Jan. 13, 1931. J. J. McINTYRE 1,789,245

FOLDING CHAIR

Filed April 13, 1928 2 Sheets-Sheet 1

Fig. 1.

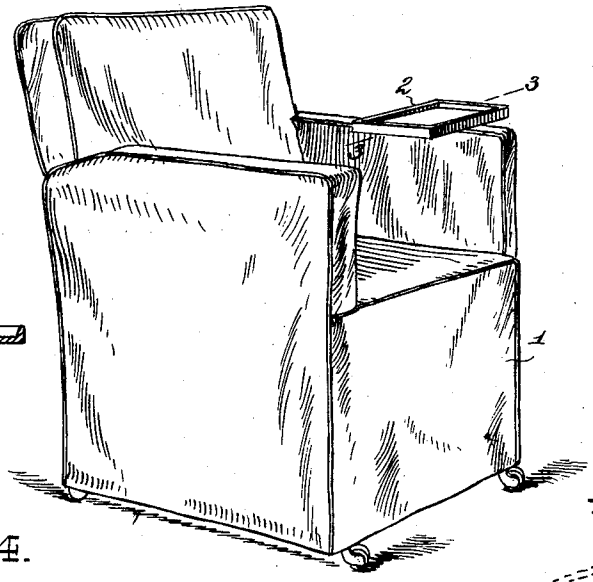


Fig. 3.

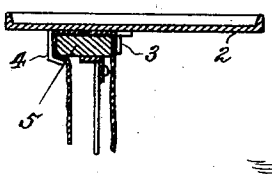


Fig. 4.

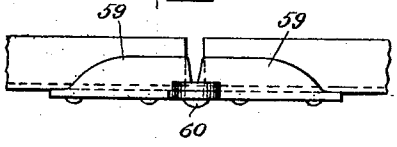


Fig. 5.

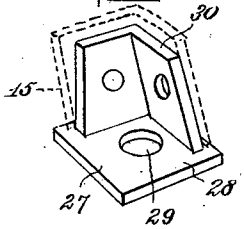


Fig. 2.

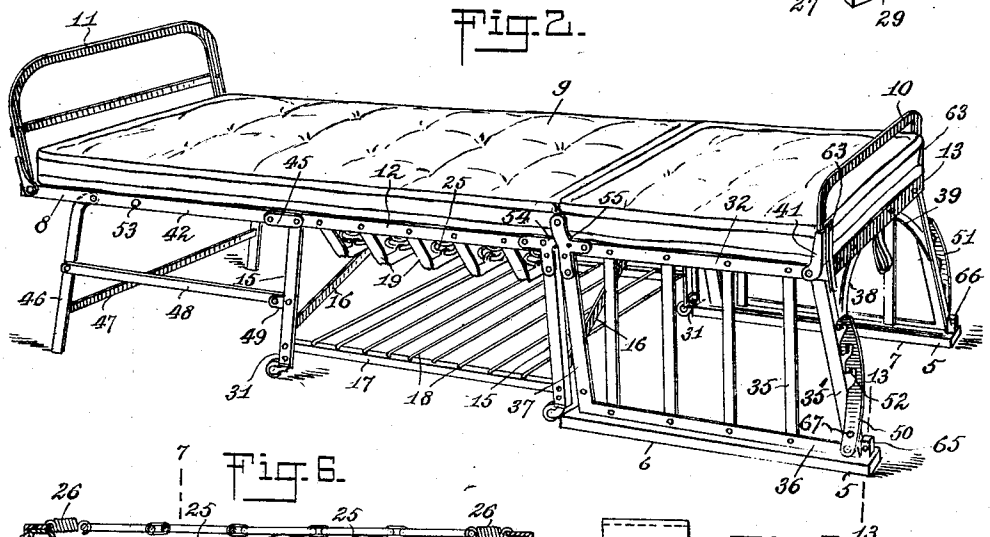
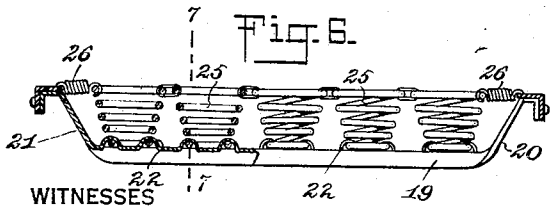


Fig. 6.



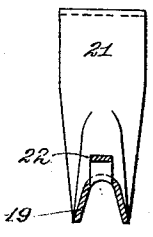


Fig. 7.

WITNESSES

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FOLDING CHAIR

Filed April 13, 1928 2 Sheets-Sheet 2

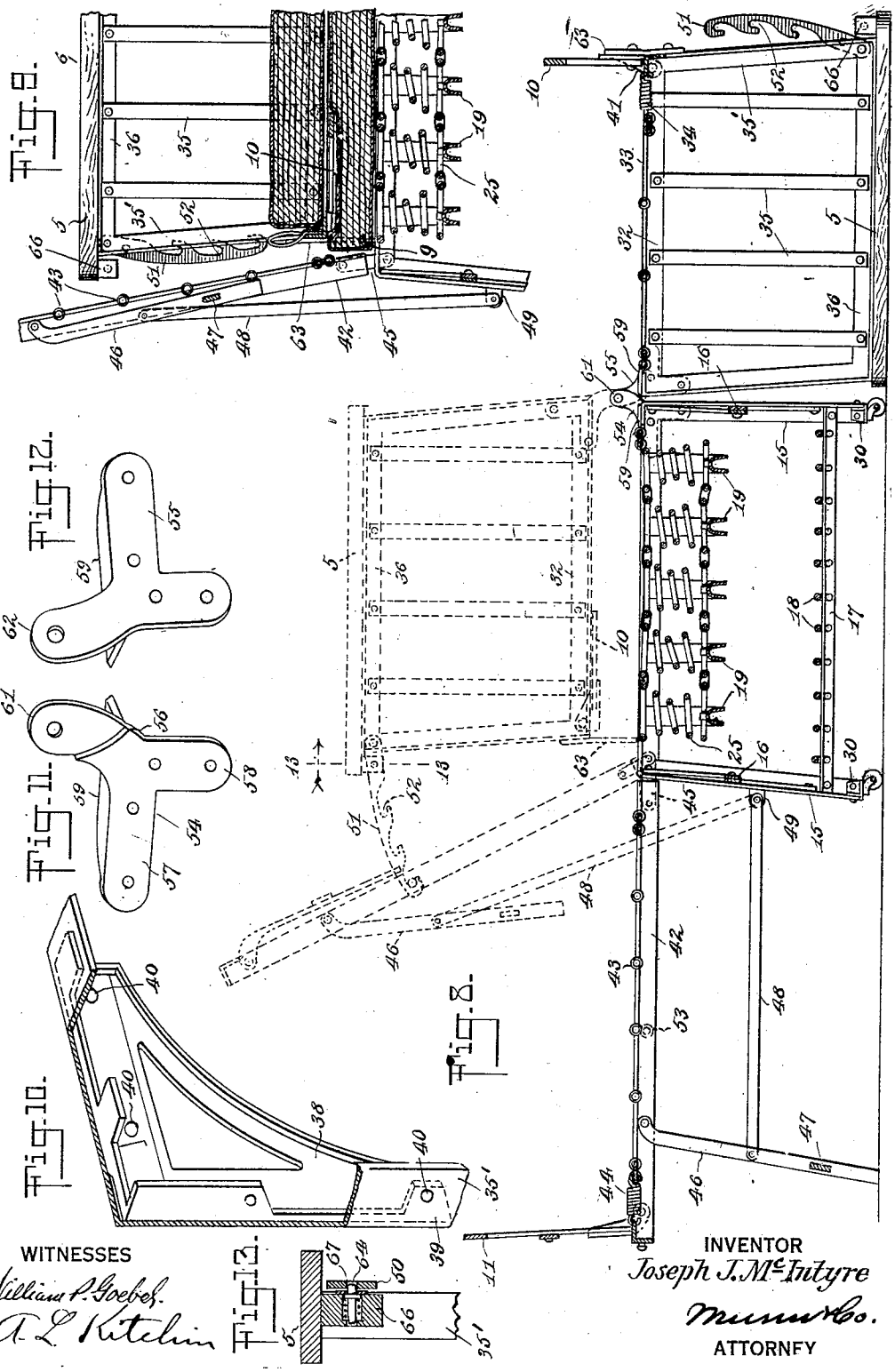


Fig. 8.

Fig. 12.

Fig. 11.

Fig. 10.

Fig. 9.

Fig. 13.

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FOLDING CHAIR

Application filed April 13, 1928. Serial No. 269,768.

This invention relates to folding chairs which are adapted to be folded so that when in one position a chair formation will be presented and when folded to a second position a bed will be presented, the object being to provide an improved structure wherein an extremely strong and easily manipulated device is presented.

Another object is to provide an improvement over my prior Patent No. 641,988 issued January 23, 1900.

A further object, more specifically, is to provide a combined bed and chair wherein the parts are firmly braced when folded to present a chair and also firmly braced when folded to present a bed.

In the accompanying drawings,—

Figure 1 is a perspective view of a device embodying the invention, the same being shown folded to present a chair;

Figure 2 is a perspective view of the same device shown in Figure 1, but with the cover removed and the parts folded or distended to present a bed structure;

Figure 3 is a detail fragmentary sectional view illustrating a removable tray and part of an arm of the chair shown on the line 3—3 in Figure 1;

Figure 4 is a detail fragmentary top plan view of one of the hinge members;

Figure 5 is an enlarged detail perspective view of the socket bracket positioned to carry the casters;

Figure 6 is a detail fragmentary view partly in section and partly in elevation, showing certain of the spring structures illustrated in Figure 2;

Figure 7 is an enlarged detail sectional view through Figure 6, approximately on the line 7—7, the spring being shown removed.

Figure 8 is an enlarged longitudinal vertical sectional view through the structure shown in Figure 2, the mattress being shown removed;

Figure 9 is a longitudinal vertical sectional view through part of the chair shown in Figure 1;

Figure 10 is a perspective view of a supporting bracket and certain associated parts embodying certain features of the invention;

Figure 11 is a perspective view of one of the hinge members shown in Figure 4;

Figure 12 is a perspective view of the second hinge member shown in Figure 4.

Figure 13 is a detail fragmentary sectional view through Figure 2 on the line 13—13.

Referring to the accompanying drawings by numerals, 1 indicates a cover which covers the entire device when folded into a chair, except the rollers, as clearly shown in Figure 1. Whenever desired, a tray 2 could be applied to one of the arms. This tray is provided with a stop 3 and a hook-shaped bracket 4 adapted to be hooked over one of the runners or bar 5 of the arms of the chair. To apply the tray to the chair the hook bracket is placed in position with the tray arranged at about 45° angle. The tray is then swung downwardly until the stop 3 is in position, as shown in Figure 3. When it is desired to make a bed of the device cover 2 is removed and the parts will appear substantially as shown in Figure 9. The arms 6 and 7 are then swung downwardly to the position shown in Figure 2 and then the back structure 8 is swung downwardly to the position shown in Figure 2. The mattress 9 is then applied and the end pieces 10 and 11 swung to the upper position. This completes the unfolding of the device and the bed is ready for use. As indicated in Figures 2, 8 and 9, the device is provided with what may be termed a central section of body 12, a back section 8 and a seat section 13. The body 12 is provided with a suitable frame 14 of strip iron or angle iron, as desired, said body being substantially rectangular and supplied with four angle iron legs 15. These legs are braced by suitable bracing members 16 and at the lower ends the respective legs on each side are connected together by bars 17. Suitable rods 18 are secured to bars 17, whereby a storage space is provided for receiving the bed clothes when the parts are folded to a chair position. The frame 14 may be of any desired kind but is provided with a number of supporting bars 19, as shown in Figure 6. Each of these supporting bars is provided with inclined upwardly-extending sections 20 and 21 fitting into the inner surface of the side bars of

frame 14 to which they are riveted. Each of the supporting bars 7 is provided with a number of pressed-up or looped members 22 forming eyes through which the lower ends of the respective springs 23 extend. Preferably there are two pressed-up portions or eyes 22 for each spring 25, whereby the springs are properly supported and connected to the support at one end. The upper ends of the springs are connected by suitable links and suitable springs 26 are also provided for preventing any permanent lateral motion of the springs 25. It will thus be seen that the body 12 is a substantially rectangular structure, and the members 8 and 13 are connected thereto so as to be swung back and forth from one position to the other. Each of the legs 15 of the body is provided with a caster-receiving bracket 27 shown particularly in Figure 5. This bracket is provided with a plate 28 having an aperture 29 and an L-shaped upstanding flange 30 having apertures for receiving suitable rivets 31. The seat section 13 is provided with a frame 32 which may be of angle bars or strip iron, as desired, and is preferably substantially rectangular. This frame carries a suitable resilient bottom 33, said bottom being preferably formed with links held in place by suitable springs 34. Connected to the frame 32 are the arms 6 and 7. Each of the arms is provided with upstanding spindles 35 riveted or otherwise secured to a bar 36 having a rear section 37, as shown in Figure 2. The end of the rear section 37 is riveted or otherwise secured to frame 32 so that when the runner 5 is placed on member 36, the arm is complete. In order to brace the arms 6 and 7, suitable bracing members 38 and 39 are provided. As these bracing members are identical, the description of one will apply to both. In Figure 10 bracing member 38 is shown and with it part of the angle bar 39 which forms a rear panel of the arm. Suitable rivets 40 secure the brace 38 to the frame 13 and to member 35'. The end piece 10 is rigidly secured to hinge members 41, said hinge members being hingedly connected with frame 32, so that end member 10 may be folded against the frame 32 whenever desired. The same arrangement is provided for the end member 11 as these members are designed to be folded against the respective frames 32 and 42 when when the device is folded into a chair structure. The back section 2 is provided with a frame 42 of strap or angle bar and is made substantially identical with the frame 32 The frame 42 is also supplied with suitable links 43 and springs 44 to hold the links under tension but allow yielding action. The frame 42 is provided with extensions 45 pivotally connected to the frame 14, whereby the parts may be arranged in the position shown in Figure 8 or swung upwardly to the position shown in Figure 9. A pair of legs 46 are pivotally connected with the frame 42 and are rigidly secured together near the outer ends by connecting brace 47. A link 48 is pivotally connected with each of of the legs 46 and with suitable brackets 49 carried by two of the legs 15. The parts are so proportioned that when the frame 42 is raised to its highest position, the legs 46 will swing past dead center, as shown in Figure 9, whereby the free end of the legs 46 rest against the links 43 or, if desired, against some stop carried by frame 42. Where it is desired to swing the back downwardly a short distance from the position shown in Figure 9, this may be readily done by first swinging the leg 46 outwardly and then frame 42 downwardly the desired distance. After having swung the back downwardly a desired distance, the catches 50 and 51 are swung into operative position. These catches are pivotally mounted on the seat section 13 and are provided with a series of hooks 52, said hooks being adapted to interlock with the respective pins 53 according to the angle at which the back has been positioned. In order to swingably connect the seat section 13 with the body 12, specially constructed hinge members 54 and 55 are provided. It will be noted that these hinge members are substantially identical with the exception that the hinge member 54 is provided with a shoulder 56 which limits the swinging movement of the hinge members in one direction. Each of these hinge members is provided with a side plate 57 adapted to be riveted in place with a depending member 58 adapted to be riveted in place and with a supporting flange 59. The flanges 59 on the respective hinge members rest on the frames 13 and 14 respectively, as shown in Figure 4, while a suitable pin 60 connects the extensions 61 and 62. From Figure 2 it will be noted that the hinge member 54 is riveted to the body 12, while the hinge member 55 is riveted to parts of the seat section 13. When the seat section is swung over, for instance, to the position shown in Figure 9 or the dotted position shown in Figure 8, the frame 32 will be spaced above frame 14. Suitable supporting feet 63 are carried by the frame 32 to support the rear part of the seat section on the frame 14. By reason of this structure the weight of the person using the chair, as shown in Figure 1, will be carried by the links 33 and not by the springs 25. If desired, the mattress or part of the mattress may be arranged in the space between the body 12 and the seat section 13, as shown in Figure 9. When the parts are in the position shown in Figure 1 or in the dotted position shown in Figure 8 and it should be desired to unfold the device, it is only necessary to remove the cover 1, disengage catches 50 and 51 and then swing the sections 8 and 13 to their lower

position. The end pieces 10 and 11 are then raised and the mattress adjusted until the parts assume the position shown in Figure 2. The device may be refolded into a chair by reverse movement. It will thus be seen that the device may be quickly and easily adjusted from one formation to another. After the seat portion has been swung to the dotted position shown in Figure 8, the catches 50 and 51 are raised to a substantially horizontal position. When raised to a horizontal position spring-pressed pins 64 interlock with the catches for holding them temporarily in this raised position. As indicated in Figure 2, a spring-pressed pin 64 is mounted in each of the blocks 65 and 66 so that both of the catches are properly taken care of. As indicated in Figure 13, the respective pins 64 snap into the respective apertures 67 and the catches 50 and 51. After the back has been swung up to the position shown in the dotted lines in Figure 8 the respective catches 50 and 51 are merely positioned downwardly until they interlock with the respective pins 53. In this way one person may manipulate these parts. In Figure 11 it will be noted that the hinge member 54 is provided with an offset portion 56. This is desirable in order that member 62 may overlap member 61 and yet permit the frames 12 and 42 to remain in alignment as shown in Figure 4.

What I claim is:—

1. In folding sectional furniture a pair of rectangular angle-iron frame sections having flat upper edging faces and depending feet and arranged with abutting frame edges, and hinges connecting said frame sections at the sides of their abutting angle-iron frame edges comprising pairs of angular plates affixed to the sides of the frame sections at said abutting edges and having integral upwardly extending relatively offset hinge arms overlapping and pivotally interconnected above the plane of said frames and having laterally offset flanges therebelow resting upon and supported by the adjacent flat upper edging faces of the angle irons of said frames.

2. A folding convertible bed-chair comprising substantially rectangular head, leg and intermediate body frame sections each having depending supporting legs and hingedly connected together at abutting ends for upswinging movement of the head end section toward the vertical to form a chair back, and for upwardly and rearwardly swinging movement of the leg frame section to overlie the intermediate body section and constitute a seat portion, said intermediate frame section having a cushion support inserted therein at its top, and having bracing arms extending longitudinally thereof and interconnecting and bracing its depending supporting legs adjacent to their lower ends, and a shelf structure cross-connecting said bracing arms and constituting a support for bed clothing when the sections are folded to constitute a chair.

3. A folding convertible bed-chair comprising substantially rectangular head, leg and intermediate body sections each having depending supporting members and having cushion supports inserted therein substantially in the plane of their top faces, cushions on said supports including a separate loose cushion for the leg section cushion support, said head end and intermediate frame sections being hingedly connected together at their abutting ends for upswinging movement of the head end section toward the vertical to constitute a chair back and having means detachably to lock said head end section in upswung position, upwardly offset hinging means pivotally interconnecting the abutting ends of the intermediate and leg sections for upswinging movement on a horizontal axis substantially in the plane of the top of the cushion on the intermediate frame section to permit said leg section to overlie the cushion of the intermediate section, stops upstanding from the non-pivoted end of the leg frame section a distance approximately the thickness of said cushion and positioned to engage said intermediate frame section in the overlaid position of the leg section and in conjunction with said upwardly offset hinging means to support said leg frame section elevated above the intermediate frame section to an extent approximating the thickness of its cushion.

Signed at Brooklyn, in the county of Kings and State of New York, this 7th day of April, A. D. 1928.

JOSEPH J. McINTYRE.