

(No Model.)

2 Sheets—Sheet 1.

N. ROLLAND & H. FRANÇOIS.
CHURN.

No. 475,346.

Patented May 24, 1892.

Fig. 5.

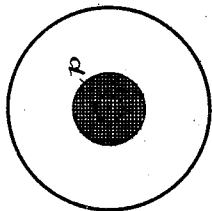


Fig. 4.

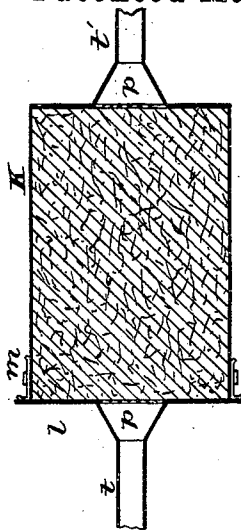


Fig. 2.

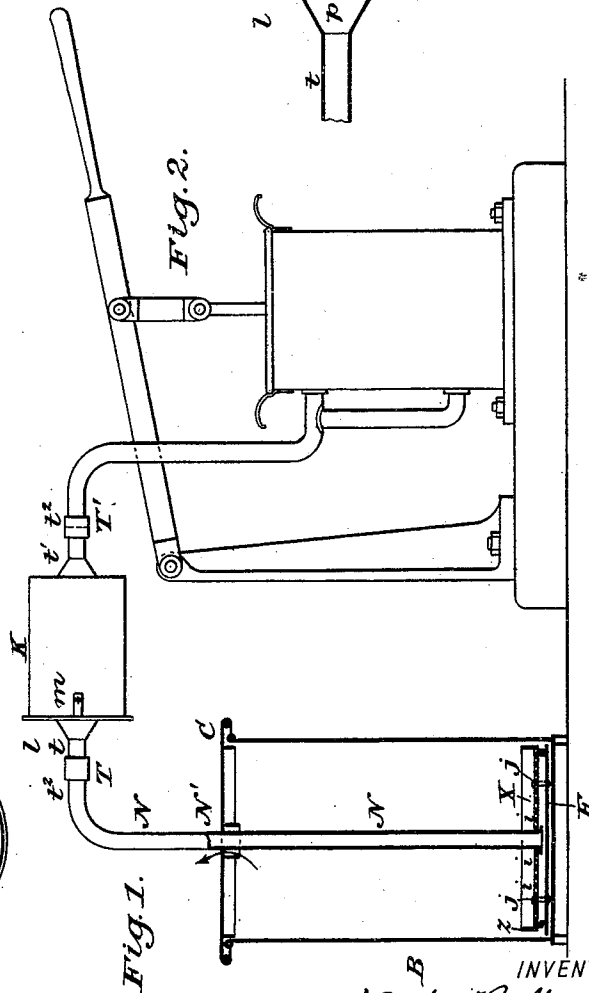
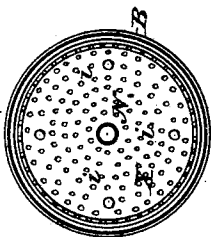


Fig. 1.

Fig. 3.



WITNESSES:

E. B. Bolton

M. A. Hatch.

INVENTORS:

Nestor Rolland
Hector Francois

BY

Richard Q.
ATTORNEYS

(No Model.)

2 Sheets—Sheet 2.

N. ROLLAND & H. FRANÇOIS.

CHURN.

No. 475,346.

Patented May 24, 1892.

Fig. 6.

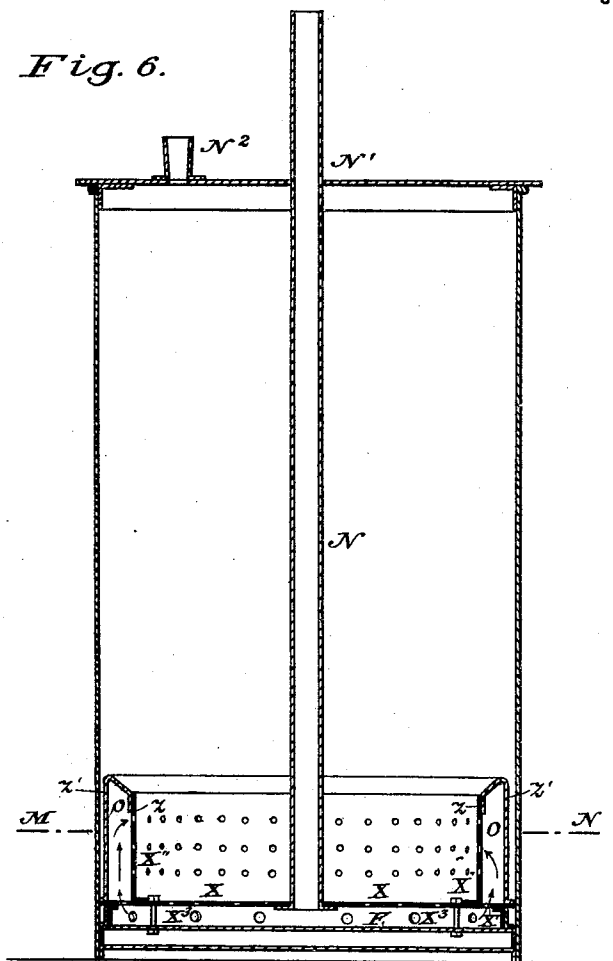
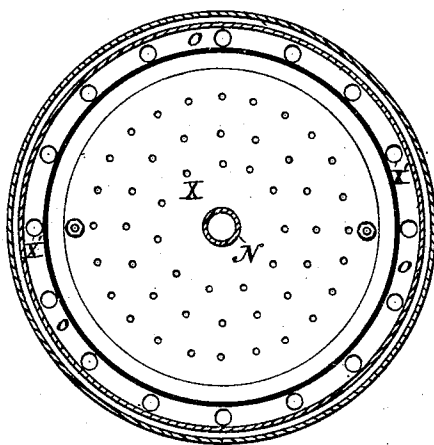


Fig. 7.



WITNESSES:

E. B. Colton
W. A. Walsh

INVENTORS.

Nestor Rolland
Hector François

BY

Richards & Co.
ATTORNEYS

UNITED STATES PATENT OFFICE.

NESTOR ROLLAND AND HECTOR FRANÇOIS, OF BRUSSELS, BELGIUM.

CHURN.

SPECIFICATION forming part of Letters Patent No. 475,346, dated May 24, 1892.

Application filed November 30, 1891. Serial No. 413,633. (No model.) Patented in Belgium January 19, 1891, No. 93,488, and August 24, 1891, No. 96,028; in Switzerland February 26, 1891, No. 3,553; in France March 7, 1891, No. 211,955; in Italy March 31, 1891, No. 131, and in Luxemburg September 8, 1891, No. 1,497.

To all whom it may concern:

Be it known that we, NESTOR ROLLAND and HECTOR FRANÇOIS, subjects of the King of Belgium, residing at Brussels, in said Kingdom, have invented certain new and useful Improvements in Churns, (for which Letters Patent have been granted in Belgium, dated January 19, 1891, No. 93,488, with patent of improvement, dated August 24, 1891, No. 96,028; in Luxemburg, dated September 8, 1891, No. 1,497; in France, dated March 7, 1891, No. 211,955; in Switzerland, dated February 26, 1891, No. 3,553, and in Italy, dated March 31, 1891, No. 131,) of which the following is a full, clear, and exact description.

The object of our invention is to provide a churn and means for passing a current of purified air through the same for the purpose of agitating and purifying the butter held in suspension in the milk.

In order to make our invention more clearly understood, we have shown in the accompanying drawings means for carrying the same into practical effect.

In said drawings, Figures 1 and 2 show, partly in section, the combination, with a churn, of an air-forcing device and the interposed air-purifier. Fig. 3 is a plan of an interior box with perforated cover. Fig. 4 is a section of the purifier. Fig. 5 is a view of an inner portion of the same. Fig. 6 shows an interior section and interior box with round perforated sides. Fig. 7 is a horizontal section through lines M N of Fig. 6.

The air-blower, Fig. 2, is of any known kind, having, preferably, a double action. Leading from this apparatus is a tube T T', which first passes through an opening N', larger than this tube and formed in the easily-removable cover of the churn B, and then ending in the bottom of the latter in a box made with two bottoms, the one X with perforations *i i i*, &c., completed by an annular rim *z*, also perforated, the other P provided with a rim, to which corresponds a lower rim of the bottom *x*, these two rims constituting thus the two sides of a box. Easily-detachable bolts *j* unite the bottoms X and F with one another. This box can during the churning rest in any suitable manner on the bottom of the churn,

leaving a space between the latter and the bottom of the box. The side Z Z, with perforations X'', can, as shown by Fig. 6, be completed by a second cylindrical chamber Z', forming with the first an annular chamber *o o*, which communicates (see the arrows) by proper openings X' with the space formed between the two false bottoms X and F. The tube N is fixed in a suitable manner to the bottom *x*.

N² is an air-regulator.

X³ are openings for the removal of the milk when after the manufacture of butter the false bottom or dish X F Z is withdrawn.

The air-purifier, Figs. 4 and 5, is a metallic receptacle, preferably cylindrical, with a cover *l*, held by a hook *m*, and which can be taken off and closed for the renewal of the wadding used for the purifying of the air. This receptacle is provided on each of its sides with a tubing *t t'*, before which a grating or sieve *p* is arranged, which gives passage to the air (see also Fig. 5) and hinders pieces of the wadding from penetrating into the air-tube. The wadding must fill the receptacle without, however, being too tightly packed. The two end tubings *t t'* go over the two corresponding parts of the conduit T T', which unites the air-blower to the churn. Appropriate joints or flexible sleeves *t'* are placed at the connection of the parts of the tube. The constitutive parts of the apparatus being thus explained, any one in the trade will easily understand the working and the advantages derived therefrom. The air brought under pressure by the air-blower passes through the wadding contained in the purifier K, arrives by the conduit N N in the space formed between the bottoms X F, escapes by the holes *i i*, traverses the milk or cream in the churn in thousands of bubbles, and produces an agitation and bubbling, thus effecting a healthy and rapid separation of the butter, which, as is known, is held in suspension in imperceptible globules. The air-bubbles attack simultaneously the butter matter in all the parts of the liquid *a*. The separation of the butter from the mass is done in a few minutes, no matter what the quantity of milk on which it operates, the quantity of air blown in being

always proportional to the section of the churn. The rapidity of the operation, together with the great quantity of pure air striking the milk in all its particles, has also the result that the beaten milk, instead of souring, remains like creamed-off milk without any after taste. When the butter is made—say in about eight minutes—to withdraw it from the churn the tube N N is unfastened from its sleeve t^2 , it is raised up, and the box X F is withdrawn from the churn, together with the basin Z, containing the butter. During the operation part of the milk can have escaped by the perforations of the wall Z. When the butter is taken out, the basin and the box X F are dismounted for the purpose of cleaning, the small quantities of butter which have formed between the two bottoms are withdrawn from the latter, and the box is put back into the bottom of the churn, after which the whole apparatus is put into working order as before. The modification in the manner of working by the use of the interior arrangement, Fig. 6, is the following: The blown-in air, coming, as previously, by the vertical tube N, spreads out in the space formed between the first two false bottoms X F, escapes partly vertically by the small holes X' of the bottom X, and in part it goes into the annular space O O, to be horizontally projected into the liquid by the small holes X'' of the interior wall $z z$. The result, in fact, is that the butter particles suspended in the milk and subjected simultaneously to the action of vertical and horizon-

tal air-jets unite and agglomerate very rapidly to form the mass of butter.

Having thus described our invention, what we claim is—

1. A churn for the production of butter by agitation with air-currents, consisting of a cylindrical body, a tubular dasher provided at its lower end with an imperforate plate, and an annular extension above said plate, the inner cylinder of said extension and the upper plate of the aerator being perforated to cause both vertical and horizontal jets, the parts being united and combined as shown, and said dasher connected at its upper portion with an air-forcing device.

2. A device for the agitation of cream, consisting of an air-forcing device, an air-filter, a cylindrical churn-body, a distributor composed of a tubular dasher provided at its lower end with an imperforate plate, and an annular extension above said plate, the inner cylinder of said extension and the upper plate of the aerator being perforated to cause both vertical and horizontal jets, the parts being united as shown.

In testimony whereof we have signed this specification in the presence of two subscribing witnesses.

NESTOR ROLLAND.
HECTOR FRANÇOIS.

Witnesses:

GEORGE BEDE,
GREGORY PHELAN.