Oct. 12, 1948. P. ZALKIND 2,451,012

FILE CABINET INTERLOCK AND REINFORCING ELEMENTS

Original Filed Feb. 26, 1943

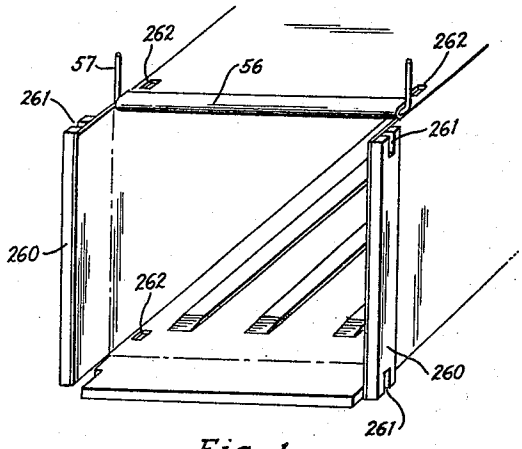


Fig. 1

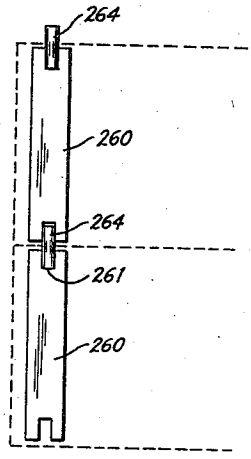


Fig. 2.

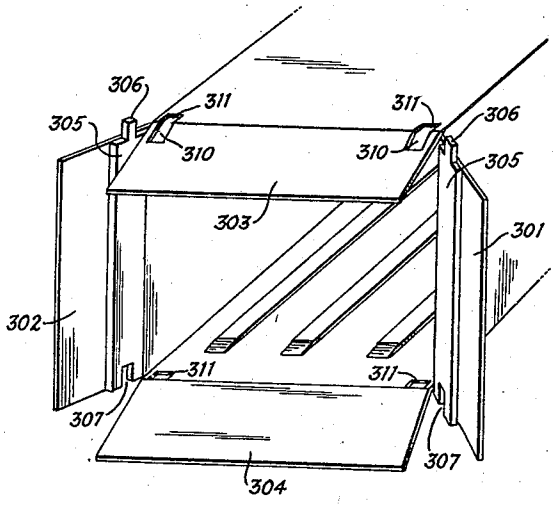


Fig. 3

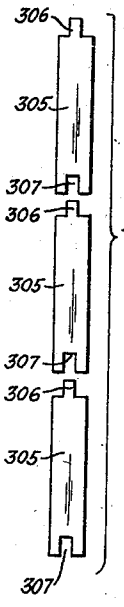


Fig 4

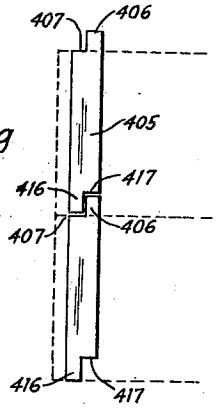


Fig. 5.

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FILE CABINET INTERLOCK AND REINFORCING ELEMENTS

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Original application February 26, 1943, Serial No. 477,204. Divided and this application May 24, 1944, Serial No. 537,133

13 Claims. (Cl. 312—108)

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This application is a division of my application Serial No. 477,204, filed February 26, 1943, which matured into patent 2,410,700 on November 5 1946, and relates to collapsible containers of the casing and drawer type adapted to co-act to form file cabinet sections which may be stacked one upon the other.

In the formation and construction of such casings, and drawer combinations, particularly where they are made of a sheet material having relatively little edgewise compressive strength such as paper, corrugated board and the like, it is necessary that reinforcing means be applied particularly to the casing section so that when a plurality of casings are stacked one upon the other, the superposed load on a lower casing can be resisted so as not to create a distortion which will impede the movement of the drawer into and out of the casing.

In addition, it has been necessary to provide a means for interlocking vertical and horizontal adjacent casings in aligned position, not merely for combining them into batteries or stacks but also to make sure that the vertical reinforcements are in alignment to act as continuous load bearing members.

This problem has been solved by various reinforcing members and modifications thereof as shown in my Patent No. 2,118,011 and in my Patents Nos. 2,233,906; 2,246,966; 2,245,026.

In these various patents it was pointed out that the application of reinforcing members, particularly to the open front of the casing in such a manner as to carry the compressive load from casing to casing through the stack prevented collapse of the open front of the casing and thereby prevented any interference with the smooth operation of the drawer therein.

While the commercial structures manufactured in accordance with the foregoing patents comprised reinforcements made substantially of metal, nevertheless, as suggested in said patents, the reinforcing structures were not necessarily limited to metallic material.

As also pointed out in my Patents Nos. 2,233,906 and 2,200,319 and in my Patent No. 2,337,079, and in my application Serial No. 417,216, now abandoned, the smooth operation of the drawer within the casing was greatly facilitated by friction reducing devices consisting of track and roller arrangements.

As previously mentioned, all of these reinforcing and friction reducing elements as well as interlock elements shown in my Patent No. 2,245,026 have previously for the most part, been made of

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metal as that was the material most readily adapted both as to strength and lightness to produce a relatively thin structure which would not interfere with collapse of the casing.

Owing, however, to conditions which restrict the availability of metallic members for reinforcement and owing to the necessity for continuing the manufacture of collapsible file cabinets made of non-metallic materials, it has now been necessary to devise reinforcing and friction reducing structure which utilizes a minimum of metal or perhaps no metal at all.

The principal difficulty which arises in the substitution of other materials for metal in casing and drawer structures of this type is that in order to obtain the requisite structural strength, additional thickness may be required. This problem has, however, been solved as shown in my Patents Nos. 2,118,011 and 2,233,906 which show how rabbeted metal members or members of other material may be used when the thickness thereof does not interfere with collapse.

Consequently, variations in the form of the reinforcing members, as well as in the form of the interlocks and in the manner of applying these various elements to the casing become necessary.

A principal object of my invention therefore, is the provision of interlocking elements for collapsible casing and drawer combinations.

Another object of my invention is the forming of such interlocking elements in such manner that they may cooperate with non-metallic reinforcing members.

An additional object of my invention is the arrangement of various interlocking members for interengaging the reinforcing structure of vertically and horizontally adjacent cabinets in order to lock the same in stacked formation.

These and many other objects of my invention will in part be apparent and where not apparent will be pointed out in the following description and drawings, in which:

Figure 1 is a view in perspective of the front of the container showing a modified form of reinforcement providing means for interlocking the container.

Figure 2 is a schematic side view of the reinforcing and interlocking members of Figure 1.

Figure 3 is a view in perspective of the back end of the container showing a form of modified reinforcement therefor which cooperates for interlocking purposes.

Figure 4 is a schematic side view of the reinforcing and interlocking elements of Figure 3.

Figure 5 is a side view of a modification of the construction of Figures 3 and 4.

In Figure 1 I have shown a vertical reinforcing member 260 on my file cabinet. Here the vertical reinforcing member 260, which may be folded into reinforcing position, is provided with the notches 261, 261 at the top and bottom thereof.

When the vertical reinforcing members are folded in, the notches 261 come into registry with the slots 262, 262 in the top and bottom walls.

As shown in Figure 2, a peg or pin 264 may then be dropped through the slot 262 so that the bottom end thereof enters into the bottom of notch 261 at the upper end of the lower vertical reinforcing member 260, and then the upper casing may be positioned over the lower casing so that the slot 262 in the lower wall thereof is in registry with the pin or peg 264 so that the member 264 enters upwardly into the lower notch 261 of the upper vertical reinforcing member.

Obviously the interlocking members of my Patent No. 2,410,700 may be utilized at all of the corners, front and rear, of the casing or may be utilized intermediate the front and rear ends of the casing.

Similarly, a reinforcing member 260 may be positioned in the casing vertically along a side wall at some distance from the front and rear walls coinciding with similar slots 262 on the top and bottom walls, so that where desired casings may be interlocked intermediate their ends.

Likewise, the members 260 having the notches 261 and the pins 264 may be used at the rear of the casing, as well as at the front. In Figure 3, I have shown, however, a modified form of reinforcing member which is particularly adapted for use at the closed end of the casing, although with appropriate modifications it may be utilized at the front thereof.

In Figure 3 it will be seen that the closed end of the casing comprises vertical flaps 301 and 302, an upper horizontal flap 303, and a lower horizontal flap 304, each connected by hinge lines to its respective wall.

The vertical flaps 301 and 302 are each provided with a vertical reinforcing member 305 having a projecting tongue 306 at the upper end thereof and a notch 307 at the lower end.

Preferably the vertical reinforcing members 305 are located adjacent the hinge lines of the flaps to which they are attached so that the corners of the casing may be reinforced thereby.

However, in appropriate cases, or where required, they may be spaced from the hinge lines to reinforce other portions of the back or the casing or additional reinforcing members may be provided.

Where in certain cases the flaps 303 and 304 are to be folded in first and then the flaps 301 and 302 are to be folded in, no special formation of the back end of the casing is required, except formation of notches in the top and bottom walls adjacent the corners to permit the tongues 306 to nest therein.

In ordinary methods of constructing these casings, however, the vertical flaps 301 and 302 are folded in first, and then the horizontal flaps 303 and 304 are folded over, and they are then secured in this position in any suitable manner, as, for instance, by an adhesive tape.

When, however, the vertical flaps 301 and 302 are folded in first, the upwardly extending tongues 306, 306 would interfere with the folding down of the flap 303. Accordingly, the upper flap 303 is provided with slots 310, 310 communicating

with short slots 311, 311 in the upper wall of the casing. The slots 310, 310 in the flap 303 are of a length equal to the height of the tongues 306.

When the flaps 301, 302 are folded in to partially cover the back end of the casing, the tongues 306 register with the short slots 311, 311 in the top wall of the casing.

The slots 310, 310 in the upper flap 303 now permit this upper flap to be rotated downwardly since they clear the tongues 306, 306.

Where no tongues are provided at the lower ends of the reinforcing members, slots 310, 310 are not necessary in the lower flap 304. However, the slots 311, 311 are needed in the bottom wall of the casing in order to provide access to the notches 307, 307 in the vertical reinforcing members 305.

In the schematic showing of Figure 4, I have shown the manner in which upwardly projecting tongues 306 enter into and register with the lower notches 307, 307 in each casing. Obviously the reinforcing members may be so arranged that the tongues 306 extend downwardly, in which case the notches will be provided in the upper ends of the reinforcing members.

When the casings are each assembled, an upper casing is now placed on the casing below by positioning the notches 311, 311 in the lower wall of the upper casing immediately above the tongues 306, 306 extending from the upper wall of the lower casing and permitting these tongues 306, 306 to enter into the notches 311 of the upper casing and hence into the notches 307 of the lower vertical reinforcing members in the upper casing.

In Figures 1 to 4 inclusive, the thickness of the vertical reinforcing member and of the tongues or pins used in connection therewith provide for an appropriate interlock.

In Figure 5 I have shown a slight modification of the construction of Figures 3 and 4 wherein, instead of having a simple tongue at the upper end and a notch at the lower end of each reinforcing member, each reinforcing member 405 has an upwardly extending tongue 406 and a downwardly extending tongue 416 on the opposite side. These tongues are defined by recesses 407, 417. Appropriate slots in the top and bottom of the casing register with the tongues 406, 416 and the recesses 407, 417.

As shown in Figure 5, therefore, a tongue 406 of the lower casing may pass through a slot in the bottom wall of the upper casing, registering against the recess 417 in the reinforcement in the upper casing.

Similarly, the lower tongue 416 of the upper casing registers with the upper recess 407 of the lower casing, thus furnishing an efficient interlock.

In each of the foregoing I have described my invention in connection with specific preferred embodiments thereof. Many variations in the form and arrangement of each of these members should now be obvious to those skilled in the art. Accordingly I prefer to be bound not by the specific disclosures herein but only by the appended claims.

I claim:

1. In a collapsible container having a side wall and top and bottom walls; an extension from the side wall hingedly connected thereto, and foldable into said container between said top and bottom walls; a vertical reinforcement member on said extension disposable between said top and bottom walls; openings in said top and bottom walls registerable with the ends of said reinforcement

member; interlock elements at the ends of said reinforcement member accessible through said openings for interlocking said container with other containers.

2. In a collapsible container having a side wall and top and bottom walls; an extension from the side wall hingedly connected thereto, and foldable into said container between said top and bottom walls; a vertical reinforcement member on said extension disposable between said top and bottom walls; openings in said top and bottom walls registerable with the ends of said reinforcement member when said container is erected; interlock elements at the ends of said reinforcement member accessible through said openings; said interlock elements comprising a notch in at least one end of said reinforcement member.

3. In a collapsible container having a side wall and top and bottom walls; an extension from the side wall hingedly connected thereto; and foldable into said container between said top and bottom walls; a vertical reinforcement member on said extension disposable between said top and bottom walls; openings in said top and bottom walls registerable with the ends of said reinforcement member when said container is erected; interlock elements at the ends of said reinforcement member accessible through said openings; said interlock elements comprising notches in the ends of said reinforcing member.

4. In a collapsible container having a side wall and top and bottom walls; an extension from the side wall hingedly connected thereto, and foldable into said container between said top and bottom walls; a vertical reinforcement member on said extension disposable between said top and bottom walls; openings in said top and bottom walls registerable with the ends of said reinforcement member; interlock elements at the ends of said reinforcement member accessible through said openings; said interlock elements comprising a tongue extending from one end of said reinforcing member through one of said openings in register therewith; and a notch in the opposite end of said reinforcing member registering with said other opening.

5. In a collapsible container having a side wall and top and bottom walls; an extension from the side wall hingedly connected thereto, and foldable into said container between said top and bottom walls; a vertical reinforcement member on said extension disposable between said top and bottom walls; openings in said top and bottom walls registerable with the ends of said reinforcement member; interlock elements at the ends of said reinforcement member accessible through said openings; said interlock elements comprising a tongue extending from one end of said reinforcement member through one of said openings in register therewith; and a notch in the opposite end of said reinforcing member registering with said other opening; the respective tongues and notches of vertically aligned containers being engageable with each other.

6. In a collapsible container having a side wall and top and bottom walls; an extension from the side wall hingedly connected thereto, and foldable into said container between said top and bottom walls; a vertical reinforcement member on said extension disposable between said top and bottom walls; openings in said top and bottom walls registerable with the ends of said reinforcement member; interlock elements at the ends of said reinforcement member accessible through said openings; said interlock elements comprising

a recess and a tongue at each end; the recesses and tongues at opposite ends being oppositely disposed; whereby the bottom end interlock element of any reinforcement member in one casing may register complementarily with the top end interlocking element of a reinforcement in another identical casing; said recess registering with the opening in one of said walls, the base of said recess being spaced from the inner surface of said wall; the tongue associated with said recess projecting through said opening to the outer side of said wall.

7. In a collapsible container having horizontal and vertical walls; an extension from each of said walls being hingedly connected thereto; said extensions of said vertical walls being adapted to be folded in first; said extensions from said horizontal walls being adapted to overlie said vertical wall extensions; reinforcing members secured in vertical position on said extensions of said vertical walls and adapted to be arranged between said horizontal walls; interlock elements on said reinforcing members; openings in said horizontal walls registering with the ends of said reinforcing members and with said interlock elements; certain of said interlock elements projecting through said openings; and clearance notches in that extension which is hinged to that horizontal wall through which interlock elements project, said clearance notches commencing at the hinged connection between that extension and said horizontal wall and being disposed to clear said projecting elements whereby that extension may be folded to overlie the extensions hinged to said vertical walls.

8. A stack of contiguous containers wherein each container is collapsible and comprises a plurality of walls and flap hinged at an extremity of at least one of said walls and a reinforcement member secured to said flap, including perforations through contiguous walls of each of said containers, and interlock elements at opposite ends of each of said reinforcement members in register with the perforations in the respective casing walls, certain of said interlock elements passing through said perforations between containers to secure said containers in alignment.

9. In a stack of collapsible containers as set forth in claim 8, wherein said interlock elements comprise a tongue at one end of each of said reinforcement members protruding through one of said perforations.

10. In a stack of collapsible containers as set forth in claim 9, wherein said one perforation in each container is disposed at an edge of its respective wall, a flap hingedly secured to said edge, and a perforation in said flap forming a continuation of the perforation in said wall substantially equal to the length of said tongue.

11. In a stack of collapsible containers as set forth in claim 8, wherein said interlock elements comprise a notch at one end of said reinforcement member.

12. A collapsible container for a stack of containers having a plurality of walls and a flap hinged at an extremity of at least one of said walls, interlocking elements secured to said flap, a perforation through each of two opposed walls of said container, said interlocking elements comprising a member having a tongue protruding through one of said perforations, and a notch at the other end of said member in register with said other perforation for reception of a similar tongue from a contiguous container.

13. A collapsible container intended to be shipped in collapsed form and to be erected for

use as a unit in a stack of similar containers, wherein said container comprises a plurality of foldably joined walls forming a tubular structure, a flap hingedly secured to an edge of at least one of said walls so as to be co-planar with said wall when said container is folded for shipment and to be rotated with respect to said wall when said container is erected, a reinforcement member secured to said flap and movable therewith and having interlock elements at its ends, a perforation in each of two other walls, said perforations being disposed so as to be in alignment with said

interlock elements when said flap and reinforcement member are rotated in erecting said container.

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REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
1,886,879	Gross	Nov. 8, 1932