H. KELLOGG.

MANUFACTURE OF CYLINDRICAL PAPER BOXES.

No. 180,350. Patented July 25, 1876.

Fig:1.

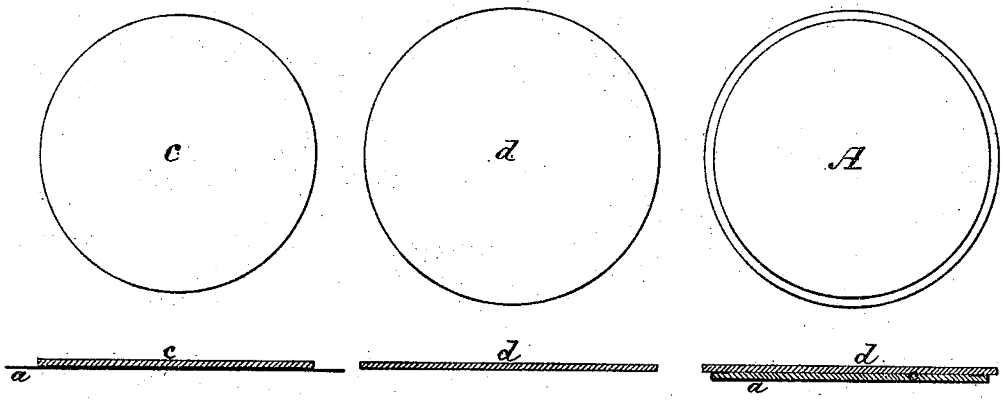


Fig: 2

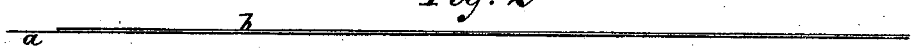


Fig 3

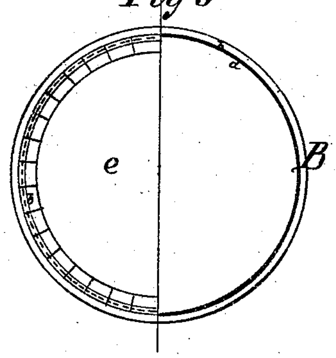


Fig: 4

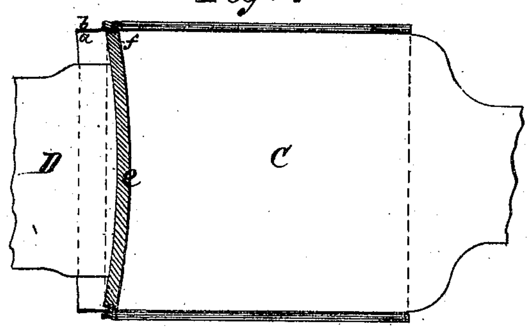


Fig: 5

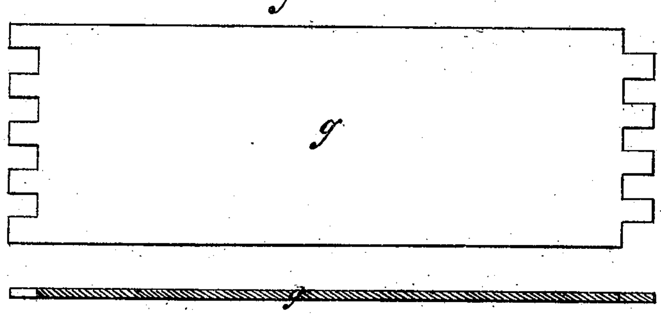
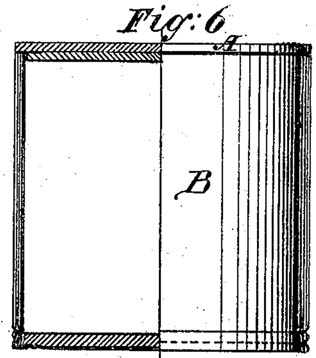


Fig: 6



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HENRY KELLOGG, OF MILFORD, CONNECTICUT.

IMPROVEMENT IN THE MANUFACTURE OF CYLINDRICAL PAPER BOXES.

Specification forming part of Letters Patent No. **180,350**, dated July 25, 1876; application filed November 16, 1875.

To all whom it may concern:

Be it known that I, HENRY KELLOGG, of the town of Milford, in the county of New Haven and State of Connecticut, have invented a new and useful Improvement in the Manufacture of Cylindrical Boxes, Cans, or Packages, which improvement is fully set forth in the following specification, reference being had to the accompanying drawings.

My invention consists in an improvement in making cylindrical boxes, cans, or packages sufficiently tight for holding such articles as lard, butter, condensed milk, prepared meats, and other articles which require to be or are usually contained in packages either water-tight, or through which oils and similar fluids will not percolate, and, by omitting tin-foil or its equivalent in their manufacture, the making of like boxes, cans, or packages for other purposes which are not required to be air-tight—in either case using less costly materials than have been heretofore used to produce similar results.

In the accompanying drawings, Figure 1 represents the cover of my can, showing the two pieces of straw or card board, and the same united together, with sectional views of the same, showing the relation of the tin-foil to the inner portion of such cover. Fig. 2 shows a section of the inner fillet of paper of which the can is made, with the tin-foil attached projecting from one end of it, showing the tin-foil projecting, so as to form the metallic joint hereinafter described. Fig. 3 represents the bottom of the can, one-half of the same showing the manner in which the two thicknesses of tin-foil and paper are turned over and fastened to the bottom from the body of the can. Fig. 4 represents the mandrel used to form the body of the can, with the arrangement for holding the bottom of the can while the can is being made. Fig. 5 shows one form in which the straw or card board is cut, as hereinafter described. Fig. 6 represents a half-section of the can, showing the manner in which the bottom is fastened therein, and also a half outside view of the finished body of the can, also showing the same manner of fastening.

Like letters of reference indicate like parts.

A is the two pieces of the top put together; B, the section of the finished can; C, the mandrel; D, its head. *a* is the tin-foil; *b*, the thin paper; *c* and *d*, the straw-board of the cover; *e*, like board of the bottom. *f* is the bead for holding the bottom; *g*, the card-board of the body.

I use the term "can" to include cylindrical box or package in the following description. I first prepare a mandrel of a size and length suitable for the can or package desired, and properly arranged for rotating, in order to facilitate the following-described process. The projecting end of the mandrel may be flat or concave to a certain suitable degree, as shown in Fig. 4, depending in part on the size of the can, and in part upon the thickness of the material used in making it. I make a head corresponding in shape to the end of the mandrel, (also shown in Fig. 4,) but about half an inch less in diameter, and this head is so held and arranged as to press against the end of the mandrel and revolve with it. In case the end of the mandrel is concave, I cut from straw-board, or any similar suitable fibrous material of the desired thickness, a disk a little larger than the diameter of the mandrel, so that when it is pressed into the concavity of the same it will be of a diameter equal to it. This disk is then covered with a piece of tin-foil or its equivalent, sufficiently large to cover the face and edge of the disk, and lap over the edge onto the opposite face about a quarter of an inch, being cemented to the paper by alcoholic shellac-varnish or other suitable cementing material. This disk, which forms the bottom of the can, is pressed against the concave end of the mandrel by the head, and held in that position. It is obvious that if the end of the mandrel is flat the diameter of the disk and mandrel should be equal. I then take a strip of tin-foil long enough to surround the mandrel and lap about one inch, and of a width a little greater than the height of the can. One side of this tin-foil is then covered with shellac-varnish made with alcohol, or other suitable cementing material. It is then placed on the mandrel, the varnished side outward, and held so as to project beyond the bottom about a fourth of an inch. The lapping portion comes upon the varnished surface, and, by the application of a gentle heat,

is made to adhere, thus forming a metallic lap-joint, and preventing the contents of the can from coming in contact with the paper. I then take a strip of thin Manila or other suitable paper, or its equivalent, of about the same length and width as the tin-foil, which I cover on one side with shellac-varnish or other suitable cementing material, and when nearly or quite dry I place it upon the mandrel, already covered with tin-foil, so that both varnished surfaces come together, and apply a gentle heat, which causes them to adhere to each other, leaving a projection of the tin-foil beyond the paper, as shown in Fig. 2, so that when they encircle the mandrel the tin surfaces will come together and form a metallic lap-joint, and will present only a paper surface, as above described.

By the pressure of a disk or wheel, on the edge or periphery of which is a slightly-projecting V or a bead, revolving in connection with the mandrel, I force the tin and paper of the side being covered with the cementing material into the edge of the bottom, as shown in the half-section of Fig. 6, thus securing the side and bottom tightly and firmly together; or, instead of the continuous V or bead, the periphery of the disk or wheel may be formed in sections or points, which punch a portion of the side, instead of a continuous ridge, into the edge of the bottom with like effect. I also turn that portion of the tin-foil-covered paper which projects toward the bottom over or down upon the face of the bottom, having coated the inside of this projection with the varnish or cement, knurling or corrugating it down upon said face with a toothed wheel, as shown in a portion of Fig. 3. I have also made the bottom in the same form as the top, hereafter described, crozing in the side upon the ledge, and turning the projecting part outward upon the shell or body; but I prefer the mode first above described.

I then prepare a fillet of paper of proper width by covering it with common glue or its equivalent, and leaving it to dry before applying it, and this I do in order to secure the continuance of the paper in the position in which it has been left at the time of forming the above-described portion of the body of the can, for if after this any change takes place, instead of swelling, as is the case when wet glue or paste is used, it is a slight shrinkage, which tends to tighten the joint between the side and bottom and to prevent leakage. I then roll on this prepared fillet, applying heat as it proceeds, until the desired thickness is attained. The heat is applied to soften the glue and render it adhesive; or I moisten the glued surface slightly, and apply it without heat. This being done, the body of the can is completely formed.

In order to give thickness and greater firmness to the can when it is desirable, before the process last described I apply a covering of card-board, straw-board, or other similar material, prepared, in the same manner as the fillet of paper, with a coating of glue, and left to dry. The ends of this covering are not butted together, but are cut in the form shown in Fig. 5, or dovetailed or chamfered, so as to give an even surface and a firmer hold, after which I apply one or more turns of the fillet hereinabove described, and finish with varnishing the exterior surface in both cases.

When the can is taken from the mandrel the bottom, which was concaved by pressure while making, tends to become flat and presses outward against the sides equally in all directions. If the can should swell, it follows the sides; if it shrinks, the bottom becomes more concave on the outside. If the bottom is left flat an additional thickness of paper or other material may be applied all over. As an additional security against any possible leakage I apply on the inside, with a pencil-brush, a little silicate of soda at the union of the bottom and sides or body of the can.

The bottom and top may be made of wood; but I prefer paper, because it is not liable to season-crack, nor does it shrink or swell more in one direction than another.

I make the cover of two pieces of straw-board or card-board, or other suitable material, one side of one of which is covered with tin-foil, in the manner described for covering the bottom, and this is made a little smaller than the other, and of a size to fit in the can, as represented in Fig. 1, and the other part covers the top of the can. Both of these pieces are firmly glued together. Thus made, a tin or metal surface only is presented to the action or contact of the contents.

To secure the top to the can a narrow fillet or band of paper is pasted or otherwise cemented around the joint, thus rendering the package air-tight. This fillet may also be cemented with shellac-varnish.

Where a water or oil tight can or package is not required I omit the use of tin-foil and shellac-varnish in its construction, using in their place a thickness of paper prepared and covered as hereinabove described.

It will be evident that any cementing material which will act upon a metallic surface may be used instead of alcoholic shellac-varnish, and that any fibrous material having substantially the qualities of paper may be used as a substitute for it.

It is obvious that my process is applicable to the making of such packages in other than cylindrical forms, and I have myself made them in other forms; but I have described the cylindrical form because I regard it the most convenient and cheapest, and, in my opinion, the preferable shape for such a package.

I claim as my invention—

1. The method of making the body of a can or package by forming it of two or more thicknesses of paper or other fibrous material, (with or without the addition of a lining of metallic foil,) each coated on one or both sides with a substance that is heated and becomes adhesive

at the moment the thicknesses are brought into contact, thus uniting them together, substantially as and for the purposes set forth.

2. The method of uniting the end with the body of the can by encircling the end piece with the thicknesses of paper or fibrous material which form the body, and beading or forcing the same into the edge or periphery of the end piece, substantially as set forth.

3. In the manufacture of cans or packages of paper or other fibrous material, the method of obtaining pressure of the bottom outwardly against the sides of the finished can by maintaining the bottom or end piece concave while building the can-body around said end, whereby, when the can is taken from the mandrel, the end piece will tend to become flat, and thus press outward against the sides equally in all directions.

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Witnesses:
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