March 25, 1958 A. P. BARKULES 2,828,175

KNOCK-DOWN FURNITURE

Filed May 3, 1956 3 Sheets-Sheet 1

FIG. 1

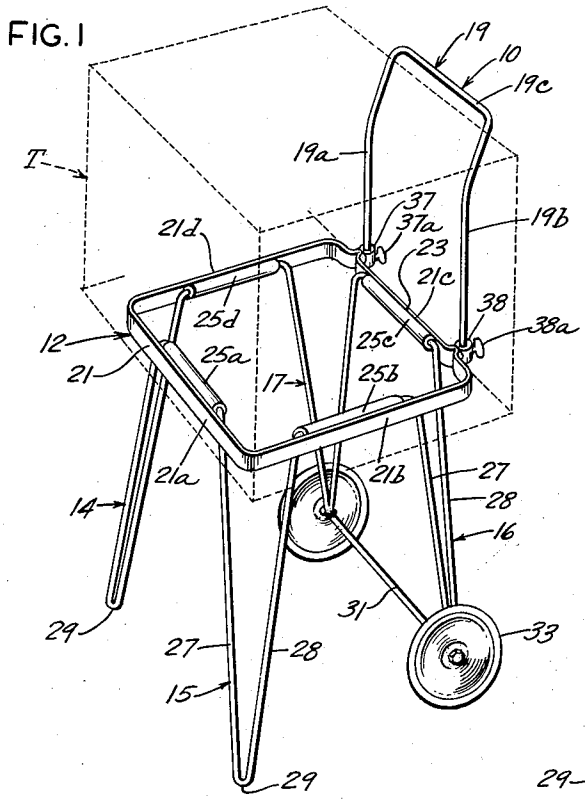


FIG. 2

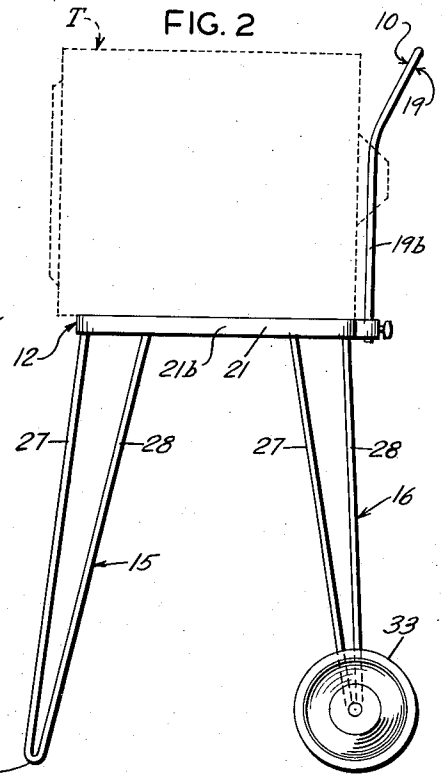


FIG. 3

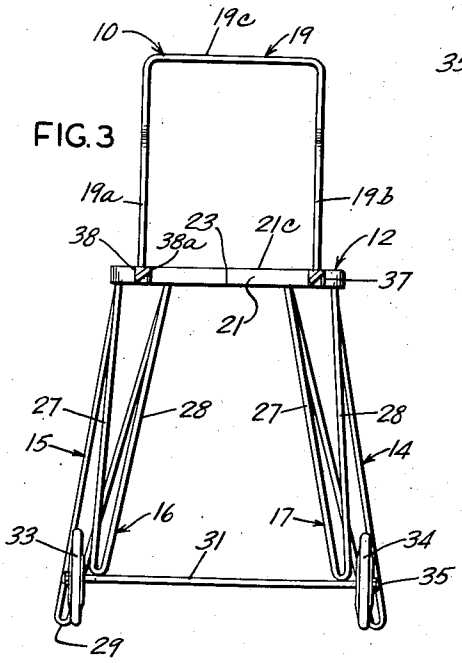
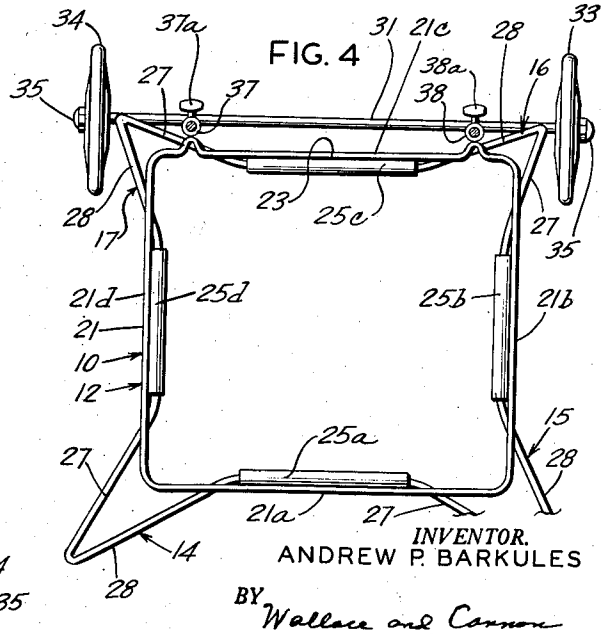


FIG. 4



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FIG. 5

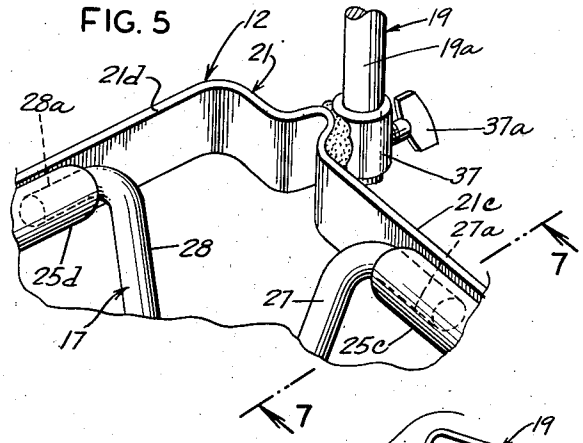
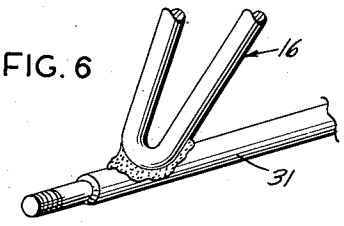


FIG. 6



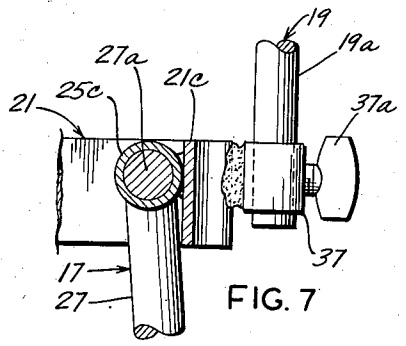
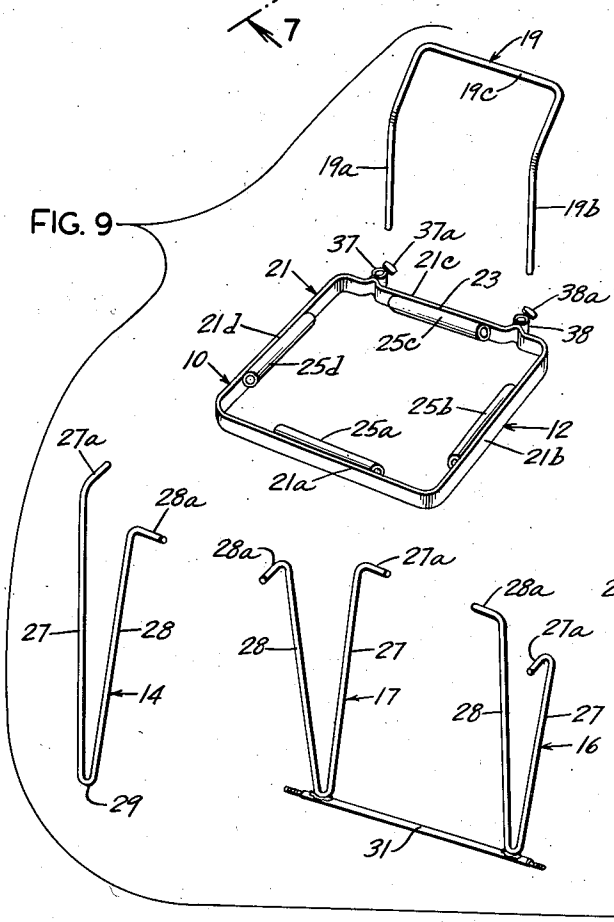


FIG. 7

FIG. 9



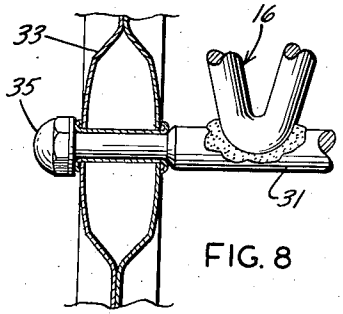


FIG. 8

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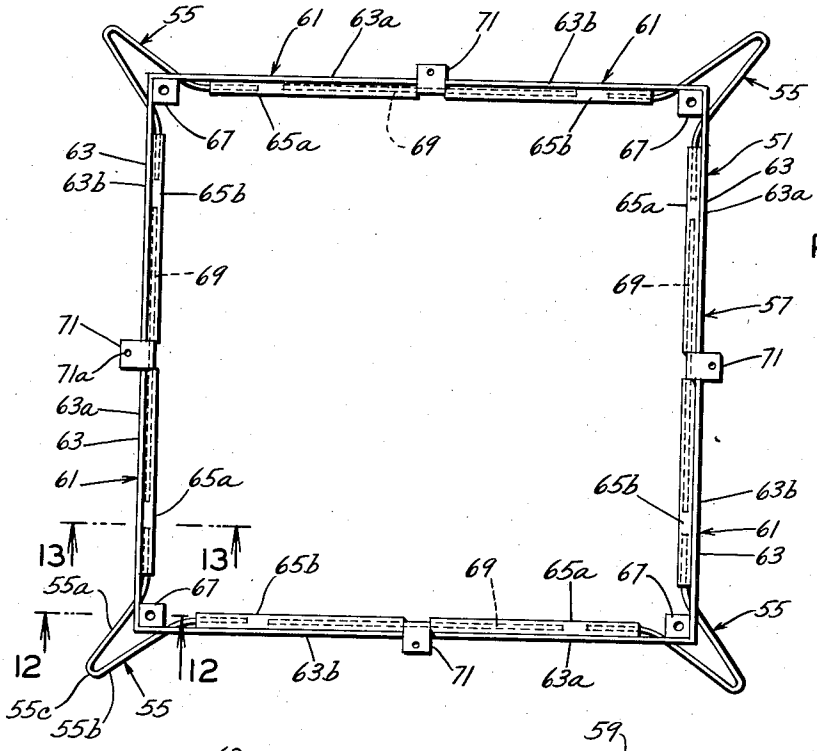


FIG. 10

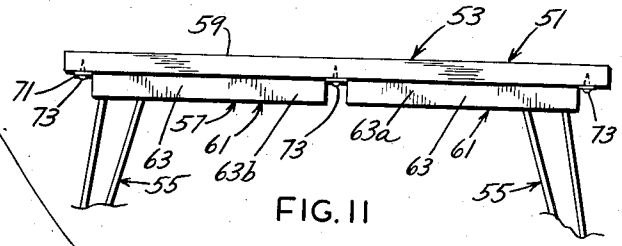


FIG. 11

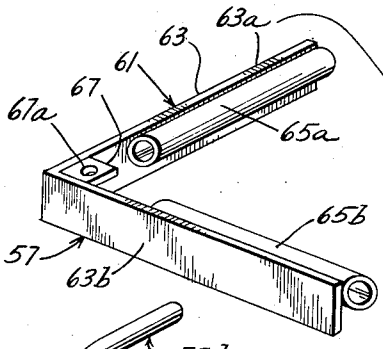


FIG. 14

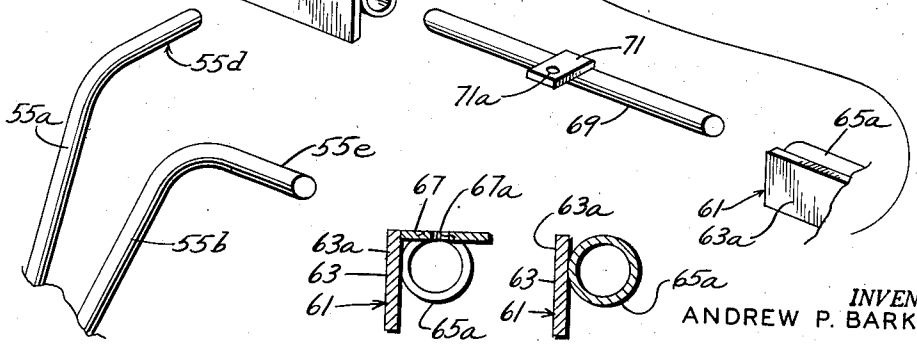


FIG. 12 FIG. 13

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United States Patent Office 2,828,175 Patented Mar. 25, 1958

2,828,175

KNOCK-DOWN FURNITURE

Andrew P. Barkules, Libertyville, Ill., assignor to Ada Metal Products, Inc., a corporation of Illinois

Application May 3, 1956, Serial No. 582,472

5 Claims. (Cl. 311—110)

This invention relates to furniture and, more particularly, to furniture of the type having a body member or platform area such as a table top, chair seat, or the like, supported by legs.

It is a primary object of my invention to enable a piece of furniture of the aforementioned general type to be constructed in a novel and expeditious manner.

Another object of my invention is to provide novel furniture embodying a body member and supporting legs wherein the body member and legs are constructed and arranged in a novel and expeditious manner.

Another object is to provide novel furniture of the aforementioned type wherein legs may be removably mounted thereon in a novel and expeditious manner.

Yet another object of my invention is to provide novel furniture of the aforementioned type which is so constructed that it may be shipped in a relatively flat, compact, disassembled condition and may be quickly and easily assembled by the recipient in a novel and expeditious manner.

A further object of my invention is to enable supporting legs to be mounted on the body member of a table, chair, stool, or the like in a novel and expeditious manner, without using screws, bolts, or such fastening devices.

Another object of my invention is to afford furniture of the aforementioned type wherein resilient supporting legs may be mounted in and removed from supporting engagement with the body member thereof in a novel and expeditious manner.

Another object of my invention is to provide novel furniture wherein a body member and substantially hair-pin shaped or V-shaped legs may be constituted and arranged in a novel and expeditious manner.

Yet another object of my invention is to enable a novel table, or the like, embodying wheels for transporting it from one location to another to be constructed in a novel and expeditious manner.

Another object of my invention is to provide novel furniture of the aforementioned type wherein the body member thereof may be constructed in a novel and expeditious manner.

Another object of my invention is to enable the body member of such novel furniture to embody telescoping parts constituted and arranged in a novel and expeditious manner.

A further object of my invention is to enable corner sections of a body member of such furniture to be assembled and disassembled in a novel and expeditious manner.

Another object of my invention is to provide novel furniture of the aforementioned type wherein parts of the body member thereof may be held together by legs of the furniture in a novel and expeditious manner.

Other and further objects of the present invention will be apparent from the following description and claims and are illustrated in the accompanying drawings, which, by way of illustration, show a preferred embodiment of

the present invention and the principles thereof and what I now consider to be the best mode in which I have contemplated applying these principles. Other embodiments of the invention embodying the same or equivalent principles may be used and structural changes may be made as desired by those skilled in the art without departing from the present invention and the purview of the appended claims.

In the drawings:

Fig. 1 is a perspective view of a table embodying the principles of my invention, with a television receiving set shown in broken lines in normal supported position thereon;

Fig. 2 is a side elevational view of the table shown in Fig. 1;

Fig. 3 is a rear elevational view of the table shown in Fig. 1;

Fig. 4 is a top plan view of the table shown in Fig. 1;

Fig. 5 is a detail perspective view of a portion of the table shown in Fig. 1;

Fig. 6 is a detail perspective view of a portion of the table shown in Fig. 1;

Fig. 7 is a detail sectional view taken substantially along the line 7—7 in Fig. 5;

Fig. 8 is a detail view of the portion of the table shown in Fig. 6 with a wheel mounted in operative position thereon;

Fig. 9 is an exploded view of the parts of the table shown in Fig. 1;

Fig. 10 is a top plan view of a table illustrating a modified form of my invention, with the table top thereof removed;

Fig. 11 is a detail side elevatiton view of the table shown in Fig. 10 with the table top shown in place;

Fig. 12 is a detail sectional view taken substantially along the line 12—12 in Fig. 10;

Fig. 13 is a detail sectional view taken substantially along the line 13—13 in Fig. 10; and

Fig. 14 is an exploded detail perspective view of parts of the table shown in Fig. 10.

For the purposes of illustrating my invention, a cart-type table **10**, embodying the principles of my invention, and which is particularly well adapted for supporting a television receiving set such as indicated at T, is shown in Figs. 1 to 9, inclusive, of the drawings.

The table **10** embodies, in general, a body member or platform area **12** supported by four legs **14**, **15**, **16**, and **17**, with a combination backrest and handle member **19** mounted on and projecting upwardly from the body member **12**, Figs. 1 to 4, inclusive.

The body member **12** shown in the drawings is substantially square in shape and preferably comprises a substantially square open frame member **21** made of suitable material such as, for example, wrought iron or strap steel, and has four sides **21***a*, **21***b*, **21***c* and **21***d*, with the side **21***a* hereinafter referred to as the "front" side, and the side **21***c* hereinafter referred to as the "rear" side. The frame member **21** may be made of a single, rectangular-shaped piece of wrought iron, or the like, formed into the aforementioned square shape, and with the ends of the piece of wrought iron disposed in abutting engagement and secured together by suitable means such as welding, as indicated at **23** on the drawings, Fig. 4.

Four substantially straight tubular members or sleeves **25***a*, **25***b*, **25***c* and **25***d* made of suitable material such as, for example, steel, are mounted on the inner faces of the sides **21***a*—**21***d*, respectively, of the frame **21** in parallel relation thereto, and are secured thereto by suitable means such as welding. The sleeves **25***a*–**25***d* are centrally disposed on the sides **21***a*–**21***d* of the frame **21** and the ends thereof terminate in inwardly spaced relation to the adjacent ends of the respective sides **21***a*–**21***d*.

Each of the legs **14–17** is substantially hair-pin shaped or V-shaped and embodies two elongated, substantially straight shanks **27** and **28** diverging outwardly away from each other, in an upward direction, form a common apex or end portion **29**, hereinafter referred to as the lower end of the legs **14–17**. Each of the shanks **27** and **28** has an upper end portion **27***a* and **28***a*, respectively, projecting substantially perpendicular thereto. The shanks **27** and **28** are preferably disposed in a common plane, and the upper end portions **27***a* and **28***a* project from the shanks **27** and **28** on the same side of the common plane at approximately a ninety degree angle to each other and at approximately a forty-five degree angle to the plane.

The sleeves **25***a–25d* are preferably equally spaced from each other around the frame **21**, and the shanks **27** and **28** of the legs **14–17** diverge from each other to such an extent that the upper end portions thereof are disposed a greater distance from each other than are the adjacent portions of the sleeves **25***a–25d* when the shanks **27** and **28** are in fully diverging position.

The upper end portions **27***a* and **28***a* of the legs **14–17** may be mounted in the adjacent ends of the pairs of sleeves **25***d* and **25***a*, **25***a* and **25***b*, **25***b* and **25***c*, and **25***c* and **25***d*, respectively, by manually pressing the upper end portions of the shanks **27** and **28** together to an extent wherein the free ends of the upper end portions **27***a* and **28***a* thereof are disposed closer together than the respective parts of sleeve ends, inserting the end portions **27***a* and **28***a* in the respective pairs of sleeve ends, and then releasing the shanks **27** and **28** to thereby permit the end portions **27***a* and **28***a* to be yieldingly moved fully into the adjacent ends of the sleeves **25***a–25d*.

The sleeves **25***a–25d* are so mounted on the sides **21***a–21d* of the frame **21**, and the sides **21***a–21d* of the frame **21** are of such width that when the legs **14–17** are so disposed in the sleeves **25***a–25d*, they project downwardly and outwardly therefrom, Figs. 1, 2 and 4, and rest against the lower edges of the adjacent sides **21***a–21d*. It will be seen that, with such construction, the legs **14–17** afford a strong support for the body member **12**, and that the application of a load to the table, when the latter is in normal supporting position, makes the supporting connection of the legs **14–17** to the body member **12** more firm.

In the table **10** shown in the drawings, the legs **16** and **17** are shorter in length than are the legs **14** and **15**, and an elongated axle **31** extends between the lower ends **29** of the legs **16** and **17** and is secured thereto by suitable means such as welding, Figs. 1, 6, and 8. The axle **31** projects outwardly past each of the legs **16** and **17**, and wheels **33** and **34** are rotatably mounted on the outer end portions of the axle **31** and are secured thereto by suitable means such as nuts **35**.

Two sleeves **37** and **38**, Figs. 1 and 4, are mounted on the outer face of the rear wall **21***c* of the frame **21** in spaced parallel relation to each other. The combination backrest and handle member **19**, which has two substantially parallel upstanding side legs **19***a* and **19***b* connected together at their upper end portions by a cross bar or intermediate leg **19***c*, is adjustably mounted in the sleeves **37** and **38**. The leg **19***a* is slidably mounted in the sleeve **37**, and the leg **19***b* is slidably mounted in the sleeve **38**. Two thumb nuts **37***a* and **38***a* are mounted in the sleeves **37** and **38** for clampingly holding the legs **19***a* and **19***b* in adjusted position in the sleeves **37** and **38**.

It will be seen that with this construction, the novel table **10** may be shipped in disassembled condition in a relatively flat, compact container. When it is desired to assemble the table **10**, the legs **14–17** may be readily inserted into proper position in the sleeves **25***a–25d* by flexing the upper end portions **27***a* and **28***a* of the legs **14–17** inwardly toward each other and inserting them into the respective pairs of sleeve ends as previously discussed. The thumb nuts **37***a* and **38***a* may then be moved into

retracted position in the sleeves **37** and **38**, and the legs **19***a* and **19***b* of the handle **19** inserted into the desired position in the sleeves **37** and **38**. The respective nuts **37***a* and **38***a* may then be screwed into clamping position relative to the legs **19***a* and **19***b*. It will be seen that, with the table **10** so constructed, it affords an effective and practical table for supporting articles, such as the television set T, or the like, and that, if desired, the table T may readily be moved from one position to another by grasping the handle **19**, tilting the table **10** rearwardly on the wheels **33** and **34** to a position wherein the legs **14** and **15** are moved out of engagement with the floor, or the like, and rolling the table **10** to the new desired position on the wheels **33** and **34**.

Also, it will be seen that my novel table **10** may be quickly and easily disassembled, if it is desired to do so, by merely loosening the thumb-screws **37***a* and **38***a* and slipping the backrest **19** upwardly out of the collars **37** and **38**; and manually squeezing the upper end portions of the shanks **27** and **28** of the legs **14–17** together to thus release them from the sleeves **25***a–25d*.

It will be seen that, if desired, the wheels **33** and **34**, and the axle **31** may be eliminated, and that the legs **16** and **17** may be made the same length as the legs **14** and **15**, without departing from the purview of my invention.

Also it will be seen that, although the body member **12** of the table T is shown as an open frame **21**, this is merely by way of illustration and not by way of limitation and that, if desired, the body member **21** may be constructed so as to be closed at the top by a suitable platform, such as, for example, a table top, chair seat, stool seat, or the like without departing from the purview of my invention.

In the modified form of my invention shown in Figs. 10 to 14, inclusive, a table **51** is shown which embodies, in general, a body member or platform area **53** mounted on four identical legs **55**, Figs. 10 and 11.

The body member **53** includes a supporting frame **57** and a table top **59**. The supporting frame **57** shown in the drawings embodies four identical corner sections **61**, Figs. 10 and 14. Each of the corner sections **61** embodies a wall member **63** having two legs **63***a* and **63***b*. The wall members **63** may be made of any suitable material such as, for example, strap steel, and the legs are preferably disposed in perpendicular relation to each other to thereby form a substantially L-shaped wall member. Two straight elongated sleeve members **65***a* and **65***b* are mounted on each of the wall members **63**. The sleeve members **65***a* and **65***b* may be made of any suitable material such as, for example, tubular steel and are secured to the inner faces of the legs **63***a* and **63***b*, respectively, of the wall members **63** by suitable means such as, for example, welding. The sleeves **65***a* and **65***b* are disposed in parallel relation to the legs **63***a* and **63***b*, respectively, and are so positioned thereon that the upper peripheral surfaces of the sleeves **65***a* and **65***b* are disposed in the same plane as the upper edges of the legs **63***a* and **63***b*, Figs. 13 and 14. The sleeves **65***a* and **65***b* are preferably disposed on the legs **63***a* and **63***b* in such position that one end of each sleeve **65***a* and **65***b* terminates flush with the free ends of the legs **63***a* and **63***b*, respectively, and the other ends of the sleeves **65***a* and **65***b* terminate in spaced relation to the junction between the legs **63***a* and **63***b*.

Each of the corner sections **61** has a mounting bracket **67** mounted in the corner defined by the junction of the legs **63***a* and **63***b*. The mounting bracket **67** may be made of any suitable material such as, for example, sheet steel and is preferably of such size that it fits snugly into the corner formed by the legs **63***a* and **63***b*. The mounting bracket **67** is disposed in the corner section **61** in position wherein the upper face thereof is disposed in the same plane as the upper edges of the legs **63***a* and **63***b*. It preferably is of the same thickness as the thickness of the walls of the sleeves **65***a* and **65***b* so that it is disposed

above the axially extending opening in the adjacent sleeves 65*a* and 65*b*. Each of the brackets 67 has an opening 67*a* extending vertically therethrough in inwardly spaced relation to the legs 63*a* and 63*b* of the corner section 61 within which the bracket 67 is mounted.

The frame 57 also embodies four substantially straight elongated rods 69 made of suitable material such as, for example, cold-rolled steel, Figs. 10 and 14. Each of the rods 69 is of such cross sectional size that it will fit snugly within the longitudinal opening in any one of the sleeves 65*a* or 65*b* but be freely slidably longitudinally therein.

Four other mounting brackets 71 are embodied in the frame 57. Each of the brackets 71 is preferably made of a substantially flat piece of suitable sheet material such as, for example, sheet steel and is attached to the outer periphery of the longitudinal center portion of a respective one of the rods 69 by suitable means such as welding.

In my novel table 51, shown in the drawings, the corner sections 61 afford the four corner portions of the frame 57, which is substantially square in shape. The legs 63*a* and 63*b* of each of the corner sections 61 are disposed in longitudinal alignment with the legs 63*b* and 63*a*, respectively, of the adjacent corner sections 61, Fig. 10. The opposite end portions of each of the rods 69 are disposed in adjacent sleeves 65*a* and 65*b* of the adjacent corner sections 61, respectively. The mounting brackets 71 on the rods 69 are disposed on the upper surface thereof and project outwardly between the adjacent legs 63*a* and 63*b*. Each of the mounting brackets 71 has a vertically extending opening 71*a* formed therein, and the brackets 71 are preferably so disposed on the rod 69, and are of such length that the openings 71*a* are disposed outwardly of the adjacent legs 63*a* and 63*b*. The brackets 71 are preferably the same thickness as the walls of the sleeves 65*a* and 65*b* so that the upper surfaces thereof are disposed in the same plane as the upper edges of the legs 63*a* and 63*b* of the adjacent corner sections 61.

In assembling the frame 57, any three of the corner sections 61 such as, for example, the two left corner sections and the upper right corner section, shown in Fig. 10, may first be assembled by inserting two rods 69 in proper position in the sleeves 65*a* and 65*b* of one of the corner sections and then moving the other two corner sections 61 into proper position on the outwardly projecting ends of the rods 69. Thereafter, the other two rods 69 may be disposed in proper position in the two sleeves 65*a* and 65*b* disposed at the free ends of that portion of the frame 57 which has thus been assembled. Those free ends of the thus assembled portion of the frame 57 may then be manually sprung outwardly away from each other, and the legs 63*a* and 63*b* of the remaining corner section 61 may be manually sprung inwardly toward each other into such position that the free ends of the last mentioned two rods 69 may be inserted into the free end portions of the sleeves 65*a* and 65*b* on the aforementioned remaining corner sections 61, and that corner section 61 may then be slid along those rods into position to complete the assembly of the frame 57.

Each of the legs 55, like the legs 14–17, shown in Figs. 1 to 9, inclusive, is substantially hair-pin shaped or V-shaped and embodies two elongated substantially straight shanks 55*a* and 55*b* diverging outwardly away from each other, in an upward direction, from a common apex or end portion 55*c* at the lower end thereof. Each of the shanks 55*a* and 55*b* has an upper end portion 55*d* and 55*e*, respectively, projecting substantially perpendicular thereto. The shanks 55*a* and 55*b* are preferably disposed in a common plane, and the upper end portions 55*d* and 55*e* project from the shanks 55*a* and 55*b* on the same side of the common plane at approximately a ninety degree angle to each other and at approximately a forty-five degree angle to the plane.

The upper end portions 55*d* and 55*e* of the shanks 55*a* and 55*b* are of a suitable cross sectional size to fit snugly within the longitudinal openings in any of the sleeves 65*a* or 65*b* with a freely slidable fit. The upper end portions 55*d* and 55*e* of each of the legs 55 are of such length that each leg 55 may be attached to any one of the corner sections 61 by manually moving the shanks 55*a* and 55*b* toward each other, disposing the upper end portions 55*d* and 55*e* in axial alignment with the longitudinal opening in the sleeves 65*a* and 65*b*, respectively, of that corner section 61, and then permitting the shanks 55*a* and 55*b* to spring outwardly away from each other to thereby insert the upper end portions 55*d* and 55*e* of that leg in the end portion of the longitudinal opening of the sleeves 65*a* and 65*b* adjacent to the corner formed by the junction of the legs 63*a* and 63*b* of that corner section.

It will be noted that the mounting bracket 67 in each of the corner sections 61 is disposed above the position of the upper end portions 55*d* and 55*e* of the leg 55 during such insertion of the leg 55 into operative position in the corner section 61 so that the shanks 55*a* and 55*b* are free to be compressed toward each other without interference by the mounting brackets 67.

When the legs 55 are disposed in the corner sections 61 in position to support the frame 57, the upper end portions 55*d* and 55*e* are disposed in the adjacent end portions of the sleeves 65*a* and 65*b*, respectively, and the shanks 55*a* and 55*b* project outwardly and downwardly therefrom into abutting engagement with the lower edges of the legs 63*a* and 63*b* of the respective corner sections. It will be seen that with this construction, the frame 57 is firmly supported by the legs 55.

After the frame 57 has been so mounted on the legs 55, the table top 59 may be mounted on the frame 57 and secured thereto by suitable fastening members such as screws 73, Fig. 11, extending through the openings 67*a* in the mounting bracket 67 and the openings 71*a* in the mounting brackets 71. When the holes 71*a* are disposed outwardly of the legs 63*a* and 63*b*, as I prefer to construct my novel table 51, the table top 59 may be of such a size that it projects outwardly beyond the frame 57 a sufficient distance that the fastening members 73 in the brackets 71 may be secured thereto. However, it will be appreciated by those skilled in the art that, if desired, the mounting brackets 71 may also project inwardly from the rods 69, and the openings 71*a* may be disposed in such inwardly projecting portion of the mounting bracket 71, and with such construction the table top 59 need not project beyond the lateral edges of the frame 57.

It will be seen that although a table 51 is shown in the drawings, and the member 59 is shown as a table top, this is merely by way of illustration and not by way of limitation and that my novel invention applies equally well to construction of other articles of furniture, such as, for example, chairs, stools, and the like, and that the member 59 may comprise a chair seat, stool seat, or the like, without departing from the purview of my invention.

Also, it will be appreciated that, although I have shown a square-shaped frame 57, this is merely by way of illustration and not by way of limitation and that furniture embodying frames of other shapes such as, for example, rectangular or triangular may be constructed without departing from the purview of my invention.

From the foregoing it will be seen that my invention enables novel furniture to be constructed in a novel, practical, and expeditious manner.

Thus, while I have illustrated and described the preferred embodiment of my invention, it is to be understood that this is capable of variation and modification, and I therefore do not wish to be limited to the precise details set forth, but desire to avail myself of such changes and alterations as fall within the purview of the following claims.

I claim:

1. In an article of furniture the combination of a frame having a plurality of corner sections, each of said sections comprising two elongated members joined together at one end, sleeves mounted on each of said members, each of said sleeves being mounted on one of said members in spaced relation to the other member in that section, a plurality of legs mounted in said sleeves and projecting downwardly therefrom in position to support said sections, and a plurality of rods connecting said sections together, each of said rods being removably mounted in two of said sleeves on adjacent ones of said sections.

2. An article of furniture comprising a body member having a plurality of corner sections, each of said sections having two elongated legs joined together at one end, elongated sleeves mounted on each of said legs and extending longitudinally thereof, each of said sleeves being mounted on a respective one of said legs in spaced relation to the other of said legs in that section, the same number of elongated rods as there are sections, each of said rods being slidably mounted in two sleeves in adjacent ones of said sections to hold said last mentioned sections together, and a plurality of supporting legs, each of said supporting legs being pivotally mounted in the two said sleeves in a respective one of said sections, at the opposite ends of said sleeves from said rods, and being disposed in abutting engagement with said respective corner section.

3. An article of furniture comprising a body member including a supporting frame and a supporting platform mounted on said frame, said frame having a plurality of separable corner sections, each of said corner sections comprising two elongated legs joined together at one end, two elongated sleeves mounted on said legs in substantially parallel relation thereto, each of said two sleeves being mounted on a respective one of said legs and terminating in spaced relation to the other of said legs in that section, and a mounting bracket mounted on said legs at said junction thereof, a plurality of elongated rods, each of said rods having one end portion slidably disposed in a sleeve in one of said sections and the other end portion disposed in a sleeve in another of said sections, mounting brackets mounted on the central portions of said rods and projecting outwardly therefrom between adjacent ends of said legs in adjacent ones of said sections and in abutting engagement therewith, means extending through said first mentioned mounting brackets and said last mentioned mounting brackets into holding engagement with said platform, and means for supporting said body member, said last named means comprising a plurality of substantially V-shaped legs, each of said V-shaped legs having off-set upper end portions removably disposed in the end portions of said sleeves disposed adjacent to the junction of said first mentioned legs in a

respective one of said corner sections, said V-shaped legs projecting downwardly and outwardly from said sleeves and being disposed in underlying abutting engagement with said first mentioned legs in said respective corner sections.

4. Furniture construction comprising a body member comprising a plurality of separable sections, each of said sections being disposed adjacent to two other of said sections, a plurality of pairs of sockets spaced around said body member and carried thereby, each of said pairs of sockets being mounted on a respective one of said sections, elongated rod members mounted in said sockets on each of said sections and extending into sockets on said adjacent sections in supporting relation thereto, and a plurality of legs, each of said legs having a lower end portion, two outwardly diverging upper end portions, said upper end portions of each of said legs being releasably mounted in a respective pair of said sockets, and means, including said lower end portions, yieldingly urging said upper end portions into said sockets.

5. An article of furniture comprising a supporting member comprising a plurality of separable sections, a plurality of pairs of sockets mounted on said supporting member, each of said pairs of sockets being mounted on a respective one of said sections, said sockets in each of said pairs being disposed in position to face generally toward each other, means slidably mounted in adjacent ones of said pairs of sockets to hold said sections together, a plurality of legs, each of said legs having resilient shanks diverging outwardly away from each other in an upward direction and joined together at the lower end portions thereof, and elongated members carried by the upper end portions of said shanks in position to engage in said sockets in a respective one of said pairs to thereby conect said leg to said supporting member in position to support the latter, and abutment means disposed in position on said supporting member to engage said legs in position to restrain rotation of the latter when said legs are disposed in said position in said sockets.

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