

2 Sheets—Sheet 1.

No. 566,884.

Patented Sept. 1, 1896.

Fig. 1.

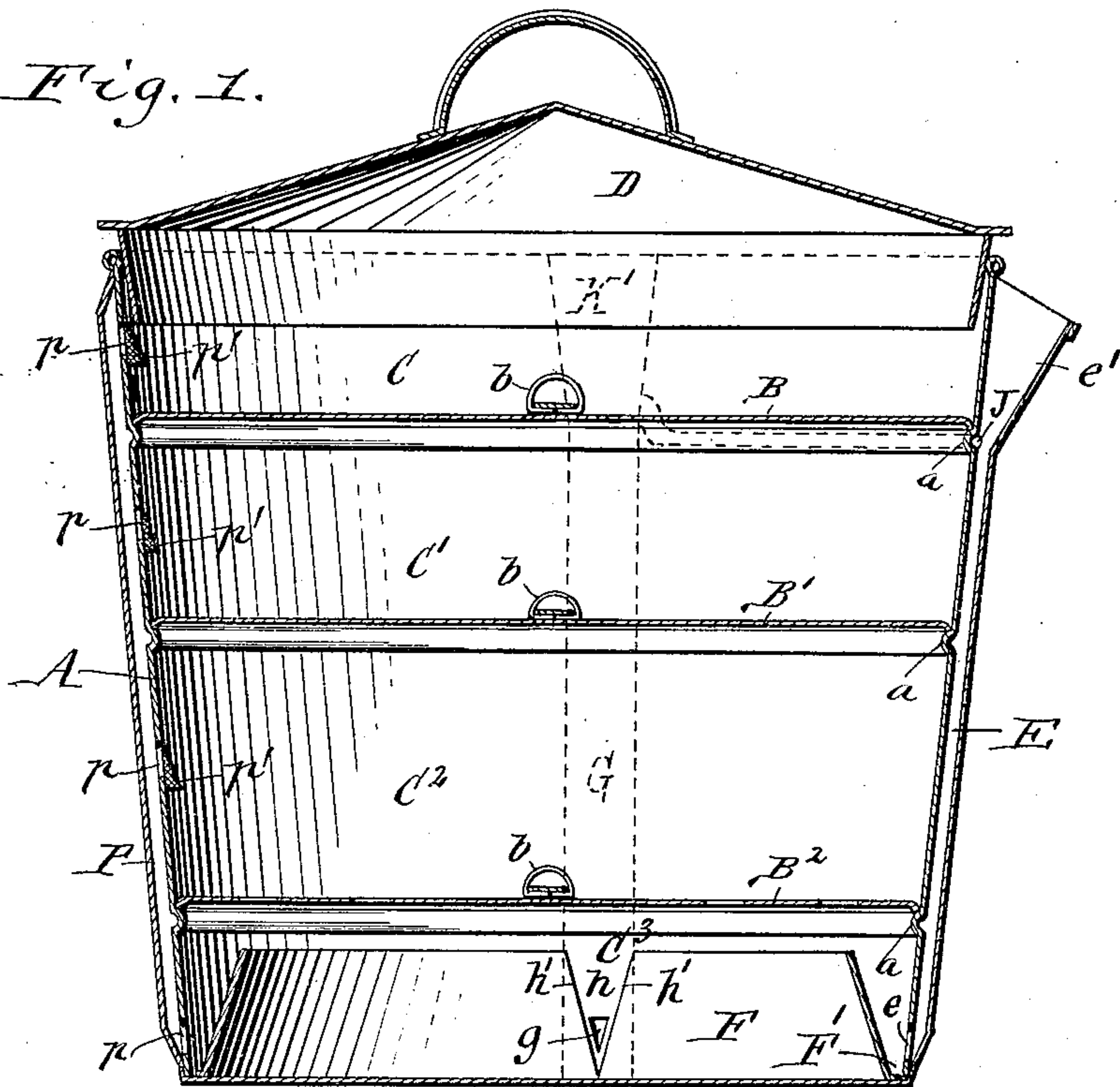
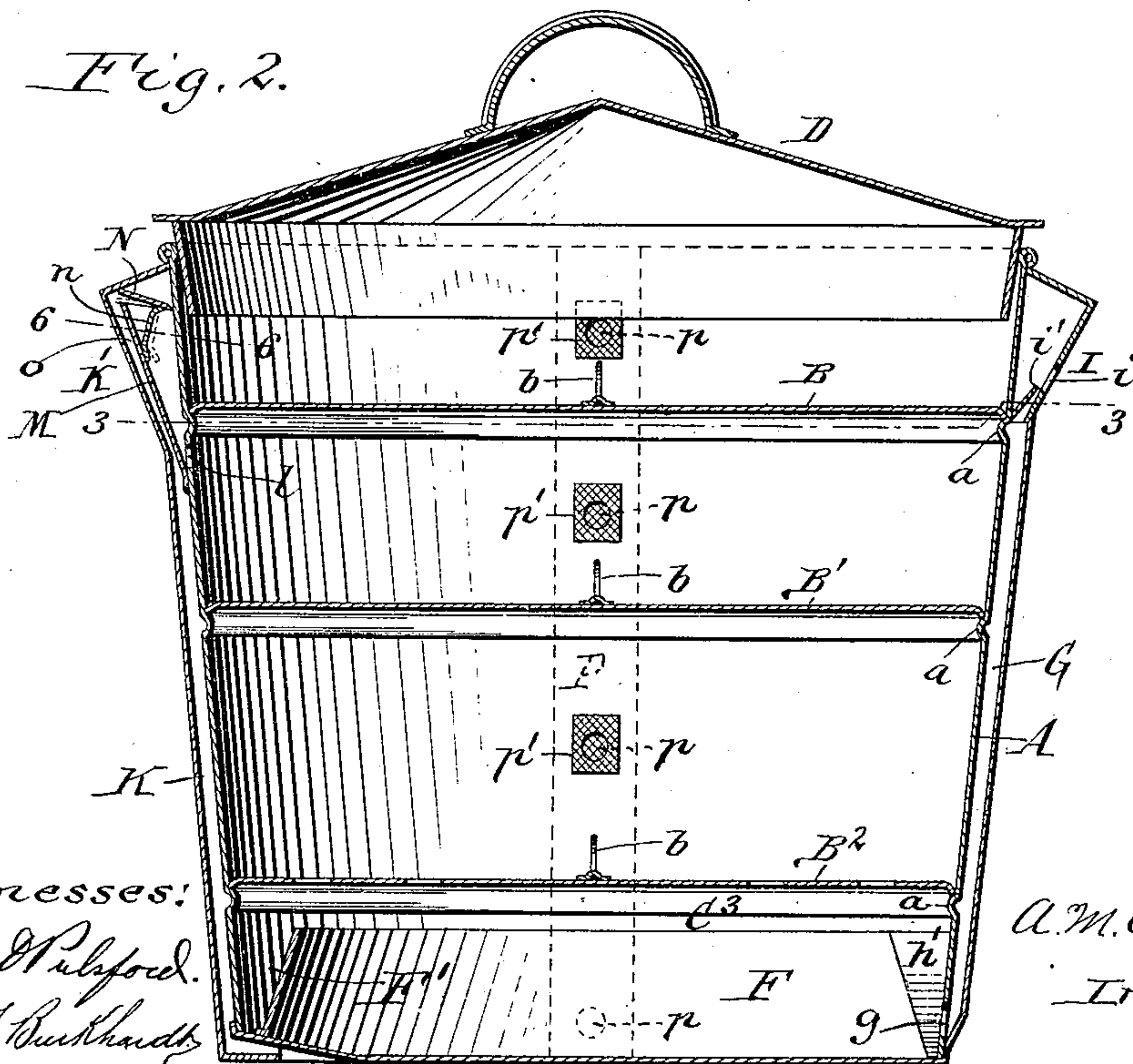


Fig. 2.



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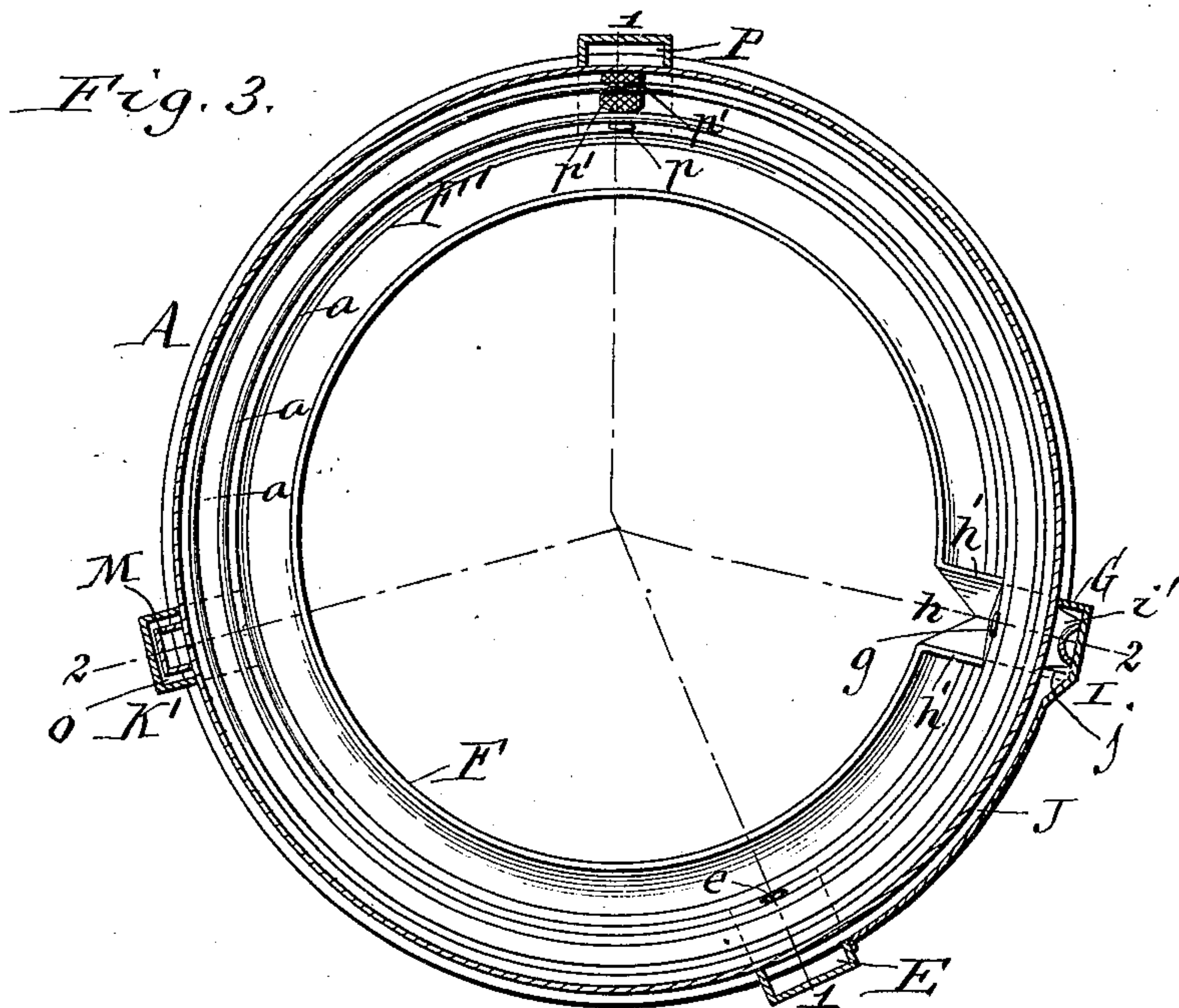
(No Model.)

2 Sheets—Sheet 2.

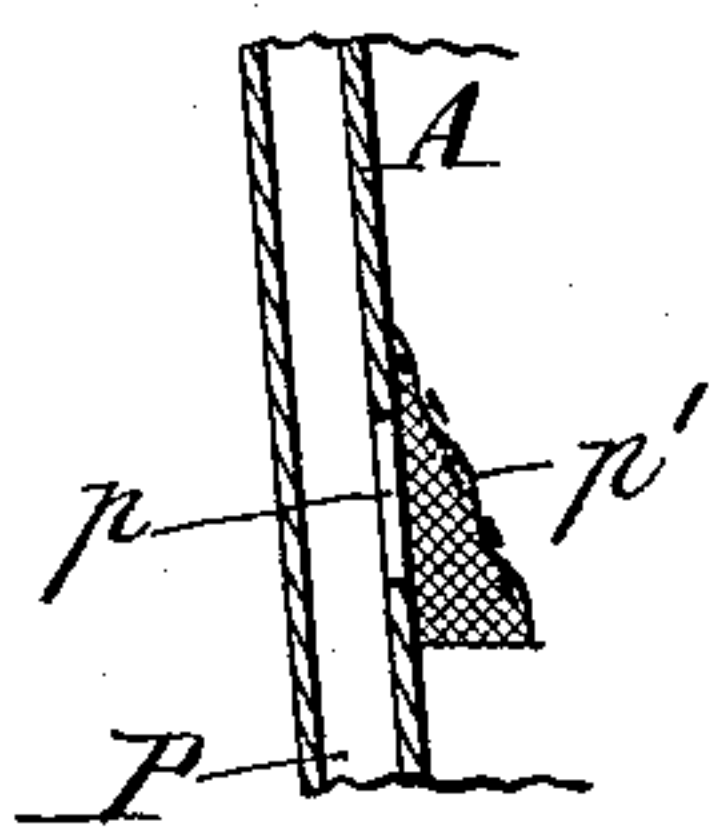
A. M. AMOS.  
STEAM COOKER.

No. 566,884.

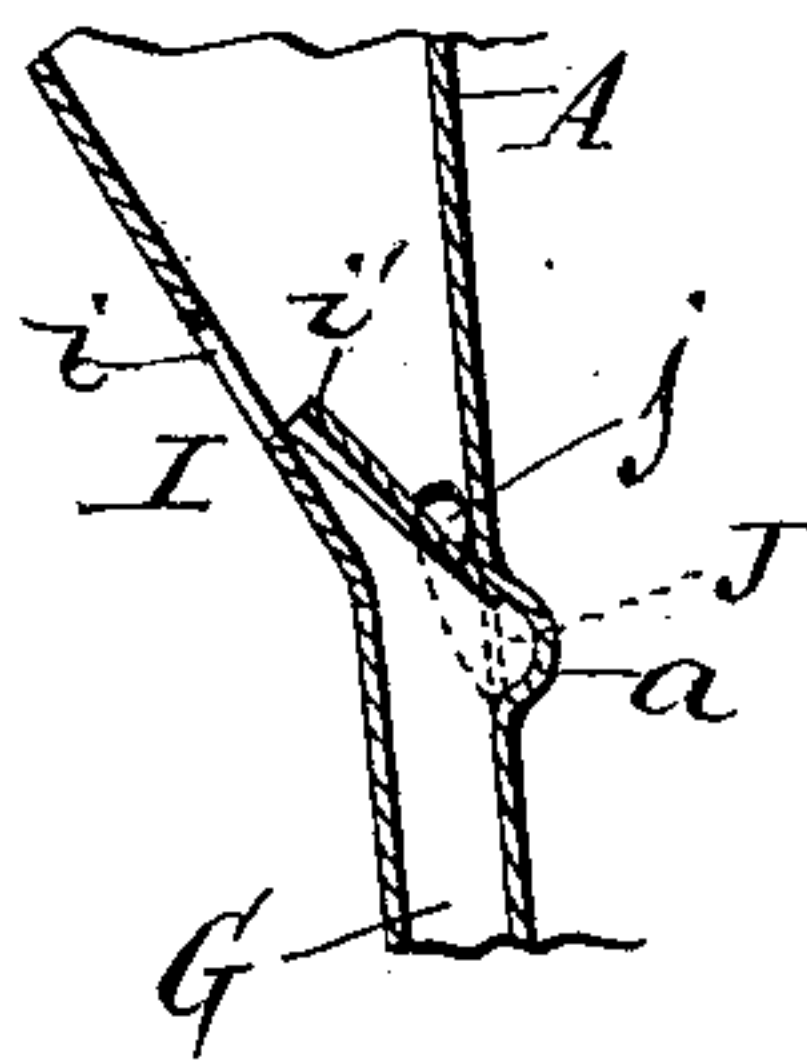
Patented Sept. 1, 1896.



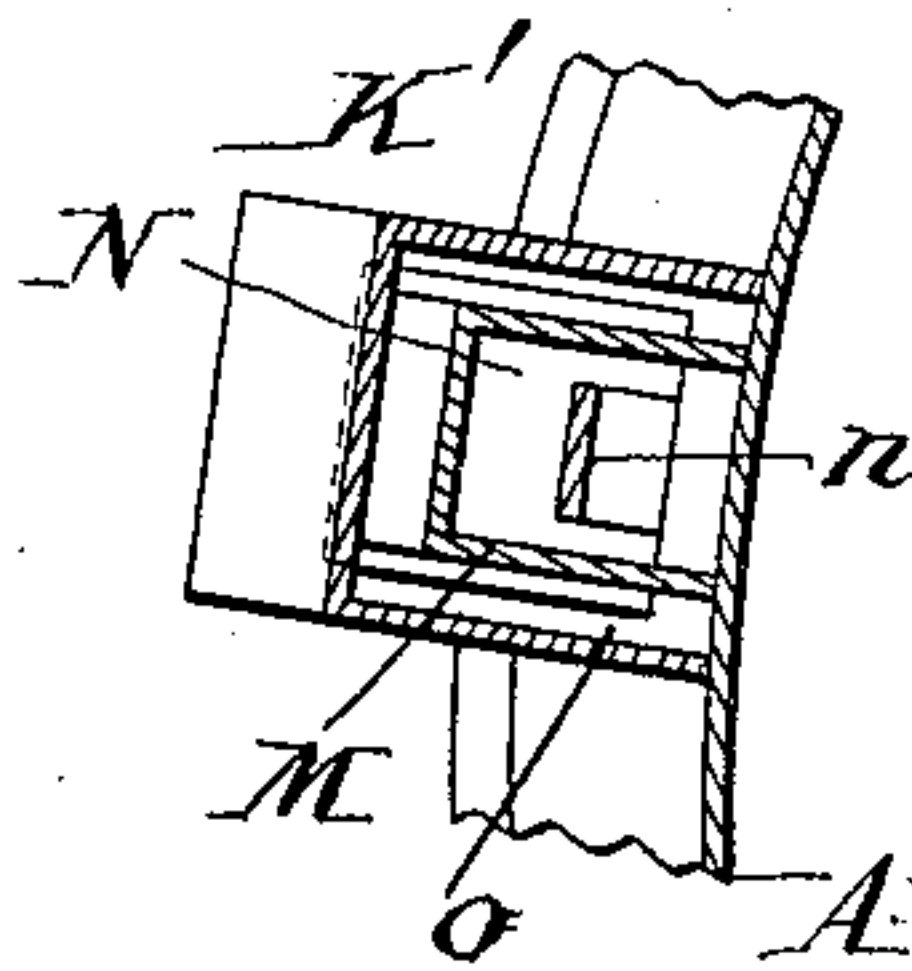
*Fig. 4.*



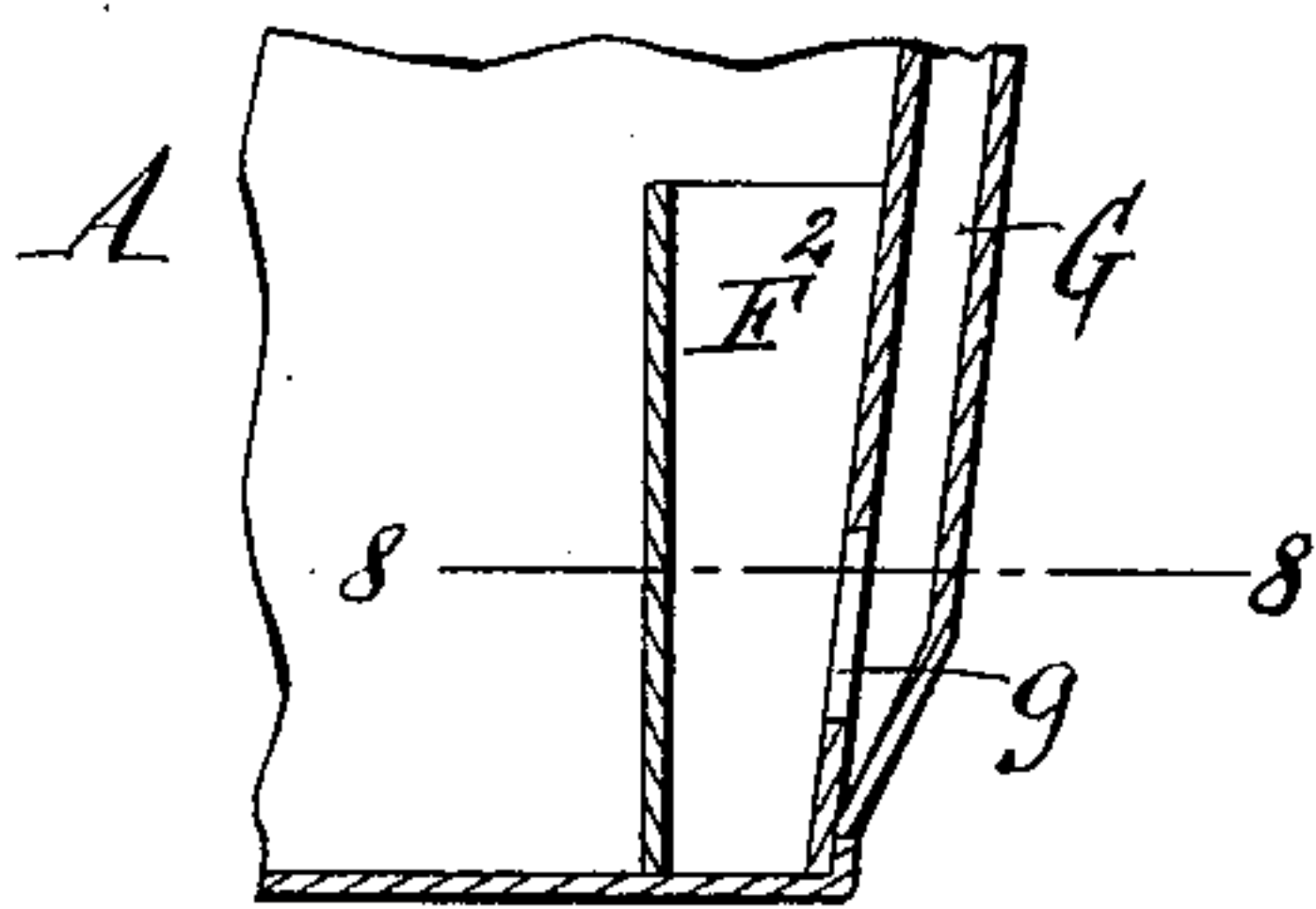
*Fig. 5.*



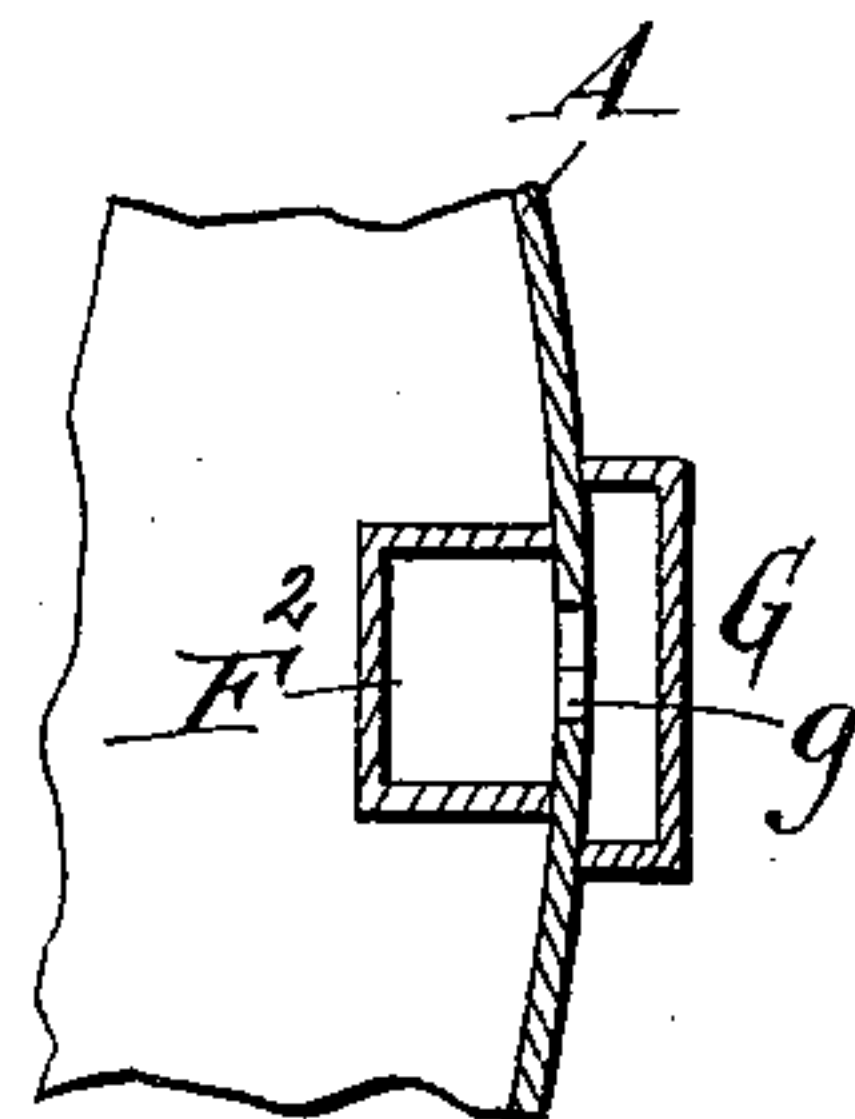
*Fig. 6.*



*Fig. 7.*



*Fig. 8.*



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# UNITED STATES PATENT OFFICE.

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## STEAM-COOKER.

SPECIFICATION forming part of Letters Patent No. 566,884, dated September 1, 1896.

Application filed December 17, 1895. Serial No. 572,390. (No model.)

*To all whom it may concern:*

Be it known that I, ALEXANDER M. AMOS, a citizen of the United States, residing at Buffalo, in the county of Erie and State of New York, have invented new and useful Improvements in Steam-Cookers, of which the following is a specification.

This invention relates more particularly to that class of steam-cookers which are divided by removable horizontal plates or diaphragms into a number of compartments in which the meats, vegetables, &c., are cooked. Steam-cookers of this kind are shown and described in Letters Patent of the United States Nos. 255,232 and 370,594, granted to me March 21, 1882, and September 27, 1887, respectively.

One of the objects of my present invention is to improve the construction of the low-water signal, so as to render the same reliable and insure an alarm of comparatively long duration.

The invention has the further objects to improve the construction of the relief or regulating valve whereby a uniform steam-pressure is maintained in the cooker, to provide efficient means for preventing burning of the bottom of the cooker in case it should boil dry, and to improve the construction of the cooker in other respects.

In the accompanying drawings, consisting of two sheets, Figure 1 is a vertical section of my improved cooker in line 1 1, Fig. 3. Fig. 2 is a similar section in line 2 2, Fig. 3. Fig. 3 is a horizontal section of the cooker in line 3 3, Fig. 2. Fig. 4 is a fragmentary vertical section, on an enlarged scale, of the connecting-tube of the cooking-compartments, showing one of the shields applied to the openings of said tube. Fig. 5 is a fragmentary vertical section of the signal-whistle in line 2 2, Fig. 3, on an enlarged scale, looking contrary to the direction of the section of Fig. 2. Fig. 6 is an enlarged horizontal section in line 6 6, Fig. 2, looking upward. Fig. 7 is a fragmentary vertical section of the cooker, showing a modified construction of the water-sealing device. Fig. 8 is a longitudinal section thereof in line 8 8, Fig. 7.

Like letters of reference refer to like parts in the several figures.

A is the body of the cooker, which is preferably flared upward, as shown, and provided

with the usual internal beads or shoulders *a* for supporting the removable division-plates or diaphragms *B B' B²*. The latter are provided with the usual rings or loops *b* for manipulating them.

*C C' C²* are the cooking-compartments formed by the diaphragms, and *C³* is the steam-generating chamber in the bottom of the cooker.

*D* is the cover, which may be of any ordinary construction that insures a steam-tight joint when the cover is pressed down tightly.

*E* is a filling-tube arranged on the outer side of the cooker and extending to the bottom thereof. The lower end of this tube communicates with the steam-generating chamber *C³* by an opening *e*, formed in the wall of the latter, while its upper end is formed with a suitable spout *e'*, into which the water is introduced.

*F* is an annular ring, wall, or dam arranged within the steam-generating chamber and extending upward from the bottom thereof. This ring is arranged at a short distance from the wall of the cooker, so as to form with said wall and the bottom of the cooker a trough *F'*, into which the water flows from the filling-tube *E*, and from which it passes into the space inclosed by the ring or dam by overflowing the latter. The ring *F* extends above the level of the inlet-opening *e*, so that the water contained in the trough *F'* forms a water seal for the inlet-opening, which prevents the escape of steam and cooking-odors through the filling-tube. This construction permits the upper end of the filling-tube to be left open and thus dispenses with the use of a plug or stopper for the tube.

*G* is a steam or signal tube arranged on the outer side of the cooker and extending upwardly from the steam-generating chamber *C³*, with which latter it communicates by an aperture *g*, formed in the wall of said chamber below the upper edge of the ring *F*. The ring and the trough formed thereby do not extend across this steam-escape aperture *g*, but the ring terminates on opposite sides of the aperture, as shown at *h* in Fig. 1, and the adjacent ends of the trough *F'* are closed by end walls or flanges *h'*, which are preferably formed by bending the ends of the ring *F* outwardly and soldering or otherwise secur-



ing the same to the wall of the cooker, as shown in Figs. 2 and 3. By this construction the steam is free to escape from the steam-generating chamber into the signal-tube when  
 5 the water-level descends to the aperture *g*, and the water is at the same time prevented from leaving the trough except by overflowing its inner wall or ring *F*. The signal-tube is provided at its upper end with a whistle or  
 10 audible-alarm device *I*, through which the steam escapes from the signal-tube. The whistle shown in the drawings consists of a three-sided case closed at its top and fitted with its rear side against the adjacent outer  
 15 side of the cooker-body, so that the latter forms the back of the whistle. The open lower end of the whistle is fitted into the upper end of the signal-tube.

*i* is the aperture of the whistle, and *i'* a deflecting-lip extending obliquely from the inner-lower edge of the whistle toward the lower edge of the whistle-aperture, whereby the escaping steam is directed against the upper edge of said aperture for sounding the whistle.  
 25 The upper portion of this deflecting-lip is concave or channeled, as shown in Fig. 3, so as to concentrate the escaping steam upon the upper edge of the whistle-aperture.

When the water-level in the steam-generating chamber is above the steam-outlet aperture *g*, the steam cannot escape through the signal-tube, but as soon as the level falls below that aperture the steam escapes through the same into the signal-tube, thereby sounding the whistle and giving the low-water alarm.  
 30

By employing separate filling and signal tubes the whistle may be permanently arranged in the signal-tube, and the same cannot therefore become lost or mislaid, which is liable to occur when the whistle is removable, thus always insuring a signal when the cooker requires to be refilled. By this independent arrangement of the filling and signal  
 45 tubes and the sealing of the filling-tube the steam, when the water-level falls to the escape-aperture *g*, cannot escape through the filling-tube, but only through the signal-tube, and the alarm-whistle will therefore be sounded  
 50 until all the water in the steam-generating chamber is evaporated, thus insuring an alarm of long duration and giving the necessary warning in case the signal is not heard when first given.

In order to prevent the water resulting from condensation of steam from accumulating in the whistle, the latter is provided in one side opposite the base of the deflecting-lip *i'* with a discharge-opening *j* for such water, as shown  
 60 in Figs. 3 and 5, and from this discharge-opening leads a drain tube or conduit *J*, which connects with the filling-tube *E*, whereby the water of condensation collecting in the whistle is conducted into the filling-tube, whence it  
 65 flows into the water-trough *F'*. By this provision no water can lodge in the whistle, thus preventing rusting of the whistle and insur-

ing a clear and loud sound thereof, and the water of condensation is at the same time prevented from trickling down the outside of  
 70 the cooker and upon the stove.

It is obvious that so far as the water-sealing function of the trough *F'* is concerned it would only be necessary to arrange a narrow trough or receptacle *F''* across the water-inlet  
 75 opening *e* of the steam-generating chamber, as shown in Figs. 7 and 8; but the same is preferably extended entirely around the bottom of the cooker, with the exception of the  
 80 recess *h* thereof, opposite the steam-escape aperture *g*, as shown in Figs. 1, 2, and 3. By this construction the water in the trough protects the soldered joint or seam of the bottom practically around the entire base of the  
 85 cooker, so that if for any reason the low-water signal should not be heard and the water in the central portion of the bottom chamber be entirely exhausted the seam will not be burned and become unsoldered, but will remain unimpaired until the water in the trough  
 90 is exhausted.

In order to give the trough a comparatively large capacity, and at the same time expose a minimum surface thereof to the fire, the ring or inner wall *F* of the trough is tapered  
 95 upward in the form of a cone-frustum, and its lower edge is arranged closely to the wall of the cooker. This construction of the ring, in connection with the upward flare of the  
 100 cooker-body, renders the trough much narrower at the bottom than at the top, and, owing to the small exposure of the bottom to the fire resulting from this construction, the water in the trough will not evaporate so rapidly as  
 105 that in the main central portion of the bottom chamber, thus protecting the bottom seam from injury for some time after the water in the middle of the chamber is exhausted.

The water of condensation from the diaphragms *B B' B''* and the cover *D* flows down  
 110 the inner surface of the cooker and constantly replenishes the trough, thus furnishing the trough with an additional supply of water and further prolonging the period during which the cooker is protected from injury.  
 115

*K* is the vent tube or passage of the cooker through which the surplus steam is allowed to escape and which is arranged on the outer side thereof and extends downwardly and  
 120 thence preferably inwardly under the bottom of the cooker, as shown in the drawings. The lower end of this tube is open, while its upper end is closed and formed with an enlargement *K'*.

*l*, Fig. 2, is an opening formed in the adjacent wall of the cooker near its upper end,  
 125 through which the steam in the cooker enters the vent-tube *K*.

*M* is a spout or casing arranged in the enlargement of the vent-tube and covering the  
 130 escape-opening *l*, and *N* is an automatic regulating-valve applied to the mouth of said spout and controlling the passage of the steam into the vent-tube. This spout or valve-case



is three-sided and is tightly fitted at its lower end and sides against the outer side of the cooker-body, while its upper end opens into the surrounding portion of the vent-tube.

5 The upper edge of the spout is preferably inclined toward the wall of the cooker, as shown in Fig. 2. The regulating-valve consists of a flat plate which is seated loosely upon the inclined upper end of the valve-case and  
10 which swings vertically upon its inner edge as a fulcrum. The valve-plate is held against displacement by the walls of the vent-tube and remains upon its seat by gravity.

$n$  is a stop-arm or projection depending  
15 from the under side of the regulating-valve and adapted to bear with its free lower end against the inner side of the front wall of the valve-case or spout when the valve is open, as shown by full lines in Fig. 2, so as to limit  
20 the upward or opening movement of the valve. By bending this stop-arm so as to stand at a greater or less distance from the outer wall of the valve-case the opening movement of the valve is regulated accord-  
25 ingly. The valve-case is separated from the surrounding vent-tube by an intervening steam space or passage  $o$ .

In the use of the cooker a sufficient quantity of water must be fed into the steam-generating compartment  $C^3$  to cover the steam-aperture  $g$ , leading to the whistle-tube. The regulating-valve retards the escape of the steam from the cooker and thus maintains a uniform pressure in the various compart-  
35 ments thereof, in a well-known manner, the valve opening and allowing the steam to escape through the vent-tube when the steam-pressure overcomes the weight of the valve. When the aperture  $g$  becomes uncovered by  
40 the falling of the water-level, the steam escapes freely through the whistle-tube, reducing the steam-pressure in the cooker, and the valve  $N$  thereupon closes and prevents the further escape of steam through the vent-  
45 tube until the steam-pressure in the cooker again rises sufficiently to open the valve, thereby compelling the steam to pass through the whistle and producing a louder signal.

By constructing the regulating-valve of a  
50 flat plate and seating the same against the flat upper edge of the valve-case, as shown, a very small surface of the valve is in contact with the case and the same is not liable to adhere to the case by the deposit of sedi-  
55 ment or grease on its under side.

The several cooking-compartments may be placed in communication with each other by providing the diaphragms  $B B' B^2$  with perforations, but they are preferably connected  
60 by means of a vertical tube  $P$ , arranged on the outside of the cooker and extending from the top to the bottom thereof. The compartments communicate with this tube by apertures  $p$ , formed in the walls thereof and covered by the tube  $P$ . Over the inner side of each of these apertures, excepting the lower-  
65 most one, is preferably applied a perforated

or gauze guard or shield  $p'$  to prevent clog-  
ging of the aperture. Each shield is tightly  
fitted against the inner wall of the cooker at  
70 its upper end and sides, but is separated there-  
from at its lower end, as shown in Fig. 4, to  
afford a free passage for the steam through  
the aperture. By perforating these shields  
the steam is free to pass through the same in  
75 case their open lower ends should become  
clogged by the vegetables or other material in  
the compartments. When the diaphragms  
are perforated, the openings therein present  
raw edges, which rust and are liable to cut  
80 the fingers in cleaning them. By providing  
the connecting-tube  $P$  all of the diaphragms,  
except the lowermost one, may be made solid  
or imperforate, thus leaving the same smooth  
and enabling them to be thoroughly cleaned  
85 without danger of injuring the hands. The  
four tubes  $E G K P$  are arranged at suitable  
intervals around the body of the cooker. As  
they all terminate at the bottom of the cooker,  
the solder-joints at their lower ends are pro-  
90 tected from burning by the water-trough  $F'$ .

If desired, the independent arrangement of  
the filling-tube  $E$  and whistle-tube  $G$  may be  
employed without the use of the water-seal-  
ing trough  $F'$ . In this case the steam-ap-  
95 erture  $g$  of the whistle-tube is above the level of  
the water-inlet opening, as shown in Fig. 1,  
and the water in the steam-generating cham-  
ber seals the inlet-aperture  $e$ . As soon as the  
water-level falls to the steam-aperture  $g$  the  
100 steam escapes through the latter and sounds  
the whistle.

I claim as my invention—

1. The combination with the body of a  
steam-cooker having a steam-generating  
105 chamber in its bottom, of an imperforate wall  
or dam extending upward from the bottom of  
the steam-generating chamber and arranged  
in proximity to the surrounding main wall  
thereof and forming with the latter a sepa-  
110 rate water-trough from which water is sup-  
plied to the steam-generating chamber only  
by overflowing said dam, and an inlet or fill-  
ing tube connected with said water-trough,  
substantially as set forth. 115

2. The combination with the body of a  
steam-cooker having a steam-generating  
chamber, provided with a water-inlet, of a  
signal-tube communicating with said cham-  
ber, an imperforate water trough or recepta-  
120 cle arranged in said chamber communicating  
with said inlet and having its walls extended  
above the inlet, whereby the water supplied  
to said trough cannot escape into the steam-  
generating chamber except by overflowing  
125 said trough and whereby the water in the  
trough forms a seal or closure which prevents  
the escape of steam through the inlet, sub-  
stantially as set forth.

3. The combination with the body of the  
130 cooker having a steam-generating chamber  
provided at or near its bottom with a water-  
inlet and a steam-escape aperture, of a filling-  
tube leading to said water-inlet, an annular



water-trough arranged in the bottom of said chamber adjacent to the wall thereof and provided opposite said steam-escape aperture with a recess, whereby steam is free to escape  
5 through said aperture when the water-level in the cooker falls below the same, and a signal or whistle tube communicating with said steam-escape aperture, substantially as set forth.

10 4. The combination with the body of a steam-cooker having a steam-generating chamber, of a signal-tube communicating with said chamber, a whistle communicating with said tube and having a deflecting-lip arranged below the whistle-aperture and an out-  
15 let-opening for the water of condensation arranged adjacent to said lip, substantially as set forth.

5. The combination with the body of a  
20 steam-cooker having a steam-generating chamber provided with a filling-tube, of a signal-tube communicating with said generating-chamber and provided with an alarm-whistle, and a drain conduit or tube leading from said  
25 whistle to said filling-tube, substantially as set forth.

6. The combination with the steam-gener-

ating chamber of the cooker provided at or near its bottom with a water-inlet and a steam-escape aperture, of filling and whistle tubes  
39 leading to said water-inlet and steam-aperture, respectively, an annular water-trough arranged in the bottom of said chamber adjacent to the wall thereof and provided opposite said steam-aperture with a recess, a steam-  
35 vent tube arranged on one side of the cooker-body and extending downwardly from a point below the upper end of the body, an upright valve-case arranged in the upper portion of  
40 said vent-tube, communicating with the interior of the cooker and having an open upper end forming a substantially horizontal valve-seat, a gravity-valve consisting of a flat plate resting loosely on said valve-seat, and means whereby said valve-plate is held  
45 against displacement on its seat, substantially as set forth.

Witness my hand this 4th day of December, 1895.

ALEXANDER M. AMOS.

Witnesses:

CARL F. GEYER,  
KATHRYN ELMORE.