June 23, 1964 E. W. HOFFSIS ETAL 3,137,868

CHAIR STRUCTURE WITH ADJUSTABLE BACK

Filed Aug. 3, 1962

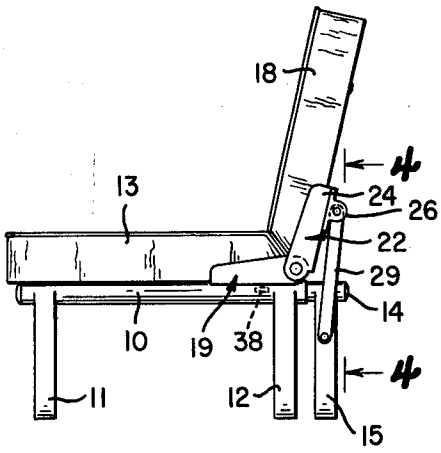


Fig. 1

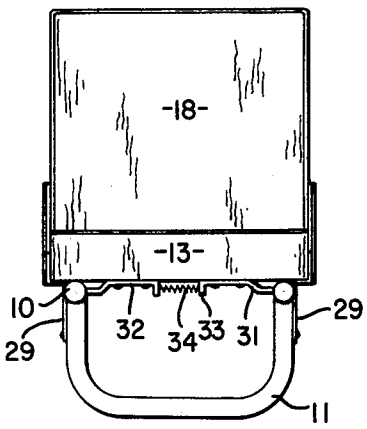


Fig. 2

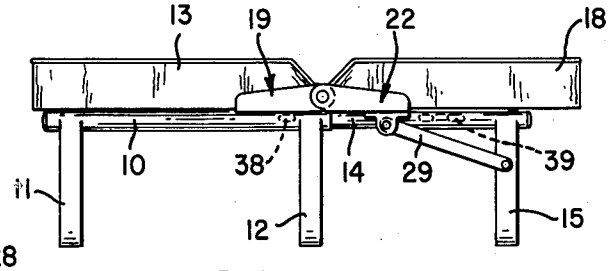


Fig. 3

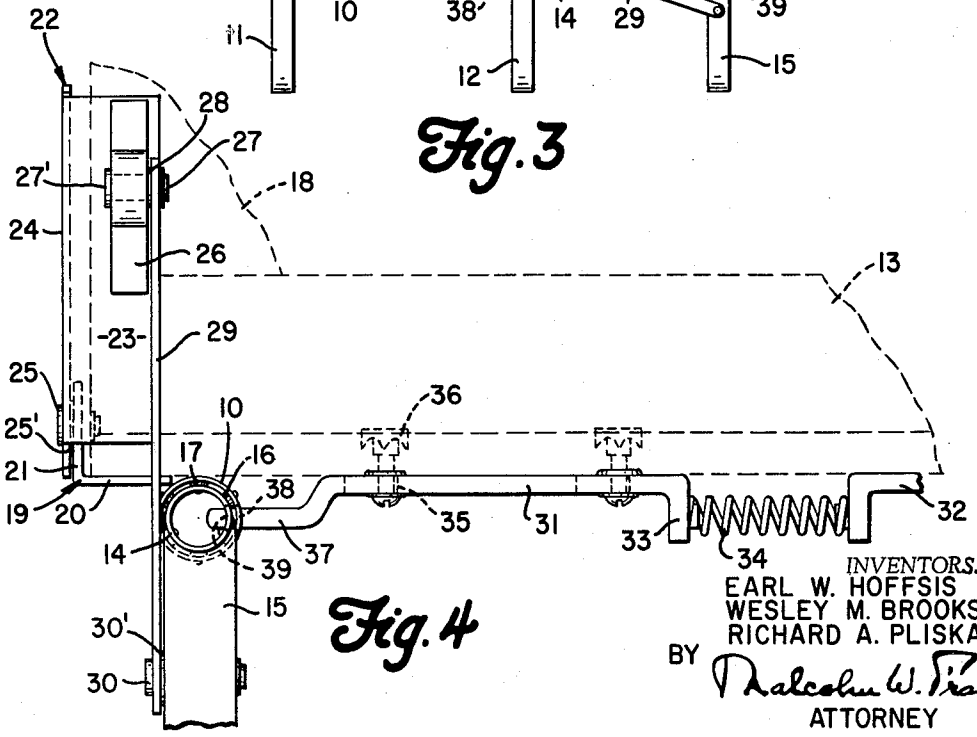


Fig. 4

INVENTORS.
EARL W. HOFFSIS
WESLEY M. BROOKS
RICHARD A. PLISKA

BY Malcolm W. Fraser
ATTORNEY

United States Patent Office 3,137,868
Patented June 23, 1964

3,137,868

CHAIR STRUCTURE WITH ADJUSTABLE BACK

Earl W. Hoffsis and Wesley M. Brooks, Toledo, and Richard A. Pliska, Genoa, Ohio, assignors, by mesne assignments, to Globe-Wernicke Industries, Inc., Toledo, Ohio, a corporation of Ohio

Filed Aug. 3, 1962, Ser. No. 214,619
2 Claims. (Cl. 5—39)

This invention relates to articles of furniture but more particularly to a convertible chair-lounge-bed unit.

An object is to produce a convertible article of furniture having an extensible frame part which is so connected to a cushion unit that upon movement of the frame part from one position to another, the cushion unit automatically assumes a predetermined position depending upon the use which is desired, a latching device being provided to secure the parts in the adjusted position.

Another object is to produce an article of furniture of the convertible type which is compact so that a minimum amount of space is occupied; is sturdy and rigid in construction so that it can cope with jars, shocks and motion, such as imparted by a marine craft; may be readily and conveniently adjustable to adapt itself for different uses, such as an upright chair, a reclining chair, or a bed; and can be securely locked in the selected position of use.

Other objects and advantages of the invention will hereinafter appear and for purposes of illustration but not of limitation, an embodiment of the invention is shown on the accompanying drawings in which

FIGURE 1 is a side elevation of the convertible chair structure showing the parts in a chair position;

FIGURE 2 is a front end elevation of the chair structure shown in FIGURE 1;

FIGURE 3 is a side elevation of the chair structure in bed position; and

FIGURE 4 is an enlarged fragmentary rear end view partly in section of the structure shown in FIGURE 1, taken substantially on the line 4—4 of FIGURE 1.

The illustrated embodiment of the invention comprises a convertible chair-bed structure having a pair of laterally spaced parallel tubular frame members **10** disposed in horizontal position and having fore and aft U shaped leg members **11** and **12** respectively rigidly fixed to the tubular members. Resting upon the tubular frame members **10** is a cushion assembly **13** which has a suitable frame (not shown) secured in any suitable manner to the frame members **10** and the sides of which project laterally a short distance beyond the frame members, particularly as shown on FIGURE 4.

A supplemental frame is provided which telescopes with the tubular frame members **10** and this frame comprises a pair of laterally spaced tubular rods **14** which slide in and out of the tubular frame members **10**. The outer ends of the tubular rods **14** are joined by a U shaped leg **15**, the upper ends of which are suitably fixed to the end portions of the rods **14**.

Telescoping movement of the supplemental frame is facilitated by the use of spacer members interposed between the rods **14** and the respective tubular frame members **10**. In this instance three nylon buttons **16** are carried by the tubular frame members **10**, as shown in FIGURE 4, thereby eliminating any metal to metal contact between these two parts so that the fore and aft motion of the supplemental frame is on the nylon spacers. Interposed between the nylon spacers **16** carried by the tube **14** are nylon spacers **17**. Thus the space between the outer surface of the rods **14** and the inner surface of the tubes **10** is occupied by the nylon spacers. These spacers have disc-like heads which are sufficiently thin and flexible to conform to the curvilinear engaging surfaces, and, as indicated, there are integral necks on each spacer which

extends through holes in the respective members and are suitably secured in place. Manifestly although the nylon has been mentioned as the material of the spacers **16** and **17**, other materials having similar characteristics may be used for the purpose of achieving a smooth sliding movement between these parts.

A cushion assembly **18** is also provided, this being similar to the cushion assembly **13** in that it has a suitable cushion portion and a frame structure so that it is self sustaining. The cushion assembly **18** is hingedly connected to the respective tubular members **10** of the main frame and in order to enable the cushions to be disposed in the position indicated on FIGURE 1, the adjacent sides are flared for this purpose. A pair of hinges provides the connection between the cushion assemblies **13** and **18** and each hinge comprises a leaf **19** of sheet metal which has a flange **20** which engages the underside of the cushion **13** and is suitably secured thereto. Integral with the flange **20** and disposed at right angles thereto is an upstanding flange **21** which is spaced laterally a slight extent from the side of the cushion assembly **13** as shown on FIGURE 4.

Forming the other part of the hinge is a leaf **22** which has a sheet metal flange **23** engaging a portion of the under side of the cushion assembly **18** and suitably secured thereto. Integral with the flange **23** is an upstanding flange **24** which is disposed alongside a portion of the cushion assembly **18**. The two leaves **19** and **22** of the hinge are suitably connected together by a headed pin **25** which is suitably secured in position by a snap spring. A nylon washer **25'** on the pin **25** is interposed between the adjacent hinged parts to facilitate movement and eliminate metal to metal contact.

Fixed to the outer side of the flange **23** of each hinge leaf **22** is a bearing bracket **26** and this bracket is arranged near the free outer end of the flange **23**. A pin **27** having a head **27'** is carried by the bracket **26** and a nylon washer **28** on the pin is interposed between the bracket and a link arm **29**, one end of which is connected to the pin. A suitable snap spring may be employed on the outer side of the link arm for retaining it on the bearing pin **27**.

The lower end of each of the link arms **29** is pivotally connected to the leg **15** of the supplemental frame at a point spaced below the connection between the leg **15** and the respective tubular rod **14**. A headed pin **30** provides the connection between the lower end of each of the links **29** and the upright portions of the leg **15**, there being a nylon washer **30'** interposed between the respective link arm and the leg **15**. The pin **30** is similarly secured at its opposite end by a snap spring so it is retained against shifting movement.

A spring loaded catch is provided for securing the supplemental frame in the selected position of adjustment. It will be understood that by moving the supplemental frame from the position shown in FIGURE 1 to the right of the figure, the link arms **29** cause the cushion assembly **18** gradually to be tilted or rocked downwardly until the cushion assembly **18** is disposed in alignment with the cushion assembly **13**, as shown in FIGURE 3, when the structure is in bed position. Manifestly any position intermediate the position shown in FIGURE 1 and that shown in FIGURE 3 disposes the back cushion assembly **18** in an inclined position providing a reclining chair.

As shown, the catch comprises a pair of transversely disposed arms **31** and **32** which are disposed beneath the rear end portion of the cushion assembly **13**. Each of the arms **31** and **32** is formed with a downwardly extending inner end or hand hold portion. Interposed between the down turned ends **33** is a coil spring **34** which constantly urges the arms **31** and **32** outwardly. The arms **31** and **32** are each provided with a pair of longitudinally

elongate slots **35** and extending through these slots are bolt and nut assemblies **36** which are secured to the frame of the cushion assembly **13**. In this manner the arms **31** and **32** may be reciprocated longitudinally. The outer ends of the arms **31** and **32** are offset, as indicated at **37**, and each offset portion extends through a hole **38** formed in the respective tubular frame member **10**. At selected positions in the tubular rods **14** are holes **39** so that the offset ends **37** may extend through the holes **39**, thereby positively to secure the supplemental frame in adjusted position.

Thus when the supplemental frame is pulled outwardly from the position shown in FIGURE 1 to that shown in FIGURE 3 the down turned ends **33** are first pressed toward each other so as to move the offset rod ends **37** out of the holes **39** and enable movement of the supplemental frame. By releasing the down turned ends **33** the offset ends **37** will butt against the tubular rods **14** until the next succeeding holes **39** are encountered whereupon the offset ends abruptly snap through the selected hole **39** to secure the parts in such position of adjustment. In this manner it will be manifest that the movement of the cushion assembly **18** is automatic and is dependent upon the shifting movement of the supplemental frame either in a fore or aft direction.

Numerous changes in detail of construction arrangement and operation may be effected without departing from the spirit of the invention, especially as defined in the appended claims.

What I claim is:

1. A chair structure with an adjustable back comprising a main frame having a pair of laterally spaced parallel tubular members adapted to be mounted on a suitable support, a supplemental frame having a pair of laterally spaced tubular rods slidable telescopically in said tubular members respectively, a cushion unit mounted on and substantially covering said main frame, a second cushion unit, hinge means providing a connection between said second cushion unit and said main frame whereby said second cushion unit may be rocked from an upright position constituting a chair back for the first cushion unit to a position in alignment therewith to constitute a bed, said hinge means comprising a member rigid with the main frame, a member rigid with the supplemental frame and aligned with the first hinge member when the frames are arranged as a bed, and a pivotal connection between the adjacent ends of said members, link means providing a connection between said second cushion unit and said supplemental frame whereby fore and aft movement of the supplemental frame imparts rocking movement to said second spring unit, and latching means for releasably securing said supplemental frame in a selected position of adjustment.

2. A chair structure as claimed in claim 1, comprising legs for supporting the main frame, a leg support fixed to the free outer end portion of the supplemental frame, and the link means comprising a single link pivoted at one end to the second cushion unit relatively close to the hinge connection between the hinge members and at the opposite end to an intermediate portion of the adjacent leg support for the supplemental frame.

References Cited in the file of this patent

UNITED STATES PATENTS

247,683	Plimpton	Sept. 27, 1881
322,176	Glaggen	July 14, 1885
537,467	Leonard	Apr. 16, 1895
1,705,851	Bukolt	Mar. 19, 1929
2,328,316	Webb	Aug. 31, 1943
2,979,738	Goldberg	Apr. 18, 1961
3,045,257	Knapp	July 24, 1962

FOREIGN PATENTS

81,581	Norway	Apr. 7, 1953
27,397	Finland	May 31, 1955
192,074	Austria	Sept. 25, 1957