A. V. TREGO.

COLLAPSIBLE BOX OR RACK.

APPLICATION FILED MAR. 18, 1918.

1,317,837.

Patented Oct. 7, 1919.

4 SHEETS—SHEET 1.

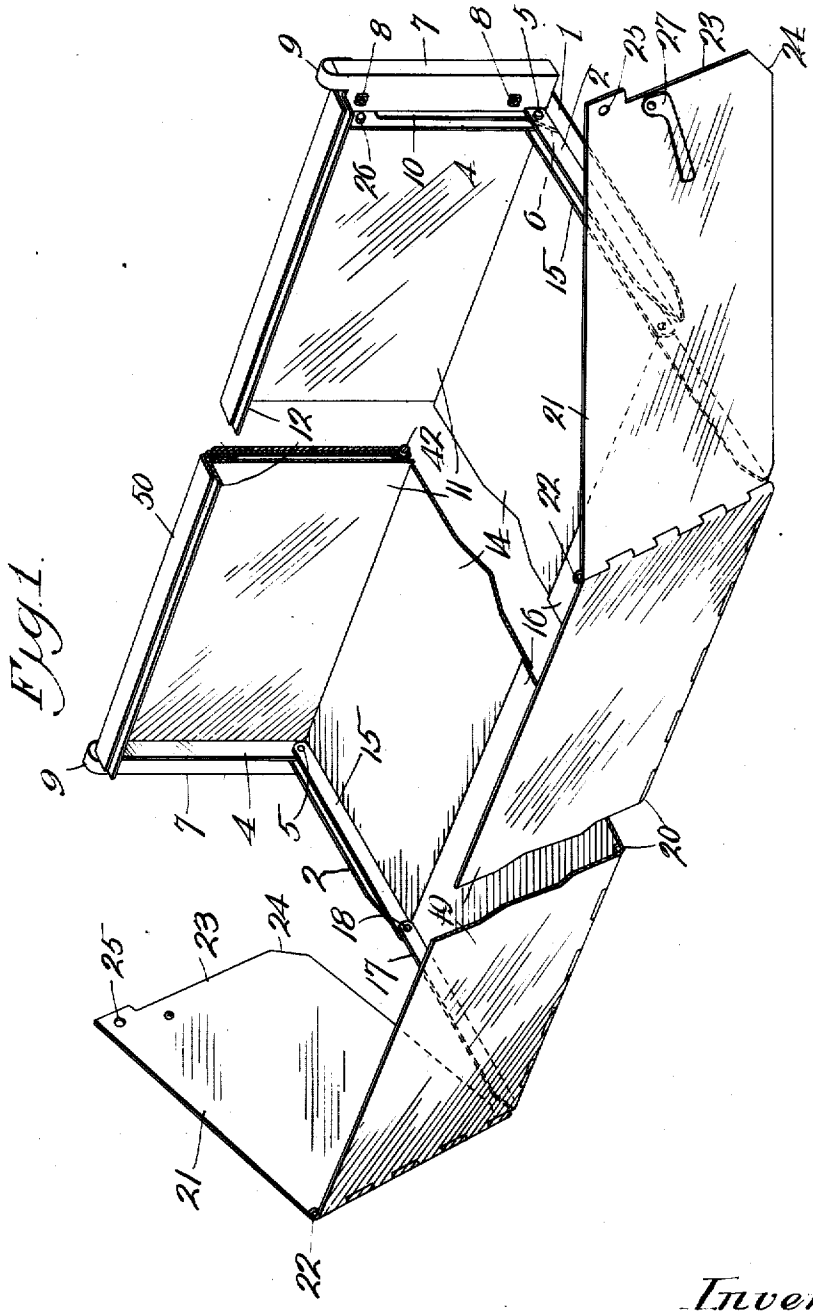


Fig. 1.

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By George H. Thorp
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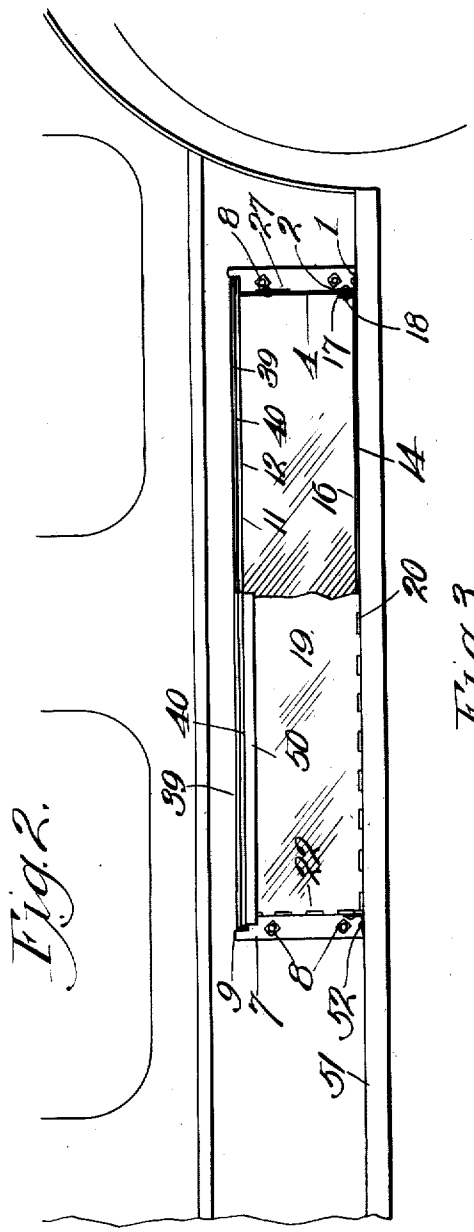


Fig. 2.

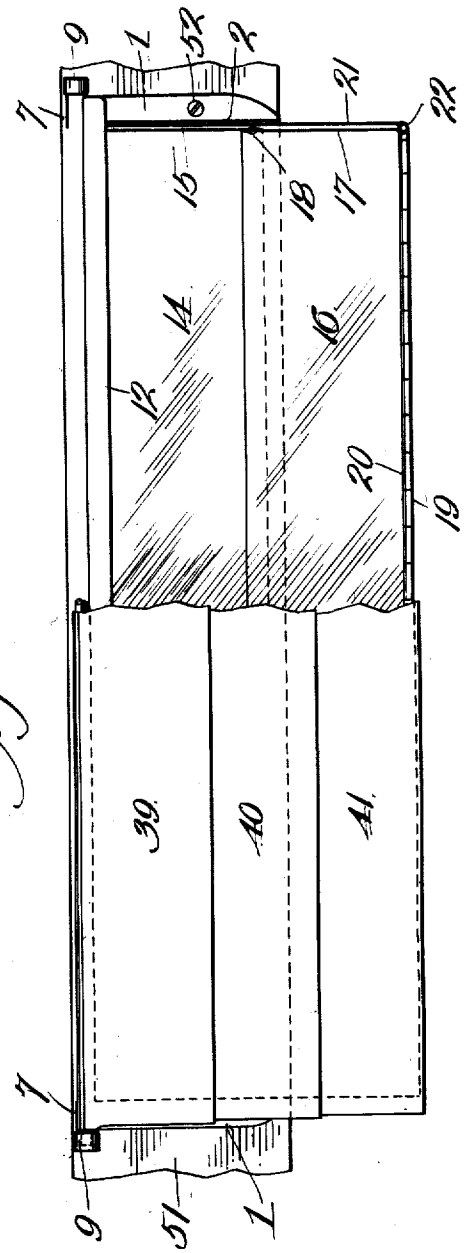


Fig. 3.

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4 SHEETS—SHEET 3.

Fig. 4.

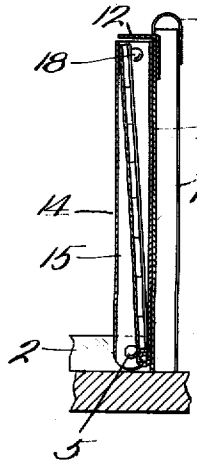


Fig. 5.

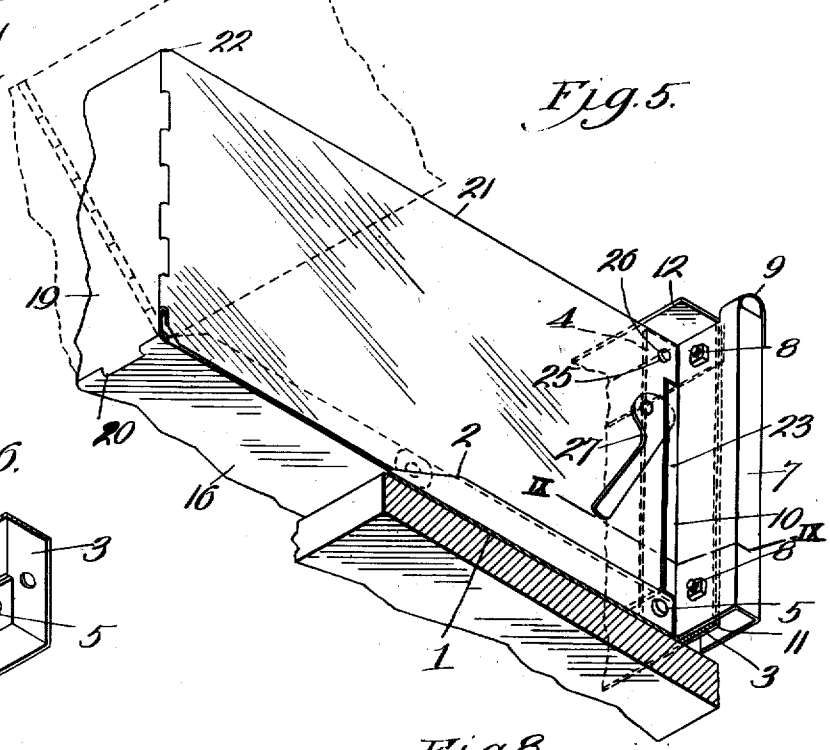


Fig. 6.

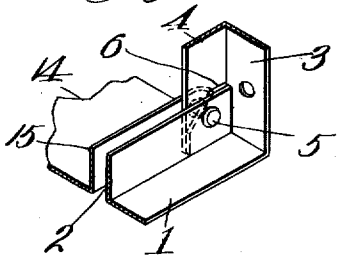


Fig. 7.

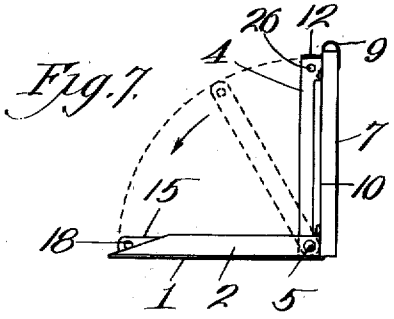


Fig. 8.

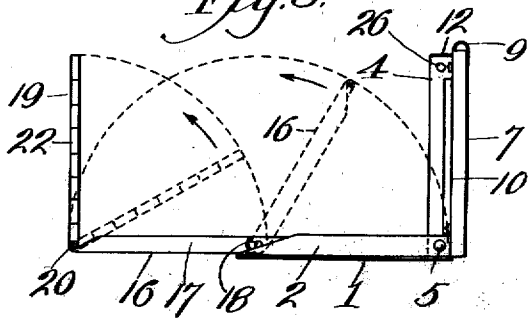
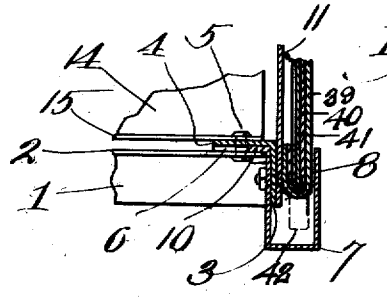


Fig. 9.



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4 SHEETS—SHEET 4.

Fig. 14.

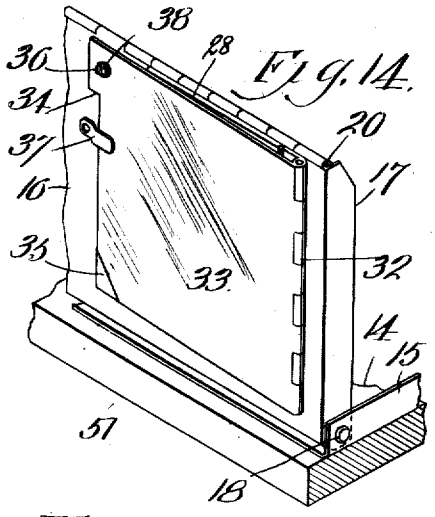


Fig. 15.

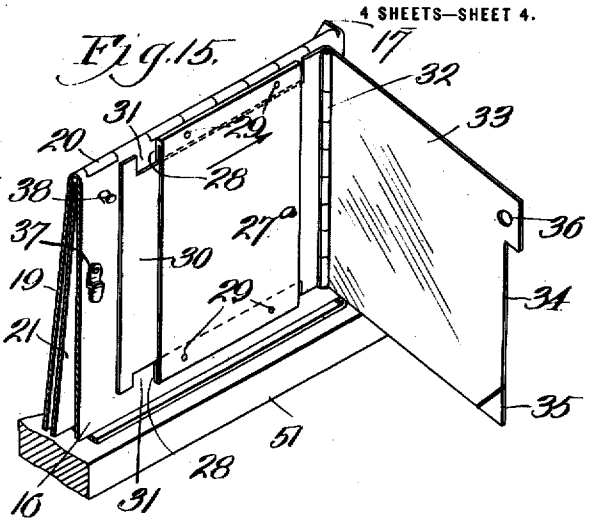


Fig. 11.

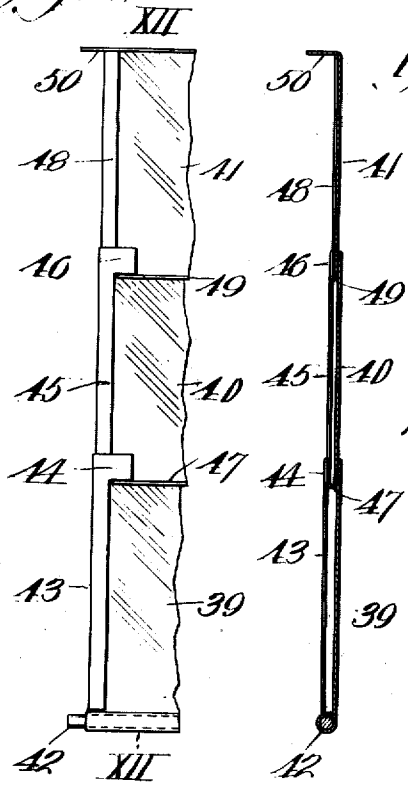


Fig. 12.

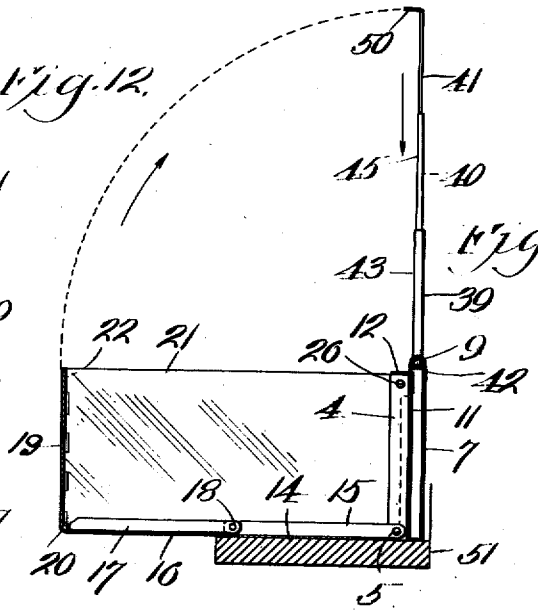
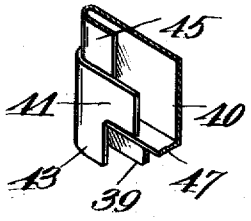


Fig. 10.

Fig. 13.



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UNITED STATES PATENT OFFICE.

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COLLAPSIBLE BOX OR RACK.

1,317,837. Specification of Letters Patent. Patented Oct. 7, 1919.

Application filed March 18, 1918. Serial No. 223,876.

To all whom it may concern:

Be it known that I, ABNER V. TREGO, citizen of the United States, residing at Kansas City, in the county of Jackson and State of Missouri, have invented certain new and useful Improvements in Collapsible Boxes or Racks, of which the following is a specification.

This invention relates to collapsible boxes or racks, and has for its object the production of a device of this character susceptible of lateral expansion and contraction, the special object being to produce a box or rack which can be conveniently secured on a running board of a motor car, and when folded, offers no obstruction to the use of the running board as such, and which may be unfolded to the width of the running board or to greater width if the full capacity of the box is desired to be utilized.

A further object is to produce a box or rack of the type outlined, which is substantially weather-tight, of simple, strong, durable and inexpensive construction, can be easily and quickly secured in position, and which when folded, is not conspicuous and hence does not detract from the appearance of the car. Another object is to produce a cover adjustable to accommodate the width of the box or rack to a position back of the box or rack when the latter is not in use.

A still further object is to produce a collapsible box or rack of simple, strong, durable and inexpensive construction.

With these objects in view, the invention consists in certain novel and useful features of construction and combinations of parts as hereinafter described and claimed; and in order that it may be fully understood reference is to be had to the accompanying drawings, in which:—

Figure 1 is a broken perspective view of a collapsible box or rack, embodying the invention.

Fig. 2 is a side view of the box or rack, partly broken away, as applied to the running board of a motor car.

Fig. 3 is a plan view of the construction shown by Fig. 2.

Fig. 4 is an enlarged vertical section of the box or rack in folded or collapsed condition.

Fig. 5 is a fragmentary perspective view, viewing the rack from one end and its underside, and also showing a part of the running board.

Fig. 6 is a detailed perspective view, showing one of the rear corners of the device.

Fig. 7 is an end view of the box or rack, partly unfolded.

Fig. 8 is a similar view, with the box or rack unfolded to its maximum width.

Fig. 9 is a horizontal section on the dotted line, IX—IX, of Fig. 5.

Fig. 10 is a transverse section of the box or rack in its fully expanded condition, and showing the cover in the position it occupies preliminary to being swung down to the closed position.

Fig. 11 is an enlarged front view of one end of the cover in its extended condition.

Fig. 12 is a vertical section on the dotted line XII—XII of Fig. 11.

Fig. 13 is an enlarged sectional perspective view to show more clearly the operative relation between sections of the cover.

Fig. 14 is a fragmentary perspective view of the box or rack when expanded to half its maximum width.

Fig. 15 is a perspective view of the construction shown by Fig. 14, as viewed from a different point, and also shows the right hand end wall swung out preparatory to disposal in its ultimate position, the left hand end wall being omitted.

In the said drawings, where like reference numerals identify corresponding parts, a pair of angle brackets each consist of a horizontal arm provided with an upstanding flange, 2, at its inner margin. The vertical arm, 3, is also provided at its inner margin with a forwardly projecting flange, 4, which at its lower end overlaps and is slightly spaced from the rear end of flange, 2, and extending through said flanges is a rivet, 5, a spacing plate, 6, being mounted on the rivet between said flanges.

7 indicates a pair of end channel plates, arranged vertically with their channels facing each other, the front arms of the channel plates overlapping the vertical flanges, 2, of said brackets, and extending through said arms, 3, and the overlapping arms of the channel plates are securing bolts, 8, to secure said parts rigidly together. The channels are crossed or bridged at their upper ends by arches, 9, for a purpose which hereinafter appears, and at the inner margins of their front arms, the channel plates are provided with forwardly projecting ribs, 10, which terminate short of the upper and lower ends of the channel plates.

11, indicates a back plate extending from one of the angle brackets to the other, and fitting at its ends against the rear sides of said angle plates, and secured firmly in position by the bolts, 8, used for securing the channel plates to said brackets, the upper margin of the back plate being reinforced and stiffened by a horizontal angle iron, 12, the upper arm of the same projecting forwardly and overlying the upper ends of the flanges, 4, of the angle brackets.

14 indicates a bottom plate of the box or rack, the same extending from one of the angle brackets to the other, and being provided at its ends with upwardly projecting flanges, 15, pivoted at their rear ends on rivets, 5, said flanges, 15, being disposed at the inner sides of the arms, 4, of the angle brackets, and spaced from the flanges, 3, thereof, for the accommodation of the end walls of the box or rack, as herein: fter explained.

16 indicates a plate similar to plate 14, and overlapping the front edge of the latter, and said plate, 16, is provided at its ends with upstanding flanges, 17, overlapping the front ends of the flanges, 15, at their inner sides, and pivoted thereto as at 18, the arrangement being such that plate 16 can be folded rearwardly onto plate 14 when it is desired to fold or collapse the box or rack.

19 indicates a plate hinged at 20 to the forward edge or margin of plate 16, and adapted to fold rearwardly down onto plate 16, or to extend upwardly therefrom and constitute the front or outer wall of the box or rack when the same is expanded to maximum width or capacity.

21 indicates a pair of end walls, the same being hinged or pivoted at 22 to the ends of the wall, 19, and said end walls may be folded inwardly to fit flatly against the inner side of plate or wall 19, or may extend rearwardly therefrom to form the end walls of the box or rack, it being noted that the end walls, 21, must in length substantially equal the combined width of the bottom plates 14 and 16. At their free or rear ends the end walls, 21, are notched as at 23 to accommodate the ribs, 10, of the channel plates, 7, that is to permit the end wall to be fitted against the bracket arm 4, and the lower rear corners of the end walls are cut away at 24 to match the oblique forward edge of the spacing plates, 6, it being understood that in manipulating the box or rack to expand it to its fullest width or capacity, the end walls are fitted between the flanges or arms, 2, of the angle brackets, and the companion arms or flanges, 4, and stand in vertical planes just inward of the ribs, 10, the unnotched upper rear corners of the end walls fitting against the outer faces of the arms or flanges, 4, and having perforations, 25, to receive pins or studs, 26, projecting endwise from said arms or flanges. When the parts are thus assembled, the pins or studs, 26, prevent endwise movements of the end walls, and to coöperate with the flanges or arms, 3, in preventing outward swinging movements of said end walls, cam-levers, 27, are pivoted to said end walls, and under proper adjustment, are caused to engage or overlap the ribs, 10, and thus clamp the end walls firmly against the flanges or arms, 4.

The construction as thus described, applies more particularly to the device when adjusted to its greatest width or capacity. In the event it is desired to produce a narrow box or rack, additional equipment is required, the same being as follows:

27ª indicates a pair of plates (one only appearing) bent back at opposite margins to form spacing ribs, 28. Each of these plates is riveted as at 29 to the normal underside of bottom plate, 16, near one end thereof, and fitting slidingly between plates 27 and bottom plate 16 are slide plates 30, the same having notches, 31, in opposite edges to receive the spacing ribs, 28, so that the unnotched ends of plates 30, shall constitute stops for abutment against the ends of said ribs, to limit the sliding movement of said plates, 30, and hinged as at 32 to the outer ends of plates 30 are end wall plates, 33, corresponding in length substantially to the width of the bottom plate, 14, and each provided in its rear or free edge with a notch, 34, and with a cut away corner, 35, and a perforation, 36, the plate corresponding, therefore, at its free edge, to the free edges of the end walls, 21. When the box or rack is to be adjusted to half width, the end walls, 21, are folded inward against the inner side of the outer wall, 19, and then the latter is folded down upon the bottom plate, 16, with the end walls, 21, interposed between them. The plate, 16, is then swung upward on pivots, 18, to a vertical position, so as to constitute the outer wall of the narrowed box or rack. This adjustment disposes the outer walls, 33, at the outer side of the box or rack, as one of them is shown by Fig. 14, it being noted in this connection that a pivoted turn button, 37, carried by plate, 16, is employed to hold end wall 33, inoperatively against plate, 16, and that the perforation, 36, of said end wall, is engaged by a pin or stud, 38, also projecting from plate, 16. To dispose the end walls, 33, in operative position to constitute the end walls of the narrowed box or rack, the turn buttons, 37, are swung to inoperative position as shown by the one appearing in Fig. 15. The end wall is then free to swing forwardly and outwardly, as shown by the last named

figure. Power is then applied upon it to slide plate, 30, in the direction indicated by the arrow in Fig. 15, until the hinge, 32, is beyond the adjacent end of plate, 16. When this adjustment is effected, each end wall 33 can be swung rearwardly, so that its rear edge may be fitted with respect to the angle brackets, ribs, 10, and pins or studs, 26, as described with respect to the end walls, 21, it being understood that the end walls, 33, will also be provided with cam-levers (not shown) corresponding to cam-levers, 27, and performing the same function as the latter.

To provide a cover for the box or rack adjustable to accommodate the same when half or fully expanded, three plates, 39, 40 and 41, are arranged in overlapping relation.

The member or plate, 39, is provided at its lower edge with a hinge pin 42 engaging the channel plates 7, and at its ends with vertical bent-back portions, 43, to form parallel end grooves, the upper ends of the bent-back portions having extensions 44, constituting stops for a purpose which hereinafter appears. The plate or member, 40, is similarly formed to provide the bent-back portions, 45, to fit slidably in the grooves of plate or member, 39, and at the upper ends of the bent-back portions, 45, are formed stops, 46, of the same character as stops, 44. The plate or member, 40, is also provided at its lower margin with a flange, 47, to abut against the lower edge of stops, 44, and arrest withdrawal movement of plate or member, 40, from plate or member, 39. The plate or member, 41, fits slidingly in the grooves formed by the bent-back portions, 45, of member, 40, and at its ends is bent back to form stiffening ribs, 48, where the plate engages the grooves of member, 40. The plate or member, 41, is also provided at its lower margin, with a flange, 49, for abutment against the lower edge of stops, 46, of member, 40, it being noted by reference to Fig. 11, that the flange, 49, is narrower than flange 47, and hence is capable of sliding downward past the stops, 44, so that the three members or plates may fit flatly together back of the back wall of the body portion of the box or rack. The member 41, it will be noted, is provided at its upper margin with a forwardly projecting flange, 50 which, when the cover is collapsed, rests upon the flange, 12, in such position that it can be readily grasped when it is desired to extend the cover as indicated in Fig. 10, preliminary to folding it down upon the body portion, it being noted that when thus arranged, the member, 39, overlaps member 40, and the latter overlaps member 41, so that the cover shall more effectually conduct water to and beyond the outer wall of the box or rack, so as to protect the contents thereof.

When it is desired to use the box or rack in its narrow form, the end walls, 21, are folded inward until they fit flatly against the inner side of the outer wall, 19. The latter, with said folded end walls, is then folded inward upon the bottom plate 16, and the latter, with the plates folded upon it, is swung upward to vertical position upon the pivots 18, and therefore exposes to view the end walls 33, which may then be manipulated in the manner hereinbefore described, to complete the box or rack in its narrow form. When thus employed, the extensible cover is raised as shown by Fig. 10. It is then swung downward on hinge pin 42 and telescoped until the plates are nested together so as to correspond in width to the box to form a proper cover therefor, the flange 50 fitting over the outer wall in the same manner as when the box is expanded.

A box or rack constructed as described can be conveniently placed upon the running board 51, of a motor car, and is preferably of such proportion that the horizontal portions of the angle brackets in length substantially equal the width of the running board, the connection being made secure by securing bolts 52 extending through said horizontal arms and the running board, as shown in Fig. 3.

When the box or rack is not in use, the cover, folded or collapsed as described, stands in channel 7, behind the back wall 11, of the box or rack, and the foldable body portion is folded to dispose its members or parts in substantially vertical position against said back wall, and under the flange 12, as shown in Fig. 4, any suitable means, such as a turn button (not shown) being employed to secure the parts in such position, and when the box or rack is thus folded or secured, it projects so slightly from the side of the car as to be hardly noticeable. with the exception of the horizontal arms of the angle brackets, and when so folded or collapsed it is obvious that it offers no obstruction to free entrance to and exit from the car.

From the above description, it will be apparent that I have produced a collapsible box or rack, embodying the features enumerated as desirable in the statement of the object of the invention, and while I have illustrated and described the preferred construction of the device, it will be apparent that it is susceptible of modification in minor particulars without departing from the spirit and scope of the appended claims.

I claim:

1. A collapsible box, comprising a bottom, back and front walls, right angle-shaped brackets comprising vertical arms rigid with and at the ends of the back wall, and forwardly projecting arms substantially parallel with and spaced from the ends of the bot-

tom, ribs rigid with the said brackets, end walls hinged at their front ends to the ends of the said front wall and provided with notches in their free edges; said end walls being adapted to be fitted at their lower edges between the ends of the bottom and the adjacent arms of said brackets, and at their ends against the outer sides of the vertical arms of said brackets, pivoted fastening devices mounted upon the outer sides of the end walls and adapted to engage and overlap the said ribs to prevent the end walls from swinging outward or opening, and means to fasten the end walls to the brackets to restrain the former against dislocation by edgewise movement.

2. A collapsible box, comprising a bottom, back and front walls, right angle-shaped brackets comprising vertical arms rigid with and at the ends of the back wall, and forwardly projecting arms substantially parallel with and spaced from the ends of the bottom, ribs rigid with the said brackets, end walls hinged at their front ends to the ends of the said front wall and provided with notches in their free edges; said end walls being adapted to be fitted at their lower edges between the ends of the bottom and the adjacent arms of said brackets, and at their ends against the outer sides of the vertical arms of said brackets, pivoted fastening devices mounted upon the outer sides of the end walls and adapted to engage and overlap the said ribs to prevent the end walls from swinging outward or opening, means to fasten the end walls to the brackets to restrain the former against dislocation by edgewise movement, a pair of inwardly opening channel guides rigid with the vertical arms of said brackets and disposed in a plane parallel with but rearward of the said back wall, the channels being closed at their upper ends, and a cover fitting slidingly at its ends in the channel guides and capable of movement upward and downward between the closed upper ends of the channels, the cover being provided at its upper edge with a flange to overlie and rest upon the upper edge of the back wall or to fit down against the outer face of the front wall; said cover also being provided at its lower edge with a hinge pin projecting into the channel guides and adapted to limit upward movement of the cover by abutment against the closed ends of the guides.

3. A collapsible box, comprising a bottom, back and front walls, right angle-shaped brackets comprising vertical arms rigid with and at the ends of the back wall, and forwardly projecting arms substantially parallel with and spaced from the ends of the bottom, ribs rigid with the said brackets, end walls hinged at their front ends to the ends of the said front wall and provided with notches in their free edges; said end walls being adapted to be fitted at their lower edges between the ends of the bottom and the adjacent arms of said brackets, and at their ends against the outer sides of the vertical arms of said brackets, pivoted fastening devices mounted upon the outer sides of the end walls and adapted to engage and overlap the said ribs to prevent the end walls from swinging outward or opening; said end walls having perforations in their upper free corners and pins projecting outwardly at the upper ends of the vertical arms of said brackets and engaging the perforations in said walls to prevent edgewise movement of said end walls.

4. The combination with a suitable support, of a pair of vertical brackets, vertical channel guides secured to the said brackets and disposed with their channels facing each other and rearward of said brackets; the ends of the channels of said channel guides being closed, a back wall secured to and between the said brackets, and provided at its upper and lower edges with forwardly projecting flanges, a bottom pivoted at its rear edge to and between said brackets at the lower ends thereof, and provided with upturned flanges at its ends, a front wall pivoted at its lower edge between the front edge of the flanges of said bottom and adapted to fold upon the bottom between the flanges thereof, end walls hinged at their front ends to the opposite ends of the front wall and adapted to fold inwardly against the inner side thereof so as to lie between the same and the bottom when the former is folded upon the latter, said bottom being adapted with the front wall and the end walls folded thereon, to fold upwardly between the top and bottom flanges of the back walls and the said brackets, and a cover fitting slidingly in the channels of said channel guides and provided with a flange to overlie and rest upon the upper flange of the back wall; said cover having a hinge pin projecting from its ends and adapted for contact with the closed upper ends of said channel guides to prevent dislocation of the cover.

In testimony whereof I affix my signature.

ABNER V. TREGO.