Jan. 22 , 1924. 1,481,560

S. RINGER

ARTICLE OF FURNITURE

Filed June 11, 1920 2 Sheets-Sheet 1

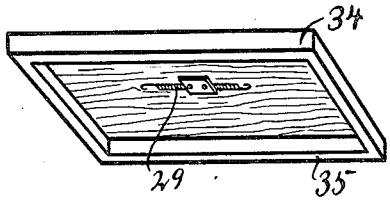


FIG 3

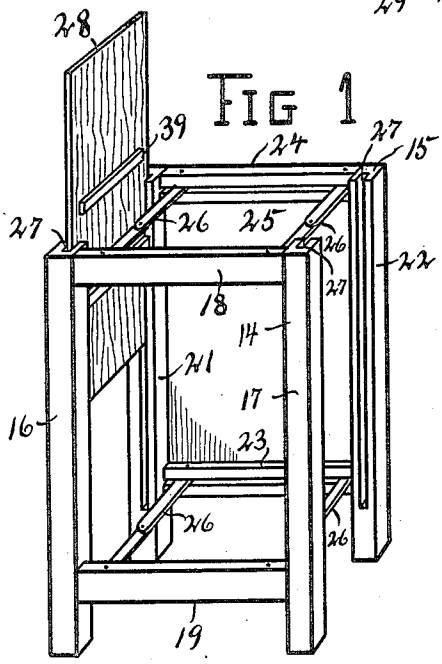


FIG 1

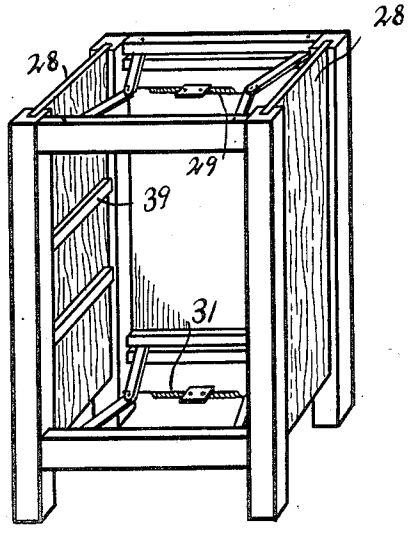


FIG 2

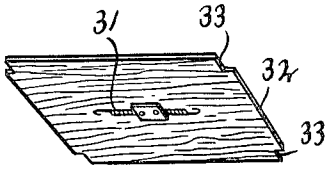


FIG 4

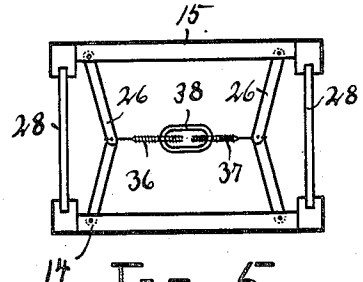


FIG 5

WITNESS:

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Jan. 22, 1924. 1,481,560

S. RINGER

ARTICLE OF FURNITURE

Filed June 11, 1920 2 Sheets-Sheet 2

FIG 6

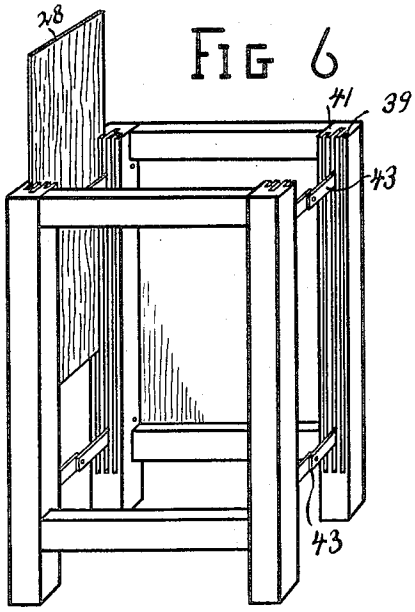


FIG 7

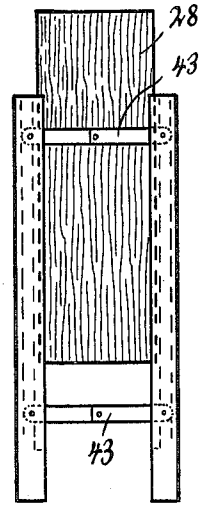
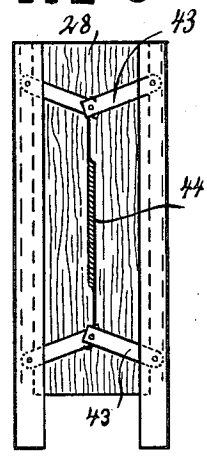


FIG 8



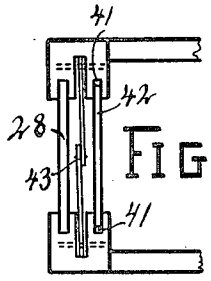
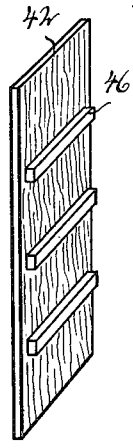


FIG 9



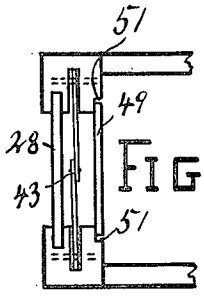


FIG 10

FIG 11

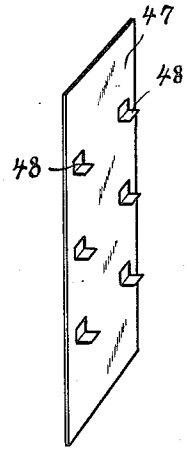
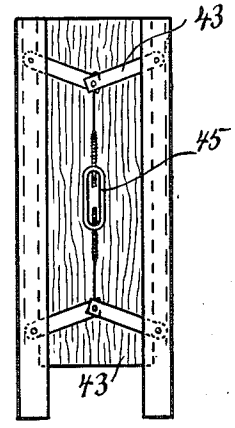


FIG 12

FIG 13



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Patented Jan. 22, 1924. 1,481,560

UNITED STATES PATENT OFFICE.

SOREN RINGER, OF CHICAGO, ILLINOIS.

ARTICLE OF FURNITURE.

Application filed June 11, 1920. Serial No. 388,202.

To all whom it may concern:

Be it known that I, SOREN RINGER, a subject of the King of Denmark, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in an Article of Furniture, of which the following is a specification.

This invention relates in general to furniture, and more particularly to what is commonly known as knock-down furniture, which is adapted to be shipped in knock-down condition and assembled by the purchaser.

One of the primary objects of my present invention is to provide an article of furniture, which can be shipped in knock-down condition, so that it will occupy a minimum space, and one which can be quickly and easily assembled by unskilled labor, and, when assembled, will be extremely strong, substantial and durable, as well as pleasing in appearance.

Another object of my invention is to provide an article of furniture, which is adaptable for many uses, and one which is capable of conversion from one use to another by simply re-arranging or substituting the interior structure, which is made up of knock-down pieces, capable of assembly into a variety of different arrangements.

A further object of my invention is to provide an article of furniture of the character indicated, which will not become loose in the joints as the result of use or of atmospheric conditions to which it may be subjected, but will automatically maintain a snug fit between the various parts and retain its strength and rigidity without attention or repairs.

Other objects and many of the attendant advantages of my invention will be readily appreciated as the same becomes better understood by reference to the following description, when considered in connection with the accompanying drawings.

Referring to the drawings:

Fig. 1 is a perspective view of a cabinet frame embodying my invention, showing the manner of assembly;

Fig. 2 is a similar view, showing the side panels clamped in position;

Fig. 3 is a perspective view from beneath the top;

Fig. 4 is a similar view of the bottom;

Fig. 5 is a plan view showing a modified form of clamping means;

Fig. 6 is a view similar to Fig. 1 showing a modified form of the invention;

Fig. 7 is an interior view of one side of the structure shown in Fig. 6;

Fig. 8 is a similar view showing the side panel clamped in position;

Fig. 9 is a fragmentary plan view showing both the inner and outer side panels in position;

Fig. 10 is a similar view showing a slightly modified form of inner side panel;

Figs. 11 and 12 are perspective views of wooden and metal side panels respectively; and

Fig. 13 is a view similar to Fig. 8 showing a modified form of clamp construction similar to that disclosed in Fig. 5.

By reference to the drawings, and particularly Figs. 1 and 2 thereof, it will be observed that the frame structure of the cabinet comprises primarily, a pair of frames designated generally by reference characters 14 and 15 respectively. One of these frames constitutes the front, and the other the back of the cabinet, the front frame consisting of upright corner posts 16 and 17 joined by the top and bottom cross pieces 18 and 19 respectively, while the rear frame, which is similarly constructed, comprises the upright corner posts 21 and 22, and the transverse members 23 and 24. The back frame is provided with a back panel 25 rigidly secured thereto and the front frame may be provided with one or more doors of any well known or preferred construction.

These frames are pivotally connected together at top and bottom by a plurality of toggle links 26, each toggle comprising two links pivoted together at their inner ends and each pivoted to the cross members of the front and rear frames respectively. By swinging the pivotal connection between the respective links of each toggle inwardly, the front and rear frames may be collapsed or moved together so that they occupy a space only twice the thickness of each corner post. The cabinet is designed to be shipped in

this knock-down condition with the other parts thereof nested inside the frames, so that the entire thickness for shipment and storage is only twice the thickness of each frame, and when thus collapsed, the cabinet obviously occupies a minimum of space.

Each corner post is provided on its inner face with a longitudinal groove 27, these grooves being opposed when the frames are in extended or separated position, as shown in Fig. 1, and in assembling the structure, a side panel 28 is slid longitudinally into these grooves from above. As illustrated in Fig. 1, the grooves extend downwardly in the posts a distance equal to the length of the side panel to be employed, so that when the panels are positioned in the grooves, their upper ends lie flush with the top of the frame.

The length of the toggle links is such that when straightened out as shown in Fig. 1, the side panels slide easily into place, but when once positioned, they are firmly clamped between the side fames so as to form a very rigid construction by drawing the pivotal connections between the links of each toggle toward each other, thus exerting a strong and effective clamping action upon the side panels by the frames. This clamping action is effected preferably by coiled tension springs 29 and 31, which are hooked or otherwise connected to the pivot points of opposed toggles so that the toggles are drawn inwardly by the springs to effect the clamping action previously mentioned, as is best illustrated in Fig. 2.

Before the clamping action is effected, the bottom 32 of the cabinet is placed in position within the frame. This bottom is simply a flat board provided with notches 33 at the corners, adapted to fit the corner posts of the frames, and it is so proportioned that when placed in position, it squares up the structure. The top 34, which is provided with a downwardly projecting circumferential flange or bead 35, is then placed in position over the upper end of the cabinet, thus completing the structure, except for the doors and the interior shelving or other accessories, which are not shown.

While the clamping springs 29 and 31 may be structurally independent of the remainder of the cabinet, I prefer to attach the springs to the under faces of the top and bottom 32 and 34 respectively, as illustrated in Figs. 3 and 4, so that the springs not only serve to effect the clamping of the side panels between the front and rear frames, but also serve to hold the top and bottom in position against accidental displacement.

Instead of the springs 29 and 31, other means for drawing the toggle links 26 together may be employed, and is Fig. 5, I have illustrated one practical method for accomplishing this purpose, which consists of a pair of rods 36 and 37 respectively provided with hooks at their outer ends to engage the toggle links and threaded to accommodate a turnbuckle 38, which may be screwed up to exert the desired clamping action between the frames and the side panels.

The side panels 28 may be equipped with cleats 39 or other types of shelf supports if desired, but in many instances, it is desirable to have a second or inner side panel which carries the interior construction. A structure adapted to employ both inner and outer side panels is illustrated in Fig. 6, wherein it will be observed that the corner posts are equipped with not only grooves 39 for the reception of the outer side panels 28, but also with inner grooves 41 in which the inner panels 42 are loosely disposed, so that they are capable of removal without releasing the clamping action upon the outer panels 28.

When both inner and outer side panels are employed, it is preferable to arrange the toggle links so that they swing vertically instead of horizontally, and I have therefore illustrated such an arrangement in Figs. 6 to 9 inclusive, in which the toggle links 43 are pivoted at their outer ends directly into the corner posts themselves and are disposed between the inner and outer side panels, as illustrated in Fig. 9. In this construction, the spring by which the toggles are drawn together to effect the clamping action between the corner posts and side panels are disposed vertically, as illustrated in Fig. 8 where the one spring is indicated by reference character 44. In lieu of the spring 44 the turn-buckle construction 45 of Fig. 13 may be employed, if preferred.

One of the inner panels 42, equipped with shelf supporting cleats 46, is illustrated in Fig. 11. Another form of panel, made of metal, is indicated by reference character 47 in Fig. 12. It should be understood that either wooden or metal panels may be employed for both the inner and outer panels of the construction, or one may be made of wood and the other of metal, as preferred. The metal panel 47 shown in Fig. 12 also is equipped with shelf supporting provisions in the form of inwardly projecting ears or studs 48 struck inwardly from the body of the metal itself.

It will be observed from Fig. 9 that the inner panel fits somewhat loosely in the grooves of the corner posts so that it may be removed without releasing the clamping effect upon the outer side panel. This enables the inner panels with the shelves or other equipment carried thereby, to be removed bodily from the cabinet, and other

equipment to be substituted therefor without releasing the clamping members. Another manner of accomplishing the same result is illustrated in Fig. 10, wherein the inner panel 49, instead of sliding in grooves in the corner posts, simply sets in recesses 51, formed in the inner faces of the corner posts. These panels can therefore, be placed in position from the inside without removing the top of the cabinet, and are held against displacement by the shelves, which are supported by the side panels and extend transversely between them.

In assembling this structure, in case the floor upon which it is to set is uneven or irregular, the frame structure can be racked so that it will set evenly and be vertically disposed, before the toggles are broken to effect the clamping action, and when the cabinet has been positioned, and the clamps tightened up, it will set squarely upon the floor and will rigidly remain in this slightly racked or distorted position. It will be obvious that the continuous tension upon the toggle links serves to keep the joints tight and prevent any looseness or flexibility, which in time customarily becomes inherent in cabinets and other furniture as the result of atmospheric conditions.

It is believed that my invention, its structure, mode of assembly and many of its attendent advantages will be understood from the foregoing without further description, but while I have shown and described preferred embodiments thereof, it should be obvious that the invention is capable of considerable modification and variation without departing from the essence of the invention, as defined in the following claims.

I claim:

1. An article of furniture, comprising a pair of frames, a plurality of pairs of toggle links connecting said frames and permitting the same to be disposed in collapsed relation, side panels slidably engageable with and adapted to be disposed between said frames, a detachable bottom, a detachable top, and means for actuating said toggles to clamp said panels between said frames.

2. An article of furniture, comprising a pair of frames, a plurality of pairs of toggle links connecting said frames and permitting the frames to be disposed in collapsible relation, side panels adapted to be detachably interposed between the sides of said frames, a detachable top and a detachable bottom associated with said frame structure, and means operating upon said toggles for drawing the frames toward each other to clamp the side panels snugly therebetween.

3. In a knockdown article of furniture, the combination of a pair of frames, side panels disposed between said frames, inner side panels spaced from said first mentioned panels also disposed between said frames, shelf supports carried by said inner panels, toggles connecting said frames, and means acting on said toggles for forcing said frames toward each other to clamp both said inner and outer panels in position between said frames.

SOREN RINGER.