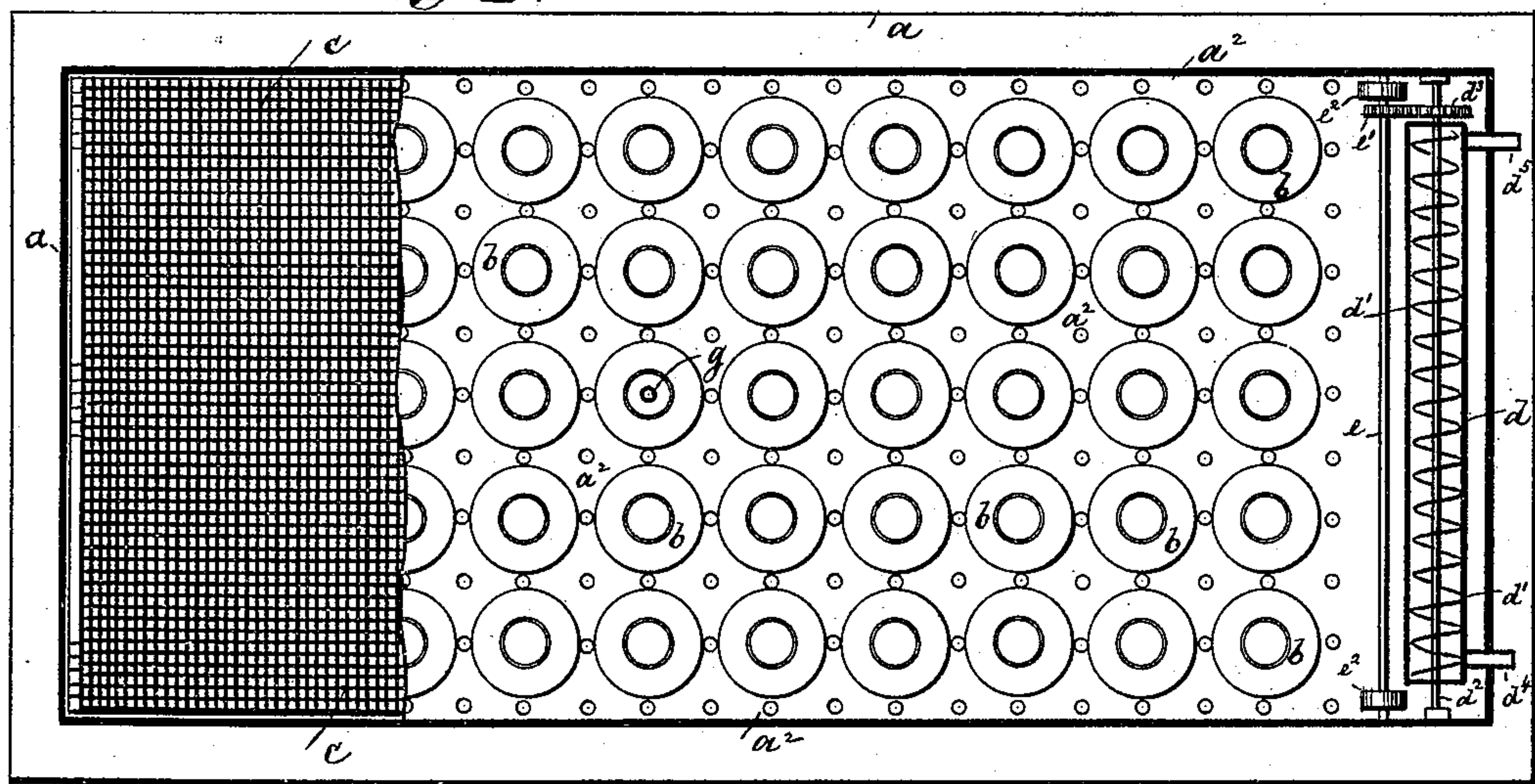
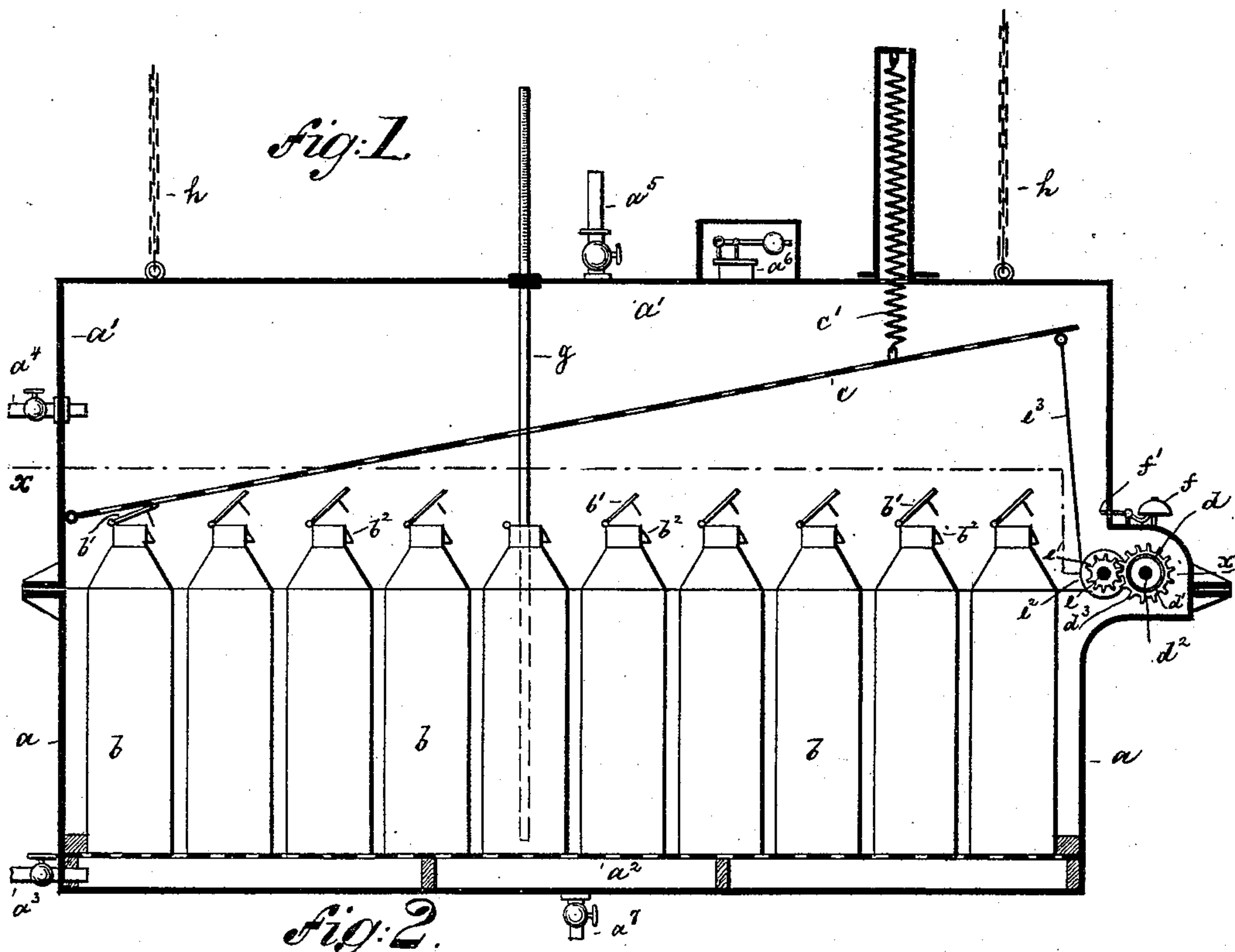


(No Model.)

F. KRÄMER.  
APPARATUS FOR STERILIZING MILK.

No. 475,122.

Patented May 17, 1892.



WITNESSES:

*A. Schehl.*  
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INVENTOR

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# UNITED STATES PATENT OFFICE.

FRANZ KRÄMER, OF NEW YORK, N. Y., ASSIGNOR TO LUDWIG MERKLEIM,  
OF SAME PLACE.

## APPARATUS FOR STERILIZING MILK.

SPECIFICATION forming part of Letters Patent No. 475,122, dated May 17, 1892.

Application filed December 11, 1891. Serial No. 414,655. (No model.)

*To all whom it may concern:*

Be it known that I, FRANZ KRÄMER, of New York city, New York, have invented an Improved Apparatus for Sterilizing Milk, of which the following is a specification.

This invention relates to an improved apparatus for sterilizing milk by subjecting the latter to the action of steam.

It consists in the various features of improvement, more fully pointed out in the claims.

In the accompanying drawings, Figure 1 is a vertical longitudinal section of the apparatus; Fig. 2, a horizontal section on line  $x x$ , Fig. 1.

The letter  $a$  represents a vessel that may be closed steam-tight by cover  $a'$ , and that is provided with an open false bottom  $a^2$ . Upon this false bottom are adapted to be placed the milk-cans  $b$ , having hinged covers  $b'$ . The cans are provided with catches  $b^2$ , that hold the covers closed when forced down. Above the cans  $b$  is hinged within the cover  $a'$  a perforated lid  $c$ , normally held up by a spring  $c'$ . To draw this lid down upon the can-covers  $b'$ , and to thus close the cans at the end of the sterilizing process, the following construction is employed: Through the vessel  $a$  there extends a tube  $d$ , in which is placed a worm  $d'$ . This worm is fixed upon its shaft  $d^2$ , revolving in suitable bearings. Upon the shaft  $d^2$  is keyed a gear-wheel  $d^3$ , engaging a gear-wheel  $e'$  fast on a shaft  $e$ , hung by the side of shaft  $d^2$ . The shaft  $e$  is provided with a pair of pulleys  $e^2$ , around which pass chains  $e^3$ , attached to the two free corners of the lid  $c$ . To revolve the worm  $d'$ , steam is admitted into the tube  $d$  at  $d^4$ , which is discharged at  $d^5$ . The revolution of the worm will cause a revolution of pulleys  $e^2$ , that will wind up the chains  $e^3$  and thus draw down the lid  $c$  upon the cans  $b$ . As the lid bears upon the covers  $b'$  it will close the same and they will be held in their closed position by the catches  $b^2$ . As soon as the cans have been closed, an alarm  $f$  will be sounded, that is set off by the lid  $c$  striking a lever  $f'$ .

The vessel  $a$  is provided with a steam-inlet  $a^3$ , and the cover  $a'$  is provided with a similar inlet  $a^4$ .

$a^5$  is the steam-outlet,  $a^6$  the safety-valve, and  $a^7$  the cock for the escape of the condensed steam.

In use steam is admitted through inlets  $a^3$   $a^4$ , and will pass through the perforated false bottom  $a^2$  and the perforated lid  $c$ , to properly sterilize the milk. As soon as the milk has been subjected to the action of the steam for the proper time and to the proper temperature, (which can be ascertained by a thermometer  $g$ ,) the lid  $c$  is drawn down in the manner described by admitting steam into the tube  $d$ . Thus the cans  $b$  are all automatically and successively closed. The steam is then shut off at  $d^4$ , so as to stop the worm and to enable the spring  $c'$  to draw up the lid  $c$ . Next the cover  $a'$  is raised off the vessel  $a$  by means of suitable chains  $h$ , that suspend it from the ceiling. The cans  $b$  can now be removed and are ready for the market.

What I claim is—

1. The combination of vessel  $a$ , having cover  $a'$ , with perforated false bottom  $a^2$ , an inner perforated lid  $c$ , hinged at one end, a revolving shaft  $e$ , pulleys  $e^2$ , and chains  $e^3$ , connected to the free end of the lid to draw the lid down on its hinge, substantially as specified.

2. The combination of vessel  $a$ , having cover  $a'$ , with hinged lid  $c$ , a tube  $d$ , a worm within said tube, pulleys  $e^2$ , operated by the worm and with chains  $e^3$ , connecting the pulleys with the hinged lid, substantially as specified.

3. The combination of vessel  $a$ , having cover  $a'$ , with hinged lid  $c$ , tube  $d$ , worm  $d'$ , gear-wheel  $d^3$ , shaft  $e$ , gear-wheel  $e'$ , pulleys  $e^2$ , and with the chains  $e^3$ , connecting the pulleys with the hinged lid, substantially as specified.

FRANZ KRÄMER.

Witnesses:

F. V. BRIESEN,  
A. JONGHMANS.