

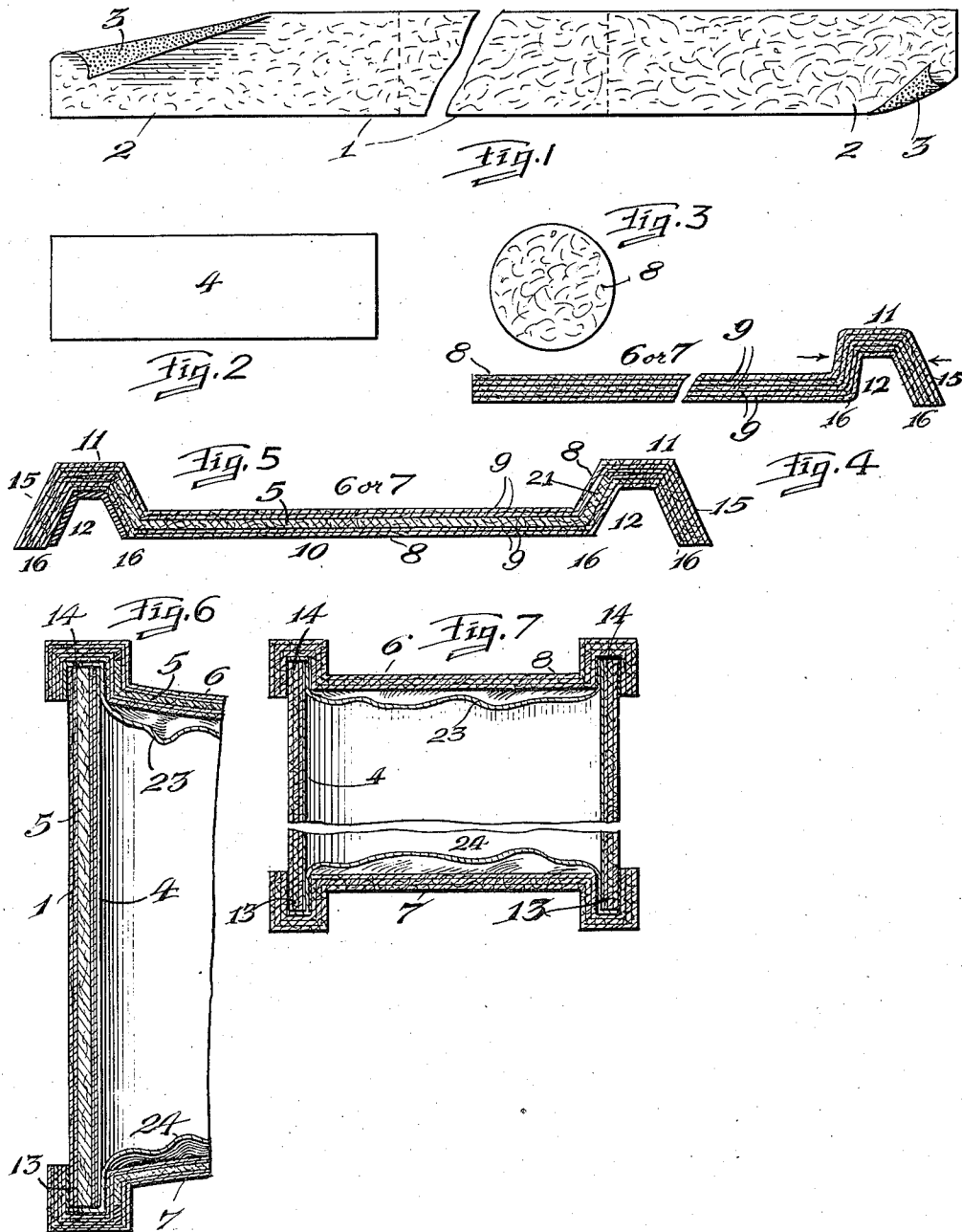
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NONMETALLIC AND PARTLY METALLIC PRESERVING CANS

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NONMETALLIC AND PARTLY METALLIC
PRESERVING CANS

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This invention relates chiefly to such improvements in nonmetallic and partly metallic preserving cans, or similar containers which permit the opening with a cutting tool without the cutting of metallic parts of the can; or it permits the opening of the can by means of a pair of pincers or of so-called anchor can openers, and therefore the cans are more sanitary in many respects than such preserving cans that have metallic tops and bottoms. First, the person that opens the can does not go the risk to cut itself on the cut edges of the metal, and still more important is the fact that the consumer of the contents of the can will not swallow metal particles that unquestionably would fall into the contents of the can at the opening thereof, if at least the can top or bottom was made of metal. The consumer is therefore safeguarded against intestinal diseases no matter how the can will be opened.

One of the objects of the present invention is to make the outer coat or hull hermetical, that is, water and air-tight, as well as oil tight, and to use the inner coat mostly as the means for keeping the contents of the preserving can from contacting with the outer strong coat thereof which will be made chiefly of materials more economical than sheet metal or certain kinds of cardboard.

The chief innovation in the completely non-metallic preserving can, consists, first, by impregnating the strips of paper for the can body and the pieces of paper for the top and bottom and the cores of cardboard if such are employed, with a relatively thin solution of asphalt and gasoline, or kerosene or crude oil or their derivatives, either entirely or in parts only, and secondly, to use a stiff solution of the same ingredients for the pasting of the sheets, strips or pieces together. The experiments with these materials did show that the thick solution will not penetrate or saturate the paper, but simply will stick to the surface although it will adhere there firmly, while a thin solution of one part asphalt and about ten or more parts of gasoline etc. makes a solution that saturates the paper completely and makes it air and water proof, sterilizing it at the same time. A stiff solution of asphalt that has a permanently somewhat soft consistency like that of rubber or even still softer may be obtained by the above indicated use of gasoline as its solvent.

Generally, paper cans or containers are made water proof by blowing or otherwise applying paraffin to the inner and outer surfaces thereof.

The paraffin, however, does not penetrate or saturate the paper at least not in a degree that would be sufficient for making the can suitable as a preserving can. Besides this shortcoming the paraffin would melt under the heat of the preserves when they are filled in the can or container, thus making the latter unfit for its purpose. The great advantage that resides with asphalt is, that it is a relatively economical material and that it can be dissolved and also made soft under the influence of heat. While therefore, there will be used different kinds of solutions of asphalt for the layers, heated asphalt will be used in the joints for closing the can after the contents are filled in, whereby the asphalt hardens immediately when it cools off.

While the aforesaid ingredients are the preferable ones it might, however, be suitable to use others under circumstances as, for instance, tar, putty made from whiting and linseed oil, paint and glue. Glue, which is generally employed, should be used, however, only on parts where no water will come into contact therewith. In order to give the can walls more stiffness there might be a core employed of cardboard to a certain extent and this cardboard may be impregnated with an asphalt solution. With certain cans, especially the kind that is exposed to rough handling, there might be a core of sheet metal employed at least for the can body wall. There might be a combination made consisting of one layer coated with putty and one layer or several of them coated with asphalt. In this instance it might be the inner layers of the paper that are cemented with putty especially when it deals with contents of the can that are of an oily or greasy character, such as paint, eatables etc. while the more economical asphalt may be used for the outer layers. The oil of the putty or paint, which materials are employable for making the can also grease or oil proof, has the tendency to spread as long as that putty or paint is not dry. The asphalt and especially the impregnating solution thereof, with which the fibrous sheets and also the cores are thoroughly saturated and impregnated, prevents the oil of the putty or paint from spreading to the outer layers of the can and these layers are and the surface of the can is therefore kept free from blotches which the oil from the putty or paint will cause otherwise.

Heretofore asphalt has been suggested as an adhesive binding or cementing material in connection with containers or paper walled vessels or with fibrous sheet materials, but in this in-

stance the asphalt is applied in hot and therefore melted condition. The chief disadvantage therein resides in the paper layers or convolutions, between which the hot asphalt is placed, of becoming brittle due to the heat that is communicated to them. The heat scorches the paper to a certain extent, and makes it still more susceptible to all kinds of liquids. Neither can hot asphalt be distributed so easily, thinly and thoroughly as dissolved asphalt. A further advantage that results with the use of dissolved asphalt is the simpler and more effective manufacture of the cans since no special apparatus is necessary for heating the asphalt and for keeping it fluent until it is situated between the paper or cardboard layers.

Various grease and oil proof substances and materials are already known for making cans or fibrous vessels etc. oil and grease proof. In connection with cans, however, one of the most practical is the use of the already mentioned putty because it acts at the same time as an adhesive means and is adapted to give the can wall, top and bottom the necessary tensile strength when it has dried. It is also suitable with metallic parts. In this connection paint may be mentioned also.

Structurally only the part of the fibrous cans are claimed that have a strengthening means for their walls of the body top and bottom and more specifically in reference to the can body the mode is claimed in which the strengthening core that might consist of cardboard or of sheet metal and which is associated with the can body wall, is wound up with the blank of paper that forms the convolutions of the can body wall. I am aware that strengthening sheets of cardboard have been contemplated heretofore with oil and grease proof papers but not in connection with convolutions in which the strengthening cardboard or sheet metal is much shorter than the fibrous blank and is simply wound up with the latter for forming the can body wall. In connection with the strengthening core employed with the top and bottom the innovation consists of the simple shape that permits the quick and easy assemblage with the can body whereby a relatively strong pressure is continuously exerted upon the can body by the bent portion of the core of the top and bottom which gives strength and compactness to the can or container. Other advantages will appear in the detail description.

Upon the requirement for division between the several structures of the cans special patent applications have been made, as, for instance, the one that was filed Oct. 22, 1936, bearing the Serial No. 107,044 which issued as U. S. Patent No. 2,160,072, of May 30, 1939.

The accompanying drawing which illustrates preserving cans with the aforesaid improvements shows in

Figure 1 the two end parts of the blank of paper for the outer can body coat which is saturated in sections with a thin solution of asphalt and which is coated on one side with a thick solution of asphalt or with putty or paint.

Figure 2 shows the blank for the inner coat of the can body;

Figure 3 shows one of the single pieces of paper that are impregnated and then coated with asphalt etc. of which a number compressed together are to be formed into tops and bottoms.

Figure 4 shows somewhat enlarged a number of the single pieces coated with asphalt and before impregnated with an asphalt solution and

flatly compressed together, to serve as tops and bottoms; under little heat other shapes may be embossed, as shown on the right.

Figure 5 shows somewhat enlarged and in section a top or bottom of the can made from the compressed pieces of paper shown in Figures 3 and 4, whereby a core of cardboard is added;

Figure 6 shows somewhat enlarged and in section part of the complete can with cores of cardboard inserted in the wall of the can body and also in the top and in the bottom;

Figure 7 shows somewhat enlarged a sectional elevation of the upper and of the lower part of the can without the cores of cardboard in its walls;

The reference numeral 1 indicates the can body blank of paper, 2 the areas that are impregnated by the thin solution of asphalt and 3 is the side coated by the thick solution of asphalt or putty or paint that serve for cementing purposes and for making the can oil and grease proof, respectively.

Obviously, the whole blank 1 may be saturated with the thin solution of asphalt but it is contemplated for economical purposes to saturate only such parts that are exposed directly to the outside air and those that are directly exposed to the contents of the can in case that no inner coat 4 is employed and no detrimental influence through the asphalt upon the contents is to be feared. Since, however, an inner coat 4 is contemplated that serves as a lining of the inner can wall, that coat will not be impregnated with the solution of asphalt and the contents are thus separated from the can body wall that is impregnated with asphalt, (see Figures 6 and 7). For similar purposes are also the coats or liners 23 and 24 employed, in view to the top and the bottom, respectively. Likewise it is not absolutely necessary to coat the whole side 3 with the thick solution of asphalt or putty or paint, because it will suffice to apply that coating on the areas that correspond in position with those that are impregnated with the thin solution of asphalt. While the thin solution of asphalt will prevent the paper from absorbing liquids or moisture it is the layer 3 of the thick solution of asphalt or the putty, or the paint that serves as the mucilage or adhesive binder and packing that cements and holds the several layers of paper firmly together and which at the same time is the means that makes the can hermetically tight and water, steam, oil and grease proof.

If especially strong cans are to be made there may be a core 5 of relatively stiff cardboard inserted in the walls of the can body and of the top and bottom. Since stiff cardboard which is relatively flexible cannot be bent sharp without cracking and because it always tends to straighten itself out again the cores are therefore limited to such parts that do not need sharp bending. The edges of the cores for the tops and bottoms, however, may be bent somewhat and in this instance the cores of cardboard will add in making the can compact.

The manufacture of this kind of can is performed as follows:

That kind of can is described first that has no cardboard or sheet metal cores.

From usually cheap grade of paper are cut the blanks 1 which are of a length that equals several times the circumference of the can. Large portions of these blanks are then dipped into the thin solution of asphalt, either entirely or only the ends 2 to a certain extent, as shown

in Fig. 1. The solution of asphalt should not be too thin, but it should be thin enough as to be absorbed by the paper. Before the blanks are formed into cylindrical can bodies, or of other convenient shapes, the stiffer coating is applied to the side 3 of the blank. The latter will be compressed while it is formed into the can body, whereby the walls thereof become sufficient strong through the several layers of paper and also of asphalt etc. between them. If the shape of the can is to be cylindrical the blank simply will be rolled up on a mandrel of that shape, as known by those skilled in the art.

The tops 6 and bottoms 7 of the can may be alike in shape and they are formed, first, of a number of single paper pieces 8, which are cut according to the shape of the can body. In Fig. 3 it is shown that the single piece is circularly cut and consequently is intended as part for the top 6, or the bottom 7, of a cylindrical can body. These pieces 8, or at least the outer and the inner one of the top or bottom, will be saturated with the thin asphalt solution to which a small amount of linseed oil may be added, so that they will become waterproof and the stiffer solution of asphalt or the putty or paint will be applied on those sides 9 of the pieces 8 which face again their next piece 8, so that all will adhere together firmly when placed together in a sufficient number and then compressed. I prefer to use the thick solution of asphalt because the latter will soften when heated, even after it has dried, which is of advantage for giving the shape of the tops and bottoms and also for the final compression of them on the can. The shape of the tops and bottoms varies according to the modifications shown and one of the convenient shapes consists of the middle part 10 and the outer or channeled part 11 as commonly known and shown in Figures 4, 5, 6 and 7. The outer or channeled part is so embossed as to leave the channel 12 wide open in order that the lower end 13, or the upper end 14, of the can body may be easily inserted. The side walls 15 of that channel are therefore outwardly flaring, so that they are the most distanced from each other where they form the edges 16 of the border of that channel. Since the structure of the bottom 7 is only the duplicate of the top 6 the same way of affixing the same applies also to the top 6. When the bottom 7 is to be affixed to the can body the lower edge of the can body will be smeared on with stiff liquid solution of asphalt and this edge will be inserted in the channel 12 (the stiff asphalt solution might, however, be placed in the channel) and the channel walls 15 compressed from outside as indicated by the arrows in Fig. 4, whereby the joint will be finished. Instead of the stiff liquid asphalt solution there might be used the heated asphalt, which is even preferable, at least for the joints, because it will harden immediately at its cooling off which may take place right after the final compression that is directed against the outside and the inside channel walls. The latter method is especially to be employed when the top 6 will be put on the can after the contents are filled in. In this respect it might also be employed tar, made soft under heat. Less advantageous for the final sealing of the can are putty, paint, or glue, because these means require considerable time for drying.

The cores 5 for strengthening the walls of the can body and of the top and bottom must be laid in correct position on the side 3 of the strip

of paper 1 (see the centrally located position indicated by the dotted lines in Figure 1) or on the certain piece of paper 8, respectively, that is covered with the stiff solution of asphalt or other mucilage or adhesive binders. At the compression the cores and the papers and asphalt etc. surrounding them will form a compact wall of sufficient firmness and stiffness that is necessary for a preserving can. Also the can in general must have firmness and stiffness and in order to create it those cores 5 that are inserted in the top and bottom must exert a certain pressure upon the respective walls of the can body without distorting the center portion of the core. This pressure will be the stronger when the inner wall of the joint part 11, which according to Figure 5, includes also the short bent part 21 of the core 5, is slanted before the top and bottom is affixed to the can body wall. In this instance, the inner edge 16 must correspond with the inner side of the can body wall and it can be even a trifle short, so that, while the top and bottom is forced into its normal position on the can body, the inner slanted wall of the joint part 11 will be forced into a vertical position as shown in Figure 6, in which it always exerts said relatively strong pressure against the can body wall, which insures compactness, strength, firmness and stiffness. In addition with the adhesive binder the joints, when finally compressed, give the can the necessary strength and said binder makes the joints as well as the whole can air, water, steam, oil and grease proof.

In known examples that are confronted with the idea of strengthening the tops and bottoms there are also reinforcing fibrous sheets contemplated, which, however, are of the same strength as the other fibrous sheets and of different construction than the cores disclosed in the present disclosure, especially in regard to the inside wall of the joint. With these known examples the joining of the top and bottom to the can body wall is more difficult than with the examples shown in the application and the pressure of that top and bottom upon the can body wall is exerted exclusively by the flat portion of the additional sheet, which is contrary to the disclosure of the structure of the top and bottom of Figures 5 and 6 of the present invention in which cardboard is employed. For certain cans, and this refers chiefly to cans that contain eatables, it is of sanitary importance, that only the core of the can body be made of sheet metal, while the cores of the top (the lid) and of the bottom are made of cardboard or paper, because it is usually the top or the bottom that will be cut through, and cardboard or paper will not be of such danger as sheet metal. By all probability the cut edge of cardboard or compressed paper will not cut the person that might unskillfully open the can, but the cut edge of the sheet metal might do it. Furthermore, pieces of paper or of cardboard or of asphalt do not endanger the consumer in such degree as metal particles would, because the latter might settle in the membranes of the intestinal organs and rust and cause inflammation that results in graver disorders.

The forming of at least the top and bottom of the inner coat or lining, of such shape as to have freedom of movement, refers to all the modifications shown. The particles cut loose from the top or bottom can then be removed before the inner coat (top 23 or bottom part 24 thereof) is cut through and the contents taken out.

These cans represent not only sanitary vessels

for all kinds of preserves but they can be manufactured at a low cost which is also important because the can will have no more purpose when once opened and thus becomes valueless.

- 5 All the modifications shown and described are also capable of being opened with pincers or so-called anchor can openers, either by forcibly tearing the joint apart, or by softening first the binder or packing whereby the joint may be
10 opened easily. If asphalt is used as the packing material the can joint simply needs to be heated to a certain extent for softening the asphalt whereupon the joint can be opened easily or the top lifted from the can body.

15 What I claim is:

1. A preserving can consisting of a can body, the bottom and the top and formed by fibrous sheet layers, these fibrous sheet layers impregnated with a thin solution of asphalt and one of
20 its solvents for making the can water, moisture, steam and air-proof, a stiffer non-impregnating solution of asphalt between the single layers, cementing and binding these layers together.

2. A preserving can, consisting of the can body
25 the bottom and the top and constituted by walls and their joints, the wall of the can body made by a single sheet of paper, wound up into convolutions, a core in said wall of the can body, adapted to strengthen said can body wall and characterized by being relatively much smaller in size
30 compared with the length of said single sheet of paper, said core wound up with said sheet of paper and the latter overlapping thereby considerably the side ends of said core.

3. A preserving can, consisting of the can body,
35 the bottom and the top, the bottom and the top made from fibrous material and constituted by walls and their joints, the single bottom and the single top each having a core of relatively flexible
40 cardboard, said core bent along a line that corresponds in extension relatively close with the inner edge of the can body, so that the unbent portion of said core together with the other fibrous

material associated therewith will be easily insertible in said can body to form a closure therefor, the bent part of said core, that includes the portion between said line and the rim of the core, flaring outwardly at such angle as to continuously exert pressure upon the inner walls of said can body after said bottom and top are placed in their correct position on said can body, thus forcing said portion of the core to be directed at a similar angle as the inner wall of said can body, said
10 portion of the core of the top, when inserted into said can body directed from said line towards the uppermost end of the can and said portion of the core of the bottom, when inserted into said can body, directed from said line towards the base of
15 the can.

4. A preserving can, consisting of the can body, the bottom and the top and made of fibrous sheet material said material impregnated with a thin solution of asphalt, the sheets secured and
20 cemented together with an adhesive binder, consisting of putty made from linseed oil and whitening.

5. A preserving can, consisting of the can body, the bottom and the top, these parts constituted
25 by layers of fibrous sheet material and the latter impregnated by a solution of asphalt, those sheets forming the innermost layers secured and cemented together by putty made from linseed oil and whitening and the remainder of the sheets secured and cemented together by a relatively stiff
30 layer but permanently somewhat soft asphalt, thus making said can oil and grease proof after the putty has dried, besides being also air, water, steam and moisture proof.

6. A preserving can, consisting of the can body, the bottom and the top and made of fibrous sheet material, the latter impregnated with a solution of asphalt, the sheets secured and cemented together with paint, rendering the can oil and
40 grease proof besides being also water, air, steam, and moisture proof.

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