W. REDHEFFER.

Churn.

No. 166,893. Patented Aug. 17, 1875.

Fig. 1.

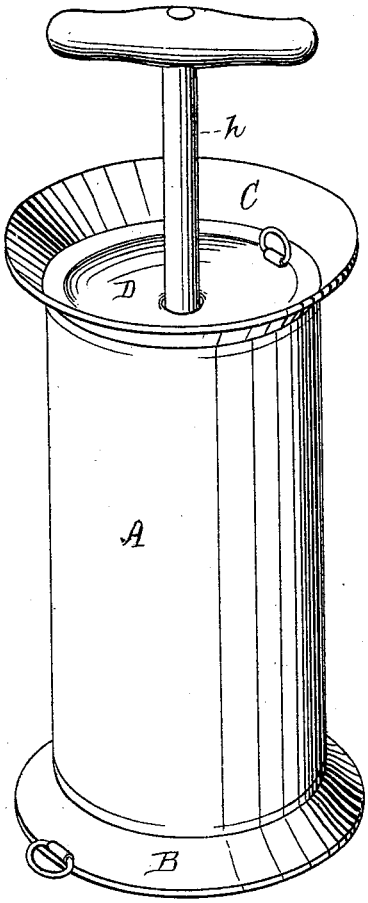
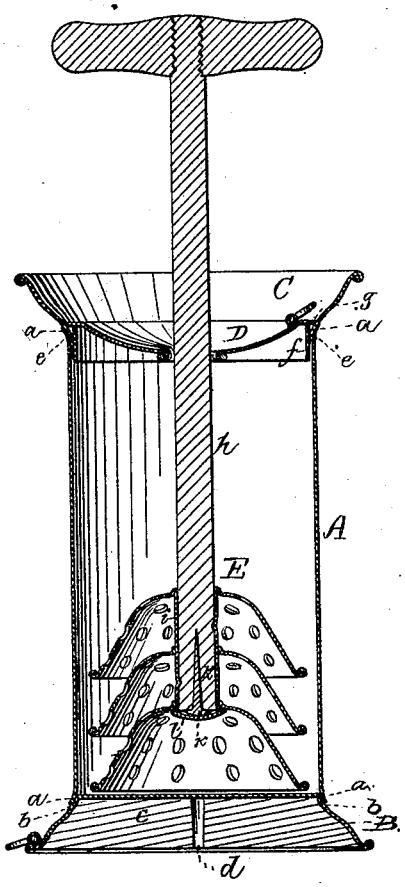


Fig. 2.



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UNITED STATES PATENT OFFICE.

WILLIAM REDHEFFER, OF ST. LOUIS, ASSIGNOR OF TWO-THIRDS HIS RIGHT TO WASHINGTON H. CHICK, OF ST. LOUIS, AND JOSEPH S. CHICK, OF KANSAS CITY, MISSOURI.

IMPROVEMENT IN CHURNS.

Specification forming part of Letters Patent No. **166,893**, dated August 17, 1875; application filed December 4, 1874.

To all whom it may concern:

Be it known that I, WILLIAM REDHEFFER, of the city and county of St. Louis, in the State of Missouri, have invented certain new and useful Improvements in Churns; and I do hereby declare that the following specification, taken in connection with the drawings furnished and forming a part of the same, is a clear, true, and accurate description thereof.

My said improvements relate to certain novelties in the construction of reciprocating tin churns, whereby they are rendered of great practicable durability.

It is well known that churns composed of wood are difficult to be kept clean and sweet, and that butter is particularly susceptible to injury in the absorption of objectionable odors and flavors. With a view to avoiding the liability of thus injuring butter, churns have been made of various materials, such as stone, iron, and commercial tin-plate. This latter article is particularly suited to the purpose, as it has a fine, smooth finish, is a good conductor of heat, and is light and readily kept clean and neat. Owing to the fact, however, that they are necessarily subjected to severe usage during the butter-making operations, tin churns, as heretofore constructed, have been short-lived, and, although preferable to any others in almost every other respect, they have been reluctantly abandoned on account of their non-durable character.

My invention consists, first, in a churn-cylinder of tin-plate, provided with outward-turned flanges at each end, a seamless flanged rim, and a seamless flanged base, both composed of tin-plate, and respectively telescoped to the cylinder-flanges, and soldered thereto, whereby the cylinder is directly braced by its end flanges and the telescoped joints of the rim and base; second, in a cap or cover which is stamped into a cup form, projecting downward into the cylinder, and provided with a dasher-handle aperture, which is surrounded by an iron ring soldered to the cover, whereby the cover, however tight and close it may be fitted, may be removed from the cylinder by means of a sharp upward blow from the dasher, without in any manner injuriously affecting the cover; third, in a novel manner of mounting upon a wooden handle such beaters as are described in my Letters Patent No. 146,710, dated January 20, 1874.

To more particularly describe my invention, I will refer to the accompanying drawings, in which—

Figure 1 represents in perspective one of my churns. Fig. 2 represents the same in vertical central section.

A denotes the cylinder of the churn, preferably made with a single vertical seam. After this seam has been soldered the flanges *a* are made at each end by means of tools well known in the art. By means of these flanges alone the cylinder is rendered quite rigid. B denotes the base. The molded flange and the bottom of the can are composed of one piece of tin-plate struck up in dies, wherein the annular shoulder *b* is formed, having an outline slightly within the interior line of the cylinder at the flanges *a*, so that when they are brought together, as shown, a telescopic joint is formed, which, when soldered, is one of great rigidity, strength, and durability.

It will be seen that the downward thrust of the cylinder on the base is borne by the flange throughout its width, instead of being borne by its edge, as is common with similar structures of tin, as heretofore constructed.

The outer periphery of the base may be strengthened by a turned edge after the manner of "false wiring," or an iron wire ring may be soldered thereto in manner well known. For purpose of increasing its strength and solidity without materially adding to its weight, I fit to the concave side of the base a wooden core, *c*, turned to conform to the contour of the flange, and secured in position by means of lugs soldered to the flange, as shown.

It is sometimes advisable to attain the desired temperature for churning by partially immersing the churn in water contained in a tub, and for the purpose of allowing the water to freely leave the spaces between the flange and core when the churn is removed from the tub the central hole *d* is provided. The bottom of the core is not inclosed, and therefore can be readily dried after use.

C denotes the rim-flange. For economy in manufacture I make the rim-flange a counterpart of the base, so that both may be cut and formed by the same dies. An annular opening is cut therein, and the downwardly-turned flange at *e* so formed that it will accurately fit the interior of the cylinder, and afford an outer periphery corresponding to the inner periphery of the cylinder-flange. When well soldered a joint is formed with strength equal to that of the joint at the base.

D denotes the cap or cover. It is composed of a plate struck up in dies in a cup form, and is provided with the usual flanges *f* and *g*, for tight connection with the cylinder. The center of the cap or cover projects downward into the cylinder. The dasher-handle hole is in the center of the cap, and is surrounded with an iron ring soldered to the lower surface. This ring affords an abutment, against which a blow is delivered by the upper end of the dasher or beater, when the cover is to be removed, and the ring, in connection with the concave form of the cover, admits of this frequent operation without possible injury to the cover. It is well known that the cover should fit tightly, and effect a close joint with the can, and that its withdrawal would be difficult without some such aid as is afforded by bringing the dasher into this service, as described.

E denotes the beater or dasher. It is composed of two or more hollow frustums of cones, constructed substantially in accordance with Letters Patent issued to me January 20, 1874, No. 146,710. The novelty in my present invention relative thereto consists in a novel method of mounting and securing the hollow frustums on the wooden dasher-handle *h*, so that no wooden surface is exposed thereon throughout the length of the dasher, whereby it may be readily cleaned, and also so that no portion thereof may become charged with stale cream or other fluids.

Each hollow frustum is perforated, as shown, and is struck up in dies from one piece of tin. The lower edges should be strengthened by false wiring or equivalent means. A tight tube, *i*, of tin of proper length is fitted to the handle, and a large-headed nail or screw, as at *k*, is driven endwise in the wood, which so expands it as to tightly wedge the tube thereon. The tube may be slightly tapered, and larger at its lower end, so that the end of the handle will fill it after the manner of dovetailing. The upper dasher is then placed adjacent to the top of the tube, and soldered from below, the solder filling and surrounding the top edge of the tube, and making the joint with the wood a tight one. Should there be any space between the handle and this frustum it will be advisable to fill it with white lead in oil, so as to secure a positively tight joint. The second frustum is then located and firmly soldered. The lower one is then put into position adjacent to the lower end of the tube and soldered. Then the button-plate at *l* is soldered, whereby the end of the wood and the nail or screw head is inclosed.

It will be seen that the handle and tube are secured against longitudinal thrusts, as follows: In the upward by the expanded handle in the tube, and against downward thrust by the button-plate at the end of the handle and the frictional contact of the expanded wood with the interior of the wood. Additional unity may be effected by indentation of the tube into the wood. When this method is adopted care should be taken not to have the indentations perforate the metal, nor afford cavities for the retention of cream, &c. The dasher-handle is provided with a cross-bar, which is connected therewith by means of a screw.

It will be seen that all the parts of the dasher may be readily cleansed, as it has none but bright smooth metallic surfaces, and has no nooks or corners for the retention of cream, &c.

As a result of my invention I have been enabled to practically meet a demand for a tin churn which, with ordinary usage, will equal in durability any heretofore known to me, and one which requires but little labor to keep it in order. It is of importance that the handle be of wood in order to avoid disagreeable and injurious friction between it and the cap or cover, and also to render it as light as possible consistent with the strength required.

As to the effect in the churning operation of the hollow perforated frustums of cones, it is only necessary to say that the churning is rapidly and perfectly effected, because at each downward movement of the dasher numerous streams of cream are forced against the walls of the cylinder in such manner as to effect a speedy and thorough separation of the butter from the cream.

Having thus described my invention, I claim as new—

1. A churn-cylinder composed of tin-plate, constructed with flanged ends, and provided with a flanged base and a flanged rim, both of which are seamless, and which are united to the cylinder by a telescoped soldered joint, substantially as described.

2. The close-fitting concave tin-plate cap or cover of a reciprocating churn, with an iron abutting-ring at its center, substantially as described, whereby the removal of the cap may be effected without injury thereto by an upward blow of the dasher, as set forth.

3. The churn-dasher composed of the expanded wooden handle, the tube *i*, and plate *l*, in combination with the hollow frustums of cones, substantially as described.

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