Jan. 17, 1950 W. J. DOBKIN 2,494,798

FOLDING SHELF

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Fig. 1.

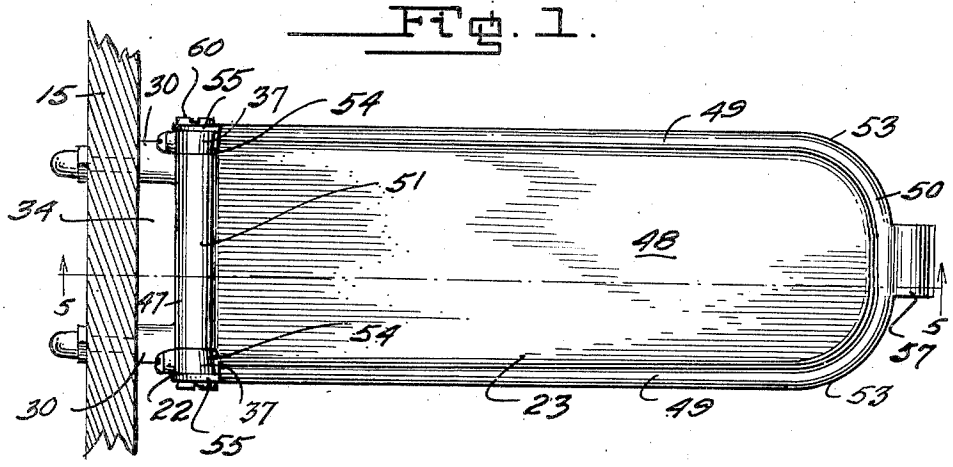


Fig. 2.

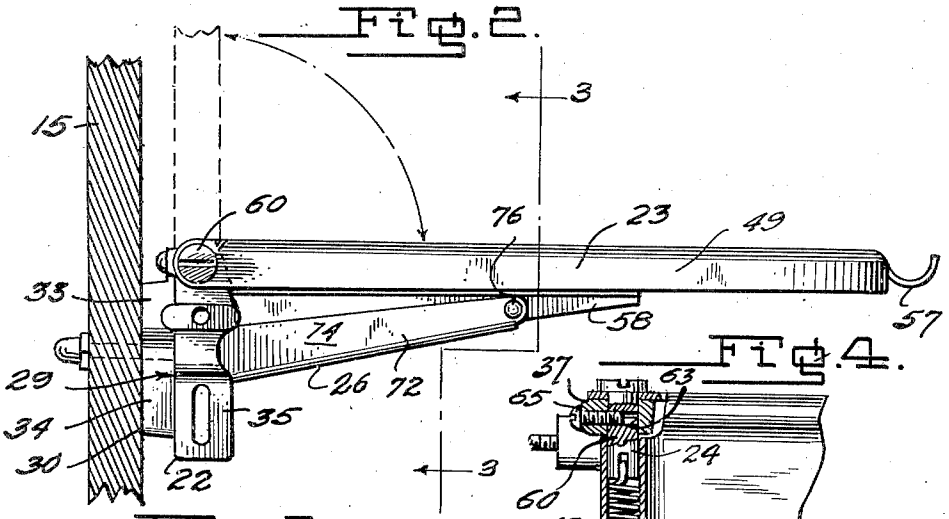


Fig. 3.

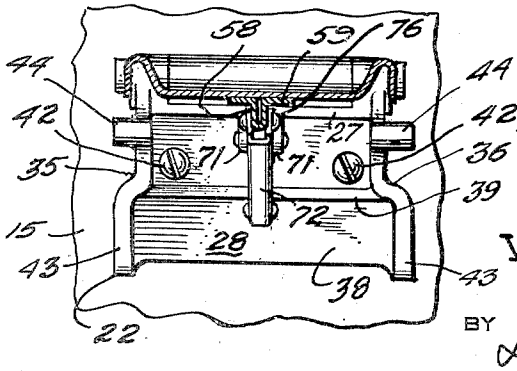
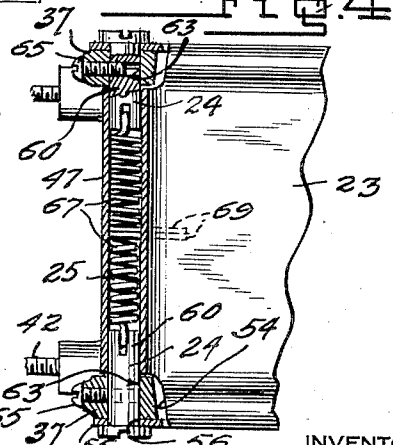


Fig. 4.



INVENTOR.
William J. Dobkin

BY Lancaster, Allwine and Rommel
ATTORNEYS.

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Fig. 5.

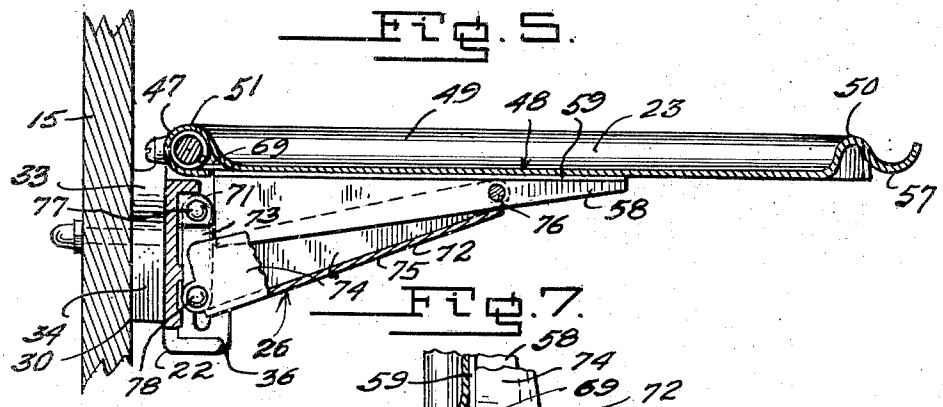


Fig. 7.

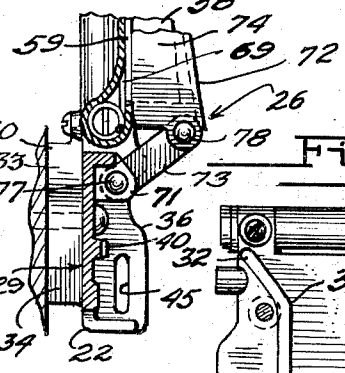


Fig. 6.

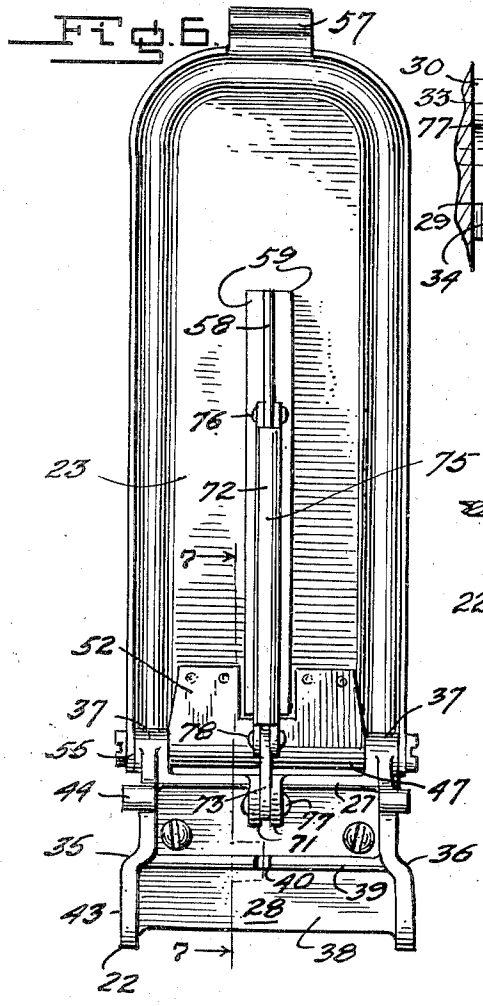


Fig. 8.

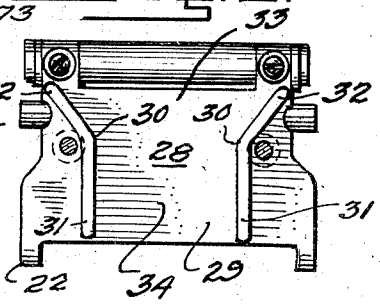
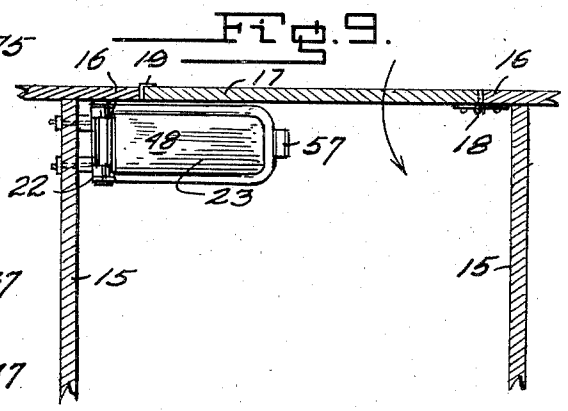


Fig. 9.



INVENTOR.

William J. Dobkin

BY Lancaster, Allwine and Rommel

ATTORNEYS.

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FOLDING SHELF

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Fig. 10.

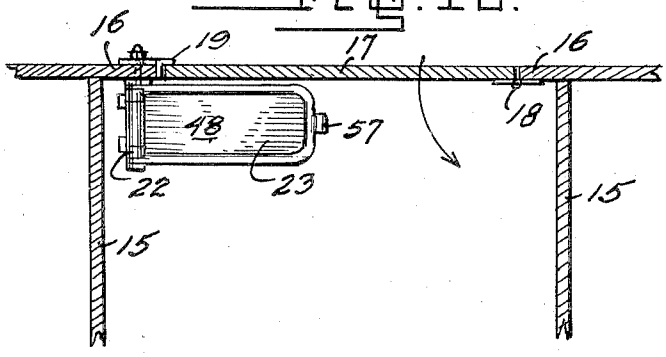


Fig. 11.

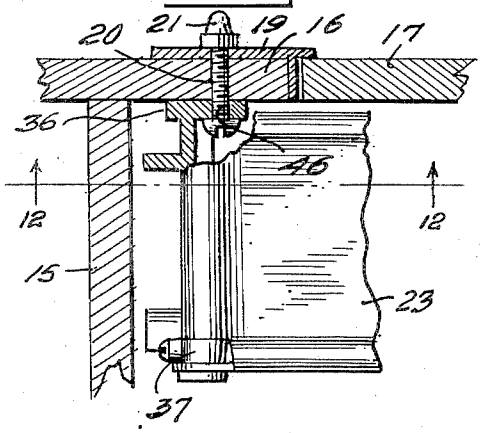


Fig. 13.

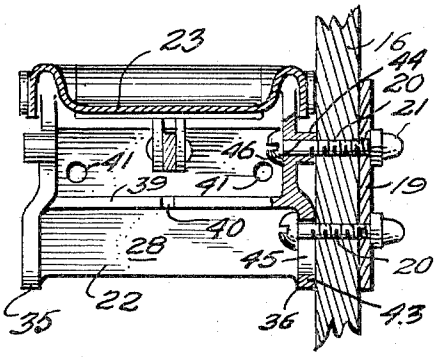


Fig. 12.

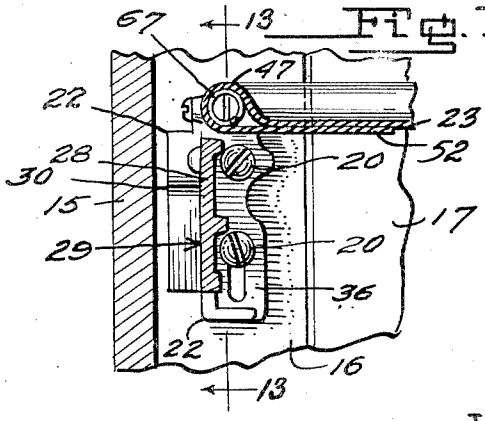
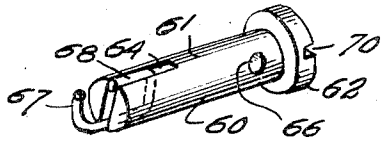


Fig. 14



INVENTOR.

William J. Dobkin

BY Lancaster, Allwine & Rommel

ATTORNEYS.

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UNITED STATES PATENT OFFICE

2,494,798

FOLDING SHELF

William J. Dobkin, New York, N. Y., assignor to The Nik-O-Lok Company, Indianapolis, Ind., a corporation of Indiana

Application September 25, 1944, Serial No. 555,673

5 Claims. (Cl. 211—93)

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The present invention relates to folding shelves particularly well adapted altho not necessarily limited for use in toilet booths.

The principal objects of the invention are to provide folding shelves which are durable; inexpensive to manufacture; sturdy in that they may support reasonably heavy loads and be subjected to shocks and strains without likelihood of becoming inoperative; and, each preferably including a bracket adapted to be attached to an upright member, such as a wall or partition so that the axis of the shelf proper extends perpendicular to the face of the upright member, or attached to either a right or a left jamb, such as a door jamb, with the axis of the shelf proper parallel to the face of the jamb, when the shelf proper is in a load receiving position.

A folding shelf including a bracket of the character described may thus be attached to the side wall or partition of a toilet booth, so that the shelf proper, when in a load receiving position, extends partially across the doorway of the booth (provided the wall or partition is sufficiently close to the doorway to accomplish this), thus requiring a person to first fold the shelf proper in order to conveniently find exit from the booth; or the folding shelf may be attached to the door jamb to likewise act as an obstruction to ready exit, if the side wall or partition is so remote from the doorway to accomplish this, or if it is desirable to use some of the bolts usually provided to secure latch plates or strike plates to jams of booths, as mediums for attaching the shelf bracket in place.

In the case of inwardly swinging booth doors, the folding shelf may take the place of the usual latch in that the shelf proper may be swung to a load receiving position and act as a barrier to the opening of the door, or swung upwardly to a folded position thus permitting free opening of the door.

Another object of the invention is to provide a folding shelf comprising a bracket and a shelf proper swingably connected thereto, so that the latter may be swung upwardly from a load receiving position to a folded position, the shelf proper preferably comprising a major service portion for supporting paraphernalia such as purses, gloves, packages, books, etc., and a minor service portion adapted to receive small articles, such as cigarettes, pins, etc. which, if left in place when the shelf proper is being moved to a folded position, will finally slide and fall by gravity therefrom, thus leaving the shelf clear of waste material and the like.

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Another object of the invention is to provide a folding shelf including a shelf proper and a bracket, and adjustable means having the dual function of swingably connecting the former to the latter, and yieldably holding the shelf proper in a folded position; the means being such that it may be adjusted to that nicety, where it automatically swings the shelf proper throughout the greater portion of its arc of movement from an unloaded, load receiving position, after a person has manually started its swinging movement, to a folded position.

Another object of the invention is to provide a combined brace and movement limiting means cooperating with the shelf proper and bracket, which is simple, sturdy and not likely to result in injury to persons swinging the shelf proper from a folded position to a load receiving position and vice versa.

Other objects and advantages of the invention will appear in the following detailed description of the preferred embodiment of the invention, taken in connection with the accompanying drawings, forming a part of this specification, and in which drawings:

Fig. 1 is a top plan view of the folding shelf, shown attached to a partition.

Fig. 2 is a side elevation of the same, the partition being in vertical section.

Fig. 3 is a sectional view on the line 3—3 of Fig. 2.

Fig. 4 is a detailed fragmentary view, partly in plan and partly in horizontal section, at a portion of the folding shelf where the shelf proper is swingably connected to the bracket.

Fig. 5 is a vertical sectional view on substantially the line 5—5 of Fig. 1.

Fig. 6 is a view in front elevation with the shelf proper in a folded position.

Fig. 7 is a fragmentary view on the line 7—7 of Fig. 6.

Fig. 8 is a rear elevation showing particularly preferred details of the bracket.

Fig. 9 is a fragmentary view on a reduced scale, partly in plan and partly in horizontal section, showing the folding shelf secured to the partition of a toilet booth having an inwardly swinging door and with the shelf proper acting to prevent opening of the door.

Fig. 10 is a view similar to Fig. 9, but showing the folding shelf secured to the door jamb of the booth.

Fig. 11 is an enlarged detailed view, partly in horizontal section and partly in plan showing

more particularly the mode of fastening the folding shelf to the jamb as in Fig. 10.

Figs. 12 and 13 are sectional views on the lines 12—12 and 13—13, of Figs. 11 and 12, respectively.

Fig. 14 is a perspective view of a trunnion or pintle and fragment of a coil spring forming a part of the preferred means of swingably connecting the shelf proper to its bracket and for swinging the former to a folded position when manually started from a service position of rest.

In the drawings, the invention is shown more particularly in Figs. 9–13, associated with structural members of a booth, but this is merely by way of example. In these views are shown a wall or partition 15, stiles 16, a door 17 provided with a hinge 18 and a strike plate 19 secured in place by bolts 20 and nuts 21.

The folding shelf in the example shown comprises a bracket 22, a shelf proper 23 pivoted thereto, means 24 for pivotally connecting the shelf proper to the bracket, so that the latter may be swung in a vertical plane, such means also forming a part of other means 25 for yieldably retaining the shelf proper in a folded position as indicated by dotted lines in Fig. 2, and in full lines Figs. 6 and 7, and means 26 for limiting pivotal movement of the shelf proper from a horizontal, load receiving position (as shown in Figs. 1–5 and 9–11) to an upright folded position, and vice versa.

The bracket 22 is preferably a casting comprising an elongated plate-like or web-like body portion 28 and when attached to a wall or stile has its longitudinal axis horizontal, with a vertical rear face 29 confronting the wall 15, if applied to a wall; spacing ribs 30 shown more particularly in Fig. 8 extending rearwardly from face 29, which may comprise vertical portions 31 and upper diverging portions 32, these ribs cooperating with the wall 15 to provide a mouth 33 and throat 34 for guiding waste material which may find its way into the mouth 33 as hereinafter described; end flanges 35 and 36 at opposite ends of body portion 28 adapted to be selectively secured to a right or a left jamb; spaced sleeves 37, one located above each end flange 35 and 36; and spaced pivot lugs 71 extending from a face 38 of the body portion 28 at the vertical medial line of the bracket for connection of a part of means 26. It is also preferred to provide upper and lower horizontal strengthening ribs 27 and 39 extending from face 38 and joined to the flanges 35 and 36. The rib 39 may be provided with a centrally located notch 40 formed in its upright face, below the space between pivot lugs 71.

The body portion 28 is provided with a plurality of perforations 41 for receiving the shanks of screws or bolts 42 when the folding shelf is applied to a wall or partition. The flanges 35 and 36 are each preferably shaped to provide a lower offset 43 and an upper transverse rib 44, provided with a vertical slot 45 and a bore 46, respectively, for receiving the shanks of bolts 20, as shown in Fig. 13, when the bracket is secured to a stile 16. This construction is advantageous in that the outer faces of the offset 43 and rib 44 may be filed or ground to permit installation with the shelf proper in a truly horizontal load receiving position if the stile is not plumb and the slot 45 permits the use of bolts 20 which may be available and in place at the time of installation as when they are there for securing the strike plate 19, the spacing of the bolts being different in different makes and models of hardware.

Referring now to the shelf proper, the preferred form is made wholly or in part of an elongated sheet of metal fabricated, stamped and treated to provide a major service portion 48 surrounded, at its sides by upwardly directed rounded flanges 49, at its free end by a similar flange 50, and at its hinged end by a rounded flange 51 which may have a continuation 52 as shown in Figs. 6 and 12 to constitute a hinge sleeve or barrel 47. It is also preferred to round the end flange 50 as shown at 53 where it merges into the side flanges 49, and to provide intermediate the said rounded portions a trough shaped minor service portion 57, which may support such articles as cigarettes, pins, etc., and also act as a handle to facilitate swinging of the shelf proper. It may also serve as a hook for pendently supporting umbrellas, and other handled articles, such as hand bags and shopping bags. In the example shown the side flanges 49 each have a cutaway portion 54 at the pivot end of the shelf proper, these cutaway portions accommodating the sleeves 37 of the bracket and leaving an ear 55 on each flange 49 provided with a perforation 56 axially aligned with the hinge sleeve 47 as shown in Fig. 4. The over-all width of the shelf proper is less than the distance between the outer faces of flanges 35 and 36, as shown in Figs. 3, 8 and 9, so that when the bracket is attached to a stile, the shelf proper may be swung to a vertical position clear of contact with the stile.

The shelf proper may also include a longitudinally extending rib 58 at its underside, in a plane normal to the axis of the hinge sleeve. This rib serves to strengthen the service portion 48 and may form a part of the preferred means 26. The rib may be formed of a strip of sheet metal doubled upon itself longitudinally, and having outstanding horizontal flanges 59 welded or otherwise secured to the bottom of the service portion 48.

The means 24 in the example shown includes the hinge sleeve 47, and pintles 60, there being a pintle for each pivot lug 37 of the bracket. Each pintle comprises a shank 61 and a head 62 preferably provided with a screw driver receiving slot 70. The shank 61 extends thru its respective perforation 56 of the shelf proper, thru a hole 63 in its respective pivot lug 37, and into the hinge sleeve 47. Since the pintles may also serve as a part of the means 25, each is provided with an end slot 64, the purpose of which will be later described, and in order to retain each pintle in its desired position, each pivot lug 37 carries a set screw 65 shown in Fig. 4, the inner end portion of which may extend into a transverse way 66 in the pintle. Thus the set screw may be turned home at each half turn of the pintle.

The means 25 in addition to the pintles 60 preferably comprises two expansion coil springs 67 accommodated mainly in the hinge sleeve 47. Each spring has its one end portion provided with an axial extension 68 fitting in the end slot 64 of its respective pintle, and a tangential extension 69 that bears against the underside of the service portion 48 as shown in Figs. 4, 5 and 7. By this arrangement, a person may tension the expansion springs to the extent desired, by manipulation of the pintles 60, so that the springs will yieldably retain the shelf proper in a folded position, and yet permit a person to readily move the shelf proper to a load receiving position and have it remain there against accidental displacement. In fact the springs may

be adjusted to such nicety that they will automatically swing the shelf proper to a folded position and throughout the greater portion of the arc of movement thereof, after a person has manually moved it slightly from a service position toward a folded position. In practice it is found that, as the center of gravity of the pivoted mass of the folding shelf moves upwardly with respect to the bracket, its momentum increases due to the action of the springs **67** and very little manual effort is required to fold the shelf.

The means **26** preferably cooperates with the rib **58** for convenience in manufacture and safety purposes, and comprises a first or major link **72** and a second or minor link **73**. The link **72** is preferably of channel shape with its flanges **74** at all times embracing the rib **58** as shown in Figs. 5 and 7, and with its connecting web **75** lowermost, when the shelf proper is in a load receiving position. The one end of link **72** is pivoted as by cross pin **76** to the rib **58** at a point remote from the pivotal axis of the shelf proper and extends downwardly and rearwardly therefrom toward the bracket **22**, when the shelf proper is in a normal, load receiving position, as shown in Figs. 2 and 5. The link **73** has its one end connected, as by cross pin **77** to the pivot lugs **71** below the pivoted axis of the shelf proper, and its other end portion pivoted to the free end of link **72** as by cross pin **78**. As shown in Fig. 5, the link **73** engages the bracket **22** at notch **40** to limit downward swinging movement of the shelf proper at a time when it is in a horizontal or load supporting position. At that time the link **72** acts as a strut. However as the shelf proper is swung upwardly the link **72** finally contacts the shelf proper, and in the example shown specifically the flanges **59** of rib **58** limiting the upward swinging or folded position of the shelf proper, putting the link **73** under tension. The notch **40** may be deepened if it is found that the shelf proper inclines upwardly from the bracket, when in a load receiving position, so that the link **73** will permit it to assume a true horizontal position.

The preferred construction and operation of the folding shelf is clear from the foregoing description. As to installation in booths, as may be observed from a consideration of Figs. 9 and 10, the folding shelf may take the place of a latch associated with inwardly swinging booth doors, no matter whether attached to the wall or partition, or to the door stile, and it is obvious that the folding shelf may be applied to the strike stile of either left or right swinging doors. Also if the booth door swings outwardly and the shelf proper has been moved to a load supporting position, the person leaving the booth will naturally swing it to a folded position, to get it out of the way. Thus the folding shelves aid in preventing users of the booths from leaving personal articles therein, and the construction is such that any waste material left on the shelf proper while it is being moved to a folded position will slide therefrom, to the floor, thus rendering the folding shelf self cleaning, so to speak. If the bracket is attached to a wall or partition as shown in Figs. 1, 2 and 9 its body portion being spaced from the wall face, by the spacing ribs **30**, will permit such waste material to drop thru the throat **34**.

Changes in details may be made without departing from the spirit of the invention as defined in the following claims.

What is claimed is:

1. In a folding shelf, the combination of a bracket, a shelf proper pivotally connected thereto, to swing in a vertical plane, said shelf proper including a rib at its underside in a plane normal to the pivotal axis of the shelf proper, and means for limiting the pivotal movement of said shelf proper from a horizontal load receiving position to an upright folded position and vice versa, comprising a first link of channel shape disposed with its flanges embracing said rib, and having its one end portion pivotally connected with the shelf proper at a point remote from the pivotal axis of the latter, and a second link pivotally connected with said bracket and to the other end portion of said first link, one of said links engaging the bracket when the shelf proper is in a horizontal position, to arrest downward movement, and said first link abutting the shelf proper when it is in a folded position.

2. In a folding shelf, the combination of a bracket, a shelf proper pivotally connected thereto to swing in a vertical plane, and means for limiting the pivotal movement of said shelf proper from a normal horizontal, load receiving position to an upright, folded position and vice versa, comprising, a first link having its one end portion pivotally connected with the underside of the shelf proper and extending downwardly and rearwardly therefrom toward said bracket, when the shelf proper is in the normal horizontal position, and a second link pivotally connected with said bracket at a point below the pivotal axis of the shelf proper and extending downwardly therefrom, when the shelf proper is in said normal position, the other end of said second link being connected to the free end of said first link, one of said links engaging the bracket when the shelf proper is in said normal horizontal position, to arrest downward movement, and said first link abutting the shelf proper when it is in a folded position.

3. In a folding shelf, the combination of a bracket; a shelf proper, including a hinge sleeve; and, means pivotally connecting said shelf proper to the bracket, so the former may swing in a vertical plane, and for yieldably urging the shelf proper in an upright, folded position with respect to the bracket, said means comprising a pintle rotatably carried by the bracket and extending into said hinge sleeve, an expansion coil spring having its one end portion coupled to said pintle to be turned therewith, and its other end portion engaging said shelf proper, whereby expansion of the spring tends to rotate the shelf proper about the axis of said pintle, and means for adjustably retaining said pintle in fixed relation to said bracket.

4. As an article of manufacture, a shelf made of sheet material comprising a horizontal service portion for supporting a load, a reinforcing flange extending along opposite margins of said service portion, and a hinge sleeve formed along another margin of said service portion between said flanges, said flanges provided with holes axially aligned with the bore of said hinge sleeve.

5. In a folding shelf, the combination of a bracket provided with a vertical face and outer side vertical faces in planes at right angles to said first mentioned face; an elongated shelf proper, the over-all width of which is less than the distance between said outer side faces; means pivotally connecting an end portion of said shelf proper to said bracket with its side margins between the planes of said outer side faces of the

bracket; and means for limiting pivotal movement of the shelf proper from a position with its plane at a right angle to the plane of said first mentioned face, to a position with the plane of the shelf proper in substantially parallel relation to the plane of said first mentioned face, or vice versa.

WILLIAM J. DOBKIN.

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