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SANITARY CAN OR CONTAINER

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2 Claims. (Cl. 229—5.5)

My invention relates to fibrous cans or containers that serve for holding various materials, liquids, beverages and eatables such as preserves, etc. and has as one of its main objects the creation of an inner, preferably fibrous, suitably coated and by itself completely hermetically closed container or coat, that has a specially shaped top and bottom piece or part and which preserves the contents without the assistance of another (outer) coat or hull against outside influences, such as the atmospheric air, water, moisture, oil, grease, fungus and to a certain extent also against acids, whereby an outer coat is contemplated that is made of inferior materials and which serves chiefly for protecting said inner container while being handled and during transportation. It is also an object of the invention to unite the joints of the inner container or coat with the respective joints of the outer coat or hull and to use a special adhesive binder in the joints of the inner container, but another different (especially more economical) adhesive binder in the joints of the outer coat or hull, whereby the end edge parts of the inner container or coat may be partly embedded in the latter adhesive binder.

A further object of the invention consists in folding the inner top part and the inner bottom part upon itself adjacent the inner body wall blank, thus making, on the one hand, the inner top part and inner bottom part very yieldable which permits the complete filling of the can or container with the goods and prevents the spilling of liquid contents, and on the other hand, will make it less susceptible to puncture by a cutting tool with which the outer top or bottom part will be cut through for opening the can or container, which is especially true when the can or container is not completely filled, so that movement of the inner top or inner bottom part is then possible.

The chips cut loose from the outer top or outer bottom when the can or container will be opened will not fall into the contents thereof, but will fall upon said inner top or said inner bottom part, dependent upon which one of these parts is being cut through, whereby said chips can be removed easily before the inner top or inner bottom part will be removed.

Another object of the invention is the exclusion of sheet metal as the main constituent of the can so that it will not be possible that metal filings will fall into the contents of the can when the can is being opened. In the case that these contents are eatables no metal filings or chips will then injure the intestinal tract of the con-

sumer which, otherwise, would entrain more dangerous intestinal diseases, such as cancer, appendicitis, etc. Since the cans or containers will be constituted chiefly of fibrous materials, the person that opens the can will not cut his or her fingers on the cut edges of the can which, however, cannot be said in connection with cans that are made of metal.

It is also an object of the invention to create a can or container that can be manufactured at a nominally low cost for the materials involved and which will be also suitable as containers for paints, varnishes, lacquers and many other commodities.

A still further object is to create a can that will not transmit to the contents, especially eatables or liquids, the metallic taste that is so objectionable with metallic cans and thanks to the completely hermetically closed inner can or container, prevents the contents from acquiring the smell and taste of the inferior materials that are employed for the outer protecting coat or hull.

A still further object is to create a can or container that can be opened in various ways and always will be safe for the consumer of the contents thereof. It is also contemplated the use of an inner sheet of suitable paper that is coated with a thin layer of solid metal, such as, tin or aluminum or others, although there would be the metallic inner surface that had to be lacquered for excluding the contamination of the eatable contents of the can with the metallic inner surface of the can. These are again operations that can be eliminated when materials are taken that are non-metallic and that are water, oil, and airproof and that are at the same time tasteless and odorless. Such materials that should be used at least for the inner coating are commercially known as cellulose and pyroxylin and any other derivation from nitro-cellulose and in some cases also of cellulose could be used also, if it will be free from any smell and food-deteriorating ingredients. Celluloid could not serve therefore on account of its smell of camphor. Especially the lacquer or cement made from nitro-cellulose or from viscose is the material suitable for pasting (cementing) the side ends of the blanks together and for securing the inner tops and bottoms to the blanks. For the outer strengthening or protecting envelope or coat of the can a very inferior material, such as wood pulp, cardboard, etc. may be used, because the label will cover it and as the binder therefor the inexpensive materials such as tar, or ordinary

oil paint or putty may be used, and in some instances it may be employed glue or cement.

For many commodities, especially such that are not liquid, as for instance, cocoa, coffee, tea, cereals, dry beans, etc., and which should simply have their aroma preserved, it will suffice that the inner coat is made from moisture-proof material of which many are commercially known and which do not need to be derivatives from nitro-cellulose. I have devised a modification of the can whose several parts can be cut from thin sheets of cellophane and properly pasted together with a proper kind of lacquer, varnish or acetate.

More advantages will appear as the description progresses.

In the accompanying drawing the Figure 1 shows the inner blank;

Figure 2 the outer envelope or blank of low grade cardboard for simply strengthening the whole can;

Figure 3 is the inner side of the bottom or cover;

Figure 4 is the outer side of the bottom or cover;

Figure 5 is the side view of the upper inner cover;

Figure 6 is the side view of the inner bottom;

Figure 7 is a view of the inside of the inner top or bottom piece;

Figure 8 is a view of the outside of the inner top or bottom piece;

Figure 9 shows the exterior of the complete can that comprises the parts illustrated by the Figures 1 to 9;

Figure 10 shows in section and enlarged, the can of Figure 9 which is one of the simpler forms showing also the claimed conformation of the inner bottom and inner cover;

Figure 11 shows in section the detached outer cover or lid of the can of Figure 10 in the shape which it received before the final compression thereof which according to the disclosure of Figure 10 has been already effected;

Figure 12 shows in section the top part of the can of Figure 10 without the outer lid, but having the inner blank and the top piece of the inner coat already placed on whereby said top piece, also denominated "inner cover" is extended to cover the edge of the inner and outer can body coats or blanks;

Figures 13, 14 and 15 are sectional views of the upper parts of cans, showing generally the improvements as claimed with three of the various obtainable shapes of the joints of the outer coat; in Figure 14 additional means are shown for carrying the can or container.

Referring to Figure 1, the blank 1 is made of a material that is water, oil and airproof in order to keep the contents of the can hermetically sealed and out of contact with the outside air. Since sheet metal is eliminated there remain three materials that will suit for the inner coat and these are first tinfoil, secondly, a suitable paper that is coated with a suitable metal that might be lacquered and third, nitro-cellulose in sheet form. Reference will be had more particularly to the two latter forms and materials because tinfoil is already widely in use and its properties known. The coating of the paper with a suitable metal will be preferably made in the manner set forth in my United States patent application Serial No. 702,344 that was filed December 14, 1933, which has the title "Fused coating of solid metal for wrappings and other purposes, includ-

ing decoration, etc." and for which the United States Patent No. 2,143,948 dated Jan. 17, 1939, was granted to me.

This blank 1 is to be shaped on a mandrel as known in the art of can-making and will thus acquire the form it needs. If a cylindrical shape is demanded which most cans or containers show, the blank 1 will be simply rolled upon a cylindrical mandrel of the correct size and the ends 3, 4 of the sides will be pasted together with a suitable lacquer or varnish. If paint or non-eatables and no beverages are to be filled in the can to be, the very inexpensive tar or paint may be used as the sealing material. The inner coat consisting of the nitro-cellulose product, which is preferably thin, might not withstand the usually rough handling during transportation, etc., and therefore it is necessary to create a strong outer coat that protects the frail inner coat of nitro-cellulose or of paper coated with a thin layer of solid metal that is, or is not lacquered, dependent upon the nature of the commodities to be filled in the can. The lacquer is not indicated in the figures and the blank 1 is supposed to be of a suitable paper. The outer coat may be of any suitable material and as cardboard is very suitable in this instance it is contemplated to cut strips 2 from low grade paper or from very thin cardboard and simply roll (or envelope) this strip 2 upon the already formed blank 1 that is still situated on the mandrel. The adhesive binder may be used freely because it will not come into contact with the interior side of the inner coat. It is, however, advisable not to paste the outer envelope completely on the inner coat. The length of the outer coat strip 2 is so chosen as to permit the enveloping of the inner coat several times so that the so created layer will have sufficient thickness and strength. It is of advantage not to make the outer coat too compact by applying too much binder, such as, tar, paint, glue or others because there remains then more freedom of movement between the several layers. The final or outer seam 5 is then pasted and compressed. The machine for making this kind of can will be the subject of a special patent application.

At this stage of the manufacture of the can the inner bottom piece 6 (see Figures 7 or 8) is applied and pasted to the edge of the inner side of the blank 1 with a suitable lacquer, etc., in a manner similar to the affixing of the inner cover 7 shown in Figure 12. It will be noted that the edge of the inner bottom piece 6 and the edge of the inner top piece 7 is bent outside, that is, upward or downward, respectively, so that the bent sides will adhere to the edge 8 of the inside of the blank 1. From the disclosure of Figure 12 it is shown that a part of the inner cover 7 lies against the inner side of the inner blank 1, whereby at the next operation said part will be compressed upon said inner side of the inner blank 1. It is also shown that adhesive is also placed to that part of the inner cover 7 that lies on the upper edge of the can body, that is, on the upper edge of the inner blank (1) and of the outer can body coat (2) and that it has also adhesive on its top, so that the outer top 10 of Figure 11 will stick to the inner cover 7 and the latter to the inner coat 1 and to the outer coat 2. In Figure 10, in which a slight modification in connection with the inner bottom 6 and inner cover 7 is shown, the inner cover 7 does not lie on the upper edge of the can body, but simply the edge part of the inner cover 7,

that lies against the inner blank 1, is coated with an adhesive and is pressed against the inner blank 1 simultaneously at the compression of the joint 12. With the bottom a similar arrangement is made, as shown.

In Figures 13, 14 and 15 the inner cover lies also against the inner blank 1 and the adhesive is placed on these corresponding parts. The next step will be the affixing of the outer bottom 9 which like the outer top 10 is preferably specially made and compressed from the pulp of which cardboard is made. Any suitable material may be chosen for making that pulp and there may be low grades or more expensive materials used but one thing is essential, namely, to avoid a too strong compression when the outer bottom or outer top will be molded from the pulp so that there is still a chance for a strong compression of these parts at least near their outer edges 11, 12, when they are placed on the can body 15. It is chiefly this final compression that gives the can its final shape and the strength all over, especially at the joints which will then keep their compressed shape, while previously strongly compressed cardboard that will be pressed into another shape afterwards, tends to return to its former shape. Before the outer bottom 9 (see Figure 10) will be applied, the lower edge 13 of the can body 15, which comprises the lower edge of the outer coat 2, will be coated relatively thickly with hot tar or varnish or lacquer or glue or with any other suitable mucilage or binder 14 and upon the affixing of the outer bottom piece the compression must take place by means of a chuck or several of them or by pincer-like parts that give the final shape to the joints. The cheapest of the so far mentioned adhesives is tar. It is not only its cheapness which, however, it must be reckoned with that makes it preferable over the other named adhesives, but it is also its water and moisture repellent qualities and the relatively quick hardening when it cools off that makes a certain kind of tar preferable to the other named adhesives. It is obvious that the kind of tar is to be employed that is commercially known as coal tar which becomes soft under the influence of heat and which becomes relatively hard under the normal, but not too hot atmospheric temperature. The particular construction of the preserving can or container permits the use of tar, at least for the outer bulky coat and in this connection as a binder for the various convolutions of the blank 2 and as a binder 14 for the joints of that outer coat, whereby also parts of the outer sides of the inner coat, including the whole outer sides of the joints of that inner coat, may be coated with tar. The fact that the inner coat forms by itself a complete can or container that is hermetically closed and cemented and that consists of a material that is made impervious to water, oil, etc. including therefore also smells and in this connection also the smell of tar, permits the use of the latter material in connection with parts of the whole can that do not come in contact with the contents of that can. The shapes of the outer bottom piece 9 and the outer top 10 may be alike and the simplest form is that shown in Figure 11 in which the top is shown as having a dish-like shape with the outer downwardly directed edge 16 somewhat outside flaring so as to give the edge of the can body a chance to enter the channel 19 left therefor. The otherwise very porous cardboard that could be impregnated with a moisture-proofing solution such as paraffin, etc. and the still hot binder etc. will be-

come tough at the compression and will make the joint sufficiently strong. This will be also the case with the bottom. In Figures 9, 10 and 11 is shown that the edge part 16 of the top and the similar part of the bottom is bevelled for avoiding a sharp edge which permits also the easier handling of the can or container. Before the top 10, 21, 25, 40 will be put on, the eatables, etc. must, of course, be filled in and then it will be put on the inner top piece 7, which may have a different shape from that shown in Figure 12. The inner top piece 7 as well as the inner bottom piece 6, besides separating the contents from the inferior material of the outer coat, and more particularly from the outer top and outer bottom, respectively, is made yieldable, as will be explained subsequently, and prevents the spilling of the contents while the binder 14, etc. and the top 10, 21, 25 or 40 is put on and compressed and consequently permits the complete filling of the can. The inner top piece 7 and the inner bottom piece 6 prevent also particles, such as chips, cut loose from the card board or other material of the outer top 10, 21, 25, 40 or bottom 9 from falling into the contents when the can or container will be opened and in order to prevent the inner top piece 7 or the inner bottom piece 6 from being punctured when the outer top 10 etc. or outer bottom 9 will be cut through with a cutting tool for opening the can or container, the inner top piece 7 and inner bottom piece 6 must also be yieldable and the can or container must in this instance not be filled completely so that the inner top piece 7 and inner bottom piece 6 can readily yield.

This yielding of the inner top piece 7 and inner bottom piece 6 is made possible by folding them upon themselves adjacent the inner can body wall blank 2 such as indicated by 41, 42, respectively, in Figure 10. This folding up of at least the inner top piece refers to all the examples shown in the drawing. Through the securing of the outer end parts of the inner blank 1 and those of the bottom 6 and of the top 7 in the joints of the outer coat or the pasting of them to a part near these joints, not only a simplification in the manufacture is obtained, but also the moving of the inner coat within the outer coat is prevented as, for instance, during transportation of the filled can.

In Figure 13 it is shown that the upper depression 20 of the cover 21 is shaped like a bight which has no corners and that the outside rim 22 is bent into a furrow 23 made near to the upper edge of the can body and that the joint of the inner coat is compressed simultaneously with the joint of the outer coat and with the binder 24 in between. It will be noted that the raw (cut) edge of the top 21 is thereby concealed in that furrow 23 and is thus covered.

In Figure 14 it is shown that the structure of the joint is so made as to secure the cover 25 still more effectively to the can body and that the binding material 24 is also employed and compressed simultaneously in the joint 26 together with the joint of the inner coat. It is shown that the depression 29 is made deep through the bending of the can body wall near its edge and that the cover 25 is, so to say, hooked fast with its likewise bent edge part on the horizontally directed portion 27 of that depression near the upper end of the can body and in addition there is a band of sheet metal 28 put on the inwardly pressed portion of the top rim and compressed at 76

the same time with the latter, for strengthening purposes.

In Figure 15 the joint 30 is more of a rounded shape and the raw cut edge of the top 40 is also concealed, similarly to that shown in Figure 13, thus leaving only rounded edges that are safer for the handlers of the cans.

It is obvious that many other materials may be used for making the outer coat for the can. It may be made even of loam and rendered into earthenware and it may be made of putty or pulp and compressed upon the inner coat instead of being rolled up as previously explained.

For containers of larger size, which are especially made for holding paint, there will be an addition which consists of wires 35 (see Figure 10) which are fastened together and bent underneath the bottom of the can where they cross each other and, then equally spaced from each other, are led along the side of the can body, and the ends of these wires 35 are then united on the top, whereby a portion of some of these wires is passed through a handle 36 which latter is then so affixed that the whole can or container can be carried easily with the handle.

A wire 37, however, might be put around the sheet metal ring 28 (Figure 14) so to say, around the neck of the can, first, for reinforcing these parts and for making the joints compact and on the other hand for permitting both ends of another wire 38 to be fastened thereto after the latter has been passed through the handle 39 as shown in Figure 14 and in a similar way as shown in Figure 10. In the example of Figure 14 less wire will be needed than in the disclosure of Figure 10. The sheet metal ring 28 prevents also the wire 37 from cutting into the material of that part of the cover while the can or container is being carried around.

For cans that have to hold paint or varnish or lacquer it is advantageous to use the lacquer or cement derived from nitro-cellulose as the binding material and this is true for a large number of liquids, such as beverages like beer, wine, milk, etc. and such that have to contain acids of a large variety. Rubber cement may be used also as a binder, especially when it deals with liquid contents like milk, beer, soups, etc., while for turpen-

tine, benzine, kerosene, and oils the lacquer or cement derived from nitro-cellulose is preferable.

The inner coat should preferably not be pasted completely to the inside wall of the outer protecting coat so that the former may have enough freedom for shrinkage or for stretching and for adapting itself to the shape of the contents etc.

What is claimed is:

1. In a sanitary can or container having an outer coat and an inner coat, the outer coat consisting of the can body part, the bottom and the top and these parts united by joints, the inner coat made of non-metallic material and consisting of three pieces, namely, the inner can body wall blank, the inner bottom and the inner top, the latter folded upon itself adjacent said inner can body wall blank and the outermost part of that inner top lying against said inner can body wall and secured to the corresponding part of the inner can body blank by means of a suitable adhesive and these parts sticking together, the parts of said inner top and of said inner can body wall blank that are secured together with said adhesive secured with another adhesive in the joint of said top and the can body part of the outer coat.

2. In a sanitary can or container having an outer coat and an inner coat, the outer coat consisting of the can body part, the bottom and the top and these parts united by joints, the inner coat made of non-metallic material and consisting of three pieces, namely, the inner can body wall blank, the inner bottom and the inner top, the latter folded upon itself adjacent said inner can body wall blank and the outermost part of that inner top lying against said inner can body wall and secured to the corresponding part of the inner can body blank by means of a suitable adhesive and these parts sticking together, the parts of said inner top and of said inner can body wall blank that are secured together with said adhesive secured with another adhesive in the joint of said top and the can body part of the outer coat, said inner bottom, similarly shaped as said inner top and secured in the bottom joint in the same way as said inner top is secured in the joint of said top.

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