Oct. 27, 1953 C. A. HENDERSON 2,656,916

DISPENSING PACK FOR INTERFOLDED SHEET MATERIAL

Filed Oct. 6, 1950 2 Sheets-Sheet 1

Fig. 1

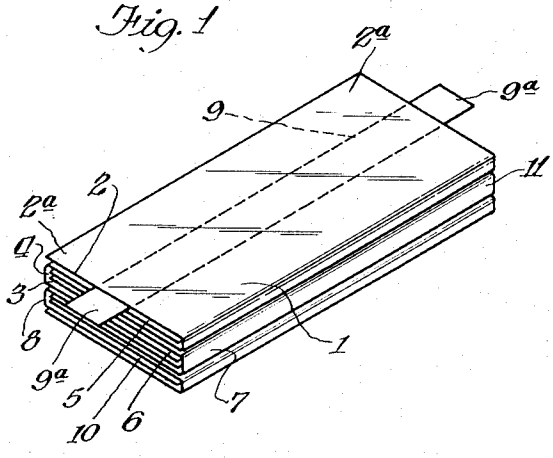


Fig. 2

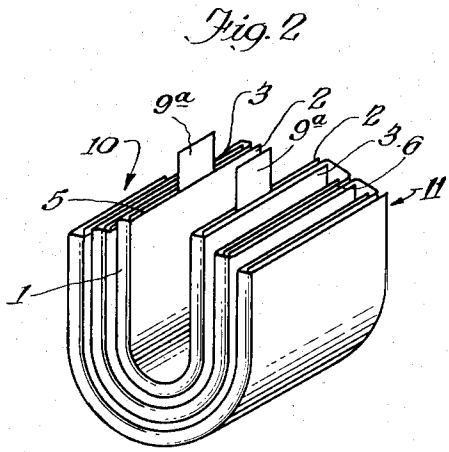


Fig. 3

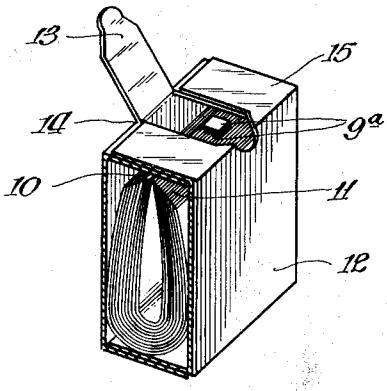


Fig. 4

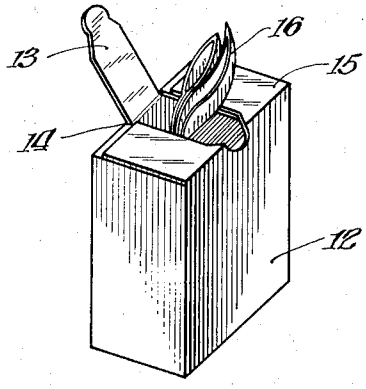
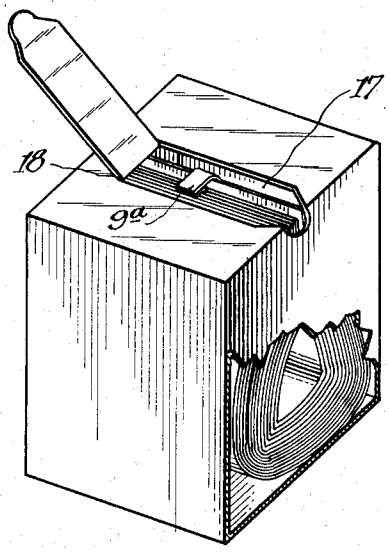


Fig. 5



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DISPENSING PACK FOR INTERFOLDED SHEET MATERIAL

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2 Sheets-Sheet 2

Fig. 6

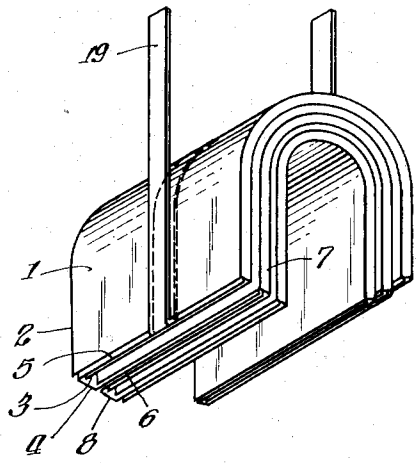


Fig. 7

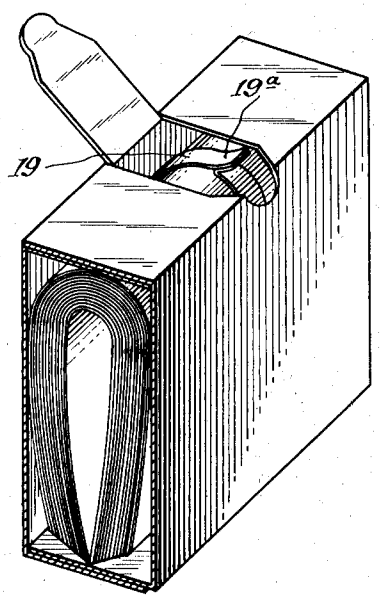


Fig. 8

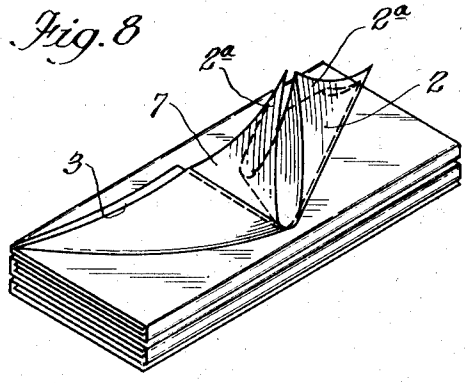


Fig. 10

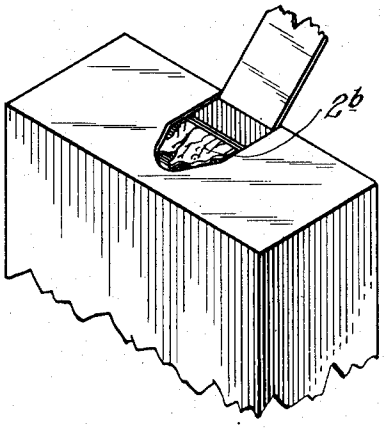
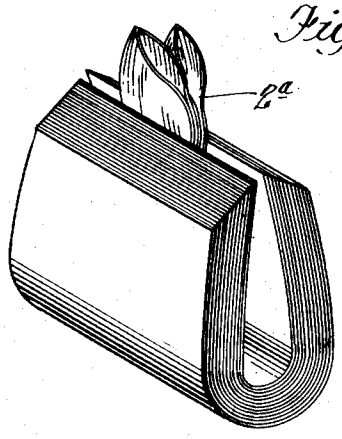


Fig. 9



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UNITED STATES PATENT OFFICE

2,656,916

DISPENSING PACK FOR INTERFOLDED SHEET MATERIAL

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Application October 6, 1950, Serial No. 188,835

6 Claims. (Cl. 206—57)

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This invention relates to an improvement in the packaging of tissue sheets such as facial tissue sheets but more especially tissue and other types of larger wiping sheets such as used in kitchens, workshops, and other places. The invention is especially concerned with the packaging of sheeting of the character indicated which is interfolded and enclosed in a container with a dispensing opening in an arrangement whereby the withdrawal of one sheet from the container automatically effects withdrawal of a portion of the next sheet to thereby facilitate withdrawal of the sheets one by one.

The object of the present invention is to provide a dispensing package of material of the character indicated whereby interfolded sheet material may be packaged in a container having length and width dimensions substantially smaller than has heretofore been available for the packaging of interfolded sheet material; to provide a reduced size packaging arrangement of the character indicated wherein withdrawal of one sheet from the reduced size container will cause a portion of another sheet to project out of the container into exposed, readily accessible position so that the sheets may readily be withdrawn one by one from the package; and in general, it is the object of the invention to provide an improved dispensing package of sheet material of the character indicated.

Other objects and advantages of the invention will be understood by reference to the following specification and accompanying drawings (2 sheets) wherein there are illustrated several embodiments of packages made according to the present invention.

In the drawings,

Fig. 1 is a more or less schematic perspective illustration of the formation of an assemblage or pack of interfolded facial tissue sheets together with the application of an element for facilitating withdrawal of the first sheet from the pack;

Fig. 2 is a similar more or less schematic perspective illustration of another step in the formation of the pack;

Fig. 3 is a perspective illustration of the completed pack, one end wall having been cut away to disclose the interior arrangement and a dispensing opening being shown opened;

Fig. 4 is a perspective illustrating the completed package after the first sheet has been withdrawn therefrom;

Fig. 5 is a perspective similar to Fig. 3 but showing a modified arrangement;

Figs. 6 and 7 are perspectives similar to Figs. 2 and 3 respectively, but showing another modification; and

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Figs. 8, 9 and 10 are perspectives illustrating another modified arrangement of the package.

This application is a continuation in part of my pending application Ser. No. 150,468, filed March 18, 1950.

In Fig. 1 there is represented the general formation of a stack of interfolded sheets which is well known. It includes sheets folded on themselves in opposite directions, the folds of each sheet generally embracing two other folds, i. e., one fold of each of the sheets above and below the U-shaped sheet. For example, in Fig. 1 the top sheet 1 has upper and lower folds 2 and 3 respectively. The next lower sheet 4 has upper and lower folds 5 and 6, the fold 5 being embraced between the folds 2 and 3 of the top sheet. The third sheet 7 has an upper fold 8 underlying the fold 3 and with it embraced between the folds 5 and 6 of the sheet 4.

Other forms of interfolding may be employed, for example, Z-folding wherein the bottom portion of one sheet is interfolded with the top portion of the succeeding sheet, the important consideration being that some degree of interfolding be present so that pull on one sheet is transmitted to the next sheet to produce a tendency for the sheets to automatically follow one after the other in chain-like fashion.

In present commercial packaging of some interfolded tissues arranged as represented in Fig. 1 and designed for professional industrial use, an elongated box is employed to receive the interfolded stack in the flat condition shown in Fig. 1. A present commercial form of such sheets requires a box which is approximately 15 inches long and about 4 inches wide and 2½ inches high. Accordingly to the present invention a stack of interfolded sheets which now requires a box having base dimensions of 15" by 4", is packaged in a container having a base size of the order of six and one half inches by four inches, thereby to reduce the shelf or other supporting area required for positioning the package.

To attain that end, the required number of interfolded sheets are asembled in the customary manner as shown in Fig. 1. A suitable tape-like strip 9 of paper of other material is placed under the upper ply 2 of the top sheet, approximately midway of its transverse dimension. This strip may also be adhesively secured to said ply in which case it may also consist of only short tape pieces associated with the respective side edge

portions of the ply, and it or they may then be placed on top or under said ply. This strip will ultimately constitute a starter for facilitating withdrawal of the first sheet from the completed package. This tape strip may, of course, be replaced by thread or any other suitable material but a flat tape strip having substantial width is preferred because it has no significant tendency to cut the upper ply 2 of the first sheet when it is to be removed from the pack.

The assemblage of interfolded sheets and tape strip 9, with ends of the tape strip projecting beyond the opposite side edges of the assemblage as shown, is next folded or doubled upon itself along a line extending crosswise of the interfolding lines so as to bring the opposite side edges 10 and 11 of the assemblage to the same side or end of the folded pack as represented in Fig. 2. By such folding, the projecting ends 9a of the tape strip will be brought together in approximately face to face relationship as indicated.

By examination of Fig. 2, it will be apparent that if the main body of the folded pack be held stationary and the end or tab portions 9a of the tape strip are grasped and pulled upwardly, the top ply or fold of the uppermost sheet 1 will be pulled upwardly from the pack.

An assemblage such as represented in Fig. 2, is enclosed in a suitable paper board container 12 having dimensions adapted to snugly accomodate the folded pack. One side wall of such a container will be of substantially the same width as the transverse dimension of the folded sheets 1, 4 and so forth, and the other dimension, instead of corresponding to the width of the sheets in the direction of their fold lines will be somewhat less than one-half that dimension. The height of the improved package would be about one-half the width of the sheets plus an allowance for the thickness (depth) of the stack of sheets which, in turn, depends mainly upon the number of sheets in the stack. The increased height of the package is much less objectionable than the elongated base dimension of prior commercial packaging conforming to the unfolded flat stack of tissues as represented in Figure 1.

The container 12 may be provided with any suitable form of dispensing opening in its upper end wall. In this instance the opening is shown as being formed by means of a flap 13 which is integrally hingedly connected to a side wall of the container along one of the top corners as indicated at 14. The flap 13 is initially formed as an integral part of the top wall 15 and is made removable therefrom by suitable scoring or perforation in a well known manner.

When the flap 13 has been opened as shown in Fig. 3, the tab ends 9a of the tape strip will be exposed and readily accessible at the top of the pack. These tab ends may then be gripped and pulled upwardly to thereby pull the top ply of the uppermost sheet in the pack upwardly through said opening and into a projecting position as represented at 16 in Fig. 4. The projecting sheet portion is now readily accessible and may be grasped for completing withdrawal of the sheet from the container. Incident to the interfolded relationship of the sheets, each sheet withdrawn will automatically withdraw the leading end portion of the next sheet to the projecting position shown at 16. After the first sheet is removed, a portion of the next sheet will remain projecting upwardly out of the dispensing opening substantially as indicated at 16 in Fig. 4. This upwardly projecting sheet portion 14 may,

of course, be gripped and pulled upwardly to complete removal of the sheet, thereby automatically also pulling out a portion of the next sheet.

The starting tape 9 may, if preferred, be located under the top ply or fold of the second sheet so as to be operative to simultaneously pull out the top ply or fold of the first and second sheets. In this manner the first sheet may be relieved of the strain applied thereto when it is relied upon to pull out the leading portion of the second sheet. Similarly, the tape strip may be positioned under the lower or inner fold of the top sheet so as to be operative to effect complete withdrawal of the top sheet and withdrawal of the leading portion of the second sheet.

As shown in Figs. 3 and 4, the dispensing opening is narrower than the width of the folded pack of sheets so that the end portions of the top wall of the container resist upward movement of the pack in its entirety when one sheet is withdrawn. When the sheets are withdrawn they are necessarily somewhat gathered on themselves in order to pass through said opening. This gathering tends to cause the upwardly projecting portion 16 of a sheet to remain in upwardly projecting position as illustrated in which it is most conveniently accessible for withdrawal. This gathering of the sheet serves also to impart a temporary stiffness to the projecting sheet which will prevent the sheet from falling back into the container. The interengagement of the box edges at the dispensing opening with the projecting sheet also assists in resisting falling of the sheet back into the container.

In the arrangement shown in Fig. 5, the doubled stack of tissues is turned one-quarter of a turn from the position shown in Figs. 3 and 4, so that the edges of the sheets are in parallel relationship to the length of the dispensing opening 17. This opening 17 is formed in the same manner as the opening in Fig. 3, but it is made to terminate short of the rear wall of the box so as to be shorter than the transverse width of the folded sheets and stack thereof, whereby a top wall portion 18 will overlie the sheet edges to prevent upward displacement of the entire pack when a single sheet is pulled out of the package.

In Figs. 6 and 7 there is illustrated an inverted or reversed arrangement in which the pullout tape 19 is associated with the top ply of the outside tissue of the doubled-over stack of tissues. This doubled assemblage of interfolded tissues and withdrawal tape is enclosed in a box as shown in Fig. 7 which is the same as that shown in Fig. 3. When the ends 19a of the pullout strip are grasped and the tape pulled upwardly, the outermost tissue sheet will be withdrawn through the dispensing opening. Withdrawal of the sheets one by one may then progress in the same manner as when the sheets are withdrawn from the center of the pack instead of from the outside thereof. This outside arrangement may also be enclosed in a container with the dispensing opening arranged in parallelism with the transverse dimension of the folded sheets (as in Fig. 5), or the dispensing opening may be reduced to a hole of suitable size within the area and spaced from all edges of the top wall of the container. The arrangement shown is easy to open and is satisfactory.

In each of the described arrangements, the tape strip may, if not adhered to the first sheet, separate therefrom after the sheet is only partially removed from the container. This is not objectionable since the main function of the tape

will have been performed, namely to identify and facilitate removal of the first sheet.

Because of the manner in which most tissue material is produced, the sheets are usually somewhat stronger in the direction of their length (i e., transversely of the lines of folding in the interfolded stack) and they are apt to tear fairly easily if pulled crosswise or in the direction of said fold lines. In the absence of a starting tape such as the tape 9 it would not only be difficult to locate the center sheet when the assemblage is arranged as represented in Figs. 2, 3 and 5, but it would also be difficult to withdraw such sheet once it is located, because the withdrawal forces would be exerted transversely of the length of the sheets, i. e., in the weakest direction of the sheets so that tearing of the sheets would be likely to occur unless extreme care were exercised in withdrawing the sheet. In the arrangement shown in Fig. 6 the first sheet, being on the outside is directly accessible but withdrawal forces would be applied in the direction of least strength with the aforesaid tendency to tear the sheets. The employment of a withdrawal tape as illustrated in Figs. 1 and 6, causes the withdrawal forces to be distributed over the entire width of the sheet and thereby minimizes the danger of tearing the sheet. After the leading end portion of the sheet is caused to project from the container as shown in Fig. 4, withdrawal pull is exerted in the direction of strength so that there is no further significant danger of tearing the sheets as an incident to withdrawal thereof.

The tape end portions 9*a* (Figs. 2 and 3) and 19*a* (Fig. 7) may be bonded together in any suitable manner if desired to thereby insure gripping of both of said ends as is desired for starting purposes.

The tape strip 9 may carry an advertising message or other information and in that respect is a valuable attribute of the described packaging in addition to its main value of facilitating withdrawal of the first sheet from the package. This tape strip may, however, be dispensed with and withdrawal of the first sheet facilitated by preparing the pack of sheets in the manner represented in Figs. 8, 9 and 10. As there shown, the upper fold 2 of the top sheet of the stack is gathered together, i. e., the opposite free corners 2*a* of said upper fold are brought together approximately centrally of the length of the stack and the stack is then doubled on itself into a U-shaped pack as represented in Figure 9. The portions 2*a* of said upper fold, now the inner fold of the central or inner most sheet, are caused to project approximately as shown, from the end or side of the pack formed by the free ends of the legs of the U-shaped pack. These projecting portions of the inner fold constitute a lead portion of the first sheet by means of which said or innermost sheet may be located and withdrawn from the pack. Said lead portion may be flattened down on the side or surface of the pack formed by the free ends of the legs of the stack preparatory to, or as an incident to, the insertion of the pack in a container, the pack being so positioned in the container as to cause the flattened down lead portions to underlie the area of the dispensing opening as indicated at 2*b* in Fig. 10. This flattened down lead portion 2*b* is of course directly accessible when the carton is opened and constitutes a means which extends into accessible position in the dispensing opening provision for facilitating withdrawal of the first sheet so that dispensing may proceed in the same manner as in the arrangement shown in Fig. 4 except that in the last described arrangement the first sheet is withdrawn by direct pull on its leading fold as are all of the subsequent sheets.

Various changes may be made in respect of the described details while retaining the principles of the improved package structure.

I claim:

1. A sheet material package comprising a container, a pack of interfolded sheets doubled on itself about an axis paralleling the planes of the sheets and extending transversely of the direction of the lines on which the sheets are folded, thereby forming a U-shaped pack, said pack being housed in said container and the latter having a wall portion provided with a dispensing opening overlying the side of the pack formed by the free ends of the legs of the pack, the innermost fold of the inside sheet of said pack being gathered and extended from and exposed on said side of the pack in a position readily accessible through said dispensing opening, thereby to facilitate withdrawal of said inside sheet from the pack.

2. A dispensing package of sheet material comprising a stack of interfolded sheets doubled on itself about an axis paralleling the planes of the sheets and extending transversely of the fold-formed edges thereof, the innermost fold of the inside sheet of said stack having a corner portion thereof displaced to extend from the side of the stack formed by the free ends of the legs thereof, and a container for said doubled stack, said container being of a size to maintain the stack doubled as aforesaid and having a dispensing opening provision overlying said displaced portion of said inside sheet and being of restricted size to normally prevent withdrawal of the stack through such opening but permitting withdrawal of the sheets one by one from the stack, the interfolded arrangement of the sheets serving to cause withdrawn sheets to pull at least a portion of succeeding sheets out of the container into readily accessible position to facilitate removal of such succeeding sheets from the package.

3. A dispensing package of sheet material comprising a pack of interfolded sheets doubled on itself about an axis paralleling the planes of the sheets and extending transversely of the fold formed edges thereof, the innermost fold of the inside sheet of said pack having a portion thereof displaced from its normal position to extend from the side of the pack formed by the free ends of the legs thereof, and a container for said doubled pack having a dispensing opening overlying the side of the pack formed by the free ends of the legs thereof, thereby permitting access to said portion of the inside sheet to facilitate withdrawal of said inside sheet from the pack.

4. A dispensing package of sheet material comprising a pack of interfolded sheets doubled on itself about an axis paralleling the planes of the sheets and extending transversely of the fold formed edges thereof, the innermost fold of the inside sheet of said pack having at least a portion thereof displaced from its normal position in the pack to extend from a side of the pack, and a container for said doubled pack having a dispensing opening overlying the side of the pack from which said inside sheet extends, thereby permitting access to said inside sheet to facilitate withdrawal thereof from the pack.

5. A sheet material package comprising a plurality of folded sheets which are interfolded with each other to form an elongated stack in which

the sheets have folds along the longitudinal edges of the stack, the ends of the stack being formed of only free cut edges of the sheets, said stack being doubled on itself about an axis paralleling the planes of the sheets and extending transversely of the folded edges thereof so as to form a U shaped pack having the ends of the pack forming the free ends of the legs of the U shape at one end of the pack and the medial portions of the sheets forming the bottom of the U shape at the opposite end of the pack, and a container for said doubled stack, said container having a dispensing opening provision in a wall overlying one of said ends of the pack to permit withdrawal of said sheets from said container, said sheets being withdrawable one by one by movement lengthwise of the legs of said U shaped pack, the interfolded relationship of said sheets serving to cause each sheet withdrawn to withdraw a portion of the next succeeding sheet to thereby facilitate withdrawal of said succeeding sheets, the doubling of said stack as aforesaid serving to reduce the length of the container required for enclosing the stack so as to facilitate storage of the package on shelf space of correspondingly reduced size.

6. A sheet material package comprising a plurality of folded sheets which are interfolded with each other to form an elongated stack in which the sheets have folds along the longitudinal edges of the stack, the ends of the stack being formed of only free cut edges of the sheets, said stack being doubled on itself about an axis paralleling the planes of the sheets and extending transversely of the folded edges thereof so as to form a U shaped pack having the ends of the pack forming the free ends of the legs of the U shape at one end of the pack and the medial portions of the sheets forming the bottom of the U shape at the opposite end of the pack, and a container for said doubled stack, said container having a dispensing opening provision in a wall overlying one of said ends of the pack to permit withdrawal of said sheets from said container, said sheets being withdrawable one by one by movement lengthwise of the legs of said U shaped pack, the interfolded relationship of said sheets serving to cause each sheet withdrawn to withdraw a portion of the next succeeding sheet to thereby facilitate withdrawal of said succeeding sheets, the doubling of said stack as aforesaid serving to reduce the length of the container required for enclosing the stack so as to facilitate storage of the package on shelf space of correspondingly reduced size, and there being provided means extending into accessible position in said dispensing opening provision from both legs of the doubled sheet on one side of said pack for facilitating withdrawal of the first sheet from the package.

CHARLES A. HENDERSON.

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