

Patented Oct. 7, 1879.

Fig. 3.

The diagram shows a perspective view of the device. It consists of a curved member labeled *i*, a circular member labeled *E*, and an elongated member labeled *D*. The member *D* is shown passing through the circular member *E*, which is positioned over the curved member *i*.

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IMPROVEMENT IN METHODS OF HERMETICALLY SEALING CANS.

Specification forming part of Letters Patent No. **220,307**, dated October 7, 1879; application filed
February 12, 1879.

To all whom it may concern:

Be it known that I, EDWIN R. POWELL, of Winooski, in the county of Chittenden and State of Vermont, have invented certain new and useful Improvements in the Method of Hermetically Sealing Cans for Preserving Fruits and other Articles; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

The invention relates to a method of exhausting air from cans for preserving fruits, vegetables, or any other article subject to change, fermentation, or decay when in contact with the atmosphere.

Heretofore the methods principally employed in accomplishing this object have been, first, to place the article to be preserved within the can while heated; then, having covered the can, it becomes hermetically sealed by the condensation of the rarefied vapor occasioned by the cooling of the can and its contents; or, second, having placed the article within the can, insert the latter in a tank of water, which is brought to a boiling temperature, then seal the can and condense the atmosphere in its interior by plunging the can in cold water; or, third, to forcibly exhaust the air from the can after the article has been deposited within it, and then, by means of an air-cock or similar device which is attached to the can, to close the same.

The first and second methods are objectionable, by reason of their frequent unreliability and the necessity of a partial cooking of the articles to be preserved, which prevents them from being kept in the same fresh and perfect condition as when first picked, destroying to a greater or less degree the original delicate flavor of fruits especially.

The third method is objectionable, on account of the great expense attending its process, which seriously prevents its extensive or even practical use.

In the accompanying drawings, in which similar letters of reference indicate like parts,

Figure 1 is a vertical section of a machine and a can in which my invention can be carried into effect. Figs. 2 and 3 are detail views of the cut-off.

A represents the can to contain the fruit or article to be preserved. It can be made of any suitable material, provided its ends are flexible.

a is an opening or orifice in the top of the can; *b*, the standard attached to the bottom of the can on the interior, and extending upward nearly to the opening *a*, its upper extremity being constructed to sustain the button or valve *c*, which is made of rubber or other elastic material.

B and C are cones, lined with rubber or other compressible material, and with outlets *d* and *e* in their respective vertices. The large diameter of these cones is somewhat greater than that of the ends of the can A.

To the outlet *d* is attached a rubber or flexible tubing, *f*, which leads to and connects with the metal pipe D, one extremity of which is attached to the outlet *e*, while the other end, *g*, is designed to be connected with an air-pump.

In the pipe D is a cut-off, E, which is so constructed that by turning its handle in different directions the passage through it in the pipe D is either uninterrupted or completely closed or opened from either section of the pipe to the atmosphere without.

The operation of the device is as follows: The whole apparatus should first be fitted to a table or bench, F, and the end *g* of the pipe D connected with a suitable air-pump. The cut-off E should then be so turned as to secure an uninterrupted passage from the air-pump to the cone C through the pipe D.

The can A, having first been filled with the article to be preserved in whatever condition it is desired to keep it, has its cover permanently secured to it, the stationary button or valve *c* being first placed upon the extremity of the standard *b* and immediately below the outlet *a* of the cover. The can is then placed upright within the cone C, and the cone B pressed over its top. By means of the air-pump the air is then practically exhausted through the open pipes D and *f* from the cone C, the can A, and the cone B, which has the

effect to cause the compressible lining of the cones to be compressed more closely against the upper and lower edges of the can, thus forming an air-tight joint at their respective points of intersection. The vacuum which is thus created in the interior of the can and cones leaves the can in its normal shape as the atmospheric pressure at each end of the can is relieved.

If desired, an indicator may be placed in the pipe D, to show the existence of this vacuum in the parts named.

Communication between the cones B and C and the air-pump is then closed by means of the cut-off E; then, by properly turning the handle of the cut-off E, the atmosphere is admitted into the section *i* of the pipe D, which lies between the cut-off and the cone C, and through this cone it presses against the bottom of the can, concaving it at the surface to a height sufficient to force the stationary valve *c* into the opening *a*, which practically closes the outlet of the can A and hermetically seals it.

By turning the handle of the cut-off in another direction the atmosphere is admitted into the tube *f*, which produces a similar effect upon the top of the can, thus forcing the valve *c* still farther, if possible, into the opening *a*. Thus effectually and simply sealed, the contents of the can will continue unchanged as long as a vacuum continues within the can. The vacuum within the cones ceasing with the

admission to each of the atmosphere through the small hole *o* in the handle of the cut-off E, the pressure of the cones upon the can is at once relieved, when the can is readily removed, another can inserted in its place, and the process repeated as often as desired.

By this device fruits or vegetables can be preserved as fresh and in the same condition in all respects as when first placed within the can, and at less expense than that of the ordinary cooking method.

No claim is here made to the apparatus for exhausting the air, as that will form the subject of another application; nor is any claim here laid to the can, as that will also be made a part of another application.

What I claim is—

The process of sealing cans consisting in exhausting the air from the interior of the can and from around the exterior of both ends, and then alternately admitting the air to the exterior of the ends, whereby they are made to bulge inward from atmospheric pressure, and thus close the valve against the opening in the head, substantially as specified.

In testimony that I claim the foregoing as my own I do affix my signature in presence of two witnesses.

EDWIN R. POWELL.

Witnesses:

CHARLES E. ALLEN,
ETHELBERT SELDEN.