No. 687,704.

Patented Nov. 26, 1901.

J. UNSER.

FOLDING BOX.

(Application filed Aug. 17, 1900.)

(No Model.)

Fig.1

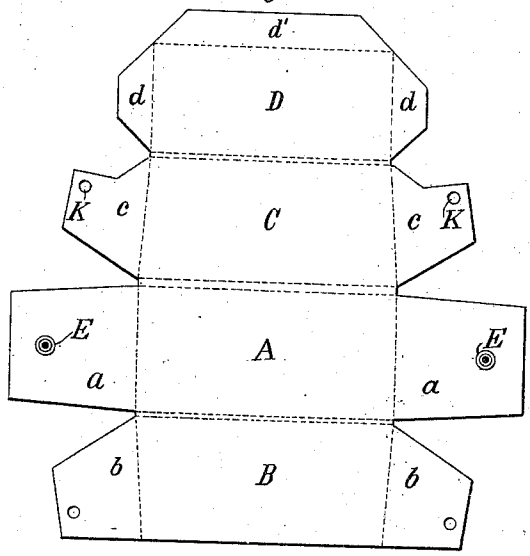


Fig.2

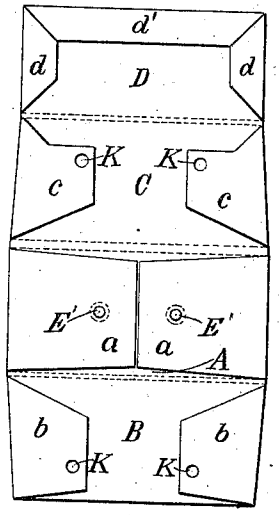


Fig.3

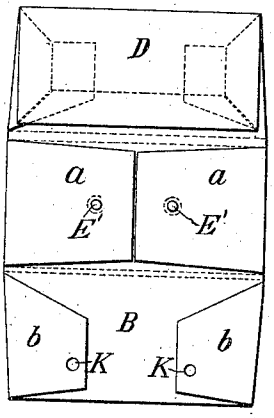


Fig.4

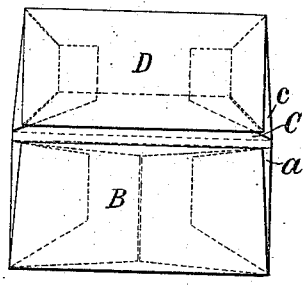


Fig.5

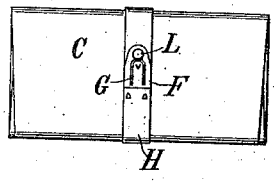


Fig.6

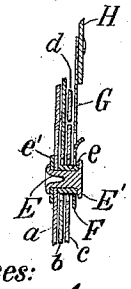


Fig.7

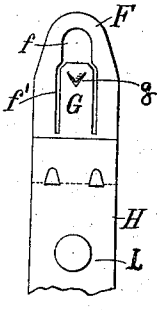
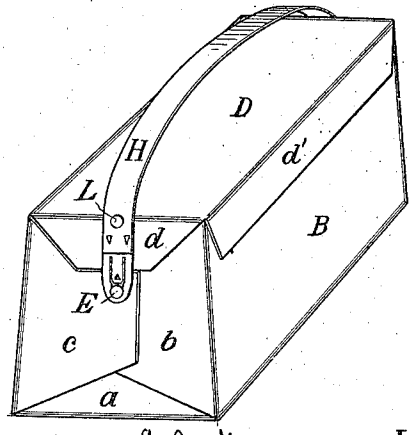


Fig.8



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THE NORRIS PETERS CO. PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

JOHN UNSER, OF CARTHAGE, NEW YORK.

FOLDING BOX.

SPECIFICATION forming part of Letters Patent No. 687,704, dated November 26, 1901.

Application filed August 17, 1900. Serial No. 27,157. (No model.)

To all whom it may concern:

Be it known that I, JOHN UNSER, a citizen of the United States, residing at Carthage, in the county of Jefferson and State of New York, have invented certain new and useful Improvements in Folding Boxes; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, forming part of this specification.

This invention has reference to a novel construction in folding boxes; and it consists in the features of construction hereinafter described and specifically claimed.

In the accompanying drawings, Figure 1 is a plan view of the blank from which my box is formed, the scoring between the panels and flaps being shown in dotted lines. Fig. 2 is a top view of said blank with the flaps folded upon their respective panels. Fig. 3 is a similar view showing in addition the cover-panel folded upon the back panel. Fig. 4 is a similar view showing in addition the front panel folded upon the bottom panel. Fig. 5 is a top view of the box folded into a flat packet and encircled by the strap-handle. Fig. 6 is a transverse section through one of the rivets on the ends of the flaps of the bottom panel. Fig. 7 is a front view of the fastener on the end of the strap-handle. Fig. 8 is a perspective view of the box when set up, showing the handle attached thereto.

The blank composing my box consists of a bottom panel A, with end flaps *a a* flexibly connected to the ends thereof, a front panel B, with flaps *b b*, a back panel C, with flaps *c c*, and a cover-panel D, with flaps *d d* and a front flap *d'*. These panels are flexibly connected, as shown in the drawings. Between each of the panels is a double line of scoring, the two lines of scoring between the panels A and C being preferably a greater distance from each other than the lines of scoring between the other panels. The scoring between the panel A and its said flaps may be at right angles to the longitudinal axis of the panel; but the scoring between the front and back panels and their respective side flaps should be diagonal and should taper or converge away from the panel A. The end flaps of all the panels should also be tapered or cut away from the respective panels toward the outer ends of the flaps, although it is not necessary to cut them away in the particular forms shown in the drawings.

It is desirable that the end flaps of the back panel should be scored substantially in the manner shown in the drawings, and that the end flaps of the cover should also be scored, so as to correspond with the scoring of the end flaps of the back panel. This method of scoring is of advantage, inasmuch as when the box is set up the end flaps of the cover fit into the indentation in the end flaps of the back and are flush with the same instead of overlapping them.

The panels and flaps may be made of leather, cloth, paper, or any other suitable material, and the panels may be flexibly joined with each other and the flaps flexibly connected to the panels in any suitable way. In some instances it may be desirable to make the entire box out of a single piece of material, weakening or scoring the lines between the different panels and between the panels and the flaps, and in other cases it may be desirable to make the panels and flaps of separate pieces and flexibly to connect them in any suitable way.

In the median line and near the outer ends of the flaps *a a* of the bottom panel are inserted buttons or rivets E E for the purpose hereinafter described. These may be of any suitable form; but I prefer to use rivets of the construction shown in the drawings and hereinafter described. These consist of a rivet E, having a head E', and at the opposite end projections suitable to be turned back to fasten the rivet in place.

e is a sleeve which is adapted to fit over the shank of the rivet and against the inner side of the head. This sleeve is of slightly less length than the shank of the rivet.

e' is a washer adapted to fit over the shank of the rivet. This rivet is attached to the flap in the following manner: The sleeve *e* is slipped upon the shank of the rivet E and is pushed against the head E'. The free end of the rivet is then projected through an opening cut in the flap *a*, which opening is of the same diameter as the outer diameter of the shank of the rivet. The outer wall of the flap

a will therefore rest against the inner end of the sleeve *e*. The washer *e'* is then slipped over the end of the rivet-shank and is pressed against the inner wall of the flap. The free end of the rivet-shank is then headed or bent out and against the washer and is secured in that position, thus clamping the flap between the washer *e'* and the sleeve *e*. It is evident that if the shank-body itself be made of greater diameter near the head and of less diameter near the face the result will be substantially the same as if a separable sleeve be slipped upon the shank. This method of fastening the shanks of buttons or rivets to various substance may be applied to other articles than the flaps of my box, and in some of these instances it may not be necessary to have a head on the end of the shank.

The flaps *b b* and *c c* of the front and back panels are provided near their outer ends with perforations K K of a diameter slightly larger than that of the heads of the rivets attached to the flaps *a a*. These perforations are so located in the flaps of the front and back panels that when the box is set up these perforations are directly opposite the rivets or buttons projecting from the flaps *a a*. The said rivets are then projected through the perforations K K of the flaps of the front and back panels, thus holding said flaps together to constitute the ends of the box and affording an opportunity of fastening to said rivets the fastener and handle hereinafter described. The rivet should be made of such length that the head of the rivet will project slightly beyond the outer walls of the front and back flaps when they are pushed upon the rivet, as above described, but should not be made very much longer than is necessary for this purpose. By sufficiently cutting away or tapering the flaps of the front, back, and cover panels it will be found that when the said flaps are folded in and the panels folded one upon another in collapsing the box and folding it into a common flat package the said flaps will not interfere with the rivets which project from the folded flaps *a a*. Thus the rivets will not prevent the box from being folded flatly and compactly.

Any suitable fastener or clip can be used for engaging with the end of the rivet after the front and back flaps have been folded upon said rivet in setting up the box for the purpose of holding said flaps together to constitute the ends of the box. I prefer, however, to use the form of clip or fastener illustrated in Fig. 7 of the drawings, which I have shown attached to a strap or other flexible band which may be used as the handle of the box. H is such flexible handle. Preferably both ends of such handle are provided with a frame F, in which is a slot *f* for part of its length of a width the same as the outer diameter of the shank of the rivet. At one portion, however, the walls of the slot are protruded, as shown at *f'*, to a width corresponding with the diameter of the head of the rivet. The frame may be thus passed over the head of the rivet and then drawn down upon the rivet, so that the shank fits closely in the end of the slot *f*. To prevent undesired movement of the rivet in this slot and the accidental disengagement of the rivet therefrom through the enlarged portion *f'* of the slot, I use a spring-tongue G, partially or fully filling the enlarged portion of the slot *f'*. This spring-tongue may be pushed back to permit of the passage of the head of the rivet through the enlarged portion of the slot. When the rivet is drawn into the end of the slot, however, the spring-tongue springs back into place, the end of the tongue resting against the side of the rivet, and thus preventing any undesired movement of the rivet in the slot. I provide the spring-tongue with a finger-piece *g*, by means of which the tongue may be readily lifted, so as to permit the rivet to be pushed back along the slot and removed from the frame altogether when desired. After the box has been set up, the front and back flaps folded into place against the bottom flaps, and the rivets E E projected through the perforations K K of the front and back flaps the opposite ends of the handle H are attached to the projecting rivets E E on the opposite ends of the box, thus securely holding the sides of the box in place and providing said box with a handle. I also intend that this handle shall be used as a band to encircle the box when it is collapsed and folded into a flat package. In order that it may answer this purpose, I provide the handle H with a headed rivet L, which may be made substantially the same as the rivet E, above described. This rivet L is preferably located near one end of the handle, its exact location, however, being dependent upon the length of the band necessary to encircle the box when collapsed and folded into a package.

I will now describe the operation of setting up my folding box. Commencing with the blank, as shown in Fig. 1, the end flaps *a* are folded into a substantially vertical position. The back panel is then folded into a substantially vertical position, and the end flaps *c c* are folded laterally, so that the rivets E E will project through the openings K K. The front panel B is then folded up into position, and its end flaps *b b* are folded laterally, so that the rivets E E project through the perforations K K. The cover-panel is then folded into position on the top of the box and its end side flaps bent down into position. Any suitable catch (not shown) may be used for fastening the cover-flap *d'* to the front panel. The handle H, with its frames *f f*, is then put into position over the rivets E E. By reason of the fact that the end flaps of the back panel are scored substantially as above described, so as to permit the end flaps of the cover to fit therein and to lie flush with the end flaps of the back, the frames of the handle H may

be made straight, whereas if the end flaps of the cover folded over the end flaps of the back then it would be necessary that the frame should be curved or bent, so as to pass around the end flaps of the cover and then engage with the rivet projecting through the end flaps of the back. To collapse the box, the spring-tongues G are lifted, the frames *f f* at the opposite ends of the handle are removed from the rivets E E, the end flaps are removed from the rivets, and the box is permitted to resume the shape shown in Fig. 1. The flaps of all the panels are then folded in, as shown in Fig. 2. The cover-panel, with its folded flaps, is then folded upon the back panel, as shown in Fig. 3. The front panel, with its folded flaps, is then folded upon the bottom panel, as shown in Fig. 4. The combined cover and back panels are then folded upon the combined front and bottom panels, as shown in Fig. 5, thus forming a compact and flat package. The flexible handle H is then placed around the package, and the frame on one end thereof is attached in the manner above described to the projecting rivet L.

It is to be noted that by cutting away or tapering the flaps the edges of all the flaps when folded clear the double score-lines between the panels and do not interfere with each other or with the panels when folding the box into a flat package. It is also apparent that the tapering or diagonal scoring of the front and back panels converging away from the bottom panel permits the box to be set up for use without any interference of the different end flaps and panels, and also permits the folding of these panels and flaps into a flat and compact package when the box is collapsed without interference and without strain upon the flexible connections between the different panels and between the panels and the flaps. The converging away from the bottom panel of the end lines of the front and back panels results in the completed box when set up being of an upwardly-tapering shape, as shown in Fig. 8. The cover-panel is therefore of smaller dimensions than the bottom panel, and in some cases one or more of the flaps on the cover may be omitted. In some instances the cover-panel may be omitted altogether. The advantages resulting from my construction are obvious, as are also the advantages resulting from the construction of my detachable handle, which may also be used as a band, and of the frame at the end of the handle, whereby the handle may be connected to the projecting rivets.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A folding box consisting of flexibly-connected front, bottom, and back panels, each of said panels having flexibly connected thereto outwardly-tapering end flaps, the lines of connection of the end flaps to the front and back panels being diagonal and converging away from the bottom panel, substantially as and for the purposes above set forth.

2. A folding box consisting of flexibly-connected front, bottom, and back panels, each of said panels having at each end flexibly-connected outwardly-tapering end flaps, the ends of the front and back panels converging away from the bottom panel, and a cover-panel of smaller dimensions than the bottom panel; whereby said panels and flaps may be set up into an upwardly-tapering box, and collapsed and folded into a flat and compact parcel of no greater area than that of the bottom panel.

3. A folding box consisting of flexibly-connected front, bottom, back and cover panels, each of said panels having flexibly connected thereto outwardly-tapering end flaps the lines of connection of the end flaps to the front and back panels being diagonal and converging away from the bottom panel, and the outer edge of the end flaps of the back panel being indented to correspond with the end flaps of the cover-panel and to permit the latter to fit into the indentation when the folding box is set up, substantially as and for the purpose above set forth.

4. A folding box consisting of flexibly-connected front, back, and bottom panels, each of said panels having flexibly connected thereto outwardly-tapering end flaps, the lines of connection of the side flaps to the front and back panels being diagonal and converging away from the bottom panel; and means for fastening together the end flaps of the front, bottom and back panels when the box is set up, substantially as and for the purposes above set forth.

5. A folding box consisting of flexibly-connecting front, back, and bottom panels each of said panels having flexibly connected thereto outwardly-tapering end flaps, the lines of connection of the end flaps to the front and back panels being diagonal and converging away from the bottom panel, rivets secured to the flaps of the bottom panel near the ends of said flaps, and perforations near the ends of the flaps of the front and back panels adapted to receive the rivets on the flaps of the bottom panel, substantially as and for the purpose above set forth.

6. A folding box consisting of flexibly-connected front, back, bottom and cover panels, each of said panels having flexibly connected thereto outwardly-tapering end flaps, the lines of connection of the end flaps to the front and back panels being diagonal and converging away from the bottom panel; rivets secured to the flaps of the bottom panel near the ends of said flaps, of perforations near the ends of the flap of the front and back panels adapted to receive the rivets on the flaps of the bottom panel; and having the end flaps of the front, back and cover panels cut away, whereby when the said folding box is collapsed and folded into a flat package, the said end flaps of the front, back and cover

panels do not come in contact with said rivets; substantially as and for the purposes above set forth.

7. A folding box consisting of flexibly-connected front, bottom, and back panels, each of said panels having flexibly connected thereto outwardly-tapering end flaps, the lines of connection of the end flaps to the front and back panels being diagonal and converging away from the bottom panel; headed rivets secured to and projecting from the flaps of the bottom panel near the ends of said flaps, perforations near the ends of the flaps of the front and back panels through which said rivets are adapted to project; and a handle adapted to be removably attached to and to connect the projecting rivets on the opposite ends of the box when set up.

8. A folding box consisting of flexibly-connected front, bottom, and back panels, each of said panels having flexibly connected thereto outwardly-tapering end flaps, the lines of connection of the end flaps to the front and back panels being diagonal and converging away from the bottom panel; headed rivets secured to and projecting from the flaps of the bottom panel near the ends of said flaps, perforations near the ends of the flaps of the front and back panels through which said rivets are adapted to project; and a handle having at each end a frame containing a slot which for part of its length is of less width than the diameter of the head of the rivet, but which at one place is of slightly-greater diameter than said head, and a spring-tongue, whereby the ends of said handle may be removably attached to said rivets.

9. A folding box consisting of flexibly-connected front, bottom and back panels, each of said panels having flexibly connected thereto outwardly-extending end flaps, headed rivets secured to and projecting from the flaps of the bottom panel near the ends of said flaps, perforations formed near the ends of the flaps of the front and back panels through which said rivets are adapted to project and a handle having at each end a frame containing a slot which for part of its length is of less width than the diameter of the head of the rivet but which at one place is of slightly-greater diameter than said head and a spring-tongue whereby the ends of said handle may be removably attached to said rivets.

10. A folding box consisting of flexibly-connected front, bottom and back panels, each of said panels having flexibly connected thereto outwardly-extending end flaps, headed rivets secured to and projecting from the flaps of the bottom panel near the ends of said flaps, there being perforations formed near the end of the flaps of the front and back panels through which said rivets are adapted to project and a handle formed of flexible material having at each end a frame containing a slot which for part of its length is of less width than the diameter of the heads of the rivets, but which at one place is of slightly-greater diameter than said heads, a spring-tongue and a projection formed on said tongue extending from the plane of the same for manually moving said tongue whereby the ends of said handle may be removably attached to said rivets.

11. The combination of a folding box having panels and end flaps, the end flaps at each end having a headed rivet to hold the same together when the box is set up; and a flexible handle having at each end a slotted frame, as F, and having a headed rivet projecting from its surface, whereby said handle may be attached to the headed rivets on the end flaps; or may be used as a band to encircle the box when folded, the slotted frame in one end of the handle in such case engaging with the headed rivet on the surface of said handle, substantially as set forth.

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Witnesses:
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