

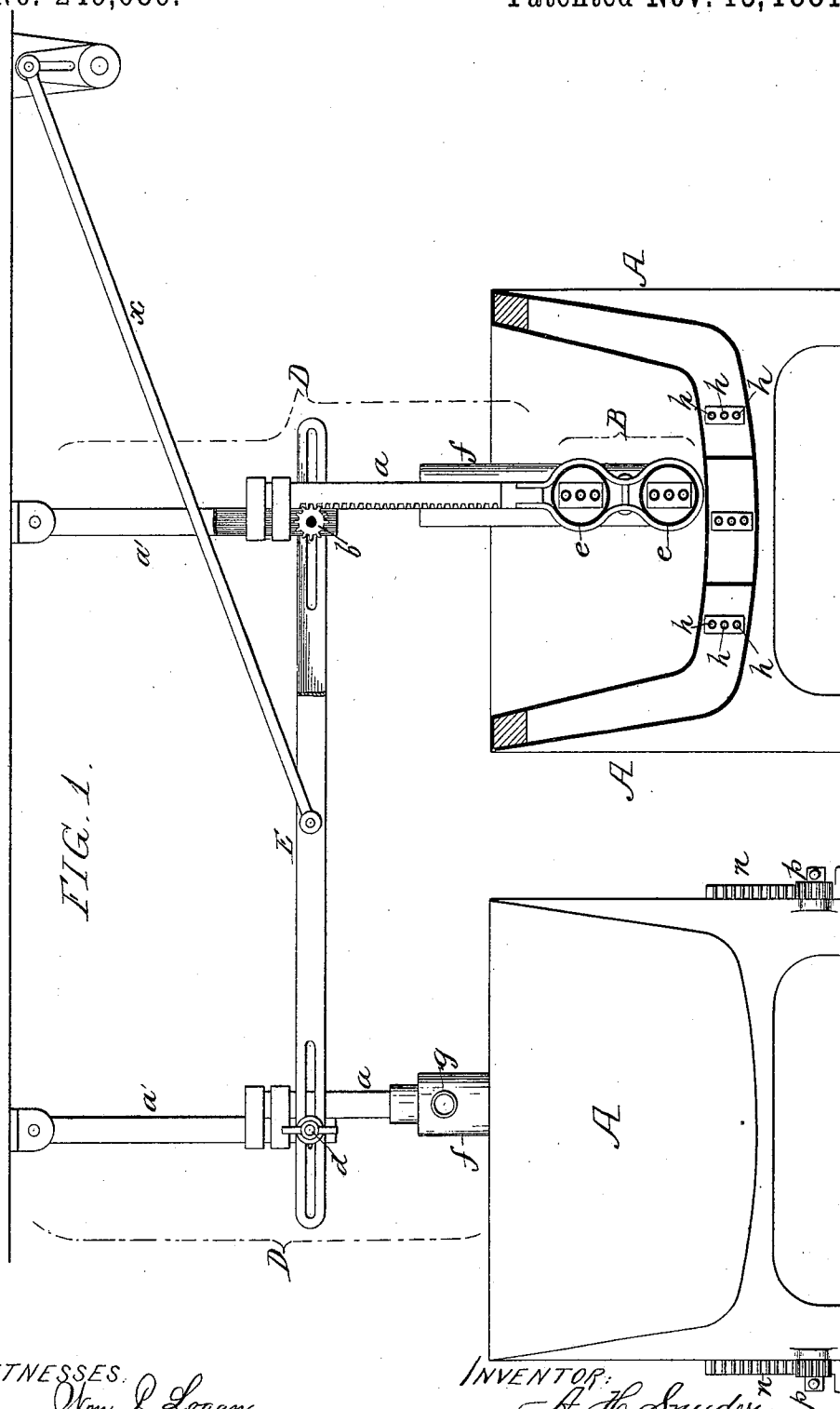
(No Model.)

2 Sheets—Sheet 1.

A. H. SNYDER.
MILK AND CHEESE VAT.

No. 249,686.

Patented Nov. 15, 1881.



WITNESSES.

Wm. L. Logan.
Harry Smith

INVENTOR:

A. H. Snyder
by his attorneys.
Howe, Manning & Co.

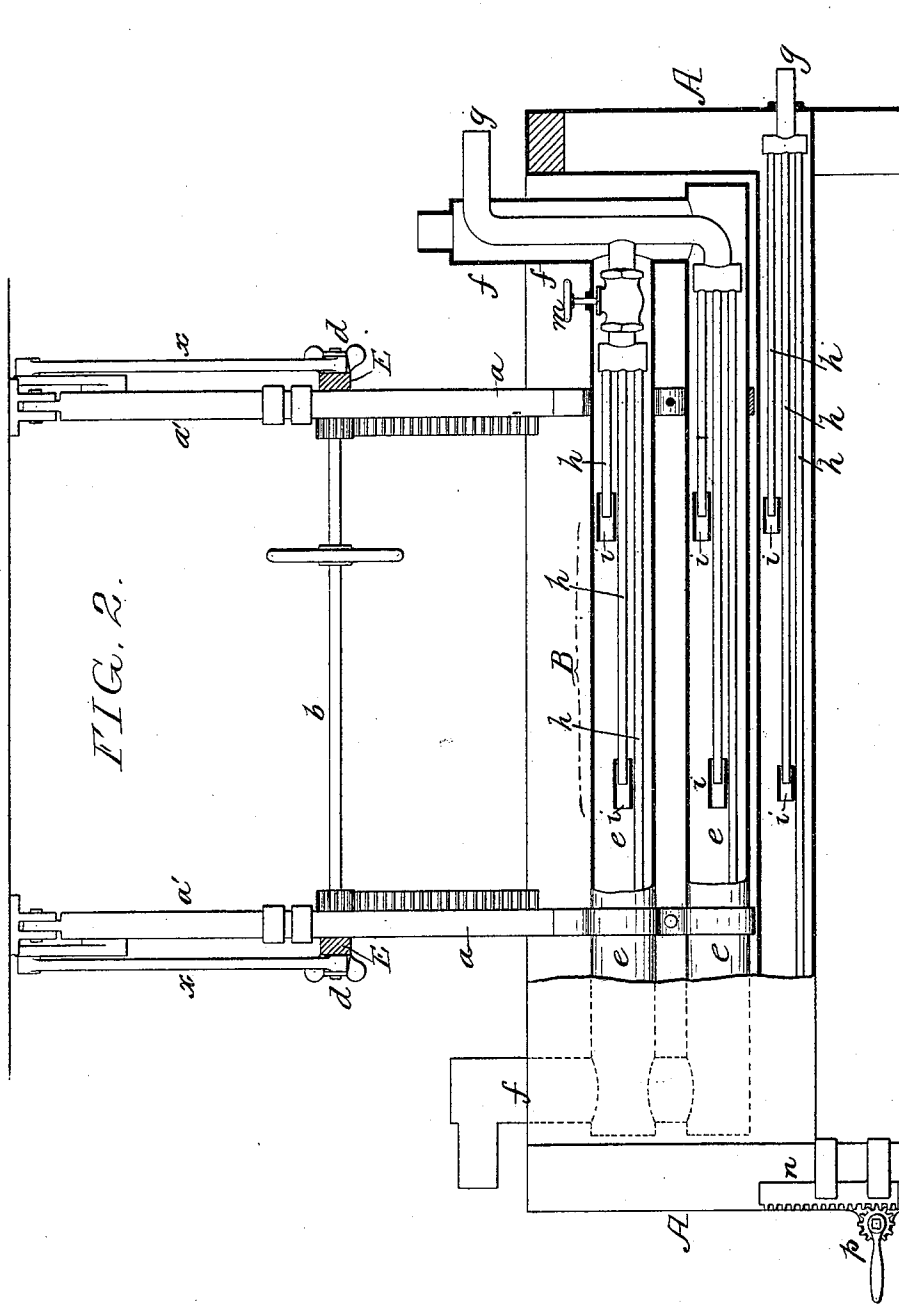
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UNITED STATES PATENT OFFICE.

AMOS H. SNYDER, OF RICHLAND TOWNSHIP, BUCKS COUNTY, PA.

MILK AND CHEESE VAT.

SPECIFICATION forming part of Letters Patent No. 249,686, dated November 15, 1881.

Application filed May 13, 1881. (No model.)

To all whom it may concern:

Be it known that I, AMOS H. SNYDER, a citizen of the United States, residing in Richland township, Bucks county, Pennsylvania, have invented certain Improvements in Milk and Cheese Vats, and in appliances connected therewith, of which the following is a specification.

My invention relates to certain improvements in the apparatus for warming or cooling milk for which Letters Patent of the United States No. 224,485 were granted to me February 10, 1880, the objects of my present improvements being too fully set forth hereinafter to need preliminary explanation.

In the accompanying drawings, Figure 1, Sheet 1, is a transverse section of apparatus in which my improvements are shown, and Fig. 2 a longitudinal section.

A A represent a pair of tanks, arranged side by side and as closely together as convenience will permit. In each of these tanks is an agitator, B, which is suspended from suitable bearings on the ceiling by means of a pair of arms, D D, so that said agitator is free to swing laterally within the tank. Each of the arms D consists of two sections, *a a'*, the section *a* being capable of moving vertically on the section *a'*, and being guided and steadied during this movement by suitable embracing straps or equivalent guides, and the movement being effected either by rack-and-pinion devices such as shown, or by a strap and drum or other equivalent means, suitable provision being made for retaining the sections *a* of the arms and the agitator B carried thereby in position after they have been elevated.

Power derived from a suitably-located shaft is transmitted to the arms D D of each agitator through the means of a crank, connecting-rods *x*, and two bars, E E, which extend from the suspending-arms D D, carrying the agitator of one tank A to the arms carrying the agitator of the other tank. The crank is preferably slotted, so as to vary the extent of vibration of the agitators. The bars E are connected to the arms D at points as close to the agitators B as convenient. In the present instance the bars are connected to the lower ends of the upper sections, *a'*, of the arms, the ends of each bar being slotted for the reception of the projecting

ends of the shafts *b*, which carry the pinions of the elevating mechanism, the outer ends of each shaft *b* being threaded for the reception of thumb-nuts *d*, whereby the bars E may be clamped to or released from the arms D, the slots in the bars being of such a length that when the clamping-nuts *d* are loosened the arms D will not be affected by the reciprocation of said bars. This mode of hanging and driving the agitators possesses several advantages. The connection of the driving mechanism to the suspending devices between the point of suspension and the agitator is the most effective method, as it enables the power to be applied as closely as possible to the point where it is to be utilized. The use of a separate operating rod or bar for each arm D of the suspending structure, moreover, insures longitudinal steadiness of the said structure and of the agitator carried thereby and prevents any twisting of the agitator in the tank.

By means of the operating-bars E, constructed and connected to the arms D as described, the agitators of both tanks may be vibrated in unison, or either of said agitators may be thrown out of gear without affecting the operation of the other, and the agitators may be raised and lowered without interfering with the action of the vibrating devices.

When but one tank is used the rods *x* may be connected directly to the arms D, or this plan may even be used in some cases where more than one tank is employed. The use of the bars E in the latter case, however, is always preferred for the reasons above given.

The agitator B, which I have shown in the present instance, is adapted to serve as a heater for the milk or curds, and is composed of two longitudinal tubes, *e*, connected at the opposite ends to vertical inlet and overflow tubes *f f*, one of the latter being provided with a steam-pipe, *g*, from which a number of branches, *h*, extend into each of the tubes *e*, the branches varying in length, so as to terminate at different points in the tubes and effect a uniform distribution of steam throughout the same, and a consequent uniform heating of the water therein. The heating of the water and the maintenance of the same at a uniform temperature are further facilitated by surrounding the end of each of the branches *h* of the pipe *g* with

a short tube, *i*, which is open at both ends, and is of a diameter somewhat greater than the branch *h*, the end of the latter projecting to the center, or about the center, of the tube, so that the jet from the same will induce a circulation of water through the tube. A series of currents within each tube or pipe *e* of the agitator is thus caused, and the steam is prevented from impinging directly upon the inner surfaces of the tubes *e*, thereby preventing the overheating of the latter and the burning of the milk.

The flow of steam to the branches in the upper pipe *e* is governed by a valve, *m*, so that the heating of the water in said upper tube may be discontinued without affecting the admission of steam to the lower tube.

When the device is used as a milk-cooler, cold water may be caused to pass through the pipe *g* and its branches, in place of steam.

Each tank *A* has a double casing inclosing a water-chamber, the water being heated by means similar to those employed in heating the tubes *e* of the agitator.

My invention is not limited to the use of the heating or cooling devices above described; nor do I claim said devices, as they are the invention of M. B. Snyder, and will form part of the subject-matter of a separate application.

The bottom of the tank is made in the arc of a circle of which the pivot-line of the supporting-arms *D* is the center. By this means the agitator is caused to move in close proximity to the bottom of the tank, and a thorough agitation of the milk or curds at this point is effected, all portions of the mass of milk or curds being thus brought under the heating action of the tank and of the agitator when the latter is heated.

In order that the tank *A* may be tilted when desired, I provide the frame of the tank at one end with guided racks *n*, which are actuated by pinions *p*, the shafts of which are adapted to bearings on the frame, and are furnished with arms or levers, whereby they may be caused to partly turn in order to elevate or depress the racks. A single shaft having a single arm and carrying both pinions may sometimes be used.

I claim as my invention—

1. The combination of the tank and the agitator adapted thereto with a pivoted suspension-arm, *D*, made in two parts, *a* *a'*, the lower part, *a*, being adjustable on and guided by the upper part, *a'*, and with an operating-rod connected to the lower end of the portion *a'* of the said suspension-arm below the guides, as set forth.

2. The combination of two or more tanks, *A*, each containing an agitator adapted to be vibrated laterally in the tank, suspending devices for said agitators, and a rod or rods, *E*, connecting the suspending devices of two or more agitators, but capable of being readily released therefrom, as set forth.

3. The combination of two or more tanks, *A*, agitators *B* therein, suspending devices for said agitators, and an arm or arms, *E*, connecting the suspending devices of two or more agitators, and slotted for the reception of the securing-bolts, as set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

AMOS H. SNYDER.

Witnesses:

WM. P. LOGAN,
HARRY SMITH.