W. POLYBLANK & G. POLYBLANK.

Improvement in Fruit Cans.

No. 124,156. Patented Feb. 27, 1872.

Fig. 4.

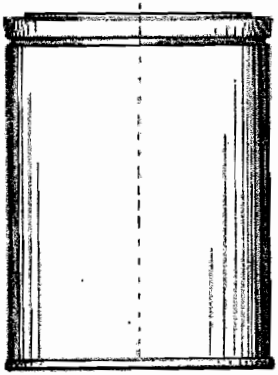


Fig. 1.

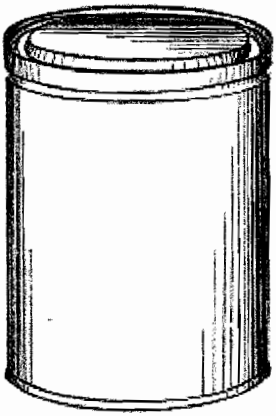


Fig. 3.

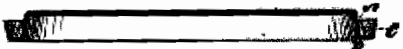
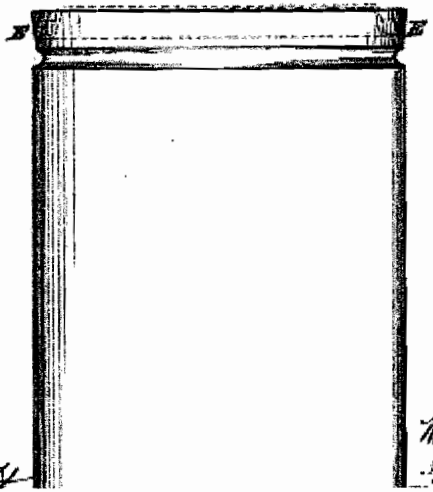


Fig. 2.



Witnesses.

F. Schill.

Inventors

William Polyblank

George Polyblank

471 - TIN CANS

471.1 - IMACS Classification:

(TD) Tin Cans - Hole-in-top
(TC) Tin Cans - Sanitary/Open Top

471.2 - Description of Classification and Attributes of Types:

1) Tin Cans - Hole-in-Top or Hole-and-Cap: "The cans of this era were manufactured completely by hand. To make the body, a piece of tinplate was bent into shape on a roller and the overlapping edges were soldered together. Two round disks were cut for the ends, their edges were bent down, or flanged, and they were soldered to the body. The top could be soldered on after the can was filled, but more common was the hole-in-top can. A top with a circular hole about an inch in diameter was soldered on before the can was filled, food was pushed through the hole, then a cap with a small vent hole was soldered over the opening. During processing, when a sufficient amount of steam had escaped, the vent hole was closed with a drop of solder. The soldered hole-in-top can changed little in style through the 19th century, but even before the Civil War its manufacture was partially mechanized" (Busch 1981:95).

"A primary and long lasting feature of the early canning industry was the introduction of the hole-in-top can. Using this method, the can was filled and then covered with a lid having a hole in the center. After boiling, the can was closed with a drop of solder (Bitting 1912:9). Hole-in-top cans were, initially, completely handmade by cutting and soldering of the tops and seams. In time, machine cutting and soldering were introduced. Soldering was replaced by crimping and hooks, although solder was also used as a reinforcement of these seals on some cans" (Buckles et al. 1978:410). Numerous refinements were made in the can industry prior to replacement of the hole-in-top by sanitary cans. These refinements can be classified as transition cans but are encoded as hole-in-top cans.

2) Tin Cans - Sanitary (open-top): "The most radical change in can history was the switch from the hole-in-top can to the sanitary can. The sanitary or open-top can was initially developed in Europe, where can ends were attached to the body by hand crimping the edges together, with a rubber gasket in between to make the seam airtight. In 1896, in the United States, Charles Ams patented a sealing compound of rubber and gum to replace the rubber gasket. By 1897, the Ams Machine Company brought out a machine that applied this compound to can ends automatically and crimped the ends to the body in a double seam, an improvement over the single seam used in Europe (May 1938:438-439; Collins 1924:36-38). With the crimped, or locked, double end seam, locked side seams replaced lapped side seams. For a lapped seam, solder was applied to the body edges which were lapped over each other while hot. The lapped side-seam fit the flanged, soldered-on top better than the locked side-seam, which was not perfected until the 1900s. For a locked side-seam the edges are crimped together and soldered on the outside only, leaving no

471 - Tin Cans (Page 2)

Tin Can Types

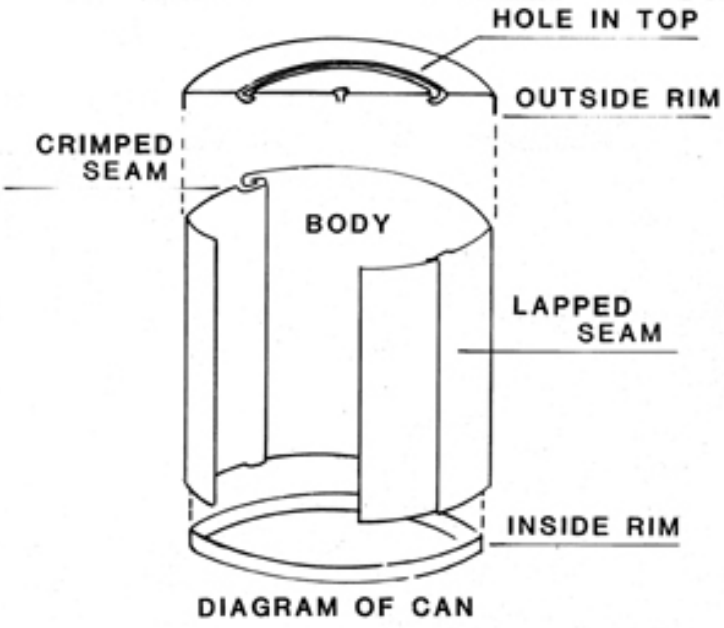
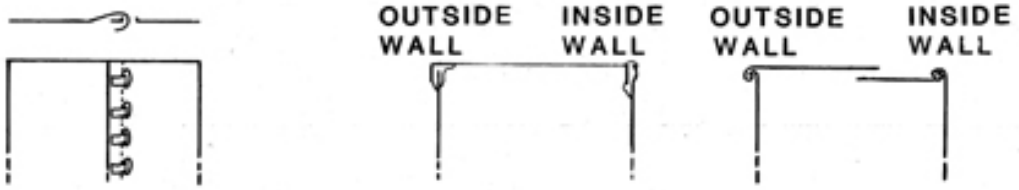


DIAGRAM OF CAN

NORMAL HOLE IN TOP CLOSURE

SALMON TYPE HOLE IN TOP CLOSURE



external ridge (Fontana et al. 1962:70; Collins 1924:35). The new can was considered more sanitary because it was soldered on the outside only. Because the top was crimped on after filling, it could hold larger pieces of food than the hole-in-top can (National Canners Association 1963:8)" (Busch 1981:97-98).

471.3 - Chronology of Types:

1) Tin Can Chronology: (from Busch 1981:103)

1819 - Beginning of commercial canning in America (fruit & vegetables)

1825 - Thomas Kensett granted U.S. patent for canning food in tin

1856 - Gail Borden granted patent for canned condensed milk

1894 - Ams machine company begins manufacturing locked, double-seamed can

1901 - Formation of American Can Company

1935 - Introduction of the beer can

1945 - First aerosol cans marketed

1959 - First all-aluminum beer can

1962 - Introduction of the beverage can pull-tab

1965 - Introduction of the tin-free steel beverage can

2) Tin Can Chronology: (from Berge 1980:261-262)

1850s- Kerosene patented

1865 - Kerosene canned

1872 - Large-scale meat canning began in Chicago

1875 - Sardines packed

1892 - First tobacco can

1906 - Modern paint can came into use

1909 - Tuna canning began in California

1910 - Flat-sided, hinge-lidded tobacco can came into use

1917 - Ernst Moeller, Bayer Company, developed the idea of a pocket-sized aspirin box

1917 - Key-opening collar-can for coffee introduced

1921 - Canned citrus juice first shipped from Florida

1922 - First canned dog food developed by P.H. Chopped

1926 - Canned ham was introduced

1933 - Quart can of motor oil used

1953 - Canned soft drinks became popular

3) Tin Can Chronology: (from Buckles at al. 1978:440-441)

1820s - The canning industry was introduced into the United States. At this time cans were made entirely by hand. Each part was cut and a heavy beading of solder was applied to both top and bottom as well as to seams.

1849 - The first die for making tops and bottoms of cans was introduced (Stevenson 1914:92). After this time, numerous machines were invented for the cutting and soldering of cans. Later, machines for crimping came into use. From this time onward cultural lag in manufacturing techniques is quite evident within this industry, stemming from secrecy surrounding advancements, labor difficulties, mechanization, expenses of new technology and others. Thus, we find old methods in use for the manufacture of cans long after faster and more efficient processes were invented. Dates of invention of patents are helpful, however, in establishing initial dates for can types.

mid 1880s - New machines for the making and packing of cans were being developed. Crimping, first successfully introduced in 1869, was initially used in combination with soldering. This method did not become a major part of can manufacturing until the 1880s (Stevenson In Judge 1914:92-93).

1894 - The first patent for the "sanitary" can was issued. This can, totally crimped and without the use of the hole-in-top, continued in experimental stages until 1903 when great strides were made in its development and acceptance by the industry (Cobb In Judge 1914:95-96).

1922 - The sanitary can was in general use (Fontana and Greenleaf 1962:73). Even so, hole-in-top cans are still in use to package condensed milk.

4) Tin Can Chronology (Jim Rock, 1990)

1810- Peter Durand was granted a patent for a tin-plated food container by King George III of England.

1818- Peter Durand introduced the tin container in America.

1819- Fish, oysters, fruits, meats and vegetables were being canned in New York by Thomas Kensett, Sr. and Ezra Daggett.

1830s- Huntley and Palmer of Reading, England were selling their cakes and biscuits in decorated tin boxes.

Mid-1840s - The hole-in-cap can became common.

1847- Allen Taylor patented a machine for stamping cylindrical can ends.

1849- Henry Evans, Jr. improved Taylor's patent with the "Pendulum": press for making can ends.

1850- Louis Pasteur discovered that bacteria caused food spoilage. By heating a "closed" can these
1860 microscopic, single-cell plants could be killed. This could be done in a hole-in-cap can.

By the Mid-1850s small seamless cans were being manufactured.

1856 Gail Borden began canning condensed milk in America. To get the contents out of this can you must remove all or most of the can end.

1856 Henry Bessmer of England discovered, as did William Kelley of America in 1857, the process for converting cast iron into steel.

1859 A patent was granted for lock side seams for cans in America.

1861- The U.S. Government, "The North", purchased quantities of Borden's condensed milk for military
1865 use. This proved to the public that canned products were safe and nutritious.

1871- The first American tinplate works was established.

1870s- A process for one-color lithography on tin plate was developed.

Hinged lid tins were on the market.

1875- Arthur A. Libby and William J. Wilson of Chicago developed a tapered meat tin for packing their products.

Late
1870s- Daniel, Joseph and Guy Somers of New York developed their lithography techniques.

Ginna and Co. of Brooklyn, New York, began producing fine artistic lithographed tins.

Howe developed the "Joker" and "Little Joker" systems that automatically attached and soldered can ends.

The English required their can manufacturers to stop soldering on inside side seams of cans. In America, this practice was discontinued at a later time.

1880s- Chromolithographed tins were introduced. These tins were lithographed by using a series of color plates. Multicolored tins were now on the market.

1885- Evaporated milk was first canned in the United States. These cans are opened by punching two holes on opposite sides of the can lid or top.

1888- Max Ams of Max Ams Machine Co. of New York developed a double side seam and gasket for cylindrical cans. This led to the "Sanitary Can".

1891- The McKinley Tariff Act greatly reduced the flow of tinplate from Europe to America.

1892- Hasker and Marcuse Manufacturing Co. was founded in Richmond, Virginia.

The flat top tobacco can was introduced on the American market.

1895- The tapered meat can was improved by the Norton Brothers of Chicago, when they added a scored key wind strip to the large end of the can.

1897- The log cabin shaped can was patented.

1898- Edwin Norton patented a vacuum pack tin.

1900- Tindeco (Tin Decorating Co.) of Baltimore was founded. By the 1920s it was the leader in lithographed tin.

After 1900 the vent hole filler can was introduced for evaporated milk.

1901- American Can Co. (AC Co.) was formed. By the 'teens they were using Canco as their logo.

1901- Hecking Can Co. began operations in Cincinnati, Ohio. Their logo was an H inside a circle.

1903- Hills Brothers of San Francisco vacuum packed the first coffee for commercial use in "squat" on pound cans.

1904- The Sanitary Can Co. was founded. They produced double-seamed open top cans.

Continental Can Co. (C.C.Co) was founded.

1906- Plus or minus two years, the upright flat tobacco can was marketed.

1908- American Can Co. absorbed the four sanitary can companies.

1911- Most California can manufacturers were producing sanitary cans.

1921- Enamel lining of zinc oxide was first used to coat the inside of cans. This coating prevented discoloration of vegetables and other reactions with the metal can.

1935- The invention of C-enamel allowed the flat top and bottom beer can to be introduced. Later that year the cone-top beer can was also introduced. The "Church Key" was invented to open the flat top beer can. This opener makes a triangular shaped hole in the can's top. The cone-top can allowed beer bottlers to retain their old bottling equipment.

WWII It appears that the hole-in-cap was taken out of production.

Late
1950s- A soft aluminum top was added to the metal flat top beer can.

1957- All aluminum cans were first produced.

1963- The aluminum tear-top can and the D & I (drawn and ironed) aluminum can were introduced.

1972- The State of Oregon required beer can tabs to remain with the can.

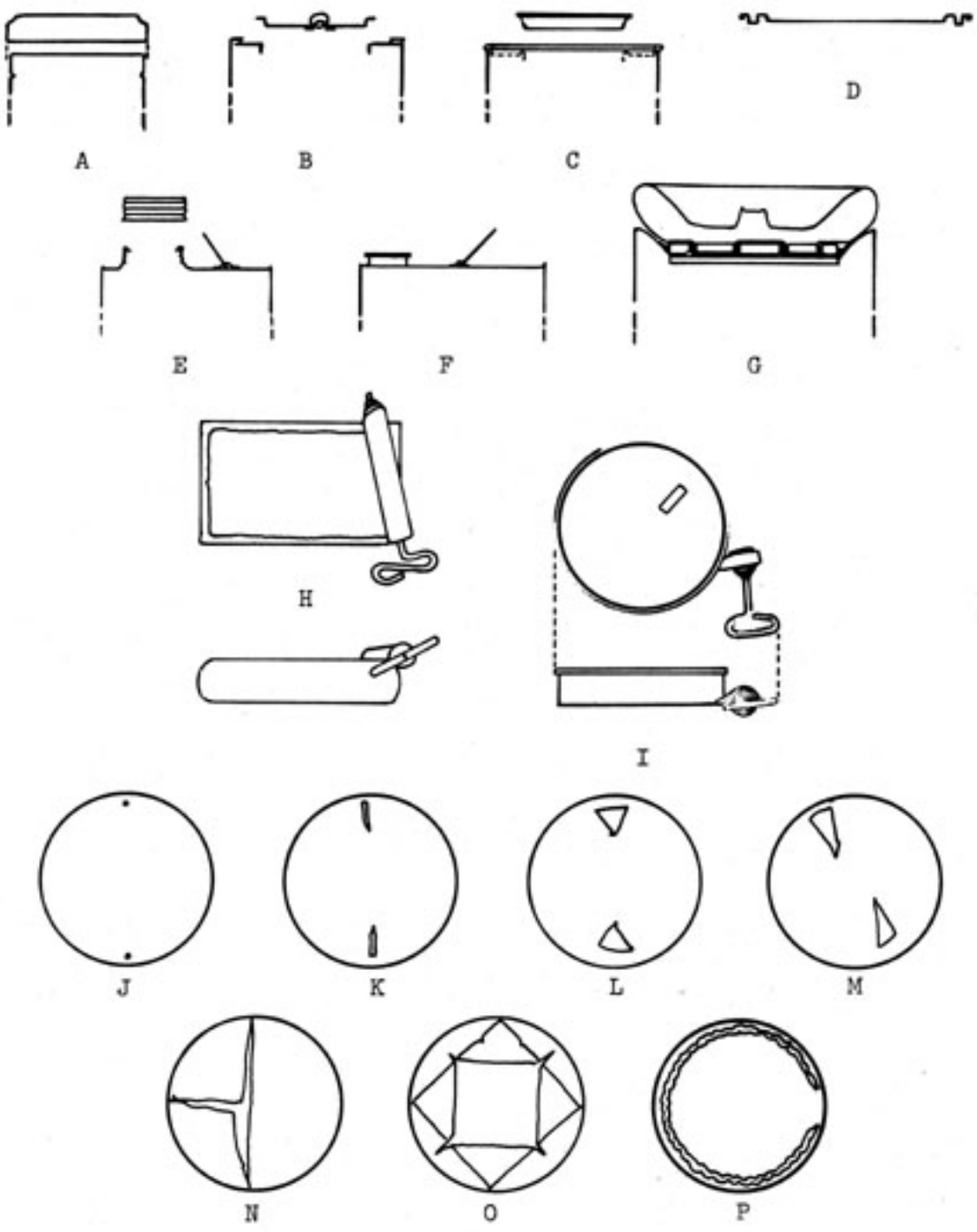
1980- 3M developed a peel scotch tab for drink cans.

471.4 - Additional Notes Pertinent for Recording Tin Cans:

1) Types of Can Openings: - from Buckles et al. 1978:412-415)

The manner of opening a can reflects, to a degree, what was contained within the can. The types of openings which are recognized should be recorded as per the description/illustration below. In addition, the number of cans with different types of opening should be estimated.

Tin Can Openings



A. Removable lid
B. Removable lip lid
C. Pry out lid
D. Paint can lid
E. Screw cap
F. Spout
G. Hinged lid
H. Key-opened, rectangular/square
I. Key-opened, round
J. Ice pick
K. Knife cut
L. Church key
M. Puncture and Pry
N. "T" cut(usually by knife)
O. "X" cut(usually by knife)
P. Cut completely around

There are other variants of can openings which can be used. These openings are useful for insights into can functions. Key opened, removable lids, paint lids and pry out lids, as an example, contained relatively non-perishable items such as tobacco, cocoa, and others. Each is traditionally associated with a particular product type. Key openings are associated with lard cans, potted meats, sea foods and others. A special type of hole-in-top can with an inside flap was used in the salmon canning industry (Bitting 1912:67-68). It is not an opening, but a variant of the hole-in-top can construction. Cans which have either puncture holes, spouts, or have been opened with a "church key" all probably contained liquids, thus requiring small openings to remove the contents. Cans cut completely around and X-Cut lids are indicative of fruit or vegetables which require larger holes for removal of the product.

2) Can Contents and Sizes: (from Buckles et al. 1978:416)

Another method of determining the possible contents of cans stems from traditional use of can sizes within the industry of canning. No set governing standards as to either can sizes or contents can be applied across the board due to the fact that the canning industry itself was not standardized.

Can sizes have been standardized in practice, to degrees, and can be classified by numbers or names used by grocers.

Number or Name	Height	Diameter	Contents
5 oz.	2-7/8"	2-1/8"	
6 oz.	3-1/2"	2-1/8"	
8 oz. regular	3"	2-11/16"	Fruits & fruit cocktail
8 oz. tall	3-1/4"	2-11/16"	
Picnic, Oysters	4"	2-11/16"	
No. 300	4-7/16"	3"	Tomato & pineapple juice
No. 300X	4-9/16"	3"	Tomato juice
No. 1 tall	4-11/16"	3-1/16"	Fruits, tomato juice, pineapple juice
No. 303	4-3/8"	3-3/16"	Tomato & pineapple juice
No. 2 flat	2-1/4"	3-7/16"	
No. 2 short	4"	3-7/16"	Peas, corn, string beans, fruits
No. 2	4-9/16"	3-7/16"	
No. 2 1/2	4-11/16"	4-1/16"	Fruits
No. 3	4-7/8"	4-1/4"	
No. 10	7"	6-3/16"	Fruits
Gallon	8-3/4"	6-3/16"	Limited extent for olives, fruits & vegetables
No. 1 square	3-1/2"	3 x 3-1/2"	
No. 2 1/2 square	6-1/4"	3 x 3-1/2"	

Condensed/Evaporated Milk Cans--Chronology for Dating Historical Sites (Don Simonis)

Type	Diameter	Height	Cap Diam.	End Seams	Side Seams	Dates
1	3.0	3 4/16	1 12/16	S	S	1875-1885
2	2 15/16	3 5/16	1 9/16	S	S	1885-1903
3	2 15/16	4 6/16	1 12/16	S	S	1885-1903
4	2 15/16	3 5/16, 4 6/16	1 4/16	C/S	C	1903-1908
5	2 8/16	2 8/16	1.0	C	C	1903-1914
6	2 15/16	4 6/16	1 1/16	C	C	1903-1914
7	1 15/16	4 6/16	12/16, 7/16	C	C	1908-1914
8	1 8/16	2 8/16	M	C	C	1915-1925
9	2 8/16	2 7/16	M	C	C	1920-1930
10	2 15/16	4 6/16	M	C	C	1915-1930
11	2 8/16	2 6/16	M	C	C	1917-1930
12	2 8/16	2 6/16	M	(4 rings embossed)	C	1931-1948
13	2 15/16	4 4/16	M	C	C	1917-1929
14	2 15/16	4.0	M	C	C	1917-1929
15	2 15/16	3 14/16	M	C	C	1917-1929
16	2 7/16	2 7/16	M	C	C	1931-1948
17	2 15/16	3 14/16	M	("Punch here" embossed)		1935-1945
18	2 7/16	2 8/16	M	C	C	1920-1931
19	2 15/16	3 14.5/16	M (if with raised rings then 1945-1950[?])	C	C	1950-present
20	2 8/16	2 5/16	M	C	C	1950-present

Types 1 and 2 condensed milk, so will be cut out, not punch holes, etc.

"N. YORK" until 1900, then "BORDEN"

M- match stick filler solder on raised circle (post hole and cap); still used today in milk cans.

S- soldered seams used on early cans.

C- crimped seams on later cans.