Dec. 9, 1952 A. G. ROSE ET AL 2,620,964

PACKAGE

Filed Oct. 30, 1947 2 SHEETS—SHEET 1

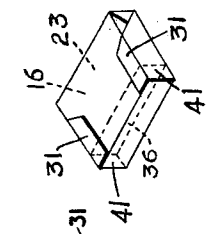


FIG. 5.

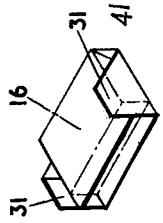


FIG. 4.

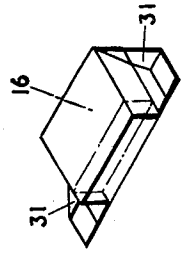


FIG. 3.

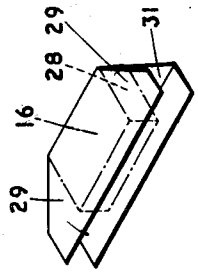


FIG. 2.

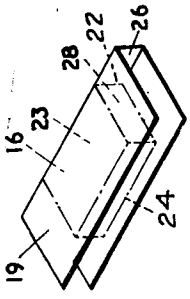


FIG. 1.

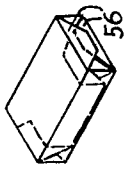


FIG. 11.

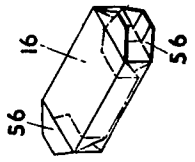


FIG. 10.

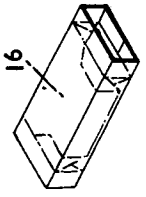


FIG. 9.

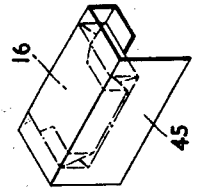


FIG. 8.

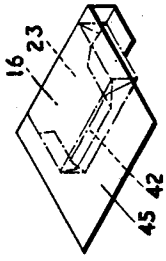


FIG. 7.

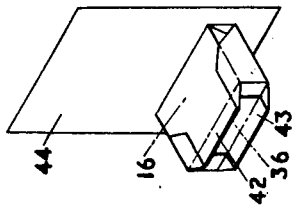


FIG. 6.

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PACKAGE

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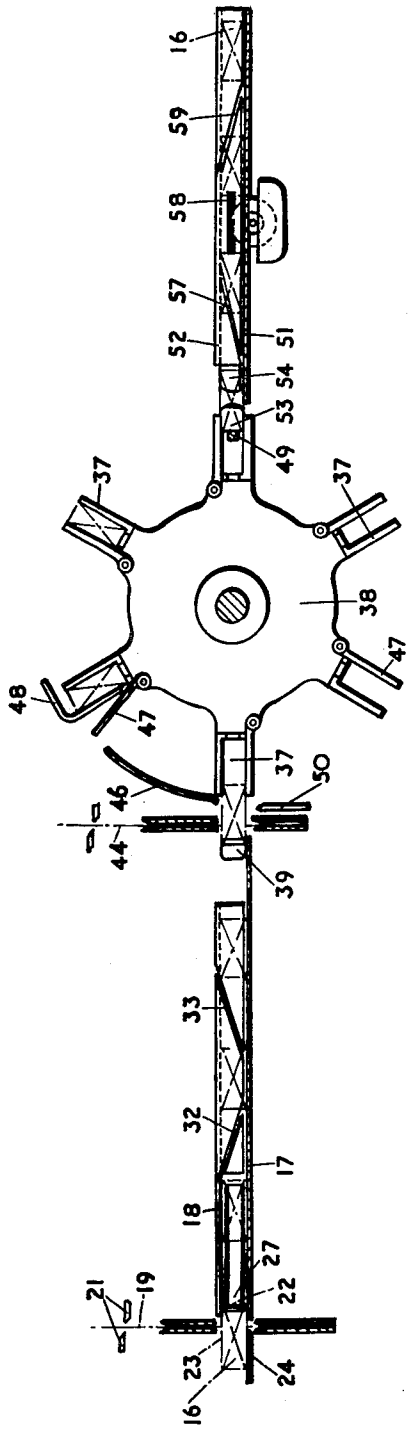


FIG. 12.

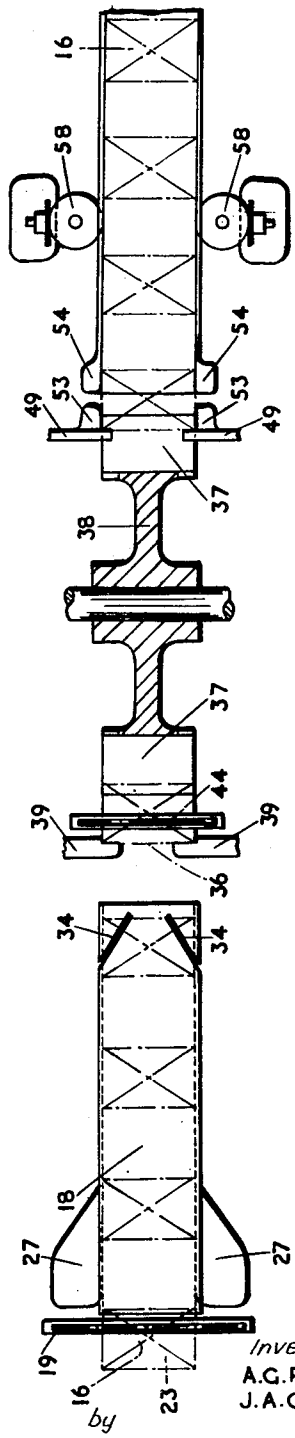


FIG. 13.

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2,620,964

UNITED STATES PATENT OFFICE

2,620,964

PACKAGE

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Application October 30, 1947, Serial No. 783,036
In Great Britain November 6, 1946

2 Claims. (Cl. 229—87)

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This invention relates to packages of substantially rectangular form, and of the kind (hereinafter referred to as the "kind described") in which a wrapper of paper, film, foil, or like wrapping material is first folded about one end and two faces, e. g., upper and lower faces of the article to be wrapped, in the form of a U with portions extending from the sides and the other end of the article sufficiently to form side and end flaps to complete the wrapping of the article.

The invention is particularly concerned with the folding of the side flaps and the improved package resulting from such folding.

The usual method of forming packages of the above kind (hereinafter referred to as "the described method"), consists in folding the extending portions of the wrapper by first forming side tucks by tucking in those portions of the wrapper which extend in the plane of the covered end of the article so that they lie against the sides of the article and are connected to portions of the wrapper constituting side flaps by triangular portions thereof that are folded inwardly as a result of the tucking operation, then folding over the side flaps extending from one face of the article on to the adjacent sides of the article, and then folding over the remaining side flaps on to the ones already folded, so that the article is contained in an open-ended pouch which is then closed by folding the extending portion of the pouch on to the adjacent end of the article in any desired manner.

According to the invention, there is provided a package of the kind described, wherein the last folded side flaps are folded right over the adjacent sides of the article and partially over the adjacent face of the article. With the folding of the side flaps in this manner, a portion of each of the last folded side flaps constitutes part of the wall of the pouch extending from the adjacent face of the article, with the result that, when the extending portion of the pouch is folded on to the adjacent end of the article to complete the package, such portions of the side flaps become inter-folded with the end folds.

It will thus be seen that, in a package formed in accordance with this invention, the various folds are each progressively trapped by the succeeding folds with the result that the last-folded end flap effectively traps all the folds so that the package could, if desired, be completed by a single sealing operation, namely, the sealing of the last folded end flap. Each fold may, of course, be sealed as it is formed, if desired, and when

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using wrappers of thermo-plastic material, the sealing may be effected merely by the application of heat and pressure.

The package according to the invention may be used for a wide variety of articles, for example, cartons containing cigarettes or other articles, groups of cigarettes which approximate to a rectangular form, cakes of soap of approximately rectangular form, and a single wrapper folded in the manner described may constitute the sole wrapping. The package thus formed, may, however, be wrapped in one or more outer wrappings if desired.

The invention has been found particularly useful, for example, in the wrapping of cakes of soap, which it is preferable to enclose in an inner wrapper of grease-proof material, and then in an outer wrapper of paper or other wrapping material. The formation of such a package will now be described in greater detail with reference to the accompanying drawings in which

Figures 1 to 11 are diagrams illustrating various stages in the formation of the package and

Figures 12 and 13 are diagrammatic representations in elevation and plan, respectively, of an apparatus for forming the package.

Referring to the drawings, articles 16, in the form of cakes of soap of substantially rectangular cross-section, are fed in spaced succession along a folding channel formed by a supporting platform 17 and an upper guide plate 18 by suitable conveyor means (not shown). Inner wrappers 19 cut from a web of wrapping material by a cutting device 21 are fed across the path of the articles 16 in timed relationship with their movement along the platfrom 17 so that each article 16 in turn engages a wrapper 19 and causes it to pass into the folding channel and in so doing fold over the forward end 22 and the upper and lower faces 23 and 24 of the article in the form of a U with portions extending from the sides and rear end of the article as shown in Figure 1. As soon as the partially wrapped article enters the folding channel, portions 26 of the wrapper extending in the plane of the forward end 22 of the article (see Figure 1) are engaged by tucking elements 27 and caused to fold on to the sides 28 of the article thus forming upper and lower side flaps 29 and 31, respectively, as shown in Figure 2.

After leaving the tucking elements 27, the upper side flaps 29 are caused to pass through folding slots 32 which fold the upper side flaps 29 on to the sides 28 of the article 16 leaving portions lying on the lower side flaps 31 as shown in

Figure 3. The lower flaps 31 with the extending portion of the upper flaps 29 then pass through folding slots 33, which extend into the upper guide plate 18 as shown at 34 in Figure 13, and are caused to fold right over the side faces 28 of the article 16 and partially over the upper face 23 of the article as shown in Figures 4 and 5. At this stage, the article 16 is enclosed in an open-ended pouch with a portion of the pouch at the open end extending from the rear end 36 of the article as shown in Figure 5, and by reason of the folding of the side flaps 31 over part of the upper face 23 of the article 16, a portion of each of the side flaps 31 constitutes part of the upper wall of the pouch, so that, during subsequent folding of the open end of the pouch to form a closure, such portions of the side flaps 31 become interfolded with the folds constituting the closure.

The article 16 is now transferred from the folding channel to a pocket 37 of a rotatable pocket wheel 38 by a pair of movable tucking elements 39 operating in timed relationship with the movement of the packages. The tucking elements 39 are first caused to move into engagement with the rear face 36 of the article 16 and in so doing cause extending side portions 41 of the open-ended pouch to fold over on to the rear end 36 of the article in the form of tucks as shown in Figure 6, leaving upper and lower end flaps 42 and 43, respectively, extending from the rear face 36 of the article. The tucking elements 39 then forward the article 16 into engagement with an outer wrapper 44 fed in a similar manner to the feeding of the inner wrappers 19 thus causing the article and wrapper to move together into the pocket 37, the wrapper 44 being caused by such action to fold over the forward end 22 and the upper and lower faces 23 and 24 of the article as before. The positioning of the wrappers 44 is such that the portion of the wrapper folded over the lower face 24 extends approximately half way over the lower face while the portion of the wrapper folded over the upper face 23 extends as shown at 45 beyond the end face 36 of the article by an amount sufficient to overlap the portion extending over the lower face 24 of the article 16 (see Figures 6 to 9).

As soon as the article 16 has been inserted in the pocket 37 the tucking elements 39 move clear of the article and the lower end flap 43 is folded against the end face 36 of the article by a movable folding member 50. The pocket wheel 38 is then caused to rotate in a clockwise direction through part of a revolution to carry the article in the pocket 37 to a further folding station and at the same time carry a further pocket 37 to the transfer station in readiness for the transfer of the next article 16 by the tucking elements 39. During the rotation of the pocket wheel 38 the extending portion 45 of the outer wrapper 44 and the upper end flap 42 of the inner wrapper are together folded across the rear end face 36 of the article 16 (see Figure 8) by a stationary folding member 46. As the pocket wheel 38 comes to rest, a movable side 47 of the pocket 37 is opened to allow a movable tucking member 48 to tuck in the remaining portion of the outer wrapper so that it overlies the portion of the outer wrapper lying on the lower face 24 of the article. The tucking member 48 is then withdrawn, the movable side 47 of the pocket closed, and the pocket wheel 38 once more rotated through a portion of a revolution to carry the article 16 to an idle station.

At this stage the article is completely enclosed in the inner wrapper 19, and the outer wrapper 44 surrounds the wrapped article in the form of a tube as shown in Figure 9. The pocket wheel 38 is then rotated through a further portion of a revolution to carry the article to a transfer station at which a pair of transfer members 49, operating in a similar manner to the tucking elements 39, move into engagement with the end face 22 of the article for the purpose of transferring it from the pocket 37 into a further folding channel constituted by a supporting platform 51 and an upper guide 52.

During the movement of the transfer members 49 into engagement with the end face 22 of the package, tucking elements 53 extending from the transfer members 49 are caused to engage portions of the extending outer wrapper and fold them over the side faces 28 of the article in the form of side tucks, and during the transferring motion of the transfer members 49, opposing portions of the wrapper are caused to engage further tucking elements 54 so as to form similar side tucks, thus leaving side flaps 56 extending from the side faces 28 of the article, as shown in Figure 10. Upon transferring into the second folding channel, the packages are engaged by suitable conveyor means (not shown) which forward each package in turn through the folding channel. During such movement the lower flaps 56 are first caused to pass through folding slots 57 which cause the flaps to fold on to the side faces of the package, the package then passes in contact with gumming wheels 58 which cause lines of gum to be applied to the outside of the folded flaps 56, and finally the upper flaps 56 are caused to pass through folding slots 59 which cause the upper flaps 56 to overlie the folded lower flaps 56 to which they become attached by the gum lines. The completed package (see Figure 11) is then discharged from the second folding channel into suitable stacking mechanism (not shown).

It will thus be seen that as each fold is formed during the formation of the package it is secured by being trapped by a subsequent fold, the article being completely enclosed in an inner wrapper which because of the progressive trapping of the folds, does not require to be separately sealed, the final sealing of the outer wrapper by the gumming of the flaps 56 securing the entire package.

We claim:

1. Method of wrapping articles of substantially rectangular form, comprising folding a wrapper of paper, film, foil, or like wrapping material about one end and two faces, e. g., upper and lower faces, of the article in the form of a U with portions of the wrapper extending from the sides and the other end of the article sufficiently to form side and end flaps, forming side tucks by tucking in those portions of the wrapper extending in the plane of the covered end of the article so that they lie against the sides of the article and are connected to portions of the wrapper constituting side flaps by triangular portions thereof that are folded inwardly as a result of the tucking operation, folding the side flaps extending from one face of the article on to the adjacent sides of the article and the remaining side flaps right over the adjacent sides of the article and at least partially over the opposite face of the article so that the article is contained in an open-ended pouch part of the extending portion of which is constituted by

portions of the last folded side flaps, and folding the extending portion of the pouch on to the adjacent end of the article thereby causing said portions of the last folded side flaps to be interfolded with the remaining parts of the extending portion of the pouch.

2. A wrapped package of the kind comprising a sheet of flexible wrapping material folded about an article of substantially rectangular form with unfolded portions lying against one end and two opposed faces, namely, the upper and lower faces, of the article with lateral extensions of those portions lying against opposed sides of the article and longitudinal extensions of those portions lying against the opposite end of the article, the lateral extensions constituting side tucks lying against the sides of the article and inner and outer side flaps connected to the side tucks by triangular portions of the side flaps that are folded inwardly, the outer side flaps extending from one face of the article right over the adjacent sides of the article and at least partially over the opposite face of the article, any portion of the inner side flaps of greater

width than the adjacent side of the article being doubled upon itself and lying between the inner and outer side flaps, whereby a portion of at least the outer side flaps is a continuation of one of the longitudinal extensions on said opposite end of the article and is interfolded therewith.

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JOSEPH ARTHUR GILBERT.

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