Dec. 6, 1960 M. A. HOWE, JR 2,962,853

PACKAGING APPARATUS

Filed April 13, 1959 4 Sheets-Sheet 1

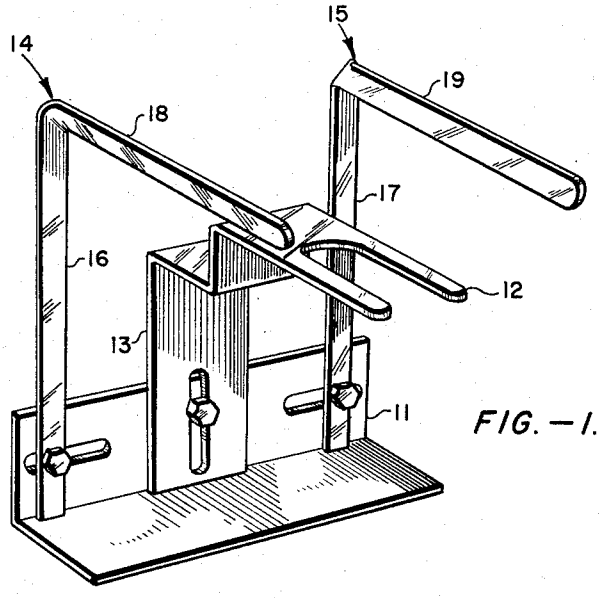


FIG. —1.

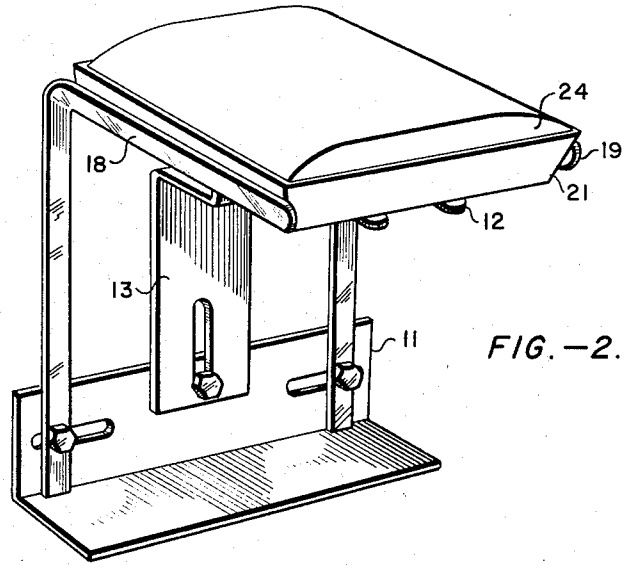


FIG. —2.

Dec. 6, 1960 M. A. HOWE, JR 2,962,853

PACKAGING APPARATUS

Filed April 13, 1959 4 Sheets-Sheet 2

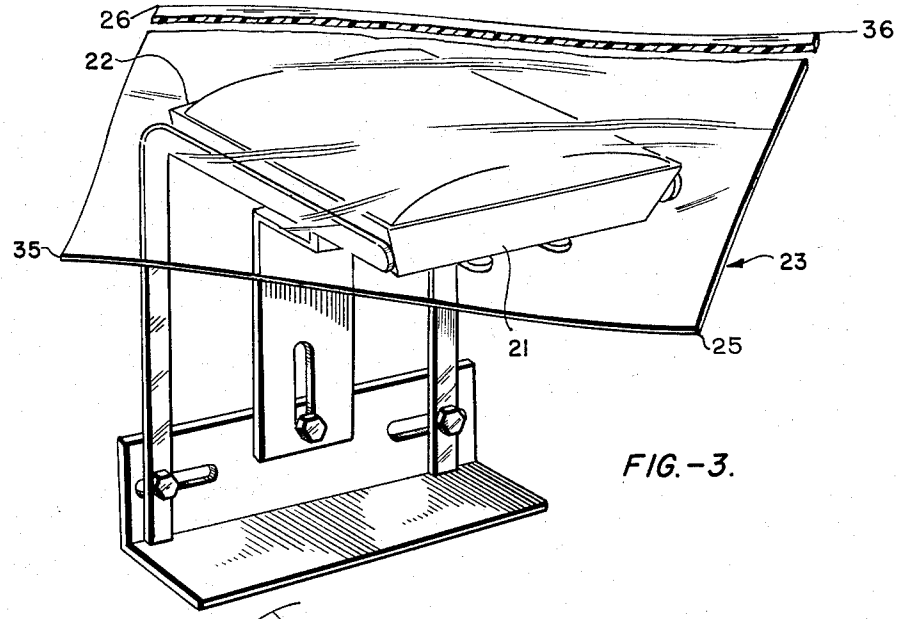


FIG.-3.

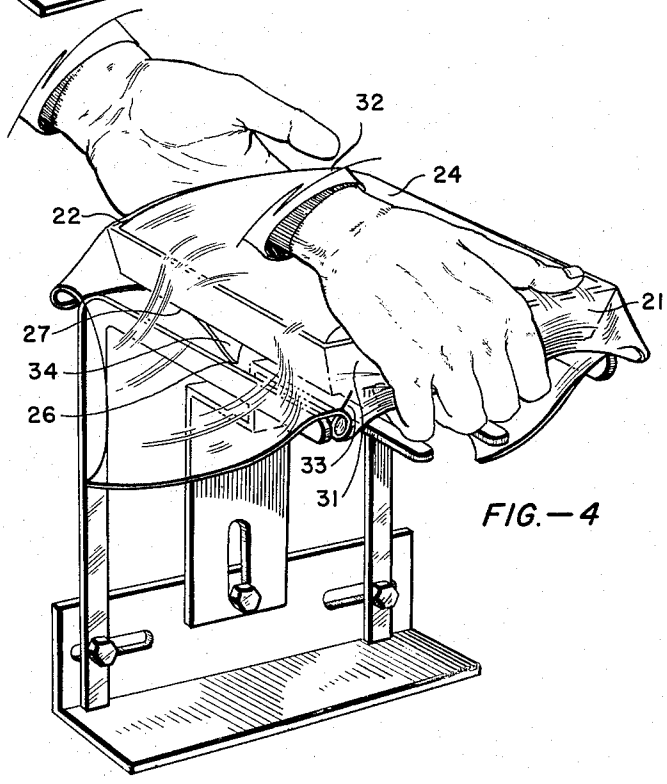


FIG.—4

Dec. 6, 1960 M. A. HOWE, JR 2,962,853

PACKAGING APPARATUS

Filed April 13, 1959 4 Sheets-Sheet 3

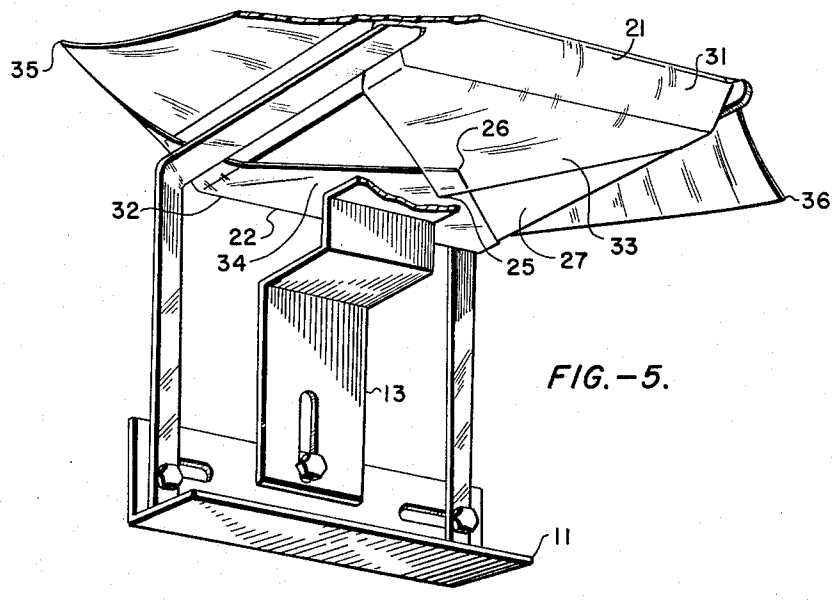


FIG.—5.

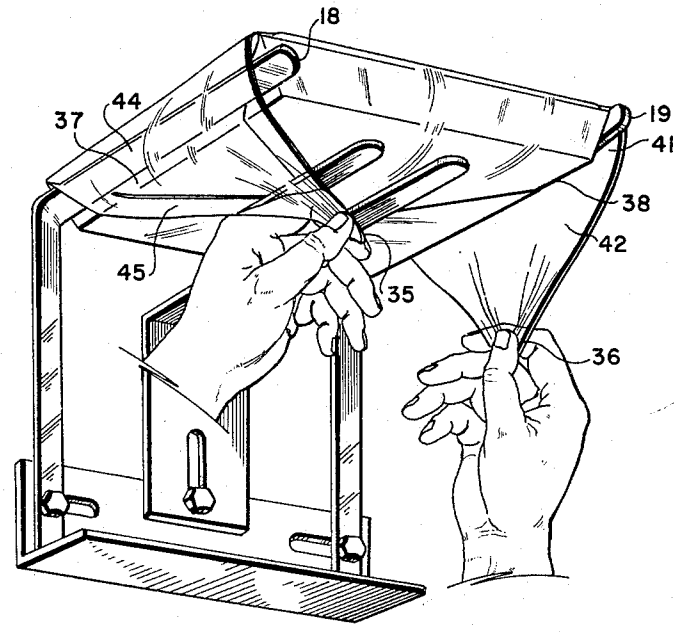


FIG.—6.

Dec. 6, 1960 M. A. HOWE, JR 2,962,853

PACKAGING APPARATUS

Filed April 13, 1959 4 Sheets-Sheet 4

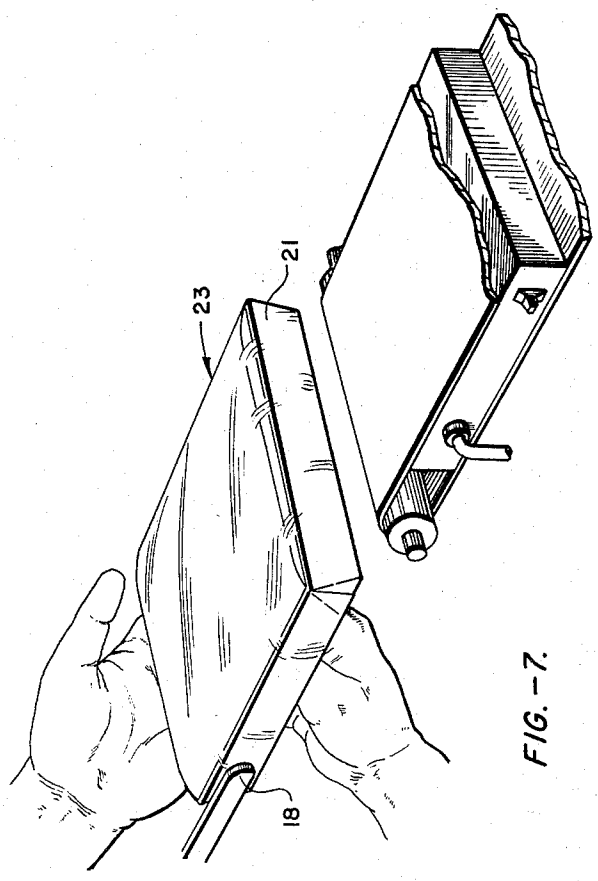


FIG. -7.

United States Patent Office

2,962,853

Patented Dec. 6, 1960

2,962,853

PACKAGING APPARATUS

Milton A. Howe, Jr., Bedford, Mass., assignor to W. R. Grace & Co., Cambridge, Mass., a corporation of Connecticut

Filed Apr. 13, 1959, Ser. No. 805,823

10 Claims. (Cl. 53—390)

This invention, in general, relates to packaging. More particularly this invention relates to an apparatus that is especially adapted to facilitate the manual wrapping of foods.

The present day tendency is to prepackage large quantities of food prior to their exhibition for sale to the public. These food products are each prepackaged in wrappings in which they are best displayed to their individual advantage. In this way each one of the packages functions as a salesman for its individual product. Besides being extremely attractive, these wrappings afford ample protection to the food product and enhance its ability to remain fresh over a relatively longer period of time.

One conventional package which has been found to be extremely attractive and which is used in many cases to package individual trays of foodstuffs, such as meats and poultry, is the diamond wrap type package. In this type package, the diagonally opposite corners of the wrapping sheet are heat sealed together, in overlapping relationship, at the underside of the packaging tray. In this manner, a neat, attractive, and sanitary package is formed with the four corners of the sheet being out of view on the underside of the package. In the best practice, the wrapping sheet utilized is made from a clear plastic film in order to facilitate the exhibition of the top surface of the packaged foodstuff to the view of the prospective buyer. This view is essentially unobstructed unless, of course, it is desired to insert instructional material, advertising, or pricing tabs between the surface of the foodstuff and the surface of the wrapping sheet.

Even though the advantages of the diamond wrap type package have been well recognized by industry, various difficulties which have been encountered in the method of assembling this type package have somewhat impeded its full use in the packaging of meats and poultry. These difficulties, in a number of cases, may be attributed to the fact that the tray of foodstuff may not be inverted during the packaging procedure. The apparent reason for this is that the tray not only contains solid foodstuffs but also the juices thereof, both of which are liable to spillage. Therefore, the following described procedure seemed to be the only practical method of performing the diamond wrap on these type products.

In illustration, a square plastic sheet is placed upon the upper surface of the foodstuff contained in the tray. The covered tray of foodstuff is then grasped at two of its opposite sides and lifted from the supporting surface. Most usually, the tray is grasped in such a manner that the diagonally opposite marginal corners of the surmounting sheet are brought together at the underside of the packaging tray during this lifting operation. The tray is now replaced on the supporting surface. Sequentially, the other two sides of the tray are grasped and the tray is again lifted from its supporting surface. During this operation the two marginal corners of the sheet, which at this point are extending from the tray,

are brought together at the underside of the packaging tray against the first two folded margins. To complete this type package, heat will be applied to the exposed surface of the folded margins in order that the margins, which are folded last, will be heat sealed to the margins which have been folded first.

One of the principal difficulties with this aforedescribed method is that the first two overlapping marginal corners exhibit a tendency of opening during the lifting operation in which the last two marginal corners are overlapped. The reason for this is that the clear plastic sheeting, which is conventionally used in this type of operation, is light in weight and possesses a smooth, slick surface. These factors tend to cause the film to continually slide out of position. Obviously, this causes the wrapper lost motions in repositioning the film and in pulling it tight against the package. Another major difficulty lies in the fact that the corners of the package produced by this method exhibit a tendency to open and unravel even after the package has been completed. This is primarily a result of the fact that the corners of the package are usually irregular and sloppy due to a lack of tucking at the corners of the tray. It is apparent that this method of performing the diamond wrap is not only difficult but, in many cases, may be extremely tedious. It is also apparent that it requires a degree of skill to produce a neat and compact package by this method with any degree of speed.

It is an object of this invention to provide an improved apparatus which will aid in facilitating the manual production of a neat, attractive, compact and sanitary diamond wrap type package.

Another object of this invention is to provide an improved apparatus which will aid in facilitating the manual wrapping of foodstuff, particularly meat and poultry, in a neat and attractive package.

A further object of this invention is to provide an improved apparatus which will impart speed and simplicity to the manual wrapping of foodstuffs, particularly meat and poultry.

Figure 1 is a perspective view of the apparatus of the present invention.

Figures 2 through 7 illustrate the various steps required in the performance of a method of producing the diamond wrap type package.

The wrapping apparatus of the present invention, illustrated in Figure 1, is provided with a rigid base mounting plate **11** upon which all other parts are adjustably mounted. The supporting plate **12**, which is adapted to receive the bottom of the conventional food tray, is adjustably mounted on the base plate **11** by means of an arm **13**. Due to its manner of mounting, the support plate **12** may be raised or lowered in position on the base plate **11**. The wrapping apparatus is further provided with two mandrels **14** and **15**. These mandrels, **14** and **15**, are each adjustably mounted on the base plate **11** by means of shafts **16** and **17**, respectively. Due to their manner of mounting, these mandrels **14** and **15** each may be laterally adjusted in position on the base plate **11**. These mandrels **14** and **15** are also each provided with tucking arms **18** and **19** respectively. These tucking arms, **18** and **19**, which are parallel to each other, each extend in the same direction from their respective shafts.

The performance of the conventional method of preparing a diamond wrap type package, utilizing the present apparatus, initially involves placing a food tray **21** in position on the support plate **12**, as illustrated in Figure 2. This tray may be any one of a wide variety of sizes and the present apparatus may be adjustably adapted to accommodate the same. For instance, this appa-

ratus may be provided with interchangeable mandrels having wrapping arms of a longitudinal length at least equal to the length of the tray. In this way, any number of trays having a wide latitude of lengths may thereby be accommodated. In further illustration, the tucking arms **18** and **19**, which are selected for use, may be laterally adjusted to aid in accommodating food trays having a wide latitude of widths. The support plate **12** may be raised or lowered in order to accommodate various food trays having a wide latitude of depths. At this point the tray may already contain foodstuff, or the foodstuff may be subsequently added thereto.

A square sheet of plastic film **23**, which is relatively larger in area in comparison to the upper surface of the tray, is placed upon the top surface of the foodstuff contained in the tray, as illustrated in Figure 3. This sheet is so positioned that its sides are oblique to the sides of the tray. A substantial portion of the sheet in the area of its four marginal corners **25**, **26**, **35** and **36** extends over the sides of the tray and due to the unsupported weight of these sections, these marginal corners will hang downwardly. In some cases, this plastic sheet may be of another shape but folded into the shape of a square.

The sides **21**, **22** of the tray, which are perpendicular to the longitudinal length of the tucking arms **18**, **19**, are now grasped in such a manner that the surmounted sheet **23** is held in position upon the upper surface of the foodstuff **24** contained in the tray. The tray is now lifted from its position upon the support plate **12** and the marginal corners **25**, **26** of the sheet are manipulated into overlapping relationship on the underside **27** of the tray, as illustrated in Figure 4. In actuality, a portion of the sheet adjacent the sides of the marginal corner **25**, which extends over the upper surface of tray side **21** is folded downwardly, such that a section **31** comes into contact with the outer surface of the tray side **21**, and thence inwardly, such that a section **33** of the same sheet comes into contact with the underside **27** of the tray. While, in the same manner, another portion of the sheet adjacent the sides of the marginal corner **26**, which also extends over the upper surface of tray side **22**, is folded downwardly, such that a section **32** of the sheet comes into contact with the outer surface of tray side **22**, and thence inwardly, such that a section **34** of the same sheet comes in contact with the first folded margin **33** at the underside of the tray. For speed and ease of operation, the two overlapped marginal corners **25**, **26** of the plastic sheet are not heat sealed at this point in the procedure. However, they may be sealed, if desired, by merely applying a heating tool to their overlapped sections.

The tray is now replaced in its position on the support plate **12** as illustrated in Figure 5. As the tray is lowered into position, the portions of sections **33** and **34**, which laterally project beyond the ends of the tray dies **21**, **22**, will come into contact with the upper surface of tucking arms **18** and **19**. Due to this operation, these particular sections will be automatically pushed upwardly into contact with the sides of the tray which run parallel to the longitudinal length of the tucking arms **18** and **19**. When the tray is finally replaced in position on the support plate **12**, both of the overlapped marginal corners **25**, **26** will be held in position by the weight of the tray itself.

While the tray is in this position, the marginal corners **35**, **36** which extend over both the tray sides **37**, **38** and the tucking arms **18**, **19** are manipulated into overlapping relationships at the undersurface of the tray, as illustrated in Figure 6. In actuality, a portion of the sheet adjacent the sides of the marginal corner **36** is folded downwardly, such that a section **41** comes into contact with the outer surface of tucking arm **19**, and thence inwardly, such that a section **42** of the same sheet comes into contact with the overlapped margins at the underside of the tray. While in the same manner, another portion of the sheet adjacent the sides of the marginal corner **35** is also folded downwardly, such that a section **44** comes into contact with the outer surface of tucking arms **18**, and thence inwardly, such that a section **45** of the same sheet comes into contact with the overlapped margins at the underside of the tray. At this point, the sides of the tray which are parallel to the tucker arms **18**, **19** are grasped lightly and the tray is slid forward, i.e., away from the supporting shafts **16**, **17**. Due to this operation, the tray is slid off the tucker arms, while at the same time the overlapping marginal corners are held in position at the underside of the tray, as illustrated in Figure 7. At this point, the package now may be completed by placing it on a heated surface which will facilitate the sealing of the overlapping folds together.

It is apparent from the foregoing description that a new and improved wrapping apparatus has been invented. This improved apparatus is especially adapted to facilitate the manual wrapping of food, such as meat and chicken, in sealed transparent packages for exhibition for sale to the public. In this manner a neat and sanitary package is formed with the four marginal corners of the sheet being out of view on the underside of the package. Such a package is ideal for display purposes, and is securely sealed preventing the contents from being tampered with.

I claim:

1. An apparatus which will facilitate the manual performance of the diamond wrap method of overwrapping a tray which comprises a base, dual parallel shafts mounted on said base and extending above said base, dual parallel wrapping arms integral with said shafts and extending at right angles from said shafts, an arm mounted on said base between said shafts and extending above said base, a support plate integral with and extending at right angles to said arm and positioned between said wrapping arms.

2. An apparatus which will facilitate the manual performance of the diamond wrap method of overwrapping a tray which comprises a base, dual parallel shafts laterally adjustable on said base and extending above said base, dual parallel wrapping arms integral with said shafts and extending at right angles to said shafts, an arm elevationally adjustable on said base between said shafts and extending above said base, a support plate integral with and extending at right angles to said arm and positioned between said wrapping arms.

3. An apparatus which will facilitate the manual performance of the diamond wrap method of overwrapping a tray which comprises a base, dual parallel shafts laterally adjustable on said base and extending above said base, dual parallel wrapping arms integral with said shafts and extending at right angles to said shafts, an arm elevationally adjustable on said base between said shafts and extending above said base, a support plate integral with and extending at right angles to said arm and positioned between said wrapping arms, said wrapping arms adapted to tuck wrappings which extend laterally from the undersurface of said tray and traverse said wrapping arms when said tray is placed on said support plate.

4. An apparatus according to claim 1 wherein said dual wrapping arms are at least equal in length to the length of said tray and are parallel with and contiguous with the sides of said tray.

5. An apparatus according to claim 4 wherein said support plate is shorter in length than said wrapping arms, lies on a plane below and parallel with the plane of said wrapping arms and is positioned within the extremities of said wrapping arms.

6. An apparatus according to claim 3 wherein said dual wrapping arms are at least equal in length to the length of said tray and are parallel with and contiguous with the sides of said tray.

7. An apparatus according to claim 6 wherein said support plate is shorter in length than said wrapping arms, lies on a plane below and parallel with the plane

of said wrapping arms and is positioned within the extremities of said wrapping arms.

8. An apparatus which will facilitate the manual performance of overwrapping a tray which comprises a base, dual parallel shafts mounted on said base and extending above said base, dual parallel tucking arms integral with said shafts and extending at right angles in the same direction from said shafts, an arm mounted on said base and extending above said base parallel with said shafts, a support means integral with and extending at a right angle to said arm and positioned between said tucking arms, said tucking arms adapted to tuck wrappings which extend laterally from the undersurface of said tray and traverse said tucking arms when said tray is placed on said support means.

9. An apparatus according to claim 8 wherein said dual parallel shafts are laterally adjustable on said base and

wherein said arm is elevationally adjustable on said base and is located between said shafts.

10. An apparatus according to claim 9 wherein said tucking arms are at least equal in length to the length of said tray and wherein said tucking arms are parallel and contiguous with the sides of said tray and wherein said support means is shorter in length than the length of said tray and lies on a plane below and parallel with the plane of said tucking arms and is positioned within the extremities of said tucking arms.

References Cited in the file of this patent

UNITED STATES PATENTS

2,020,415	Hirsch	Nov. 12, 1935
2,590,128	Sandberg	Mar. 25, 1952
2,824,414	Fieman et al.	Feb. 25, 1958
2,877,613	Shuttleworth et al.	Mar. 17, 1959