Aug. 22, 1939. F. G. STEINER 2,170,540

PAPER PACKAGE

Filed July 16, 1937

FIG. 1

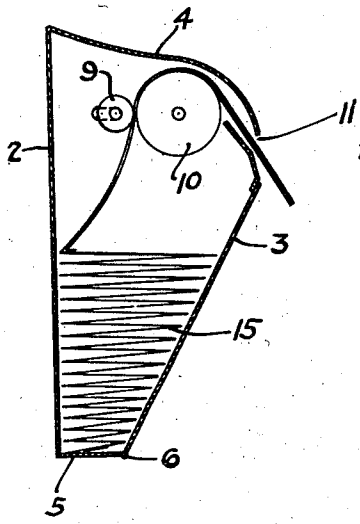


FIG. 2

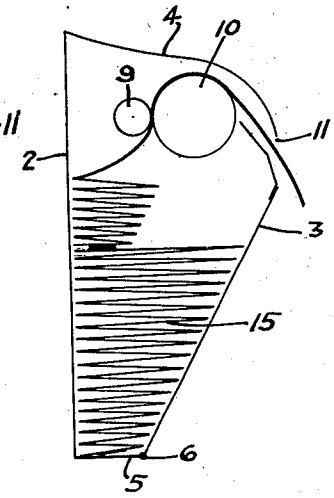


FIG. 3

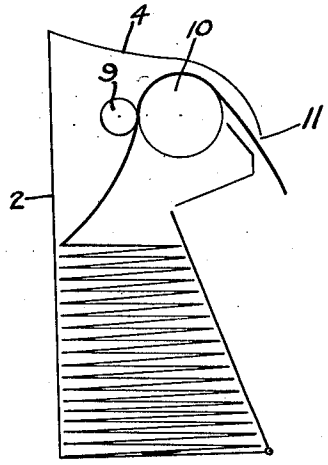


FIG. 6

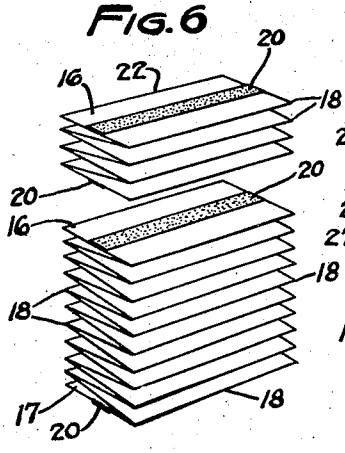


FIG. 7

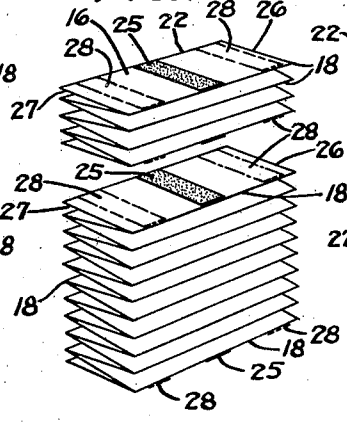


FIG. 8

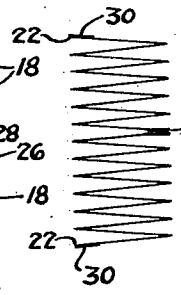


FIG. 9

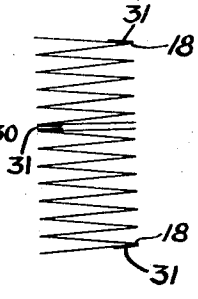


FIG. 10

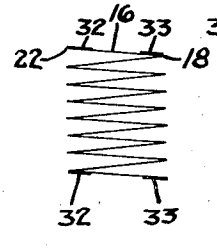


FIG. 11

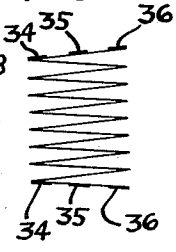


FIG. 4

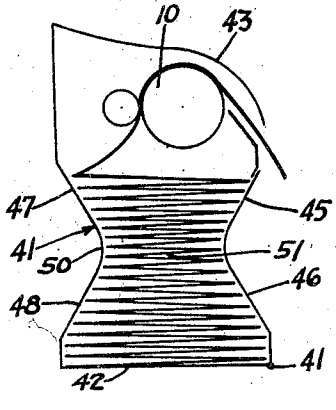
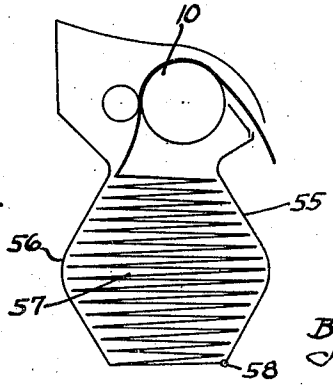


FIG. 5



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Application July 16, 1937, Serial No. 154,021

5 Claims. (Cl. 206—57)

This invention relates to the paper package and paper feeding arts, and has for an important object to provide means for connecting the end or terminal of one supply roll or package to the terminal of another roll or package to obtain continuity for feeding, as for example by means of a pair of rolls.

Another object is to prevent waste of paper, by those who service paper dispensing cabinets, such persons being prone to remove and throw away an unused portion of a supply package or roll and to substitute a full package therefor, to save themselves the trouble of making a special round or trip to service the particular cabinet.

The present invention facilitates the addition of a full package or roll to a partially depleted supply package or roll by the use of simple means for connecting the end of one supply to the end of another to obtain continuity for feeding purposes. Thus the service man will not throw away the partially used roll or package to save himself another trip but will merely connect the new supply to the old, and save paper as well as avoid an extra trip.

The invention finds valuable application in the paper dispensing art, and particularly for a package which is formed by repeatedly reversely folding a continuous strip of paper. The adhesive preferably used is of that type which will only adhere to some specific material and thus there is no possibility of accidental adherence, since it will only adhere when pressed against material of a specific kind, in this case against an adhesive substance like itself.

Features, objects and advantages will appear in the description of the drawing, and in said drawing,

Figure 1 is a transverse vertical section through a cabinet, somewhat diagrammatically illustrating the metering, and supply-fitted-to-cabinet, schemes;

Figure 2 is a view similar to Figure 1, showing a partially depleted supply of paper connected to a full supply to obtain continuity of feed of one by the other;

Figure 3 is a vertical transverse section of another form of supply-fitted-to-cabinet scheme;

Figures 4 and 5 are cross sectional views showing other modifications of the supply-fitted-to-cabinet scheme;

Figure 6 is a diagrammatic perspective view showing a partially depleted supply and a full supply, as before connection, and showing the adhesive or other connecting means extending parallel with the fold lines;

Figure 7 is a view similar to Figure 6 in which the adhesive extends in a direction at right angles to the fold lines and in which plural adhesive areas are used; and

Figures 8, 9, 10 and 11 are diagrammatic views showing modifications in the placements of the adhesive.

Referring to the drawing, and first to Figure 1:

There is indicated a cabinet having a rear wall **2**, a front wall in part formed by a service door **3**, a top wall **4** and a bottom wall **5**. The door **3** is hinged as at **6**, and the cabinet has therein a pair of feed rollers (or other feeding means) respectively indicated **9**, **10**. A delivery opening is indicated at **11**. The invention is applicable to other types of cabinets, and for up or down feed use. Within the cabinet is a supply package **15** of paper, which package is formed by reversely folding a continuous sheet, see also Figure 6. The package has free terminal folds or flaps respectively designated **16**, **17**. The fold lines are indicated at **18**. As shown in Figures 1 to 5 inclusive, the distances between the fold lines vary, while in Figures 6 to 11 inclusive the distances between the fold lines are the same for all layers or folds.

An important feature of this invention relates to a paper package formed from a continuous sheet by reverse folding and having at each opposite terminal, means by which the package can be connected to the end of another package of the same kind, as best shown in Figures 2, 6, 7, 8 and 9. It will be understood that other means than adhesive may be used for connecting purposes, but adhesive is preferred because of the ease with which the connection can be made for obtaining continuous feed. The use of ready-placed adhesive for feeding purposes is believed broadly new. The provision of adhesive or other means as a part of the package and sold with it, or attached to it, at time of sale and the use of such means for obtaining continuity of feed is broadly claimed, particularly on a package formed by reverse folding. It will also be noted that the feeding connection scheme can be used for attaching the end of any kind of a supply, (whether folded or not) to another supply by merely pressing the ends of the supplies together.

In Figure 6 the adhesively treated areas are indicated by numeral **20**, and in this instance, these areas extend parallel with the fold lines **18**, and

each area lies midway between the free edge 22 and the fold line 18 of the corresponding end flap. It is thus seen that registration between the adhesive areas 20 of two supplies is easily obtained by merely registering the perimeters of the end flaps and applying pressure. One suitable adhesive substance for the use herein is a solution of para rubber in gasoline, which can be bought on the open market. Thus, adhesive substance upon one flap or terminal of one package is adapted to adhere to the adhesive substance of the other flap upon contact therewith.

It will be understood that a plurality of strips of adhesive may be applied, and this plural application is shown in Figure 7 although in this figure the strip-like areas of adhesive are disposed perpendicularly to the edges 22, 18. The adhesive area 25 is midway between the end edges 26 and 28 of the end flaps, and dotted lines have been added to indicate the location of areas 28 which may be used in addition to the area 25, or the area 25 may be omitted and the area 28 only used. In all instances where adhesive is used it is preferably placed in some central or midposition so that when the perimeters of the end flaps of two packages are registered, that is, the edges 18, 22, 26 and 27 are registered with the corresponding elements of another package, the adhesive area or areas will also be in register, so that to obtain adhesive juncture it is only necessary to apply pressure against the end faces of the packages as one would apply pressure to an accordion to close it, or put one package upon a support, and place the other upon the top of it and apply pressure.

Preferably, the outer surface of each end fold is of rectangular configuration and this rectangle is generally elongated in the direction which is parallel with the axes of the rollers by which the paper is fed. The adhesive area preferably extends the full longitudinal length. The size of the adhesive area may vary and may be of any preferred shape, and a plurality of such areas may be used, and they may extend in any desired direction relatively to the fold lines, or to the axes of rotation of the feed rollers.

In Figures 8 to 11 have been shown modifications in the location or placement of the adhesive material. In Figure 8, the adhesive material is shown at the free edge 22 and as extending longitudinally, and is indicated by the numeral 30. In Figure 9, each strip of adhesive is arranged near a fold line 18 and is indicated by the numeral 31. In Figure 10, plural strips 32, 33 are shown and they are located one at the free edge 22 of the end flap 16 and the other at the fold line 18 thereof. In Figure 11 three strips of adhesive respectively indicated 34, 35, 36 have been shown, and extend longitudinally. In Figure 7, three strips extend transversely.

It will, of course, be understood that the adhesive may be located at any desired place on the outer side of the end flap and that means, other than adhesive can be used. Package-connecting, to obtain continuity of feed, by the use of adhesive is claimed, and the use of the particular kind of adhesive which will only become adhesively attached to material of its own nature is also a feature. This is believed new as means for connecting packages of sheet material together to obtain continuous feeding in a dispensing apparatus.

Another feature of the invention relates to what I designate "self-metering". That is, the shaping of the folded package so that the distance between the folds varies, and so that as the paper issues from the cabinet, the difference in lengths of the folds indicates to the serviceman the approximate amount of the supply remaining in the cabinet. To simplify the illustration only a few varieties of shapes of packages have been shown, but in each package there is a variation in the lengths of the folds and the lengths are progressively greater or less from one end of the package to the other. Thus, as the paper is fed, the lengths of the fold are observable and serve to indicate the amount of supply remaining in the cabinet. For example, in Figures 1 and 2 the appearance of short lengths will indicate that the supply is getting low, while in Figure 3 the appearance of long lengths will indicate that the supply is getting low. The metering feature can be, and is, combined with the shape-to-fit-the-cabinet scheme, described herebelow.

When the self-metering or shape-to-fit-the-cabinet schemes are not used, a package which has a rectangular parallelepiped configuration is desirable, although whatever the shape of the packages they can be connected end to end, as is broadly contemplated herein.

Another feature of the invention which is closely related to the self-metering scheme, is the shaping of the (folded) supply to fit or conform to the configuration of two opposed surfaces of the cabinet, preferably two upright surfaces one of which is a service door. In Figures 1, 3, 4 and 5, have been shown respectively four shapes which can be used, but it is understood that there is no intention to be limited entirely to these particular shapes, and that they are only illustrative of the broad idea of the shaping of a supply of folded paper to fit only a particular cabinet, so that paper can only be introduced into a cabinet of the corresponding shape with which it is intended to be used.

With this scheme no supply package of equal bulk or yardage can be properly placed (to be fed) in any cabinet but the one designed for its reception. This has the advantage of giving each customer a distinctive exclusive type or shape of cabinet and discourages the use therein of any type of package other than that specially shaped to fit it.

The door and the back wall of the cabinet hold the package in upright position by engagement against those sides at which folding occurs. The relation of the fold lines to the inner faces of the opposite walls of the cabinet (or equivalent supporting elements) and to the axes of rotation of the rollers is to be particularly noticed, because this feature is common to all forms of packages herein. This feature along with the metering feature and the scheme for connecting supplies of folded paper together are closely related inventions. The illustration is diagrammatic. It will of course be understood that the fold elements of the package are parallel and are engaged flatly one against the other. These elements have been shown separated and angularly related only to simplify the illustration. Moreover, it will be understood that those sides of the package at which the fold lines occur, are engaged by the walls or equivalent supporting elements of the cabinet.

In Figure 4 the specially shaped door is hinged as at 41 and its inner surface is parallel with the rotative axis of the rolls 10. The specially shaped back of the cabinet is generally indicated at 41. The bottom of the cabinet is indicated at 42 and the top of the cabinet is indicated at 43. The

top portion 45 of the door slants inwardly and downwardly as does the top portion 47 of the back, and the bottom portion of the door 46 slants inwardly and upwardly as does the bottom portion 48 of the back. The result is that the cabinet is constricted at the middle as at 50, and a supply of paper is so folded as to be correspondingly constricted as at 51. This cross-sectional hour-glass configuration is a feature.

If an attempt is made to introduce a package of the shape shown in Figure 5, into the cabinet of Figure 4, (assuming that the package of Figure 5 has about the same total volume or yardage as that of the package of Figure 4) it is seen that the door could not be properly closed without such deformation as would preclude proper feeding. There is no intention to be limited to use in an up-feed type of cabinet, it is obvious that all of the schemes herein set forth in relation to an up-feed cabinet, can be applied as well in a down-feed cabinet.

In Figure 5 the cross-sectional configuration of the cabinet and supply is roughly diamond-shaped. The front of the cabinet is indicated at 55, the back at 56, and the paper package 57 has its widest part at the vertical middle of the cabinet. The hinge is indicated at 58.

It will, of course, be understood that the rollers may be operated either by pull on the paper or by a crank attached to either one of them, and it will be further understood that the rolls may be separable and that the cabinet may be of the types shown in my co-pending applications 18,397 and 130,119. However, there is no intention to limit the invention entirely to use in any particular style of cabinet, but the principles may be applied in any cabinet which dispenses sheet material and in which the packages are formed by reversely folding a paper strip, and in which the fold lines have a certain relation to the walls of the cabinet and to the dispensing elements.

A new combination giving an improved result resides in the relation of the particular package (formed by reverse folding) and the manner in which the same is cross-sectionally shaped, and the manner in which the fold lines are related to the axes of the rollers and to the opposite walls or equivalent elements of the cabinet which walls are parallel with the long axis of the rolls. It is preferable to have one of these walls formed by the service door, but conceivably the folded supply package could be introduced in a direction which is parallel with the axes of the rolls, that is from the side, instead of from the front or back of the cabinet and such introduction is intended.

A feature which is common to all uses of this invention is the formation of a paper package by reversely folding a continuous sheet. The provision of means on each package by which two or more packages can be connected end to end to obtain continuity of feed, and to save paper (by connecting a partially depleted supply to a new supply) the scheme wherein folded paper is so shaped as to fit a cabinet of corresponding shape, and the self-metering scheme, are all closely related to a use of supply package formed by reverse folding.

The particular relation of the folded supply to the rolls and the relation of the supply and rolls to the service door is to be especially noted, and is also claimed. It is noted that the service door although shown at the front may be at the back of the cabinet but it is further noted that the plane of the door is parallel with the axis of the rolls so that the door is swung away or toward the rolls respectively for servicing. That is, the door moves toward and away from the cylindrical faces of the rolls. The door may be of the sliding type, but in any event, when it is in closed position the plane of its inner surface is substantially parallel with the rotative axes of the rolls. Thus whatever the shape of the door or whatever the shape of the cabinet, the opposite walls hold the supply in the proper position, and the shapes of supply and of the cabinet are complemental.

I claim as my invention:

1. A paper package comprising a continuous sheet and having, a terminal free flap at each end, the outer face of each terminal flap having applied thereto an adhesive which is only adhesively attachable to a substance of like nature when the adhesive treated areas are pressed together.

2. A paper package comprising a continuous sheet and having a terminal free flap at each end, the outer face of each terminal flap having applied thereto an adhesive which is only adhesively attachable to a substance of like nature when the adhesive treated areas are pressed together, said adhesive being so located that adhesive juncture is obtainable by opposing the end faces of two packages, bringing their perimeters into registration and then applying pressure through one or both packages.

3. A paper package comprising a continuous sheet and which has a terminal free flap at each end, the outer face of each terminal flap having applied thereto about midway between opposite fold lines, an adhesive which is only adhesively attachable to an adhesive substance of like nature when the adhesive treated areas are pressed together.

4. A paper package comprising a continuous sheet and which has a terminal free flap at each end, the outer face of each terminal flap having applied thereto an adhesive which is only adhesively attachable to an adhesive substance of like nature, when the adhesive areas are pressed together, whereby the terminal portions of the two packages can be connected to form a continuous web for feeding purposes, and whereby such connection can be accomplished by piling one package upon another and applying pressure through one or both packages.

5. A paper package comprising a continuous sheet, which has a terminal free flap at each end, the outer face of each terminal flap having applied thereto about midway between opposite fold lines an adhesive which is only adhesively attachable to an adhesive substance of like nature when the adhesive treated areas are pressed together.

FRANK G. STEINER.