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COLLAPSIBLE SHIPPING BOX

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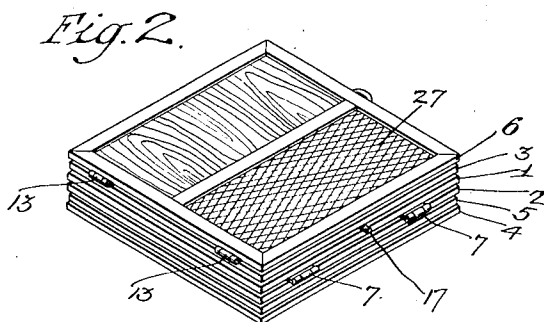
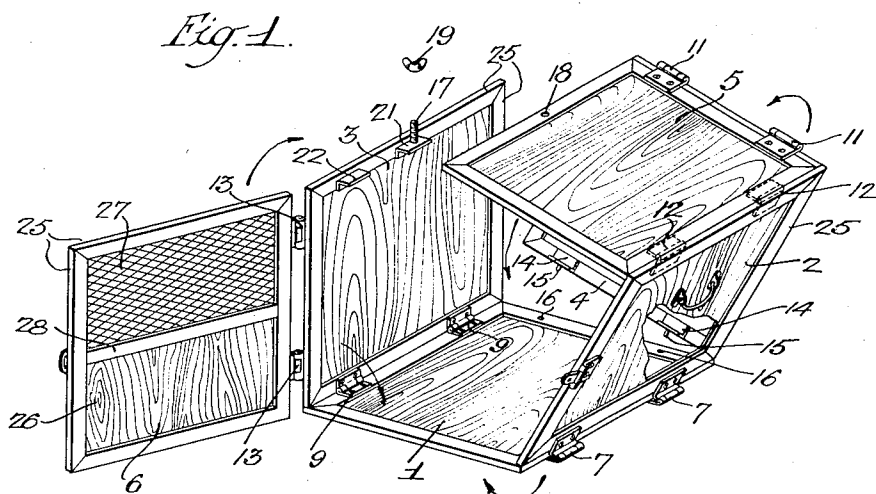


Fig. 3.

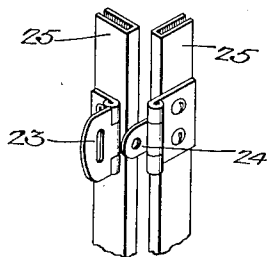
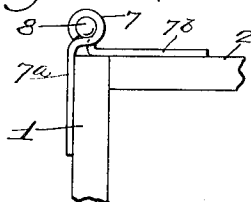


Fig. 4.



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COLLAPSIBLE SHIPPING BOX

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4 Claims. (Cl. 217-14)

This invention relates to improvements in collapsible or folding shipping boxes.

The primary object of the invention is to provide a strong, durable and light-weight box that may efficiently perform the function of a temporary kennel and which may be readily folded into relatively small compass when not in use; a further object being the provision of a shipping box of general utility having the above-named characteristics.

The invention resides in the novel structural form of the box and the manner in which the component parts are secured together.

In the attached drawing:

Figure 1 is a view in perspective illustrating the structural details of the box;

Fig. 2 is a view in perspective of the box folded;

Fig. 3 is a fragmentary view in perspective showing the details of the latching device, and

Fig. 4 is a fragmentary view of one of the hinge elements.

With reference to Figure 1, a box made in accordance with my invention comprises a base panel 1, side panels 2 and 3 respectively, rear-side and top panels 4 and 5, and a front panel 6 which constitutes the door of the box. The panel 2 is secured to one edge of the base panel 1 by hinges 7, 7, one of these hinges being shown in the enlarged fragmentary view of Fig. 4. It comprises one element 7a secured to the base panel 1 and projecting beyond the edge of the latter, this projecting end forming a socket for the pintle pin 8 and being offset upwardly, as viewed in Fig. 1. Each of the hinges comprises a second element 7b which is secured to the bottom edge of the panel 2 with its socketed end extending beyond the lower edge of the panel 2, also as viewed in Fig. 1, and being offset outwardly from the outer face of the panel to engage the pintle pin 8 in the conventional manner. These hinges are so formed as to permit adjustment of the panel 2 from a position at right angles to the panel 1, as shown in Fig. 4, to an alternative position wherein the panel 2 lies flatly against the under side of the base panel 1, as shown in Fig. 2.

The other side panel 3 is hinged to the opposite edge of the base panel 1 by means of hinges 9, 9, the relatively movable elements of which are secured respectively to the upper face of the base panel 1 and the inner face of the side panel 3, as clearly shown in Fig. 1. These hinges permit adjustment of the side panel 3 between a position, as shown in Fig. 1, in which the said panel extends upwardly at right angles from the base panel 1, and the position shown in Fig. 2, wherein the side panel 3 lies substantially flatly against the upper face of the panel 1.

The rear panel 4 is secured through the medium of hinges 11, 11 to the rear edge of the top panel 5, these hinges being secured to the outer faces

of the connected panels so as to permit the folding over of the panel 4 onto the top of the panel 5 from the position in which it is shown in Fig. 1, in which latter position it extends substantially at right angles to the top panel 5. This latter panel in turn is secured to the upper edge of the side panel 2 by means of hinges 12, 12 shown in broken lines in Fig. 1 and secured to the inner faces of the respective panels. The hinge 12 permits adjustment of the panel 5 with respect to the panel 2 from the position in which it is shown in Fig. 1, substantially at right angles to the last-named panel, to an alternative position wherein as illustrated in Fig. 2 it lies flatly against the inner face of the panel 2.

The front panel 6 is secured by hinges 13, 13 to the front edge of the side panel 3, the hinges being secured to the outer faces of both panels and permitting adjustment of the panel 6 between alternative positions in one of which it lies flatly against the outer face of the panel 3 and in another of which it lies substantially at right angles to the panel 3 and against the front edges of the panels 1, 2, 3 and 5.

The manner in which the panels are adjusted to form the box and the means by which the panels are held securely together in box formation is well illustrated in Fig. 1. It will be noted that the lower edge of the back panel 4 is provided at the inner face of the panel with angle brackets 14, 14, which when the box is set up bear upon the upper face of the base panel 1 at the rear edge of the latter, and each of these brackets comprises a depending pin 15 which is adapted to enter an aperture 16 in the base panel 1 to thereby in effect interlock the lower edge of the rear panel 4 with the base panel 1. The pins 15 can be cleared from the apertures 16 only by an adjustment of the side panel 2, the top panel 5 and the rear panel 4 into or toward the positions in which they are shown in Fig. 1. Normally such movement of these panels is prevented by a stud 17 which enters an aperture 18 at the edge of the top panel 5, a wing or other suitable nut 19 being provided for the stud 17 to prevent displacement of the top panel from the stud. To the inner side and at the upper edge of the side panel 3 is secured an angle bracket 21 which carries the upwardly extending stud 17 and which also forms a bearing or seat for the edge of the top panel 5. Preferably a second angle bracket 22 is provided at the upper inner edge of the panel 3 for similarly supporting the otherwise unsupported forward edge of the top panel 5 at that side.

When the box is set up, it will be apparent that by the simple interlock devices between the rear panel 4 and the base panel 1 and between the top panel 5 and the side panel 3, the entire group of panels, with the exception of the front panel 6, is securely and rigidly held in their respective

right angle positions forming the body of the box; and that the panels may be released for folding into the compact form shown in Fig. 2 by the simple expedient of removing the nut 19. As previously set forth, the front panel 6 constitutes the door of the box. When closed, the front panel bears against the forward edges of the panels 1, 2, 3 and 5, and it may be secured in this position by means of a latch comprising as shown in Fig. 3 a hasp element 23 hinged to the edge of the panel 6 and a staple element 24 which cooperates with the hasp 23 in well known manner and which is hinged to the forward edge of the side panel 2. By so hinging the hasp and staple elements to the respective panels, these elements may be folded back against the faces of the panels so as not to interfere with the folding of the panels as described above, and so also that they may be contained within the limits of the folded panels.

The individual panels may be substantially uniform in construction as illustrated. In the present instance, each consists of a rectangular frame composed as shown in Fig. 3 of channel elements 25, and the body of the panels may be formed of plywood or any other suitable sheet material, the edges of which occupy the channeled recesses of the frame. For shipping purposes, it is preferable to have solid panels in order to preclude exposure of the dog to drafts, and provision for necessary ventilation is made in the front panel 6, the lower portion of which is formed solid by means of a sheet of the plywood or other suitable material, as indicated at 26, and the upper portion of which is formed of wire mesh, as indicated at 27. To this end, the frame of the panel 6 is provided with an intermediate channeled cross member 28 which receives the lower edges of the wire mesh fabric 27 and the upper edge of the solid panel member 26. The elements 25 of the panel frames may be secured together by welding or in any other suitable manner.

It will be understood that a box made in accordance with my invention while designed primarily for dogs will have a general utility as a shipping container. When used for other than live stock or for goods requiring ventilation, all of the panels may be made solid. An advantage of the box as a shipping container resides in its foldability to relatively compact form for economical return to the place from which it was shipped and for storage. A box made in accordance with my invention as described above has all the elements of ruggedness and durability, cheapness of manufacture and simplicity of form and assembly required for the purpose.

I claim:

1. A box structure comprising a floor panel, side panels hinged to opposite edges of the floor panel and adapted to be folded from the normal extended positions flatly against the upper and lower faces of the floor panel respectively, a top panel hinged to the upper edge of the last-mentioned side panel and adapted to be folded flatly against the inner face of said side panel, a back panel hinged to the rear edge of the top panel and adapted to be folded over against the upper face of the latter panel, means at the lower edge of said back panel for interlocking engagement with the rear end of the floor panel, means for clamping a free edge of the top panel to the top of the first-mentioned side panel, a door panel hinged to the front edge of the said first-mentioned side panel and adapted to be folded rearwardly against the outer face of said panel, and

means for fastening said door panel in position at the forward edges of said floor, top and side panels to thereby close the box.

2. A box structure comprising a floor panel, side panels hinged to opposite edges of the floor panel and adapted to be folded from the normal extended positions flatly against the upper and lower faces of the floor panel respectively, a top panel hinged to the upper edge of the last-mentioned side panel and adapted to be folded flatly against the inner face of said side panel, a back panel hinged to the rear edge of the top panel and adapted to be folded over against the upper face of the latter panel, cleats at the lower edge of said back panel adapted to bear upon the upper surface and at the rear edge of said floor panel, pins depending from said cleats and adapted to enter apertures at the back of the floor panel to thereby interlock said floor and back panels, means for clamping a free edge of the top panel to the top of the first-mentioned side panel, a door panel hinged to the front edge of the said first-mentioned side panel and adapted to be folded rearwardly against the outer face of said panel, and means for fastening said door floor, top and side panels to thereby close the box.

3. A box structure comprising a floor panel, side panels hinged to opposite edges of the floor panel and adapted to be folded from the normal extended positions flatly against the upper and lower faces of the floor panel respectively, a top panel hinged to the upper edge of the last-mentioned side panel and adapted to be folded flatly against the inner face of said side panel, a back panel hinged to the rear edge of the top panel and adapted to be folded over against the upper face of the latter panel, cleats at the top of said first-mentioned side panel for supporting the side free edge of the top panel, means for detachably interlocking the contiguous edges of said first-mentioned side panel and said top panel, a door panel hinged to the front edge of the said first-mentioned side panel and adapted to be folded rearwardly against the outer face of said panel, and means for fastening said door floor, top and side panels to thereby close the box.

4. A box structure comprising a floor panel, a side panel hinged interiorly to one side edge of said floor panel and being adapted to fold inwardly against the upper surface of said floor panel, a door panel hinged exteriorly to the front edge of said side panel and adapted to be folded rearwardly against the outer face of said side panel, an opposite side panel hinged exteriorly to the opposite edge of said floor panel, said hinges being constructed to permit said side panel to be folded under and flatly against the under face of the floor panel, a top panel hinged interiorly to the upper edge of the last-named side panel and being thereby adapted to be folded against the inner face of said panel, a back panel hinged exteriorly to the rear edge of said top panel and adapted to fold over to a position flatly against the upper face of said top panel, means for detachably interlocking the lower edge of said back panel with the rear of said floor panel, and means for detachably securing the free side edge of said top panel to the upper edge of the first-named side panel, said panels being adapted by release of said securing means to be folded together in flat superimposed relation.