No. 782,888. PATENTED FEB. 21, 1905.

J. H. VINTON.

FURNACE FOR HEATING TOE CALK BLANKS.

APPLICATION FILED APR. 7, 1904.

4 SHEETS—SHEET 1.

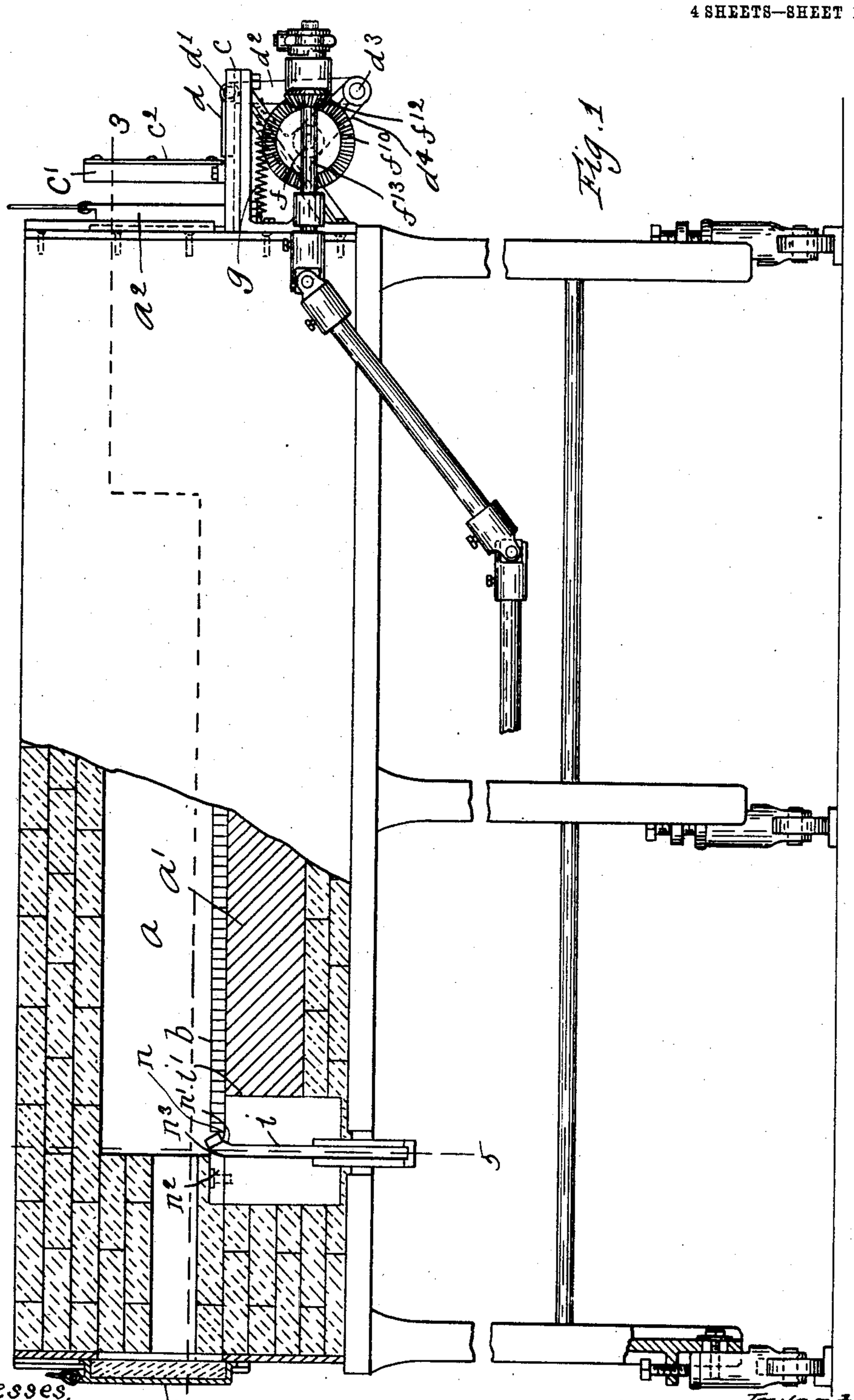

Fig. 1.

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M. M. Piper

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4 SHEETS—SHEET 2.

Fig. 2.

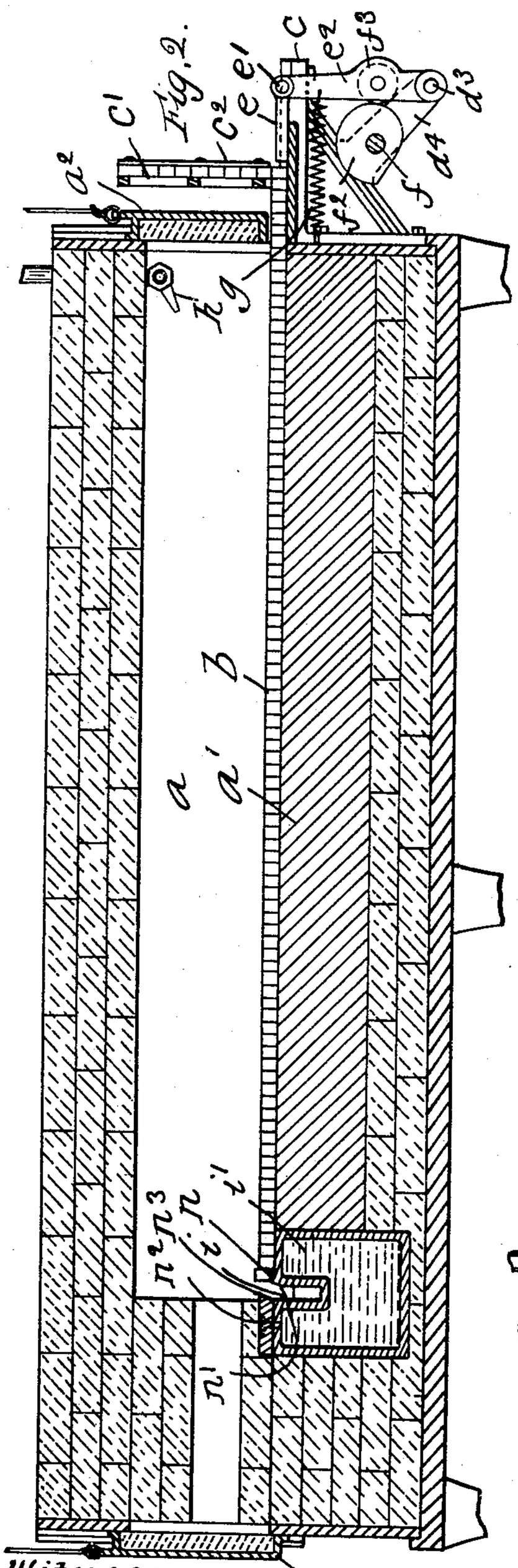
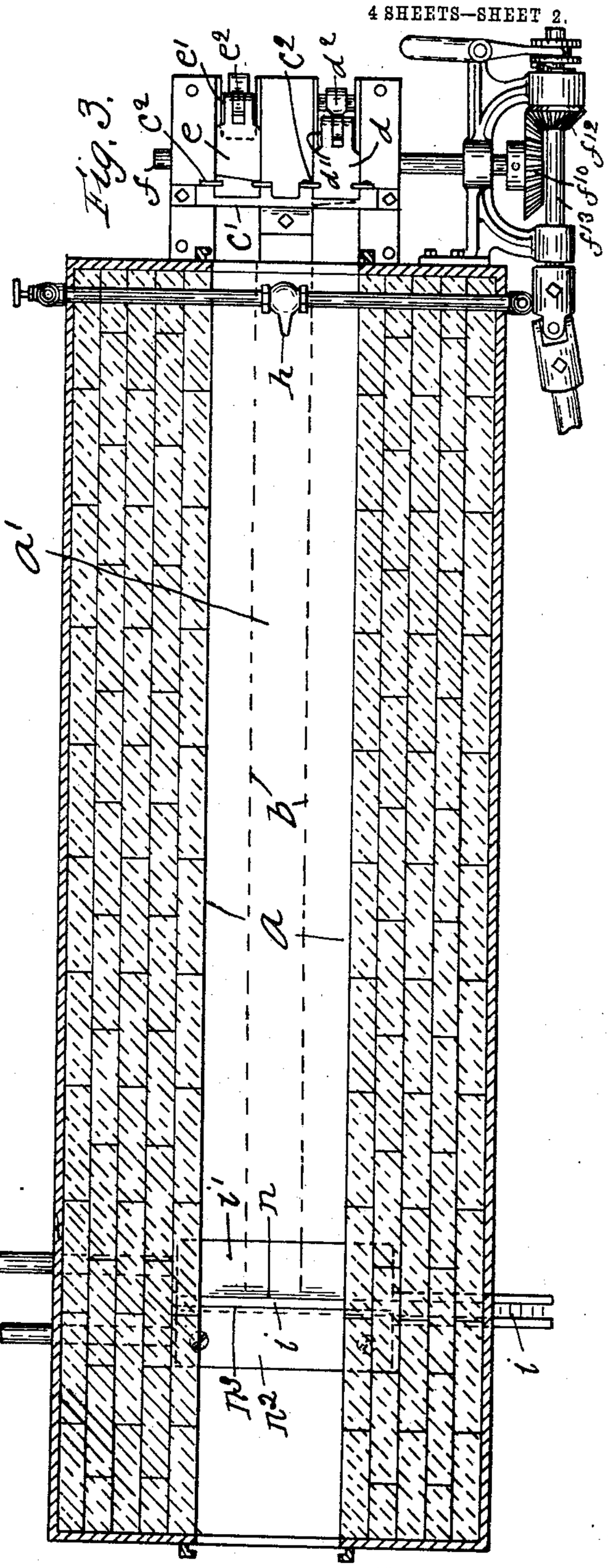


Fig. 3.



Witnesses:
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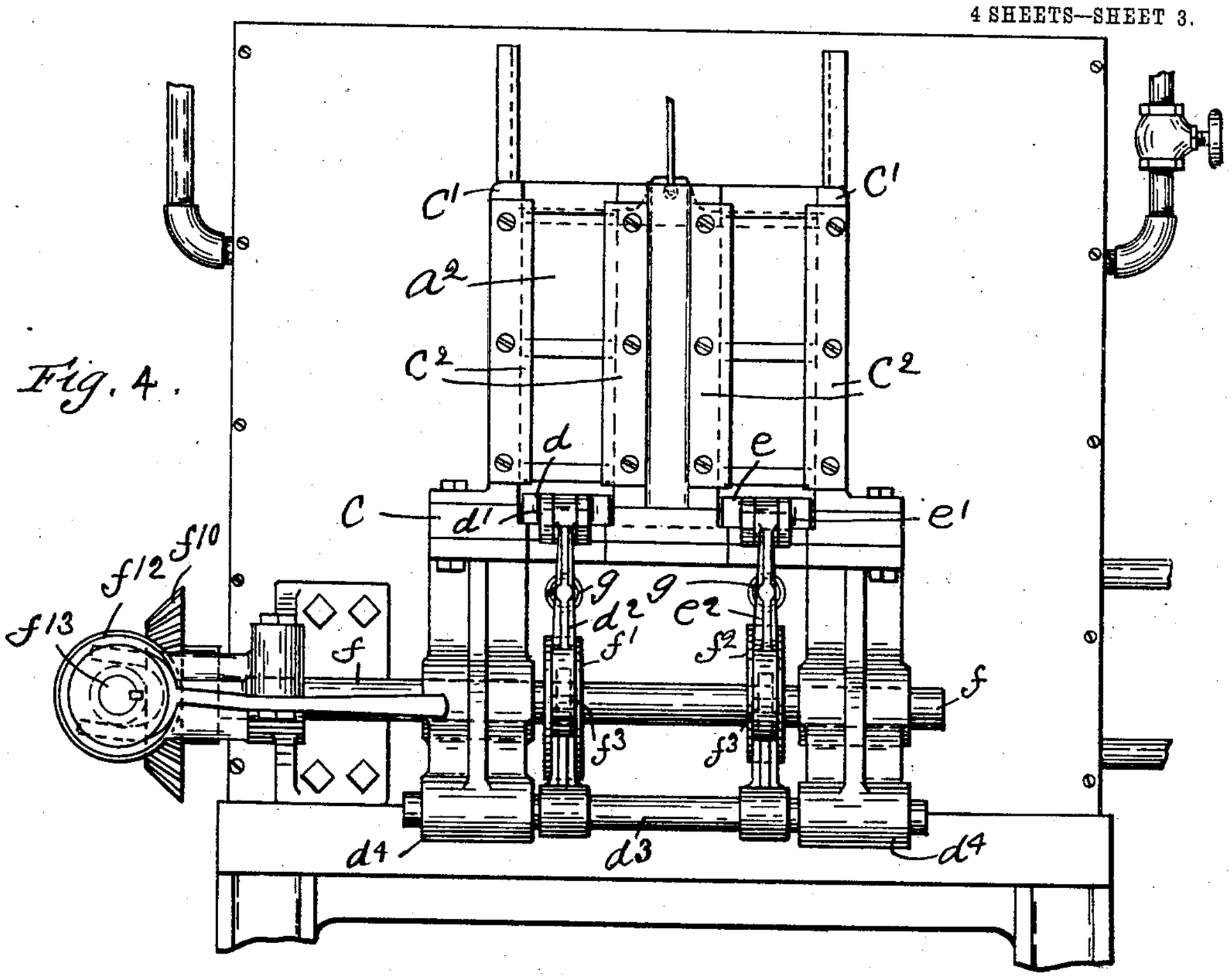
4 SHEETS—SHEET 3.

Fig. 4.



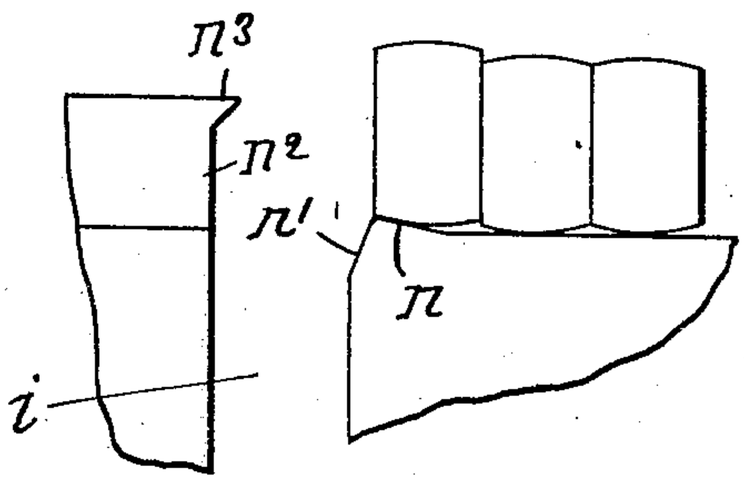


Fig. 7.

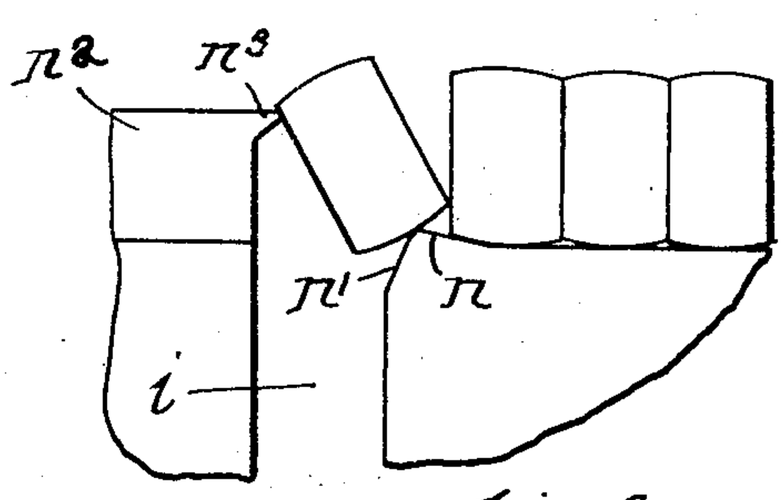


Fig. 8.

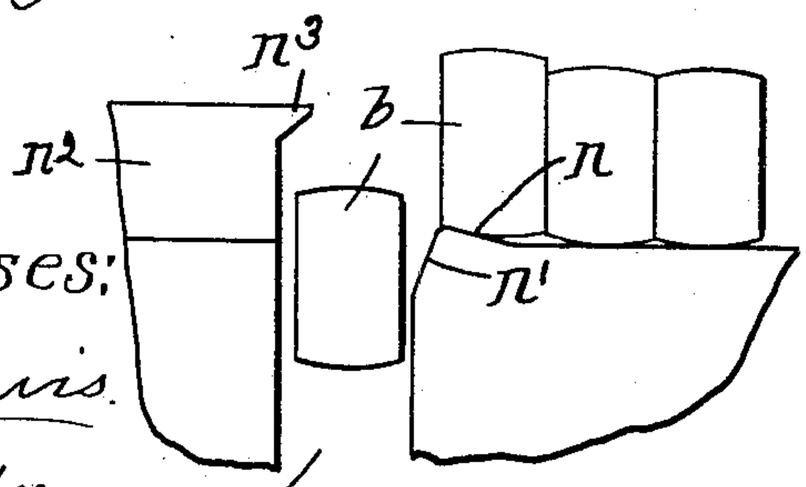


Fig. 9.

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No. 782,888. PATENTED FEB. 21, 1905.

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4 SHEETS—SHEET 4.

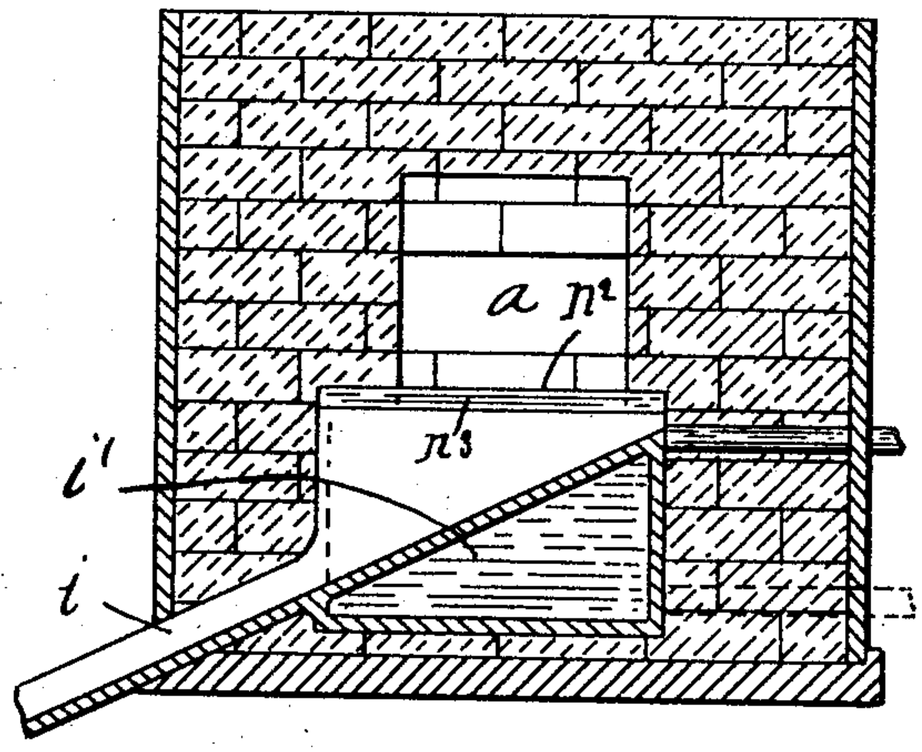

Fig. 5.

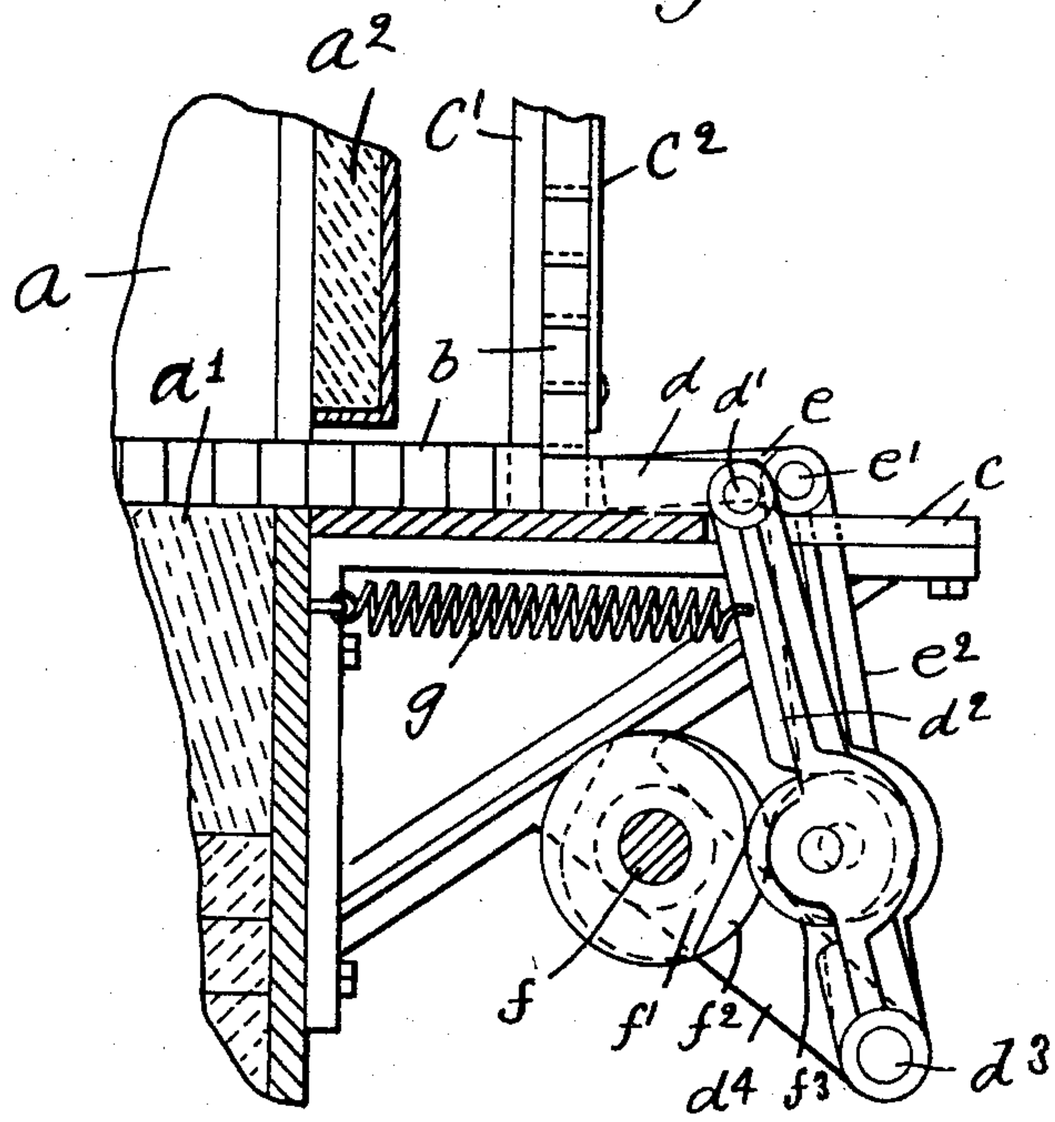

Fig. 6.

Witnesses:
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No. 782,888. Patented February 21, 1905.

UNITED STATES PATENT OFFICE.

JOHN H. VINTON, OF BOSTON, MASSACHUSETTS, ASSIGNOR OF TWO-THIRDS TO WILLIAM W. POTTER, OF BROOKLINE, MASSACHUSETTS, AND JAMES T. MINCHIN, OF MALDEN, MASSACHUSETTS.

FURNACE FOR HEATING TOE-CALK BLANKS.

SPECIFICATION forming part of Letters Patent No. 782,888, dated February 21, 1905.

Application filed April 7, 1904. Serial No. 202,004.

To all whom it may concern:

Be it known that I, JOHN H. VINTON, of Boston, county of Suffolk, State of Massachusetts, have invented an Improvement in Furnaces for Heating Toe-Calk Blanks, of which the following description, in connection with the accompanying drawings, is a specification, like characters on the drawings representing like parts.

This invention has for its object to construct a furnace especially adapted for heating blanks for the manufacture of horseshoe toe-calks; yet said machine may be used for heating blanks for other purposes. The blanks, which are of suitable length to form the toe-calks, are first cut off of a cold bar, and in accordance with my method of manufacturing toe-calks are then heated in a furnace to a high degree, and the heated blanks are then subjected to the action of suitable spur-forming devices, by which the spur is formed and finished.

The furnace embodying this invention is adapted to heat a large number of blanks and to deliver the heated blanks rapidly, so as to supply a rapidly-working toe-calk-making machine, and contains a long heating-chamber having a bottom wall or bed adapted to receive upon it two lines or rows of contiguously-disposed blanks, one row at each side thereof, and an entrance is provided at one end of said chamber for the introduction of the cold blanks, and an exit is provided at the opposite end of the chamber for the delivery of the heated blanks, and means are provided for pushing the blanks along said bed, said means comprising two plungers or pushers which operate alternately and push along the two rows of blanks alternately, so that the heated blanks from the two rows will be delivered alternately at the exit of the heating-chamber. Suitable receivers are provided at the entering end of the chamber adapted to receive two stacks or piles of blanks, and the plungers move across the lower ends of said receivers and remove the lowermost blank from each stack and push it along into the heating-chamber, at the same time advancing the row of blanks ahead of it. A continuous passage of the blanks through the furnace is thereby provided. The blanks are preferably rectangular in cross-section, and means are provided for delivering the blanks at the exit of the heating-chamber always in a certain relative position, so as to be correctly presented to the spur-forming devices of the toe-calk-making machine.

My furnace may be used with but a single row of blanks or any other number of rows.

Figure 1 shows in side elevation and partial longitudinal vertical section a furnace for heating blanks for horseshoe toe-calks embodying this invention. Fig. 2 is a longitudinal vertical section of the furnace shown in Fig. 1. Fig. 3 is a horizontal section of the furnace shown in Fig. 1, taken on the dotted line 3 3, Fig. 1. Fig. 4 is an end view of the furnace shown in Fig. 1. Fig. 5 is a transverse section of the furnace shown in Fig. 1, taken on the dotted line 5 5. Fig. 6 is a detail showing the means for operating the plungers. Figs. 7, 8, and 9 are details representing the blanks as they are delivered from the heating-chamber.

The furnace is essentially built of masonry and has formed within it a long heating-chamber *a*, provided with a bottom wall or flat bed *a'*. The heating-chamber is provided with a door a^2 at each end, by which access may be had thereto for the sake of cleaning it, said doors being herein shown as adapted to be moved up and down. The bed *a'* is adapted to receive upon it two rows of contiguously-disposed blanks *b*, and it is desirable that said rows of blanks shall be located at the outer or side edges of the bed. At one end of the heating-chamber openings are provided for the entrance of the blanks, and a common delivery-passage is provided at the opposite end of the heating-chamber.

On a suitable shelf or other support *c* at the entrance end of the furnace an upright blank-receiver is provided, which is herein shown as arranged to hold two vertical stacks or piles of blanks; yet said receiver may be arranged to hold any other desired number of stacks, and said receiver comprises a vertical frame

c', having two parallel blank-receiving spaces and also having strips c^2 secured to it, which overlie said spaces and which hold the superimposed blanks therein. At the lower end of said blank-receiver openings are provided for the removal of the lowermost blank from the stack or pile to the heating-chamber.

The blanks are introduced at the top of the receiver. Two plungers are provided, which reciprocate in a horizontal plane at the lower end of the blank-receiver and which operate to remove the lowermost blanks from the stacks or piles and push them into the heating-chamber.

d and e represent the two plungers, which are herein shown as flat plates which rest upon the shelf c and slide thereon in a horizontal plane, or said plungers may be otherwise guided. The plungers d and e are pivotally connected at d' e' to the upper ends of arms or levers d^2 e^2, and said arms are pivoted to a bar or other support d^3, which is supported by arms d^4, which project from a stationarily-supported bracket. A shaft f, supported by said arms d^4 or otherwise, bears two cams or irregularly-shaped disks f' f^2, which are disposed on the shaft f so as to respectively engage rolls f^3, supported on the levers d^2 e^2 at points intermediate their length, and said cams f' f^2 are arranged to alternately operate said levers d^2 e^2 and alternately operate the horizontally-movable plungers. The cams are designed to move the levers outward, so that the horizontally-movable plungers will be moved outward by said cams, and strong springs g are connected to said levers, which act to return them to their normal positions. Therefore the feeding action of the plungers is obtained by the springs, which will only exert a certain pressure on the blanks, so that in case the furnace should clog the blanks will not be advanced and produce an irregular row.

The shaft f has secured to it a bevel-gear f^{10}, which is engaged by a bevel-pinion f^{12}, secured to a short shaft f^{13}, which is adapted to be driven by any suitable means.

During each revolution of the shaft f the plunger will be moved alternately and two blanks will be fed into the heating-chamber.

In order that the blanks of the two rows shall keep to their respective sides of the heating-chamber and be advanced in a straight line, the ends of the plungers are inclined as shown in Fig. 3, so as to act upon the ends of the blanks remote from the side walls of the heating-chamber, which may be called the "inner" ends of the blanks.

The blanks are heated by means of one or any desired number of gas-jets h.

At the delivery end of the heating-chamber a delivery-passage is provided, which is herein shown as a guideway i of suitable width to receive the blanks, having an inclined bottom, (see Fig. 5,) and said guideway i is set into or forms a part of a receptacle i', which is set in the masonry, and said receptacle is adapted to receive water or any other cooling medium to cool the guideway. As the blanks are pushed along the bed they will fall into the guideway and will then follow along the inclined bottom thereof.

The blanks are herein shown as rectangular in cross-section, and it is necessary that they shall be dropped into the guideway in a certain relative position and shall not be turned over or partially turned over, and to accomplish this result the surface of the bed adjoining the guideway rises a little, as shown at n in Figs. 7, 8, and 9, and one wall of the guideway at the top is beveled, as at n', and upon the opposite side of the guideway a block n^2 is placed, having a projection n^3, and as the endmost blank is pushed along it first rises, as shown in Fig. 7, and then tips over onto the projection n^3, as shown in Fig. 8, and then by pressure of the next blank upon it falls into the guideway.

By providing a heating-chamber of a width adapted to receive two rows of blanks and means for feeding the blanks along alternately I am enabled to employ a shorter heating-chamber than would otherwise be the case if but a single row of blanks was provided for, and yet the required number of blanks will be delivered per minute, which will be retained in the heating-chamber a sufficient length of time to become properly heated.

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

1. In a furnace for heating blanks, a heating-chamber having a blank-receiving bed, a blank-receiver supported at one end of said bed for holding a stack of superimposed blanks, a reciprocating plunger working at the lower end of said blank-receiver for removing the lowermost blank from the stack and for feeding it into the heating-chamber and for advancing the row of blanks ahead of it, a spring-actuated lever to which said plunger is connected and means for moving said lever against the action of said spring, substantially as described.

2. In a furnace for heating blanks, a heating-chamber having a blank-receiving bed adapted to receive upon it two rows of blanks, a blank-receiver supported at one end of said bed, two horizontally-movable plungers working at the lower end of said blank-receiver for receiving the lowermost blanks from said receiver and for pushing them into the heating-chamber and for advancing the rows of blanks, two spring-actuated levers to which said plungers are connected and means for moving said levers alternately against the action of said springs, substantially as described.

3. In a furnace for heating blanks, a heating-chamber having a blank-receiving bed, a plunger for advancing the blanks along on said bed, and a guideway at the delivery end of said

heating-chamber having an inclined bottom wall, a raised edge at one side of said guideway, a block at the opposite side thereof having a blank-engaging portion, substantially as described.

4. In a furnace for heating blanks, a heating-chamber having a blank-receiving bed, a plunger for advancing the blanks along on said bed, and a guideway at the delivery end of said heating-chamber having an inclined bottom wall, a raised edge at one side of said guideway, and an adjoining bevel, and a block at the opposite side thereof having a blank-engaging portion, substantially as described.

5. In a furnace, a heating-chamber having a blank-receiving bed, a blank-receiver at one end of said bed for holding a stack of superimposed blanks, a reciprocating plunger having a beveled end working at the lower end of said blank-receiver, for removing the lowermost blank from the stack and for feeding it into the heating-chamber and for advancing the row of blanks ahead of it, and means for operating said plunger, substantially as described.

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

JOHN H. VINTON.

Witnesses:
L. H. HARRIMAN,
H. B. DAVIS.