United States Patent [19]

House

[11] **3,791,707**

[45] **Feb. 12, 1974**

[54] **INTERLOCKING DEVICE FOR PORTABLE FOOD SERVICE CABINETS AND THE LIKE**

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[22] Filed: **May 11, 1972**

[21] Appl. No.: **252,428**

[52] **U.S. Cl.** **312/111,** 52/754, 312/198

[51] **Int. Cl.** **F16b 12/06,** F16b 12/32

[58] **Field of Search** ... 287/20.92 T, 20.926, 20.927, 287/20.92 R, 189.36 R; 312/198, 111; 292/302, 173, 341.15

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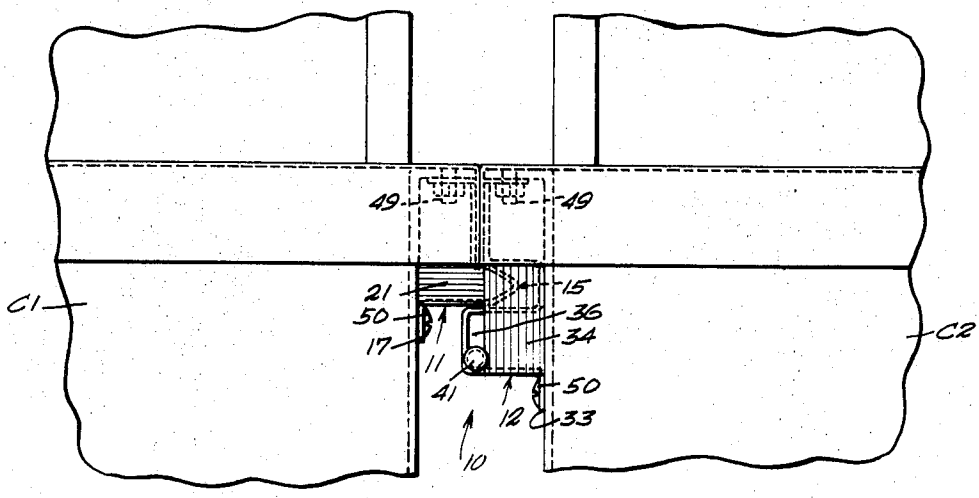
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[57] **ABSTRACT**

An interconnecting and locking device for joining portable food service cabinets and the like in side-by-side relation while at the same time adjusting them to be in substantial vertical and horizontal alignment simply by pushing the cabinets together. The device comprises elongated male and female connector members adapted to be secured horizontally along opposed upper edge portions of the cabinets to be joined, the female connector member having an elongated recess along its length and the male connector member having an elongated nose member along its length, both of which are convergently beveled to the outside to serve as horizontal and vertical locating means upon interconnection of the device. Releasable latch means is provided for locking the device in interconnected relation while at the same time providing for manual release for separating the cabinets.

7 Claims, 6 Drawing Figures



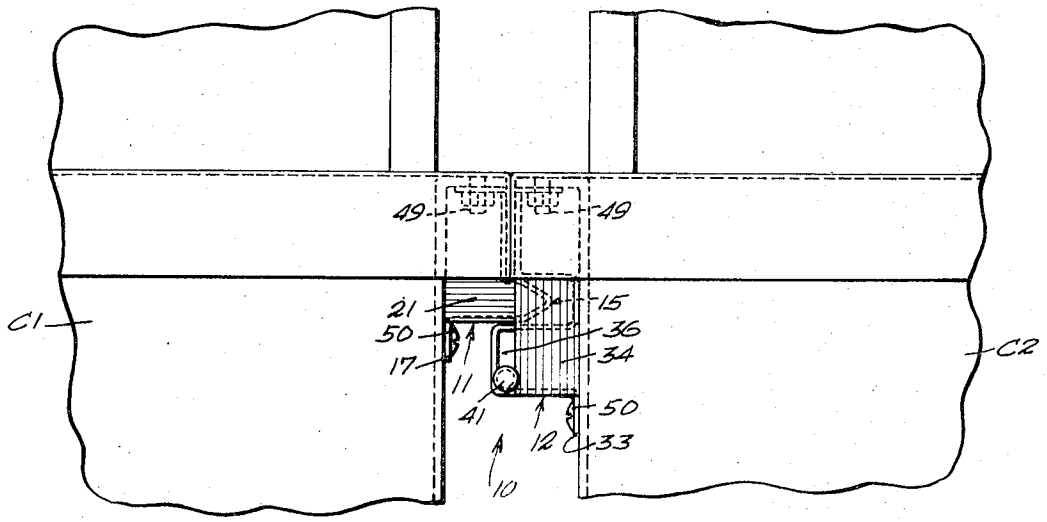


Fig. 1

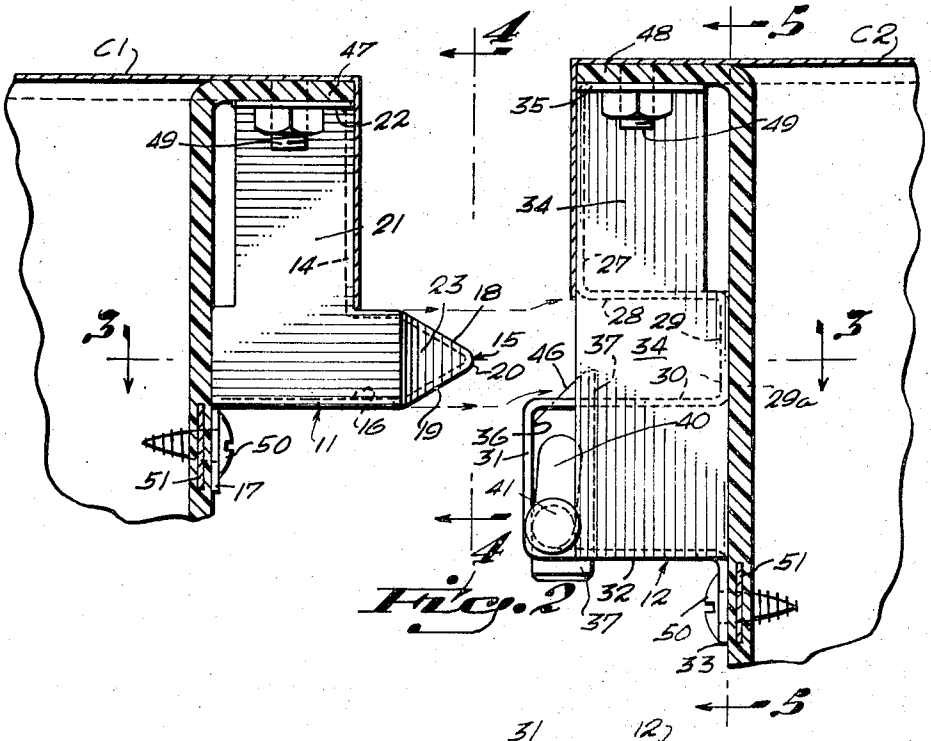


Fig. 2

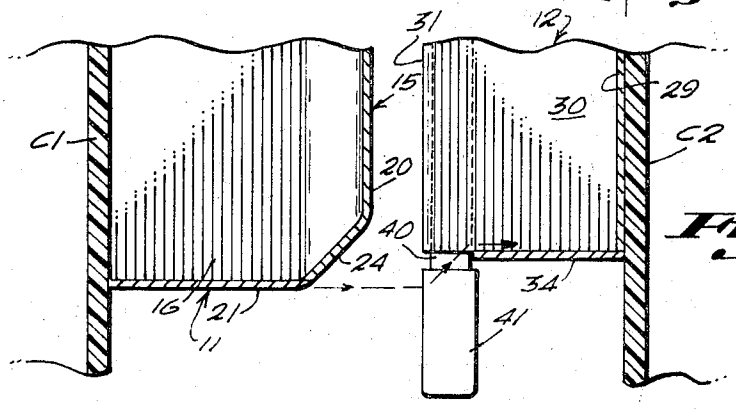


Fig. 3

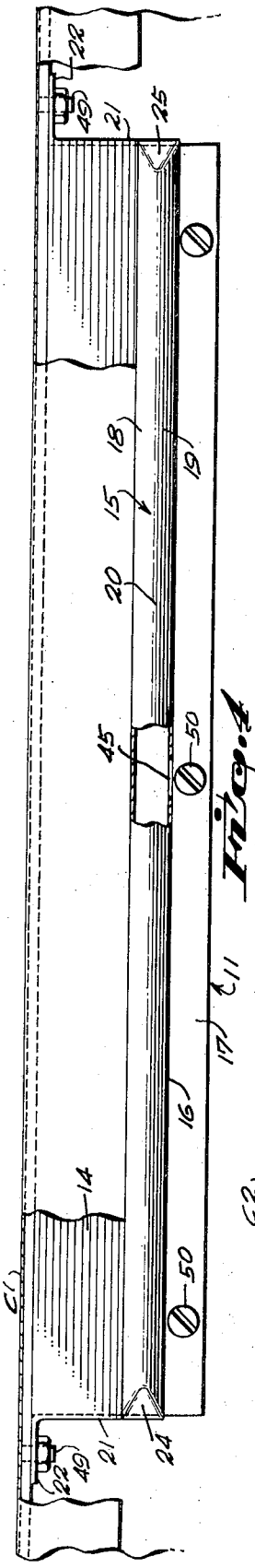


Fig. 4

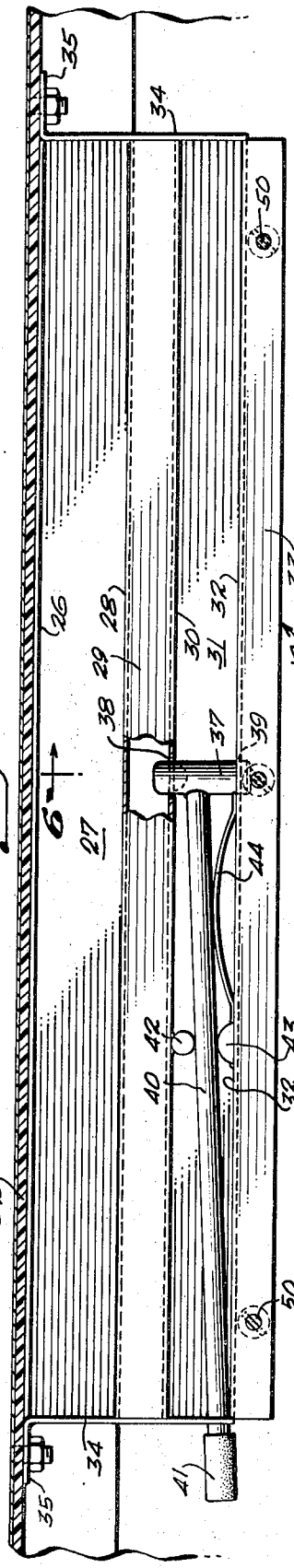


Fig. 5

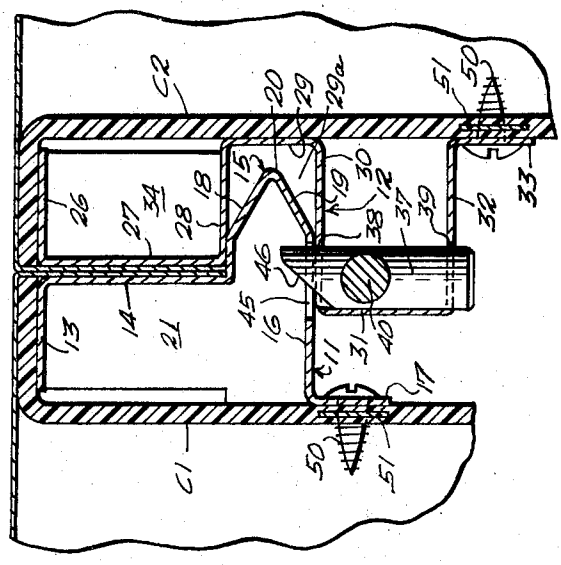


Fig. 6

INTERLOCKING DEVICE FOR PORTABLE FOOD SERVICE CABINETS AND THE LIKE

This invention relates to food service cabinets of the type used in restaurants and cafeterias and is directed particularly to a novel and improved mechanism for releasable interconnecting or coupling a plurality of such cabinets in vertical and horizontal alignment for use as a cafeteria style serving line.

In many public institutions, efficient use of building facilities dictates that the dining facilities be combined with one of the larger general use rooms such as an auditorium. Such dual use of room facilites has become so general, particularly in schools, that the word "cafetorium" has been coined to describe the usage. To accommodate for such use, rollably portable food service cabinets having slide-tray facilities are arranged to form a serving line along the front of which the dining patrons can pass for food service as in an ordinary cafeteria. In such arrangements, various interlocking mechanisms have heretofore been devised for securing food service cabinets thus aligned in more or less rigid interconnection. The interconnection devices heretofore known, however, have been deficient in one or more respects, principally in that both horizontal and vertical alignment of adjacent cabinets was difficult to achieve, particularly along cabinet lines supported on irregular flooring. Such misalignment resulted in irregularities in level of the slide-tray sections at the front of the food service cabinets, thereby interfering with the free sliding motion of trays being pushed along the serving line.

It is, accordingly, the principal object of this invention to provide a novel and improved mechanism for releasably interconnecting food service cabinets and the like that, in addition to establishing firm interconnection between adjacent cabinets, at the same time aligns the cabinets both horizontally and vertically.

A more particular object of the invention is to provide a locating and interconnecting mechanism of the character described comprising an elongated, wedged-shaped male connector member adapted for cooperative interengagement with an elongated female connector member having a coextensive recess adapted to receive the wedge-shaped member and including lock means for releasably retaining the wedge-shaped member in interfitted relation.

Another object of the invention is to provide a locating and interconnecting mechanism of the above nature the cooperative connector members of which are readily adapted for use with a wide variety of portable food service cabinets for effecting their straight and level interconnection whenever required.

Yet another object of the invention is to provide a locating and interconnecting mechanism for portable food service cabinets that will be simple in construction, easy to install, inconspicuous in appearance and durable in use.

Other objects, features and advantages of the invention will be apparent from the following description when read with the accompanying drawings. In the drawings, where in like reference numerals denote corresponding parts throughout the several views:

FIG. 1 is a fragmentary view, in elevation, of a pair of side-by-side food service cabinets, as seen from behind the cabinets, equipped with interlocking mechanism embodying the invention;

FIG. 2 is an elevational view, similar to that of FIG. 1 but on an enlarged scale, with cabinet portions in vertical section, and illustrating how vertical alignment of the associated cabinets is effected upon interengagement of the interlocking mechanism;

FIG. 3 is a partial horizontal cross-sectional view, taken along the line 3—3 of FIG. 2 in the direction of the arrows and illustrating how horizontal alignment of the associated cabinets is effected upon interengagement of the interlocking mechanism;

FIG. 4 is a front elevational view of the male connector member as seen along the plane indicated at 4—4 of FIG. 2, looking in the direction of the arrows;

FIG. 5 is a vertical cross-sectional view taken along the plane indicated at 5—5 of FIG. 2, illustrating constructional details of the female connector member and its assembly to its associated cabinet; and

FIG. 6 is a vertical cross-sectional view taken along the line of 6—6 of FIG. 5 in the direction of the arrows, shown together with the associated male connector member interconnected therewith and illustrating operation of the releasable latch mechanism for retaining the connector members in interlocked relation.

Referring now in detail to the drawings, reference characters C1 and C2 designate a pair of side-by-side food service cabinets, as seen from behind, equipped with interlocking mechanism, designated generally by reference numeral **10**, embodying the invention and shown in interlocked relation. The interlocking mechanism **10** comprises a male connector member **11** and a female connector member **12** which are secured, respectively, to the side-by-side cabinets C1, C2 to effect their interlocking engagement.

The male connector member **11**, which is preferably fabricated of sheet metal, such as of stainless steel, is elongated in shape and is bent along its length to define a rectangular top surface portion **13**, a rectangular vertically-downwardly-extending portion **14**, and a laterally-outwardly-extending wedge or nose portion **15** the underside of which is directed inwardly to provide a substantially horizontal, rectangular bottom portion **16**. The inner end of the rectangular bottom portion **16** merges into a vertically-downwardly-extending rectangular bracket portion **17**. The nose portion **15** of the male connector member **11** has an outer portion of wedge-shape configuration defined along its length by upper and lower, outwardly-convergent surface portions **18, 19**, respectively merging at their outer ends in a rounded nose-tip portion **20**. As best illustrated in FIGS. **2** and **4**, each end of the male connector members **11** has welded or otherwise affixed thereto an end plate **21** the upper end of which is formed with an outwardly-extending rectangular attachment bracket portion **22** lying substantially in the same plane as the top surface portion **13**. The end plates **21** are formed with mutually-inwardly-directed, triangular tab portions **23** which smoothly join angularly foreshortened end portions of the outwardly-convergent surface portions **18, 19** to define thereat convergent, opposed, nose end cam surface portions **24, 25**.

The female connector member **12**, which is also preferably fabricated of sheet stainless steel and is elongated in shape, is bent along its length to define a rectangular top surface portion **26**, a rectangular, vertically-downwardly-extending portion **27**, a horizontally-inwardly-extending portion **28**, a second vertically-downwardly-extending portion **29** a horizontally-out-

wardly-extending portion **30**, a third downardly-extending portion **31**, a second horizontally-inwardly-extending portion **32** and a fourth vertically-downwardly-extending bracket portion **33**, all coextensive in length and all substantially rectangular in configuration. The width along their lengths of the horizontally-outwardly-extending portion **30** and the second horizontally-inwardly-extending portion **32** is substantially equal, and somewhat greater than the width of the horizontally-inwardly-extending portion **28**, so that the third vertically-downwardly-extending portion **31** is somewhat outwardly spaced with respect to the vertically-downwardly-extending portion **27**. The horizontally-inwardly-extending portion **28**, the second vertically-downwardly-extending portion **29** and the horizontally-outwardly-extending portion **30** together define an elongated recess **29***a* for the reception of the nose portion **15** of the male connector member **11**, as is hereinbelow more particularly described.

As best illustrated in FIGS. **2** and **5**, each end of the female connector member **12** has welded or otherwise fixed thereto an enclosing end plate **34** the upper end of which is formed with an outwardly-extending, rectangular bracket portion **35** lying in substantially the same plane as the top surface portion **26**. As illustrated in FIGS. **1** and **2** a substantially rectangular opening **36** is defined by the outwardly-extending, third vertically-downwardly-extending portion **31** and an outer edge portion of the end plate **34**.

Latch mechanism is provided for interlocking the male and female connector members **11** and **12**, respectively, when fitted to a pair of side-by-side food service cabinets or the like, as is hereinafter more particularly described. To this end, a cylindrical latch bolt **37** is fitted for sliding up and down movement within a pair of vertically-aligned openings **38, 39** in the horizontally-outwardly-extending portion **30** and the second horizontally-inwardly-extending portion **32**, centrally disposed therealong. Manual control of the latch bolt **37** is effected by means of an outwardly-extending control rod **40** secured at one end to said latch bolt, and extending outwardly of one end of the female connector member **12** through the rectangular opening **36**. As best illustrated in FIG. **5**, the outwardly-projecting end of the rod **40** is fitted with a rubber cap, indicated at **41**, for use as a hand grip. Upper and lower rounded abutment members **42, 43**, welded or otherwise secured against respective opposed, inside portions of the horizontally-inwardly-extending portion **30** and the second horizontally-inwardly-extending portion **32** provide a fulcrum between which the control rod **40** extends (see FIG. **5**) for controlling the vertical position of the latch bolt **37** by manual vertical movement of the outwardly-extending handle portion of said rod. An arcuate leaf spring **44** is situated between the abutment member **43** and the latch bolt **37** and constrained between the control rod **40** and the inner surface of the second horizontally-inwardly-extending portion **32** of the female connector member **12** serves to normally constrain said latch bolt to its uppermost or latching position, as illustrated in FIGS. **5** and **6**.

As best illustrated in FIGS. **4** and **6**, the bottom portion of the male connector member **11** is provided with a circular opening **45** for interengagement by the upper end of the latch bolt **37** upon interlocking engagement of said male connector member with the female connector member **12**, as is hereinbelow more particularly described. As illustrated in FIG. **6**, the upper end of the latch bolt **37** is beveled to provide an outwardly-directed cam surface portion **46**.

In use, the male and female connector members **11** and **12** will be secured along opposed side portions of adjacent portable food service cabinets, such as food service cabinets partially indicated at C1 and C2 in FIGS. **1** and **2**. The upper surface portions of such cabinets are ordinarlly provided with sidewardly-outwardly-extending marginal portions **47, 48** against the undersides of which the respective male and female interconnecting members **11** and **12** can readily be attached as by the use of stud-bolts **49** extending through openings provided in the attachment bracket portions **22** and **35** of respective male connection member **11** and female connection member **12**. As additional securment means, a plurality of self-tapping screws **50** are applied through spaced openings along the vertically-downwardly-extending bracket portions **17** and **33** of the respective male and female connector members **11** and **12**. As best illustrated in FIG. **6**, if the side walls of the cabinets C1 and C2 to which the male and female connection members **11** and **12** are attached are fabricated of a reinforced synthetic plastic material, said side walls can have embedded therein sheet metal members **51** appropriately placed for receiving the sheet metal screws **50**.

In use, whenever a pair of food service cabinets or the like equipped with the interlocking mechanism **10** embodying the invention are pushed together for interlocking engagement, the nose portion **15** of the male connector member **11**, being angular or wedged-shaped along its length, will be guided into proper interfitting position within the elongated recess **29***a* in the female connector member **11**. Thus, as illustrated in FIG. **2**, if the cabinet C1 equipped with the male connector member **11** is somewhat lower than the cabinet equipped with the female connector member **12**, as illustrated in FIG. **2**, the lower angular surface portion **19** of the nose portion **15** of said male connector member will ride, by cam action, along the juncture corner of the horizontally-outwardly-extending portion **30** and the third vertically-downwardly-extending portion **31** of the female connector member **12** for guiding said nose portion into the recess **29***a* while at the same time bringing the upper surfaces of the associated cabinets to the same level. Similarly, if the cabinet C1 should be higher than the cabinet C2 prior to their interconnection, the upper inclined surface portion **18** of the nose portions **15** would be guided in cam-like fashion along the zone of juncture of the rectangular, vertically-downwardly-extending portions **27** and the horizontal-inwardly-extending portion **28** of the female connector member **12** to vetically adjust and guide the nose portion **15** into the recess **29***a*.

With reference to FIG. **3**, it will be seen how the nose end cam surface portions **24, 25** provide for horizontal alignment of the cabinets upon their interconnection. If the cabinet C1 should be somewhat to the rear of the cabinet C2 upon pushing them together, cam surface portion **24** at the rear end of the nose portion **15** of the male connector **11** will engage the outer edge of the end plate **34**, causing said male connector member and its associated cabinet to align itself, front-to-back, with the cabinet C2 with which it is to be interconnected. The overall length of the nose portion **15** of the male connector member **11**, moreover, is such that it will fit

snugly within the recess 29*a* of the female connector member 12, so that no matter in which direction one cabinet is offset from the other just prior to interconnection, the pushing together to effect interlocking will at the same time effect vertical and horizontal alignment of the cabinets. It will further be understood that upon interconnection of the male and female connection members 11, 12, the lower surface portion 19 of the nose portion 15 will slide in cam-like fashion against the inclined upper end surface portion 46 of the latch bolt 37, causing said latch bolt to be pushed inwardly against the reactive urging of the leaf spring 44 until said male and female connection members are fully interengaged, whereupon said latch bolt will spring upwardly into the latch bolt opening 45 of the male connector member to maintain the interlocked condition. Whenever it is desired to unlock the locking mechanism so that the interconnected cabinets C1 and C2 can be separated again, it is only necessary to push upwardly upon the hand grip 41 at the outer, rearwardly-extending end of the control rod 40, whereupon the latch bolt 37 will be moved sufficiently downward to release itself from the latch bolt opening 45 in the male connector member 11, thereby permitting separation of the interconnecting mechanism 10.

While I have illustrated and described herein only one form which my invention can conveniently be embodied in practice, it is to be understood that this embodiment is given by way of example only and not in a limiting sense. The invention, in brief, comprises all the embodiments and modifications coming within the scope and spirit of the following claims.

I claim:

1. An interconnecting device for joining substantially rectangular portable food service cabinets and the like in side-by-side relation comprising, in combination, a pair of substantially rectangular, portable cabinets, an elongated male connector member, means for securing said male connector member horizontally along an upper edge portion of one side of one of said pair of cabinets to be joined, an elongated female connector member, means for securing said female connector member horizontally along an upper edge portion of one side of the other of said pair of cabinets to be joined, said female connector member having an elongated, horizontally-extending recess, said male connector member having an outwardly-extending, substantially horizontal nose portion of such size as to be slidingly received in said recess upon said pair of cabinets being moved through relatively translatory motion into side-by-side abutting relation with respect to said one side of said one of said cabinets and said one side of said other of said cabinets, guide means along the length of said nose portion and at the ends thereof for adjustingly directing said nose portion into said recess upon the movement of said nose portion into said recess for interfittingly connecting said male and female connector members, and releasable means operative to automatically lock said male and female members upon their being placed into mutual interfitting relation, said guide means comprising upper and lower, outwardly-convergent surface portions along the length of said nose portion, terminating in a rounded nose tip portion.

2. An interconnecting device as defined in claim 1 wherein said releasable locking means comprises a latch bolt vertically movable into said recess at a central position therealong, an opening centrally disposed along said nose portion of said male connector member for receiving said latch bolt, said latch bolt, at the end thereof received within said recess, being beveled to provide an outwardly-directed cam surface portion for sliding engagement with said nose portion upon interfittingly connecting said male and female connector members, and resilient means normally constraining the beveled end portion of said latch bolt in the direction of said recess.

3. An interconnecting device as defined in claim 2 wherein said releasable locking means further comprises a sidewardly-outwardly-extending rod affixed at one end to a side portion of said latch bolt and extending outwardly at one end of said female connector member, and fulcrum means between the ends of said rod to provide for substantially vertical movement of said latch bolt against the urging of said resilient means upon the movement of said outer end of said rod in the direction opposite the locking direction of movement of said latch bolt.

4. An interconnecting device as defined in claim 1 wherein said guide means further comprises triangular, outwardly-convergent nose end cam surface portions.

5. An interconnecting device as defined in claim 4 wherein said elongated male and female connector members are fabricated of bent sheet metal.

6. An interconnecting device as defined in claim 5 wherein the horizontally-extending recess of said female connector member comprises a first bent portion of U-shaped configuration extending along said female connector member, and further comprising a second bent portion of U-shaped configuration extending along said female connector member and defining an elongated recess beneath said first-mentioned recess, said releasable locking means comprising a latch bolt vertically movable into said recess at a central position therealong, an opening centrally disposed along said nose portion of said male connector member for receiving said latch bolt, said latch bolt, at the end thereof received within said recess, being beveled to provide an outwardly-directed cam surface portion for sliding engagement with said nose portion upon interfittingly connecting said male and female connector members, and resilient means normally constraining the beveled end portion of said latch bolt in the direction of said recess.

7. An interconnecting device as defined in claim 6 wherein said releasable locking means further comprises a sidewardly-outwardly-extending rod affixed at one end to a side portion of said latch bolt and extending outwardly through said second recess at one end thereof, and fulcrum means between the ends of said rod to provide for substantially vertical movement of said latch bolt against the urging of said resilient means upon the movement of said outer end of said rod in the direction opposite the locking direction of said latch bolt.

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