

Aug. 28, 1962

S. F. FLYNN

3,051,345

ARTICLE SUPPORT

Filed Feb. 24, 1958

Fig. 1.

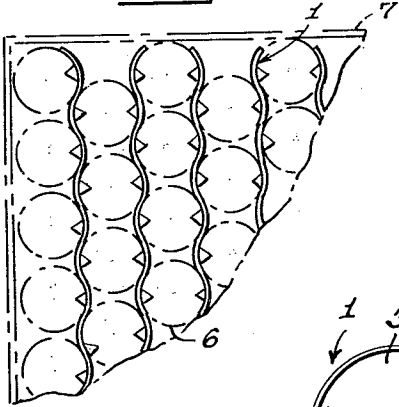


Fig. 2.

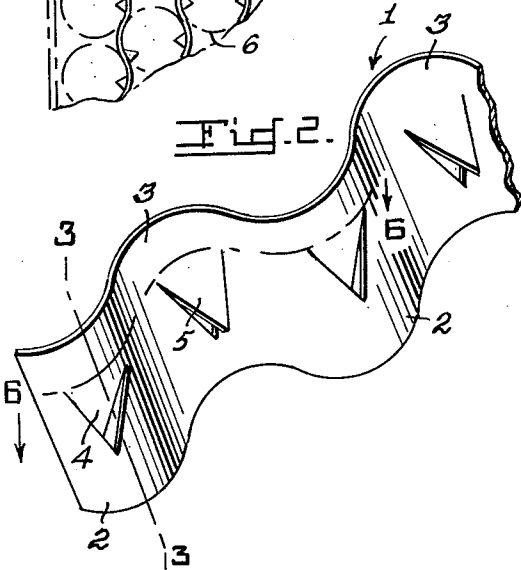


Fig. 3.



Fig. 6.



Fig. 10.

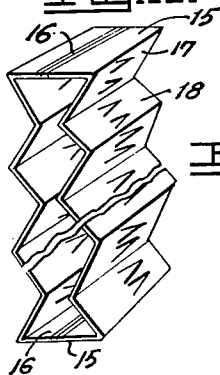


Fig. 4.



Fig. 5.

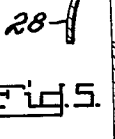


Fig. 7.

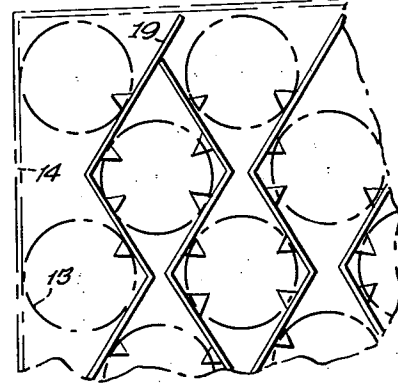


Fig. 8.

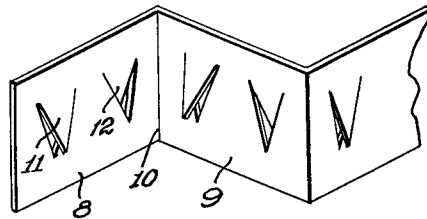
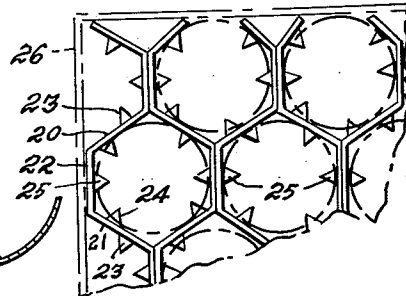


Fig. 9.



Stanley F. Flynn
INVENTOR.

BY

1

3,051,345

ARTICLE SUPPORT

Stanley F. Flynn, 4228 Columbia Pike, Arlington, Va.

Filed Feb. 24, 1958, Ser. No. 717,111

3 Claims. (Cl. 217—34)

(Granted under Title 35, U.S. Code (1952), sec. 266)

The invention described herein, if patented, may be manufactured and used by or for the Government for governmental purposes, without the payment to me of any royalty thereon.

This invention relates to protective devices for packing and shipping articles having curved or plane-surfaced contours and more particularly to a partition member or separator between rows of similarly shaped articles which serves the dual purpose of separating the articles being packed therebetween and supporting them in a manner to prevent breakage and maintain a separation between adjacent articles in the same row.

Conservation of space is of paramount importance in the shipment of many articles and in the accomplishment of this result it is essential that fragile articles such as eggs, glass objects and objects having frangible surfaces be packed in a minimum of space yet in a manner to reduce breakage to a minimum.

It is therefore a principal object of the present invention to provide a partition or separation member for similarly shaped articles having curved or plane-surfaced contours which will permit packing such articles in a minimum of space and also support such articles within a row and between adjacent rows and in vertical tiers in a manner to prevent breakage.

It is a further object of the present invention to provide a partition or separation member for articles having curved or plane-surfaced contours which permits relative adjustment of parallelly arranged partition members to utilize the packing space most efficiently and prevents breakage of the supported articles.

It is a further object of the present invention to provide a partition or separation member for articles having curved or plane-surfaced contours, which separation member includes support elements affording yieldable support for fragile articles to prevent breakage.

These and other objects will become apparent from the following description of the invention wherein:

FIG. 1 is a plan view of one layer of a container utilizing one embodiment of a separator employing the principles of construction of the instant invention for supporting and separating similarly shaped articles;

FIG. 2 is a perspective view of a length of the separator as used in FIG. 1;

FIG. 3 is a vertical sectional view taken on the line 3—3 of FIG. 2;

FIG. 4 is a vertical sectional view similar to that of FIG. 3 but showing a modified configuration of article supporting tab;

FIG. 5 is a vertical sectional view similar to that of FIG. 3 but showing a further modification of the article supporting tab;

FIG. 6 is a horizontal sectional view taken on the line 6—6 of FIG. 2;

FIG. 7 is a plan view of one layer of a container utilizing a modified configuration of separator in accordance with the instant invention for separating and supporting similarly shaped articles;

FIG. 8 is a perspective view of a length of the separator having the configuration as used in FIG. 7;

FIG. 9 is a plan view of one layer of a container utilizing still another modification of a separator in accordance with the instant invention for separating and supporting similarly shaped articles;

FIG. 10 is a perspective view of a pair of parallelly

2

arranged separators, similar in configuration to that shown in FIGS. 7 and 8, flexibly joined to permit relative movement lengthwise of the separators.

Reference is now made to the form of separator shown in FIGURE 2. The strip shown generally by 1 comprises adjacent curved surfaces 2 and 3 alternating in direction of curvature. Each of the curved surfaces 2 of the strip 1 has a tab 4 located approximately centrally of the curved surface and struck from the material of the strip 1. Each of the curved surfaces 3 of the strip 1 has a tab 5 located approximately centrally of the curved surface and aligned in the longitudinal direction of the strip 1 with the tabs 4 but struck from the material of the strip 1 in a direction opposite from that of the tabs 4. Rather than strike the tabs 4 and 5 from the material, it may be desirable to produce the tabs 4 and 5 separately and secure them in place by adhesive or other suitable means on the curved surfaces 2 and 3 in oppositely directed fashion as when struck from the material. The strips 1 shown in FIG. 2 may be preformed in the undulating fashion shown from natural or synthetic plastic materials, paper or wood pulp compositions, metal and other suitable materials which may be preformed by heat and pressure methods. Alternatively, the strips 1 may be produced of flexible material in flat condition and arranged in curved configuration by supplementary guide means such as pegs or grooves to maintain the oppositely directed curved surfaces when in use for packaging materials such as in the container 7 as in FIG. 1. FIG. 1 illustrates the manner in which the strips 1 shown in FIG. 2 are arranged for packaging similarly shaped articles 6 which in this instance are shown as having curved contours but which may alternatively be plane surfaced. When successive tiers or layers of similarly shaped articles are packaged, a plane surfaced separator, not shown, is used between layers to provide a base for supporting the strips 1. Such plane surfaced separators may be provided with the pegs or grooves for supporting the strips 1 and forming them in undulating configuration when so formed from flat, plane surfaced strips or alternatively the end walls of the containers in which the strips 1 are used may be grooved or provided with slots to receive the ends of the strips 1 when in vertical or upright position in a container. As in FIG. 1 when the strips 1 are used to separate packaged articles the oppositely directed tabs 4 and 5 support the articles in a manner which provides efficient utilization of the space and which reduces breakage to a minimum.

FIG. 8 illustrates another configuration of the strips wherein the adjacent sections 8 and 9 are plane surfaced rather than curved and are angularly disposed to one another. The particular angle between the sections is not critical and may be adjusted to accommodate the particular articles being packaged. The meeting edges 10 of the adjacent sections 8 and 9 may be permanently formed, if the separators are made of heavy gauge material or they may be creased or alternately perforated to provide a hinged connection permitting the adjacent sections 8 and 9 to be adjusted to any desired angle. This configuration has the advantage that when stored they may be folded accordion fashion thus compressing a long strip into a small package or of course they may be stored in flat condition. The tabs 11 and 12 in each of the sections 8 and 9 are struck from the material in the manner described for the modification shown in FIG. 2. The tabs 11 and 12 in each section are oppositely directed as shown in FIG. 7 or they may be struck out to project in the same direction if the article for which the strips are to be used would be more conveniently packaged if the tabs were so arranged. Again the tabs 11 and 12 may be produced separately and fastened to the surface of the sections 8 and 9 by any suitable method as de-

scribed for the modification shown in FIG. 2. The separators of FIG. 8 may be formed of the same materials and in the same manner as described for the separator of FIG. 2. The illustration in FIG. 7 shows the manner in which the separator of FIG. 8 is employed to package similarly shaped articles 13 having curved contours in a container 14.

Separators having the configuration of the embodiment shown in FIG. 8 for adjacent rows of packaged, similarly shaped articles may be joined at their ends by a member 15 in FIG. 10. By including a hinged section 16 in the joining member 15 as well as having the individual sections 17 and 18 flexibly joined at their meeting edges, and where these sections join the members 15, it will be possible to shift the separator strips formed by the adjoining sections 17 and 18 relative to each other longitudinally. This is advantageous when packaging articles which are staggered as in the illustrations in FIGS. 1 and 7 for efficient space utilization. With uniform length of sections such as 8 and 9 in FIG. 8, and 17 and 18 in FIG. 10, the separator may not extend to the ends of the container to provide firm support for the articles. By having a flexible hinge such as 16 in the end joining members 15 it is possible to shift the separators relatively and have them extend to the ends of the containers as shown at 19 in FIG. 7. The hinge 16 may be formed in various ways such as by providing an accordion pleated section in the end joining member 15 or by butting the meeting edges of the hinge and maintaining them in that manner by an adhesive strip overlaying the meeting edges.

Another configuration of a separator strip for supporting similarly shaped articles in container 26 in accordance with the instant invention is illustrated in FIG. 9. In this embodiment the plane surfaced sections 20 and 21 are similarly disposed to form equal angles with the common joining plane surfaced section 22. The configuration of each strip is such that when two strips formed of the joined sections 20, 21 and 22 are placed in facing relation with their sections 22 in face contact, the article receiving enclosures are in the form of regular hexagons. As in the embodiment illustrated in FIG. 8 the junction line between adjoining sections may be creased or formed by alternating perforations or in any equivalent manner to provide a hinge between the sections when the strips are made of material such as previously described and of a gauge to permit bending the sections relative to each other to form the configuration shown in FIG. 9. If the sections are formed of heavy gauge material as heretofore mentioned, the sections may be permanently disposed to obtain the configuration shown by preforming the strips by any of the well known stamping, molding or pressure methods. If the strips formed of the sections 20, 21 and 22 are made of relatively thin flexible material such as metal, plastic, paper or wood pulp they may be produced in flat and bent along the junction lines to form the desired configuration when used in packaging similarly shaped articles as shown in the illustration in FIG. 9. As in the previous embodiments, the sections 20, 21 and 22 are provided with tabs. Sections 20 and 21 are each provided with oppositely projecting tabs 23 and 24 and the sections 22 are each provided with a single tab 25. This arrangement of tabs provides six tabs projecting into the article enclosing space formed by the strips for resiliently supporting similarly shaped articles. The tabs in this embodiment may be struck from the material or may be formed separately and secured to the plane-surfaced sections in any suitable manner.

The illustrations shown in FIGS. 7 and 9 represent single layers of similarly shaped articles. When successive tiers or layers of such articles are packaged a plane-surfaced separator, not shown, is used between layers to provide a base for supporting the strips shown in FIGS. 7 and 9. Such base members may be provided with pegs or grooves for supporting the strips and forming them in undulating configuration when so formed from flat,

plane-surfaced strips or alternatively the end walls of the containers in which the strips are used may be grooved or provided with slots to receive the ends of the strips when in vertical or upright position in a container.

The strips shown in the embodiments illustrated in the various figures are provided with generally triangularly shaped tabs. It is within the scope of the present invention to provide tabs having shapes other than triangular and of various configurations. For example, in packaging fragile articles or articles having frangible surfaces, tabs such as shown at 27 and 28 in FIGS. 4 and 5, respectively, may be used. Tabs such as shown at 27 and 28 provide tangential contact with the article supported and are yieldable thus reducing breakage of fragile articles in the event the containers are jarred in handling or transportation. Such tabs may be struck from the material of the strip as in the foregoing embodiments or attached separately to the separator strip in any suitable manner. The tabs are struck out to place them in planes which are parallel to the direction of undulation of the strips and thus have a dimension lengthwise of the tabs, which dimension is perpendicular to the lengthwise dimension of the strip. It is also within the scope of the instant invention to arrange the tabs within the individual sections of the strips in patterns other than as shown and in alignments other than longitudinal as has been shown in the embodiments, which have been shown by way of example only. For example, it may be desirable to provide separator strips in accordance with the present invention of varying widths to accommodate articles of different heights in which event tabs may be arranged on the strips in vertical alignment as well as horizontal alignment to provide adequate protection for the articles supported by the separator strips.

Having thus described my invention, what I claim as new and desire to secure by U.S. Letters Patent is:

1. A separator strip for packaged articles, such as rows of eggs or other fragile articles, comprising a pre-shaped elongated strip of material combining the characteristics of relative stiffness and flexibility, said strip being of any desired length and having a substantially constant width throughout its length, said strip also being of undulated configuration lengthwise thereof, the undulations providing a series of contiguous alternating oppositely directed pocket portions adapted when in use to cooperate with articles arranged in adjacent rows, and a series of tongues formed from said strip of material, one thereof being disposed in each of said pocket portions, with the free ends of all tongues extending in a common general direction toward one of the longitudinal edges of the separator strip, each of said tongues projecting outwardly beyond the surface of the separator strip from within a pocket portion thereof alternately on opposite faces of said strip whereby packaged articles received in said pockets will be resiliently supported by said tongues.

2. A separator strip for packaged articles, such as rows of eggs or other fragile articles, comprising a pre-shaped elongated strip of relatively stiff yet flexible material, said strip being of a given length and of substantially constant width throughout its length and also having an undulated configuration lengthwise thereof, the undulations providing a series of contiguous alternating oppositely directed pocket portions adapted when in use to cooperate with articles arranged in adjacent rows, and a plurality of tongues formed from said strip of material, one thereof being disposed in each of said pocket portions, each of said tongues projecting outwardly and downwardly beyond the surface of the separator strip from within a pocket portion thereof alternately on opposite faces of said strip whereby packaged articles received in said pockets will be resiliently supported by said tongues.

3. A separator for packaged articles comprising a strip of undulating configuration lengthwise of said strip, said undulating configuration being formed by a series of hingedly connected relatively angularly disposed sections,

5

and at least one tab carried by each of said sections and adapted to project beyond the plane of its associated section, the direction of projection of said tabs alternating sequentially.

5

References Cited in the file of this patent

UNITED STATES PATENTS

814,069	Naylor	Mar. 6, 1906
1,282,656	Tiede	Oct. 22, 1918

1,888,855
1,925,792
2,124,808
2,464,154
2,533,738
2,637,440

6

Fuller	Nov. 22, 1932
Coyle	Sept. 5, 1933
White et al.	July 26, 1938
Roselius	Mar. 8, 1949
Moore	Dec. 12, 1950
Lodewick	May 5, 1953

FOREIGN PATENTS

France	Sept. 23, 1953
Great Britain	May 18, 1955

1,051,988
730,170