

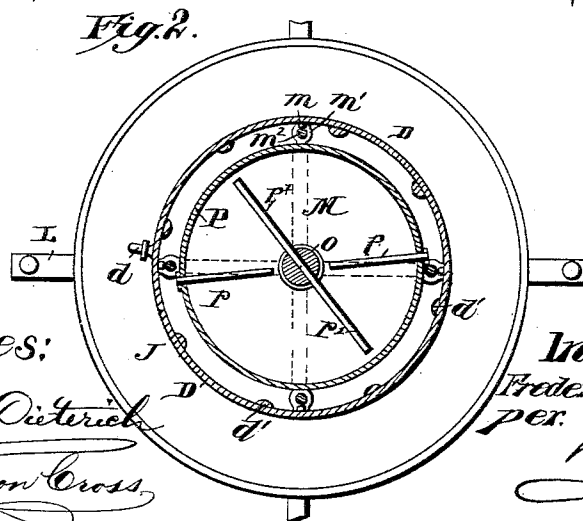
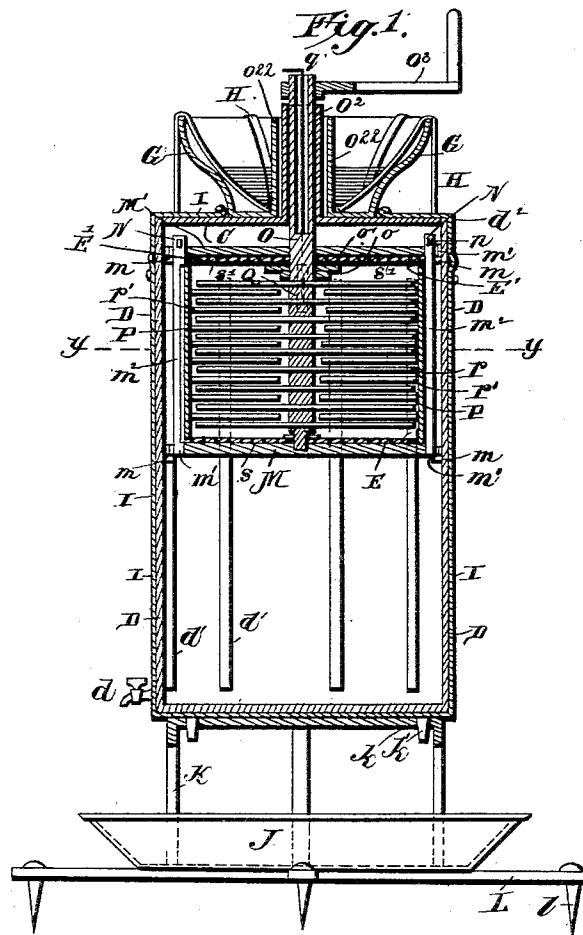
(No Model.)

2 Sheets—Sheet 1.

F. R. C. STRÜVER.
BUTTER WORKER.

No. 476,429.

Patented June 7, 1892.



Witnesses:

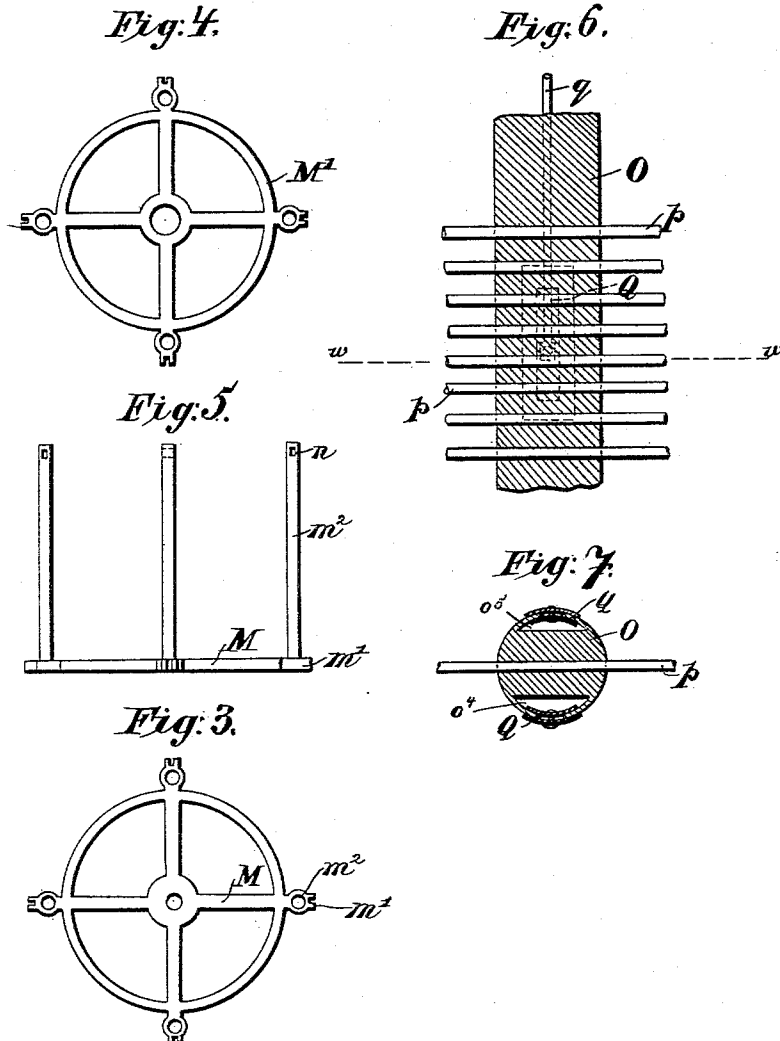
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UNITED STATES PATENT OFFICE

FREDERICK RUDOLPH CHRISTIAN STRÜVER, OF PINE CREEK, QUEENSLAND.

BUTTER-WORKER.

SPECIFICATION forming part of Letters Patent No. 476,429, dated June 7, 1892.

Application filed March 5, 1890. Serial No. 342,738. (No model.) Patented in New South Wales December 13, 1889, No. 1,917; in Victoria December 16, 1889, No. 7,350; in Tasmania December 21, 1889, No. 779; in New Zealand December 30, 1889, No. 4,152; in South Australia January 8, 1890, No. 1,493; in England January 27, 1890, No. 1,428; in France February 5, 1890, No. 203,583; in Germany February 6, 1890, No. 54,090; in Canada February 25, 1890, No. 33,782, and in Queensland June 18, 1890, No. 915.

To all whom it may concern:

Be it known that I, FREDERICK RUDOLPH CHRISTIAN STRÜVER, grazier, a subject of the Queen of Great Britain, residing at Pine Creek, Darling Downs, in the British colony of Queensland, have invented certain new and useful Improvements in Butter-Workers, (for which I have obtained Letters Patent in the following countries: Great Britain, dated January 27, 1890, No. 1,428; Germany, dated February 6, 1890, No. 54,090; France, dated February 5, 1890, No. 203,583; Dominion of Canada, dated February 25, 1890, No. 33,782; British Colony of Victoria, dated December 16, 1889, No. 7,350; British Colony of Queensland, dated June 18, 1890, No. 915; British Colony of New South Wales, dated December 13, 1889, No. 1,917; British Colony of South Australia, dated January 8, 1890, No. 1,493; British Colony of New Zealand, dated December 30, 1889, No. 4,152, and British Colony of Tasmania, dated December 21, 1889, No. 779,) of which the following is a specification.

The invention relates to apparatus for removing from freshly-churned butter the buttermilk yet combined therewith or remaining therein, such apparatus being known under the appellation of "butter-workers;" and the invention consists in structural features and combinations of parts, as will now be fully described, reference being had to the accompanying drawings, in which—

Figure 1 is a vertical sectional view of my improved apparatus. Fig. 2 is a transverse section thereof taken about on line *y y* of Fig. 1. Fig. 3 is a top plan view of the frame that supports the butter-worker proper, the top ring being removed. Fig. 4 is a like view of said top ring, and Fig. 5 an elevation of the frame without the top ring. Fig. 6 is a sectional elevation of a portion of the revolvable shaft of the butter-working devices, and Fig. 7 is a section taken about on line *w w* of Fig. 6.

Similar letters of reference indicate like parts wherever they occur in the above-described figures of drawings.

D indicates a cylindrical vessel that is pref-

erably provided with vertical corrugations or ribs *d'* for the purpose of strengthening the same, and the said vessel has at its lower end a stop-cock *d* for drawing off the buttermilk worked out of the butter. The bottom of the vessel has feet or studs *k'*, that fit into holes *k*, formed in the top of a stool or support K, adapted to be set into a drip-pan J, which has radial arms L, provided with perforations, so that it may be bolted to a table or other support to prevent the pan from being accidentally displaced and the vessel D overturned, said vessel being set into the pan. The drip-pan J serves to collect the water dripping from the clothing of vessel D when cold water is supplied thereto as a cooling agent.

The stool K is composed of a ring provided with feet and of arms radiating from a center piece to the ring, said arms being provided with the perforations *k*, above referred to, for the feet *k'* of the vessel D. The object of this construction is to permit a free circulation of air over the greater part of the bottom of the vessel D to promote evaporation of the cooling liquid.

The vessel D has a cover C, that may be secured in any desired manner—as, for instance, by hasps and turn-buttons or in any other desired manner—so as to be readily removed from vessel D. The cover has a tubular journal *o*², projecting vertically and centrally therefrom for a similar bearing *o*²², formed centrally of a vessel G, that is to contain a cooling liquid—as, for instance, cold water—the cover C and vessel D being clothed with a suitable fabric I, such as felt or damask, to which the cooling liquid is fed from vessel G by capillary attraction through the medium of strips or ribbons H of like material. The supply of the cooling liquid—as, for instance, the cold water—to the clothing of the vessel D should be so regulated as to keep the said clothing moist or damp, but not saturated, so as to facilitate the evaporation, and this is readily accomplished by the use of a greater or less number of ribbons H, as will be readily understood.

Within the cylindrical vessel D are secured

two sets of brackets m and m' , of which I have shown four in each set. One of the sets of brackets is arranged about midway of the length of said vessel and the other near its upper edge, said brackets serving as bearings for the butter-working devices proper. These devices consist of a frame composed of a bottom and top ring M and M' , respectively, each of which has radial perforated lugs m' , provided with a slotted extension that fits into the brackets m and m' , respectively. In the perforations of the lugs of the lower ring M are secured the vertical connecting-rods m^2 , which rods are slotted at their upper end to receive a key N , said rods passing freely through the perforations in the radial lugs of the upper ring M' . The two rings M and M' are further provided with a central bearing for a vertical shaft O , that has a collar o , serving to support a washer o' , for purposes presently to be described. The shaft O , as shown in Fig. 1, extends upwardly and beyond the tubular journal o^2 of the cover C and carries a handle o^3 .

Within the described frame is placed an open-ended cylinder P , that has two vertical series or rows of radial arms p , projecting inwardly therefrom from opposite sides nearly to the shaft O , which latter has a corresponding series of radial arms p' , arranged to pass between the arms p when said shaft is rotated.

Before placing the butter to be worked in the butter-worker I first place a disk s of perforated sheet metal upon the lower ring M of the frame, and onto this a sheet of linen E , of greater diameter than the cylinder P , so that its overlapping edges may be tied around the lower end of the cylinder P . After the butter has been introduced into the said cylinder I place a sheet of linen E' upon the washer o' , whose overlapping edges are also tied around the upper end of cylinder P , and upon this sheet of linen E' , I place a disk of perforated sheet metal s' , and finally the top ring M' of the frame, and connect the whole by means of the locking-keys N , inserted into the slot n of the connecting rods or bars m^2 . By revolving the shaft O the butter contained in vessel P is subjected to a kneading process that removes the buttermilk therefrom, which percolates through the linen E and E' , and through the foraminous disks s and s' into cylinder D .

As shown in the drawings, the radial arms p and p' of the working-cylinder P and shaft O , respectively, are detachably connected with said parts, the arms p having a head at their outer end, so that they may be readily removed, while the arms p' are simply inserted into suitable openings in the shaft and held therein by frictional contact. It will also be observed that upon removal of the handle o^3 vessel G , cover C , and the locking-keys N , the upper ring M' of the frame may

be removed, and then the perforated disk s' , linen E , shaft O , and cylinder P , and finally the frame-ring M , perforated disk s , and linen E' , the radial arms p and p' , as abovestated, being removable from the cylinder and shaft O , respectively, all of the working parts, as well as the main cylinder d may be thoroughly and effectually cleansed.

The upper end of the shaft O is hollow to a point proximate to the upper frame-ring M' , from which point lead ducts o^4 o^5 down along opposite sides of said shaft to a point within the working cylinder P , said ducts having each a port opening into the cylinder, which ports are opened or closed by means of slide valves or gates Q , whose operating-rods q extend upwardly through the hollow or tubular portion of said shaft and are provided with a suitable handle. The object of this construction is to provide means for salting the butter, brine being introduced into the shaft, so that this operation may be performed simultaneously with the working of the butter, thereby avoiding the opening of the working cylinder for the introduction of the salt.

The vessel D , when constructed as described, may be used in the making of butter according to my method, as fully described in a divisional application for Letters Patent filed about November 12, 1891, Serial No. 411,720, so that after making the butter and removing the butter-making appliances, the butter-working appliances can be substituted therefor.

Of course it will be understood that the apparatus will be constructed of materials not affected by the acid in the buttermilk, and to this end galvanized or enameled sheet metal or porcelain-lined sheet metal may be employed.

I am aware that it is not new to clothe a vessel with a textile fabric and conduct a cooling liquid thereto by capillary attraction, and I do not desire to claim this feature, broadly; but

What I do claim is—

1. A butter-worker comprising a stationary working cylinder provided with foraminous heads and with inwardly-projecting radial arms, a shaft revoluble in said cylinder and having like arms arranged to pass between the arms of the cylinder, and an inclosing vessel of greater diameter and height than the working cylinder within which vessel said cylinder is detachably connected, for the purpose set forth.

2. A butter-worker comprising a stationary working cylinder provided with detachable foraminous heads and with inwardly-projecting radial arms, a shaft revoluble in said cylinder and provided with like arms arranged to pass between the arms on the cylinder, means for introducing brine into the working cylinder through the shaft, and an inclosing vessel of greater diameter and height than

the working cylinder, which latter is detachably supported in said vessel above the bottom thereof, for the purpose set forth.

3. A butter-worker comprising a stationary
5 working cylinder provided with foraminous heads and with inwardly-projecting radial arms, a shaft revoluble in said cylinder and also provided with radial arms adapted to pass between those of the cylinder, an inclosing
10 vessel of greater diameter and height than said cylinder, which latter is detachably supported in said vessel above the bottom thereof, and means, substantially such as described, for exteriorly cooling the inclosing
15 vessel, for the purpose set forth.

4. A butter-worker comprising a stationary working cylinder having detachable foraminous heads and inwardly-projecting radial arms, a shaft revoluble in said cylinder and
20 having like arms arranged to pass between those of the cylinder, the upper end of said shaft being tubular and having a port leading from said tubular portion into the working cylinder, a valve for said port, and an inclosing
25 cylinder of greater diameter than said

working cylinder, which latter is detachably supported in said vessel above the bottom thereof, for the purposes set forth.

5. The combination, in a butter-worker, with the working cylinder P, of the shaft O, 30 whose upper portion is tubular and provided with a port leading into the cylinder, a valve adapted to close said port, and a valve-rod extending through said tubular portion of the shaft, for the purpose set forth. 35

6. The combination, with the vessel D, provided with the brackets *m*, the butter-working cylinder P, supported from said brackets, the shaft O in said cylinder, and the cover C, provided with the tubular journal *o*² for the
40 said shaft, of the vessel G, provided with an axial bearing fitting around said journal *o*², for the purpose set forth.

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