

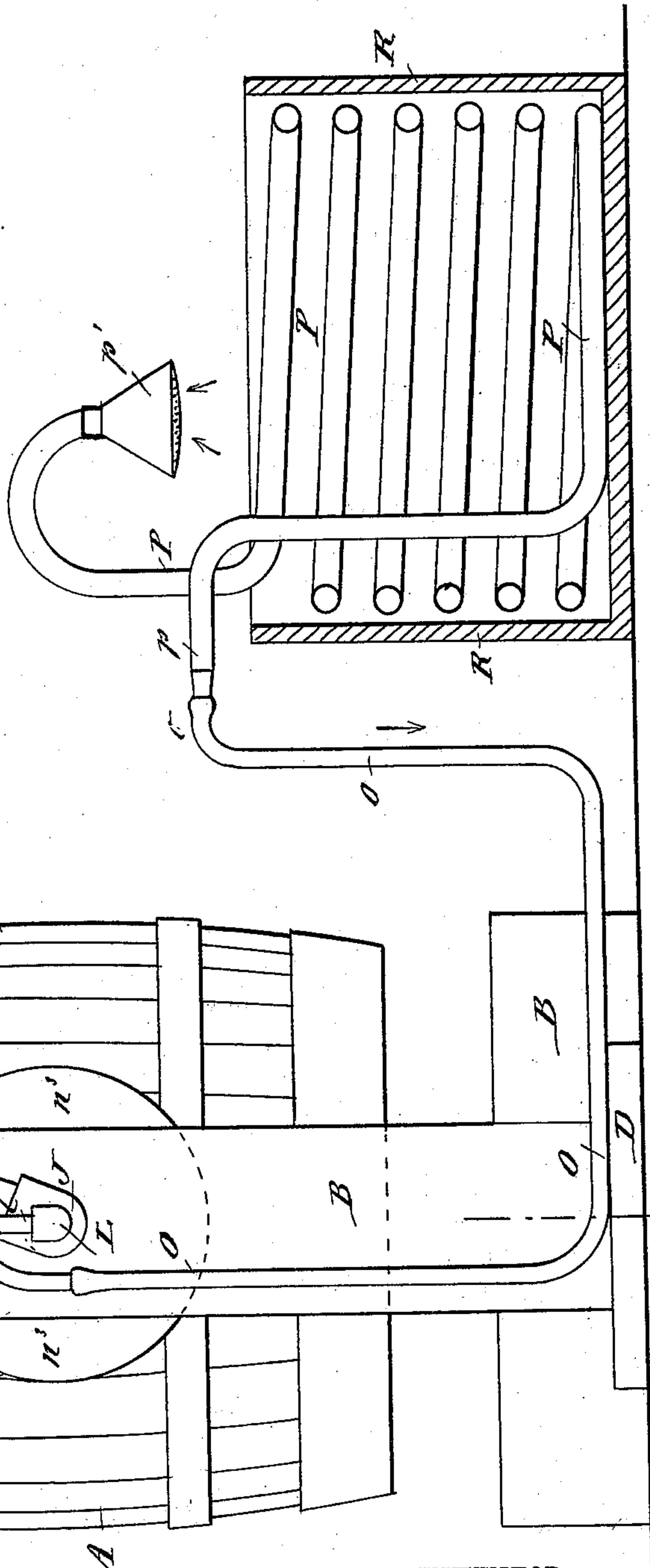
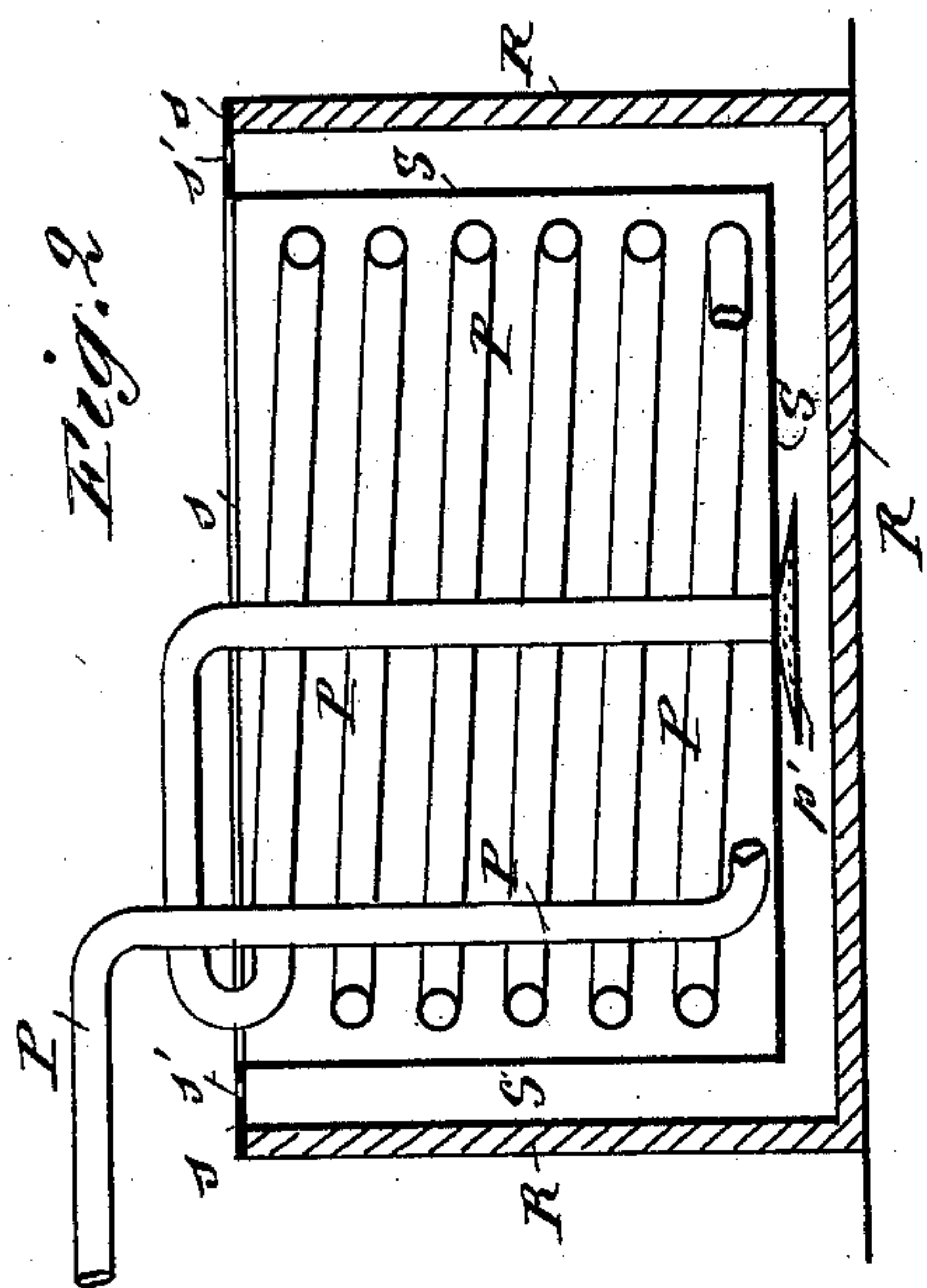
(No Model.)

2 Sheets—Sheet 1.

R. C. BOEKLER.
CHURN.

No. 364,793.

Patented June 14, 1887.



WITNESSES:

C. Neveu
C. Sedgwick

INVENTOR:

R. C. Boekler

BY

Munn & Co

ATTORNEYS.

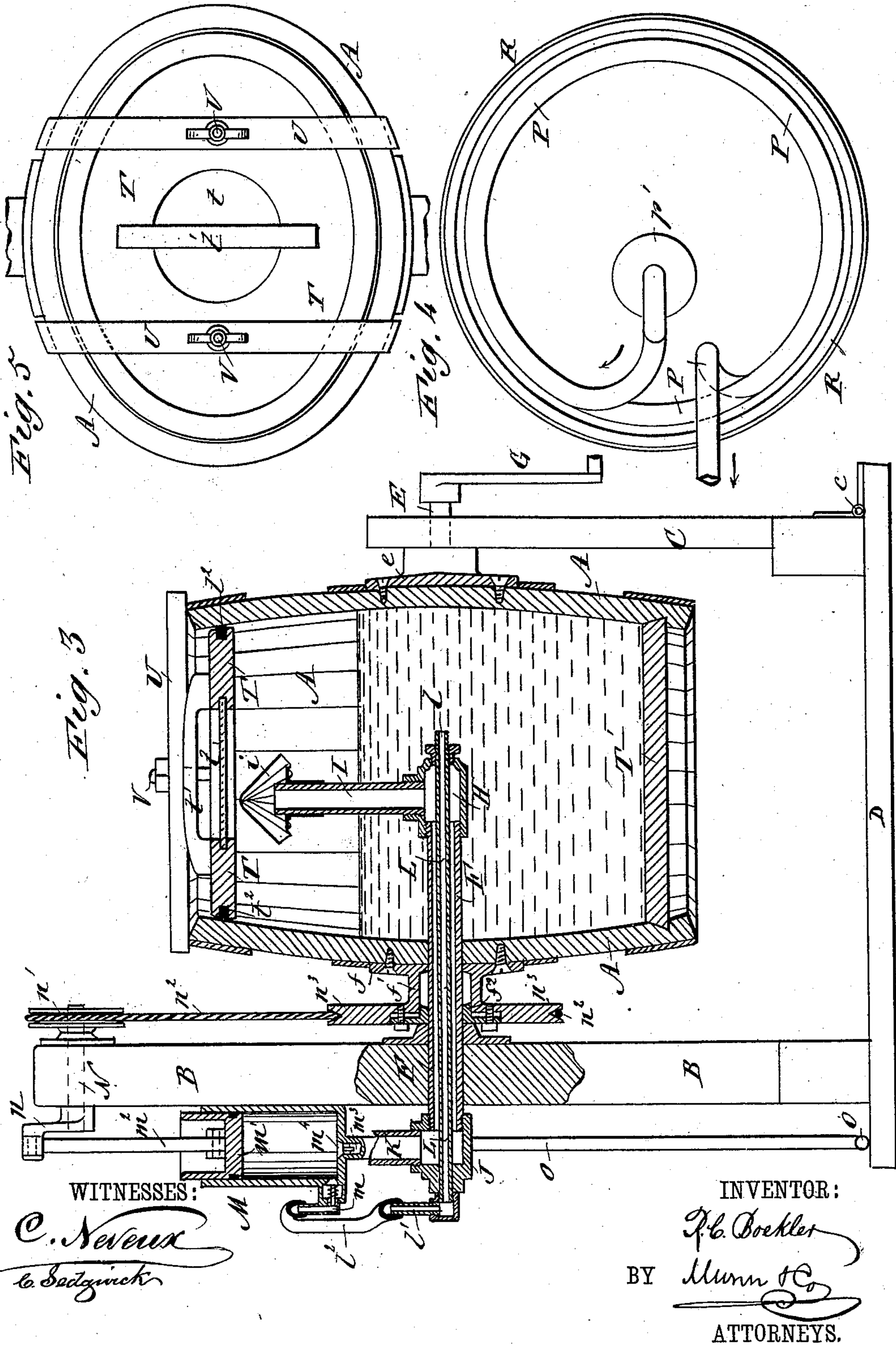
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UNITED STATES PATENT OFFICE.

ROBERT CONRAD BOEKLER, OF MANKATO, MINNESOTA.

CHURN.

SPECIFICATION forming part of Letters Patent No. 364,793, dated June 14, 1887.

Application filed January 11, 1887. Serial No. 224,067. (No model.)

To all whom it may concern:

Be it known that I, ROBERT CONRAD BOEKLER, of Mankato, in the county of Blue Earth and State of Minnesota, have invented a new and Improved Churn, of which the following is a full, clear, and exact description.

My invention relates to churning apparatus, and has for its object to provide a simple, inexpensive, and effective apparatus of this character, assuring practically perfect ventilation of the churn-body, and allowing close regulation of the temperature of the air-supply to the body, thus insuring proper action of the churn at all seasons for producing butter of the first quality with economy of time and labor.

The invention consists in certain novel features of construction and combinations of parts of the churning apparatus, all as hereinafter fully described and claimed.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a side elevation of my improved churn and a vertical sectional elevation of the temperature-regulating apparatus connected therewith. Fig. 2 is a vertical sectional elevation of a modified form of temperature-regulator. Fig. 3 is a vertical sectional elevation of the churn proper, taken at right angles to the same parts in Fig. 1, and partly broken away. Fig. 4 is a plan view of the temperature-regulator shown in Fig. 1, and Fig. 5 is a top view of the churn-body.

The churn-body A is preferably oval in cross-section, and is journaled to a main standard, B, and an opposite short standard, C. The standard B is fixed to a suitable base or platform, D, and the one C is hinged to the base at *e*, to allow the churn-body to be removed from its supports at any time for convenience in transportation or for other purpose. The journals of the churn-body consist of a shouldered shaft or gudgeon, E, fixed to a plate, *e*, secured to the side of the body, and having a bearing in the standard C, and the opposite journal F is a pipe or tube, which is fixed in the standard B, and on which the churn-body revolves, a metal plate, *f*, fixed to

the body, giving a good bearing on the journal, and to this plate *f* there is fixed a collar, *f'*, which with a gland, *f''*, forms a stuffing-box, which may be suitably packed to prevent escape of liquid from the churn-body where the journal F passes through it. A crank, G, fitted to the shaft E, may be operated to rotate the churn-body to agitate its contents.

To the inner end of the tube F there is secured a hollow head or coupling, H, to which is screwed a short vertically-ranging pipe, I, fitted with a cap, *i*, preferably having the conical crimped form shown and adapted to prevent passage of drip liquid into the tube F as the churn-body is rotated, but allowing free passage of gases and animal heat from the interior of the churn-body through the tube F. A coupling, J, is secured to the outer end of tube F, and a pipe, K, is screwed to the coupling J, and is preferably bent over at its top, whereat is fitted a rose-head, *k*, to prevent passage of flies or other insects to the inside of the churn.

Through the center of the tube F and through the couplings H J runs a pipe, L, which has no open communication with the tube F, but is open at its inner end, *l*, to the interior of the churn-body, and at its outer end is coupled by a short tube, *l'*, to a short pipe or tube, *l''*, which is preferably made of rubber, and is connected to the valved outlet or discharge-passage *m* of an air-pump, M, which is secured to the standard B, and is fitted with an ordinary packed piston, *m'*, which is connected by a rod, *m''*, with a crank-arm, *n*, on a shaft, N, journaled at the head of the standard B. This shaft N carries a grooved pulley, *n'*, over which a belt, *n''*, passes to a grooved pulley, *n'''*, fixed to the stuffing-box or the churn-body, and whereby as the body is turned by the crank G the pump will be operated.

The suction or inlet passage or pipe *m'''* of the pump M is fitted with an inwardly-opening valve, *m''''*, and to a pipe, *m''''''*, connected to the pipe *m'''*, there is attached one end of a pipe, O, preferably a flexible pipe, which extends to the upper or outer end, *p*, of a pipe-coil, P, fitted in a tub, R, standing at the most convenient place where the purest air may be drawn

through its other end, which is preferably fitted with a rose nozzle or strainer, p' , to prevent passage of insects or dust or other impurities with the air to the coil and thence to the pipe O, through which the air is drawn by the pump M, whence the air is discharged through the pipes t^2 L to the interior of the churn-body A.

In operating the churn it is obvious that while the gases and animal heat escape freely from the liquid in the churn-body through the pipes L, F, and K, a plentiful supply of fresh air will be discharged to the interior of the churn by the pump and pipe connections above described, to thoroughly aerate the liquid contents of the churn, and thereby promote the quick production of butter of the first quality. By placing ice in the tub R, around the pipe-coil P, the temperature of the air passing to the churn-body may be lowered in warm weather, or by supplying hot water to the tub R around the coil in cold weather the temperature of the air will be raised; hence it is possible to regulate the temperature of the air very closely, to assure proper working of the churn at all seasons of the year.

If desired, the pipe-coil P may be placed within a metal vessel, S, a couple of inches smaller every way than the tub R, and having a peripheral flange, s, resting on top of the tub to support it above the bottom thereof, as in Fig. 2 of the drawings. The flange s may have a series of perforations, s' , through it around the air-space between the vessel S and the tub R to admit air, although sufficient air-supply may be had between the flange and the top of the tub. With this arrangement the air-inlet end of the pipe-coil P may be extended down through the vessel S into the space between it and the bottom of the tub R, where it will be fitted with a flatter nozzle or strainer, p' , and whereby the air to be taken from the space between the vessel and the tub will already be considerably reduced in temperature.

The connection at o of the flexible pipe O with the pipe-coil P may easily be broken to allow the pipe to be hung from a window or other place to take air-supply without using the pipe-coil, and the nozzle or strainer p' will fit the end of the pipe O, thus barring insects therefrom. The pipe t^2 may also be easily disconnected from the tube t' , to allow water to be poured into said tube and thence through the pipe L into the churn-body when desired, and without removing the cover of the churn-body, which is peculiarly made, as next described. This cover T is fitted with a glass, t , allowing inspection of the contents of the churn-body, and also has a handle, t' , to lift and adjust it by. The cover is elliptical marginally to conform to the shape of the churn-body A, and is a trifle smaller than the opening at the top of the body, to allow a packing, t^2 , fitted to the margin of the cover to close tightly to the walls of the churn-body. A couple of cross-pieces, U U, are held loosely to the cover T

by nutted bolts V, and the cross-pieces are long enough to overlap the top of the churn-body at each side.

To apply the cover to the churn-body the cross-pieces U U will be turned to lie at their ends within the margin of the cover T, and the cover will be slipped edgewise into the churn-body, long edge first, and when the cover is drawn up flatwise, so that its packing t^2 binds against the walls of the churn-body, the cross-pieces U U will be turned to overlap the chine of the body, and when the nuts of the bolts V are tightened the cover will be drawn tightly to the churn-body, to prevent leakage of its liquid contents as the churn is operated.

If desired, the cover T may be made entirely of glass, and the other end or head, T' , of the churn-body may also be made of glass, to facilitate inspection of the contents of the body as the churning progresses.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination, in a churn, of a body, a gas-exit pipe entering the body and opening to its interior and to the outer air, an air-supply pipe passed through the gas-exit pipe, and a pump connected to the air-supply pipe to force air to the interior of the churn-body, substantially as described, for the purposes set forth.

2. The combination, in a churn, of a rotatable body, A, a pipe, F, forming one of its journals, and having communication with the interior of the body and the outer air, an air-supply pipe, L, passed through the pipe F and opening to the churn-body and to the outer air, and a pump supplying air to the churn-body through the pipe L, substantially as shown and described.

3. The combination, in a churn, of a body, A, a gas-exit pipe, F, couplings H J, pipes I K, an air-supply pipe, L, passed through the parts F H J, and a pump supplying air to the churn-body through the pipe L, substantially as shown and described.

4. The combination, in a churn, of a body, a pipe, F, communicating with the interior of the body and the outer air, an air-supply pipe, L, passed through the pipe F and opening to the interior of the body and to the outer air, an air-pump, and a detachable pipe, t' , connecting the pump-outlet and the pipe L, substantially as shown and described, whereby when the pipe t' is disconnected from the pipe L water may be poured through pipe L to the churn-body, as set forth.

5. The combination, in a churn, of a rotatable body, A, a pipe, F, forming one of the body-journals, a pipe, L, passing through the pipe F, an air-pump, connections therefrom to the pipe L, a cranked shaft, N, connected to the pump-piston, a pulley, n' , on said shaft, a pulley, n^3 , on the churn-body journal, and a belt, n^2 , connecting the pulleys $n' n^3$, substantially as shown

and described, whereby as the churn-body is rotated the gas may escape freely from it and fresh air will be pumped into it, as and for the purposes set forth.

5 6. The combination, with a churn comprising a body, A, pipes F L, an air-pump, and connections therefrom to the pipe L, substantially as specified, of a pipe, O, connected to the air-inlet of the pump, a tub or
10 vessel, R, and a pipe-coil, P, therein and connected to the pipe O, substantially as described, for the purposes set forth.

7. In a churning apparatus, an air-temperature regulator comprising a tub, R, a vessel, S, supported therein, a pipe-coil, P, in said 15 vessel and adapted for connection to a pipe conveying air to the churn-body, and said pipe P extending into the space between the tub R and vessel S, substantially as shown and described.

ROBERT CONRAD BOEKLER.

Witnesses:

P. A. FOSTER,

S. B. MARTIN.