Nov. 3, 1964 J. MAICH 3,155,235

DISPENSERS

Filed May 17, 1962

Fig. 1.

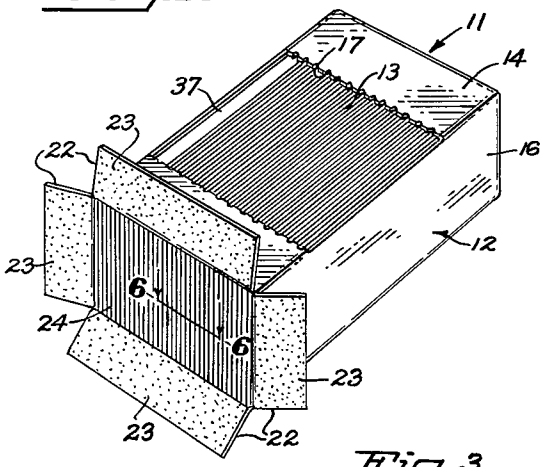


Fig. 2.

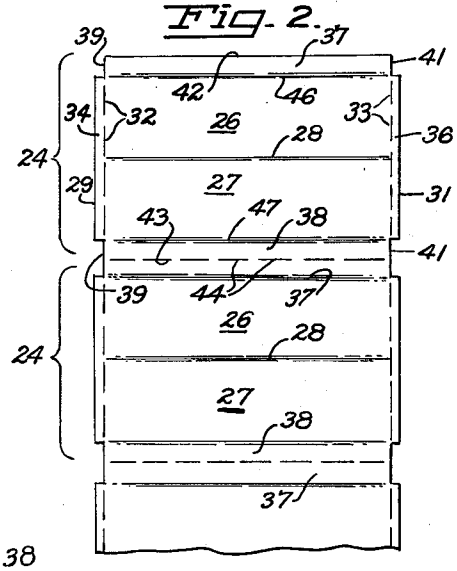


Fig. 3.

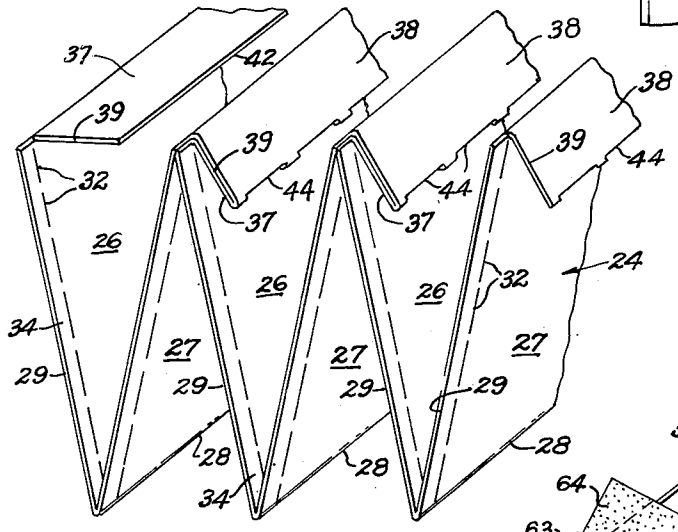


Fig. 6.

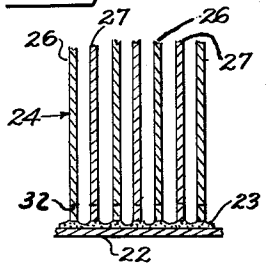
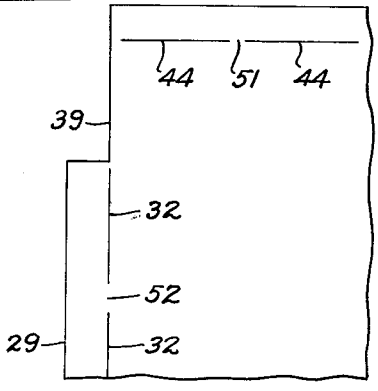


Fig. 5.



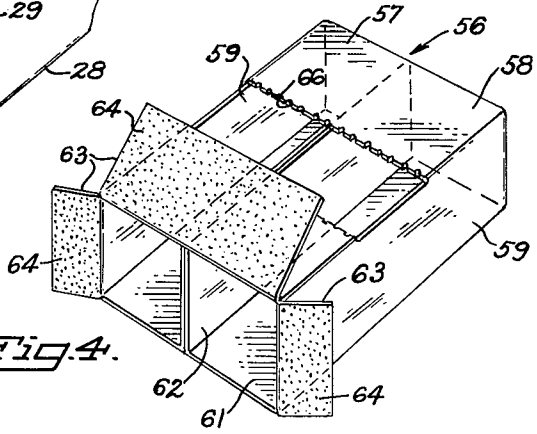


Fig. 4.

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DISPENSERS

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11 Claims. (Cl. 206—57)

The present invention relates to a dispenser for sheet material arranged in a stack to provide sequential feeding of each sheet from the stack in response to movement of the immediately preceding sheet away from the stack. The present invention is especially useful in connection with interfolded tissues such as cleansing tissues, facial tissues or the like.

Sheet or tissue dispensers presently in use commonly incorporate a dispensing opening effective to feed single sheets sequentially from the dispenser and to retain a sheet partially extended through the dispensing opening until such time as it is to be removed from the dispenser. Dispensers of this type have the inherent disadvantage of permitting removal of only one sheet at a time from the dispenser. If several sheets are desired, repeated withdrawal operations are necessary to obtain the sheets. Dispensers of this type also suffer from the disadvantage that the number of sheets remaining in the dispenser cannot be visually determined.

In another type of dispenser commonly used at the present time, a large opening is formed in the top panel and the sheets or tissues are removed by reaching through the large opening and grasping the tissues. This type of dispenser is inconvenient since it is often difficult to pick up a single tissue without removing more than the intended single tissue. This type of dispenser has the further disadvantage of making it difficult to withdraw a large number of tissues, at least in those instances in which the dispenser has been newly opened. The sheets or tissues in the bottom of the box tend to become jumbled, and this further adds to the difficulties of getting tissues or sheets from this type of dispenser.

In accordance with the present invention, stacked sheets or tissues are held in a fixed position in a dispenser, and the dispenser permits any selected number of sheets or tissues to be removed from the stack while the remainder of the sheets in the stack are retained in the fixed position. The tissues or sheets can be suquentially removed from the dispenser one at a time or, if desired, any number up to and including the entire stack can be simultaneously removed from the dispenser in a single operation. The disposition of the dispenser opening and the manner in which the sheets are retained in fixed position enables the remaining number of sheets in the dispenser at all times to be visually determined. A dispenser which is effective to function in this manner constitutes a primary object of the present invention.

It is another object of the present invention to employ manufacturing techniques for accomplishing these results which do not add substantially to the cost of the dispenser and which, for the most part, correspond to fabricating operations otherwise necessary for the manufacture of conventional dispensers.

In dispensers utilizing a sequential feed in which each sheet is to be retained in a partially extended position through the dispensing opening prior to removal of the sheet from the dispenser problems are presented if a

sheet is, for some reason, not moved to the extended position prior to separation of the preceding sheet or if the sheet, once partially extended, should fall back within the dispenser.

It is another object of the present invention to incorporate a leading tab on each sheet or tissue which is freely movable while inside the dispenser and to so fold the leading tab in the stack that the tab will tend to move toward the outside rather than the inside of the dispenser after being detached from the immediately preceding sheet. A leading tab folded in this manner minimizes problems of loss of the tab within the interior of the dispenser.

In large dispensers problems of jumbling of the sheets or tissues become greater as more tissues are removed from the dispenser. It is another object of the present invention to incorporate a divider which extends between the end panels of the dispenser and which is effective to assist in retaining the tissues or sheets in fixed position within the dispenser. The manner in which a divider of this kind is incorporated in the dispenser of the present invention also makes it convenient to dispense sheets or tissues of different colors or surfaces from the same dispenser.

In accordance with the present invention a carton has top, bottom and side panels with an opening formed in one of these panels for removing sheets or tissues from the carton. A stack of sheets is disposed within the carton and each sheet has side edges attached to the inside surfaces of end panels of the carton, as by gluing, for holding the sheet in a fixed position regardless of the orientation of the carton. A series of perforations extend linearly along the edges so attached to the end panels to define side margins between the perforations and the attached edges. The sheets are interfolded in the stack, and each sheet is attached at a trailing edge to a leading edge of the next adjacent sheet to provide sequential feeding of each sheet from the stack in response to movement of the immediately preceding sheet away from the stack. Each tissue has a leading tab which is formed with side edges offset from the side edges of the sheet or tissue attached to the carton end panels so as to be freely movable to the dispenser opening on removal of the immediately preceding sheet. As the leading tab is moved through the dispenser opening serrated edges of the opening engage the tab to retain the tab outside of the carton after the preceding sheet has been detached. The perforations disposed closely adjacent the attached side edges of the sheets permit each sheet to be readily detached from its fixed position in the dispenser. A dispenser incorporating these structural features effective to function in the manner described constitutes another object of the present invention.

Other and further objects of the present invention will be apparent from the following description and claims and are illustrated in the accompanying drawings which, by way of illustration, show preferred embodiments of the present invention and the principles thereof in what is now considered to be the best mode contemplated for applying these principles. Other embodiments of the invention embodying the same or equivalent principles may be used and structural changes may be made as desired by those skilled in the art without departing from

the present invention and the purview of the appended claims.

In the drawings:

FIG. 1 is a perspective view, with end panels at one end open, of a dispenser constructed in accordance with one embodiment of the present invention;

FIG. 2 is a plan view of serially connected sheets to be dispensed from the dispenser shown in FIG. 1 showing fold lines and perforations in the sheets in an unstacked disposition of the sheets;

FIG. 3 is a fragmentary perspective view of sheets in the folded and stacked disposition but accordian expanded to show details of construction;

FIG. 4 is a perspective view of a carton, without stacks of sheets to be dispensed, incorporating a divider partition;

FIG. 5 is an enlarged fragmentary view illustrating details of perforations between trailing and leading edges of successive sheets and perforations along an edge attached to an end panel; and

FIG. 6 is a view taken along the lines 6—6 in FIG. 1 showing details of the attachment of the sheets to an end panel of the dispenser.

In FIG. 1, a dispenser constructed in accordance with one embodiment of the present invention is indicated generally by the reference numeral 11. The dispenser includes an outer carton 12, which may be preferably made of paperboard or the like, and a stack of sheets or tissues 13. The carton 12 has a top panel 14, a side panel 16, and another side panel and a bottom panel which are not visible in FIG. 1. The dispenser opening 17 is formed in the top panel 14 by tearing back a flap (not illustrated) along the perforated edges defining the opening 17. The dispenser opening 17 extends transversely to the stack 13 across the entire extent of the stack. As will become more apparent from the description to follow, the manner in which the opening 17 is disposed with respect to the stack 13 enables any number of tissues in the stack to be removed from the stack by a single operation and also enables the number of tissues or sheets remaining in the stack 13 to be visually determined at all times.

The stack of sheets 13 is illustrated in FIG. 1 as it exists immediately after the flap has been pulled back to form the opening 17 and before any sheets or tissues have been removed from the dispenser 11. In this condition, a leading tab 37 of the first sheet to be removed from the dispenser is disposed in overlying relation to the stack 13. To start removal of the sheets from the dispenser 11 it is merely necessary to slip a finger under the leading tab 37 and initiate removal of the sheets in the manner to be described in greater detail below.

The carton 12 of the dispenser 11 includes one or more end panels 22, shown folded back in FIG. 1, at each end of the carton. As illustrated in FIG. 1, the inner surfaces 23 of the end panels are coated with an adhesive, and this adhesive is effective to attach the side edges of the sheets or tissues in the stack 13 to the end panels of the carton 12 when the end panels 22 are closed.

With reference to FIGS. 2 and 3 it will be seen that the stack 13 comprises a series of interfolded sheets or tissues 24. Each sheet or tissue 24 includes a main body having sections 26 and 27 connected along a fold line 28. Each tissue has side edges 29 and 31 adapted to be attached to the interior surfaces 23 of the end panels 22 in the manner described. A series of perforations 32 and 33 extend linearly along and closely adjacent to the side edges 29 and 31. Side margins 34 and 36 are defined between the edge 29 and perforations 32 and between the edge 31 and perforations 33. Each tissue or sheet 24 includes a leading tab 37 and a trailing tab 38. The leading and trailing tabs have side edges 39 and 41 which are offset from the edges 29 and 31 so as to be free of attachment to the inner surfaces 23 of the end panel 22. Each sheet or tissue 24 has a leading edge 42 and a trailing edge 43. The leading and trailing edges between two immediately adjacent tissues 24 are mutually defined by a series of linearly extending perforations 44 which permit ready detachment of one sheet or tissue from the next adjacent sheet or tissue. The perforations 32, 33 and 44 may be in the form of slits extending for an inch or so with a $\frac{1}{32}$ or $\frac{1}{64}$ inch spacing between adjoining slits. The width of the side margins 34 and 36 is preferably kept quite small, and may be in the order of $\frac{1}{16}$ or $\frac{1}{32}$ of an inch. As best illustrated in FIG. 2, the leading tabs 37 join with the sections 26 along a fold line 46 while the trailing tabs 38 join with sections 27 along a fold line 47.

As best illustrated in FIG. 3, in the stacked disposition of the sheets 24, the leading tab 37 and the trailing tab 38 of two immediately adjacent sheets are folded back between sections 26 and 27 of the sheet of which the leading tab 37 forms a part. Because the leading tab 37 is thus folded back in the stack 13, the tab 37 will have a tendency to drop back toward this position, rather than to fall forward toward the empty portion of the carton 12 when the leading tab 37 is drawn through the opening 17 in the manner to be described below.

As noted above, the leading tab 37 of the first tissue to be withdrawn from the dispenser 11 is preferably folded back over the top of the stack 13 rather than being disposed between the sections 26 and 27 in the same manner as the leading tabs of the other tissues or sheets in the stack.

As illustrated in FIG. 5, the spacing 51 between at least the first two perforations 44 is somewhat less than the spacing 52 between the perforations 32. This relationship is preferably maintained with respect to the spacing between the slits 44 and 33 also. This difference may be on the order of $\frac{1}{32}$ of an inch. By making the spacing 52 larger than the spacing 51, the trailing tab 38 of one sheet or tissue will be caused to break away from the leading tab 37 on the next succeeding sheet before the sheet is detached from the end panel 22 along the perforations 32 and 33.

In accordance with the present invention, the sheets 24 can be produced by conventional cutting and folding operations on a continuous strip of sheet or tissue. Thus, the slits 32, 33 and 44 can be cut in the sheets 24 and the recessed edges 39 and 41 can be formed by automatically operating production line equipment. After the sheets have been folded and stacked in the manner illustrated in FIG. 3, the carton 12 can be formed about the stack and the end panels 22 can be directly attached to the edges 29 and 31 without the necessity of resorting to any operations other than those normally required to pack a stack of tissues within a dispenser carton.

With the stack 13 and tab 37 disposed as illustrated in FIG. 1, it is simple matter to withdraw the first tissue from the carton 12 by pulling on the leading tab 37. Pulling on the tab 37 causes the first sheet 24 to be detached from the end panel 22 along the perforations 32 and 33. As the first sheet is pulled through the opening 17, the leading tab 37 of the next succeeding sheet is freely moved from the stack and through the opening 17, where it is engaged by the serrated edges of the opening. The resistance offered by the attachment of the succeeding sheet to the end panels is sufficient to break the first sheet from the next succeeding sheet along the line of perforations 44.

In this manner, sheets 24 can be withdrawn one by one from the carton 12. Alternatively, if it is desired to withdraw a plurality of sheets from the carton 12 at one time, the selected number can be grasped between a thumb and forefinger and pulled through the opening 17. In either case, the remaining tissues in the carton 12 are retained in fixed position by reason of the attachment to the end panels 22. As mentioned above, the manner in which the leading tabs 37 are folded back in the stack 13 causes the leading tab to move toward the stack 13 rather than the empty interior of the carton 12.

In the embodiment of the invention illustrated in FIG. 4, a dispenser **56** incorporates a carton **57** having a top panel **58**, side panels **59** and a bottom panel **61**. In this case, however, a divider **62** may be preferably utilized to assist in holding the stacked sheets or tissues in position within the dispenser **56**. The divider **62** extends between the ends of panels **63** which are also coated with adhesive on the inner surfaces **64** for attachment to the side edges of the sheets to be dispensed. The divider **62** extends between the ends of panels **63** which are also coated with adhesive on the inner surfaces **64** for attachment to the side edges of the sheets to be dispensed. The divider **62** may preferably be formed integral with the bottom panel **61** as by folding upwardly in the manner illustrated in FIG. 4. The divider **62** offers an additional safeguard against detachment of tissues from the end panels in the event the dispenser **56** should be dropped at a time when a substantial number of the tissues have been taken from the dispenser. The divider **62** also serves as a convenient division if it is desired to dispense tissues of different surfaces or different colors from the same dispenser.

The dispenser **56** has an opening **66** which extends transversely across the entire dispenser and which is formed by tearing back a flap (not illustrated) along the partially perforated lines defining the opening **66**.

The operation of the dispenser illustrated in FIG. 4 is substantially the same as that described above with respect to the dispenser **11**.

Hence, while I have illustrated and described the preferred embodiments of my invention, it is to be understood that these are capable of variation and modification, and I therefore do not wish to be limited to the precise details set forth, but desire to avail myself of such changes and alterations as fall in the purview of the following claims.

I claim:

1. A dispenser for holding a stack of sheets in a fixed position in the dispenser and permitting any selected number of the sheets to be removed from the stack while the remainder of the sheets in the stack are retained in said fixed position and comprising, a carton for containing a stack of sheets and having end panels, and a stack of sheets disposed within the carton with each sheet in the stack attached to the inside surfaces of an end panel along an edge disposed immediately adjacent the end panel to maintain each sheet in a fixed position in the carton until the sheet is removed from the dispenser, and each of said sheets having a series of perforations closely adjacent to and susbtantially uniformly spaced from each edge attached to an end panel for permitting ready detachment of each sheet from the carton by tearing along the perforations.

2. A dispenser for holding a stack of sheets in a fixed position in the dispenser and permitting any selected number of sheets to be removed from the stack while the remainder of the sheets in the stack are retained in said fixed position and comprising, a carton for containing the stack of sheets and having top, bottom, side and end panels, means forming an opening in one of the top, bottom and end panels for removing sheets from the carton, and a stack of sheets disposed within the carton, each sheet having a side edge attached to the inside surfaces of an end panel for holding the sheet in fixed position in the carton and having a series of perforations closely adjacent to and substantially uniformly spaced from the edge attached to an end panel for permitting ready detachment of the sheet from the carton.

3. A dispenser as defined in claim 2 in which the opening extends transversely to the ends of the sheets.

4. A dispenser for holding a stack of sheets in a fixed position in the dispenser and permitting any selected number of sheets to be removed from the stack while the remainder of the sheets in the stack are retained in said fixed position and comprising, a carton for containing the

stack of sheets and having top, bottom, side and end panels, means forming an opening in one of the top, bottom and end panels for removing sheets from the carton, and a stack of sheets disposed within the carton, each sheet having side edges atatched to the inside surfaces of the end panels for holding the sheet in fixed position in the carton and having a series of perforations closely adjacent to and substantially uniformly spaced from each edge attached to an end panel for permitting ready detachment of the sheet from the carton, said opening extending transversely to the ends of the sheets and across the entire stack of sheets so that any number of sheets in the stack can be simultaneously withdrawn from the carton through the opening and the number of sheets remaining in the carton can be visually determined through the opening.

5. A dispenser for holding a stack of sheets in a fixed position in the dispenser and permitting any selected number of sheets to be removed from the stack while the remainder of the sheets in the stack are retained in said fixed position and comprising, a carton for containing the stack of sheets and having top, bottom, side and end panels, means forming an opening in one of the top, bottom and end panels for removing sheets from the carton, and a stack of sheets disposed within the carton, each sheet having side edges attached to the inside surfaces of the end panels for holding the sheet in fixed position in the carton and having a series of perforations closely adjacent to and substantially uniformly spaced from each edge attached to an end panel for permitting ready detachment of the sheet from the carton, said sheets being interfolded in the stack and attached at a trailing edge to a leading edge of the next adjacent sheet to provide sequential feeding of each sheet from the stack in response to movement of the immediately preceding sheet away from the stack, and each tissue having a leading tab formed with side edges which are offset from the side edges attached to the carton end panels so as to be free of attachment to the carton and movable through the opening on removal of the preceding sheet to a position in which the edges of said opening engage the tab to retain the tab outside of the carton after the preceding sheet has been detached.

6. A dispenser as defined in claim 5 in which said opening has serrated edges for engaging the leading tabs of each sheet.

7. A dispenser as defined in claim 5 in which the trailing and leading edges of two immediately adjacent sheets are mutually defined by a series of perforations extending linearly across the sheets and in which the spacing between said perforations is sufficiently small in comparison to the spacings between the perforations adjacent the side edges of the tissues to cause detachment of the one sheet from the next adjacent sheet before the next adjacent sheet is detached from the end panels on sequential removal of the sheets from the carton.

8. A dispenser as defined in claim 5 in which each sheet includes a trailing tab with offset side edges free of attachment to the end panels and attached to the leading tab of the next adjacent sheet in the stack, said leading and trailing tabs being folded back to a position in which both tabs are disposed between folded sections of the sheet bearing the leading tab with the crease line along which the leading tab is folded being effective to cause the leading tab to move toward the exterior rather than the empty interior of the carton on movement of the leading tab through said carton opening.

9. A dispenser as defined in claim 5 in which the carton includes a divider extending between the end panels and fixed in position for dividing the stack of sheets in different parts and aiding in maintaining each part of the stack in fixed position in the carton.

10. A dispenser as defined in claim 5 in which the side edges are attached to the end panels by glue.

11. A stack of interfolded sheets attached along leading and trailing edges to provide sequential feeding of each sheet from the stack, having a series of perforations extending linearly along and closely adjacent to side edges for permitting ready detachment of the sheets from side margins defined between the perforation and side edges, each sheet having a leading tab and a trailing tab with side edges offset from the side edges of the side margin, and the leading and trailing tabs of two immediately adjacent sheets being folded back to a position in which both tabs are disposed between folds of the sheet bearing the leading tab.

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