March 20, 1951 O. MEHR ET AL 2,545,891

CONVERTIBLE FURNITURE

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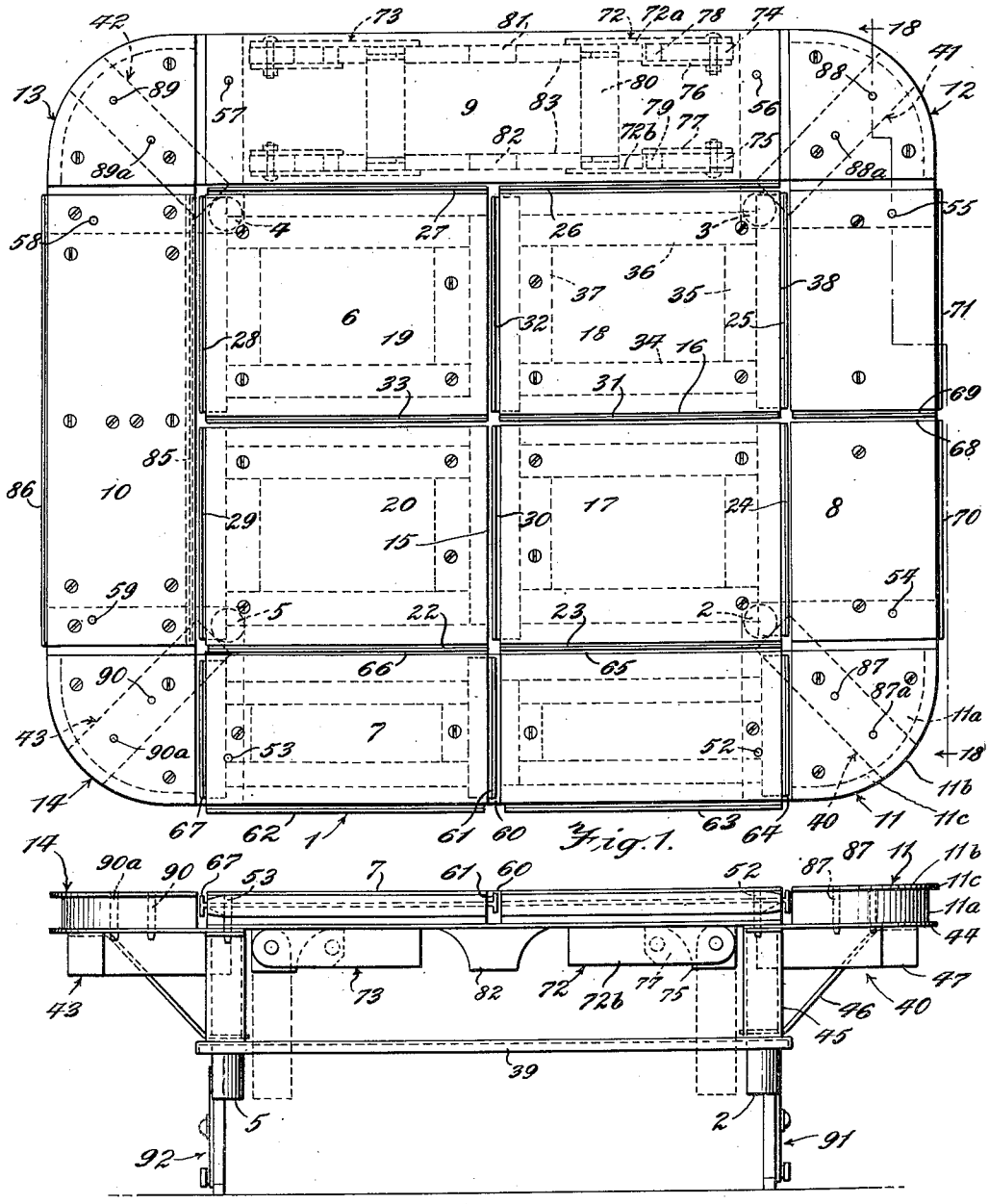


Fig. 1.

Fig. 2.

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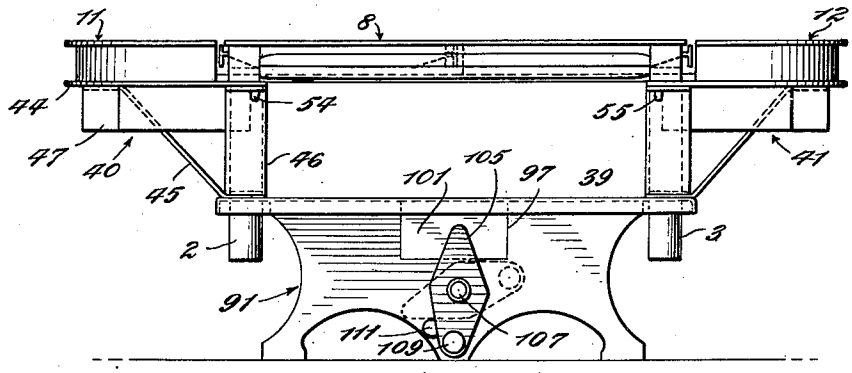


Fig. 3.

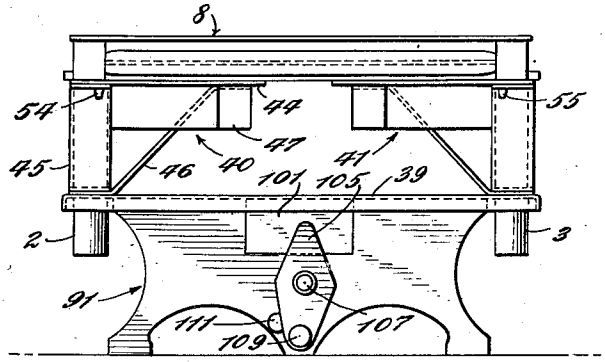


Fig. 4.

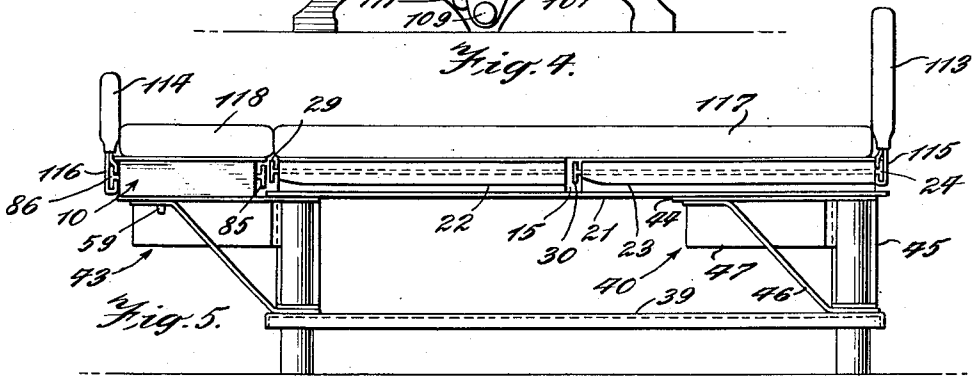


Fig. 5.

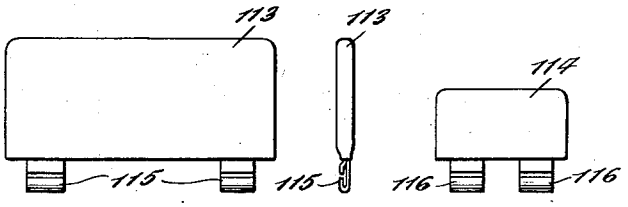


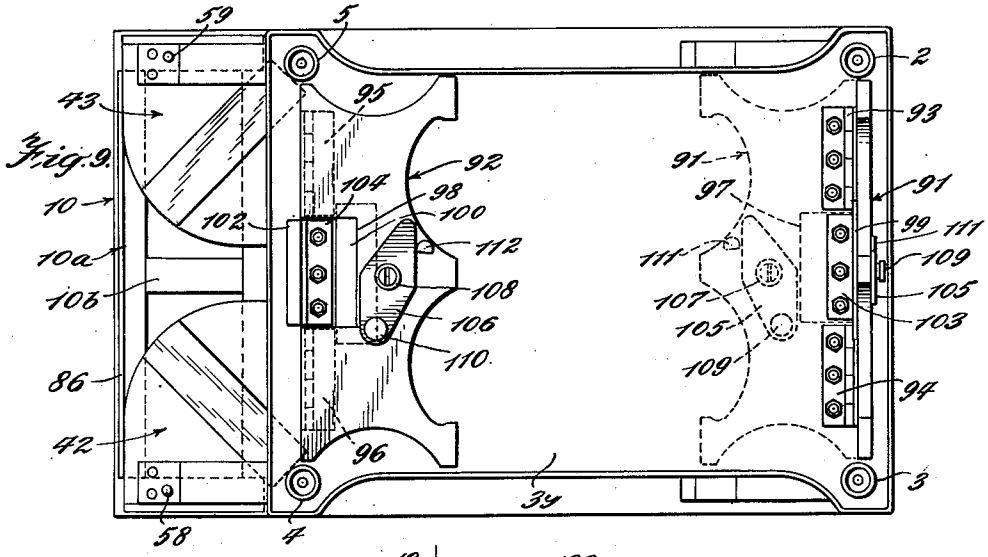
Fig. 6. Fig. 7. Fig. 8.

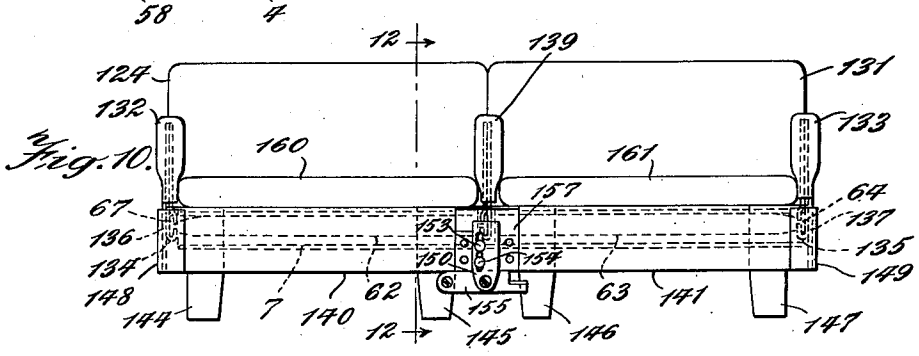
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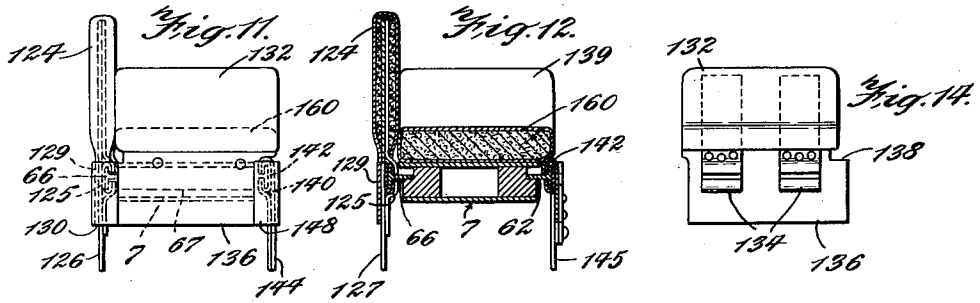
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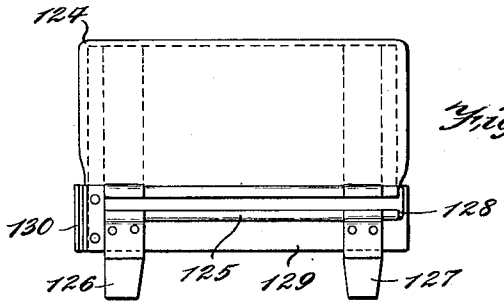
CONVERTIBLE FURNITURE

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CONVERTIBLE FURNITURE

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Fig. 15.

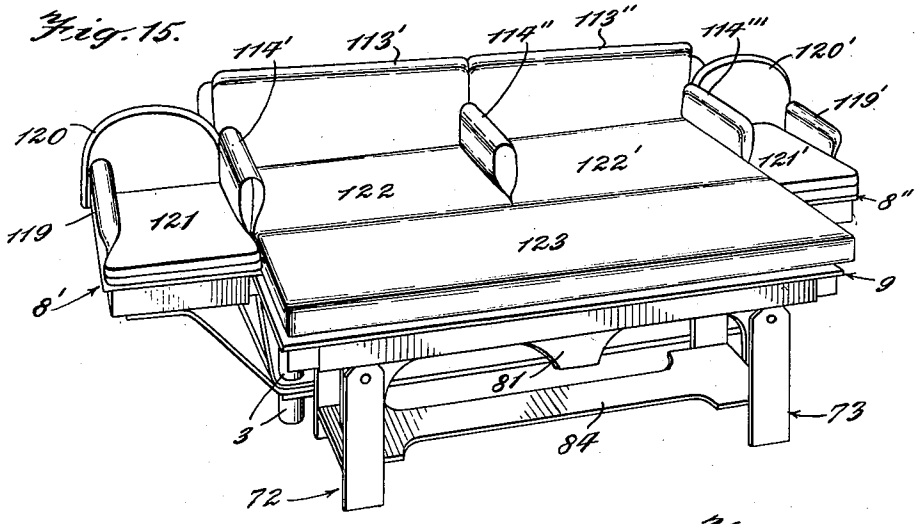


Fig. 16.

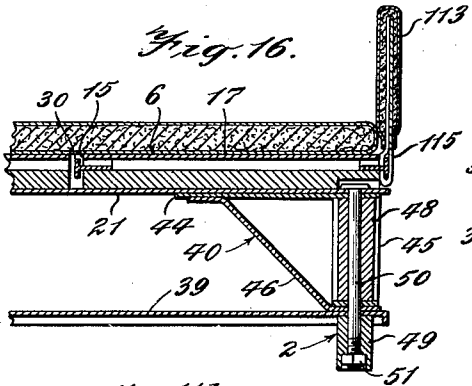
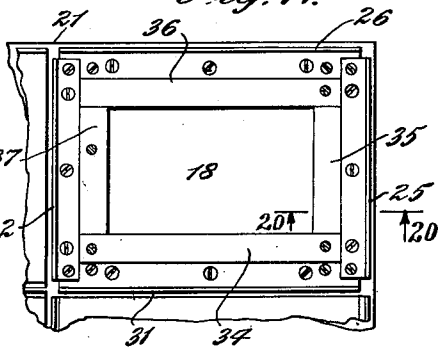


Fig. 17.



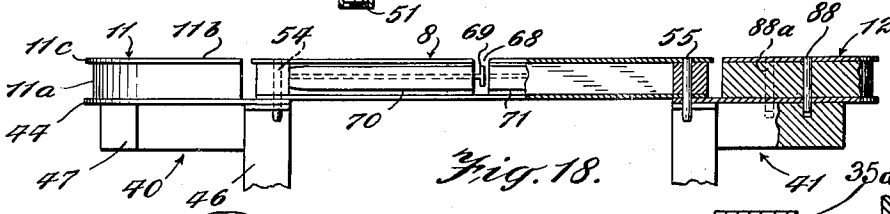
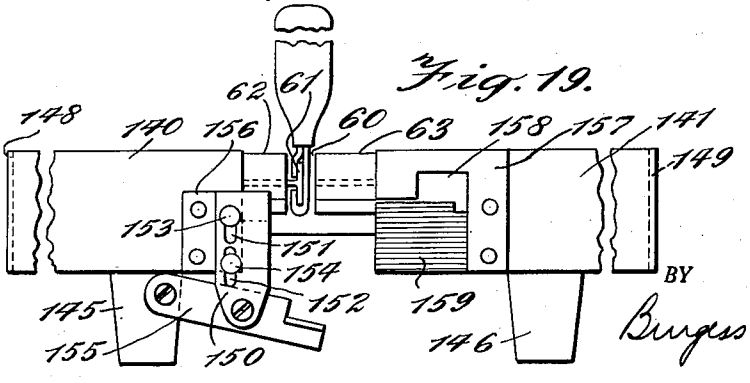


Fig. 18.

Fig. 19.



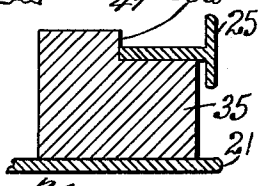


Fig. 20.

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UNITED STATES PATENT OFFICE

2,545,891

CONVERTIBLE FURNITURE

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Application November 6, 1945, Serial No. 626,972

5 Claims. (Cl. 5—3)

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This invention relates to convertible or knock-down furniture of a kind which can be interchangeably converted from one unit of furniture to another and contemplates a construction which is light in weight, yet durable.

A particular object of the invention is to provide a framework or foundation piece which can be converted with minimum effort into a number of furniture items or units of varied utility and appearance. Another object is to provide auxiliary pieces capable of interchangeable use in the different furniture items. Other objects and advantages will appear as the description proceeds.

The invention in general involves a horizontally situated surface member supported by legs and having its edges fitted to receive and be joined to other members by a sliding connection, so as to secure said other members in a position more or less normal to the surface member. The sliding connection is preferably in the form of a track and slide arrangement, which lends itself to unobtrusive installation, but, as will be understood, other connecting means are applicable. The surface member, which term includes a main surface member to be referred to hereinafter and certain auxiliary surface members, may have its top portion or top side cut by one or more channels, which may intersect each other, and in which tracks may be located, so that appropriate upright members having slides to engage said tracks may be positioned in the channels. The upright members may be upholstered or may be finished plain.

In one form of the invention the main surface member, as above described, may comprise the top of a table, and the table may be provided with means for increasing the top surface, as well as for varying its height. In other applications of the invention, furniture units of various sizes and shapes may be formed from the table unit, and in addition, certain of the auxiliary surface members are adapted to form still other furniture units.

The invention will be better understood by referring to the accompanying drawings, which in connection with the ensuing description constitute a preferred application of the invention, and in which:

Fig. 1 is a plan view of the table unit showing the table top in full size;

Fig. 2 is a side elevation of the table of Fig. 1 showing the table at its maximum height;

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Fig. 3 is an elevational view of the table of Fig. 1 from another side;

Fig. 4 is a view similar to Fig. 3, but showing the table top reduced in size;

Fig. 5 is an elevational view of a couch unit constructed from the table unit;

Figs. 6, 7, and 8 are views of upholstered members used in the unit of Fig. 5;

Fig. 9 is a bottom view of the unit shown in Fig. 5 but with a slight modification;

Fig. 10 is an elevation of a lounge or divan unit constructed from one of the auxiliary surface members shown in Fig. 1;

Fig. 11 is an end elevation of Fig. 10;

Fig. 12 is a section through line 12—12 of Fig. 10;

Figs. 13 and 14 are detailed views of the upholstered members employed in the divan unit;

Fig. 15 is a perspective view of an upholstered unit formed from the table unit;

Fig. 16 is a partial vertical section through one leg of the unit in Fig. 5, showing the internal construction;

Fig. 17 is a partial plan view of the table unit of Fig. 1 with a portion of the table top removed to show the inner construction;

Fig. 18 is a partial view along line 18—18 of Fig. 1;

Fig. 19 is an enlarged, broken view of a portion of Fig. 10; and

Fig. 20 is an enlarged section along line 20—20 of Fig. 17.

In Figs. 1–4 the table unit is shown, from which it will be seen to comprise a top 1 supported by legs 2, 3, 4, and 5. The top includes the surface member 6, which in this form of the invention may be designated a main surface member. Surface members 7, 8, 9, 10, 11, 12, 13, and 14 may be termed auxiliary surface members. Surface member 6 is an integral element, having right angularly disposed channels 15 and 16 intersecting each other in its top portion or top side and thus dividing it into the smaller surface sections 17, 18, 19, and 20. The latter form a part of the main surface member 6, there being provided a base plate 21 (Figs. 16 and 17) to which each surface section is fastened. The edges of the member 6 have T-shaped tracks 22, 23, 24, 25, 26, 27, 28, and 29 extending outwardly therefrom, each length of track ending at one end at a corner of member 6 and at its other end at one of the intersecting channels 15, 16 which open through the sides of the main surface member 6. Tracks

30, 31, 32, and 33 are also provided in the channels 15 and 16, as shown.

A preferred construction of the tracks is illustrated in Fig. 17, in which is shown the arrangement of one of the surface sections, the others being identical. All four of the surface sections are formed upon the base plate 21. Section 18, for example, comprises a rectangular framework formed by the members 34, 35, 36, and 37 which are fastened to the plate 21. Each of these members has a step or recess rabbeted in one side thereof (note Fig. 16 and 35a in Fig. 20) in which the tracks 25, 26, 31, and 32 are secured, as by means of screws as shown. A top plate 38 (not shown in Fig. 17) is then positioned upon the members 34, 35, 36, and 37 (note Fig. 1), thereby forming the surface of section 18.

A lower surface member 39, having turned down edges, is secured to each leg of the table and serves to brace the same, as well as to provide storage space. Each leg is provided with swingable frame members 40, 41, 42, and 43, each of which is adapted to pivot completely about its respective leg. The construction of the swingable frame members is the same, and therefore a description of one will be given which will suffice for all. The member 40, for example, is formed of a plate 44 of a general quadrantal shape and supported by a pair of struts 45, 46, spaced at right angles to each other. The plate 44 is suitably fastened to a member 47, whose outer end is curved to correspond to the curvature of the plate. Plate 44, struts 45, 46, and lower surface member 39 are each secured to the leg 2 preferably as illustrated in Fig. 16, wherein leg 2 is shown as consisting of two parts 48 and 49, each having a suitable bore. A bolt 50 passes through base plate 21, plate 44 and the bore in leg part 48, and then through the struts 45 and 46, lower surface member 39 and the bore in leg part 49, the bolt being held in place by a nut 51 recessed in the end of the part 49.

The swingable frame members 40, 41, 42, and 43, when swung outwardly of the legs 2, 3, 4, and 5, as shown in Figs. 1–3, are adapted to support the auxiliary surface members 7, 8, 9, 10, 11, 12, 13, and 14 in positions adjacent to and flush with the main surface member 6 and each other. The rectangularly-shaped members 7, 8, 9, and 10 are each supported by a pair of swingable frame members; thus the surface member 7 is supported on swingable members 40 and 43 (Figs. 1 and 2), and is secured thereto by means of pins 52, 53, which fit into corresponding holes in the quadrantal plates and struts of swingable members 40 and 43; surface member 8 is supported on swingable members 40 and 41 and has pins 54, 55, which fit into corresponding holes in the quadrantal plates and struts of the members 40 and 41 (Fig. 18); similarly, surface member 9 has pins 56, 57, for securing it to swingable members 41 and 42, and surface member 10 has pins 58, 59, for securing it to swingable members 42 and 43.

Surface member 7 has a groove 60 extending across its top portion or side in which a length of T-shaped track 61 is disposed as shown in Figs. 1 and 2, and also has tracks 62, 63, 64, 65, 66, and 67 mounted in its edges. Surface member 8, like the member 7, has a groove 68 intersecting its top portion or side in which is situated the T-shaped track 69. It is also provided with tracks 70 and 71 in its outer edge (Fig. 18). The frame construction of the surface members 7 and 8 is generally similar to that of surface member 6 and will not, therefore, be further described.

Surface member 9 carries no tracks and is provided on its underside with two pairs of folding legs generally designated as 72 and 73 (Figs. 1 and 2). The pair 72 consists of two legs 72*a*, 72*b*, pivoted to ears 74, 75, respectively, and secured to reinforcing members 76, 77, respectively. The latter are fastened to the legs by spacers 78, 79, and serve to brace the same. A detachable brace 80 also helps to support the legs. The pair of folding legs 73 is similar in construction to pair 72 and will not be further described. Members 81 and 82 are extensions of the frame members 33, to which the ears 74, 75 are attached, and have a decorative effect. Fig. 2 illustrates the folding legs 72 and 73 in their folded position, and also, in dotted outline, in their extended position. In Fig. 15 is shown a perspective view of the surface member 9, wherein the folding legs have been turned down to provide support and a cross member 84 replaces the detachable braces such as 80.

Surface member 10 has tracks 85, 86 on its two side edges. Its frame construction is shown in Fig. 9, from which it is seen to consist of a rectangularly shaped frame generally designated as 10*a* and a cross member 10*b*.

It will be seen that a variety of forms of auxiliary surfaces can be used to develop the table unit, including auxiliary surface members having no tracks, such as the member 9. As will be understood, all of the foregoing auxiliary surface members may be of one kind, for example, like the member 7, or any of the other members, or of any combination of these members.

The corner surface members 11, 12, 13, and 14 all have a quadrantal or segmental shape and are designed to rest upon the swingable frame members. The member 11, for example, consists of a quadrantally shaped frame member 11*a* upon which is fastened a plate 11*b* of similar shape but having a marginal extension 11*c*. Corner members 12, 13, and 14 also have this construction. Member 11 has a pair of pins 87, 87*a* which engage with a pair of corresponding holes in the quadrantal plate 44 of the swingable frame member 40. These holes extend through the plate 44 and into the member 47 to an appropriate depth. By this arrangement the member 11 is removably secured to the swingable member 40 and can be supported upon said member in a position adjacent to and flush with the main surface member 6 and the adjacent members 7 and 8. The construction of the surface members 12, 13, and 14, being identical to that of member 11, will not be described, except to say that they are provided with pairs of pins 88 and 88*a*, 89 and 89*a*, 90 and 90*a*, respectively, which fit into corresponding holes in the quadrantal plates and cross members of the swingable frame members 41, 42, and 43, respectively (Fig. 18).

As shown in Figs 2, 3, 4, and 9, the lower surface member 39 is provided with a pair of folding leg members 91 and 92 for increasing the height of the table unit. Fig. 9 gives a bottom view of the leg member 91 in its extended position, and also, in dotted outline, in its folded position, and leg member 92 is illustrated in the folded position. Leg member 91 is secured to the underside of lower surface member 39 by hinges 93 and 94, leg member 92 by hinges 95 and 96. Rectangularly shaped portions have been cut from the leg members 91 and 92 to provide openings 97 and 98, respectively, which are then partially blocked off by plates 99 and 100 fastened to the inner sides of leg members 91 and 92, respectively.

Plates 99 and 100, as shown, are larger than openings 97 and 98 and overlie the edges thereof. The rectangularly-shaped portions, designated as stops 101 and 102, have been secured to the underside of lower surface member 39 by means of brackets 103 and 104. When the leg members are extended as shown in Figs. 2–4, the stops 101 and 102 fit into the openings 97 and 98, respectively, in a position flush with the outer sides of the leg members, as shown in Fig. 9 in the case of leg member 91. The plates 99 and 100, which block further passage of the stops through the openings, prevent the leg members from being swung outwardly beyond the stops. Catches 105 and 106 are adapted to lock the leg members in their extended positions to the stops 101 and 102, respectively, so as to prevent inward movement of said leg members. Each of the catches 105 and 106 is provided with a pivot 107, 108, a handle 109, 110, and a catch stop 111, 112, respectively. In their folded position, leg members 91 and 92 are concealed from view by the turned down edges of the lower surface member 39.

Referring to Figs. 1–4, the main surface member 6 and its supporting structure, which includes the legs, the swingable frame members, the lower surface member, and the folding leg members, comprise the basic table unit from which may be constructed a number of other units of varying size, appearance, and usefulness. Some of these units will be described to illustrate the principles of the invention, although it will be understood that many other units may also be built in accordance with the invention. Fig. 4, for example, shows the table unit in a reduced size and having as surface members only the main surface member 6 and auxiliary surface member 10. In this form the unit is adapted to be converted into the furniture item of Fig. 5, shown as a couch or reclining lounge and made by reducing the height of the unit in Fig. 4 and adding thereto appropriate upright or upholstered members and cushions. The upright members 113 and 114 have slides 115 and 116, respectively, extending from their edges, which are adapted to engage the tracks in the manner shown (Figs. 5–8). A number of upright members may be used, of course, to extend completely across any particular side of the furniture unit. Cushion members 117 and 118 are of any suitable design. Fig. 9 is a bottom view of the couch unit of Fig. 5, but with leg member 91 in an extended form to reveal its construction.

In Fig. 15 a unit is shown which utilizes the basic table unit, the auxiliary surface member 9 with its legs extended and resting on the floor, and two surface members 8' and 8'' which are identical to the member 8 (see Fig. 1). Upright members 113' and 113'' are the same as that shown in Figs. 6 and 7; and upright members 114', 114'' and 114''' are the same as that shown in Fig. 8. The members 119, 119', 120, and 120' are similar to those of Figs. 6–8 but of different sizes and shapes. Cushions 121, 121', 122, 122', and 123 complete the unit.

As heretofore pointed out, the auxiliary surface members shown in Fig. 1 may be interchangeably used in constructing a number of furniture units, as illustrated in Figs. 5 and 15. In some instances, the auxiliary surface members may function as the basic or central structural element upon which to build separate and distinct furniture items. In one application of this form of the invention, the surface member 7, which in Fig. 1 is employed as an auxiliary surface member, may be used as the basic element of the item shown in Figs. 10–12. In this particular item, shown as a divan unit, the surface member 7 constitutes a seat support or, in this form of the invention, a main surface member. In the assembly of the divan, a back or upright member 124 having a slide 125 integrally formed with leg members 126 and 127, is first slipped into place on the rear edge of surface member 7 by means of the track 66 and slide 125 (Figs. 12–13), approximately half of said rear edge being engaged by the member 124. The track and slide engagement is started at the edge 128 of the slide 125. A skirt member 129 is secured to leg members 126 and 127 and serves to conceal the construction of the unit as well as to improve the appearance of the same. Leg members 126 and 127 (see Fig. 13) are fastened to the skirt member 129 by means of rivets. It is intended that the leg members and the skirt member be integrally formed. The leg members extend upwardly to the top portion of the back member 124 and are imbedded in such member, as shown in Figs. 12 and 13. The upward extensions of the leg members are indicated in Fig. 13 by the dotted lines. The slide 125 is an integral part of the skirt 128 although it may be formed separately of the skirt and later riveted or welded thereto. It will thus be seen that the member 124 shown in Fig. 13 is a single unitary structure and is attachable to the surface member 7 by threading or sliding the track 66 of surface member 7 through the slide 125 of back member 124, as shown in Fig. 12.

Skirt member 129 is formed with a pair of lips 130 disposed at right angles to it. A back member 131, having a construction matching that of the back member 124, is adapted to engage the other half of the rear edge of surface member 7. Back members 124 and 131, when properly in position, fit snugly against each other at the back of the unit. Upright members 132 and 133, having integrally formed slides 134 and 135 and skirt members 136 and 137, respectively, are next slid into place by engaging said slides with the tracks 67, 64, respectively, of the surface member 7. Upright member 132, as shown in detail in Fig. 14, has a tongue portion 138 which is adapted to engage the lips 130 of back member 124. The tongue portion 138 is only partially shown in Fig. 11 in order to reveal the other construction. Upright member 133 is similar to the member 132 and of matching design. An upright member 139, identical to that shown in Fig. 8, is adapted to engage the tracks 61 (Fig. 19) in the groove 60 of surface member 7. As is shown in Figs. 10–14, all if the above-mentioned upright members have an upholstered finish.

To complete the assembly of the divan unit, skirt members 140 and 141, having slides 142 (Figs. 11 and 12) and 143 (not shown) similar to slide 125 of back member 124 of Fig. 13, are slid into place along the tracks 62 and 63, respectively, of the surface member 7. Fig. 19 shows the skirt members as they approach each other on the tracks 62 and 63. As illustrated in Figs. 10, 11. 12, and 19, skirt members 140 and 141 are integrally formed with leg members 144, 145, and 146, 147, respectively, and each skirt member is bent at right angles at one of their ends to form a clamp or stop 148, 149, respectively (note Fig. 11). At their other ends each of the skirt members is provided with means for locking one to the other to provide a compactly assem-

bled furniture unit. In the present instance such locking means comprise a sliding plate 150 having a pair of slots 151, 152 engaged by the pins 153, 154 which are fastened to skirt member 140. An arm 155, pivoted to leg member 145 and plate 150, serves to move the latter up and down through the distance permitted by the slots. A flat member 156 is secured to the skirt 140 to provide support for the sliding plate 150. Cooperating with the foregoing arrangement of parts is an inverted L-shaped member 157 secured to the skirt 141 and slightly bent out of the plane of said skirt to permit it to slide over the skirt 140 (above the skirt, according to Fig. 19), when both skirts are brought together. The member 157 has a recess 158 to receive the plate 150. The portion 159 of skirt 141 is also bent slightly out of the plane of said skirt to permit it to slide under the skirt 140 (below the skirt, according to Fig. 19) when both skirts are brought together. With skirts 140 and 141 advanced their full limit along tracks 62 and 63, respectively, i. e., with clamps 148 and 149 pressing against the side skirts 136 and 137, the skirts 140 and 141 will have the position shown in Fig. 10. The member 157 of skirt 141 will extend over and above the opposite skirt, and the portion 159 will extend underneath said opposite skirt. By turning arm 155 upwardly the plate 150 will enter recess 158 and lock the skirts 140 and 141 together. A snug and compact fit of all parts may be secured, and it will be observed that each part is adapted to support and stabilize the previously assembled part. Thus, the skirts 140 and 141 serve to retain and compress the upright members 132 and 133 by means of the clamps 148 and 149. These upright members are in turn held firmly in place between the skirts 140, 141 and the lips of the back members 124, 131, as well as by the track and slide arrangement. A pair of cushions 160, 161 complete the divan unit.

It is apparent that the invention provides flexible and versatile means of constructing a large number of furniture units with ease from a relatively small number of pieces. The size of the units that may be built will, of course, depend upon the size of the various structural elements involved, which may vary widely, depending upon the purpose for which the units are made. It will also be appreciated that the foregoing description of the invention is illustrative and that it is capable of application in various other modifications. The following is claimed:

1. In convertible furniture adapted to be interchangeably converted from one unit of furniture to another, the combination of a main surface member having supporting legs therefor, a lower surface member disposed beneath said main surface member and secured to said legs, said lower surface member serving to brace said legs and to provide storage space, swingable frame members swingably connected to said legs, said main surface member having T-shaped tracks mounted in the edges and extending outwardly thereof, upright members having slides extending outwardly of their edges, said slides engaging said tracks so as to unite said upright members with said main surface member, and auxiliary surface members removably secured to said swingable frame members in positions adjacent said main surface member so as to increase the surface area of said latter member.

2. In convertible furniture adapted to be interchangeably converted from one unit of furniture to another, the combination of a main surface member having supporting legs therefor, a lower surface member disposed beneath said main surface member and secured to said legs, said lower surface member serving to brace said legs and to provide storage space, swingable frame members supported on said lower surface member and swingably connected to said legs, auxiliary surface members removably secured to said swingable frame members in positions adjacent said main surface member so as to increase the surface area of said latter member, said lower surface member having folding leg members hinged thereto and foldable outwardly thereof to increase the height of the furniture unit.

3. In convertible furniture the combination of a main surface member having a top portion and a bottom portion, said bottom portion having supporting legs secured thereto, said top portion having intersecting channels opening through the sides of said main surface member, thereby dividing the top portion into surface sections, each of said surface sections having edges adjoining said channels, certain of said edges having tracks extending outwardly thereof into said channels, and upright members having one side thereof terminating in slides, said slides engaging said tracks to locate said upright members in a substantially upright position relative to said main surface member.

4. In convertible furniture, the combination of a main surface member having supporting legs therefor, said main surface member having T-shaped tracks mounted in the edges and extending outwardly thereof, swingable frame members supported on and swingable about said legs, auxiliary surface members removably secured to said swingable frame members in positions adjacent said main surface member, said auxiliary surface members having T-shaped tracks mounted in their edges and extending outwardly thereof, and upright members having slides extending outwardly of their edges, said slides engaging said tracks so as to unite said upright members with said main surface member and said auxiliary surface members.

5. In convertible furniture, the combination of a main surface member having supporting legs therefor, said main surface member having T-shaped tracks mounted in the edges and extending outwardly thereof, said main surface member having a top portion and a bottom portion, said top portion having intersecting channels opening through the sides of said main surface member, thereby dividing the latter into surface sections, each of said surface sections having edges adjoining said channels, certain of said last-mentioned edges having tracks extending outwardly thereof into said channels, swingable frame members supported on and swingable about said legs, auxiliary surface members removably secured to said swingable frame members in positions adjacent said main surface member, said auxiliary surface members having T-shaped tracks mounted in their edges and extending outwardly thereof, and upright members having slides extending outwardly of their edges, said slides engaging the tracks in said auxiliary surface members and said main surface member, including the tracks in said intersecting channels.

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