Aug. 11, 1936. J. B. EISEN 2,050,248

STRIP MATERIAL FOR CONTAINER CLOSURES

Filed Aug. 24, 1934

Fig. 1.

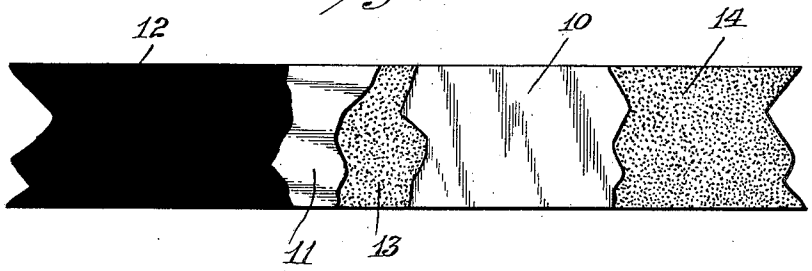
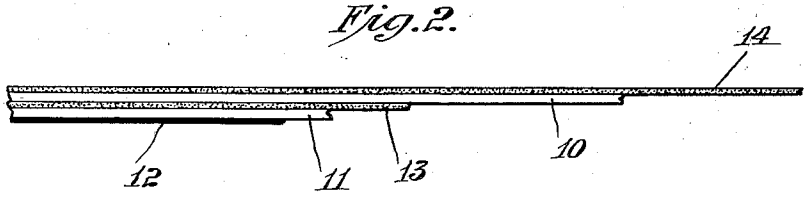


Fig. 2.



Jay Bernard Eisen

INVENTOR

BY Grant P. Wentworth

his ATTORNEY.

Patented Aug. 11, 1936 2,050,248

UNITED STATES PATENT OFFICE

2,050,248

STRIP MATERIAL FOR CONTAINER CLOSURES

Jay Bernard Eisen, Yonkers, N. Y., assignor to Ferdinand Gutmann & Co., New York, N. Y., a corporation of New York

Application August 24, 1934, Serial No. 741,240

1 Claim. (Cl. 154—45.5)

The invention relates to strip material for container closures, and more particularly to laminated material in strip form from which disks may be cut and applied to the sealing member of a container closure for the purpose of preventing deterioration of said sealing member from contact of the contents of the container therewith.

In the packaging of various materials, the mouth of a container is sealed in some instances by means of a compressible cushion disk composed of natural cork, composition cork or resilient fibrous material, and in other instances, the seal is effected by means of a thin non-compressible disk, the portion of which adjacent its edge is bonded directly to the container about the mouth thereof, by means of an adhesive which, like the material of the disk, is neutral to the container contents, that is to say, does not deleteriously affect said contents and is not impaired or destroyed thereby.

It has long been the custom to provide cushion disks and sealing disks of the character above referred to, with a protecting facing disk for the purpose, in some instances, of preventing discoloration of such disks; in other instances, to close voids occurring therein; in still other instances, to prevent tainting of the contents with the characteristic odors of the cushion or sealing disk, and in still other instances, to permit the selection of the cushion or sealing disk solely from the viewpoint of the effectiveness of the seal secured thereby, the facing disk being relied upon to protect the contents of a container from the sealing medium and the sealing medium from the contents of the container.

In the bottling of mineral waters and beer, the practice for years has been to employ either a tin or other metal foil for the facing disk. In the bottling of fruit juices and carbonated beverages, the practice has been to use a varnish coated kraft or express paper such as is also commonly used in the packaging of various foodstuffs, such as catsups, pickles, mayonnaise, etc. Material used for facing disks in the packaging of one product is frequently not suitable for the packaging of other products.

Great difficulty has been experienced in the packaging of liquids having a highly volatile content, or which contain chemicals which act upon the material of the closure either in a manner to destroy the material or to set up bacteriological action in the contents of the container, either as a result of the direct chemical action upon the material of the facing disk, or such action upon the material of the sealing medium as a result of the destruction or partial destruction of said sealing disk.

Prior to my invention, so far as I am aware, no material for facing disks was known which would resist both the chemical action of the contents of the container thereon and prevent the escape of the volatile constituents of such contents.

In applying such facing disks to container closures, the usual practice is to cut the disks from a strip of material, properly position them in relation to the closure, and bond them thereto by means of an adhesive stratum between the facing disk and the closure. In some instances, the adhesive was applied to the closure and the disk deposited upon the adhesive, and heat subsequently applied to said adhesive. Another practice was to coat one face of the strip with a dry adhesive and moisten the closure throughout the area of contact thereof with the facing disk, so as to make the adhesive tacky so that by a subsequent drying operation, a bond would be formed. Another method was to feed a strip of fusible material, such as gutta-percha, concurrently with the feeding of the strip, and use a heated plunger for applying the facing disk to the closure so as to fuse the adhesive and subsequently allow it to set at normal temperatures. Another method was to apply this fusible cement directly to the facing strip, and in a still further method, the closure was subjected to heat and a strip, coated with a fusible adhesive applied to the pre-heated closure and subjected to pressure, the assembled structure being later subjected to a normal temperature while the parts were under pressure so as to cause the formation of a bond as the cement set.

The strip material of the invention may be used with any of these methods, although it is preferable to employ the method involving the heating of the closure prior to the application of the facing disk, since by this method a cold cutting die may be used and the fouling of the dies by the adhesive, mutilation of the disks, or stoppage of the assembling machine for the purpose of cleaning the dies, is avoided.

The present invention has to do solely with the characteristics of the strip material by which it is adapted for special use for which facing disk materials, employed prior to my invention, could not be used.

The packaging of materials having a highly volatile constituent, or those which are highly alkaline or slightly acid, has always presented

serious difficulties, particularly as the highly volatile constituents of the contents of a container may act as solvents in destroying the adhesives commonly used in securing said disks in relation to the closure.

The materials used for the facing disks are very thin, ordinarily being about .006 of an inch. Where fusible adhesives are used for making the adhesive tacky, high heat conductivity of the facing materials is desirable, since in applying facing disks to closures, the operation is rapid, the product of the machine ranging from seven hundred to one thousand gross per day of eight hours. The pre-heating of the closure, when such is resorted to, is particularly desirable, since it affords available heat for making the adhesive tacky entirely independently of the heat applied through the facing material from external sources.

In the production of thin materials, minute voids or openings are apt to occur throughout the material which, while so small as to avoid detection except on very careful inspection, are sufficiently large to make the material permeable to highly volatile gases or vapors thereof. The rapidity with which the disk must be formed and embodied in a closure is so great as to preclude the detection of such voids by ordinary inspection methods.

It is customary to use some materials of sufficient thickness to minimize likelihood of the presence of such voids, but the use of such materials interferes with the application of heat to the adhesive employed for bonding the disk to the closure, although the pre-heating of the closure has permitted a more effective bonding of such heavier or thicker materials.

With the above conditions in mind, I have provided facing material in strip form embodying therein a laminated structure, one of the laminae of which is resistant to chemical action thereon by the contents of a container, although not sufficiently impermeable to the volatile constituents of such contents to provide a seal which is effective in preventing the evaporation or escape of such volatile constituents. The other lamina is of a material which is impermeable to such volatile matter, and may or may not be chemically resistant as to such contents, since this lamina is protected from contact with the container contents by the lamina first above mentioned. With such a construction, very thin materials may be used in the strip, since even if voids occur in each strip, the likelihood of the voids of one strip coinciding with those of another is so remote as to be negligible.

By the use of laminae having dissimilar properties as above referred to, a highly effective seal may be obtained and one in which the facing disk will not be subject to deterioration because of the chemical action of the contents of a container upon that portion of the facing disk coming in contact therewith. By effectively confining the volatile matter or the vapors thereof, destruction of the bond between the facing disk and the closure, or between the laminae of the facing disk is prevented, even though such volatile matter or vapors may be capable of acting as a solvent of the adhesive used.

In actual practice, I have gotten satisfactory results with the use of a strip of facing material in which one of the laminae is formed of thin paper having a surface coating of Gilsonite, this lamina being bonded to a lamina of a metal foil such as thin aluminum. With this construction, the Gilsonite serves as a chemical resistant preventing deterioration of the lamina as a result of contact thereof with the contents of a container or with volatile constituents thereof, while the metal foil lamina is substantially impermeable by such volatile constituents and is protected from contact with the contents of a container by the Gilsonite coating lamina. The aggregate thickness of the laminated structure need be but slightly greater than that of some materials used for facing disks.

With a strip so constructed, the facing material embodies therein one lamina which is a good heat conductor, so that when a fusible bonding medium is employed in securing the facing disk to the closure, heat may be more readily conducted to the adhesive through the facing disk, particularly if a heated plunger be used at any stage in the application of the disk to the closure.

The invention consists primarily in strip material for container closures consisting of a lamina of thin paper having a surface coating of Gilsonite, a lamina of metal foil, a surface coating of adhesive which is non-tacky at normal temperatures upon one surface thereof, and a bonding stratum between said laminae other novel characteristics as are hereinafter set forth and described, and more particularly pointed out in the claim hereto appended.

Referring to the drawing,

Fig. 1 is a view of a short length of strip material embodying the invention broken upon different planes to disclose the various laminae; and

Fig. 2 is an edge view of the strip shown in Fig. 1.

Like numerals refer to like parts in both of said views.

As illustrated in the accompanying drawing, the strip material of the invention embodies therein a lamina 10, the chief characteristic of which is that it is impermeable to highly volatile matter to be packaged. As shown in the drawing, this strip is of metal foil such as aluminum.

Firmly adhered to the lamina 10 is a second lamina 11 which, as shown, is formed of thin paper having a surface coating of Gilsonite, or other material, which will resist chemical action thereon by the volatile constituents of the container contents, or by an alkali or acid content of such contents. This surface coating is shown at 12.

The lamina 11, when paper is used as a support for the chemically resistant coating, is bonded to the lamina 10 by a stratum of cement 13, co-extensive in area with that of the surface of the two laminae to be bonded together. Any desired adhesive may be used, such being merely a matter of selection with a wide range of possible adhesives well known in the arts.

Preferably, the side of the lamina 10 to be presented toward the closure member is coated with a heat fusible cement which is non-tacky at normal temperatures, so as to permit the material to be collected in a roll for use upon an assembling or a facing machine. If desired, however, this coating of adhesive may be applied to the strip while in the assembling or facing machine, although as a manufacturing convenience it is preferable to apply adhesive 14 to the strip material before it is accumulated in a roll.

The adhesive used in the stratum 14 may be selected according to the assembling method which it is desired to employ in applying the facing disk to the closure. There are various well known adhesives obtainable on the open market suitable for this purpose which have been

used in the closure art for many years. Such adhesives include albuminous cements, resinous cements, gutta-percha, rubber compounds, shellac and various other gum compounds, and a cellulose cement such as is described in U. S. Letters Patent No. 1,710,453 of 1929.

Strip material embodying the invention, by reason of its laminated structure, is non-curling, this feature being most pronounced when a metal foil is used as one of the laminae.

The strip material herein specifically referred to has been found to give highly satisfactory results in the packaging of liniments, one of the constituents of which is chloroform, a product which, prior to my invention, could not be packaged with the use of closures of the type using facing disks of materials employed prior to my invention.

The materials of which the laminae of the strip of the invention is formed may be varied to develop the desired resistance to chemical action thereon by the contents of a container, according to the matter which is to be packaged, so that it is not my intention to limit the invention to the specific materials herein described, although it is essential in strip material embodying the invention that the different laminae shall have dissimilar characteristics in the respect that one of them must be chemically resistant to the contents of a container and another must be impermeable to volatile constituents of such contents.

It is not, therefore, my intention to limit the invention to the precise materials herein described.

Having described the invention, what I claim as new and desire to have protected by Letters Patent, is:—

Strip material for container closures consisting of a lamina of thin paper having a surface coating of Gilsonite, a lamina of metal foil, a surface coating of adhesive which is non-tacky at normal temperatures upon one surface thereof, and a bonding stratum between said laminae.

JAY BERNARD EISEN.