immediately contiguous to the pivot 16, so that the lower end of the arm 12^b will be shifted to the right if the back be moving to the right and the back caused to turn on the pivot 11, whereby the upper edge of the back will be caused to recede toward the seat, or in a direction the opposite of that in which the lower edge of the back moves, and hence instead of the back being thrown down at an angle in line with the arm 10 it will be brought back to a position suitable for a sitting posture. The movement of the parts is limited in both directions by stops 22, secured to the plate 1^a on the end frame of the seat and receiving the impact of the lever 18.

All of the parts, it will be seen, may be constructed of plain bar-steel or forgings, whereby they may be made comparatively thin and yet possess the requisite strength, and even the cranked shaft 13 14 may be made as a continuation of the arms 10 and integral therewith, as indicated in Fig. 6, the arm 10 in that event being pivoted at 9^a to the end frame or to the plate 1^a instead of being supported upon the cranked shaft 13 14, as in the other form, which constitutes the pivot of the arm.

In Figs. 4 and 5 I have illustrated the slight modification of the construction shown in Fig. 1, whereby the back may be thrown down at a greater angle should the sitter desire to rest in a reclining posture. In accomplishing this I provide the upper end of the arm 12^b, which is secured to the back, with a slot 23, in which engages a stud or pivot-pin 24, secured to the upper end of the arm 10. Also pivoted to this stud 24 is a plate 25, whose lower end carries a pivot-stud 26, engaging

in the slot 17 of the lever 18. The lower end of the arm 12^b instead of being held by the pivot 16 is seated in one of three sockets 27 28 29, formed on the lower end of the plate 25. The edges or walls of the middle socket 28 are sufficiently low to permit the entire back and arm 12^b to be raised with relation to the stud 24 and the lower end of the arm 12^b lifted over into either the socket 27 or 29, according to the direction in which it is desired to incline the back. Should the back be in the position shown in the drawings, it would simply be necessary to lift upwardly on the lower edge thereof until the arm 12^b disengaged from the middle socket. It would then fall of its own accord until the lower end of the arm struck the outer wall of the socket 29, which outer wall of the socket 29, as well as the outer wall of the socket 27, is sufficiently high to prevent the lower end of the arm 12^b from passing it before the lower end of the slot 23 comes against the stud 24 as the back is lifted. Thus it will be seen that the back may be readily and conveniently thrown into position for either a sitting or a reclining posture.

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

1. A seat having in combination a bodily-shiftable back, a pivotal support having pivotal connection with said back, a lever having operative connection with said back and with said support and a fulcrum fixed with relation to the back and with which fulcrum said lever has sliding connection longitudinally of the lever, substantially as set forth.

2. A seat having in combination a bodily-shiftable back, a pivoted arm having pivotal connection with said back, a lever pivoted to said arm and being movable longitudinally and having one end fixed against lateral movement and its other end provided with operative connection with the back, substantially as set forth.

3. A seat having in combination a bodily-shiftable back, a pivoted arm pivotally connected to said back, a lever pivoted to said arm, a fulcrum for said lever having sliding connection with one end thereof, a sliding connection between the other end of said lever and said back and stops for limiting the movement of said pivotal arm, substantially as set forth.

4. A seat having in combination a shiftable back provided with an arm, an arm having a fixed pivot at one end and its other end having pivotal connection with said back, a lever pivoted to said pivoted arm and having one end fixed against lateral movement and the other end provided with sliding connection with the arm on said back, substantially as set forth.

5. A seat having in combination a shiftable back, a pivoted arm having pivotal connection with said back and forming a support therefor, a lever having a slotted end and being pivoted to said pivoted arm, a fixed fulcrum or pivot engaging in said slotted end, an arm projecting down from said back and having pin-and-slot connection with said lever at a point between the pivots which connect the pivotal arm with the back and the lever with the pivotal arm, substantially as set forth.

6. A seat having in combination a shiftable back, having a depending arm, a pivoted arm pivotally connected to said back, a lever pivoted to said pivoted arm at a point between the pivot of the latter and the pivot which connects said pivoted arm with the back, a fixed stud or fulcrum having sliding connection with said lever at a point between the pivot of said pivoted arm and the pivot of said lever, and a sliding connection between the other end of said lever and said depending arm of the back, said latter connection being located between the pivot of the lever and the pivot which connects said pivoted arm with the back, substantially as set forth.

7. A seat having in combination a shiftable back having both pivotal and bodily movement and being also capable of being lifted with reference to its pivot, the pivot on which said back is pivoted as aforesaid, a lever having one end fulcrumed and the other operatively connected with the back for controlling the pivotal movement of the back, an arm projecting from the back and a series of sockets connected with said lever and adapted to receive said arm for holding the back at various inclinations, substantially as set forth.

8. A seat having in combination a bodily-movable pivotal back, a lever having one end fulcrumed and the other end operatively connected with said back for controlling the pivotal movement of the back, a series of sockets movable with said lever and a portion carried by said back and engaging in one of said sockets, substantially as set forth.

9. A seat having in combination a shiftable back, a pivotal arm pivoted to said back, a lever having one end fulcrumed and being operatively connected with said arm, a plate pivotally connected with said arm and having sliding connection with the other end of said lever, a series of sockets carried by said plate, and a detachable projection on the back adapted to engage in said sockets, the end sockets being deeper than the intermediate one, substantially as set forth.

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