

(No Model.)

3 Sheets-

R. OLP.  
CHEESE VAT.

No. 364,128.

Patented May 31, 1887.

Figure 1.

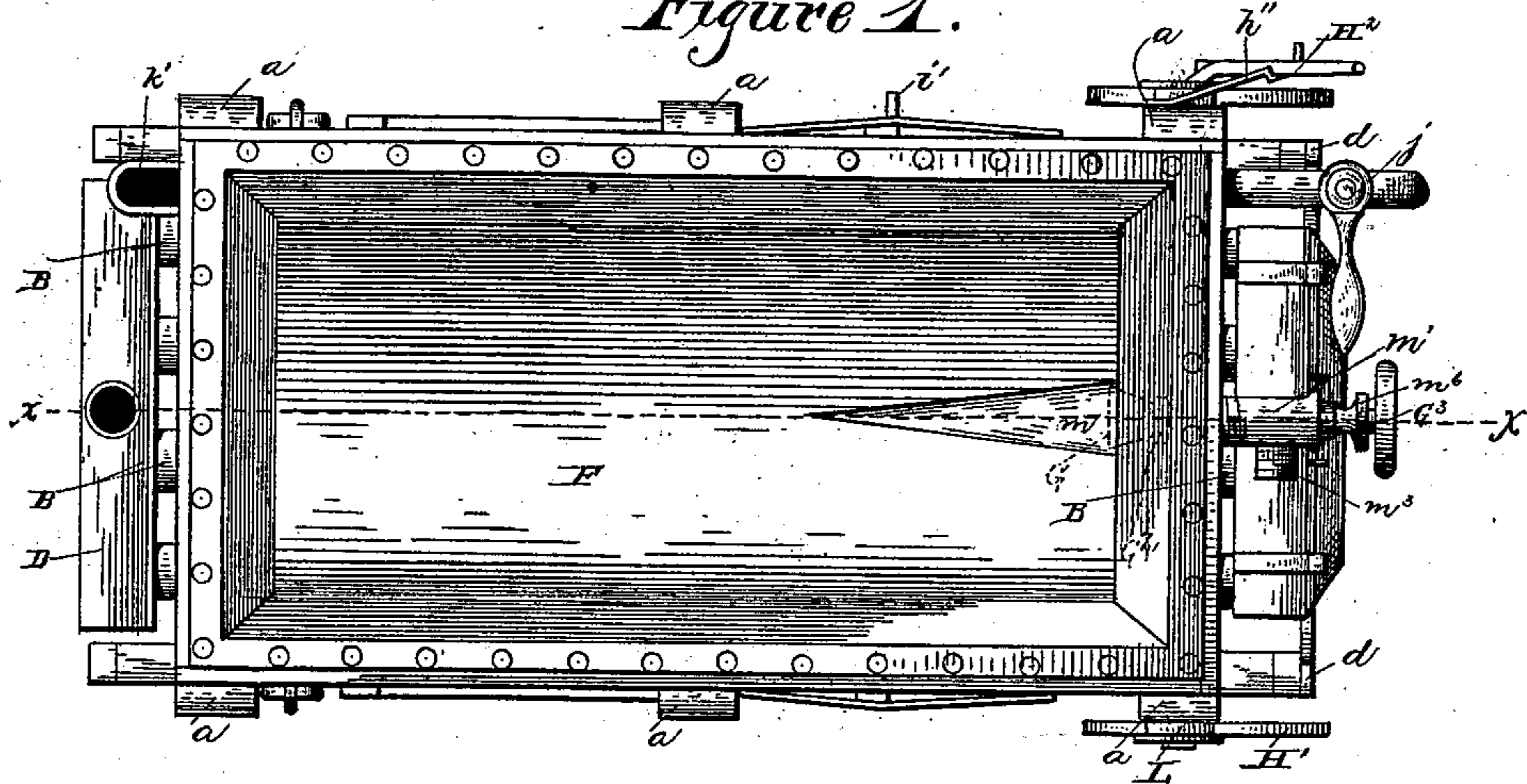
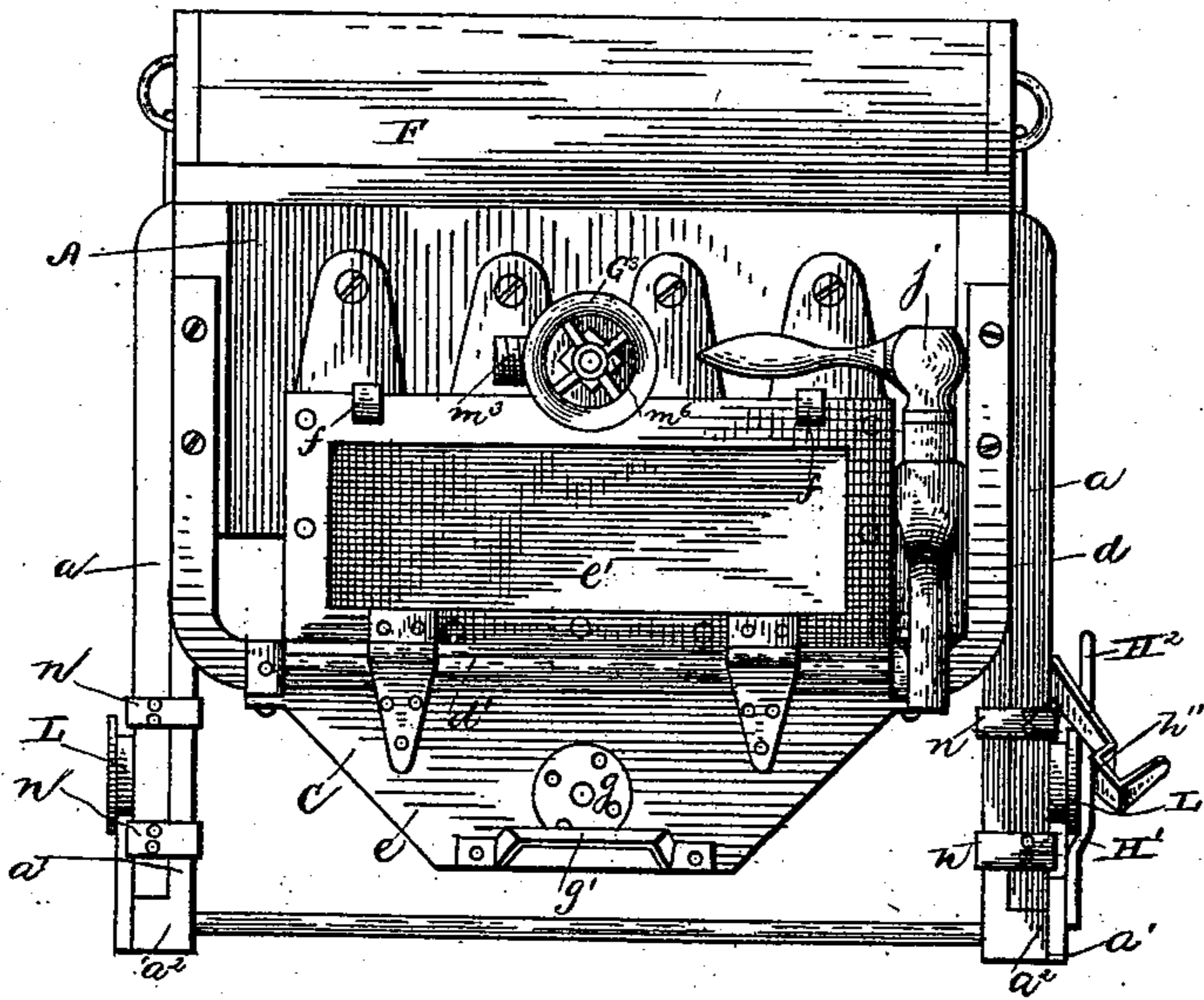


Figure 2.



Witnesses:

John Anders &  
John W. Gill.

Inventor:  
Robert O. Olp.

By *Myra C. Olp*

Attorneys:

R. OLP.  
CHEESE VAT.

No. 364,128.

Patented May 31, 1887.

Figure 3.

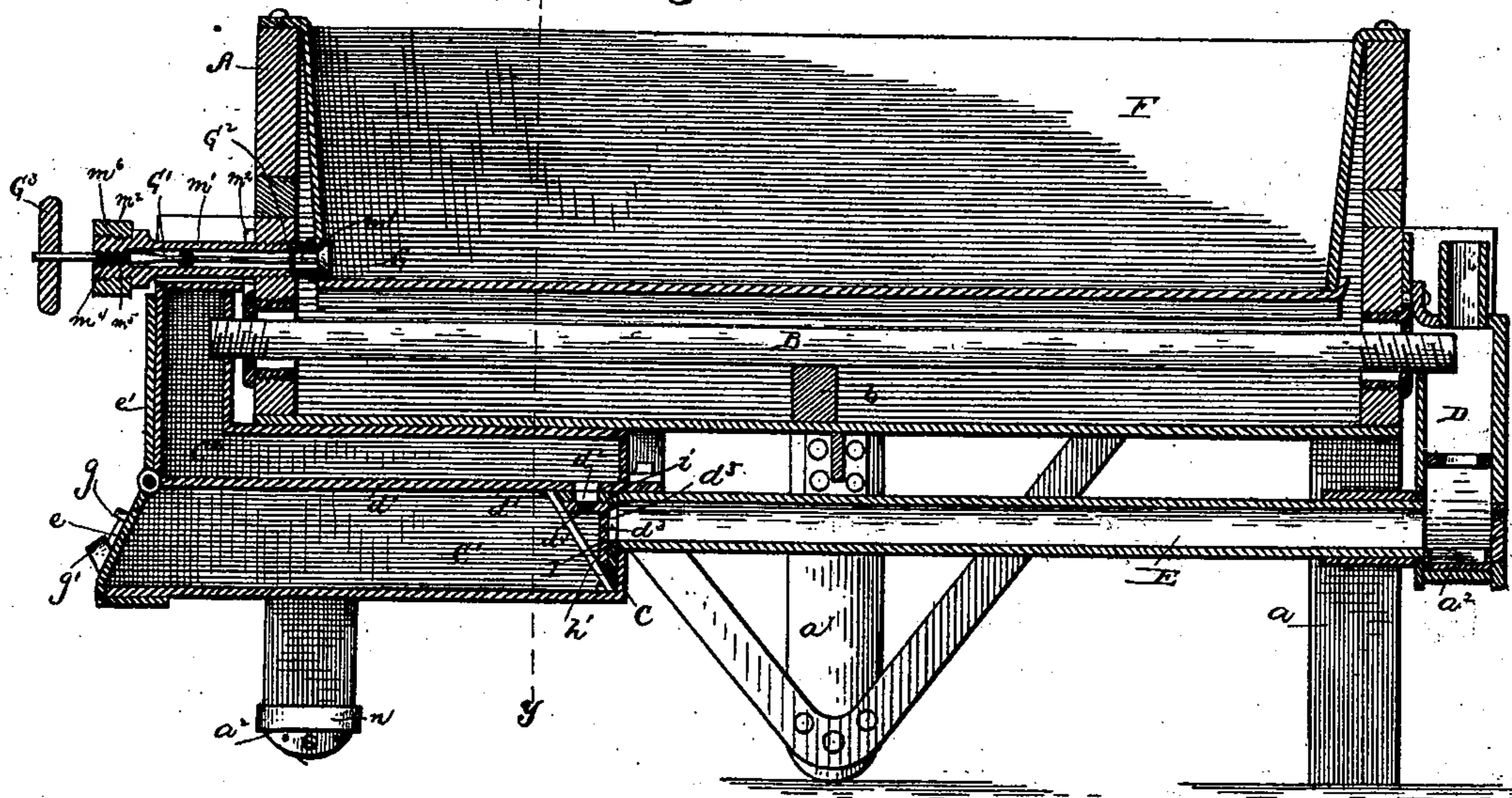


Figure 4.

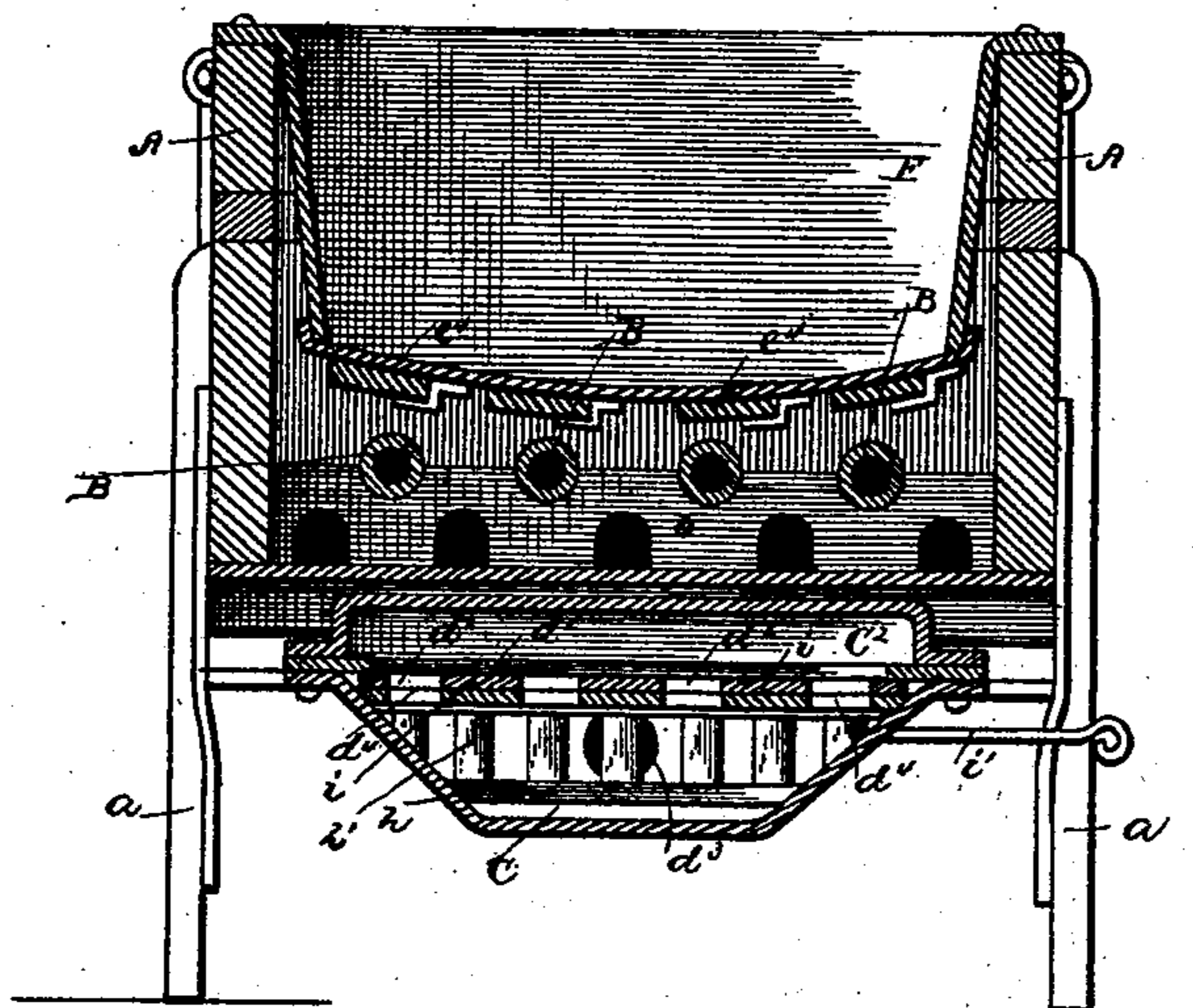
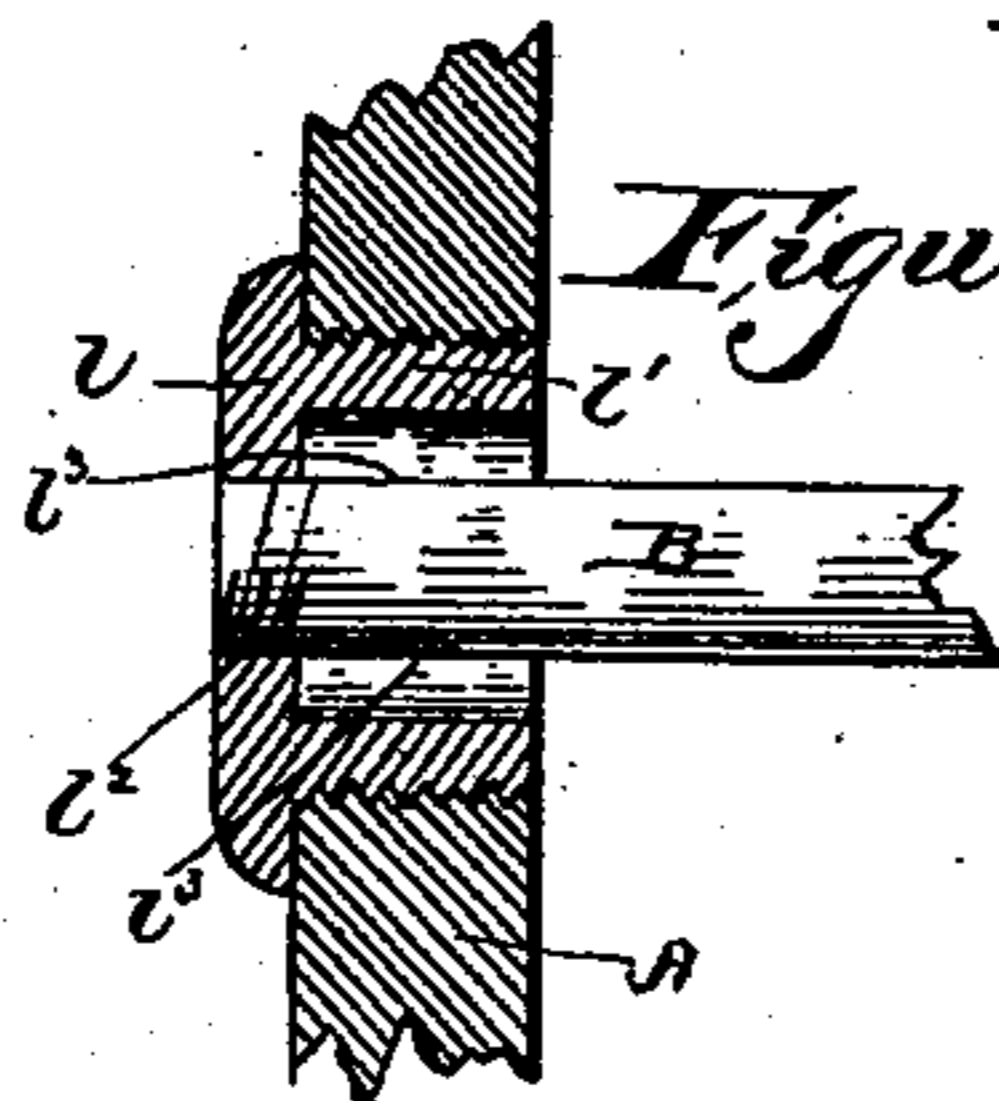


Figure 5.



Witnesses  
John Anders Jr.  
*[Signature]*

Inventor  
Robert Olp.  
*[Signature]*

By his Attorneys



# UNITED STATES PATENT OFFICE.

ROBERT OLP, OF MANITOWOC, WISCONSIN.

## CHEESE-VAT.

SPECIFICATION forming part of Letters Patent No. 364,128, dated May 31, 1887.

Application filed April 6, 1886. Serial No. 198,007. (No model.)

*To all whom it may concern:*

Be it known that I, ROBERT OLP, a citizen of the United States of America, residing at Manitowoc, in the county of Manitowoc and State of Wisconsin, have invented certain new and useful Improvements in Cheese-Vats, of which the following is a specification, reference being had therein to the accompanying drawings.

10 This invention pertains to improvements in cheese-vats, having for its object to divert the flame or heat from the milk-pan as the water is drawn off, to facilitate the feeding of the fuel and the cleaning of the fire-box, and to effect the perfect straining and withdrawal of the whey; and the invention consists of the combination of parts, including their construction, substantially as hereinafter set forth, and pointed out in the claims.

20 In the accompanying drawings, Figure 1 is a plan view of my improved cheese-vat. Fig. 2 is a front elevation of the invention. Fig. 3 is a longitudinal section on the line *x x*, Fig. 1. Fig. 4 is a transverse section thereof, the latter section being taken through the fire-box on the line *y y*, Fig. 3. Fig. 5 is a detail view. Fig. 6 is a side elevation. Figs. 7 and 8 are detail views of the valve and its conjunctive parts, and Fig. 9 is a sectional detail view of the damper and the adjoining parts.

30 In the organization of my invention I employ a receptacle, A, for holding the water to be heated in the operation of making cheese. This receptacle is preferably rectangular or oblong and is mounted upon legs *a*, one being affixed to each corner and at each side at the middle. It is provided with a metallic bottom, and has a series of heating-pipes B B, extending through it from end to end, the same also extending through its ends and connected at their front ends to the fire-box C and at their rear ends to the smoke-box D, as presently more fully disclosed. These pipes are set into and supported about centrally of their lengths upon a cross-bar, *b*, firmly seated or secured in the receptacle A, the lower side of which cross-bar is provided with transverse recesses in it to permit of the unobstructed flow of the water in the said receptacle.

50 The fire-box C is, as before intimated, disposed at the forward end of the receptacle A,

having its front end secured to the said end of the receptacle and projecting forward thereof to permit convenient access thereto. The fire-box is extended under the receptacle A about one-third the length of the latter, with its upper compartment, C<sup>2</sup>, arranged directly in contact with the bottom of the receptacle A, and connected at its ends to the receptacle by inverted approximately U-shaped flat bars or plates *d d*, bolted or fastened to the sides and front of the receptacle. This fire-box is divided by a plate or partition, *d'*, horizontally into two chambers or compartments, C' C<sup>2</sup>, the lower chamber or compartment, C', of which forms the combustion-chamber, its front end projecting downward and in a plane forward of the upper compartment or chamber, C<sup>2</sup>. At the front these chambers or compartments are provided with doors *e e'*, hinged to the front edge or end of the plate *d'*, the upper one at its lower edge and the lower one at its upper edge. The upper door, *e'*, is retained in its closed position by spring-clasps *f f*, fastened to the front top part of the fire-box, the forward curved ends of which project beyond the front upper edge of said door, while the lower door, *e*, retains its closed position by gravity and is provided with a draft-regulator, *g*, and a handle, *g'*, to permit the opening of the door. The lower door, *e*, of the lower compartment, C', of the fire-box C permits of the ready or convenient cleaning of the same of any light ashes or other products of combustion that lodge or fall into the said chamber or compartment. The partition *d'* is provided with a long opening or aperture, *d''*, as seen in Figs. 3 and 9, in order to form a passage or flue from the lower compartment or combustion-chamber, C', to the upper compartment or flame-chamber, C<sup>2</sup>, whence the heat, &c., passes into the pipes B B, to effect the heating of the same, which in turn heat the water of the receptacle A, the inflow of said heat being regulated by means hereinafter stated.

95 The combustion-chamber C' is provided at the rear end with a plate, *h*, composed of serially-spaced-apart bars *h'*, forming apertures between the same, and said plate is disposed in an inclined position, its lower horizontal edge being rigidly secured to the rear end of the said chamber C', near which point is also

secured the lower end of the vertical portion of a right-angular plate,  $i$ , which conforms to the inner right-angular portion of the rear end of said fire-box. The upper horizontal portion of this right-angular plate bears against the under surface of the partition or plate  $d'$ , and to its forward end is rigidly connected the upper forward edge of said apertured plate  $h$ . This right-angular plate  $i$  is provided in its horizontal portion with three or more openings or apertures,  $d^2$ , and in its vertical or rear portion with a large opening or aperture,  $d^3$ , communicating with the flue  $E$ , as will appear farther on. Within the smoke-box  $D$  is arranged a small pan or receptacle,  $a^2$ , directly at that end of the smoke pipe or flue  $E$ , to catch and permit of the convenient removal of light ashes, soot, &c., the smoke-box having a small door for the removal of the pan and its contents when required.

The combustion-chamber  $C'$  and smoke-box  $D$  are connected to a pipe or flue,  $E$ , upon the frame-work beneath the receptacle  $A$ .

Within the space formed between the walls of the right-angular plate  $i$  and apertured plate  $h$  is arranged a damper,  $I$ , in general outline being of the same formation as the right-angular plate  $i$ , against which it is designed to slide, and is manipulated by a rod,  $i'$ , connected to said damper and having its inner short right-angularly-bent end extending through a suitable slot in the side of the fire-box and the vertical portion of the plate  $i$ , and projecting along the rear end of said fire-box to one side of the receptacle, within convenient reach of manipulation to open or close the fire-box end of said flue or pipe  $E$ , as may be required. The horizontal plate of this right-angular damper  $I$  has formed therein openings or apertures  $d^4$ , the same corresponding in number to the openings or apertures formed in the horizontal portion of the plate  $i$ , and the other or vertical plate of said damper has but one large opening or aperture,  $d^5$ , corresponding to the opening in the end of the flue  $E$  and the vertical portion of the plate  $i$ . The openings  $d^4$  in the horizontal part of the damper  $I$  are so arranged that when the opening or aperture in said damper registers with the flue  $E$  the openings or apertures in the horizontal portion of the plate  $i$  are closed, and vice versa—that is, when the openings or apertures  $d^4$  are registering with the said openings or apertures  $d^2$  the opening of the flue is closed. By the movement of said damper or plate  $I$  so as to open up communication between the combustion-chamber  $C'$  and the pipe or flue  $E$ , leading to the smoke-box  $D$ , the flame or heat will be diverted from the upper chamber,  $C^2$ , and consequently from the water-heating pipes  $B$ , and conducted into said flue directly to the smoke-box, as is required when drawing or running off the water from the receptacle  $A$ , the latter having a waste-water cock or faucet,  $j$ , at the front end, as well as a supply-funnel,  $k'$ , at its rear end.

The water-heating pipes  $B$  are screw-thread-

ed at their ends where they pass through the apertures in the upper compartment,  $C^2$ , of fire-box  $C$  and the smoke-box  $D$ , and said screw-threaded ends of the pipes are connected to the ends of the receptacle  $A$  by means of bushings or nuts  $l$ , one applied to each end of the pipes, and said bushings are each provided with a screw-threaded rim or ring,  $l'$ , screwing into a threaded aperture in each end of the receptacle, while directly through the center of the bushing or nut is a screw-threaded aperture,  $l^2$ , into which screws the end of the pipe or flue.

The front or disk portion of the bushing or nut projects by its rim or ring and rests against the outside of the receptacle. By means of this construction of bushing or nut and its connection with the pipe a water space or chamber,  $l^3$ , is provided intermediately of the pipe and the ends of the receptacle to prevent the scorching or charring of the wood of said ends.

$F$  is a whey tank or pan, which is preferably zinc-lined and adapted to fit snugly upon and partly within the receptacle  $A$ , having its upper outer portion resting at its lower edge upon the upper edge of the receptacle and connected thereto by hooks and eyes. Upon the under side of the bottom of the pan or tank  $F$  are secured, suitably spaced apart, strips or slats  $e^4$ , which re-enforce or strengthen the bottom. The bottom of the pan or tank  $F$  slopes toward the forward end and the middle to drain off the whey, while the front end of the pan or tank is provided with an outlet or opening,  $m$ , in alignment with the vertex of the side-sloping surface of the bottom.

Arranged to work in the inner end of the outlet or opening  $m$  is a valve,  $G$ , whose inner surface or face is conical, fitting a corresponding inner surface of said outlet or opening, and whose stem  $G'$  extends through the outlet or opening and some distance beyond the same. The portion of the outlet or opening  $m$  made directly through the pan or tank has a short nozzle,  $m'$ , on the outside of the latter, which enters a pipe,  $m^2$ , also forming a part of said outlet or opening, which pipe is screwed into and through the front of the receptacle  $A$ , and is provided with a screw-threaded lateral discharge nozzle or outlet,  $m^3$ , to which is connected suitable means for passing off the whey. The valve-stem  $G'$  is provided near the valve with a disk-shaped strainer,  $G^2$ , (see Figs. 7 and 8,) to effect the straining of the whey as it is drawn off and within the pipe  $m^2$ , and is provided with a worm-like screw-thread,  $m^4$ , which engages or works in a corresponding female screw-thread,  $m^5$ , in said pipe, to permit the ready opening and closing of the valve  $G$ . The outer end of the pipe  $m^2$  is also fitted with a cap-like nut,  $m^6$ , limiting the inward movement of the valve-stem with its valve, and upon the outer end of the valve-stem is applied and held thereon, by a spline or feather, a hand-wheel,  $G^3$ , or lever, to permit of the convenient operation of the valve-stem in opening and closing the valve.

The inward movement of the valve and its stem is limited, as above stated, by reason of the wheel  $G^3$  coming in contact with the nut  $m^6$ , screwed or fitted on the pipe  $m^2$ , through which said valve-stem passes.

To the front legs,  $a$ , of the receptacle  $A$  are applied supplementary legs or extensions  $a'a'$ , which are confined to and permitted to slide upon primary legs  $a$  by means of keepers or staples  $n$ , fastened to the latter legs and embracing the supplementary legs. The lower ends of the supplementary legs  $a'$  are provided with feet  $a^2$ , somewhat thicker than the primary legs  $a$ , and to each of them is pivoted the lower end of the stem of an approximately T-shaped lever,  $H'$ , the cross piece or head of the T being curved, and forming an eccentric with its extremities slightly turned up, forming steps  $o o'$  thereat. The upper convexed surface of the cross pieces or heads of the levers  $H'$  bear against the peripheries or faces of flanged frictional disks or wheels  $L$ , hung or revolving upon axes fastened to the legs  $a$  from their outside, the flanges of the wheels or disks serving as guards to prevent the accidental displacement or disengagement of the levers therefrom. To the stem or vertical portion of one of the levers  $H'$  is fixed in any suitable way a handle or lever,  $H^2$ , which is retained in position, when released from the hand or out of action, by a bent or stepped spring-catch,  $h''$ , as shown. In their normal positions (shown in Fig. 6) the supplementary legs  $a' a'$  will permit the contrivance or vat as a whole to stand level; but when it is desired to draw off the whey and to effect the thorough draining of the whey tank or pan the handle or lever is grasped and disengaged from its catch, when the weight of the contrivance, pressing upon the primary legs  $a$ , will have the effect to transmit the pressure through the wheels or disks  $L$  to the eccentrically-curved cross-pieces and stems of the levers  $H'$ , which curved pieces will naturally move under the said pressure, carrying with them bodily the levers, thus permitting the sliding of the primary legs  $a$  down on the supplementary legs  $a'$ , and consequently lowering that end of the contrivance, or disposing the same in a forwardly-inclined position, when the whey, to the last thereof, may be drawn off through the valves. The water, it will be understood, is drawn from the receptacle  $A$  by means of the before-referred-to cock or faucet  $j$ . In order to restore the vat or contrivance to its normal or level position, it is only necessary to again bring the handle or lever  $H^2$  into engagement with its spring-catch, thus raising the forward end of the contrivance.

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

1. The combination, with the receptacle and its water-heating pipes located therein, of the fire-box having two chambers or compartments, one of said chambers or compartments extending up in front of the receptacle and communicating with said pipes for heating the contents of said receptacle, and the other chamber or compartment communicating with a flue leading to a smoke-box arranged at the rear end of the receptacle, said fire-box having a damper arranged to open and close the said flue and to open and close the openings leading from the fire-box to the upper compartment thereof, substantially as shown and described.

2. The combination, with the receptacle, its water-heating pipes, and the flue connecting with a rear smoke-box, of the fire-box having two compartments or chambers extending beyond the front of said receptacle, and to one of which said flue is also connected, and the hinged doors secured at their upper and lower ends, respectively, to the forward end of a central partition of said fire-box; one of said doors having a draft-regulating damper, substantially as shown and described.

3. The combination, with the water-receptacle, of the water-heating pipes arranged therein, the smoke and fire boxes disposed at opposite ends of said receptacle, the smoke-flue underneath the receptacle, said water-heating pipes and flue connecting the fire and smoke boxes, and the damper arranged within the fire-box to open and close alternately the fire-box end of the smoke-flue and the said water-heating pipes, substantially as shown and described.

4. The combination, with the receptacle, of the devices for lowering one end thereof, the same consisting of the supplementary legs, capable of sliding or moving upon the primary legs, and the approximately T-shaped levers, with their lower ends pivoted to the feet of the supplementary legs and their upper ends provided with eccentrically-curved cross-pieces bearing against the disks or wheels on the primary legs, with means to actuate and release the said levers, substantially as shown and described.

In testimony whereof I affix my signature in presence of two witnesses.

ROBERT OLP.

Witnesses:

JOS. V. MILLER,  
H. C. BUHRE.