(No Model.)

2 Sheets—Sheet 1.

E. T. STARR.

Sleeping Car.

No. 242,801.

Fig. 1, Patented June 14, 1881.

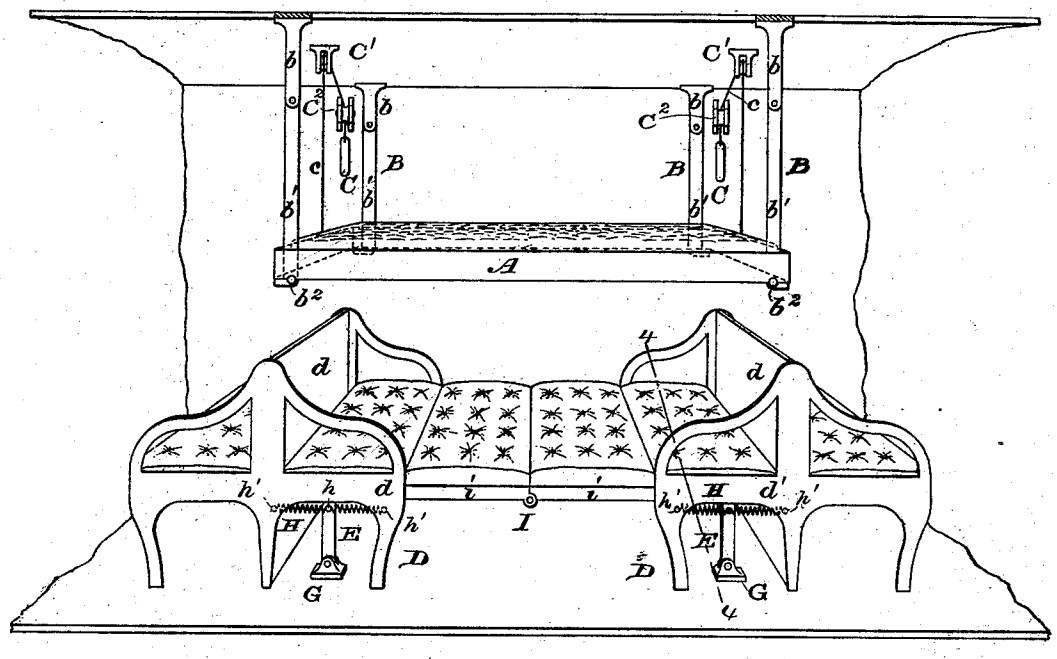


Fig. 6

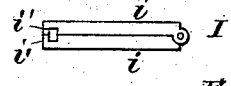


Fig. 4

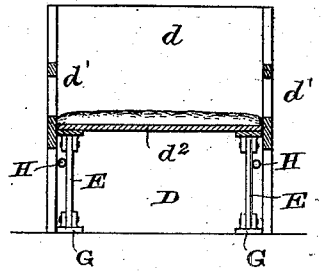


Fig. 3

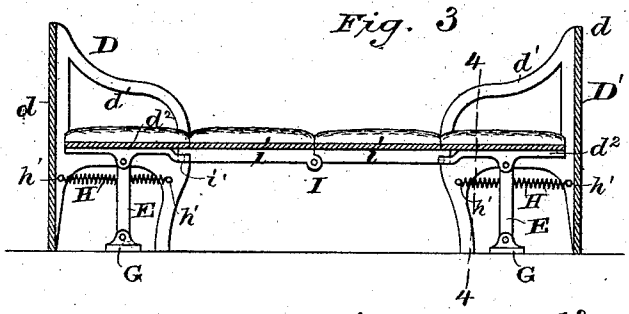
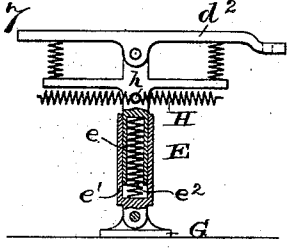


Fig. 7



WITNESSES

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(No Model.) 2 Sheets—Sheet 2.

E. T. STARR.
Sleeping Car.

No. 242,801. **Patented June 14, 1881.**

Fig. 2.

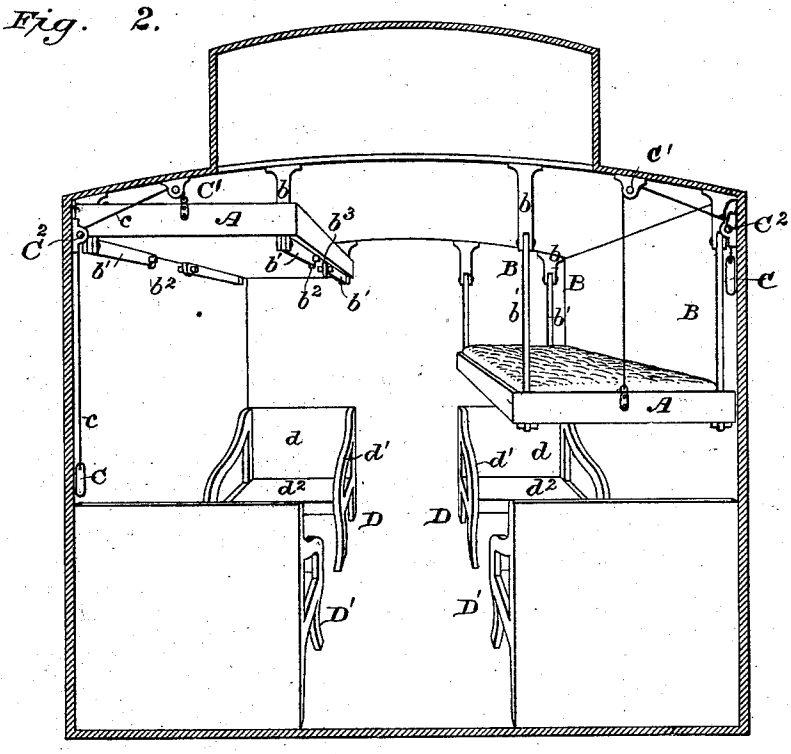
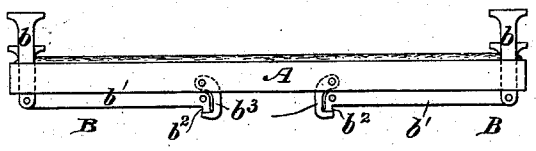


Fig. 5.



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UNITED STATES PATENT OFFICE.

ELI T. STARR, OF PHILADELPHIA, PENNSYLVANIA.

SLEEPING-CAR.

SPECIFICATION forming part of Letters Patent No. 242,801, dated June 14, 1881.

Application filed March 30, 1881. (No model.)

To all whom it may concern:

Be it known that I, ELI T. STARR, of the city and county of Philadelphia, in the State of Pennsylvania, have invented certain new and useful Improvements in Railway Sleeping Cars or Coaches, of which the following is a specification.

My invention relates to the class of railway cars or coaches known as "sleeping-cars"—that is to say, it relates to cars of the class which are provided with sleeping accommodations, in the nature of berths or beds arranged, in a longitudinal direction, generally at both sides of the car, with a passage-way in the center, whereby long-distance travel by rail has been rendered possible without extraordinary fatigue to the strong and robust. The use of sleeping-cars has also rendered it possible to convey some classes of delicate and sick persons long distances by rail without too great danger from over fatigue.

It is well known, however, that serious objections exist to the sleeping-cars as now constructed, in that the occupants of the berths or beds are subjected to the sudden and repeated starts and jerks which are incident to the starting, stopping, and continued motions of the car from station to station. While these objections (which interdict entirely the safe conveyance of some delicate and sick persons for long distances by rail) have been perceived, there has as yet, so far as I am aware, been no means devised to thoroughly overcome them and render travel by rail to all who are capable of travel in any vehicle, not only safe from over fatigue due to repeated shocks and jars, but also comparatively easy, smooth, and pleasant.

The object of my present invention is to overcome the objections to railway travel in sleeping-cars which I have noted—to wit, the tendencies to repeated shocks, jars, and unpleasant motions due to the sudden starting, stopping, and motions of trains propelled by steam; and this end I attain by a peculiar organization of the berths or bed-frames upon which the occupants lie, and by certain new combinations of parts, all of which is hereinafter set forth in detail, while the subject-matter claimed by me herein is particularly pointed out at the close of the specification.

In the accompanying drawings, which show my improvements as organized and embodied in the best way now known to me, Figure 1 is a longitudinal section of a portion of a car having my improvements applied. Fig. 2 is a cross-section through the car, showing clearly the upper sleeping-berths at opposite sides thereof. Fig. 3 is a longitudinal central section through one of the lower berths when in condition to receive the proper bed-clothing and the occupant; and Fig. 4 is a vertical section therethrough on the line 4 4 of Figs. 1 and 3. Fig. 5 is a view of one of the upper berths as folded up. Fig. 6 is a view of the folding connecting-frame of the lower berth detached, so as to permit portions of the berth to be used as ordinary seats; and Fig. 7 is a view of a modification of the supports of the lower berth.

I will first describe the construction of the upper berth and then that of the lower berth, merely premising that the usual and proper number of berths, both upper and lower, will be supplied to each car.

The upper berth is suspended from the top of the car, or from a suitable frame connected with the car, as clearly shown in Figs. 1 and 2. In this example the berth-frame or bed-board A is suspended from its four corners, or, in other words, from the opposite corners of its two ends, so as to leave the side next the central passage of the car unobstructed for the entrance of the occupant. The suspending-connections consist of jointed rods B B B B, the upper and shorter sections, *b*, of which are firmly secured to the car-top or suspending-frame. The rods B pass through vertical openings in the berth-frame or bed-board A, and are provided at their lower ends with right-angled toes or extensions b^2, to limit the downward movement of said frame or board and suspend it at the proper height from the lower berth beneath and from the car-floor. The joints of the suspending-bars B are formed by transverse pivot-bolts, so that the lower sections, *b'*, of the rods have the capacity of swinging backward and forward in the longitudinal line of the car, and communicate the same motion to the berth or bed frame at their lower ends. The capacity mentioned is given to the berth or bed frame so as to prevent the sudden jerks, starts, and unpleasant motions of the car from being communicated to the occupant,

as while the upper sections, *b*, of the suspending-rods are compelled to follow the rigid motions of the car, the lower sections, *b'*, with the berth, at each jerk or start merely sway gently backward and forward, thus converting the rigid jerky motion of the car, which is seriously objectionable, into an easy, smooth, and pleasant rocking motion of the berth and occupant.

When the berth is not in use—as, for instance, during the period of daylight—it is folded up out of the way against or near the car-top by merely raising it up to a point above the joints in the suspending-bars, and then rocking the lower sections, *b'*, of said bars beneath and parallel with the bottom of the berth, where their free ends are fastened by suitable hooks or catches, b^3, a simple form of hook or securing device being shown in Fig. 5.

I prefer to counterbalance the weight of the berth-frame, so as to render its manipulation or elevation and depression easy, and this is accomplished in a simple and efficient manner by a pair of counterbalancing-weights, C, one at each end of the berth. Each weight C is connected to one end of a cord or chain, *c*, running over pulleys C' C^2, secured to the car-top and side, respectively, the opposite ends of the cords or chains being connected to the berth-frame. (See Figs. 1 and 2.) It will be seen from this counterbalancing of the berth-frame that the attendant is not compelled to lift or bear the weight of the berth, but merely pushes it up and secures it in place, or pulls it down when desired.

As is usual in such cases, the upper berth is reached by the occupant by a small step-ladder. Of course the berth will be provided with suitable inclosing-curtains and other well-known necessary accompaniments, and may have a folding rail or other suitable auxiliaries, if desired, so as to insure the safety of the occupant from accidentally rolling out during sleep, or otherwise.

Beneath each upper berth I prefer to have a lower berth. In this example, beneath the head and foot of each upper berth there are two chairs, D D', facing each other, with an intermediate space between, and these chairs are intended to be occupied during daylight travel or when the berth as a sleeping arrangement is not in use. The back frame, *d*, and side frame, *d'*, of these chairs are preferably rigidly fastened to the car-floor, while the seat-frame d^2 is disconnected from the side and back frames, being supported at each end of the chair, between the side frames, preferably by a support or link, E. The upper ends of said supports or links E are jointed to the seat-frame d^2, or to a suitable connection or frame fastened to the seat-frame, and the lower ends of the links are jointed to base plates or pieces G, rigidly fastened to the car-floor. The supports are maintained in a normally-upright position, so as to support the seats in a horizontal position by means of, in this example, coiled springs H, connected at or about their center to the supports by a lug or pin, *h*, and at their ends with pins *h'*, projecting from the rigid side frames, *d'*, so that it will be seen the seat-frames are free to rock or yield, not only by reason of the jointed connection with the upper end of the supports E, but also by reason of the swaying of the supports themselves (which are governed by the springs) from a point near the car-floor.

The lower berth is completed as a sleeping-berth by means of a folding frame, I, composed of two sections, *i i*, hinged together. When unfolded and spread out with the hinge downward, and the lugs or hooks *i' i'* at each end engaged with or hooked into suitable eyes or openings in the front ends of the seat-frames d^2 of the chairs, the said folding frame bridges the space between the seats of the chairs and forms a continuous rigid bed-frame supported upon the rocking or yielding supports E of the seats, as clearly shown in Figs. 1 and 3. The cushions of the chair-backs, which are made readily removable for the purpose in well-known ways, are fitted one upon each section of the folding frame I, so as to render the bed-frame of the lower berth even throughout upon its top or reclining surface.

It will be seen, from what has been said as to the construction of the lower berth, that the bed-frame upon which the occupant reclines is free to swing or sway, by its jointed or yielding supports, from a point near the car-floor backward and forward in the longitudinal line of the car, and that the swaying motion will be controlled or governed by the action of the springs H, or their equivalents, against the force of which the supports move when deflected out of the perpendicular by the motions of the car. This swaying capacity of the berth or bed frame is given for the same purpose as the similar capacity is given to the upper berth—to wit, to prevent the communication of the sudden jerks, starts, or rigid motions of the car to the occupant of the berth or couch. While the rigid base-plate G will follow the jerky rigid movements of the car the bed-frame will, at each jerk or sudden motion, merely sway gently backward and forward against the force of the controlling-springs, and thereby convert the harsh and objectionable shocks, jerks, or motions into motions which are easy, smooth, and delightful to the occupant.

The lower berth may, like the upper one, have all the usual and necessary sleeping appliances and screens desirable or necessary.

When the lower berth is to be converted into seats merely, the back cushions are replaced or fitted upon the backs of the chairs, and the folding frame I unhooked and removed. The seat-cushions are preferably rendered readily removable in well-known ways from the seat-frames, in order to facilitate the fitting and removal of the folding frame I. The chairs then afford easy and delightful seats, inasmuch as, like the berth, they convert the unpleasant rigid motions of the car into easy and yielding ones.

It may be desirable, in some instances, to render only the side frames of the double chairs shown in Fig. 1 rigid, while mounting the intermediate back and seats of the chair upon a common support or supports acted upon by the spring, so that the back and seats may sway or swing together independently of the side frames of the chair.

Other modifications and changes may be made without departing from the spirit of my invention. Changes in the mechanical details of the devices may also be made while continuing within the scope of my invention.

One of the modifications which may be made I have deemed to be of such value as to incorporate it in the drawings, it being clearly shown in Fig. 7. This modification relates to the supports of the lower berth or bed frame, and consists in adding means by which the rigid up-and-down or vertical motions of the car are softened and rendered pleasant, as well as those taking place in the longitudinal direction of the car. In said figure the support E is a tubular support, consisting of two sections, *e e'*, telescoping one into the other, a spring, e^2, being interposed between the two sections, so that the vertical weight of the berth or bed frame and occupant rests upon a spring or yielding medium, which converts the jolts or up-and-down movements of the car into easy, springy motions. The said support sways backward and forward against a spring or its equivalent, as has been before described, while the connection of the seat-frame, to which the upper end of the support is jointed, rocks or yields upon the support against the action of springs e^3, which improves the action of the seat and of the berth when the latter is in use.

Another modification I deem to be of sufficient importance to recite relates also more especially to the lower berth; and it consists in dispensing with the yielding connections or supports E for the seat-frames, by which the berth or bed frame is given its yielding capacity, as clearly shown in Fig. 3, and substituting therefor a removable bed or berth frame, which is fitted between the chairs and supported thereupon by spring or other yielding connections, which give it a capacity to swing or yield, to soften or ameliorate the harsh and unpleasant motions before mentioned.

I do not wish to be understood as claiming herein every form of berth-frame suspended from the top of the car so as to be capable of a rocking or yielding motion, as a claim thus broadly construed would be invalid.

I claim as my invention—

1. The combination, substantially as hereinbefore set forth, of the car, the jointed suspension-connections thereof, and the berth or bed frame suspended by said connections, while capable of moving vertically thereon, whereby the berth-frame is given a yielding capacity to overcome objectionable motions, while it is capable of being moved upward out of the way and locked from descending by the aid of said connections.

2. The combination, substantially as hereinbefore set forth, of a car, a folding berth or bed frame connected with the car by yielding connections which permit the berth or frame to rock or yield to overcome objectionable motions, and a counter-balance for said berth or frame.

3. The combination, substantially as hereinbefore set forth, of the car, the berth or bed frame, the jointed connections by which said berth or frame is connected with the car, so as to permit it to rock or yield while capable of being folded or moved out of the way, securing devices to lock the berth when folded, and a counter-balance for said berth to render its manipulation easy.

4. The combination, substantially as hereinbefore set forth, of a car with a lower berth or bed frame supported near each end by supports which permit the berth or frame to rock or yield from a point near the car-floor.

5. The combination, substantially as hereinbefore set forth, of the yielding seat-frames with an interposed removable frame to bridge the space between said seat-frames, so as to constitute a berth or bed frame.

6. The combination, substantially as hereinbefore set forth, of two seat-frames, a support for said frames which allows them to rock or yield, a yielding medium (such as a spring) acting upon the support, so that the rocking action thereof is controlled, and a removable frame bridging the space between the seat-frames, so as to constitute a berth or bed frame.

7. The combination, substantially as hereinbefore set forth, of the seat-frame, a telescoping or vertically-sliding support for said frame, which permits the frame to rock backward and forward and move vertically, and springs to control these movements and render them easy and yielding.

8. The combination, substantially as hereinbefore set forth, of a car, two chairs facing each other, and a removable frame fitted between said chairs to form a rocking or vibrating berth or bed frame.

In testimony whereof I have hereunto set my hand.

ELI T. STARR.

Witnesses:
WM. J. PEYTON,
LLOYD B. WIGHT.