United States Patent

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[45] Patented **June 28, 1971**

[54] **FOLDING COUNTER CONSTRUCTION**
14 Claims, 13 Drawing Figs.

[52] **U.S. Cl.** **312/140.2,** 312/258
[51] **Int. Cl.** **A47b 96/18**
[50] **Field of Search** 312/258, 259, 262, 140.2, 199, 140.1, 140.3, 140.4

[56] **References Cited**

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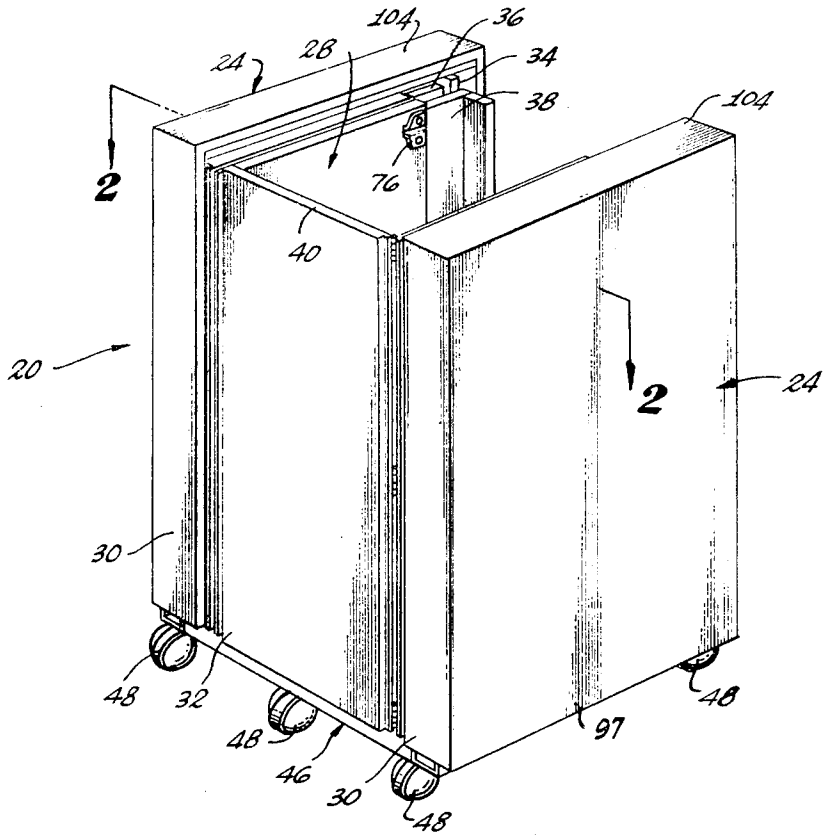
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ABSTRACT: A folding counter having a central cabinet and movable side housings connected to a front panel of the cabinet by folding front panels. The side housings house three vertically nested shelves which are horizontally disposed at fixed vertical intervals to provide work and shelf spaces when the counter is opened. The central cabinet and side housings are mounted on an underframe with the sections of the underframe supporting the side housings being connected to the central section of the underframe by telescoping members.



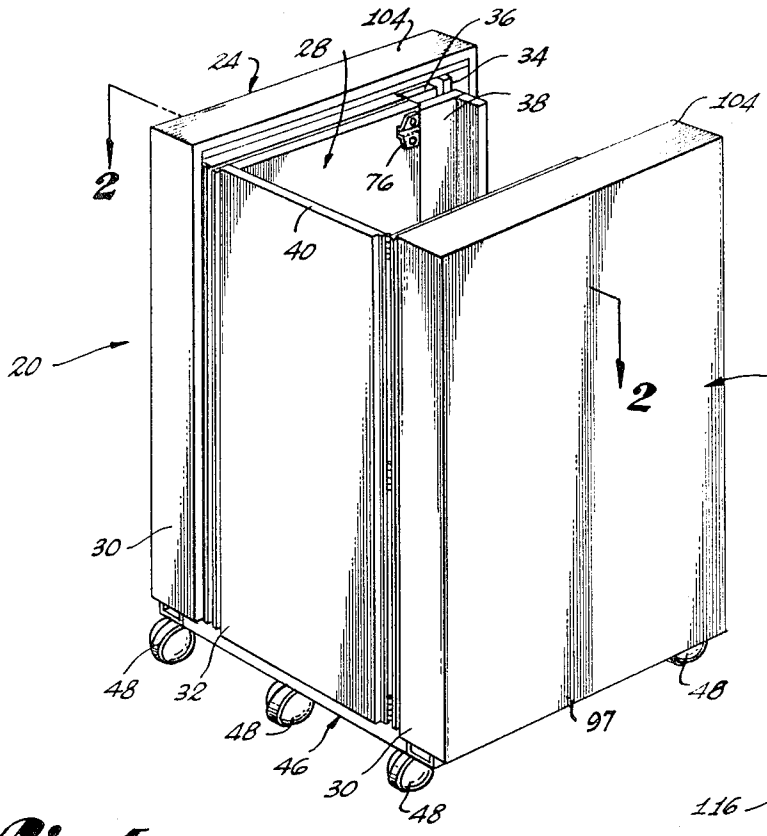
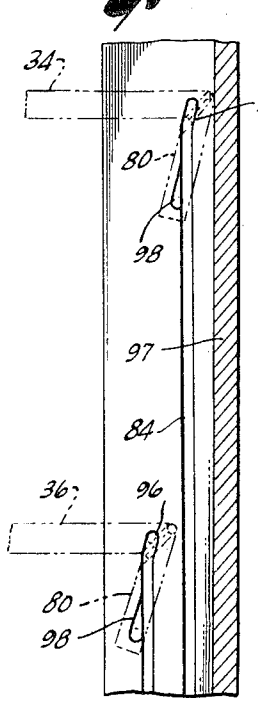


Fig. 1

Fig. 3



Fig. 4



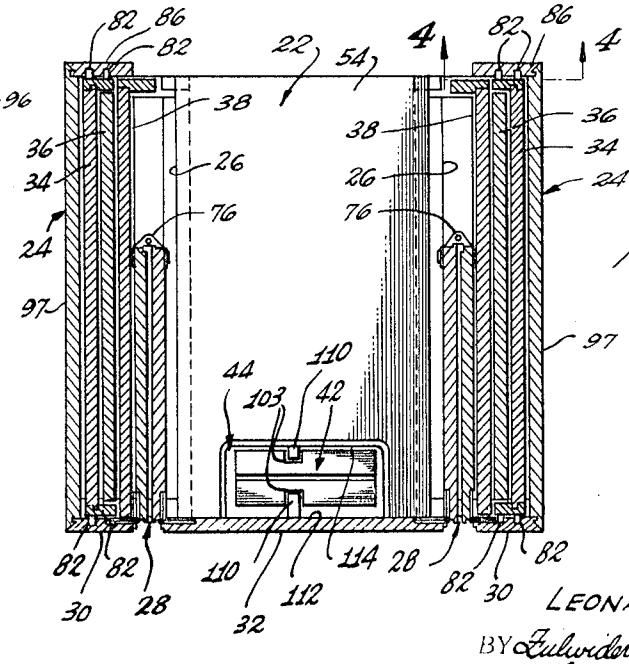


Fig. 2

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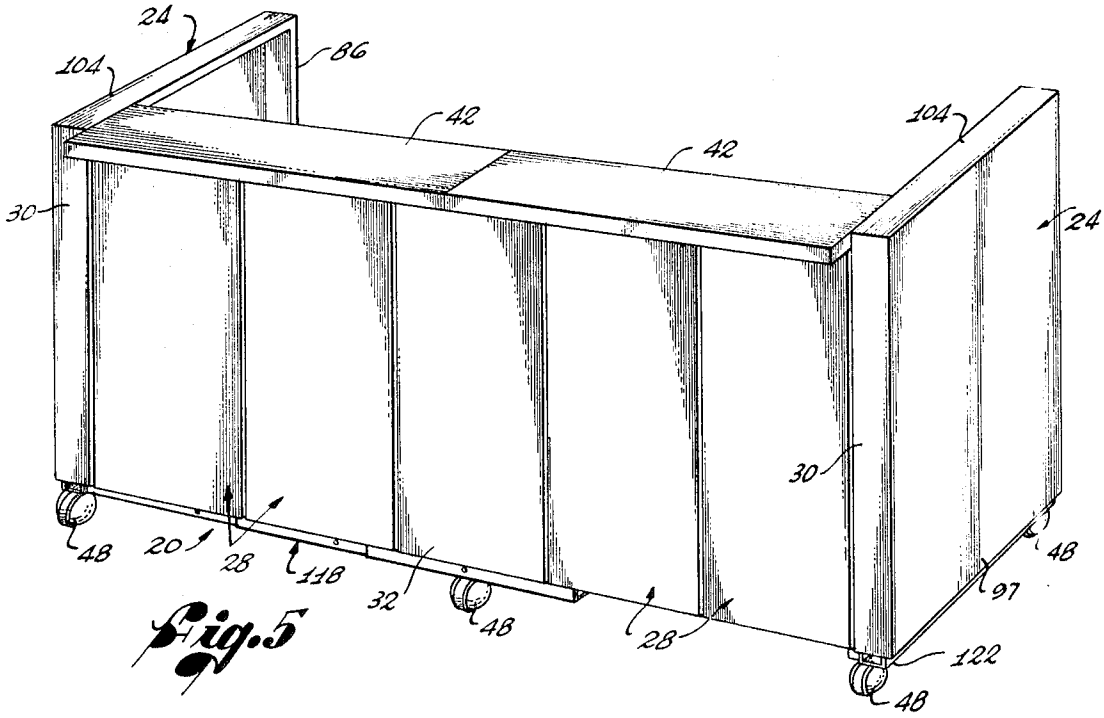


Fig. 5

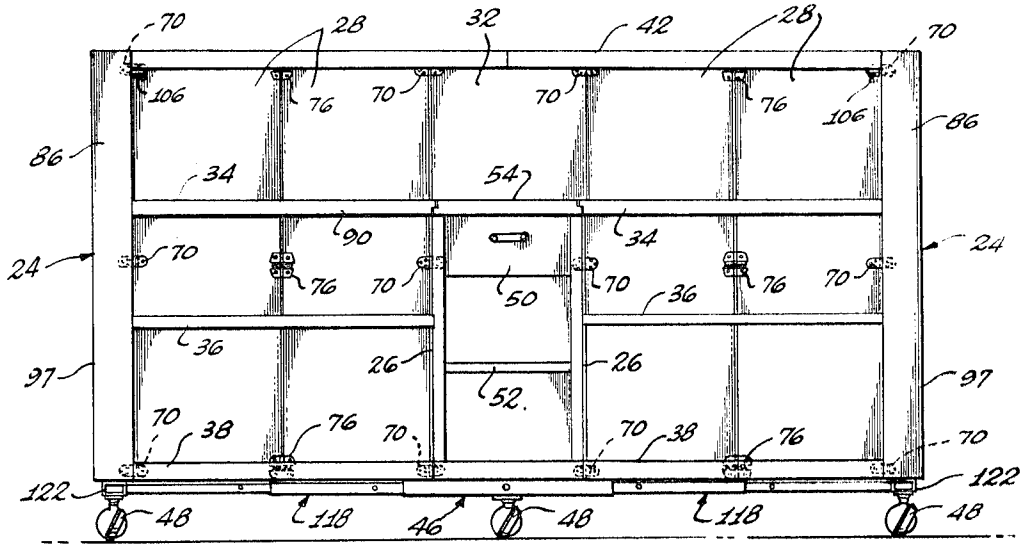


Fig. 6

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Fig. 8

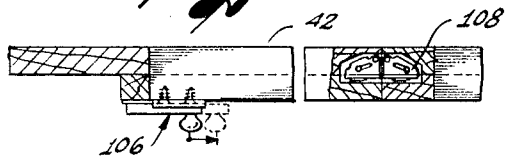


Fig. 9

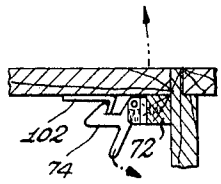


Fig. 10

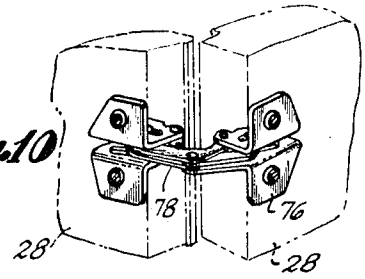
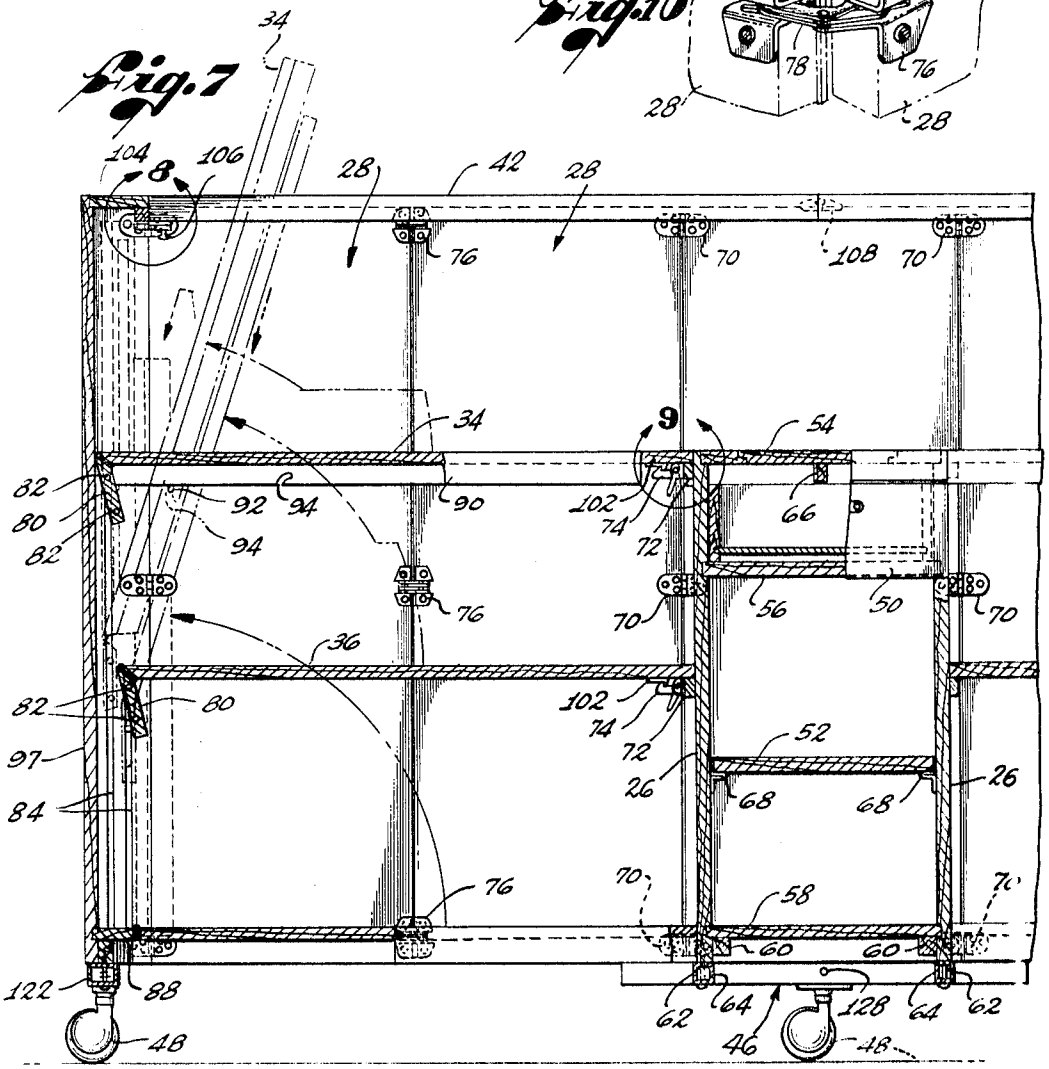


Fig. 7



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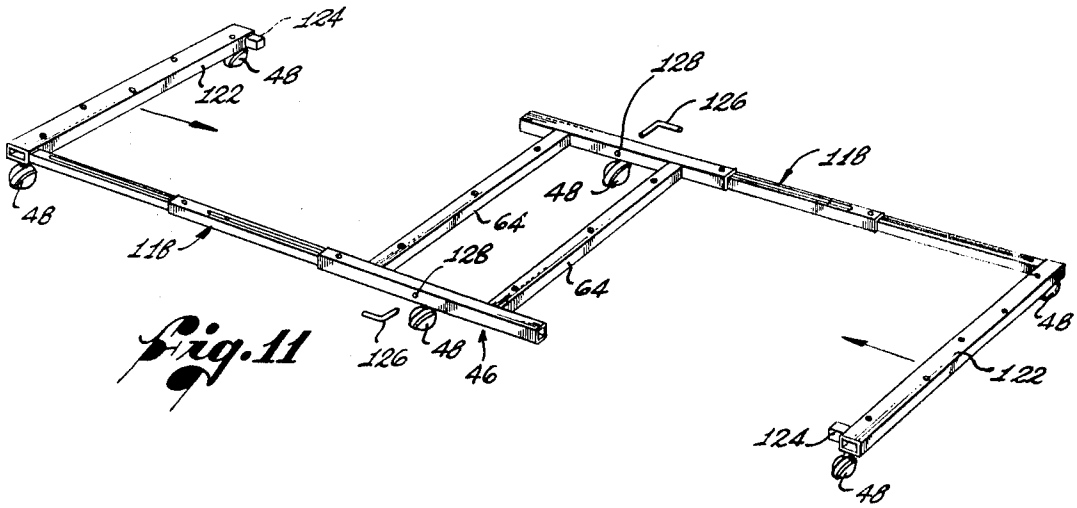


Fig. 11

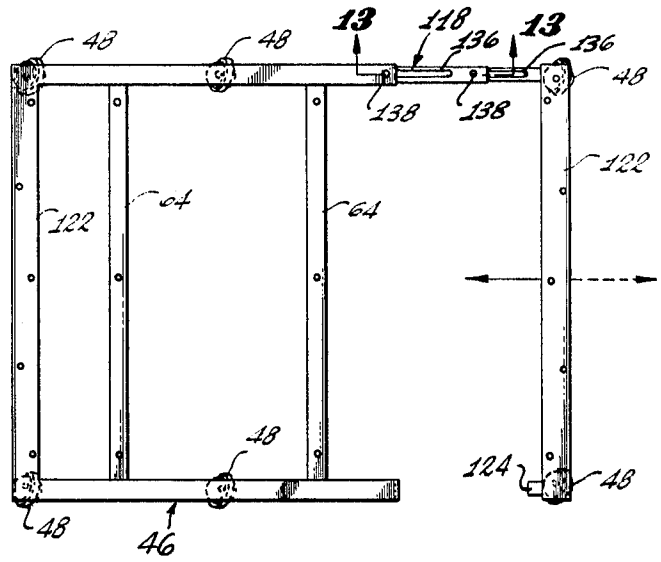
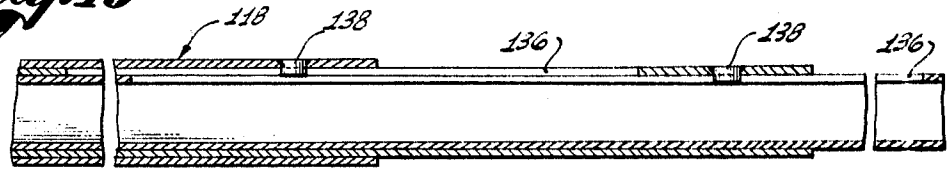


Fig. 12

Fig. 13



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FOLDING COUNTER CONSTRUCTION

BACKGROUND OF THE INVENTION

The present invention relates generally to movable counters, and more particularly, to such counters which can be folded for compact storage.

In department stores and hotels or the like, the need often arises for additional or auxiliary counter space. Such additional counter space is particularly needed in department stores during peak buying seasons for additional cash register stations and gift wrapping counters. In hotels, portable bars are often used for private parties.

In the past, such auxiliary counter space has often been merely improvised in the case of department stores or movable counters have been especially constructed. Because of the relatively rough handling which such movable counters must endure, they are ordinarily sturdily constructed, resulting in a relatively heavy and bulky counter that is somewhat difficult to handle.

In the case of department stores, such auxiliary counters are only used for short periods during the year and they must be stored during the remainder of the year. Because the counters must be relatively large to provide adequate work space, even a small number of such counters can take up considerable valuable storage space for most of the year.

SUMMARY OF THE INVENTION

The present invention provides a moveable counter which can be folded or closed into a relatively compact and sturdy structure so that the counter can be easily handled by mechanical means, such as a forklift, without damage.

The counter generally has a central cabinet, serving as a base, and a substantially vertical front panel which cooperates with one or two extensible-retractable front panels to form a frontal surface for the opened counter. The external edge of each of the front panels are attached to a side housing moveable toward and away from the cabinet to close and open the counter, respectively. When the counter is opened, one or more shelves are disposed between the cabinet and each side housing to provide a work surface and structural rigidity for the counter.

In the presently preferred embodiment of the counter, the shelves are vertically nested within each side of the housing when the counter is closed. One end of each of the shelves is either fixed or slideably held within the side housing to prevent loss or misplacement of the shelves.

Additionally, the preferred embodiment is provided with a service ledge disposed along the upper edge of the front panels to provide flat counter space and to aid in maintaining the front panels in a planar relationship. The service ledge is folded and stored in a well in the cabinet when the counter is closed.

The preferred embodiment is also provided with a rigid steel underframe to prevent damage to the counter during handling by a forklift or the like.

Thus, the folding counter of the present invention provides a sturdy, attractive counter having considerable work and shelf space when in use and which can be folded into a relatively compact and rigid structure for movement and storage.

DESCRIPTION OF THE DRAWINGS

FIG. **1** is a perspective view of the folding counter of the present invention shown in the folded condition;

FIG. **2** is a section taken along the lines **2–2** of FIG. **1**;

FIG. **3** is a top plan view of a cover for covering the service ledge well in the cabinet of the counter during use;

FIG. **4** is a section taken along the lines **4–4** of FIG. **2**;

FIG. **5** is a perspective view of the opened counter of the present invention;

FIG. **6** is a rear elevational view of the opened counter;

FIG. **7** is a fragmentary sectional view from the rear of the counter, to a large scale, showing intermediate positions of the shelves in phantom outline;

FIG. **8** is an enlarged detailed view of the area enclosed by circle **8** of FIG. **7**;

FIG. **9** is an enlarged detailed view of the area enclosed by the circle **9** of FIG. **7**;

FIG. **10** is a fragmentary perspective view of a hinge construction for the folding panels of the counter;

FIG. **11** is a perspective view of the underframe construction for the counter of the present invention shown in the opened condition;

FIG. **12** is a top plan view of the underframe, one side being shown in the closed condition and the other side being shown in a position intermediate between the closed and the opened condition; and

FIG. **13** is an enlarged sectional view taken along the lines **13–13** of FIG. **12**.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring now to the drawings, particularly FIGS. **1** and **5** thereof, a folding counter **20** constructed according to the present invention is shown both in the closed and in the opened condition, respectively. The counter **20** is preferably constructed of wood but other materials may be used. Generally, the counter **20** has a base or central cabinet **22** with a center front panel **32**. The extensible-retractable front panels of the illustrated embodiment are a pair of folding panels **28** attached to each side of the front panel **32**. A pair of side housings **24** are attached to the external edges of the folding panels **28**. The side housings are moveable toward or away from the sidewalls of the cabinet to close or open the counter **20**, respectively.

The side housings **24** are adapted to house vertically nested top **34**, middle **36**, and bottom **38** shelves when the counter **20** is closed, as shown in FIG. **2**. When the counter **20** is opened, the shelves are moved to appropriate horizontal positions to form work and shelf areas, and the folding front panels **28** are aligned in a substantially planar relationship with the center front panel **32** to form an attractive frontal surface for the counter **20**.

To form a counter area along upper edge **40** of the opened front panels **28**, **32** and to aid in maintaining the planar relationship of the panels, a removable elongated service ledge **42** is provided which is disposed along the upper edges of the panels when the counter **20** is opened, as shown in FIG. **5**. When the counter **20** is closed, the service ledge **42** is stored in a well **44** provided in the central cabinet **22**, as shown in FIG. **2**.

The counter **20** is sufficiently sturdy for relatively rough handling, especially when closed, and casters **48** may be mounted under the cabinet **22** and side housings **24** to facilitate moving the counter. In some cases, however, additional structural rigidity is desired if the counter **20** is to be repeatedly moved by mechanical means such as a forklift. In such cases, the counter is preferably mounted on an underframe **46**, constructed of rectangularly shaped steel members, which is best seen in FIGS. **10** and **11**. The casters **48** are then provided on the underframe **46** for easy movement of the counter **20**. When the counter **20** is opened or closed, the portions of the underframe **46** on which the side housings **24** are mounted extend outwardly from a center section by means of telescoping members **118** which serves as a guide to maintain the substantially parallel alignment of the side housings with cabinet **22**.

It should be appreciated that, while the illustrated preferred embodiment has side housings **24** and folding panels **28** on each side of the cabinet **22**, the counter **20** can be constructed with only one side housing if desired.

The center cabinet **22** of the folding counter **20** serves as a rigidly constructed base on which to mount the moveable panels **28** and side housings **24** of the counter. While the center cabinet **22** may take many forms with structural rigidity being the only major requirement, the cabinet **22** of the illustrated presently preferred embodiment is generally rectangularly shaped as shown in FIGS. **2**, **6** and **7**, and has a drawer **50**

and adjustable shelf 52 for convenience. The top 54 of the cabinet 22 as well as the drawer 50 and shelf 52 may be utilized even though the counter 20 is folded, thereby adding to the utility of the counter.

As shown in FIG. 7, the cabinet 22 is generally constructed with a pair of generally rectangular sidewalls 26 spaced by a top 54, a drawer shelf 56 and a bottom shelf 58 which is reinforced with blocks 60. Lower ends 62 of the sidewalls 26 of the cabinet 22 rest on central cross members 64 of the center section of the underframe 46.

The drawer 50 rests on the drawer shelf 56 and a tilt bar 66 attached to the underside of the top 54 of the cabinet 22 prevents the drawer from tilting downwardly too far when pulled out. The adjustable shelf 52 is mounted between the drawer shelf 56 and the bottom shelf 58 with its height being adjustable by means of removable brackets 68 which cooperate with tracks (not shown) on the inside of the sidewalls 26 of the cabinet 22.

The center front panel 32 is attached to the front of the cabinet 22 and extends above the top 54 of the cabinet to a height determined partially by the use to which the counter 20 is to be put. The length of the shelves 34, 36, 38 which are preferably nested within the side housings 24, is also governed by the height of the front panels 28, 32 so that a balance must be selected between the desired overall length of the opened counter 20 and its height.

The width of the center front panel 32 is greater than the width of the cabinet 22 in order to mount a series of hinges 70 attaching the folding front panels 28 to the center front panel 32. The additional width of the center front panel 32 also allows the folding panels 28 to clear three shelf stops 72 and catches 74 mounted on the outside of the sidewalls 26 of the cabinet 22, as shown in FIG. 7.

Each of the folding panels 28 have two sections which are hingedly attached to the center front panel 32 and the front end wall of the side housing 24. It should be appreciated, however, that multiple-folded panels may be used in alternate constructions. The folding panels 28 are adapted to be folded inwardly between the side housings 24 and cabinet 22. The joints between the panels are preferably provided with decorative grooves to substantially hide the joints and hinges and to give the counter 20 the appearance of a nonfoldable counter when it is opened.

The hinges 70 connecting the folding panels 28 to the front end wall 30 of the side housing 24 and the center front panel 32 may be ordinary leaf hinges but the hinges 76 in the center of the folding panels are link leaf hinges, as shown in FIG. 10, to hide these hinges from view when the counter 20 is opened. The link leaf hinge 76 shown in FIG. 10 is constructed so that, when the front panels 28 are folded, links 78 in the hinge separate allowing the panels to align themselves substantially parallel as shown in FIG. 2. While the link leaf hinge 76 has been selected for the illustrated preferred embodiment, any hinge which can be inwardly folded so that the panels 28 are substantially parallel can be successfully utilized.

The shelves 34, 36, 38 may be arranged for storage in the closed counter in many different ways or remain separate from the counter 20, entirely. In the illustrated preferred embodiment, each side housing 24 is adapted to vertically nest the shelves which can then be moved to their respective horizontal positions when the counter 20 is opened. The nesting arrangement for the shelves 34, 36, 38 is most clearly shown in FIGS. 2 and 7. Two of the shelves, the top shelf 34 and middle shelf 36, each have an end hingedly attached to generally rectangularly shaped follower bars 80 having spaced pins 82 in their ends which ride in tracks 84 in front 30 and rear 86 end walls of the side housing 24. The bottom shelf 38 is simply hinged to a bottom wall 88 of the side housing 24. One end of each of the shelves 34, 36, 38 is then either fixed or slideably held within the side housing 24 preventing loss or misplacement of the shelves which could occur if the shelves were loose.

As is most clearly seen in FIG. 7, the counter 20 is opened by pulling the side housings 24 away from the center cabinet 22 to unfold the folding panels 28. The bottom shelf 38 may then be hinged downwardly so that its free end rests on the bottom shelf stop 72 with its end substantially abutting the sidewall 26 of the cabinet 22.

It should be noted that when the top and middle shelves 34, 36 are in their vertically nested position, a pair of sides 90 for the top shelf 34 are in a blocking relationship with the tracks 84 for the follower bar 80 of the middle shelf 36, as shown in FIG. 2. Therefore, when placing the top and middle shelves 34, 36 in position, the top shelf is first pulled upwardly along its track 84 to an intermediate position, as shown in the phantom lines of FIG. 7. It will thus be seen that the sides 90 of the top shelf 34 are then clear of the track 84 for the middle shelf 36. For convenience, the top shelf 34 may be maintained in the intermediate position by means of a peg 92 set in the folding panel 28 which cooperates with a hooked notch 94 cut into the side 90 of the top shelf adjacent the panel.

The middle shelf 36 may then be pulled upwardly to bring its follower bar 80 to the top of the track 84. As shown in FIG. 4, the top of each track 84 has an upper offset 96 angled toward the outside wall 97 of the side housing 24, and an inward offset 98 slightly lower down in the track 84.

The spacing between the upper and lower offsets 96, 98 is adjusted to the spacing between upper and lower pins 82 on the ends of the follower bars 80 so that when the upper pin reaches the upper offset, the lower part of the follower bar, including the lower pin, may be pivoted into the lower offset. When the follower bar 80 is then allowed to drop slightly, the follower bar is locked in position within the track 84 which in turn fixes one end of the middle shelf 36.

After the follower bar 80 for the middle shelf 36 is locked in position, the remainder of the shelf is lowered into position against the middle shelf stop 72 with the end of the shelf in abutment with the sidewall 26 of the cabinet 22. The top shelf 34 is then removed from its intermediate position and its follower bar 80 in turn pulled to the top of its track 84 and locked in position. The top shelf 34 is then lowered into position against the top shelf stop 72 in abutment with the sidewall 26 of the cabinet 22. The top shelf 34 is then removed from its intermediate position and its follower bar 80 in turn pulled to the top of its track 84 and locked in position. The lower edge of the side 90 of the top shelf 34 can pivot about the peg 92 to aid in raising the follower bar 80 into its locking position. The top shelf 34 is then lowered into position against the top shelf stop 72 in abutment with the sidewall 26 of the cabinet 22. The shelves 34, 36, 38 may be locked in position by means of spring catches 74 mounted on the shelf stops 72 which cooperate with clips 102 attached to the shelves, as shown in FIG. 9.

As mentioned above, to provide a work surface along the upper edge 40 of the front panels 28, 32 as well as to maintain the planar relationship between the panels, a service ledge 42 is provided which has a groove 102 centrally located in one side of the ledge which fits over the upper edge 40 of the front panels. The service ledge 42 fits between top walls 104 of the side housings 24 and locks in position by means of sliding bolt latches 106 at either end of the ledge, as shown in FIG. 8. When the counter 20 is closed, the illustrated service ledge 42 is centrally folded by means of leaf link hinges 108, as shown in FIG. 8, and the folded ledge is stored in the well 44 in the front part of the cabinet 22, as shown in FIG. 2. Depending on its length, it will be appreciated that the service ledge 42 may also have multiple folds. The well 44 has a pair of ribs 110 mounted along its front and back sides 112, 114 which fit into the grooves 103 in the service ledge 42 to prevent excessive movement of the ledge as the counter 20 is moved from place to place. When the service ledge 42 is in use, the opening of the well 44 is closed by means of a small cover 116, shown in FIG. 3, to provide an uninterrupted work surface for the counter 20.

As mentioned above, while the closed counter **20** is comparatively structurally rigid, it is preferable in some cases to reinforce the bottom of the counter so that it will not be damaged when moved by mechanical means, such as with a forklift.

To this end, the underframe **46** for the counter **20** is generally constructed as shown in FIGS. **11**, **12** and **13** of steel or a similar metal. The underframe **46** has a pair of rectangular front and rear telescoping members **118** with a pair of center crossmembers **64** maintaining the telescoping members in parallel relationship. The fixed portions of each of the telescoping members **118**, together with the two crossmembers **64**, forms the center section of the underframe **46** on which the cabinet **22** is mounted. At each end of the telescoping members **118** is a movable crossmember **122** on which the side housing **24** are mounted. The center section and the two movable crossmembers **122** are provided with casters **48** so that the counter **20** may be easily moved. Only one telescoping member **118** is provided for each movable crossmember **122** because they are needed mainly to aid in maintaining the proper substantially parallel alignment between the side housings **24** and the center cabinet **22** as the counter **20** is opened or closed. The shelves **34**, **36**, **38** and the front panels **28**, **32**, held in place by the service ledge **42**, provide structural rigidity for the opened counter **20**.

As shown in FIG. **12**, when the counter **20** is closed, the movable crossmembers **122** are substantially connected together with the telescoping members **118** and the center crossmembers **64** of the underframe **46** to form a structurally rigid bottom for the counter. The free end of the movable cross members **122** have a pair of inserts **124** which extend into the open ends of the telescoping members **118** for added structural rigidity when the underframe **46** is closed. When the counter **20** is closed, the side housings **24** are locked against movement by a pair of locking pins **126** keyed through aligned holes **128** in the telescoping members **118**.

The telescoping members **118** are formed with three generally rectangular sections of diminishing size so that they telescope within each other as shown in FIG. **13**. The two smaller sections each have a groove **136** in their upper surface which cooperates with a pin **138** extending downwardly from the next larger section, as shown in FIG. **13**, to prevent the telescoping sections from being pulled completely apart.

To open the folding counter **20**, the two locking pins **126** are first pulled out of the aligned holes **128** in the telescoping members **118** of the underframe **46** and each side housing **24** is pulled away from the center cabinet **22**. The bottom shelf **38** on each side is then dropped into position and locked. The top shelf **34** is then pulled upwardly into its intermediate position and the hooked notch **94** in the side of the top shelf locked over the peg **92** in the front panel **28** to maintain the shelf in the intermediate position. The middle shelf **36** is then pulled upwardly until its follower bar **80** reaches the top of its track **84** and the lower end of the bar is pivoted into the lower offset **98** and lowered to lock the bar in position. The middle shelf **36** may then be lowered to its horizontal position and locked. The top shelf **34** is then moved off the peg **92** and its follower bar **80** moved to the top of its track and pivoted to lock the follower bar in position. The top shelf **34** is then lowered into position and locked. The steps are repeated for the other side of the counter **20**.

The service ledge **42** is removed from the well **44** in the center cabinet **22**, unfolded and placed in position on top of the upper edge **40** of the front panels **28**, **32**. The service ledge **42** is locked in position by means of the sliding bolt latches **106** at either end of the ledge. The small cover **116** may then be put in position over the well **44** in the center cabinet **22**. Thus, when it is opened, the counter **20** is structurally rigid and has the appearance of an unfolded counter.

To close the counter **20** the steps are merely reversed.

While a preferred embodiment of the folding counter **20** of the present invention has been described in detail, it will be appreciated that any variations in the structure of the counter may be made and still be within the scope of the present invention.

I claim:

1. A folding counter comprising:
- a cabinet having a vertical front panel;
- an extensible-retractable front panel cooperative with said vertical front panel to form a frontal surface for said counter when said counter is opened;
- a side housing hingedly connected to an external edge of said extensible-retractable front panel, said side housing being moveable toward and away from said cabinet in a substantially parallel relationship therewith to close and open said counter, respectively; and
- at least one shelf horizontally disposed between said side housing and said cabinet providing a horizontal work surface for said folding counter when said folding counter is opened.

2. The folding counter of claim **1** including an underframe, said cabinet and said side housing being mounted on said underframe, said underframe having a telescoping member between said side housing and said cabinet.

3. The folding counter defined in claim **1**, including a folding service ledge selectively disposable along the upper edge of said extensible-retractable front panel and said front panel on said cabinet when said counter is opened.

4. The folding counter of claim **3**, wherein said cabinet includes a storage well for selectively receiving said folding service ledge.

5. The folding counter of claim **1**, wherein said shelf is vertically stored within said side housing when said counter is closed said shelf including a follower bar hingedly connected to one end thereof; and said side housing including tracks for slidably receiving said follower bar, said tracks having means for locking said follower bar in a predetermined position within said tracks.

6. A folding counter comprising:
- a central cabinet having a vertical center front panel having vertical edges;
- a pair of generally rectangular folding front panels hingedly connected to said vertical edges of said center front panel, said folding front panels being foldable to a position generally adjacent to the sides of said cabinet when said counter is closed and being generally coplanar with said center front panel when said counter is opened;
- a pair of side housings hingedly connected to external edges of said folding front panels, said side housing being generally disposed parallel to the sides of said cabinet and moveable toward and away from said cabinet to close and open said counter, respectively;
- a set of top, middle and bottom shelves vertically nested within each of said side housings for storage;
- means for horizontally disposing said top, middle and bottom shelves at spaced vertical intervals between said side housing and said central cabinet, said top shelves providing a horizontal work surface when said folding counter is opened.

7. The folding counter of claim **6**, wherein said shelves are substantially as long as the height of said side housings.

8. The folding counter of claim **6**, wherein each of said top and middle shelves includes a follower bar hingedly connected to one end thereof and said side housing includes tracks for slidably receiving said follower bar.

9. The folding counter of claim **8**, wherein said tracks have offsets substantially at the upper ends thereof and said follower bars have pins which are slidably received within said tracks and cooperate with said offsets to lock said follower bars in position substantially at the upper ends of said tracks.

10. The folding counter of claim **6**, including a folding service ledge selectively disposable along the upper edges of said center front panel and said folding front panels when said counter is opened.

11. The folding counter of claim **10**, wherein said cabinet includes a storage well for selectively receiving said folding service ledge.

12. The folding counter of claim 6, including an underframe on which said cabinet and said side housings are mounted, said underframe having telescoping members between said side housing and said cabinet.

13. A folding counter comprising:

a cabinet having a vertical front panel;

an extensible-retractable folding front panel cooperative with said vertical front panel to form a frontal surface for said counter when said counter is opened;

a side housing hingedly connected to an external edge of said extensible-retractable front panel, said side housing being moveable toward and away from said cabinet to close and open said counter, respectively, an underframe, said cabinet and said side housing being mounted on said underframe, having a telescoping member between said side housing and said cabinet;

at least one shelf horizontally disposed between said side housing and said cabinet when said folding counter is opened; and

a folding service ledge selectively disposable along the upper edge of said folding front panel and said front panel on said cabinet when said counter is opened.

14. A folding counter comprising:

a central cabinet having a vertical center front panel having a vertical edges;

a pair of generally rectangular folding front panels hingedly connected to said vertical edges of said center front panel, said folding front panels being foldable to a position generally adjacent to the sides of said cabinet when said counter is closed and being generally coplanar with said center front panel when said counter is opened;

a pair of side housings hingedly connected to the external edges of said folding front panels, said side housings being generally disposed parallel to the sides of said cabinet and moveable toward and away from said cabinet to close and open said counter, respectively;

top, middle and bottom shelves adapted to be vertically nested within each of said side housings for storage, follower bars in said side housing hingedly connecting one end of each of said top and said middle shelves, tracks in said side housings, said follower bars riding in said tracks, and said bottom shelves being hingedly connected to said side housings said top, said middle and said bottom shelves being horizontally disposed at spaced vertical intervals between said side housing and said central cabinet when said folding counter is opened;

a folding service ledge, selectively disposable along the upper edges of said center front panel and said folding front panels when said counter is opened; and

an underframe on which said cabinet and said side housings are mounted, said underframe having telescoping members between said side housing and said cabinet.