April 8, 1958 H. W. SCHULZE 2,829,934

MULTI-ELEMENT ARTICLES OF FURNITURE

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FIG. 1

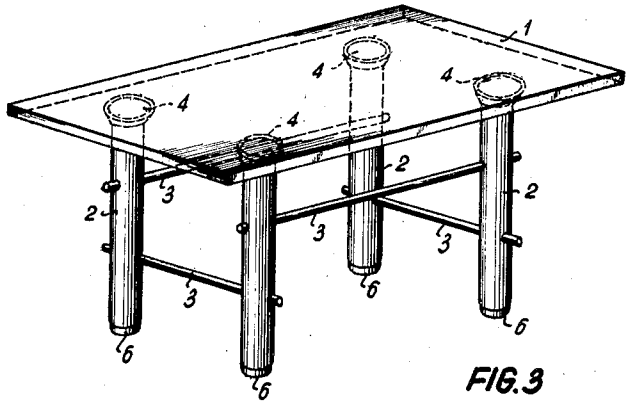


FIG. 3

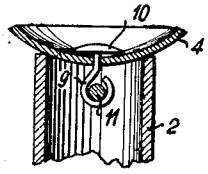


FIG. 2

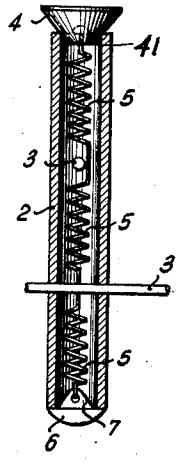
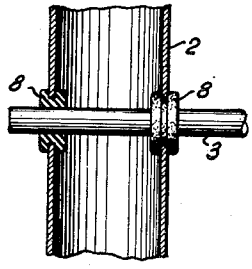


FIG. 4



FIG. 5



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MULTI-ELEMENT ARTICLES OF FURNITURE

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1 Claim. (Cl. 311—35)

This invention relates to articles of furniture, and in particular to articles of furniture constructed of a number of separate elements or component parts.

It is already known to prefabricate component parts of articles of furniture in such a manner that the user thereof could assemble them, while in his home or place of business, into finished form. Heretofore, however, such parts could only be interconnected by means of screws, nails, wedges or keys or, in many instances, by being glued together.

As will be readily realized, such interconnecting operations could only be carried out by fairly skilled craftsmen or by persons having advanced technical backgrounds. As a result, when an inexperienced person attempted to assemble these parts so as to complete the desired article, said parts were frequently scratched or otherwise damaged.

It is, therefore, an important object of the present invention to provide means facilitating assembly of articles of furniture, such as tables, shelves and the like, from prefabricated component parts in such a manner as to ensure accurate and secure joining of said parts to each other without distortion, scratching or other damaging of said parts during the assembly operation.

Another important object of the present invention is the provision of means contributing to articles of furniture the elements of which can be easily assembled without the aid of tools and gluing materials and can be dismantled just as easily.

A further object of the present invention is to provide means enabling a sturdy and compact supporting structure composed of a number of individual, prefabricated elements to be built up in a greatly simplified and straightforward manner which does not necessitate that the person assembling said elements having special experience or an advanced technical background.

Still a further object of the present invention is the provision of means conducive to a novel and improved supporting structure wherein the object-carrying or supporting part of said structure is positioned on suction cups arranged on the upper ends of legs or like support elements for said part, whereby said part and said legs are held together solely by suction, while said suction cups function as shock-absorbing protection means for said part.

More specifically, the invention contemplates that those parts of said articles presenting supporting surfaces for other objects are connected with suitable supports or legs by means of suction cups which are attached to the supports and remain in engagement with said parts only through suction.

The aforesaid supports are, furthermore, interconnected by a plurality of crossbars or like connecting members arranged angularly with respect to each other and inserted into transverse bores provided in the supports. The bores are so dimensioned that the crossbars are received therein with a tight fit and are retained therein solely through friction.

By virtue of the above-mentioned constructional features, sturdy tables of all kinds, bookcases, shelves, stools or chairs and like structures can be easily assembled even by women.

These and other objects and advantages of the invention will become further apparent from the following detailed description, reference being made to the accompanying drawing showing preferred embodiments of the invention.

In the drawing:

Fig. 1 is a perspective view of a table assembled in accordance with the present invention;

Fig. 2 is a longitudinal sectional view of a support or leg for said table, showing also a suction cup and a sliding element for said table;

Fig. 3 is a sectional view of the upper portion of a support for said table, showing a modified form of suction cup and a retaining element therefor;

Fig. 4 is a longitudinal view of said retaining element; and

Fig. 5 is a longitudinal sectional view of an intermediate portion of a table support showing the manner in which a crossbar or connecting member is joined to the latter.

While there is shown and described herein certain specific structure embodying the invention, it will be manifest to those skilled in the art that various modifications and rearrangements of the parts may be made without departing from the scope of the invention, and that the same is not limited to the particular form herein shown and described, except in so far as indicated by the appended claim.

Referring now more particularly to Fig. 1, the support structure according to the present invention is shown as a table comprising a table top **1**, which may be made of glass, for example, and rests on four supports or legs **2**. The legs **2** are interconnected by means of a plurality of crossbars or like connecting members **3** as more fully explained hereinafter.

The supports or legs **2** are provided at their upper ends with suction cups **4**, respectively, which adhere in a fluid-tight manner to the lower surface of the table top **1** and thus fixedly interconnect said top with the supports. At the same time the suction cups **4** provide an elastic bearing or resting arrangement for said top capable of absorbing shocks and impacts, thus affording considerable protection of the table top.

The crossbars or connecting members **3**, which may be in the form of rods, tubes or like elements made of wood, metal or synthetic plastic materials, are inserted into perpendicularly arranged horizontal bores provided in each of the supports or legs **2**. The bores are so dimensioned that the members **3** are received therein with a tight fit and are retained therein solely by the effects of friction.

It will, of course, be readily understood that when only three or, alternatively, more than four legs or supports are to be employed, then the bores in the individual supports will be oriented with respect to each other at acute or obtuse angles corresponding to the angles defined by the imaginary triangle or other polygon at the corners of which said supports are arranged.

In the event that the supports **2** are constructed of a hard material, such as metal, which could scratch or otherwise damage the outer surfaces of the members **3** upon insertion thereof into the bores, it is advantageous to equip said bores with a relatively soft elastic lining or flange-shaped sleeve means **8** of rubber, plastic or like material (see Fig. 5). Such sleeve means **8** additionally enhance and improve the tight fit of said members **3** in the bores, said sleeve means projecting with their flanges beyond contiguous inner and outer wall portions at the respective bores of said supports.

The interconnection of the supports or legs **2** by means of the tight-fitting crossbars or connecting members **3** affords a supporting frame or structure of substantial transverse strength, since the frictional engagement be-

tween the crossbars and the bores becomes more positive as laterally directed forces tending to incline or slant the legs with respect to each other are increased. Nevertheless, such a supporting structure is articulated to a certain extent which enables it to accommodate itself to uneven floors.

The supports **2**, which may be made of metal, wood such as bamboo, or any other sufficiently strong material, are preferably hollow and tubular so that the suction cups **4** may be anchored thereto at their lower ends by means of suitable fastening means disposed interiorly of the supports. As shown in Fig. 2, elastic tension means, such as a tension spring **5**, may be employed for this purpose. One end of said spring is hooked through an eye **4'** in the base of the suction cup **4** while the other end of the spring is hooked through an aperture in a lug **7** of a smooth-surfaced cup-shaped element **6**. The element **6** facilitates sliding of the table on carpets, rough floors or other rough surfaces.

In lieu of the sliding element **6** it is, of course, possible to employ an anti-sliding element, for example a rubber pad or plug, which inhibits ready sliding of the table along a relatively smooth floor or other surface. Also, the spring **5** may be replaced by a rubber band or tape or other similar fastening means.

Thus it will be seen that each suction cup **4** positioned at one end of a support **2** is connected by means of the spring **5**, stretching throughout the entire length of said support **2**, with the sliding element (or anti-sliding element) **6** positioned at the other end of the support **2**. This ensures that both the suction cup and the element **6** are drawn toward each other and held against the opposite ends of their respective support **2**.

Referring now to Figs. 3 and 4, it will be seen that each suction cup **4** consists of an elastic, normally flat or plane plate or disc, made of rubber or other suitable plastic material, which is provided in its center with a hole or aperture. An eye or hook **9** extends from each disc into the corresponding hollow support **2** and is connected to said suction cup-forming disc by means of a relatively flat button or head **10** engaging the upper surface of said disc, said hole, of course, being smaller than the head **10**. The head **10** covers and closes the hole in the disc **4** so that when the latter is used as a suction cup no air can flow through said hole.

Arranged transversely within each hollow support or leg **2** and adjacent the upper end thereof is a small pin **11** provided in its center with a notch or groove **12**. The pin **11** extends through the eye or loop of the hook **9** with the latter engaging the notch **12**. In this manner, the plate or disc **4**, which rests on the upper rim of the support **2**, is drawn into and retained in its cup-like shape while being secured to the pin and the support **2**.

This last described construction of the suction cups **4** and their attachment to the supports or legs is especially inexpensive and advantageous since the suction cup-forming discs may be cut or stamped from a sheet of rubber, for example, or from a cylinder of rubber.

The above described constructional features may be modified in a number of ways without departing from the spirit and scope of the invention. Thus, in lieu of the sliding element (or anti-sliding element) **6** there may be employed a second suction cup **4**. This facilitates placing two or more tables, each assembled as described above, on top of one another for the purpose of constructing a shelf arrangement, a flower table with a plurality of stages or other similar structures.

The table top **1** may be constructed of plastic materials, wood or other substances suited for use in tables rather than being made of glass. Moreover, the element **6** may also be retained in position by means of a pin **11** extending through the lug **7** in a manner similar to the hook and pin arrangement shown with respect to the suction cup in Figs. 3 and 4.

Further, the pins **11** may be entirely dispensed with by elongating the hook members **9** so as to enable each of the latter to engage one of the connecting members **3** extending across the respective leg or support **2**. Such an arrangement is also adaptable to the sliding (or anti-sliding) elements **6**, merely necessitating that the lugs **7** be extended so as to locate the apertures or openings thereof in alignment with the lower bores in the supports **2**.

From the above it will be seen that there has been provided, in accordance with a broad view of the invention, a support structure, comprising an element having upper and lower surfaces with said upper surface arranged to support an object, a plurality of legs for said element, suction cup means connected to said legs, respectively, at one end thereof and engaging said lower surface of said element in a fluid-tight manner, whereby said legs and said element are interconnected only through said suction cup means, each of said legs being provided with at least two transverse bores oriented angularly with respect to each other, and a plurality of connecting members having end portions received with a tight fit in corresponding bores of said legs, whereby said members are retained in said bores solely through friction to thereby interconnect said legs with each other and substantially prevent displacement of said legs relative to each other.

Having thus described the invention, what is claimed as new and desired to be secured by Letters Patent is:

An article of furniture designed for ready assembly and disassembly; comprising a substantially flat element having an underface, a plurality of tubular support members each having a tubular upper end, suction cup means having upper and lower ends and centered with their lower ends in the tubular upper ends of said support members to thereby provide bearing means for said suction cup means, the upper ends of said suction cup means being adapted to engage the underface of said element in condition of assembly and in a fluid-tight manner and constituting the only connection of said support members with said element, means anchoring said lower ends of said suction cup means within said tubular upper ends of said support members, said support members being provided with at least two transverse bores passing through the walls of said tubular support members at predetermined distance from and oriented angularly with respect to each other, a plurality of connecting rod members adapted to pass through corresponding bores of respective pairs of said support members, and elastic flange-shaped sleeve means seated in said bores and projecting beyond said walls of said tubular support members therewithin and therewithout, to thereby interconnect the latter with each other upon insertion of said rod members through said sleeve means, respectively, and upon frictional engagement therewith, so as to stabilize the position of said support members with respect to each other.

References Cited in the file of this patent

UNITED STATES PATENTS

1,147,102	Knabe	July 20, 1919
1,678,392	Hursh et al.	July 24, 1928
1,842,383	Bell	Jan. 26, 1932
1,845,196	Schaff	Feb. 16, 1932
2,010,394	Herman	Aug. 6, 1935
2,127,980	Niemann	Aug. 23, 1938
2,127,981	Niemann	Aug. 23, 1938
2,244,122	Schudder	June 3, 1941
2,422,327	Winslow	June 10, 1944
2,467,080	Duer	Apr. 12, 1949
2,740,650	Hutton	Apr. 3, 1956

FOREIGN PATENTS

831,896	Germany	Feb. 18, 1952