United States Patent [19]

Bue et al.

[11] **3,861,325**

[45] **Jan. 21, 1975**

[54] **CONVERTIBLE FOLDING TABLE-CARREL UNIT**

[75] Inventors: **Richard C. Bue; Kermit H. Wilson,** both of Minneapolis, Mich.

[73] Assignee: **Sico Incorporated,** Minneapolis, Minn.

[22] Filed: **Aug. 13, 1973**

[21] Appl. No.: **387,647**

Related U.S. Application Data

[63] Continuation of Ser. No. 267,064, June 28, 1973, abandoned.

[52] **U.S. Cl.** **108/13,** 108/60, 108/99, 108/113, 312/258

[51] **Int. Cl.** **A47b 85/00**

[58] **Field of Search** 108/33–36, 108/39, 50, 59–64, 99, 111, 112, 152, 13; 248/240.4; 211/149; 312/140.1, 140.2, 258, 262; 160/135, 351

[56] **References Cited**

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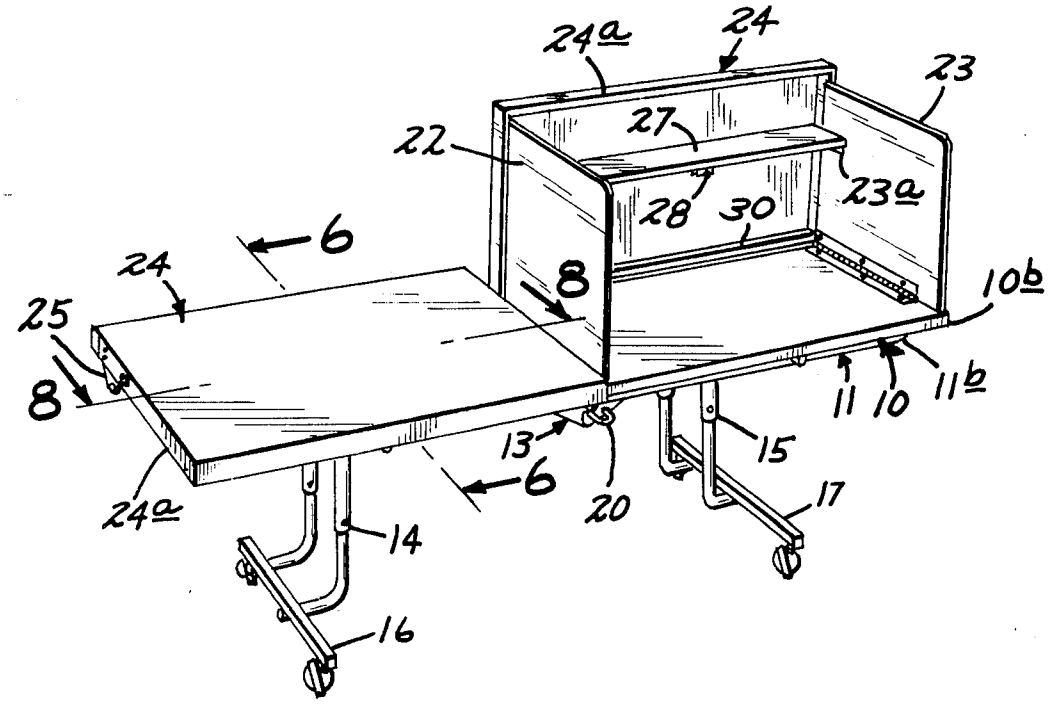
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Assistant Examiner—William E. Lyddane
Attorney, Agent, or Firm—Merchant, Gould, Smith & Edell

[57] **ABSTRACT**

A folding table is disclosed having a pair of top sections pivotally connected for movements between horizontal use positions and generally vertical storage positions. Each top section is provided with folding walls to form a study carrel. These include a pair of side walls pivotally connected to each end thereof for movements between storage positions against the top section and vertical use positions. A back wall member is pivotally mounted on each top section for movements from a vertical position to a horizontal table-top forming position overlying the folded side walls. The back wall member has a peripheral frame which acts as an outer stop means for the vertical side walls and also has an inner shelf which folds down to hold the side walls against the stop means.

1 Claim, 8 Drawing Figures



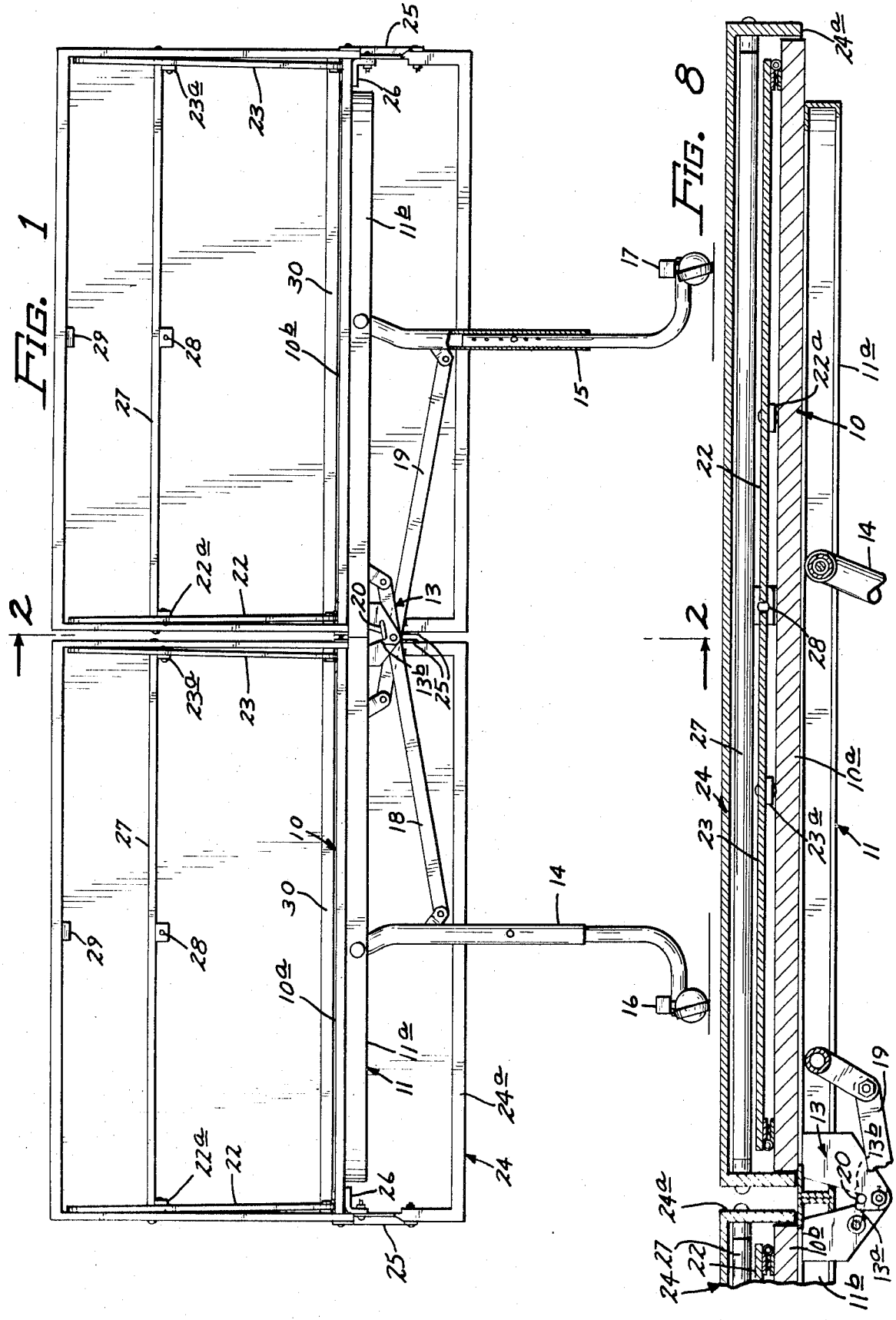

Fig. 1
Fig. 8
2
2
25
26
23a
23
11b
30
17
29
28
10b
15
27
19
22a
22
20
13
13b
25
18
10
10a
14
16
11
11a
24
24a
12
13a

FIG. 2

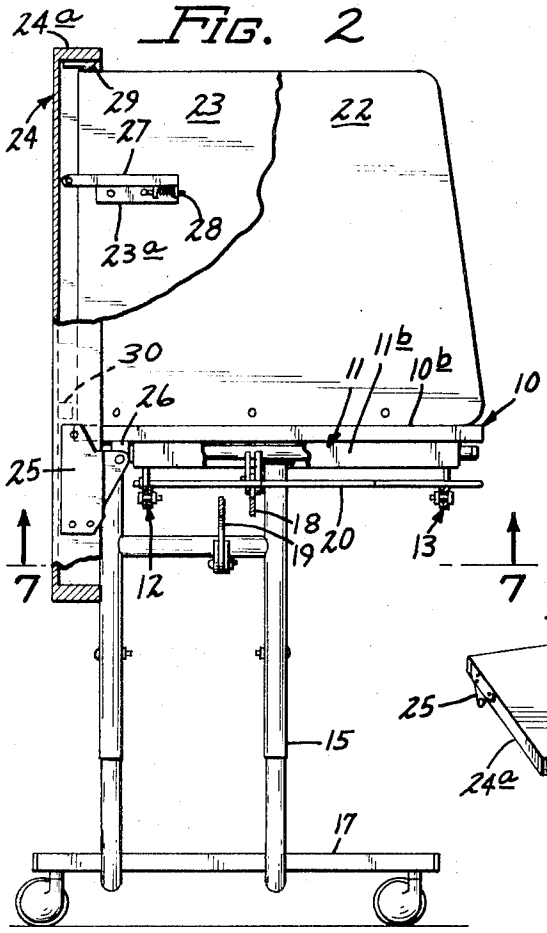


FIG. 7

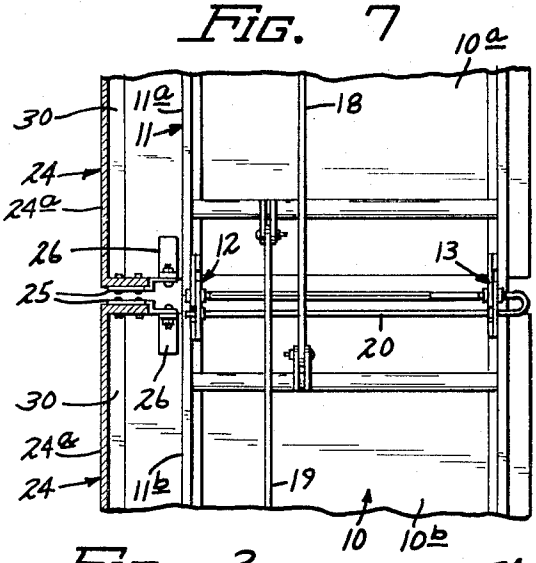


FIG. 3

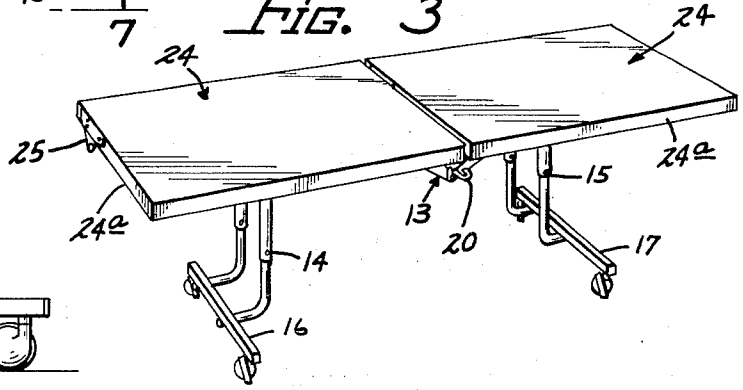


FIG. 4

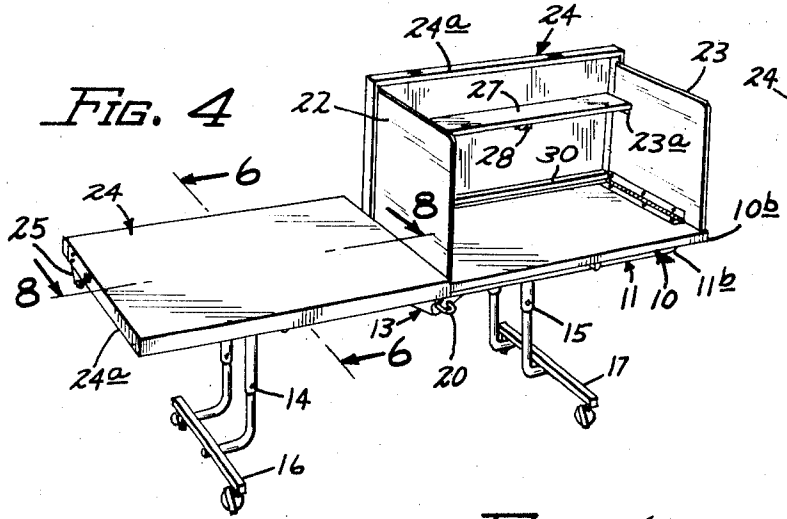


FIG. 5

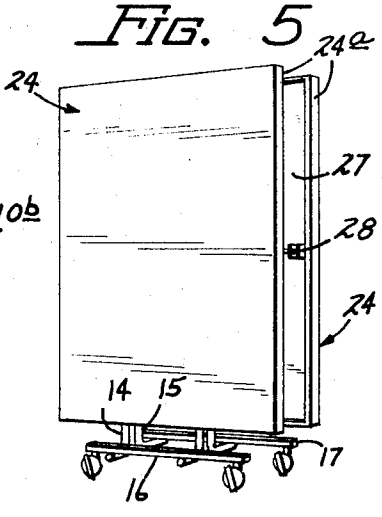
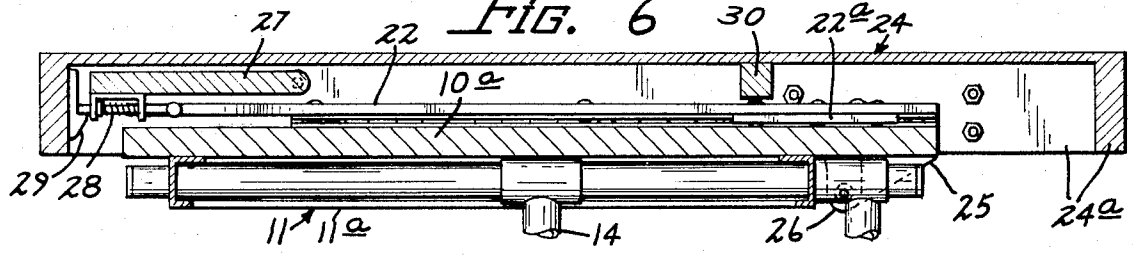


FIG. 6



CONVERTIBLE FOLDING TABLE-CARREL UNIT

This is a continuation of application Ser. No. 267,064, filed June 28, 1973, now abandoned.

BACKGROUND OF THE INVENTION

1. Field of the Invention

This invention relates generally to the field of convertible furniture and more particularly relates to a table-carrel unit convertible from a flat table having two hinged sections to a folded table for storage or divider wall usage, or a two-station carrel.

2. Description of the Prior Art

Carrels are often used in schools today to provide privacy for students, especially in the use of audio-visual equipment. In some cases, carrels are built with permanently affixed partitions, but in other cases, the partitions are movable or foldable to permit the unit to also be used as a desk or table. Because of the high cost of furnishing modern schools, it is important that the furniture be capable of use for different purposes. While the prior art has recognized the need for this convertibility feature, the different approaches that have been taken to making the units convertible have not always been practical from a manufacturing standpoint or from the standpoint of durability over a period of long usage. Typically, the prior art units require complicated latching mechanisms or the like to retain the various moveable partitions in their carrel-forming positions. These latching or locking mechanisms make the units more difficult and expensive to manufacture, they tend to provide a distraction for students using the unit, and they tend to become inoperable after a period of usage. Because of their relative complexity, many prior art units have been unsuitable for use by unskilled students. Other structures have been unsafe for use in a classroom situation because of their heavy construction, and their insecure hinging and locking mechanisms.

SUMMARY OF THE INVENTION

The unit of the present invention can be converted from a two-station carrel to a flat table. The flat table can be folded for storage. In the storage position, the unit can be used as a mobile divider wall. In the preferred embodiment shown in the drawings, the folding table has two hinged sections, each of which can be used either as a single table or as a carrel. Each side of the unit functions independently of the other side.

In addition to its versatility, the unit is simple, reliable and safe to use. The unit is designed so that no complicated locking mechanisms are required to hold the unit in the carrel position. The wall partitions are interrelated so that they cooperate to hold each other in their carrel-forming positions. Because no mechanical lock is used to hold the partitions in their carrel-forming positions, there is no likelihood that a malfunction will occur that will permit the partitions to collapse. Only by intentionally moving the shelf from its horizontal shelf position to its storage position can the unit be made to fold down to the table position. Because of the simplicity of its construction, even the most unskilled student can master the technique without difficulty. These and other features of the present invention will become evident in the following description of the preferred embodiment.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** is a view in front elevation of a convertible study unit according to the present invention, in the configuration providing two side-by-side carrels;

FIG. **2** is a sectional view taken along line **2—2** of FIG. **1,** portions thereof being broken away;

FIG. **3** is a perspective view, on a smaller scale, of the convertible unit in the configuration providing a flat table;

FIG. **4** is a perspective view on the scale of FIG. **3,** showing one of the table sections in the carrel configuration and the other table section in the flat table configuration;

FIG. **5** is a view in perspective of the convertible study unit folded to the storage position;

FIG. **6** is an enlarged sectional view taken along line **6—6** of FIG. **4,** portions thereof being broken away;

FIG. **7** is a sectional view taken along line **7—7** of FIG. **2,** showing the bottom of the unit, portions thereof being broken away; and

FIG. **8** is an enlarged vertical sectional view taken along line **8—8** of FIG. **4,** portions thereof being broken away.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring now to the drawings, wherein like reference numerals are used throughout the several views to indicate like elements of the invention, there is disclosed in FIG. **1** a convertible study unit having a table top **10** comprising two top sections **10***a* and **10***b*. Table top **10** is supported in a generally horizontal position by a frame **11** comprising two frame sections **11***a* and **11***b* secured to the bottom thereof. Frame sections **11***a* and **11***b* are connected together by a pair of hinges **12** and **13** that permit the frame sections and table top sections to be folded from the coplanar position shown in FIG. **1** to generally vertical, parallel storage positions shown in FIG. **5.** Connected intermediate the ends of the frame sections **11***a* and **11***b* are pairs of leg members **14** and **15.** Leg members **14** and **15** are pivotally connected to the frame sections at their upper ends. The bottom portion of each leg member is generally L-shaped, with the generally horizontally extending bottom leg portion extending outwardly away from the center of the table. Crossbars **16** and **17** are secured to the outermost ends of the leg members **14** and **15** respectively. A pair of caster wheels are attached to the ends of each crossbar. This construction, and especially the L-shaped leg members, provide a stable support for the unit in the divider wall or storage position shown in FIG. **5.** As shown in FIG. **1,** each of the leg members **14** and **15** is made from two telescoping parts having matching holes so that the height of the table can be adjusted.

To hold the leg members **14** and **15** in a proper relationship, each is provided with a link member **18** and **19** respectively, which is pivotally connected from the leg member to a point on the opposite table top section. The linkage **18** and **19** is designed to retain the leg members **14** and **15** in generally vertical positions as the table is folded from the horizontal position of FIG. **3** to the vertical position of FIG. **5.**

A generally U-shaped rod **20** is provided to lock the table in the horizontal position. One leg of the rod **20** extends through suitable openings formed in one side

of each of the hinges **12** and **13.** These aligned openings act as pivot points for the rod **20.** The other leg of the U-shaped rod **20,** which is shorter, can be pivoted downwardly between a pair of ears **13***a* and **13***b* on hinge **13,** as best shown in FIG. **8,** which tightly engage the rod **20** if the table is lifted at its center. In order to fold the table, the rod **20** is simply rotated about its longer leg to remove the short leg from between the ears **13***a* and **13***b*.

It will be here noted that each of the top sections **10***a*, **10***b* is provided with identical parts for forming their respective carrels and such parts will carry like identification in the following description. However, in the interest of brevity, only those parts associated with top **10***a* will be described in detail. Each of the table top sections is rectangular in shape, and can be considered to have an inner end edge adjacent the hinges **12** and **13,** and an outer end edge opposite therefrom. The top sections also have front and back edges, with the front edges being shown in FIG. **1.** A pair of side walls **22** and **23** are connected by hinges to the top surface of top section **10***a* directly adjacent the inner and outer edges thereof. As shown in FIG. **2,** the side walls **22** and **23** have a bottom edge which is substantially equal in length to the width of its corresponding top section. The rear edge of the side walls is perpendicular to the bottom edge, but the front edge slopes rearwardly so that the top edge is somewhat shorter than the bottom edge. Because of the hinged connection, each side wall **22** and **23** is moveable between a storage position in which it is folded downwardly against the top section **10***a*, as best shown in FIGS. **6** and **8,** and a vertical use position as shown in FIG. **1.** In their use positions, the side walls **22** and **23** are generally parallel to each other.

A back wall member **24** is pivotally connected to the top section **10***a* for movements between an open position as shown in FIGS. **1** and **2** in which it is vertically disposed along the back edge of and extends partly below the horizontal top section **10***a*, and a closed position in which it overlies the folded side walls **22** and **23,** as shown in FIGS. **4, 6** and **8,** for example. Back wall member **24** has a peripheral frame **24***a* secured to the edges thereof so as to form a generally rectangular, box-like back wall member, which in the closed position has the frame extending downwardly around the edges of the side walls **22** and **23** and the top section **10***a* to hide such edges from view. The pivotal connection between the back wall member **24** and the top section **10**a is provided by a pair of metal bracket members **25** attached to the opposite ends of the peripheral frame **24***a* and a pair of brackets **26** secured to the bottom surface of top section **10***a* adjacent the inner and outer end edges thereof. The corresponding pair of brackets **25** and **26** are connected together by a bolt or pin permitting the pivotal movements therebetween. In the open, vertical position of back wall member **24,** as shown in FIG. **2,** the rear portion of the peripheral frame **24***a* abuts the rear leg member **15** to limit the pivotal movement of back wall member **24.**

Another feature of the end portions of the peripheral frame **24***a* is that they act as stop means for the vertical side walls **22** and **23** to prevent outward swinging movements thereof. As shown in FIG. **2,** the side walls have their back edges extending into the box-like back wall member so that they strike the inner surfaces of the peripheral frame **24***a* as they are swung upwardly to the open position. To prevent the side walls **22** and **23** fromcollapsing inwardly, a shelf **27** is pivotally connected by means of suitable pins at its opposite ends between the opposite end portions of the frame **24***a*. The shelf **27** can thus be pivoted between a storage position shown in FIG. **6** in which it lies against or adjacent to an undersurface of the back wall member **24,** and a shelf position as shown in FIGS. **1** and **2** in which it extends horizontally outwardly from the open back wall member **24.** In the horizontal shelf position shown in FIGS. **1** and **2,** the opposite ends of the shelf **27** engage the vertical side walls **22** and **23** to securely hold the side walls against the stop means defined by the peripheral frame **24***a*. The side walls **22** and **23** have shelf stop members **22***a* and **23***a* respectively, secured thereto, to support the shelf **27** in the horizontal shelfforming position. To hold the shelf in the storage position, it is provided with a spring-loaded latch **28** which cooperates with a corresponding latch strike **29** mounted on the inner surface of the top portion of the peripheral frame **24***a*, as best shown in FIG. **6.**

To fold the carrel shown in FIG. **1** to the table position shown in FIG. **4,** the shelf **27** is first folded upwardly to its storage position against the undersurface of back wall member **24.** This permits the two side walls **22** and **23** to be folded downwardly against the top section **10***a*. Then, the back wall member **24** can be folded forwardly over the folded side walls to the position shown in FIG. **4.** In this position, the upper surface of the back wall member acts as a usual or normal table surface.

As previously indicated, the carrel unit formed on top of top section **10***b* is constructed in identical fashion, so it need not be discussed in detail here. As shown in FIG. **4,** the two carrel units can be independently operated so that use of one is not dependent upon use of the other. Both of the carrel units can be folded down as in FIG. **3** to form a large table. The large table of FIG. **3** can then be folded about the hinges **12** and **13** to the position shown in FIG. **5,** so that the entire unit can be stored in a small space, or used as a divider wall. Typically, a number of these units would be placed side-by-side to form a long divider wall. These divider walls can be used in cafeterias or the like to divide a large area into semi-private spaces.

A barrier strip **30** is secured to the undersurface of the back wall member **24,** between the back wall member and a rear edge of the top section **10**a to effectively close the gap therebetween when the back wall member **24** is in its open position. When the back wall member **24** is folded downwardly, this barrier strip **30** engages the surface of the folded down side walls **22** and **23** to provide added support for the table top, as shown in FIG. **6.**

The present invention thus provides a convertible table-carrel-divider wall unit which is relatively simple in construction, easy to manufacture and simple to operate. These and other features of the present invention are more fully defined in the appended claims.

What is claimed is:

1. A convertible table-carrel unit comprising:

a. a top section having a back edge and opposite end edges;

b. base means for supporting said top section in a generally horizontal plane;

c. a pair of side walls having inner and outer surfaces, said side walls being oppositely hinged to said top

section along lines adjacent and parallel to said end edges for upward and outward pivotal movement from inward, closed storage positions, folded downwardly with said inner surfaces against and parallel to said top section, to open parallel carrel forming positions perpendicular to said top surface along the ends thereof;

d. a back wall member pivotally connected to said top section for movement between an open, carrel-forming position in which it is vertically disposed along said back edge of and extends partly below said top section, and a closed, table-forming position in which it overlies the side walls in their inwardly and downwardly folded storage positions;

e. a peripheral frame secured to the edges of said back wall member, which in the closed position of the back wall member extends downwardly to hide the edges of the side walls and top section, the opposite ends of said peripheral frame providing stop members having inner surfaces thereon and extending forwardly from said back wall member in the open position thereof, the distance between the inner surfaces of said stop members being the same as the distance between the outer surfaces of said side walls in the open positions thereof so that in the open position of said back wall member said stop members limit said upward and outward movement of said side walls;

f. shelf means hinged longitudinally to said back wall member for pivotal movement between a closed position parallel thereto and an open position extending horizontally forward from said back wall member in the open position thereof, between said side walls, the length of said shelf means being the same as the distance between the inner surfaces of said side walls in their open positions, whereby said side walls are gripped between said stop members and the ends of said shelf means in the open position of said back wall member, said side walls, and said shelf means;

g. and means carried by said side walls on the inner surfaces thereof for limiting the forward pivotal movement of said shelf means.

* * * * *

UNITED STATES PATENT OFFICE

CERTIFICATE OF CORRECTION

PATENT NO. : 3,861,325
DATED : Jan. 21, 1975
INVENTOR(S) : Richard C. Bue; Kermit H. Wilson

It is certified that error appears in the above-identified patent and that said Letters Patent are hereby corrected as shown below:

On the cover sheet item [73] should read as follows:

[73] Assignee: Sico Incorporated, Minneapolis, Minn., Assignee of the Entire Interest of Richard C. Bue

Signed and sealed this 15th day of July 1975.

(SEAL)
Attest:

RUTH C. MASON
Attesting Officer

C. MARSHALL DANN
Commissioner of Patents
and Trademarks