

(No Model.)

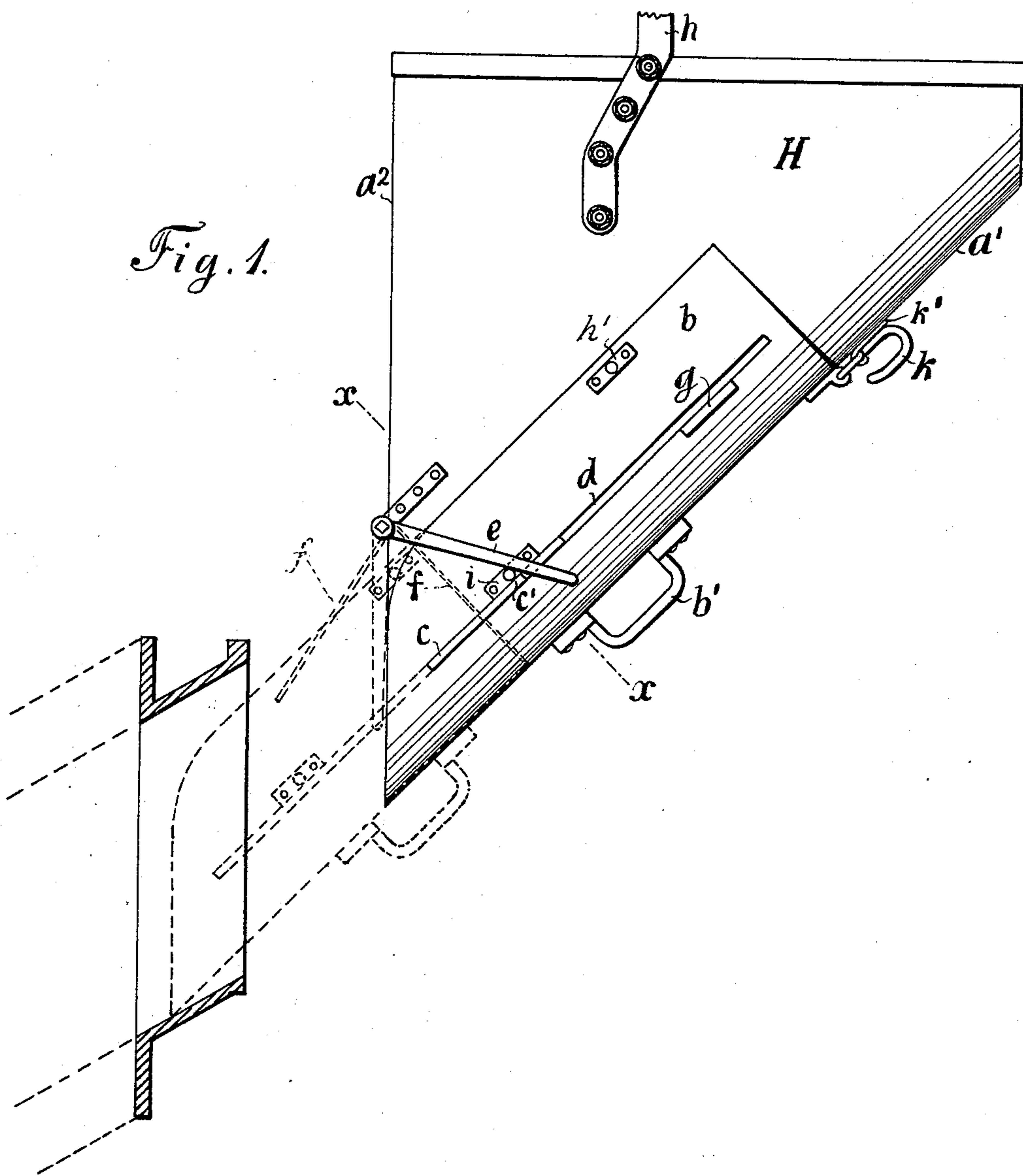
3 Sheets—Sheet 1.

E. RIEGEL.

STOKER FOR INCLINED GRATES OR RETORTS.

No. 594,431.

Patented Nov. 30, 1897.



Witnesses  
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B. H. Sommers

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(No Model.)

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Fig. 2

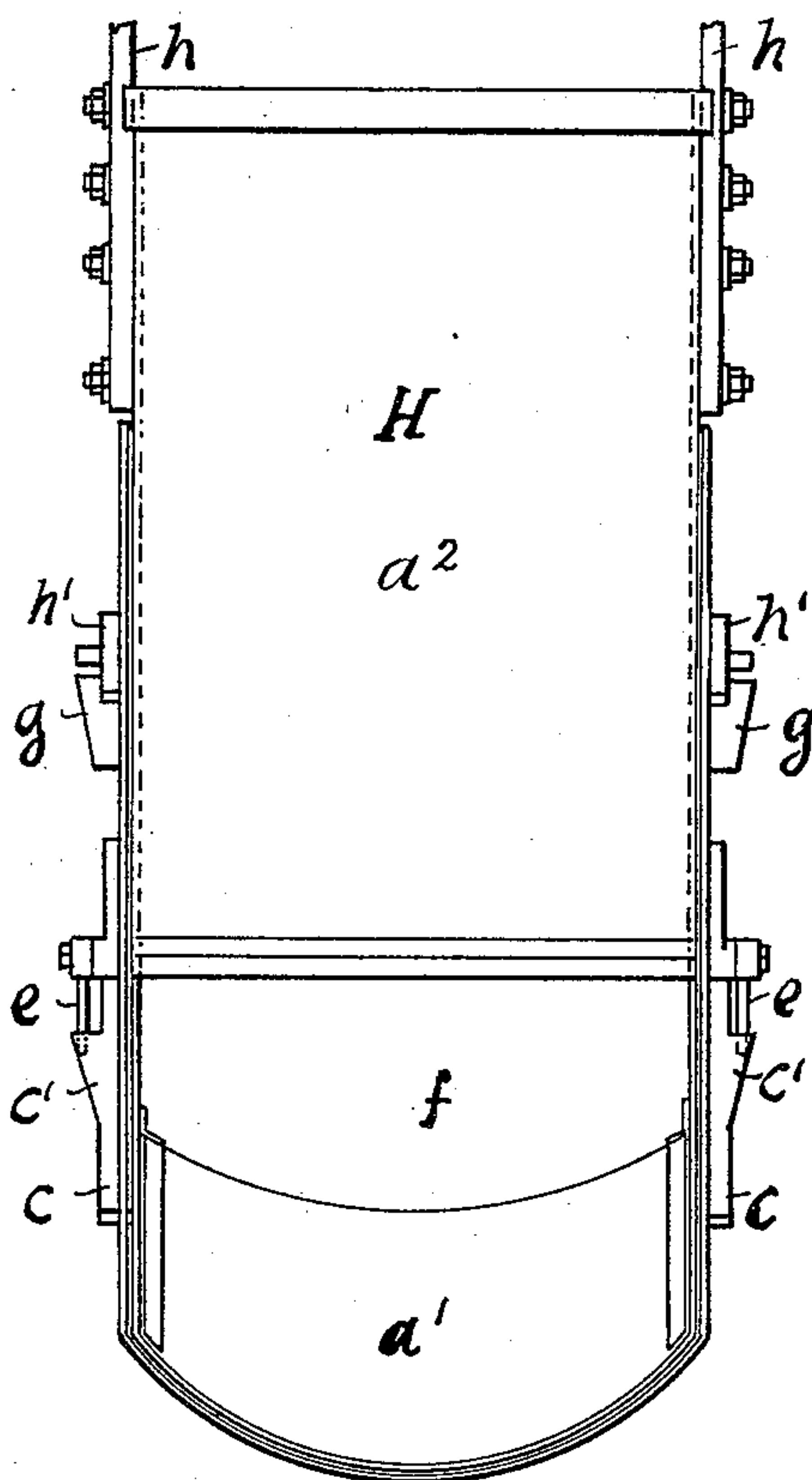
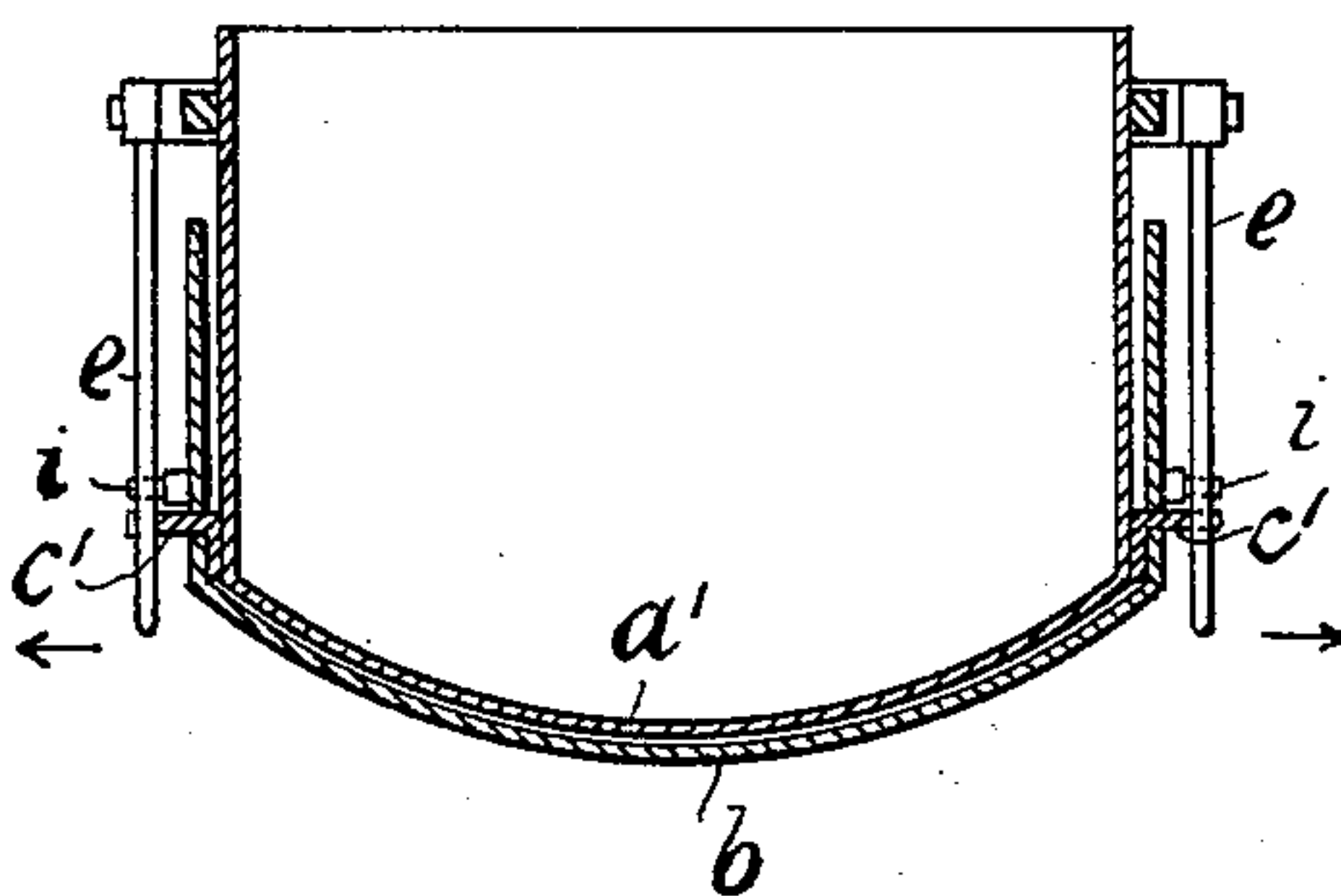


Fig. 3



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Fig. 5.

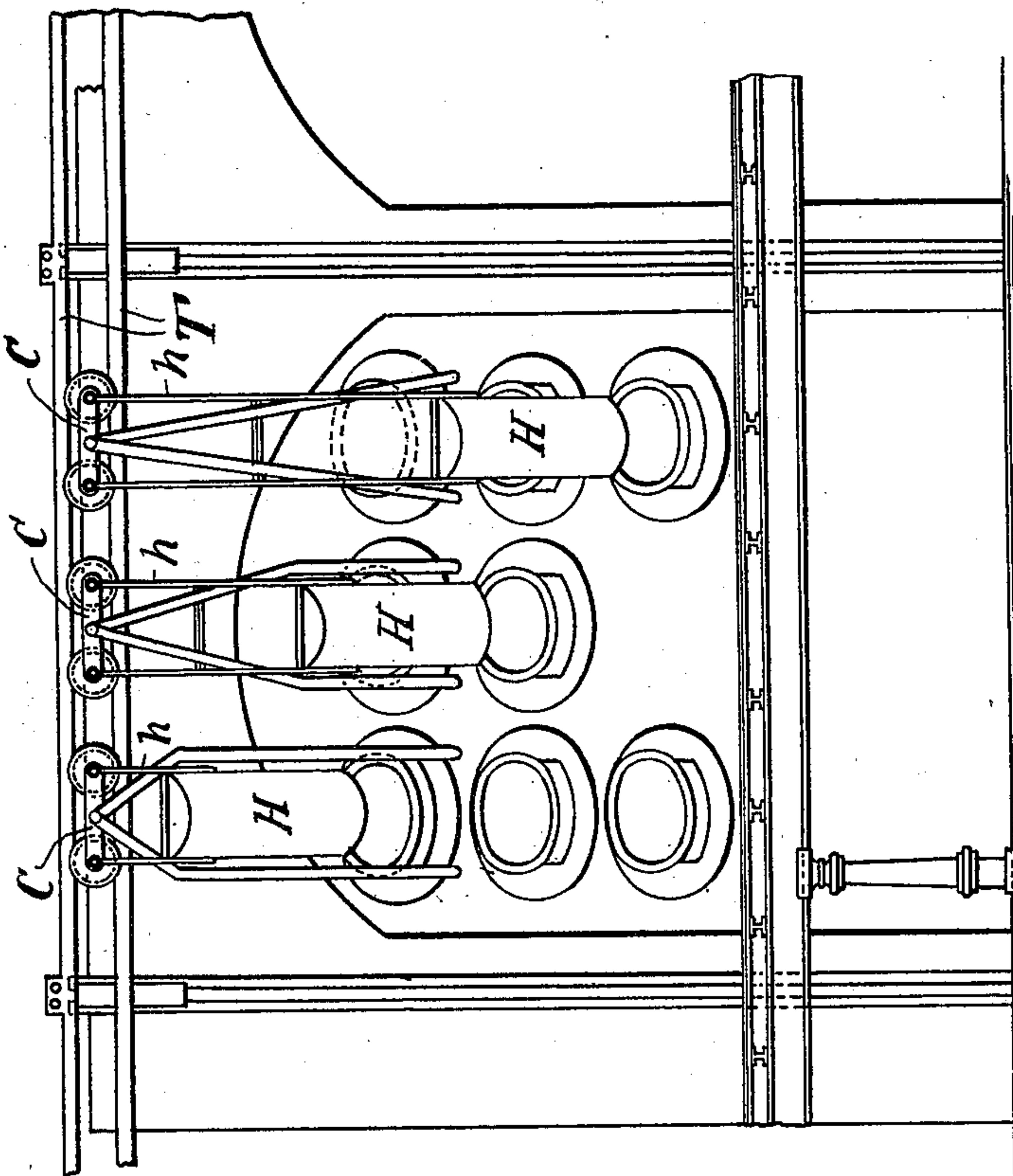
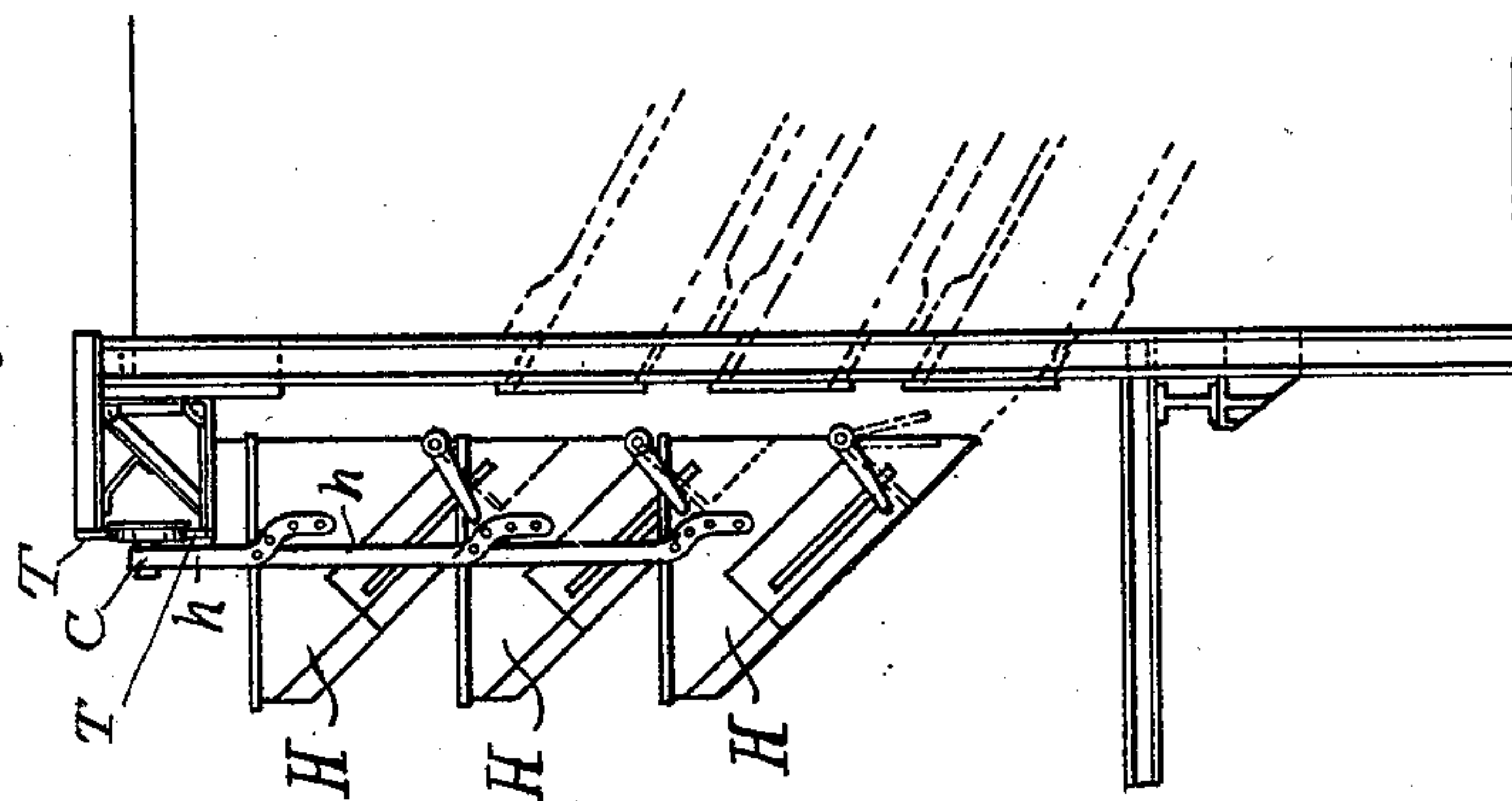


Fig. 4.



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# UNITED STATES PATENT OFFICE.

ERNST RIEGEL, OF STETTIN, GERMANY.

## STOKER FOR INCLINED GRATES OR RETORTS.

SPECIFICATION forming part of Letters Patent No. 594,431, dated November 30, 1897.

Application filed September 25, 1897. Serial No. 653,037. (No model.) Patented in Germany February 3, 1892, No. 64,443; in Belgium February 3, 1892, No. 98,192, and in Denmark May 9, 1892.

*To all whom it may concern:*

Be it known that I, ERNST RIEGEL, a subject of the King of Prussia, and a resident of Stettin, Germany, have invented certain new and useful Improvements in Stokers for Inclined Grates or Retorts, (for which Letters Patent have been obtained in Germany, No. 64,443, dated February 3, 1892; in Belgium, No. 98,192, dated February 3, 1892, and in Denmark, dated May 9, 1892, not yet numbered;) 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, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

This invention has relation to apparatus for stoking furnaces having inclined grates and for feeding coal to inclined retorts; and it has for its object certain improvements in the construction of the stoking or feeding devices, as will be fully described hereinafter, and as shown in the accompanying drawings, in which I have shown my invention in its application to superposed benches of inclined retorts.

Figure 1 is a side view of a feed-hopper embodying my invention. Fig. 2 is a front end view thereof, and Fig. 3 a section on line  $xx$  of Fig. 1. Fig. 4 is a side view, and Fig. 5 a front view, of superposed benches of retorts and a feed-hopper for each bench of retorts.

There is a twin-rail track  $T$  above the benches of retorts, between which rails the wheels of two-wheeled carriages or trucks  $C$  are adapted to travel, and from said carriages the feed-hoppers  $H$  are suspended by means of hangers, the length of which corresponds with the distance between their points of suspension and the line of discharge of the hoppers.

The hopper  $H$  is of a substantially triangular shape in side elevation and has secured to its side walls guide-cleats  $c$ , having inclined outer faces  $c'$ . The front  $a^2$  of the hopper is closed to a point along the axis of rotation of a valve or gate  $f$ , thus providing a discharge orifice and chute at the apex of the

angle, and to the bottom  $a'$  of said hopper, near its upper edge, is secured a stud or hook  $k'$ . On the bottom of the hopper is arranged a concavo-convex discharge-chute  $b$ , having longitudinal slots  $d$  in its opposite sides for the guide-cleats  $c$  on said bottom. Near the lower end of said slots, proximate to their upper edges, is a pin  $i$ , and near the upper end of said slots, proximate to their lower edges, there is an inclined or wedge-shaped cleat  $g$ , a pin  $h$  being secured to the sides of the slide near its upper edge and end, these devices being properly located to perform their respective functions, to wit:

When the chute  $b$  is in its normal position, hooked to the hook  $k'$  on the bottom of hopper  $H$  by means of a handled link  $k$ , the discharge valve or gate  $f$  will be held closed by the shoulders formed by the inclines  $c'$  on the hopper-cleats  $c$  abutting against the levers  $e$ , secured to the gate-pintle. Supposing the hopper to be filled with coal, it is moved in front of the intake of a retort and the chute  $b$  is unhooked from the stud or hook  $k'$ , which operation is facilitated by means of the handhold  $b'$  on said chute, which is thus free to slide to or partly into the intake of such retort, whereby the inclined faces of the wedge-shaped cleats  $g$  impinge upon the levers  $e$  and move the same off the shoulders of the inclines  $c'$ , (direction of arrows, Fig. 3.) The levers  $e$  being thus released from their locking devices leave the gate  $f$  free to open under the pressure of the load in hopper  $H$ , which is thus discharged, the chute  $b$  performing the function of an extension of the hopper and bridging the space between the discharge-orifice of the hopper and the retort-intake, the levers  $e$  moving into the position indicated by dotted lines, Fig. 1, in which position the pins  $h$  will lie under said levers and prevent the gate  $f$  from closing before the hopper is emptied. After the discharge of the contents of the hopper the chute  $b$  is moved back into its normal position by means of the handhold  $b'$  and hooked to stud  $k'$  on hopper  $H$ . As the chute moves back along the hopper-bottom the pins  $i$  engage the levers  $e$  and turn the same to close the gate  $f$ . Just before the gate  $f$  closes said levers move along the inclined face  $c'$  of the



cleats *c*, and as said gate closes said levers spring inwardly—*i. e.*, in a direction opposite to that of arrows, Fig. 3—onto the shoulders formed by said inclined portion of the cleats, 5 Fig. 2.

Although I have shown in the drawings a feed-hopper for each bench of retorts, it is obvious that a single hopper for all the retorts may be used, in which case I adjustably 10 suspend the hopper from its carriage in any usual or well-known manner.

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

15 1. The combination with a feed-hopper and a swinging valve or gate controlling its discharge-orifice; of a guide-chute having sliding motion on the hopper-bottom and controlling the opening and closing of the valve 20 or gate according as said chute is moved to project beyond the discharge-opening of the hopper or is retracted, for the purpose set forth.

2. The combination with a feed-hopper, a 25 swinging valve or gate controlling the discharge of said hopper, and locking devices to lock the gate closed; of a chute having sliding motion on the hopper-bottom and adapted to be projected beyond the hopper- 30 discharge, releasing devices on said chute acting on the gate-locking devices to release such gate when the chute is projected, locking devices on said chute for locking the gate open, and appliances on said chute for closing 35 the gate and bringing its locking devices

into engagement when said chute is retracted, for the purpose set forth.

3. The combination with a feed-hopper of substantially triangular shape in side elevation, and having its discharge at the apex, 40 said hopper provided with abutments on opposite sides, a valve or gate for said discharge, and a lever at each end of the gate-pintle normally in contact with the aforesaid abutments on the hopper to lock the gate closed; 45 of a guide-chute having sliding motion on the hopper-bottom and adapted to be projected beyond the discharge of said hopper, and wedge-shaped cleats on said chute adapted to engage the gate-levers and move the same off 50 their abutments when said chute slides in the direction of the hopper-discharge, for the purpose set forth.

4. The combination with the hopper II having guide-cleats *c* provided with inclines 55 *c'* forming stop-shoulders, the hopper valve or gate *f* and the levers *e* on the gate-pintle; of the chute *b* having longitudinal slots for said hopper-cleats, and wedge-shaped cleats *g* adapted to move behind the aforesaid le- 60 vers *e*, and the pins or studs *i h* on said chute, said parts arranged for operation substantially as and for the purpose set forth.

In testimony that I claim the foregoing as my invention I have signed my name in pres- 65 ence of two subscribing witnesses.

ERNST RIEGEL. [L. S.]

Witnesses:

EDUARD MAY,

BRUNO KRETSCHMANN.