

O. SMITH.
AUTOMATIC EGG-BOILER.

No. 192,946.

Patented July 10, 1877.

Fig 1

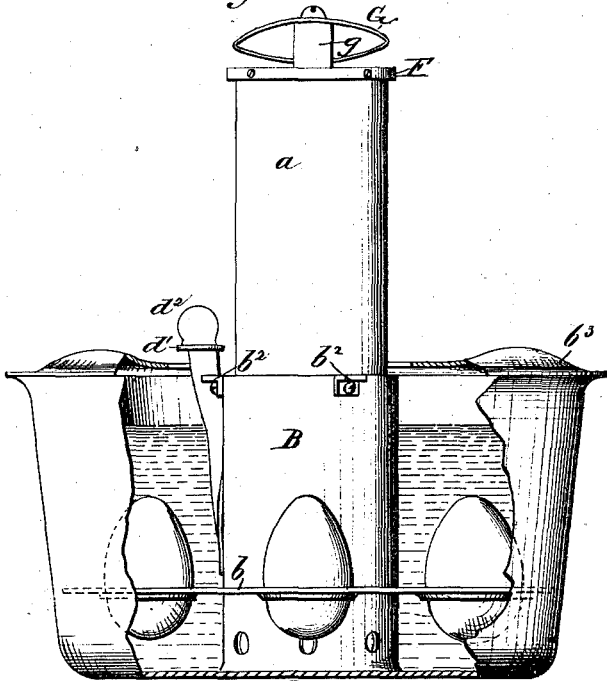
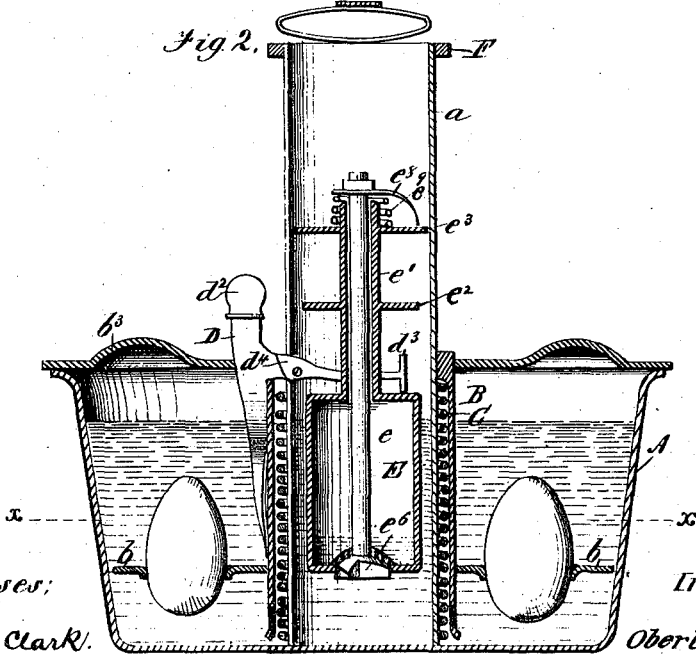


Fig 2.



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Fig. 3.

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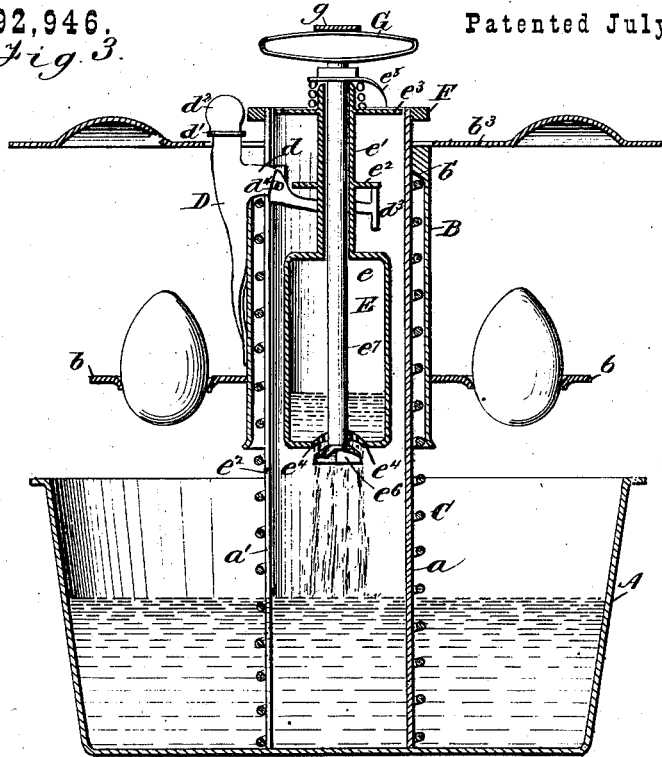
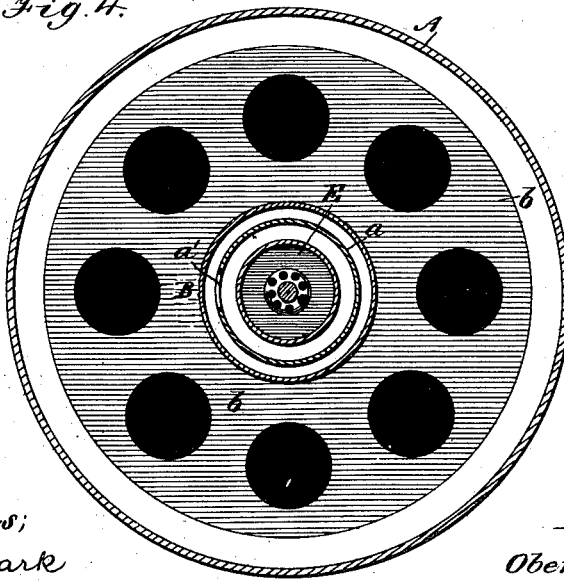


Fig. 4.



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Fig 5

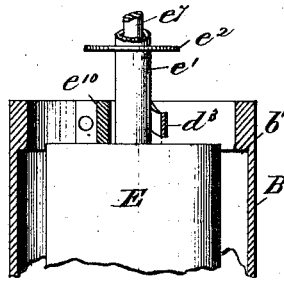


Fig 6

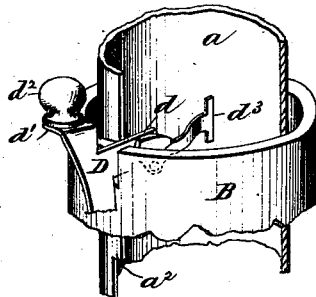


Fig 7

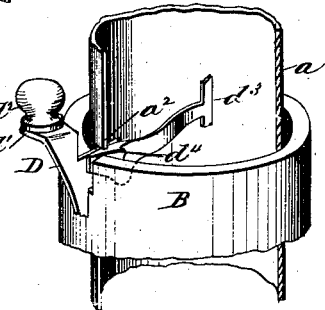


Fig 10

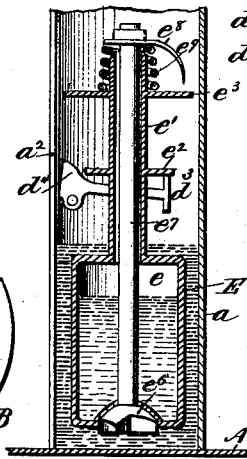


Fig 8

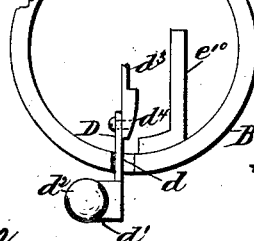


Fig 9

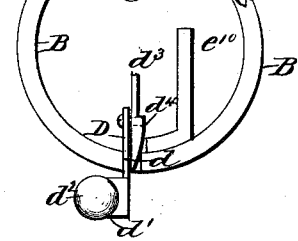


Fig 12

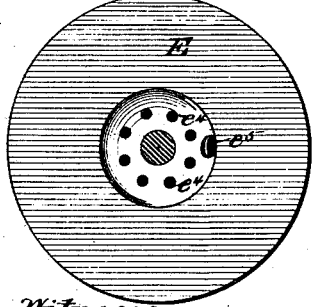


Fig 11

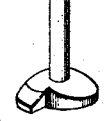


Fig 13

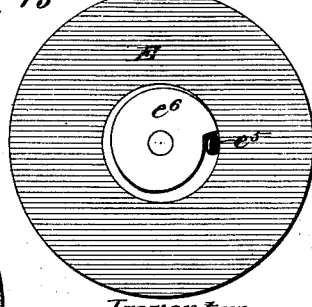
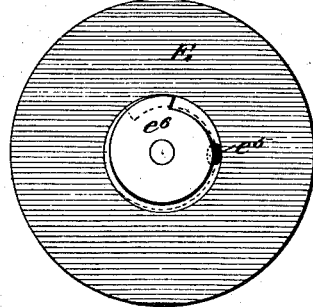


Fig 14



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UNITED STATES PATENT OFFICE.

OBERLIN SMITH, OF BRIDGETON, NEW JERSEY.

IMPROVEMENT IN AUTOMATIC EGG-BOILERS.

Specification forming part of Letters Patent No. 192,946, dated July 10, 1877; application filed December 20, 1876.

To all whom it may concern:

Be it known that I, OBERLIN SMITH, of Bridgeton, in the county of Cumberland and State of New Jersey, have invented a new and useful Automatic Egg-Boiler; and I do hereby declare that the following is a full and exact description of the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

This invention is primarily designed for boiling eggs; but it may be used for other purposes for which it is adapted.

It consists, mainly, in the employment, in connection with a proper vessel, of certain power mechanism for raising the eggs out of the water at the proper time, and certain timing mechanism for determining when the power mechanism shall act.

It consists, further, in the combination, with the foregoing, of certain other devices, and also in certain details of construction, all of which will be hereinafter fully set forth.

In the drawings, Figure 1 represents a side elevation of my egg-boiler, with the side of the vessel partially broken away to show the interior, the cylinder and egg-frame being depressed to expose the eggs to the boiling action. Fig. 2 represents a central sectional elevation of the same, the float being represented in its raised position. Fig. 3 represents a similar view, with the cylinder and egg-frame elevated to remove the eggs from the boiling action; Fig. 4, a cross-section on the line *x x*, Fig. 2; Fig. 5, a partial sectional elevation of the cylinder and float; Figs. 6, 7, 8, and 9, various views of the holding-catch and mechanism for locking and unlocking the same; Fig. 10, a central sectional elevation of the float in its depressed position; Figs. 11, 12, 13, and 14, various views of the float-valve and its seat.

To enable others skilled in the art to make and use my invention, I will now proceed to describe fully its construction and manner of operation.

A represents a vessel of any proper construction and suitable size. *a* represents a central tubular standard rising from the bottom of the vessel, which is provided with the longitudinal slot *a'*, Figs. 3 and 4, and the projecting shoulder or catch *a''*, Fig. 1, as shown.

B represents a cylinder adapted to slide freely in a vertical direction on the central standard *a*, which is provided with a perforated ring, *b*, adapted to hold the eggs, and an internal shoulder, *b'*, Figs. 3 and 5, adapted to furnish a bearing for the upper end of the lifting-spring, hereinafter referred to. *b'' b'''*, Fig. 1, represent brackets of any proper construction, located about the upper edge of the cylinder; and *b''''*, a removable cover, which, when in place, is supported by these brackets. C represents a lifting-spring surrounding the tubular standard *a*, which is adapted, when free to act, to bear upon cylinder B, carrying the egg-frame. D represents a spring-plate rigidly fixed at its lower end to cylinder B, which is provided with a projecting catch-piece, *d*, Fig. 6, and a right-angled arm, *d'*, having a handle, *d''*, as shown. *d'''* represents a trip-lever, pivoted to one side of the catch *d*, as shown, which is provided with a cam-face, *d''''*, adapted, when in the proper position, to press the catch *d* to one side, as will be hereinafter described. E represents a float, consisting of a hollow vessel, *e*, having a hollow stem, *e'*, annular flange *e''*, and indicating-plate *e'''*, provided with proper division-marks, as shown. *e'''' e''''''*, Fig. 12, represent holes formed in the bottom of the float near the center, and *e''''''* a single hole located at some distance from the center, as shown. *e''''''''*, Figs. 11, 13, and 14, represents a valve adapted to bear against the seat formed in the bottom of the float, which is attached to the lower end of the valve-rod *e''''''''''*, having index-hand *e''''''''''''*, and is held to its seat by the action of spring *e''''''''''''''*, interposed between plate *e''''''''''''''* and the index-hand *e''''''''''''''''*, as shown. When this valve is in place it will be observed that the central holes *e''''''''''''''*, Figs. 10, 13, 14, are entirely covered by its corresponding portion, which fits snugly to its seat. The opening *e''''''''''''''''*, however, located upon one side of the center, is not entirely covered, a certain area being left exposed, for purposes hereinafter explained. The periphery of the valve being cut in spiral form, as shown in Figs. 11, 13, and 14, it may be adjusted by revolving the same to uncover more or less fully the opening, according to the circumstances of the case, the amount of adjustment being shown by the position of the index-finger relative to the marked plate

below it. e^{10} , Figs. 5 and 9, represents a stop-bar projecting into the central space of the cylinder, by means of which the vertical movement of the float is limited in each direction, and the same is held against accidental displacement. F represents a stop-ring secured to the upper end of the tubular standard a , by means of which the accidental displacement of the cylinder is prevented. G represents a stop-spring supported by the arched bar g , rising from the stop-ring F, by means of which the upward movement of the cylinder and the connections is properly checked.

The operation is as follows: The eggs having been placed in the perforated frame, and the vessel provided with boiling water having been set upon the stove, the cylinder B is pushed downward by means of the handle until its catch-piece is caught by the shoulder on the tubular standard, as shown in Figs. 1 and 7. This catch-piece is caused to engage with the shoulder by the pressure exerted in forcing the cylinder downward, this pressure, owing to the position of the handle upon the right-angled arm, causing the spring-plate to bend toward that side of the slot of the tubular standard upon which the catch is located.

If, however, the catch-piece is not held in this position, it will be withdrawn, when the handle is released, by the reaction of the spring.

When, however, the cylinder is depressed, the float will be necessarily raised by contact with the water, as shown in Fig. 2, and hence, also, the trip-lever projecting into the line of its movement. The latter being raised, its cam-surface is caused to bear against the side of the catch-piece, and lock it against movement in a lateral direction, as shown in Figs. 2, 7, and 9.

The cylinder then, when the catch-piece is locked by the trip-lever, will be held in its downward position against the pressure of the lifting-spring, and the eggs will consequently be exposed to the action of the heat until the trip-lever is depressed and the catch-piece is released.

This action will result, after a given time, by the leakage of water through the opening e^2 into the float, by means of which the buoyancy of the latter is lost, and it consequently is caused to sink to the bottom of the vessel, as shown in Fig. 10.

In consequence of its downward movement its flange e^3 is brought in contact with the trip-lever d^3 , and the latter being depressed, the catch-piece is necessarily released, and the cylinder consequently raised by the action of the lifting-spring.

The length of time that the eggs will remain in the water will depend, necessarily, upon the time required to overcome the buoyancy of the float by the leakage of water into it, and this will depend, of course, upon the size of the opening e^2 . It follows, then, that by properly revolving the valve this opening e^2 may be uncovered to a greater or less ex-

tent, and the time of cooking be lengthened or diminished, as may be desired, the division-plate, of course, if properly marked, indicating the proper position of the index-finger of the valve, to obtain any desired time.

By means of the upward movement of the cylinder the valve-rod is brought into contact with the stop-spring, and pushed downward against the action of its spring, as shown in Fig. 3. In consequence of this action the valve is forced off from its seat, and all the openings being thus uncovered, the contents of the float will be discharged into the vessel, the boiler thus being prepared for use again when needed.

Some of the advantages of the described invention are as follows:

The cooking of eggs and other articles which require exposure to heat for exact periods of time may be certainly accomplished without reliance upon the judgment or attention of the cook.

By the employment of a float for actuating the mechanism for locking the catch which holds the cylinder the apparatus is inoperative unless the vessel contains a proper quantity of water.

By the employment, also, of a float and connections, constructed as described, this apparatus will be inoperative if from any cause the float should not wholly empty itself, notice thus being given by its failure to operate that attention is required.

If it were otherwise, and the float should act when partly filled, no reliance, of course, could be placed upon the time, as a less period would be required to wholly fill a float already partially filled than one entirely empty.

I do not limit myself to the precise construction shown. If desired, a counterbalance-weight may be employed instead of the lifting-spring. The stop or check spring may be dispensed with. Other locking mechanism for holding down the cylinder may be employed.

In place of the perforated frame for holding unbroken eggs, a series of pans may be employed for holding eggs removed from their shells.

If desired, also, the cylinder or the egg-frame may be made removable, so that when the cooking is completed it may be placed upon the table without disturbing the eggs.

If desired, also, an auxiliary attachment may be applied to the boiler for the purpose of cracking the shells of the eggs as they are brought into contact with it by the lifting power.

If desired, also, a bell or sound-signal of any kind may be applied thereto.

If desired, also, other lifting mechanism may be employed or other timing mechanism for determining when the lifting mechanism shall act, such as regular clock-work or a sand-glass.

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

1. A cooking-vessel having the following combination of elements: mechanism, substantially as described, for lifting the cooking articles away from the action of heat, and timing mechanism, substantially as described, for determining the interval of time before the lifting mechanism shall act.

2. In combination with lifting and timing mechanism, substantially as described, stop mechanism, substantially as described, for arresting the movement of the lifting mechanism.

3. In combination with catch mechanism, substantially as described, for holding down the cylinder against the action of the lifting mechanism, a float, substantially as described, adapted to lock the catch mechanism, as and for the purpose set forth.

4. In combination with the lifting mechanism and the catch mechanism for holding down the cylinder, float mechanism, substantially as described, adapted for the double purpose of locking and unlocking the catch mechanism.

5. In combination with the catch mechanism, a float having a leakage-opening, as described.

6. In combination with the float having the opening e , the valve having the spirally-cut periphery, as described.

7. In combination with a float having a leak-

age-opening, adjusting mechanism, substantially as described, for varying the size of the opening.

8. In combination with the float having the central opening, the valve and its connections, adapted to cover said openings, as described.

9. In combination with the float having the central openings, the valve, valve-rod, and opening, and the stop-pieces for starting the valve from its seat, substantially as described.

10. In combination with the float having the opening e , the valve, valve-rod, and index-finger, and the marked division-plate.

11. In combination with the spring-plate, the trip-lever and float mechanism for actuating it, substantially as described.

12. A cooking-vessel, substantially as described, adapted to expose articles to the action of heat for a predetermined period of time, and then automatically remove them from the action of the heat, as and for the purpose set forth.

This specification signed and witnessed this 28th day of November, 1876.

OBERLIN SMITH.

Witnesses:

JAMES J. REEVES,
C. W. SHOEMAKER.