

[54] COPY SHEET PACKAGE

[72] Inventor: George E. Bell, Ontario, N.Y.

[73] Assignee: Xerox Corporation, Rochester, N.Y.

[22] Filed: July 3, 1969

[21] Appl. No.: 839,017

2,659,303 11/1953 Quirk.....271/36 X
925,349 6/1909 Kraetsch.....206/63 X
834,527 10/1906 Klein229/30

Primary Examiner—Leonard Summer

Attorney—Norman E. Schrader, James J. Ralabate and Melvin A. Klein

[52] U.S. Cl.....206/57, 206/63, 229/30,
271/36, 271/61

[51] Int. Cl.....B65h 3/02, B65d 85/16, B65h 1/04

[58] Field of Search229/30, 1.5, 34; 206/57, 63,
206/73, 46 SY, 46 CT

[56] References Cited

UNITED STATES PATENTS

2,271,265 1/1942 Kirby.....229/1.5
2,841,275 7/1958 Schwimmer et al.206/57
2,705,555 4/1955 Brenner.....206/46 CT

[57]

ABSTRACT

A unitary tray for storing and dispensing a stack of sheets comprising a blank having a base portion, a lateral side flap portion, and a lateral end flap portion, said side flap and end flap portion being scored to induce folding along parallel lines and having an adhesive thereon to form rectangular support elements on the end and one side of a stack of sheets to be fed, said side support element having secured thereto a plurality of friction pad elements to enable feeding sheets one at a time without skewing. A wrapper enclosing the tray and stack of sheets to form a package.

1 Claim, 6 Drawing Figures

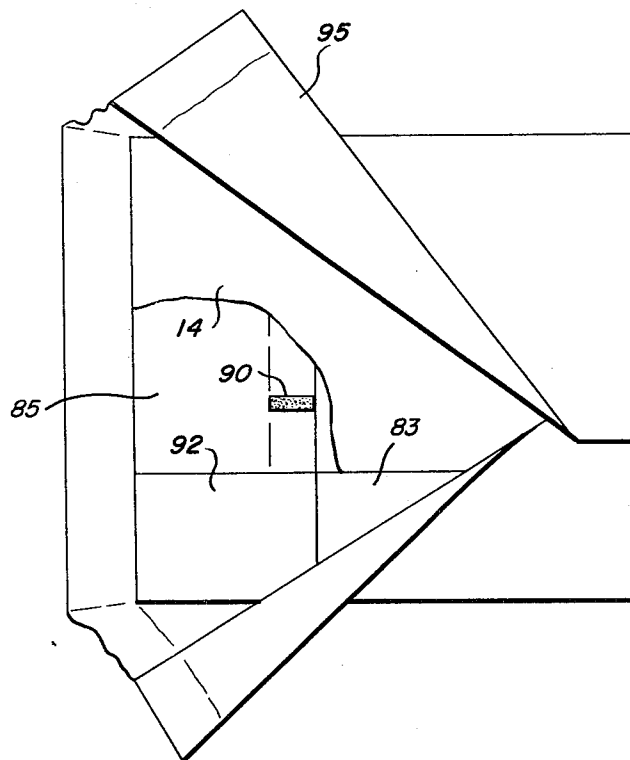


FIG. 1

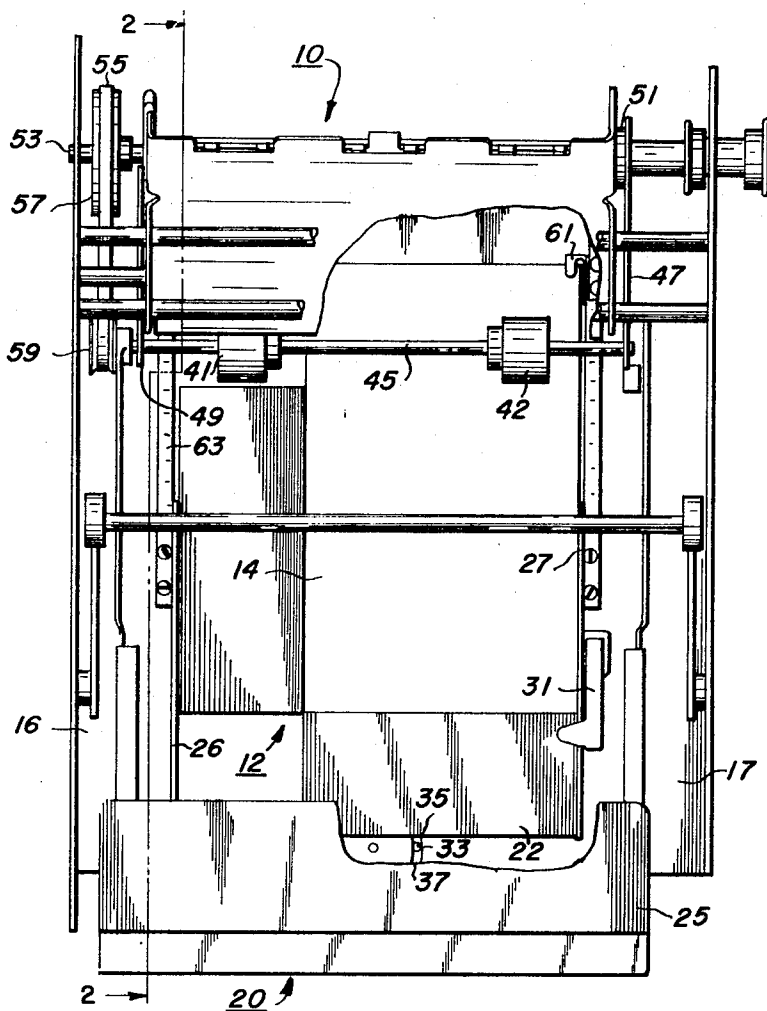
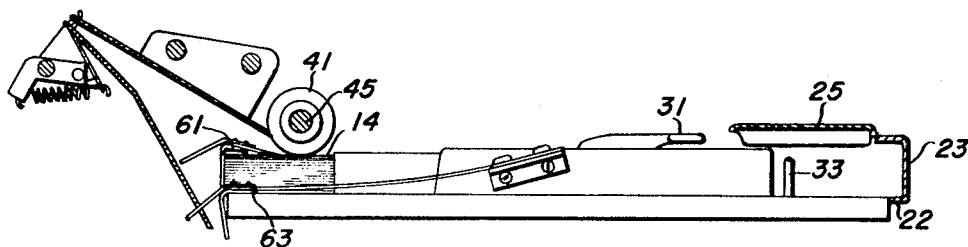


FIG. 2

INVENTOR.
GEORGE E BELL
BY *Melvin A. Klem*
ATTORNEY

FIG. 4

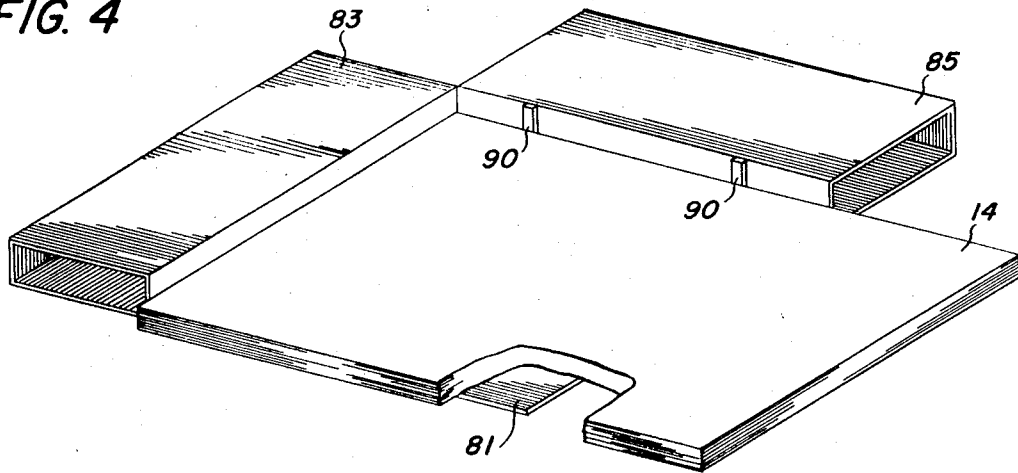
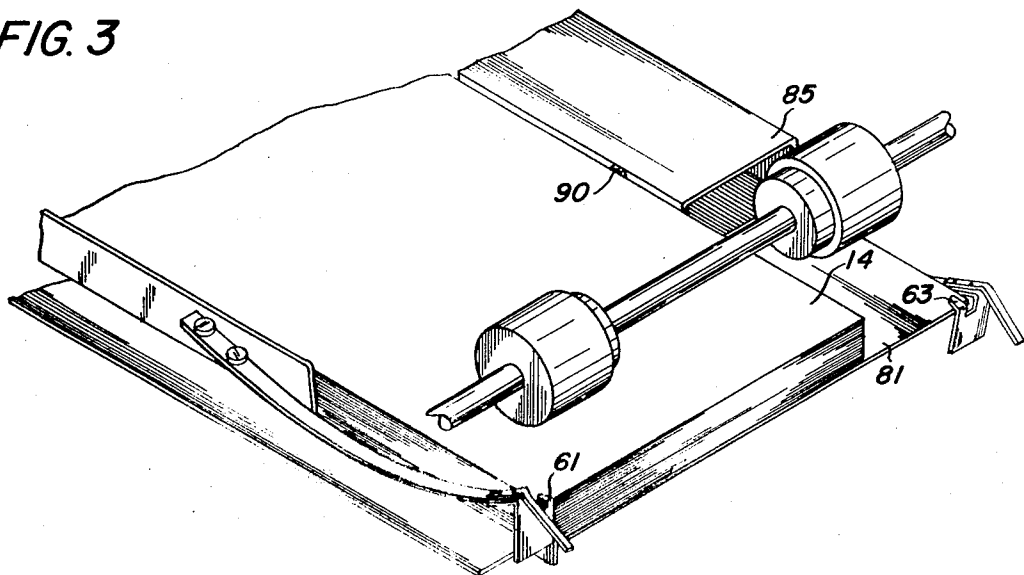
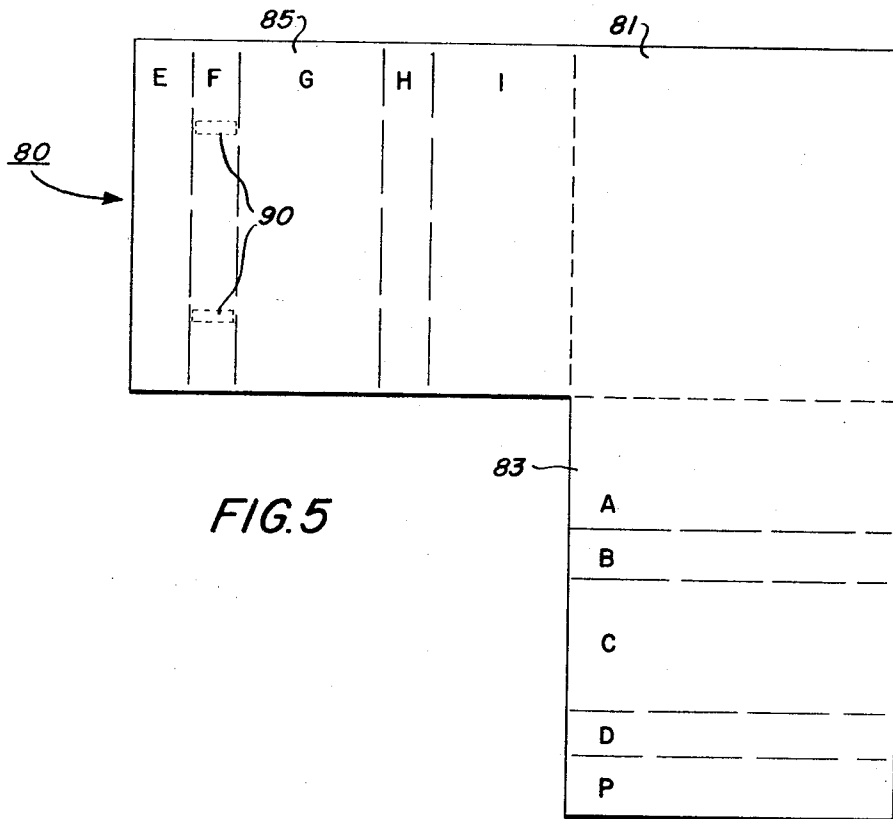
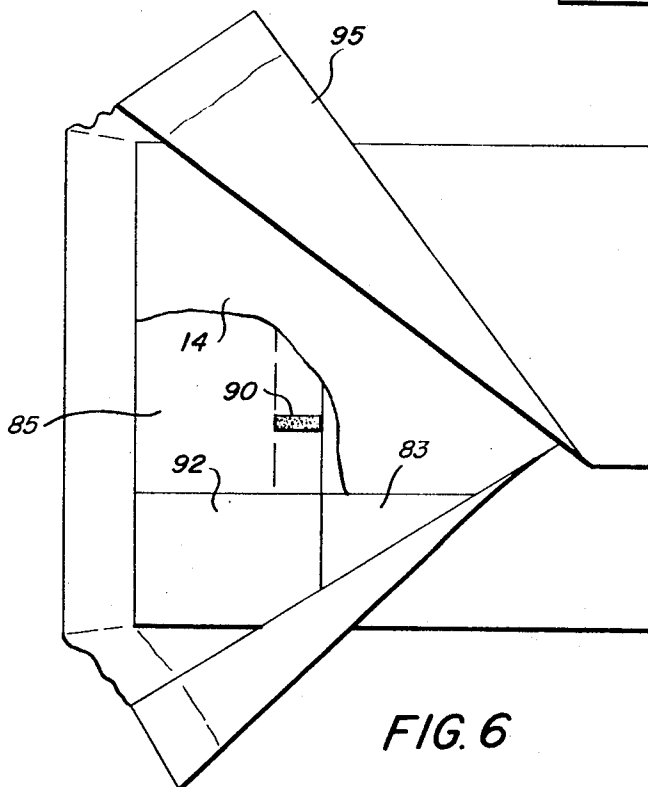


FIG. 3





COPY SHEET PACKAGE

This invention relates to copying machines and, more particularly, to a dispensing package for a stack of sheets for use in such machines.

It is usual for certain copying machines to have a copy sheet tray with a movable lateral guide and end stop mechanism to receive and support a stack of copy sheets at a desired position relative to a feed mechanism for the machine. While the lateral guide and end stop mechanism are adjustable to accommodate somewhat different widths and lengths of copy sheet, the same machine is not able to accommodate large and small sheets alike, as for example, 5×8 or 6×9 and 8½×11 or 9×14 due to the fact that the copy sheet supply tray and feed mechanism are unable to handle the greatly diverse sizes. As a result, the use of the machine is greatly curtailed or the machine operator is required to use the larger size copy sheets and subsequently trim them to the desired size.

In accordance with the present invention, these above disadvantages are overcome by a novel dispensing package for a stack of sheets adapted to be quickly and easily mounted on a standard tray of a copying machine so that greatly different sheet sizes are available in the same copying machine.

It is an object of this invention to improve copy sheet dispensing.

It is another object of this invention to feed greatly different sizes of copy sheets in a simplified manner.

It is another object of the invention to enable feeding copy sheets of greatly different sizes without modification of the existing copy sheet feed tray apparatus.

It is another object of the invention to provide a dispensing package for a stack of sheets which not only serves to ship and store a stack of copy sheets but also controls sheet dispensing in the same manner as a corresponding machine part.

These objects as well as others are attained by the present invention generally speaking by positioning a dispensing package comprising a flexible, collapsible frame made of cardboard or other suitable material and formed from a blank to a predetermined shape which when in an upright position can dispense a stack of sheets to be fed without skewing and which can be easily positioned into and out of the desired feed path of a copy sheet feed mechanism.

A more thorough understanding of the present invention will be had by reference to the following detailed description when considered in conjunction with the accompanying drawings in which:

FIG. 1 is a plan view of the typical paper tray assembly incorporating a dispensing package according to the present invention;

FIG. 2 is a side view of FIG. 1 taken along line 2—2 with parts broken away to show interior details thereof;

FIGS. 3 and 4 are perspective views of the dispensing package in its dispensing position and removed from the tray, respectively.

FIG. 5 is a plan view of the blank of the dispensing package;

FIG. 6 is a plan view of the complete dispensing package with the outer cover turned back to show details thereof.

Referring now to FIGS. 1, 2 and 3 there is shown a copy sheet tray assembly 10 incorporating a dispensing package 12 for a stack of sheets 14 to be fed through a copying machine, as for example, a xerographic copying machine of the type described in U.S. Pat. No. 3,100,111. Tray assembly 10 is movably positioned at the front of the copying machine by a pair of drawer slides 16 and 17 so that a tray 20 can be extended beyond the outer margin of the cabinet of the machine. Sheet feed tray 20 comprises a platform or support 22 formed with a turned up portion 23 at one end to support hinged cover plate 25 at the rear of the tray. A left hand paper guide 26 and a right hand paper guide 27 are positioned to extend across the length of the platform to align the left hand side of the dispensing package 12 and the right hand side margin of the stack of sheets 14, respectively. It will be noted that the left hand paper guide 26 is secured to the platform as by welding while the right hand paper guide is adapted for lateral

movement to accommodate up to about an inch the width of copy sheets to be fed. Right hand paper guide 27 releasably locked in position on the platform by actuation of cam lever 31 pivotally secured to the platform as by a leaf spring (not shown). To compensate for various paper lengths, a stop stud 33 is utilized as an adjustable stop against the trailing edge of the stack of sheets. Stop stud 33 is secured to a disc 35 and extends through an arcuate slot 37 formed in the platform to accommodate slightly different sheet lengths.

To feed copy sheets one at a time from the tray assembly there is provided a feed mechanism comprising intermittently driven separator rollers 41, 42 mounted on a driven shaft 45. Shaft 45 is journaled in one end of an arm 47, the other end of the shaft being free to float within vertical limits in an arm 49. The opposite end of arms 47 and 49 are suitably secured as by welding to a torque tube 51. Shaft 45 is driven from a shaft 53 by a belt 55 which runs on pulleys 57 and 59 fixedly mounted on shaft 53 and 45, respectively. In order to ensure separation of the top most sheet only from the stack there is provided at the corners of the stack separator elements 61, 63 sometimes referred to as "snubbers" which apply a restraining force on the topmost sheet and the leading edge of the stack. The downward restraining force exerted by the separator elements is sufficiently small to still permit the top most sheet to be advanced from thereunder along the copy sheet transport path. It should be noted that when dispensing package 12 is mounted on the tray assembly only the separator roller 42 and separator element 61 are utilized.

It is believed that the foregoing description of the tray assembly and feed mechanism is sufficient to understand the operation thereof for use with the present invention which will now be described in detail. A complete description of the tray assembly and feed mechanism is described in U.S. Pat. No. 3,100,111.

Referring now to FIG. 5, there is shown a unitary blank 80 from which a dispenser frame is constructed. Blank 80 is made out of any suitable material, as for example, cardboard and comprises a base portion 81, a lateral end flap portion 83 and a lateral side flap portion 85. Lateral end flap portion 83 is scored along parallel lines defining sections A, B, C, and P so as to facilitate folding over the flap which is then adhesively secured in the form of a parallelogram as best seen in FIG. 4. Due to the parallel lines, defining sections A, B, C, D and P, the parallelogram formed is adapted to extend in an upright position when dispensing a stack of sheets and may be placed in a collapsed position when in the storage or shipping condition as will become more apparent. In like manner, the lateral side flap portion 85 is scored along parallel lines defining sections E, F, G, H, and I to facilitate folding into a parallelogram which is then adhesively secured at the mating surfaces. As in the case of the lateral end flap portion, the lateral side flap portion form a parallelogram which may be extended in a vertical direction for dispensing or collapsed for shipping or storage.

To use the dispensing package for dispensing a stack of sheets, the extended frame and stack of sheets to be fed are placed on top of the sheet tray assembly and right hand paper guide 27 loosened for rapid insertion of the unit and then tightened to firmly hold the package in the tray assembly. It will now be appreciated that by virtue of the particular structural features of the dispensing package, sheets can be dispensed directly aligned with the feed mechanism which feeds each of the topmost sheets in sequence into the machine.

In order to maintain a straight path of sheets being fed from the dispensing package so that they are not skewed in the copy sheet path of the machine, a plurality of friction pads 90 are adhesively secured to the side lateral flap portion 85. By this arrangement, contact with the edges of the stack of sheets is continuously maintained to effect the desired drag on the sheets. Pressure or friction pads 90 ensure that only one sheet at a time is fed without skewing, since separator roll 42 which is positioned off center would normally tend to apply a side

force on the sheets. It is very important that a single sheet feed straight ahead each time in the copying machine as a double or skewed feed will result in the machine being turned off due to various sensing devices which are utilized to sense multiple sheet feeds and jams.

FIG. 6 shows the dispensing package when used as a shipping or storage device. Flap portion 83 is in the upright position while flap portion 85 is collapsed to receive the stack of sheets. It should be understood, however, that either flap portion or both may be extended and that more than one stack 14 and blank 80 can be arranged in a single package. To facilitate wrapping by a cover 95, one or more spacer elements 92 made of a suitable material such as cardboard, Styrofoam, etc., are positioned to fill any void space. Typical materials for cover 95 are cardboard, paper, plastic, reinforced metal foil, etc.

It is apparent from the foregoing that there is provided a combination dispensing and shipping as well as storage package for a stack of sheets which enables feeding greatly different sheet sizes in a copying machine which otherwise would be unable to accommodate the sheet sizes.

While there is in this application specifically described one form which the invention may assume in practice, it will be un-

derstood that this form of the same is shown for purposes of illustration, and that the invention may be modified and embodied in various other forms without departing from the spirit of the invention.

What is claimed is:

1. An improved package for a stack of reduced size sheets for a copier machine having a predetermined sheet feed path normally associated with a larger size stack of sheets comprising

a unitary tray member having a base portion, a lateral portion, and an end portion, said portions defining bottom, side and end support means for a stack of sheets to be fed, said side and end portions being arranged at right angles and each comprising a hollow spacing element extending laterally from a side and an end of said base portion, respectively, said stack being coextensive with said base portion,

friction means on one of said spacing elements contacting one edge of the stack of sheets to enable feeding of the stack of sheets one at a time without skewing, and a wrapper enclosing the unitary tray member and stack of sheets.

* * * * *

25

30

35

40

45

50

55

60

65

70

75