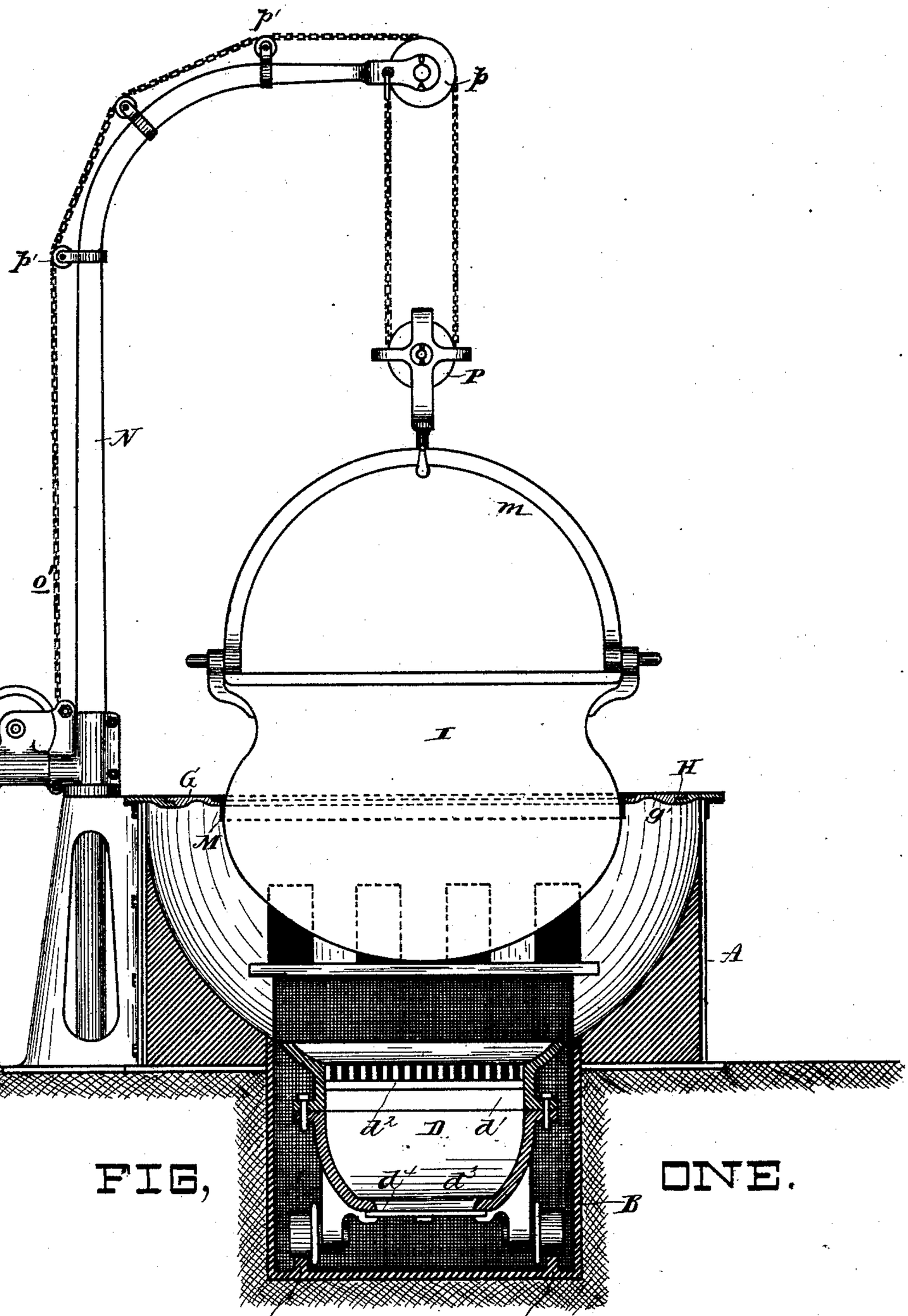
(No Model.) 4 Sheets—Sheet 1.

F. GEBHARDT.

CHEESE MAKING APPARATUS.

No. 354,314. Patented Dec. 14, 1886.



FIG, ONE.

Witnesses { Jno. R. Morgan, W. D. Thomas.

Inventor Fridrick Gebhardt
by Pollard Simmons, Attys.

(No Model.) 4 Sheets—Sheet 2.

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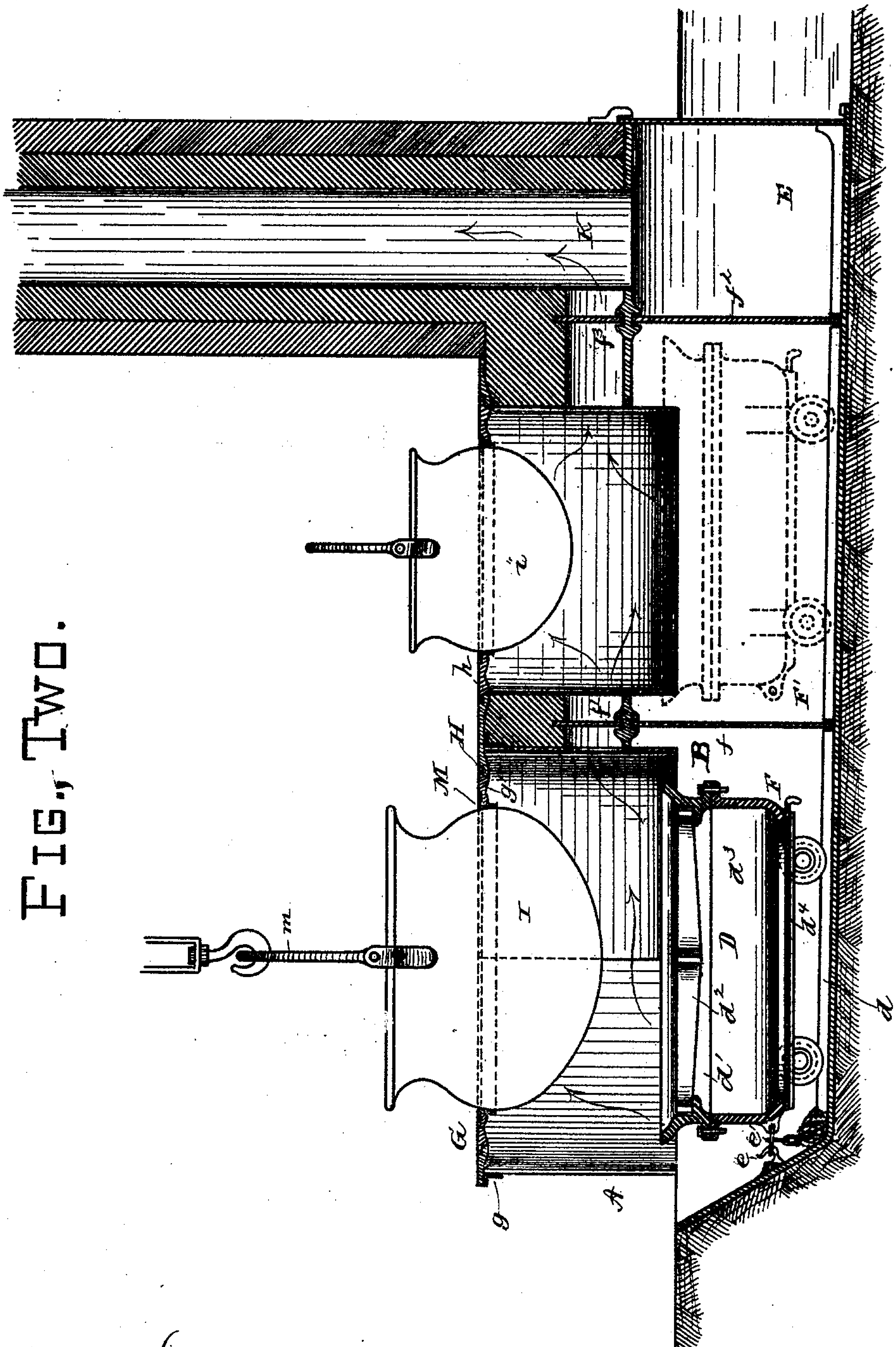

FIG. TWO.

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Atty.

(No Model.)

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CHEESE MAKING APPARATUS.

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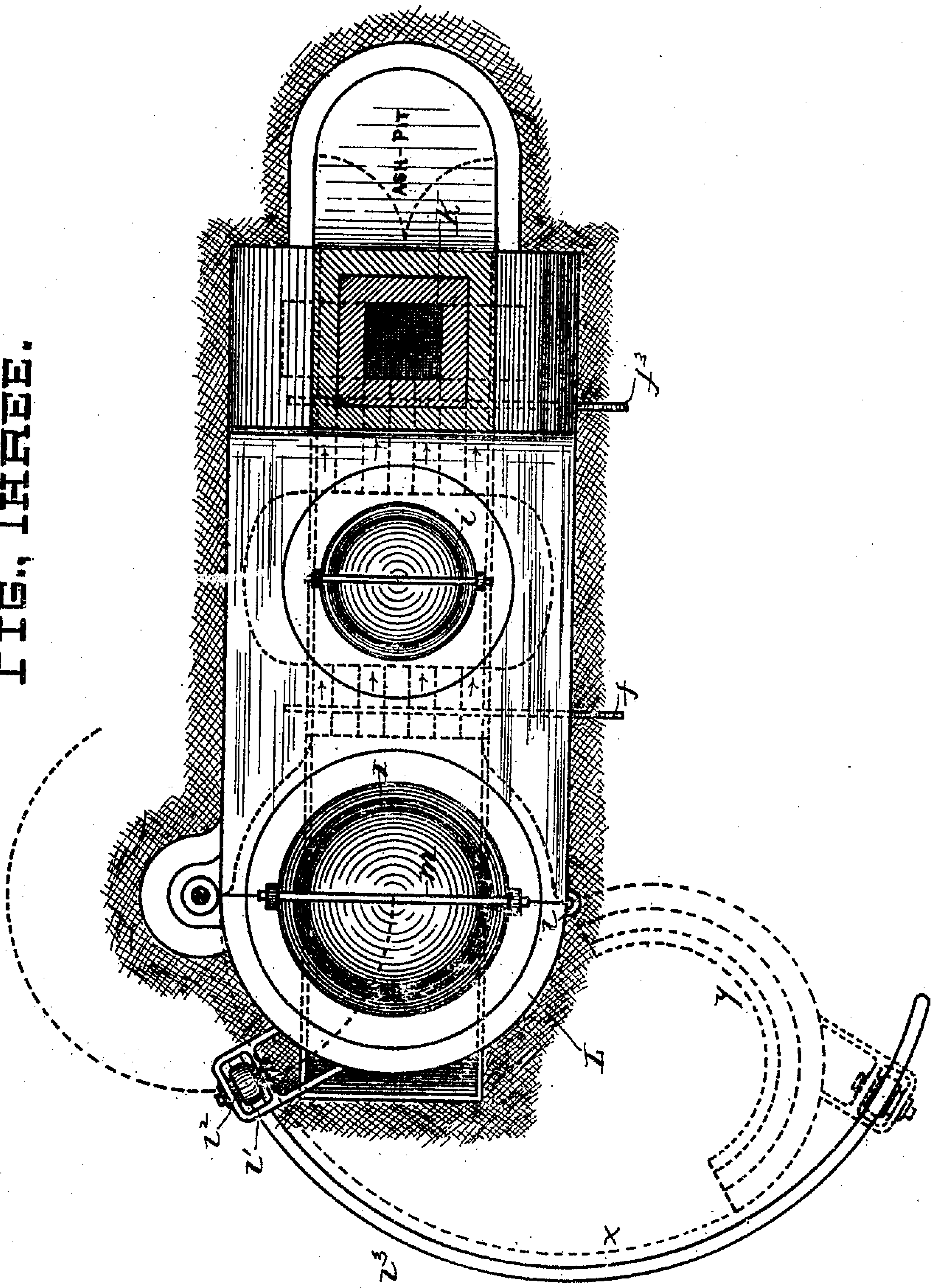
Fig. Three.



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(No Model.) 4 Sheets—Sheet 4.

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CHEESE MAKING APPARATUS.

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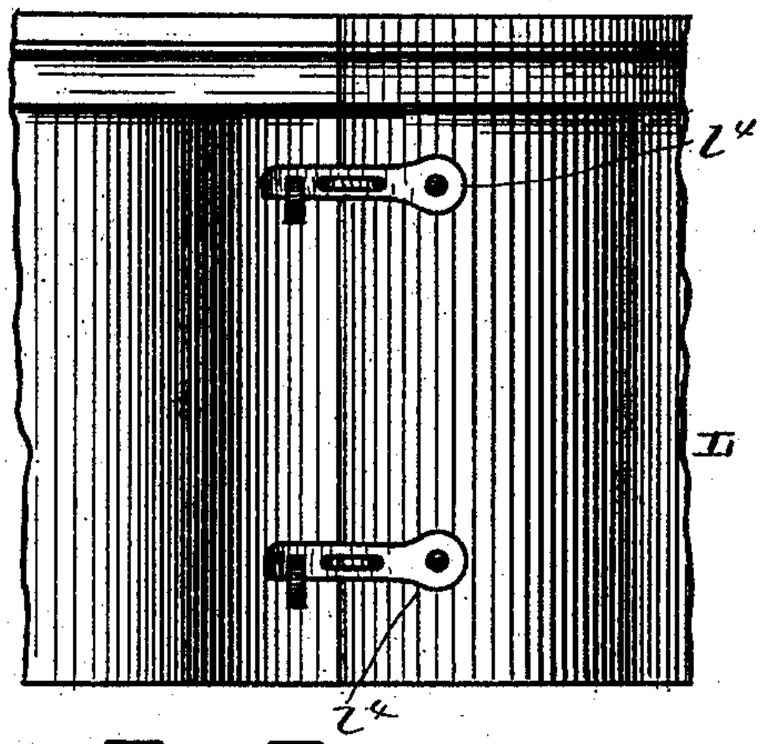

FIG., FOUR.

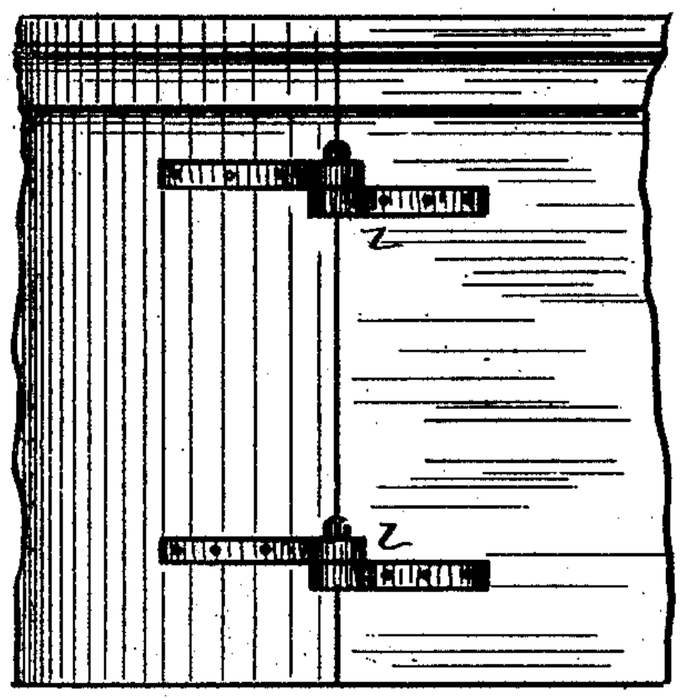

FIG., FIVE.

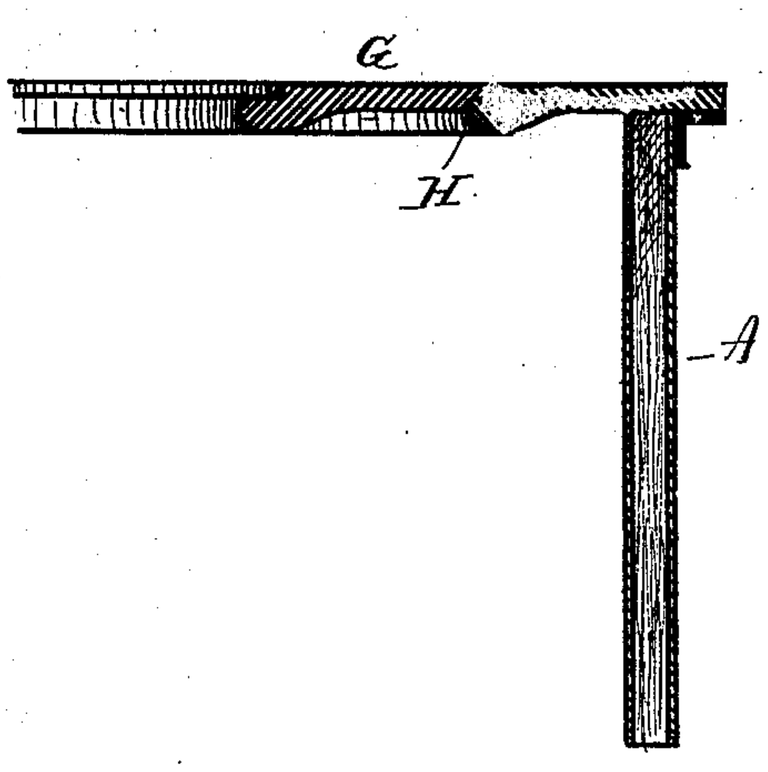

FIG., SIX

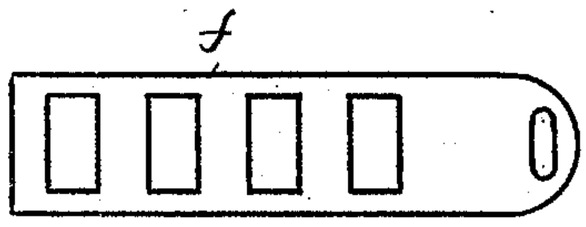

FIG., SEVEN.

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W. D. Thomas.

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by Pfeil & Seymour.

UNITED STATES PATENT OFFICE.

FRIDRICK GEBHARDT, OF ALLIANCE, OHIO.

CHEESE-MAKING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 354,314, dated December 14, 1886.

Application filed April 23, 1886. Serial No. 199,893. (No model.)

To all whom it may concern:

Be it known that I, FRIDRICK GEBHARDT, of Alliance, in the county of Stark and State of Ohio, have invented certain new and useful Improvements in Cheese-Making Apparatus; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to an improvement in cheese-making apparatus.

In the process of making what is commonly termed "Swiss cheese" success depends upon the rapid heating and cooling of the milk. To accomplish this, it has hitherto been customary to employ a kettle made of the finest drawn copper, about one-sixteenth of an inch in thickness. The furnace over which the kettle has been hung for heating has been constructed of rude masonry-work, in the top of which the kettle fitted very imperfectly. As a consequence of such construction, the kettle has been dented and damaged in spite of the utmost care in swinging it off and on, and because of the great weight of the kettle and its contents, (from twelve to fifteen hundred pounds,) the thinness of the metal, and the roughness of the seat in the top of the furnace the bottom has been rapidly worn and kettle rendered useless. The clumsy manner in which the furnaces have been built, intended for the most part for burning wood, has rendered the smoke and flame liable to creep out and annoy the operators and damage the building. The smoke and gas have been particularly annoying when coal has been substituted for wood, as sometimes happens when wood is scarce. The operator has also been obliged to bandage his limbs to prevent them from blistering. The difficulty experienced in getting the kettle off and on with sufficient rapidity to heat and chill at proper intervals has had a tendency to produce an inferior article, which has to be "doctored" to render it marketable.

The object of my present invention is to provide means for guarding, heating, and removing the kettle, by which the difficulties hitherto experienced may be avoided and the manufacture of cheese conducted with greater economy and more rapidly and effectively.

With these ends in view my invention consists in certain features of construction and combinations of parts, which will be hereinafter described, and pointed out in the claims.

In the accompanying drawings, Figure 1 is a transverse vertical section through the furnace, showing the kettle in side elevation. Fig. 2 is a vertical longitudinal section through the furnace. Fig. 3 is a top plan view. Figs. 4 and 5 are partial front elevations showing the latched and hinged edges of front door, respectively. Fig. 6 is an enlarged part section showing the construction of the furnace wall and top, and Fig. 7 is a view of one of the dampers.

A represents the walls of an elongated furnace, preferably built of double sheet-iron, spaced as shown in Fig. 6, to admit a circulation of air between them, or some non-conducting fire-proof material. The walls A rest on suitable supports, preferably on the surface of the ground or floor, and between and below them is a pit, B, extending rearwardly beyond the uptake K. In the pit B a car, D, is adapted to travel on rails *d*. The upper section, *d'*, of the car D is provided with a set of grate-bars, d^2, and is made removable from the lower section, d^3, so that it may be renewed when the grate-bars become burned out without the expense of an entirely new car. The lower section, d^3, of the car is an ash-receptacle, and the bottom is provided with a slide, d^4, to dump the ashes when the car is run to the rear of the uptake or ash-pit E.

The tracks on which the car D runs are set on a downgrade toward the rear, so that the car will gravitate to the rear when released at the front end. A hook, *e*, attached to the end wall of the pit, and a chain, *e'*, attached to the front end of the car, serve to lock the car in its normal position at the front end of the furnace, and to draw the car from the rear end to the front.

The furnace interior is separated into two compartments, F and F', by means of a gate, *f*, and damper *f'*, located transversely across the pit and upper half of the interior, and adapted to slide outwardly to allow the car to travel and open the draft-flues. A second gate and damper, f^2 f^3, having a construction similar to the gate and damper *f f'*, are located be-

tween the compartment F′ and the uptake, and are opened and closed by a sliding motion transversely to the furnace.

The top G of the furnace is of cast-iron, and is secured to the walls by means of angle-irons *g*, bolted or riveted thereto. The front section of the top is provided with a circular opening, H, or it may be oval or angular, adapted to receive the rounded or otherwise shaped bottom of the milk-kettle I. One or more rings, *g′*, are adapted to fit the border of the opening H, to admit of the use of kettles of different sizes. A second opening, *h*, is formed in the top G, back of the opening H, to receive a water-kettle, *i*. The opening *h* is also provided with spacing-rings, to suit different-sized kettles.

K is the uptake, consisting of a pipe or chimney extending upwardly from the rear end of the furnace.

The front L of the furnace is semicircular in form, and is adapted to separate from the main portion at the extremities of the transverse diameter of the opening H, and swing open on hinges *l*, thereby allowing the kettle I to be swung out of its position in the opening H toward the front without elevating it. The front L is double-walled, to prevent the passage of heat to the legs of the operator, and to prevent it from sagging or straining the hinges *l* it is provided at its free end with a bracket projection, *l′*, in which is mounted a roller, l^2, which is adapted to travel on a track, l^3, set in the floor or ground. An ordinary latch, l^4, is provided for holding the door in closed adjustment.

The kettle I is constructed of thin drawn copper, and is provided with an iron shield, M, encircling its bulging bottom at the line where the kettle is intended to rest in contact with the edge of the opening H. The shield M is preferably a band of malleable iron—such, for example, as thick hoop-iron—and consists, essentially, of a cylindrical band and an annular ring. The kettle is further provided with a bail, *m*, by which it is suspended from a crane, N, secured in swinging adjustment at the side of the furnace, and provided with a windlass, O, and chain *o′*, leading from the end of the crane around a movable pulley, P, at the bail, thence over a fixed pulley, *p*, at the end of the crane, and thence over guide-rollers *p′* to the windlass.

The path in which the kettle I travels when swung off and on by the crane is noted in Fig. 3 by a curved dotted line, *x*. The position which the front of the furnace assumes when open is also noted in the same figure by dotted lines *y*.

The above-described arrangement of parts admits of the fire located in the upper section of the car D being removed from beneath the kettle I, when the latter has been sufficiently heated, and transferred to a point beneath the water-kettle *i*, where it is utilized in heating the water. When desired to dump the ashes, the car is allowed to run back to the ash-pit, and the door at the bottom of the car there opened.

To remove the kettle from the furnace, the front L is swung open and the kettle swung out of the furnace without disturbing the contents, and in much shorter time than by hoisting it. It may, however, be hoisted to any desired height, and when in its lowered position over the furnace its weight may be taken partly or wholly by the top of the furnace in contact with the iron shield.

It is evident that slight changes might be resorted to in the form and arrangement of the several parts without departing from the spirit and scope of my invention; hence I do not wish to limit myself strictly to the construction herein set forth; but,

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

1. In a cheese-making apparatus, the combination, with a furnace-casing, a kettle, a crane, and a chain connected to the crane for supporting the kettle in a position over the fire-pot of the furnace, of a fire-pot adapted to be moved away from and beneath the kettle at pleasure, substantially as set forth.

2. In a cheese-making apparatus, the combination, with a furnace-casing and a kettle, of an ash-car and a fire-pot removably secured thereto, substantially as set forth.

3. In a cheese-making apparatus, the combination, with a furnace-casing, of an inclined track beneath the casing and a fire-pot and ash-car adapted to travel thereon beneath the casing, substantially as set forth.

4. In a cheese-making apparatus, the combination, with a furnace-casing and a series of movable partitions dividing the interior of the furnace into two or more compartments, of a fire-pot adapted to be moved from one compartment into another, substantially as set forth.

5. The combination, with a furnace and an inclined track located below the same, of a car forming a fire-pot and a hook and chain for operating and locking the car in position under the furnace, substantially as set forth.

6. The combination, with the furnace and the traveling fire-pot and ash-pan, of the ash-pit and declining track leading thereto, substantially as set forth.

7. The combination, with the body of the furnace, a crane located alongside thereof, and the kettle suspended from said crane, of the furnace-front adapted to swing open and allow the kettle to pass out, substantially as set forth.

8. The combination, with a furnace having openings and a kettle having a bulging bottom, of the shield made of stronger metal encircling the bulging portion of said kettle, and consisting of a cylindrical band and an annular flange, substantially as set forth.

9. The combination, with the furnace provided with a swinging front, of the crane adapted to suspend a kettle in the opening in

the furnace and remove it therefrom without hoisting, substantially as set forth.

10. The combination, with the two-compartment furnace and the shifting fire-pot, of the two kettle-openings, the kettles, and the crane for handling the same, substantially as set forth.

11. The cheese-making apparatus, consisting, essentially, of the furnace with its swinging front, the car fire-pot and ash-pan, the shielded kettle, and the crane, the whole constructed and arranged substantially as set forth.

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

FRIDRICK GEBHARDT.

Witnesses:
J. D. LEWIS,
JOSEPH FIRST.