Oct. 18, 1949. A. B. BELL ET AL 2,484,803

RETRACTILE LEG REST

Filed Sept. 29, 1945 2 Sheets-Sheet 1

Fig. 1.

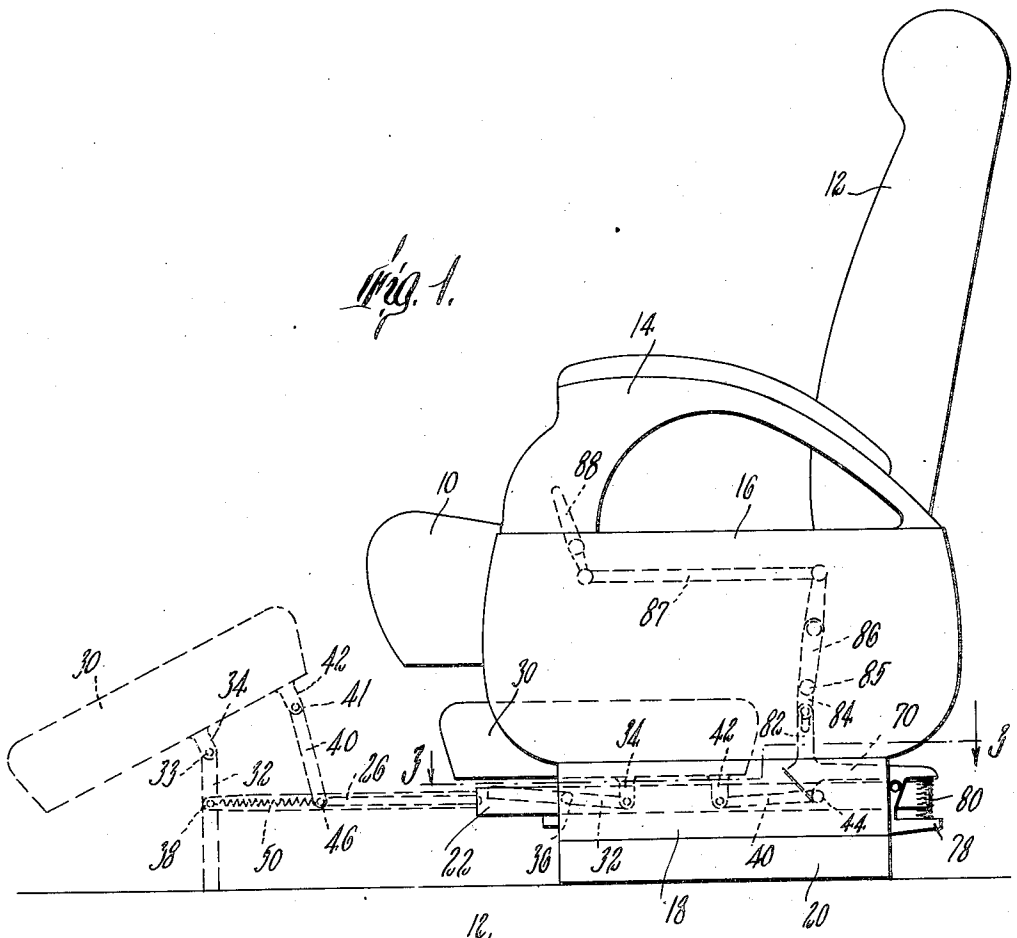
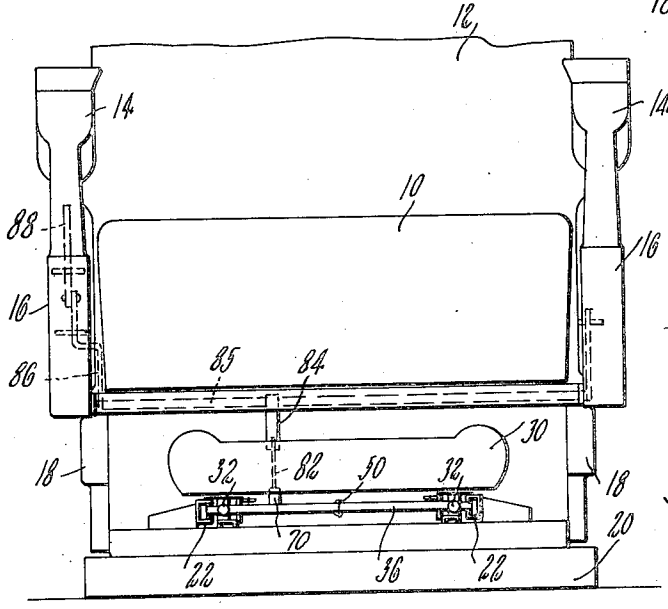


Fig. 2.



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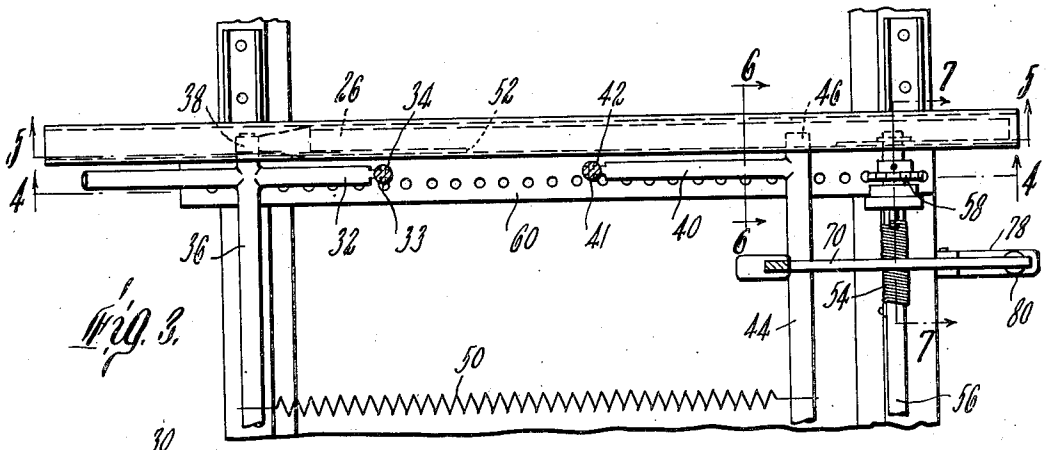

Fig. 3.

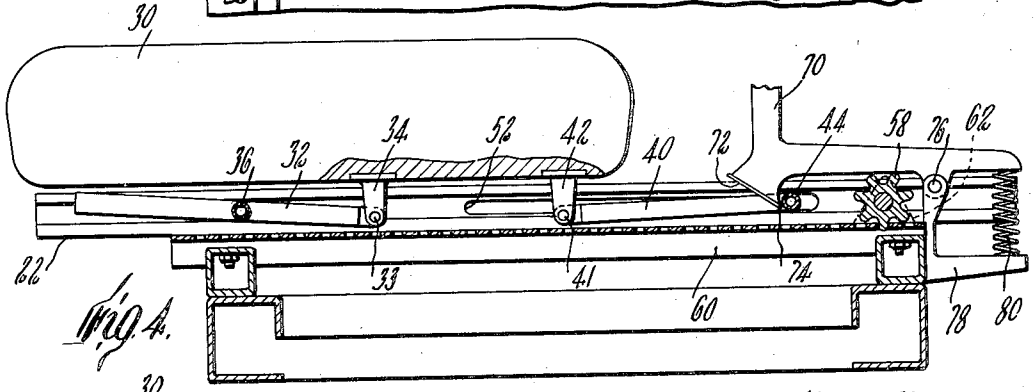

Fig. 4.

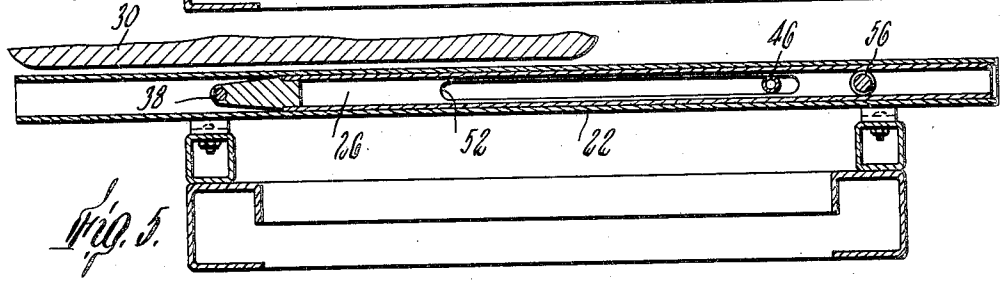

Fig. 5.

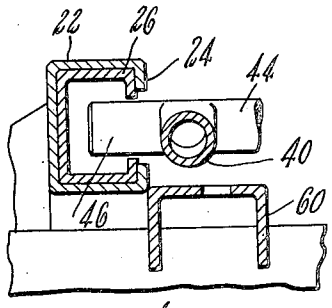

Fig. 6.

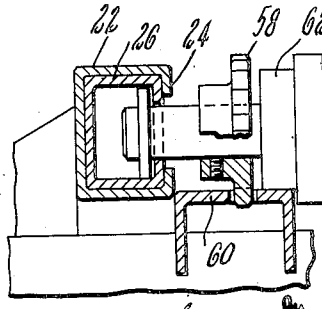

Fig. 7.

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RETRACTILE LEG REST

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Application September 29, 1945, Serial No. 619,388

4 Claims. (Cl. 155—170)

1

This invention relates to a leg rest for use with chairs, particularly chairs intended for vehicles, such as railway cars or buses and the like.

It is an object of the invention to provide a leg rest which can conveniently be stowed beneath the seat of the chair but which can readily be drawn out and elevated to a position of use in which the upper surface of the leg rest is preferably inclined.

As a further object of the invention, to provide a leg rest which can be readily released from its stowed position beneath the seat and which can be moved forward and up to its position of use by suitable springs.

Other advantageous features will be apparent to one skilled in the art from the following description of an embodiment of the invention and from the drawings, of which:

Figure 1 is an end elevation of a railway car chair having a leg rest embodying the invention;

Figure 2 is a fragmentary elevation of the same;

Figure 3 is a section on the line 3—3 of Figure 1;

Figure 4 is a section on the line 4—4 of Figure 3;

Figure 5 is a section on the line 5—5 of Figure 3;

Figure 6 is a section on the line 6—6 of Figure 3; and

Figure 7 is a section on the line 7—7 of Figure 3.

The railway chair shown in Figure 1 may be of any desired structure except that the base is so constructed as to leave stowage space for a leg rest. As shown, the chair comprises a seat cushion 10, a back rest 12 which may be adjustably inclined, an arm rest 14 on an end wall 16, and supports 18. Two supports 18 are shown in Figure 2 but it is to be understood that one end of the chair may be supported by the wall of the car or bus in which the chair is mounted. The supports 18 are mounted on a fixed base or pedestal 20. This base carries a pair of fixed horizontal rails 22 which are preferably in the form of channels having inturned flanges 24 as shown in Figures 6 and 7. Within the channels 22 are slidably supported elongated hollow slides 26. The slides 26 carry at their forward ends a leg rest 30 and telescope with the rails 22. The leg rest is connected to the slides 26 by a linkage comprising a pair of forward links 32, each of which is pivotally attached at its upper end as at 33 to a bracket 34 fixed to the under side of the leg rest. The links 32 are joined by a transverse rod 36 (Figure 3) which projects beyond the links, the end projections being pivotally attached as at 38 to the forward ends of the slides 26. When the leg rest is in its position of use in front of a chair, as illustrated in dotted lines in Figure 1, the links 32 extend down to rest upon the floor and thus constitute auxiliary support means taking most of the weight of the leg rest and the load thereon. The rear end of the leg rest is supported by a pair of links 40, each of which is pivotally attached to a bracket 42 as at 43 near the rear end of the leg rest, the lower ends of the links 40 being joined by a transverse bar 44 (Figure 3) having projecting end portions 46 which extend into longitudinal slots in the slides 26 as shown in Figure 6. A spring 50 is stretched between the cross bar 36 and cross bar 44. This spring is always under tension, but particularly so when the leg rest is in its lowered horizontal position for stowing since the spring is then considerably stretched. When the leg rest is moved from its elevated inclined position to its lowered horizontal position, then the cross bar 44 moves toward the rear to permit the rear end of the leg rest to descend. As the axis 41 is drawn down and toward the rear, the axis 33 is also drawn down toward the rear, the links 32 being rocked about the axis of the cross bar 36 until they are substantially horizontal. As indicated in Figure 4, the axes 33 and 41 eventually move down to a position wherein they are both below the line of centers of the cross bars 36 and 44. The links 32 and 40 thus form a sort of toggle, the double pivot of which passes across the line of centers of the extreme ends of the toggle, that is, the bars 36 and 44. This results in a snap action arrangement by which the spring 50 operates to hold the leg rest in its horizontal position as shown in Figure 4, but when the leg rest is manually raised a slight amount so as to bring either of the axes 33 or 41 above the line of centers of the bars 36 and 44, the spring 50 thereupon acts to elevate the leg rest to its fully raised position, as shown in Figure 1. The forward ends 52 of the slots in the slides 26 stop the forward movement of the cross bar extensions 46 when the leg rest reaches its position of use.

The leg rest 30 and the slides 26 on which it is supported can be moved forward and rearward on the rails 22 manually or, if desired, spring means may be provided for forward movement of these members. Such spring means are illustrated in Figures 3 and 7, and comprise a pair of helical springs 54 on a transverse shaft 56, the ends of which shaft are journalled in the slides 26 near the rear ends thereof. Mounted on the shaft 56 are a pair of gear wheels 58 which mesh with racks 60 adjacent to the respective rails 22.

As illustrated in the drawings, the gear wheels 58 are in the form of star wheels, the points of which enter a series of holes in the racks 60, but any other suitable form of rack and gear mechanism can be employed as desired. Adjacent to each of the gear wheels 58, a triangular slide member 62 is loosely mounted on the shaft 56, its bottom surface bearing slidably on the top of the corresponding rack 60 so that it moves forward and rearward on the rail 60 but is not rotatable. One end of each of the springs 54 is secured to the corresponding slide 62 as at 64, the other end of the spring being secured as at 66 to the shaft 56. Thus when the slides 26 are pushed toward the rear so as to move the leg rest to its stowed position beneath the seat 10, the rotation of the shaft 46 by the engagement of the gear wheels 58 with the racks 60 winds up the springs 54 so that they tend to impel the leg rest and its supporting slides forward. In order to retain the leg rest in its stowed position against the force of the springs 54, a suitable latch 70 is provided. This latch, as indicated in Figure 4, is provided with a cam face 72 in the path of the cross bar 44 so that when the cross bar moves far enough to the rear to engage the latch 70 it lifts the latch and passes beyond the nose 74 thereof behind which it catches. The latch is pivotally mounted as at 76 on the bracket 78 secured to the base of the chair and is constantly pressed to its engaging position by a suitable spring 80 as shown in Figure 4. For convenient releasing of the latch 70 any suitable linkage may be provided. As shown in Figure 1, the latch 70 is provided with an upwardly extending arm 82 which is pivotally connected to the lower end of a projection 84 on a transverse rod 85 which is rigidly secured to the end of a lever 86. The upper end of this lever is connected by a link 87 to the lower end of an operating lever 88 mounted within the side frame 16 of the chair. The handle of the operating lever 88 is conveniently placed for the occupant of the chair. By rocking the lever 88, the latch 70 can be raised to release the leg rest and allow the springs 54 to thrust the leg rest to its forward position in front of the chair. If the leg rest is slightly raised by the foot or hand of the occupant of the chair, the spring 50 will then operate to elevate it to its inclined position for use. When the use of the leg rest is no longer desired, it is depressed manually until the axes 33 and 41 are below the line of centers of the rods 36 and 44. The leg rest is then in its lowered horizontal position and may be pushed manually to the rear until the bar 44 catches beyond the nose 74 of the latch 70.

We claim:

1. A chair having a seat, a pair of horizontal rails mounted beneath said seat and extending from front to rear, a pair of elongated slides supported by and slidable on said rails, an auxiliary support member pivotally mounted at an intermediate point thereof on the forward end of each said slide, said support members being rockable from a horizontal position to an upright position in which the lower ends thereof rest on the floor, a leg rest pivotally mounted on the upper ends of said supports, and a pair of links pivotally attached at their upper ends to said leg rest near its rear end, the lower ends of said links being movable along said slides to raise or lower the rear end of the leg rest.

2. A chair having a seat, a pair of rails mounted beneath said seat and extending from front to rear, elongated slides supported by and slidable on said rails, a leg rest mounted on said slides and movable thereon from a lowered horizontal to an elevated inclined position, a linkage connecting said leg rest and said slides, a spring connected to said linkage to maintain said leg rest yieldingly in either of said positions, spring means tending to move said slides and leg rest forward, and a manually releasable latch for holding said leg rest in a rearward position under said seat.

3. A chair having a frame with a seat thereon, a support projecting forward from the frame below the level of the seat, a leg rest carried by said support, and means yieldingly maintaining said leg rest in an elevated or a lowered position, said means comprising a pivot connection between the forward end of said support member and an intermediate point of said leg rest, a link pivoted at one end to the leg rest near the rear end thereof and at the other end to said support, the pivot connection to the support being slidable thereon a limited distance forward to raise the rear end of the leg rest, and spring means urging said movable pivot forward whereby the rear end of the leg rest is maintained yieldingly in an elevated position when its link pivot is above the line of centers of the pivots on said support and is yieldingly maintained in a lowered position when its link pivot is below the line of centers of the pivots on the support.

4. A chair having a seat, a pair of horizontal rails mounted beneath said seat and extending from front to rear, a pair of elongated slides supported by and slidable on said rails, an auxiliary support member pivotally mounted at an intermediate point thereof on the forward end of each said slide, said support members being rockable from a horizontal position to an upright position in which the lower ends thereof rest on the floor, a leg rest pivotally mounted on the upper ends of said supports, a pair of links pivotally attached at their upper ends to said leg rest near its rear end, the lower ends of said links being movable along said slides to raise or lower the rear end of the leg rest, and spring means carried by said slides tending to move the lower ends of said links in a direction to raise the leg rest when the upper pivots of the links are above the level of the lower ends of the links and to hold down the leg rest when the upper pivots of the links are below the level of the lower ends of the links.

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WILFORD STAVELEY.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
155,187	Enger	Sept. 22, 1874
161,887	Lanibert	Apr. 13, 1875
167,095	Goss	Aug. 24, 1875
335,815	Hogan	Feb. 9, 1886
513,170	Armstrong	Jan. 23, 1894
1,185,819	Ostendorf	June 6, 1916
1,211,428	Fischrupp	Jan. 9, 1917
1,301,835	Glenister	Apr. 29, 1919
1,821,298	Ferreira	Sept. 1, 1931
1,962,789	Simpson et al.	June 12, 1934
2,185,813	Johnson	Jan. 2, 1940

FOREIGN PATENTS

Number	Country	Date
323,675	France	Nov. 17, 1902