United States Patent [19]

Sullivan

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[45] **Apr. 17, 1973**

[54] **CONTAINER**

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[73] Assignee: **Nashua Corporation,** Nashua, N.H.

[22] Filed: **Mar. 31, 1971**

[21] Appl. No.: **129,810**

[52] **U.S. Cl.** .....**229/16 R,** 206/57 R, 271/61

[51] **Int. Cl.** **B65l 5/00**

[58] **Field of Search**.....206/57 R; 271/61, 271/61 TR, 61 BF; 229/16 R, 16 A

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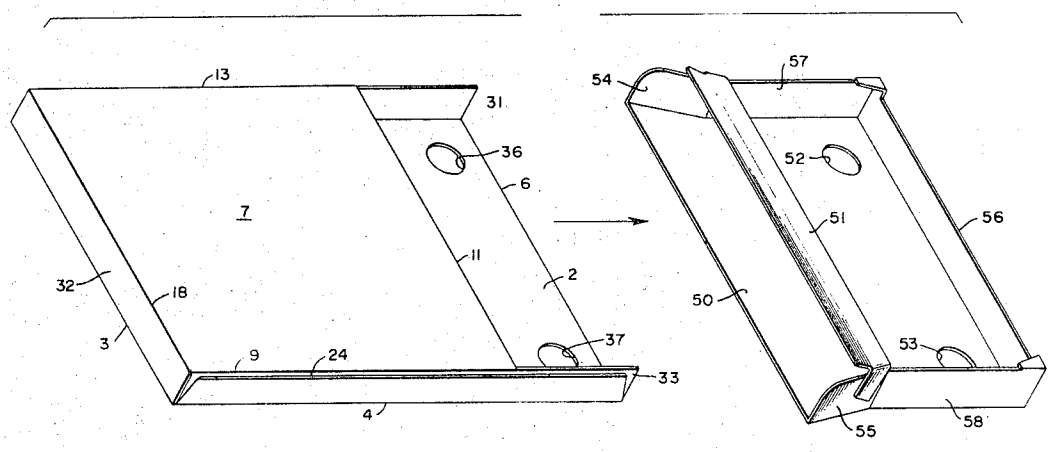
Primary Examiner—Davis T. Moorhead

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[57] **ABSTRACT**

A box for retaining a stack of paper sheets and adapted to feed the sheets one by one to a copying apparatus. The box is formed from two folded blanks each having a top panel, a bottom panel, two side panels and one end panel so that each folded blank has an open end. The open end of one blank fits over the open end of the other blank and any exposed paper sheets.

4 Claims, 7 Drawing Figures



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SHEET 1 OF 4

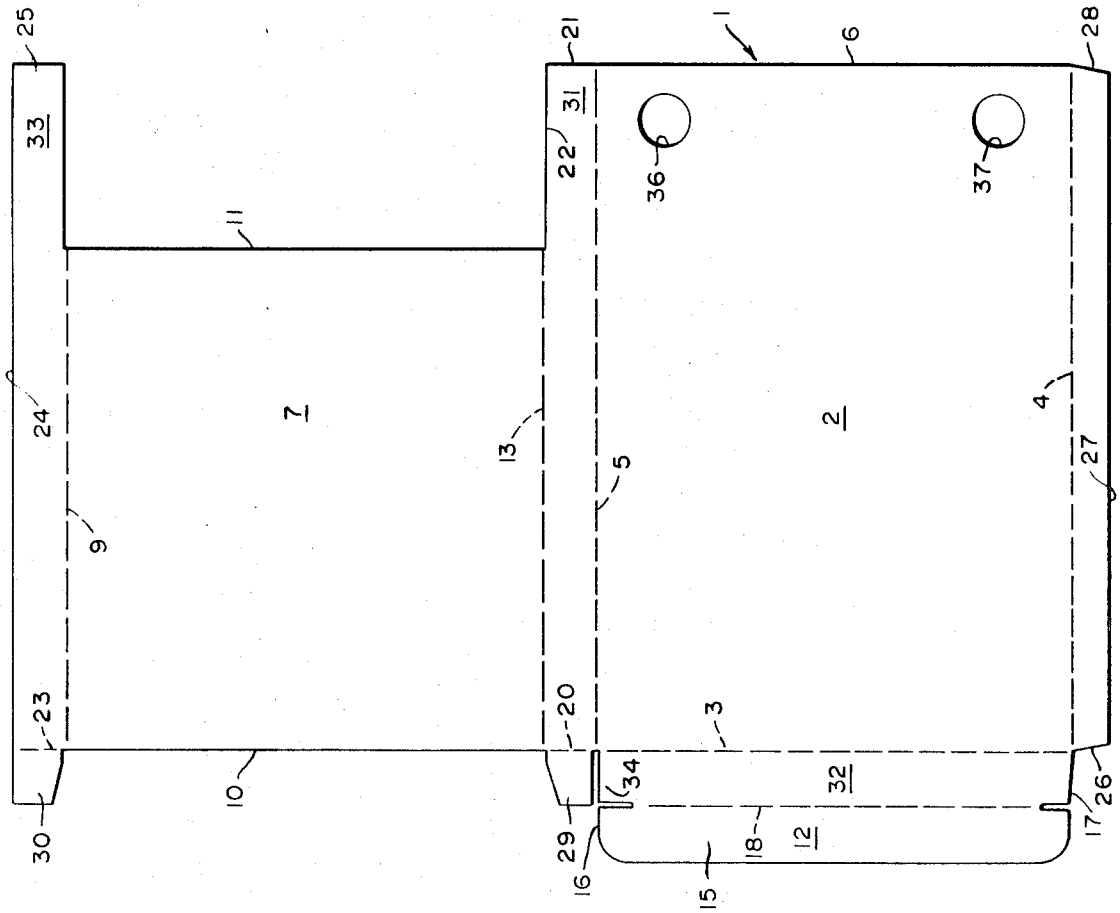


FIG. 1

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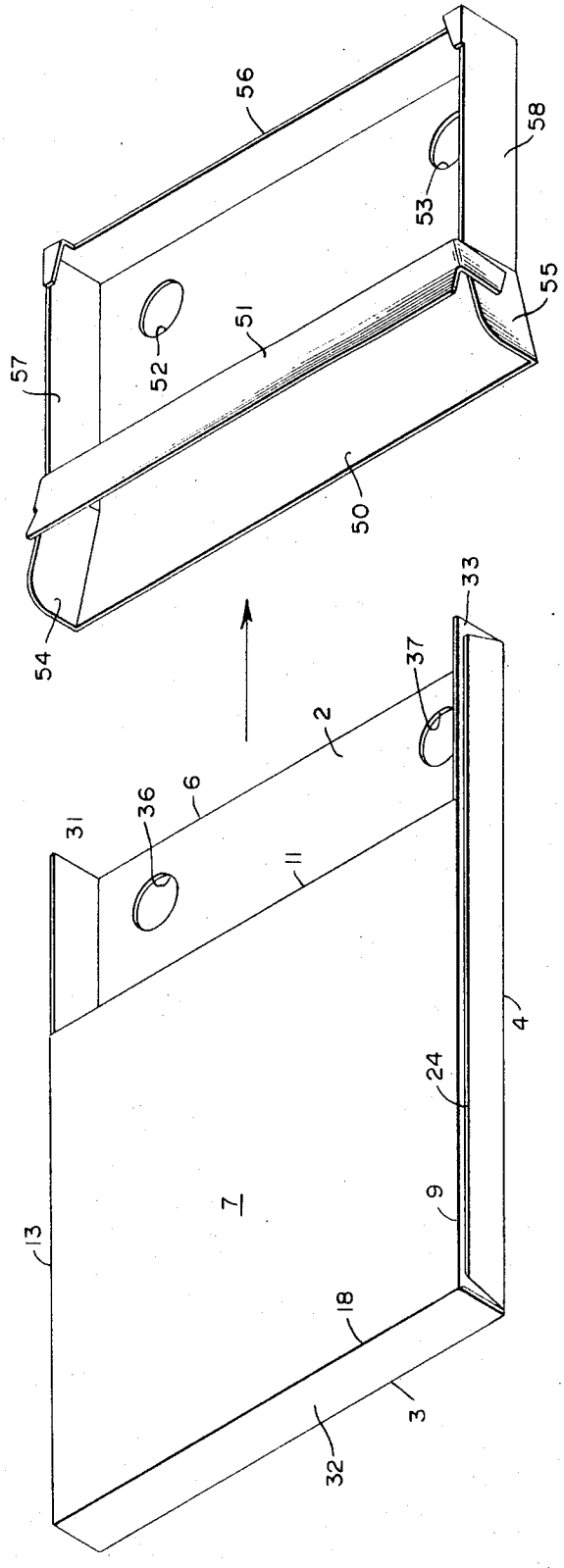


FIG. 3

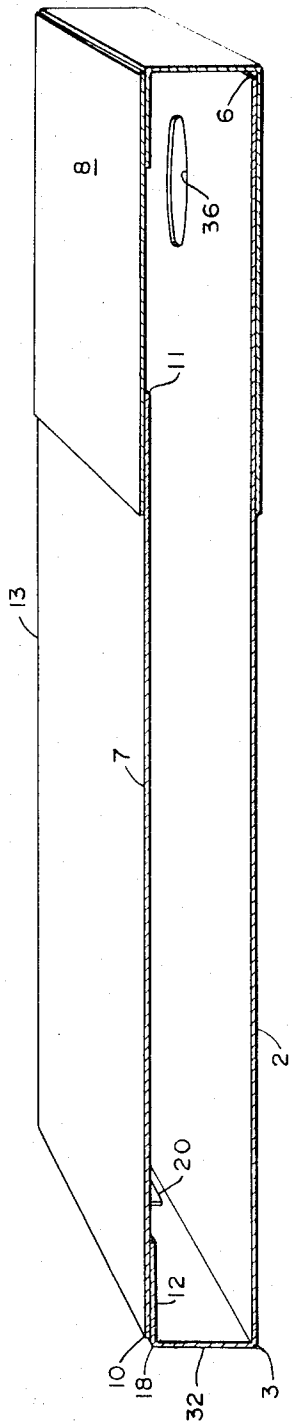


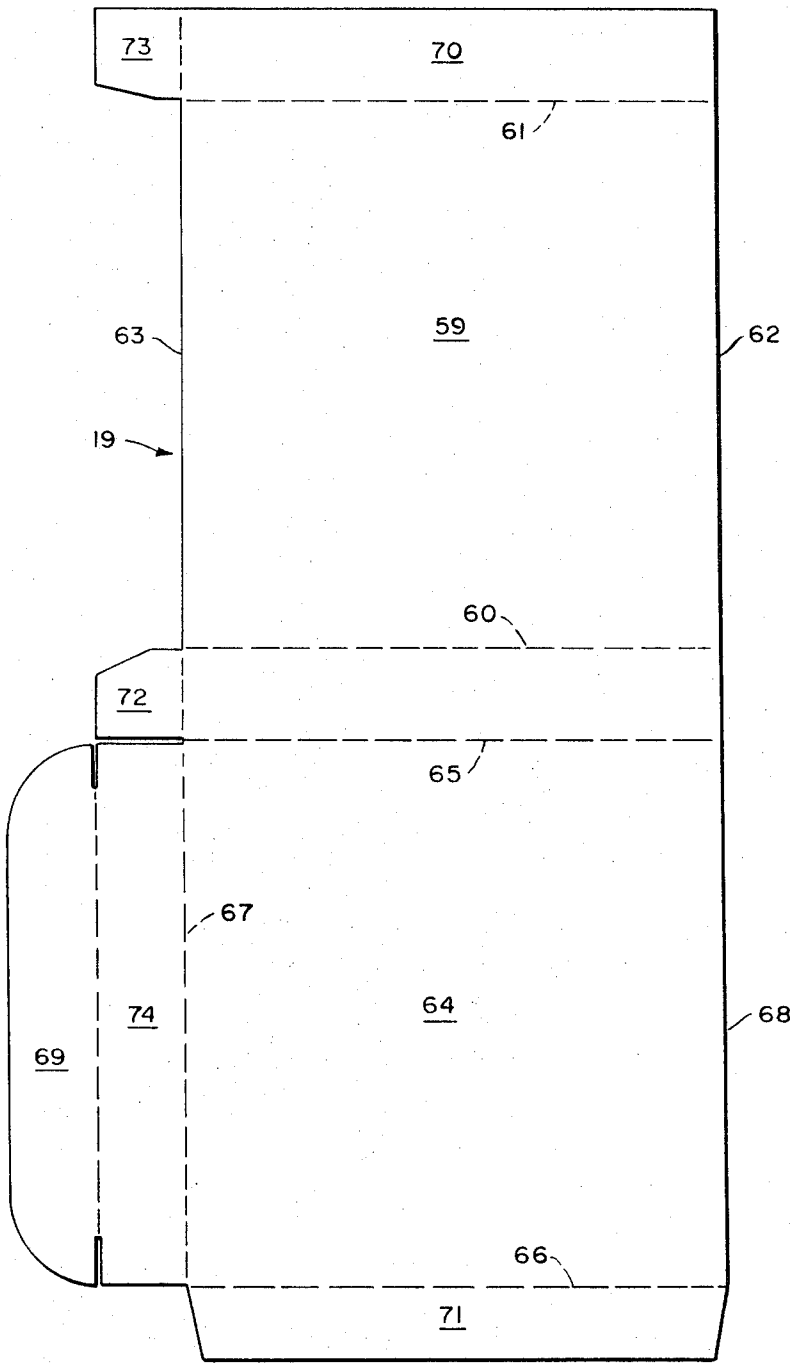
FIG. 2

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FIG. 4

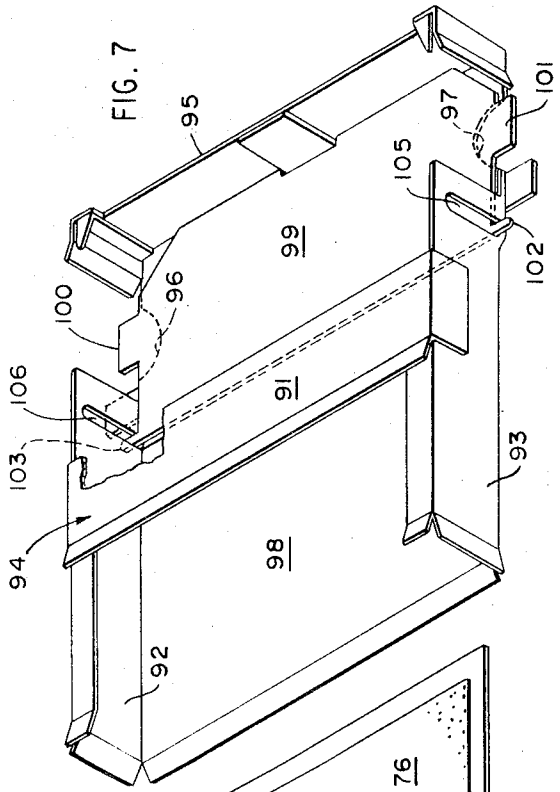


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FIG. 7



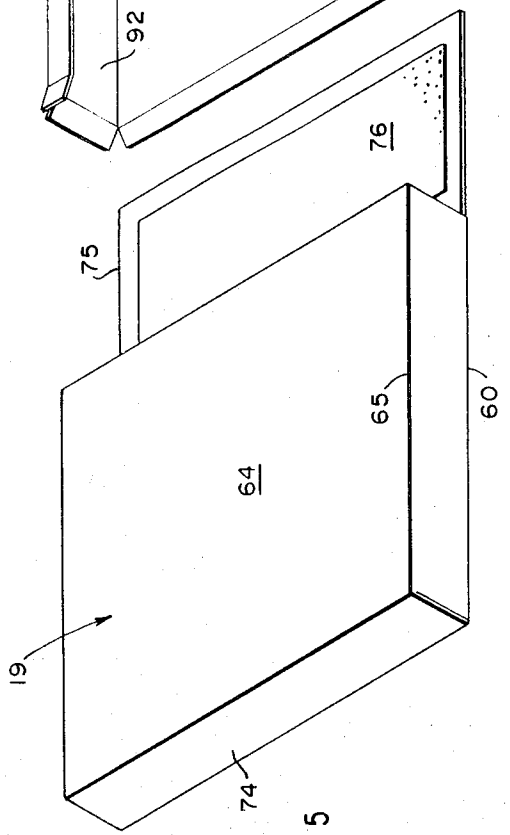


FIG. 5

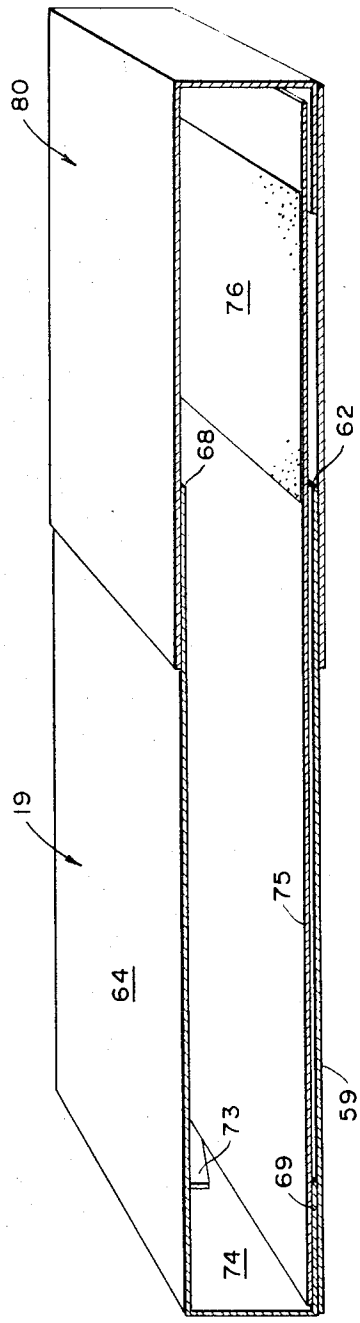


FIG. 6

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CONTAINER

This invention relates to a container adapted to dispense paper sheet and more particularly to a container adapted to dispense paper sheet to copying apparatus.

Paper sheets are presently fed to copying machines either from a stack of exposed paper sheets or from a stack of paper sheets enclosed in a dispenser. A dispense such as a cardboard box provides advantages as compared to the exposed stack of sheets in that disorientation of the sheets is minimized prior to and while being fed to the copying apparatus. Sheet disorientation can cause simultaneous feeding of more than one sheet or a sheet being fed at an improper angle thereby causing the machine to become jammed. Therefore, it is essential that the method of feeding a copying apparatus guarantee that only one sheet at a time at the proper angle be fed thereto. Furthermore, the pick-up apparatus associated with the copying machine requires that the top sheet presented for pick-up be flat. This is generally accomplished by applying moderate pressure to the bottom of the paper stack in the dispenser to apply even pressure continuously to the top sheet. When the paper sheets are dispensed from an exposed stack, a restraining member opposing the pressure applied to the bottom sheet usually contacts only a small portion of the sheet surface. This reduces the friction force caused by contacting the top sheet and the restraining member thereby reducing the necessary force to remove the top sheet from the stack. Generally, when this force is minimized, the probability of picking up more than one sheet from the stack is correspondingly reduced.

A wide variety of containers have been proposed for storing paper sheets to be dispensed, one at a time. However, they have proven unsatisfactory for dispensing the paper without causing jamming in the copying apparatus. This has resulted either because the initial package design did not provide equal frictional force on the top sheet or the package was not sufficiently strong to withstand normal forces encountered during shipping which resulted in package distortion and unequal frictional forces on the top sheet during dispensing.

It would be highly desirable to provide a means for dispensing paper sheet from a container which prevents sheet disorientation and is sufficiently strong to withstand normal shipping.

In accordance with the present invention, there is provided a container for paper sheets especially adapted for use with a copying apparatus. The container comprises a two-piece container; one piece retaining a stack of paper sheets so that a portion of the top sheet is exposed when the container is open. The second container piece fits over the first piece so that it covers the exposed paper sheets and protects the open portion of the first piece. When sheets are to be dispensed, the second piece is removed and the exposed stack in the first piece are inserted into a retainer associated with a copying apparatus.

Reference is made to the accompanying drawings for further understanding of the present invention.

FIG. 1 shows a blank for a container used to store relatively wide paper sheets.

FIG. 2 is a horizontal cross-sectional view along the longitudinal midplane of the assembled container of FIG. 1 and an overlaying second container piece.

FIG. 3 shows the relationship of the container of FIG. 1 with the overlaying piece removed when assembled, and a retainer therefor. FIG. 4 shows a blank for a container to store relatively narrow paper sheets.

FIG. 5 is an isometric view of the assembled blank of FIG. 4 containing a bottom cardboard sheet.

FIG. 6 is a cross-sectional view of the container of FIG. 5 with an overlaying second piece.

FIG. 7 is an isometric view of a retainer used with the container of FIG. 5.

Referring to FIG. 1, the inside surface of a first container piece 1 is shown with the broken lines signifying scores along which the blank is folded toward the inside of the box. The box blank comprises a bottom panel 2 defined by folds 3, 4, 5 and edge 6. The top panel 7 is defined by folds 9 and 13 and edges 10 and 11. When the blank is folded and constructed to form a container, the flap 12, defined by edges 15, 16 and 17 and fold 18, extends into the container. When the blank is folded, one of the side panels defined by folds 5, 13 and 20 and edge 21. The other side panel defined by folds 9 and 23 and edges 24 and 25 is joined to side panel defined by fold 4 and edges 26, 27 and 28. Tabs 29 and 30 together with panel 32 defined by fold 3 and 18 and edges 34 and 17 are joined.

The holes 35 and 36 in bottom panel 2 are adapted to accommodate blunt prongs extending from the copying apparatus for purposes of applying pressure to the stack of paper sheets in the box.

As shown in FIG. 2, the box is constructed by placing piece 8 on piece 1. Piece 1 comprises top panel 7, bottom panel 2, and flap 12. The side panel 32 is reinforced by panel 31 and tab 29. Top panel 7 and side panel 32 are joined. Piece 8 is slid over piece 1 so that it covers a stack of paper in piece 1 and protects extension 31 and 33 and edge 11.

Referring to FIG. 3, the relationship of the box with piece 8 removed and a retainer 50 for the box is shown. When the paper is to be fed in the copy apparatus, a second container piece 8 (see FIG. 2) is removed from contact with the container piece 1 and the paper in the box. When pressure is applied on the stack of paper through holes 35 and 36, the top sheet of paper contacts pick-up rollers associated with a copying apparatus (not shown). The retainer 50 either fits into or is an integral part of the copying machine, (not shown) and the box is inserted into retainer 50. Holes 52 and 53 of the retainer 50 complement holes 36 and 37 of the box to provide means for applying moderate pressure to the stack of paper. The retainer bar 51 and walls 54 and 55 are flared to facilitate insertion of the box into the retainer 50. The height of walls 57 and 58 are substantially the same as the heights of the box to provide a snug fit. The edge 56 is lower than the height of the box and the walls 57 and 58 to facilitate removing the top sheet from the box.

Referring to FIG. 4, a container piece 19, suitable for use with small paper sheets of such dimensions as 5 ½ inches by 8 ½ inches comprise a top panel 59 defined by folds 60 and 61 and edges 62 and 63. The top panel 64 is defined by folds 65 and 66 and 67 and edge 68. When the blank is folded, the flap 69 extends into the

piece 19 and the side panel 70 and 71 are joined together and tabs 72 and 73 are folded to contact panel 74.

Referring to FIG. 5 the container 19 has a cardboard insert 75 which is employed at the sheet of a stack of paper sheets. The insert 75 has a strip 76 with adhesive material on its exposed surface to permit feeding of the bottom portions of the paper stack one at a time to the copying machine.

As shown in FIG. 6, the container, prior to use, is fit into a second container piece 80 so that the container piece 80 covers a stack of paper sheets in container piece 19 and insert 75 as well as the exposed edges 62 and 68.

Referring to FIG. 7, the retainer 90 is employed to accomodate the narrow container shown in FIG. 5. The retainer 90 has a length equal to the length of the exposed stack of paper sheets and about one half the length of the container 19 to provide support to the stack of paper sheets and the container 19. The retainer bar 91 and walls 92 and 93 are flared to facilitate insertion of container 19. The height of walls 92 and 93 are substantially the same height as the box and the edge 95 is lower than the height of the container 19 and walls 92 and 93 to facilitate removal of the top paper sheet from the container 19. Holes 96 and 97 are provided in the bottom surface 98 of the retainer 90 to accomodate prongs associated with a copying apparatus, (not shown). A plate 99, adapted to contact the prongs and move vertically, is provided to apply equal pressure over the surface of the bottom cardboard insert 76 and the top sheet. Extension 100 and 101 of plate 99 extend beyond the width of the stack of paper sheets to provide uniform pressure there and tabs 102 and 103 of slate 99 fit into slots 105 and 106 to maintain plate 99 within retainer 90 during vertical movement of the plate 99. The box accomodates standard paper sizes now used, most generally 8 ½ by 11 inches and 8 ½ by 14 while box 19 accomodates paper having various widths of about 5 ½ inches. The adhesive is applied to the top surface of the stiff insert sheet to prevent feeding more than the one paper sheet to the copying machine. WHen the adhesive is not used, the last and next to last paper sheets in the stack normally will be fed simultaneously to the copying machine. In addition, the adhesive serves to clean the rollers associated with the copying machine after the last sheet has been fed to the copying machine.

I claim:

1. A box adapted to house a stack of paper sheets and to permit one-by-one dispensing of the paper sheets comprising

a. a folded first blank having

1. a first top panel having a size and shape adapted to expose the entire width of a top paper sheet in said stack adjacent one end of said top sheet,
2. a first bottom panel
3. a first side panel hinged to the first top and bottom panels
4. a second side panel formed by joining a third side panel hinged to the first top panel and a fourth side panel hinged to the first bottom panel and
5. one end panel

b. a folded second blank having

6. a second top panel
7. a second bottom panel
8. a fifth side panel hinged to the top and bottom panels
9. a sixth side panel formed by joining a seventh side panel hinged to the second top panel and an eighth side panel hinged to the second bottom panel,
10. one end flap, an open end of said folded second blank being sufficiently large to fit over an open end of said folded first blank, and

c. means associated with said folded first blank to permit application of pressure through said stack and to provide substantially uniform pressure across the width of the top sheet on said stack.

2. The box of claim 1 wherein the top panel of said folded first blank is shorter than side panels of said first blank and said first bottom panel to form a free end on said first top panel substantially normal to the side panels.

3. The box of claim 1 wherein the first bottom panel has a plurality of holes arranged to accommodate apparatus for applying pressure to a stack of paper sheets in the box having the shape of said first bottom panel.

4. The box of claim 2 wherein the first bottom panel has a plurality of holes arranged to accommodate apparatus for applying pressure to a stack of paper sheets in the box having the shape of said first bottom panel.

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