

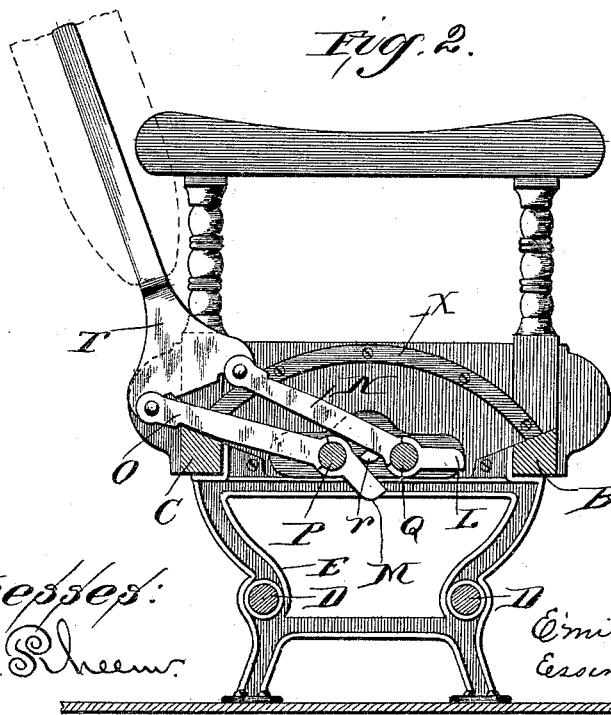
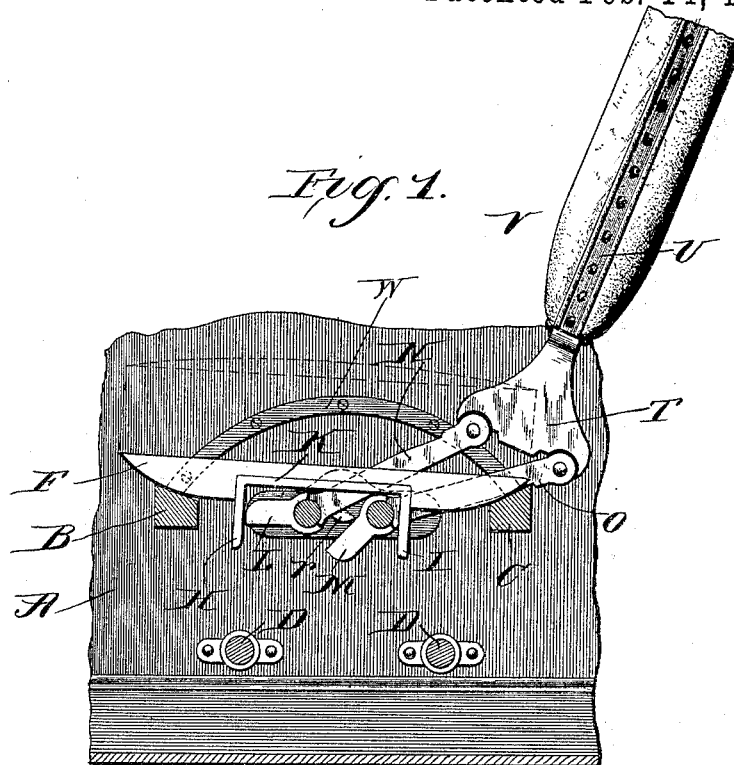
(No Model.)

2 Sheets—Sheet 1.

E. AZE & E. N. GILFILLAN.
CAR SEAT.

No. 491,761.

Patented Feb. 14, 1893.



Witnesses:
Wm. M. Rheem.

J. M. J. Scott.

Inventors
Emile Aze and
Eugene N. Gilfillan

By Elliott & Ormohundro Attorneys

(No Model.)

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Fig. 3

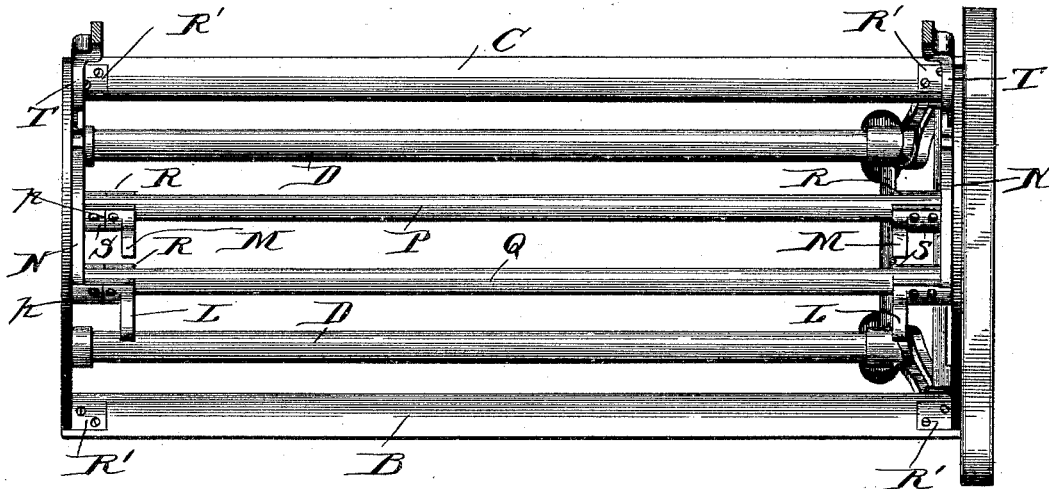
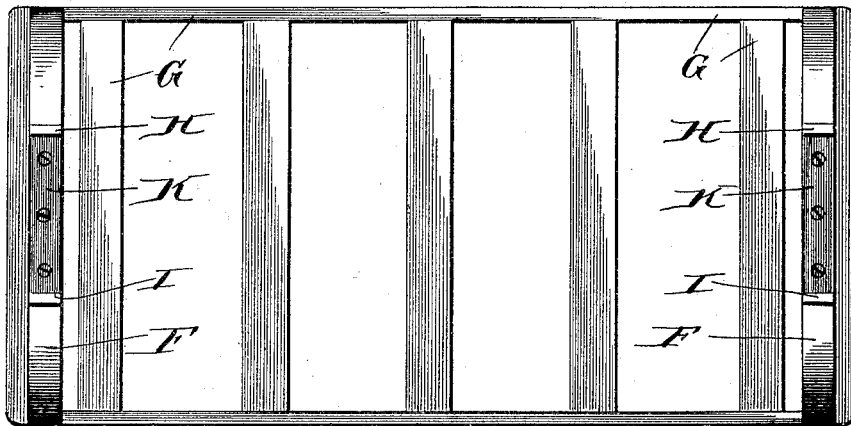


Fig. 4



Witnesses
Wm. M. Rheem.
W. H. H.

Inventors
Emile Aze and
Eugene N. Gilfillan

By Elliott & Ashland Attys

UNITED STATES PATENT OFFICE.

EMILE AZE AND ESSINGTON N. GILFILLAN, OF CHICAGO, ILLINOIS, ASSIGNORS
TO HARRIS A. WHEELER, OF SAME PLACE.

CAR-SEAT.

SPECIFICATION forming part of Letters Patent No. 491,761, dated February 14, 1893.

Application filed November 24, 1891. Serial No. 412,996. (No model.)

To all whom it may concern:

Be it known that we, EMILE AZE and ESSINGTON N. GILFILLAN, both citizens 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 specification.

Our invention relates to that class of seats in which the back is reversible with relation to the bottom and the bottom is shifted back and forth by the movement of the back in changing the facing direction of the seat.

Our improvements are more particularly designed for reversible car seats, but of course the same will be equally applicable and appropriate in any other seat of a kindred nature. In a seat of this character it is very desirable that the back should not turn completely over in shifting in such a manner as to bring to the bottom that portion which was formerly employed at the top, but that both sides of the back should alternately share the wear, and that the back should always remain with the same edge up. In order to accomplish this result and at the same time give the back the requisite throw from side to side, various constructions have been devised, but so far as we are aware such prior constructions are found to be objectionable for railway purposes, owing to the great length of the arms or levers and the looseness of the parts which permits them to rattle.

The prime object of our invention, therefore, is to construct an improved seat in which the back shall have the maximum extent of throw from side to side without the necessity of the employment of loose pivots or connections or supporting arms pivoted at low points in the frame.

It also has for its object to provide a seat of this character which shall be very simple of construction and operation but of great strength and durability.

With these ends in view, our invention consists in certain features of novelty hereinafter described in connection with the accompanying drawings, and more particularly pointed out in the claims.

In the said drawings: Figure 1 is a transverse vertical section of a car seat showing

the back in full and the bottom cushion in dotted lines. Fig. 2 is a view similar to Fig. 1, but of the opposite end of the seat, the bottom being omitted and the back cushion being shown in dotted lines. Fig. 3 is a plan view with the bottom removed and the back broken off, and Fig. 4 is a detail plan view of the under side of the bottom.

In the drawings, wherein like signs of reference indicate like parts throughout the several views, A is the side wall of the car which may serve as a support for one end of the supporting frame of the seat, which frame consists of the longitudinal beams or sills, B, C, the tie rods or rungs, D, and the legs, E, which are located at the outer end thereof and which support said sills, B, C, and are braced at the bottom by the rungs, D, in the usual manner.

As clearly shown in Fig. 1, the upper surfaces of the longitudinal sills, B, C, are inclined or beveled inwardly transversely of the seat, and supported on these sills are transverse rockers or runners, F, preferably arranged one at or near each end of the seat and which constitute portions of the bottom frame, G, upon which the cushion is mounted and to which such runners are secured. The outer ends of each of the rockers or runners, F, on their undersides are beveled or rounded, and they are of sufficient length to rest upon both of the sills, B, C, and also to project slightly over or beyond one side as shown in Fig. 1. Thus it will be seen that when the bottom is shifted from one side to the other the runners, F, at one end will slide down the inclined or beveled face of, say the sill C, while their opposite ends will ride upward over the inclined face of the other sill; and in this way cause the bottom to project beyond its supporting frame or pedestal at one side and simultaneously ride upward at the same side into an inclined or backwardly slanting position calculated to give greater comfort to the occupant, as shown in Fig. 1.

In order that the bottom may be shifted automatically in the described manner from one side to the other, by the movement of the back, we provide each of the runners, F, with lugs or arms, H, I, preferably projecting downward from the under side of the sill and being formed integral with or secured to a

plate, K, which is set into a recess in the under side of the runner. These lugs are adapted to alternately receive a thrust from cams, L, M, respectively, as the back is shifted from side to side, said cams being secured to or otherwise connected with arms or links, N, O, upon which the back is pivotally supported at both ends of the seat. The cams, L, M, are arranged at an angle to their respective arms, N, O, as shown, so that they will be on dead center and at the limit of their greatest outward movement, when they come to rest, after moving upward. Thus it will be seen that when the arms, N, O, are oscillated, say to the right, as in Fig. 1, both cams, L, M, will be turned toward the same arm or lug, H, and one of them, L, will strike such lug and force the seat forward into the position shown, or in the opposite direction to which the back is moving; and when such arms are oscillated in the opposite direction, or to the left, the cam, L, will turn downward and release the lug, H, while the cam, M, will move upward and impinge the lug, I, thus shifting the bottom to the other side of its pedestal or supporting frame with the right hand side in the elevated position which the left hand side formerly occupied, and also projecting this side of the seat a few inches beyond the sill, C. This arrangement of the two lugs and independent cams possesses a two-fold advantage. First, the cams L, M, do not begin to act until the back has nearly completed its movement, and hence no extra effort is required to shift the bottom or seat proper, and second, the lugs project on both sides of the bars P, Q, (presently to be described) and thus at all times hold the bottom or seat proper, against accidental displacement.

The cams L, M, are mounted on two longitudinal rocking bars, P, Q, which form parts of the frame or pedestal of the seat. These cams may be formed separate from the arms N, O, as indicated by the line *p* on the right in Fig. 3, and actuated by the rotation of said bars; or the arms and the cams may be formed integrally with hubs or bearings R, and actuated directly by the movement of such arms. The bars P, Q, pass through the hubs or bearings R, and are secured therein by means of screws or rivets S, in such a manner as to compel the bars to turn when the arms are rocked or oscillated, so that when the seat is pulled over at one side the power will be transmitted through the rocking bars, P, Q, to the arms on the opposite side, and thence to the back itself.

The arms, N, O, at each end of the seat are pivoted to a head or plate, T, formed on or otherwise rigidly secured to the lower side or edge of the frame, U, in which the cushion, V, of the back is supported. The arms might be pivoted to the back at almost any point in its height but we prefer to pivot them to its lower edge as shown, in order to have them as short as possible so that they may be en-

tirely excluded from view by the ends of the bottom cushion and will be out of the way. In any event, however, the pivots at the upper ends of each pair of the arms should fall in a line substantially at right angles to the plane of the back; and so also should the pivots at their lower ends, *i. e.*, the bars, P, Q, be arranged in a horizontal plane so that the back may assume the same angle or inclination on both sides, as will be readily understood.

The arms, N, O, are arranged in pairs, as stated, and are of equal length and substantially parallel but slightly farther apart at their upper ends where they are pivoted near the corners of the plates or heads, T, and they are also arranged to oscillate in substantially the same plane, so that when the back is shifted to the extremity of its movement in either direction, the arm which is uppermost will rest against the hub of the other arm and thus prevent further downward movement of the back. And on the other hand when the back is shifted in the opposite direction the hub of the arm which was formerly uppermost will form a stop and support for the arm which was formerly underneath. At the same instant that the uppermost arm strikes the hub of the other one it also finds a firm bearing on the inclined face of the sill toward which it swings, such sill being provided with bearing plates, R', to receive the impact. For the sake of greater strength the arms are thus provided with a double support, the hubs of the arms themselves and the sills, B, C, but we wish it to be understood that our invention contemplates the use of only one of these supports, that is to say the sill may be so arranged as not to be impinged by the arms at all, and on the other hand they may be so arranged as to form the sole support and the arms so arranged as not to come in contact with each other. Again, a special stop, such as *r*, shown in Figs. 1 and 2, may be provided for arresting the movement of the arms and when such is employed it is not necessary that the arms should alternately rest upon each other or upon the bars, P, Q, or even upon the sills.

In order to brace the arms, N, O against side play, we provide rub plates, W, X, one of which, W, is secured to the wall of the car as shown in Fig. 1, and the other, X, to the inner side of the end member of the seat frame as shown in Fig. 2.

It will now be seen that according to our invention the back supporting arms may be pivoted to the frame as high up as the bottom itself and yet give the back a greater throw than could be accomplished if such arms were of the usual form and pivoted at a point even below the floor, for it is obvious that in our invention the length of each arm need only to be equal to one half the distance which the lower edge of the back travels in shifting from side to side, the arrangement being such that the top of the back moves

but a slight distance farther than the bottom thereof.

It will also be seen that by the employment of the arms N, O, of substantially equal length pivoted to the back and to the frame in the manner described, we are enabled to shift the back from one facing direction to the other without reversing it, and at the same time cause it to assume, when at the limit of its movement, the same angle on both sides. This is due to the fact that the upper pair of pivots travel in an arc, while the lower pair is compelled to remain in a horizontal plane; and this condition causes the lower arm to project beyond the upper one, and thereby tends to straighten up the back, although the arms may be of the same length and parallel; and it also causes the upper arm to come to rest upon the pivot of the other before their upper ends meet, thus causing any strain which may be produced by pressing backward on the back to be transmitted more directly in line with the upper arm than it would be if the arms came together at their upper ends.

While we have been particular to describe the back supporting arms as being wider apart at their upper than at their lower ends, we nevertheless wish it to be understood that we do not confine ourselves to such an arrangement, for it is very evident that this arrangement might be reversed, that is to say, they may be arranged wider apart at their lower ends, or they might even be strictly parallel, it only being necessary to make the hub of each of such size that the uppermost arm will strike the lower hub and thus arrest further movement at the proper time. It is important, however, that the pivots at the lower ends of the arms, be located near the center of the frame or seat, for it is obvious that if such pivots were arranged at the outer edges of the frame or seat, the lowermost arm would cause the back to turn over into a substantially horizontal position across the seat bottom. We also wish it to be understood that such arms, if desired, may be caused to impinge directly against the bars, P, Q, or against a special stop or bearing such as the hub or bearing R thereon, and furthermore that the arms might be arranged slightly out of alignment without departing from the spirit of our invention.

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

1. In a reversible car seat, the combination with the frame, of a pair of arms pivoted to both sides of said frame, the pivot of each arm serving as a stop for limiting the movement of the other arm, and the back pivoted to said arms, substantially as set forth.

2. In a reversible car seat, the combination with a frame and a back, of a pair of arms substantially equal in length, pivoted to each end of the back at their upper ends, and hav-

ing their lower ends pivoted to the frame near the center thereof, the pivots connecting said arms to the back being arranged in a line extending at an angle to the plane of the back, substantially as set forth.

3. In a reversible car seat, the combination with a frame; and the back: of a pair of substantially parallel arms pivoted to said frame and to each side of said back, and such latter pivots being in a line at right angles to the plane of the back, substantially as set forth.

4. In a reversible car seat, the combination with the frame and the back; of a pair of substantially parallel arms pivoted at their ends respectively to each side of the back and the frame, the pivots thereof at the upper end of the pair being arranged in a plane at right angles to the back and at the other end in a horizontal plane, substantially as set forth.

5. In a reversible car seat, the combination with a frame and a back, of a pair of substantially parallel supporting arms, pivoted to the lower edge of said back, and to the frame, at each side and a stop for limiting the movement of said arms, the pivots connecting the arms to the back being arranged in a line extending at an angle to the plane of the back, and the pivots connecting the arms to the frame, being located near the center of the frame substantially as set forth.

6. In a reversible car seat, the combination with the frame having rocking bars, of a shiftable back and substantially parallel supporting arms secured to said bars and back at each side thereof and each having at its pivot a stop for arresting the movement of the other, substantially as set forth.

7. In a reversible car seat, the combination with the frame having the rocking bars P, Q, of a shiftable back and substantially parallel supporting arms secured to said bars and back, at each side thereof and each of said bars being provided with a bearing or stop for arresting the movement of said arms, substantially as set forth.

8. In a reversible car seat, the combination with a frame and a shiftable back; of a pair of substantially parallel pivoted supporting arms pivoted to said frame and to both sides of said back, each having an independent cam, projecting at an angle thereto and a shiftable bottom having lugs adapted to be impinged by said cams, substantially as set forth.

9. In a reversible car seat, the combination with the frame and a back, having the heads, T, secured to the bottom thereof at both sides of the rocking bars, P, Q, and substantially parallel arms mounted on said bars in pairs and having pivoted connection with each of said heads, substantially as set forth.

10. In a reversible car seat, the combination with the frame of the back having heads rigidly fixed to both sides thereof, and arms pivoted to the said heads, and to both sides of the frame near the center thereof, the pivots connecting said arms to the said heads be-

ing normally arranged in a line extending at an angle to the plane of the back, substantially as set forth.

11. In a reversible car seat, the combination with the frame of the back having heads 5 rigidly fixed thereto and projecting below the lower edge thereof, and arms pivoted to said heads, and to both sides of said frame near the center thereof, the pivots connecting said 10 arms to the heads being arranged in a line extending at an angle to the plane of the back, substantially as set forth.

12. In a reversible car seat, the combination with the frame and a shiftable back and 15 the sills, B, C, having inclined or beveled surfaces of the bars, P, Q, journaled in said frame between said sills, substantially parallel

arms pivoted at different points at both sides of said back and secured to both ends of said bars and adapted to rest upon said sills, substantially as set forth. 20

13. In a reversible car seat, the combination with a frame and the back having the heads T, arranged at the lower edge of both 25 sides thereof of the rotary or rocking bars P, Q, journaled in said frame and substantially parallel arms secured to said bars in pairs, and having pivotal connection with each of said heads, substantially as set forth.

EMILE AZE.

ESSINGTON N. GILFILLAN.

Witnesses:

R. C. OMOHUNDRO,

F. A. HOPKINS.