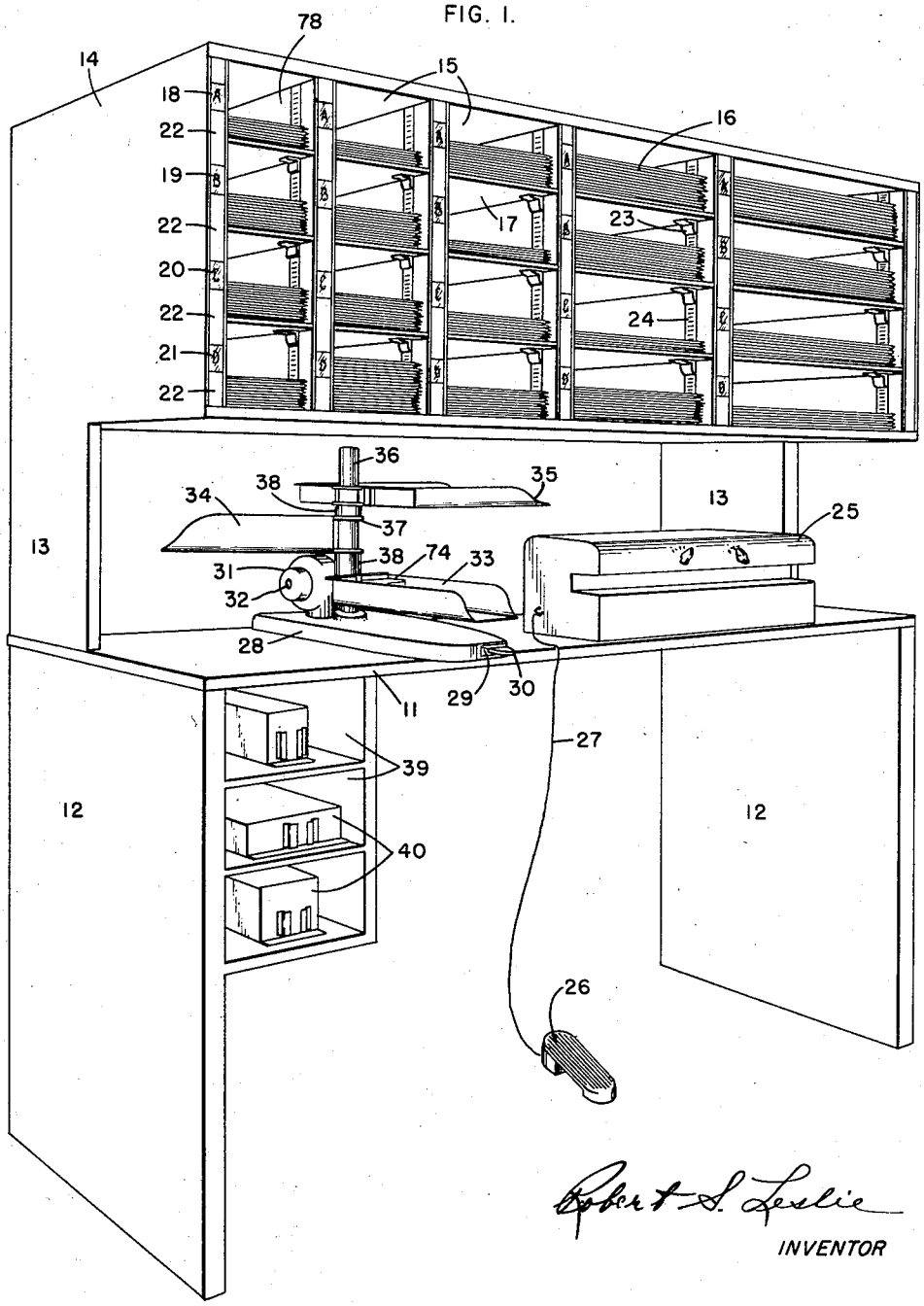
April 12, 1960 R. S. LESLIE 2,932,139

BAG FILLING APPARATUS WITH PROVISION FOR PREDETERMINING PACKAGE SIZE

Filed April 22, 1957 2 Sheets-Sheet 1

FIG. 1.



Robert S. Leslie

INVENTOR

April 12, 1960 R. S. LESLIE 2,932,139

BAG FILLING APPARATUS WITH PROVISION FOR PREDETERMINING PACKAGE SIZE

Filed April 22, 1957

2 Sheets-Sheet 2

FIG. 3.

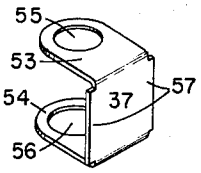


FIG. 9.

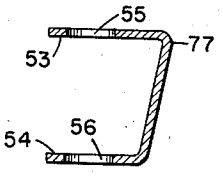
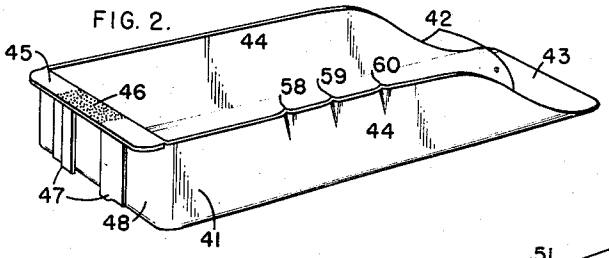


FIG. 2.



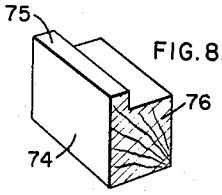
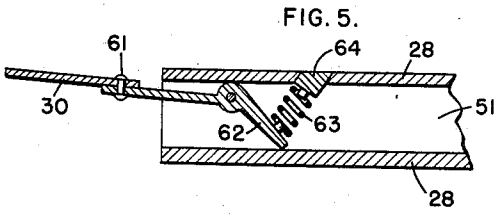
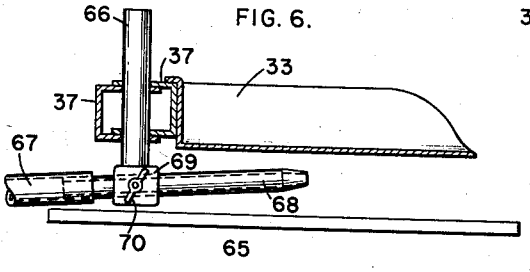
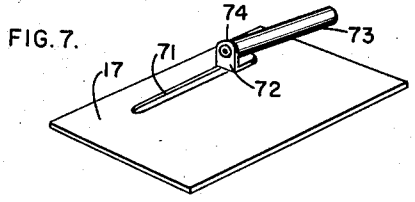


FIG. 5.







Robert S. Leslie

INVENTOR

United States Patent Office 2,932,139 Patented Apr. 12, 1960

2,932,139

BAG FILLING APPARATUS WITH PROVISION FOR PREDETERMINING PACKAGE SIZE

Robert S. Leslie, Minneapolis, Minn., assignor to Kenfield Corporation, Minneapolis, Minn., a corporation of Minnesota

Application April 22, 1957, Serial No. 654,378

4 Claims. (Cl. 53—188)

My invention has to do with packaging, and particularly to the packaging of products in heat sealable bags or pouches.

The object of my invention is to provide means and method for economically and expeditiously packaging objects or materials such as food products, and especially to so simplify the operations involved as to permit unskilled persons to do such packaging efficiently.

The object of my invention is to provide means for controlling the shape of package and contents, thus providing economical utilization of the wrapping materials. Such packages containing foods are often stored in freezers for some time before use, and my method results in conserving storage space while also providing easy identification of the package contents, much like the index in a card file. Controlling the shape permits making packages which are neat and pleasing in form.

Still further, since many foods such as meat, are naturally of various sizes and shapes, my invention provides a means to select at will a suitable combination of container and loading fixture. A wide range of such containers and loading fixtures are instantly available to the operator at all times. Still further, this range of sizes is capable of change, so my invention is useful for different applications and not restricted to a single business.

Another advantage of my invention is in providing means for loading greasy materials into heat sealable bags while protecting the heat sealable surface from greasy contamination.

These and other advantages will become apparent from a study of the following description and the accompanying drawings in which:

Figure 1 is a perspective view of one form of my invention set up for use.

Figure 2 is a perspective view of loading tray.

Figure 3 is a clip used to connect the loading tray and the supporting structure.

Figure 4 is a perspective view of the tray supporting structure.

Figure 5 is a fragmentary view of a portion of the structure shown in Figure 4.

Figure 6 is another form of supporting structure with attached clips and tray shown in cross section.

Figure 7 is a perspective view of a shelf with adjustable backstop.

Figure 8 is a perspective view of the pusher used in conjunction with the loading fixture.

Figure 9 is an alternate form of clip shown in cross section.

Throughout all of these drawings, similar numerals refer to similar parts. Referring to Figure 1 shows a bench comprising a top surface 11 supported by two vertical panels 12—12. Above the table and within convenient reaching distance of the operator is a cabinet 14 held in place by two supporting members 13—13. This cabinet is used to hold a supply of bags 16 of different sizes. In order to keep these bags separated into separate stacks, the cabinet is divided into compartments

such as indicated generally by the numeral 15. A series of vertical dividers 18 are used to divide the cabinet for bags of different widths and girths. In some businesses these dividers may be affixed permanently to the cabinet shell, but where the sizes may vary from time to time, it is also possible that these dividers may be adjusted so that the bag widths may vary. In the case of Figure 1, the narrowest bags are placed at the extreme left side of the cabinet and the widest bags at the extreme right side of the cabinet. This might frequently be the most convenient arrangement, but where some particular bag width is used more frequently than others, a different arrangement is, of course, quite possible.

In addition to the variation in bag width, it is also necessary, in order to package a variety of different sized products, to have a variety of bag lengths. For this purpose, I provide a series of shelves 17 and these shelves are of a uniform length from front to back but differ in width by convenient increments corresponding to the various widths of bags being used. These shelves are supported on clips 23 which are attached to perforated metal strips 24. Each of the dividers, and also the inside surfaces of the cabinet ends, are provided with these perforated metal trips so that the shelves are supported on each side of the front and back.

This arrangement permits adjusting the vertical space in the various compartments in accord with the quantity of bags of the different sizes required.

I have found that in nearly every installation certain sizes are used in greater quantities than others and they have taken the foregoing means to provide a bag supply that takes this into account. On the left hand side of each compartment is a grooved metal frame 22. This frame is painted with a color which serves as an indicia corresponding to a given bag width, thus the narrowest bag might be arbitrarily coded as Red, the next larger width as Orange, following size as Yellow, etc. Small cards 18, 19, 20, 21 are slid into place and held frictionally by the sides of the groove. These cards bear an indicia of a second class, such as numbers or letters, to distinguish from the indicia of the first class mentioned earlier which consists, in this case, of colors.

If it is desired to change the sizes of bags frequently, the color indicia can consist of colored cardboard slipped in the intervals between the lettered cards, and these colored cards can then be readily changed for rearranging the bag stock. On the table is indicated a heat sealing machine 25 having a foot pedal control 26 connected thereto by an electric cord 27. Since the heat sealing machine is not part of my present invention, I have shown it without specific detail. To the left of this machine, also resting on the table top, is a base 28 having an opening at the front 29 through which air blasts can escape when the valve lever 30 is depressed. In order to supply this air blast there is a blower 31 affixed to the rear of the base and driven by an electric motor 32. Also affixed to the base 28 is a circular post 36. Metal clips such as indicated by the numeral 37 couple loading trays 33, 34, 35 to this column. In this particular installation, there are spacing collars 38—38 separating these clips so that each of the trays can be swung out of the way or into use, as desired. In Figure 1, tray 33 is positioned for use while trays 34 and 35 are swung to one side to permit free access to the particular loading tray in service. A pusher 74 is indicated in its normal position in tray 33. Each of the trays has a similar pusher, but of a size adapted to fill the width of the tray.

I have shown three loading trays assembled to form a loading fixture. In actual installations, the number of trays required varies widely, and I have found that while a few trays may suffice for a short time additional trays are sometimes needed and in Figure 1 I show such addi-

tional trays 40 stored in compartments 39 beneath the table. These are thus readily available and because all of the trays are interchangeably mounted by means of clips, it takes but a moment to lift one tray off the clip and replace it with another, and this without disturbing any of the other trays, clips or spacing collars.

Figure 2 shows one of these loading trays 41 in greater detail. This tray is made of metal, and stainless steel is particularly useful where food products are being packaged. It is convenient to form this tray of a single piece of metal having a bottom 43 and two sides formed at right angles 44—44. A back 48 is also formed from the same metal and a flange 45 is provided at the top of the back portion. Also welded to the back 48 are two formed metal plates 47. The purpose of these formed plates is to cooperate with the clip, as will be explained a little later. The sides 44—44 are sloped smoothly in a sort of S-curve at the front ends as denoted by the numeral 42. At several points along one side of the tray are indentations 58, 59, 60 which are used as measuring points.

It will be readily understood that for a tray of given dimensions there will be a corresponding bag width which will just properly fit over the loading tray, neither too loosely nor too tightly. The fit of this loading tray will be determined by its girth. It will also be apparent that there may be several trays of different dimensions which will fit a single bag. For example, a tray by having sides one inch high and having a width between the sides of six inches would have the same girth as another tray which had sides three inches high and a width of four inches between the sides. In every case, there is a fixed correspondence between the loading tray and the appropriate size of bag to be used with it. It is for this purpose I use an indicia of one class such as color, and both the bag storage compartment and the loading tray bear this indicia to denote the proper bag to use with a given tray. Any portion of the tray may bear this color indicia, but I have found it convenient and satisfactory to place this color as a patch on the back flange of the tray, as indicated by the numeral 46.

In order to establish the proper length of bag required, use is made of the indentations 58, 59, 60. These are placed at a given distance from the extreme open end of the tray and correspond to a bag length to enable the operator to quickly gauge the length of the product being packaged and to select a corresponding bag length. These indentations may be numbered or lettered to correspond with the same class of indicia used in the bag cabinet, but I have found that this is really unnecessary since the operator quickly learns that the first notch corresponds to bag length A, second notch B, etc.

I also have found that operators using my invention designate bag sizes not by their dimension in inches, but simply by their indicia such as "Red B," etc.

The base 28 of the loading fixture is shown in greater detail in Figure 4, in which the base 28 proper is. Extending longitudinally through this base is an air channel 51. The rear of this channel is affixed to a blower 31 having an air inlet 49 and a driving motor 32. The air outlet passes through the opening 50 into the air channel 51. The forward end of this air channel is normally closed by means of a valve, shown in detail in Figure 5. The valve gate 62 is normally held closed by a spring 63 which is loaded in place through an opening in the upper part of the base 28 and is thereafter closed by a plug 64. The gate has secured to it by means of a rivet 61, a handle 30. It will be obvious that pressing down on the handle 30 permits the air to flow through the air channel and supplies a blast of air which is used to blow open the mouth of the bag prior to placing of this bag on a loading tray.

The needs of various industries differ from each other so that I have found that various arrangements for holding the loading trays are advantageous. Now, referring to Figure 6, a different form of base 65 is employed and this has a post 66 to which two clips 37—37 are nested. In this case, it is easy to swing the trays around the post, bringing either one of them into operating position at the same level. In this case, the bag opening blast of air is supplied through a hose 67 from a compressor, which is not shown, and furnished to a nozzle 68 which is clamped to the base or post by a clamp 69 having a thumb screw 70 for ready adjustment. This arrangement produces an air jet adjacent to the loading tray so that merely bringing the bag in front of the tray and approximately in position to slip it over the tray causes the air blast to open the bag. It will also be seen that this arrangement can be used with more than two trays—in fact, four trays can be accommodated with clips of proper dimension.

Figure 3 illustrates such a clip. The top and bottom of this clip is bent at right angles to the body to form tabs 53 and 54, and these tabs have coaxial round openings 55 and 56, the size to permit them to fit freely on the supporting posts previously described. Two extensions on the sides of the clip denoted by the numeral 57 are designed to engage with the formed metal plates 47 in the loading tray, as shown in Figure 2. The flange 45 rests on the top of the clip 37 so that it is securely held.

In the previous illustrations, I have shown the loading trays in a horizontal position, and this is a common arrangement. However, it is sometimes an advantage to slant these trays, tilting them so the open end is either lower or high than the back. Obviously, if we were loading ball bearings, it would be an advantage to have the gravity retain these bearings within the tray prior to transfer to the bag. On the other hand, with meat, which has considerable adhesion to the loading tray, it is convenient to tilt the loading tray in the opposite manner and the clip shown in Figure 9 makes this possible. It will be noted that the main body of this clip is not parallel to the angle of the holes 55 and 56 in the tabs 53 and 54. In order to aid in the transfer of the product being packaged from the tray to the bag, a pusher 74 is provided, as illustrated in Figure 8. This has a raised portion 75, which serves as a handle, and a ramming portion 76 extending forward of this handle. The normal position for this pusher is at the back of the tray. The pusher is long enough to fit snugly but freely between the sides 44—44 of the loading tray. There is another feature of my invention which is illustrated in Figure 7. Since the bags are supplied in various lengths, it is convenient to have an adjustable backstop so that the bags are all of a uniform distance from the front of the cabinets. This makes it easy for the operator to automatically reach for a bag without having to devote special attention to this process. As I have previously explained, the shelves in my bag cabinet may be positioned, in some cases, close together and, in others, considerable separation may be involved. I have devised a convenient backstop that will meet this condition. The shelf 17 is slotted as denoted by the numeral 71. The small angle clip is adjustable in this slot and may be clamped at any given point by a screw, accessible from the bottom of the shelf which is not specifically shown. An arm 73 is frictionally pivoted at 74. This arm may be brought down flat against the shelf or may be swiveled to extend vertically and thus can serve as a backstop for the bags, regardless of the spacing between shelves. Since the materials used in making heat sealable bags are more expensive than ordinary wrapping paper, rigorous economy of material is important. I have found that by using my invention a degree of standardization in bag sizes may be obtained by shaping the contents in the most advantageous way. It is also important that the operator select a bag which is exactly the right size. This minimum size would be difficult, if not impossible, to use without my loading fixture. Furthermore, without my invention, an operator would have to acquire a great deal of skill to determine the right size of bag for a given product.

In order to explain the operation of my invention, I will describe its application to the packaging of meat.

It will be realized that this, being a natural product, comes in various sizes and cuts. Meat is also a greasy product and if it is inserted manually in a bag of heat sealable material, this grease contaminates the sealing surface so that it is difficult to make a permanent and satisfactory seal. This is particularly true when the packages are evacuated prior to sealing and a fully sealed vacuum package leaks air so that the advantages of vacuum sealing are lost.

The loading trays used in my invention provide a four-fold service. They are used to measure the product and to add in the selection of correct bag sizes; they permit the operator to quickly form the meat into a compact and regular shape that will make the most efficient use of the containing material; they aid in inserting the meat in the bag and they protect the interior surface of the bag from being contaminated by grease.

The operator selects a tray of appropriate size for the particular cut of meat to be packaged. The pusher normally rests at the back of the tray, as shown in Figure 1. Since meat is somewhat plastic, the operator can mold it to fit into a more or less rectangular shape. This is a very rapid process since the two sides of the tray confine the meat laterally and the operator, by drawing the pusher forward, will almost, more or less, form the back side of the cut square with the sides of the tray. In doing this, the operator brings the remaining side of the cut of the meat near to the open end of the tray. The operator selects the correct bag size by noting the color indicia of the tray which, I have explained, is a measure of the girth, and noting the notch of the left side of the tray, she can at once pick out the bag which is the correct length. Bringing this bag near the front of the base, where the opening 29 is located, a touch of her hand on the valve lever 30 causes a blast of air to be released which blows the lips of the bag apart and opens it, ready for immediate placement over the loading tray. She slides this bag over the tray, the tapered front edges at the side distending the bag which rides up the inclined sides and over the contents of the tray. It will be understood that she pushes this bag as far as it will go over the tray and the product contained therein. Grasping the handle of the pusher with one hand, she draws it toward her, whereupon the meat is first pushed into contact with the bottom of the bag and as movement of the pusher is continued, the bag and the meat slide together off the end of the loading tray and into her other hand. At this point, the operation of loading the bag is complete and ready to be placed in the sealer.

Normally a jaw-type sealer is used which produces a heat seal across the mouth of the bag. After sealing, this constitutes a flap, and in my invention I use this flap for marking so that the contents of each package is clearly shown.

Usually following the packaging and sealing of meat products, the package goes to a freezer and results in a flat, roughly rectangular package which is adapted to be stored in stacks. These flaps carrying the marking mentioned above extend beyond the package and serve as a filing system. The housewife can go to her freezer and by running her finger down the protruding flaps, can find any particular cut of meat that she desires without having to disturb the stacking.

Another advantage of meat packaged in the manner I have described is that it can be quickly thawed while

preserving the natural juices by inserting the entire bag and contents in a container of water which thaws it much more rapidly than would otherwise be possible.

I have described my invention and its use with particular reference to the packaging of meats but, of course, it will be obvious that its use is not in any way limited to this type of product.

I claim:

1. Equipment useful in packaging comprising a base, supporting means affixed to said base, adapted to hold at least one loading tray, said loading trays bearing an indicia of one class used to denote the girth of said tray, a series of indicia of a second class placed at intervals along said tray, said second class of indicia adapted to be used as a measure of length for any product placed in said tray and indicating the proper length of container for use in packaging said product, a bag cabinet divided into a plurality of compartments, said compartments bearing indicia corresponding to the aforesaid indicia on the loading tray and denoting the corresponding bag size.

2. Equipment useful in packaging comprising a base, supporting means affixed to said base, adapted to hold at least one loading tray, said loading tray bearing an indicia of one class used to denote the girth of said tray, a series of indicia of a second class placed at intervals along said tray, said second class of indicia adapted to be used as a measure of length for any product placed in said tray and indicating the proper length of container for use in packaging said product, a bag cabinet divided into a plurality of compartments, said compartments bearing indicia corresponding to the aforesaid indicia on the loading trays and denoting the corresponding bag size, a pusher normally resting at the back of said loading tray and adapted to be manually moved in a path longitudinal to said tray for the purpose of transferring the tray contents to a container.

3. An apparatus useful in packaging comprising a base, upstanding supporting means affixed to said base, a tray mounted on the upstanding supporting means and extending outwardly therefrom, an air channel through said base, a blower connected to one end of said air channel, an orifice at the opposite end of the air channel, a valve in said air channel, and a lever associated with said valve to permit opening said orifice for the passage of air blast when desired.

4. Apparatus used for packaging charges of materials of varying lengths comprising, a tray having a bottom and a pair of spaced upstanding side walls, defining a chamber for receiving a charge of material to be packaged, said tray terminating in an open bag receiving delivery end, indicia means located at spaced intervals along the length of the tray for denoting the length of the charge of material placed in the tray, and means for storing and typing a plurality of bags having lengths corresponding to said indicia means in readiness for dispensing.

References Cited in the file of this patent

UNITED STATES PATENTS

1,046,488	Pauley	Dec. 10, 1912
1,238,215	Terrell	Aug. 28, 1917
1,351,372	Conine	Aug. 21, 1920
1,367,245	Ebrenz	Feb. 1, 1921
2,075,129	Olund	Mar. 30, 1937
2,568,593	Ortstein	Sept. 18, 1951
2,685,996	Shoffner et al.	Aug. 10, 1954