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O. W. BODEN ET AL
SHOE FORM AND STORAGE BOX

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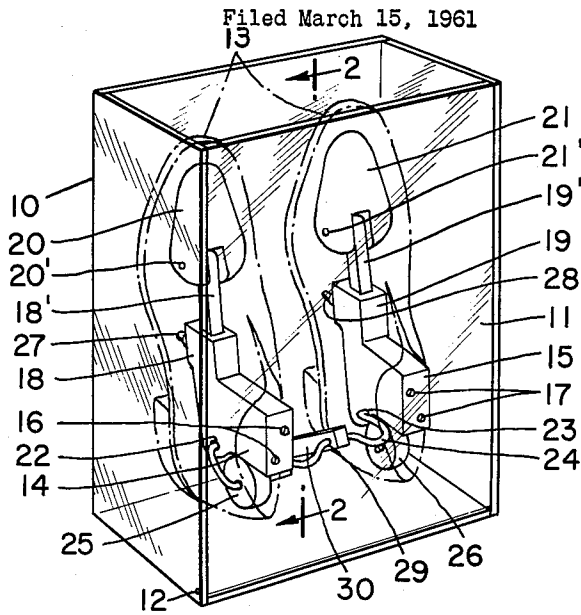


FIG. 1.

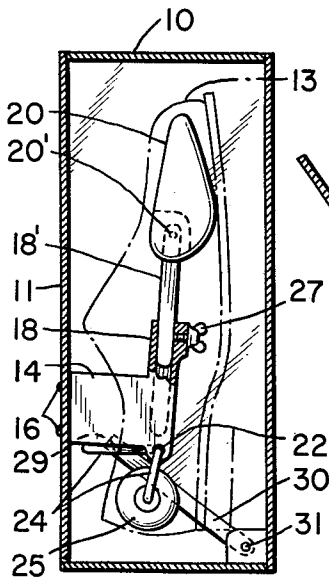


FIG. 2.

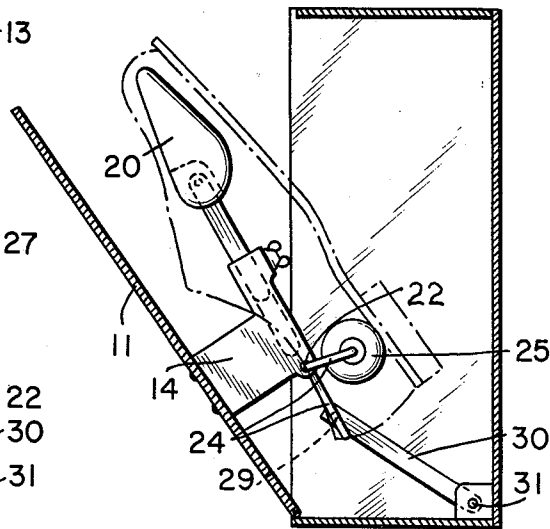


FIG. 3.

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SHOE FORM AND STORAGE BOX

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4 Claims. (Cl. 206—7)

This invention relates generally to a shoe form and storage box for facilitating the storing of shoes in closets and the like.

One important object of this invention is to provide a convenient storage place for shoes which simultaneously serves to hold the shoes in shape to the end that closet floors and the like may be kept clear.

Another important object is to provide a storage container for shoes which will maintain them clean and free from dirt and which will support the shoes in a manner such that the tops of the shoes are clearly visible through a transparent front panel portion constituting part of the enclosure.

Another object is to provide an enclosure for shoes including a transparent lid coupled to shoe trees which automatically stretch and shape the shoes when the lid is closed and which automatically slacken their hold on the shoes when the lid is opened.

Still another object is to provide a novel combination enclosure and shoe forming means in which the shoes themselves serve to exert a reverse bias for holding the enclosure front lid or panel in a closed position.

Briefly, these and many other objects and advantages of this invention are attained by providing a box structure including a transparent front panel or lid hinged at its lower edge for swinging movement from an open to a closed position. Suitable pedestal means are secured to the inside surface of the movable front panel and support conventional toe forming portions of shoe trees. The heel form members of the shoe trees are pivoted to the pedestals and coupled through a lever arrangement to a support on the floor of the box structure. The arrangement is such that swinging of the panel from the open to the closed position will result in rotation of the heel form in a direction to increase the overall length between the toe form and the heel form so that shoes placed thereon will be stretched. This stretching is achieved without the necessity of any springs or the like. Moreover, because of an over center principle employed, the reaction compression forces between the toe and heel portions of the tree forms exerted by the shoes will tend to maintain the panel in closed position.

The pedestal portions connected to the toe forms of the trees include adjustable means for varying the initial distance between the toe form and heel member so that an initial adjustment may be made for the particular shoes to be employed in the box structure. The proper degree of stretching will then be insured when the shoes are placed on the forms and the lid closed. The lid itself is transparent, and the pedestals and shoe trees are positioned such as to display the tops of the shoes through the transparent lid so that shoes may be readily identified. Further, the box structure is preferably of rectangular shape so that several such structures may be stacked one above the other or in side-by-side relationship. Since the opening lid portion constitutes the front vertical panel, either vertical or side-by-side stacking can be achieved.

A better understanding of the invention will be had by referring to a preferred embodiment thereof as illustrated in the accompanying drawings, in which:

FIGURE 1 is an overall perspective view of one embodiment of the shoe forms and storage box;

FIGURE 2 is a cross section taken in the direction of the arrows 2—2 of FIGURE 1; and,

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FIGURE 3 is a view similar to FIGURE 2 but showing the box in an open position to enable ready removal of the shoes.

Referring first to FIGURE 1, the form and box combination constitutes a box structure 10 preferably made of transparent plastic side walls as shown. The box 10 includes a front cover or lid 11 also transparent and preferably hinged to the box structure along its lower edge as at 12 for swinging movement from a closed position such as illustrated in FIGURE 2, to an open position as in FIG. 3.

As shown in FIGURE 1, the box is designed to store a pair of shoes indicated in dotted lines at 13. The supports for these shoes include a pair of pedestals 14 and 15 secured to the inside front portion of the door 11 as indicated at 16 and 17. These pedestals 14 and 15 respectively extend into upward members 18 and 19 cooperating with telescoping sliding members 18' and 19' in turn pivoted to toe form members 20 and 21 at 20' and 21'.

The lower end portions of the pedestals 14 and 15 include journals at 22 and 23 for supporting a single integral rod 24 rotatably mounting at its free ends suitable heel forms 25 and 26. The overall length between the heel forms 25 and 26 and the respective toe forms 20 and 21 can be varied by changing the telescoping relationship of the members 18 and 18' and 19 and 19' to fit the particular pair of shoes 13 to be stored. This adjustment is effected by loosening suitable wing nuts or equivalent set screws as shown at 27 and 28, making an adjustment, and then tightening the nuts.

The single integral rod 24, as shown in FIGURE 1, includes a central curved portion pivoted at 29 to a link 30. The other end of the link 30 connects to a rear portion 31 of the box structure.

The particular arrangement will be clearer by referring to FIGURE 2 wherein the relationship and configuration of the rod and lever is such that when the shoe trees are in the position shown with the lid closed, the heel form 25 is at its maximum distance from the toe form 20. In fact, it will be noted that the journal 22 for the rod 24 connecting to the heel form 25 is disposed to the right of a straight line connecting the center of the heel form and the pivot point of the toe form 20 so that any compression forces exerted on the toe and heel forms by the shoe 13 itself as a consequence of stretching of the same will bear against the journal 22 and urge the pedestal 14 to the right as viewed in FIGURE 2 thereby tending to hold the lid 11 in a tightly closed position.

Referring now to FIGURE 3, it will be evident that if the lid 11 is moved open, the swinging motion will be transmitted through the pedestal 14 to the journal 22 thus swinging the rod 24 in a counterclockwise direction about the central pivot 29 on the link 30, this motion moving the heel form 25 upwardly closer to the toe form 20 such that the relative parts will assume the position shown in FIGURE 3 when the door 11 is all the way open. The degree to which the door or panel 11 can be opened is limited by the overall length of the link 30 which serves as a stop to limit maximum opening of the front panel.

In the position shown, it will be evident that swinging of the heel form 25 has resulted in a reduction in the distance from the toe form 20 so that the shoes may be readily removed from the forms and worn. Similarly, when the lid is in the open position as shown in FIGURE 3, the shoes may be readily reinserted on the tree forms. Closing of the lid 11 then automatically reverses the movements of the rod and link to both enclose the shoes in a dustproof structure and simultaneously stretch the same to maintain them wrinkle free and in good condition.

It will be evident from the foregoing description that the over center rod and link arrangement is such that there

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is eliminated the need for any springs and the like, and yet a biasing action on the lid to hold the same closed is achieved as well as a proper and constant stretching force applied to the shoes. Proper operation, of course, depends upon proper initial adjustment by means of the wing nuts 27 and 28 of the distance between the toe and heel forms. However, once this adjustment is made, it need never be changed unless the shoes are changed.

While the box structure 10 is shown as transparent on all sides, it is only necessary that the front panel be transparent in order to enable the tops of the shoes to be readily visible.

Various modifications and changes that fall clearly within the scope and spirit of this invention will occur to those skilled in the art. The shoe form and storage box is therefore not to be thought of as limited to the particular embodiment set forth merely for illustrative purposes.

What is claimed is:

1. A shoe form and storage box comprising, in combination: a box structure; shoe forms having heel and toe form members positioned in said box structure; lid means hinged to said box structure; and coupling means connected to said lid and said shoe forms and responsive to opening of said lid to reduce the spacing between said heel and toe members and responsive to closing of said lid to increase said spacing whereby shoes placed over said shoe forms when said lid is open are stretched when said lid is closed.

2. A shoe form and storage box, according to claim 1, in which said coupling means includes: pedestal members secured to said lid and to said toe forms; a rod member passing through journals in said pedestal members and connecting to said heel forms such that swinging movement of said heel forms about said journals varies the distance between the engaging end portions of said heel

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forms and said toe forms; a link pivoted to said box structure and having its free end pivoted to a central portion of said rod member such that swinging movement of said lid causes rotation of said rod about its central portion to vary said distance between said heel and toe members.

3. A shoe form and storage box according to claim 2, in which said link and rod members cooperate to provide an over-center action whereby the bias exerted on said heel and toe members in response to stretching of said shoes holds said lid closed.

4. A shoe holding frame, including, in combination: shoe forms having heel and toe form members mounted to said frame; actuating means mounted to said frame for swinging movement between a first position and a second position relative to said frame; pedestal members secured to said actuating means and to said toe forms so that said pedestal members are moved together as a unit upon swinging movement of said actuating means; and means coupling said heel form to said pedestal members and frame and responsive to movement of said pedestal members by said actuating means to increase the distance between the engaging end portions of said heel and toe forms when said actuating means is moved to said first position, and decrease said distance when said actuating means is moved to said second position whereby shoes placed over said shoe forms when said actuating means is in said second position are stretched when said actuating means is moved to said first position.

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