

C. Neames,
Steam-Boiler Furnace,

Nº 27,146,

Patented Feb. 14, 1860.

Fig. 6.

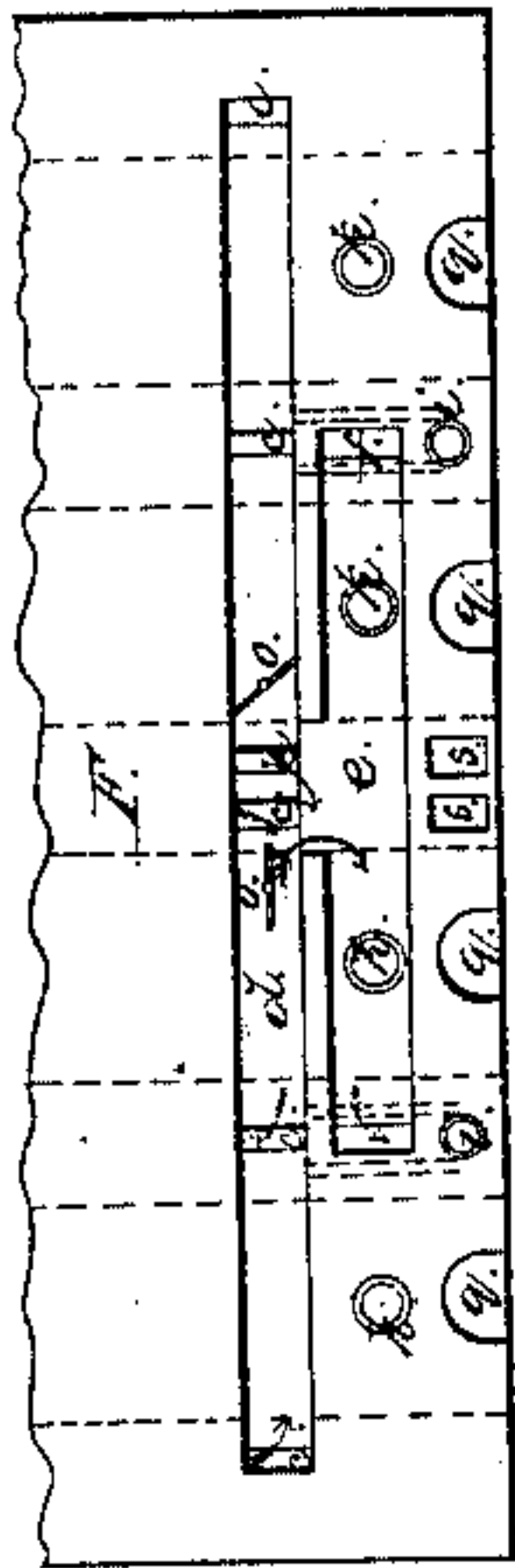


Fig. 5.

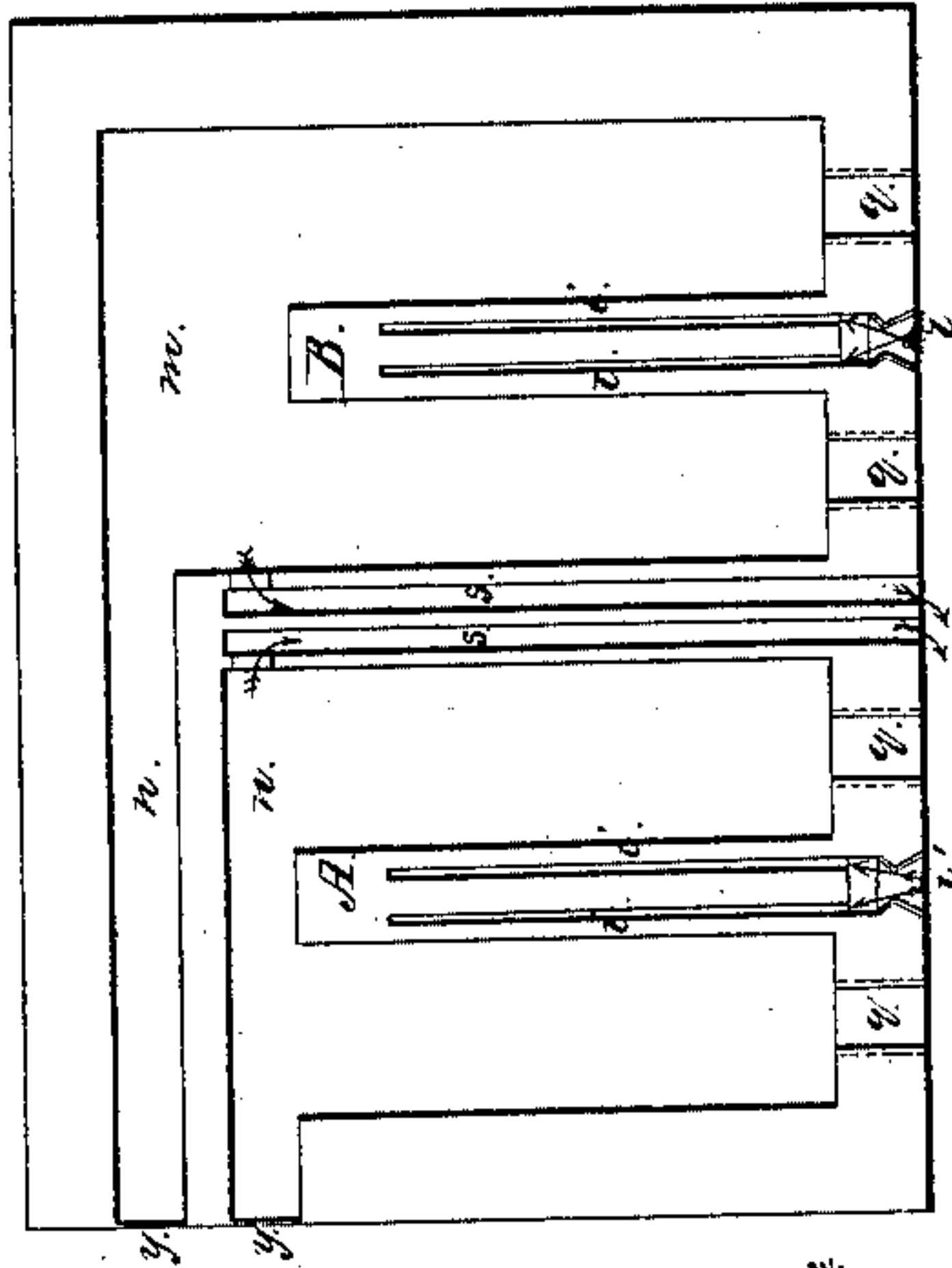


Fig. 4.

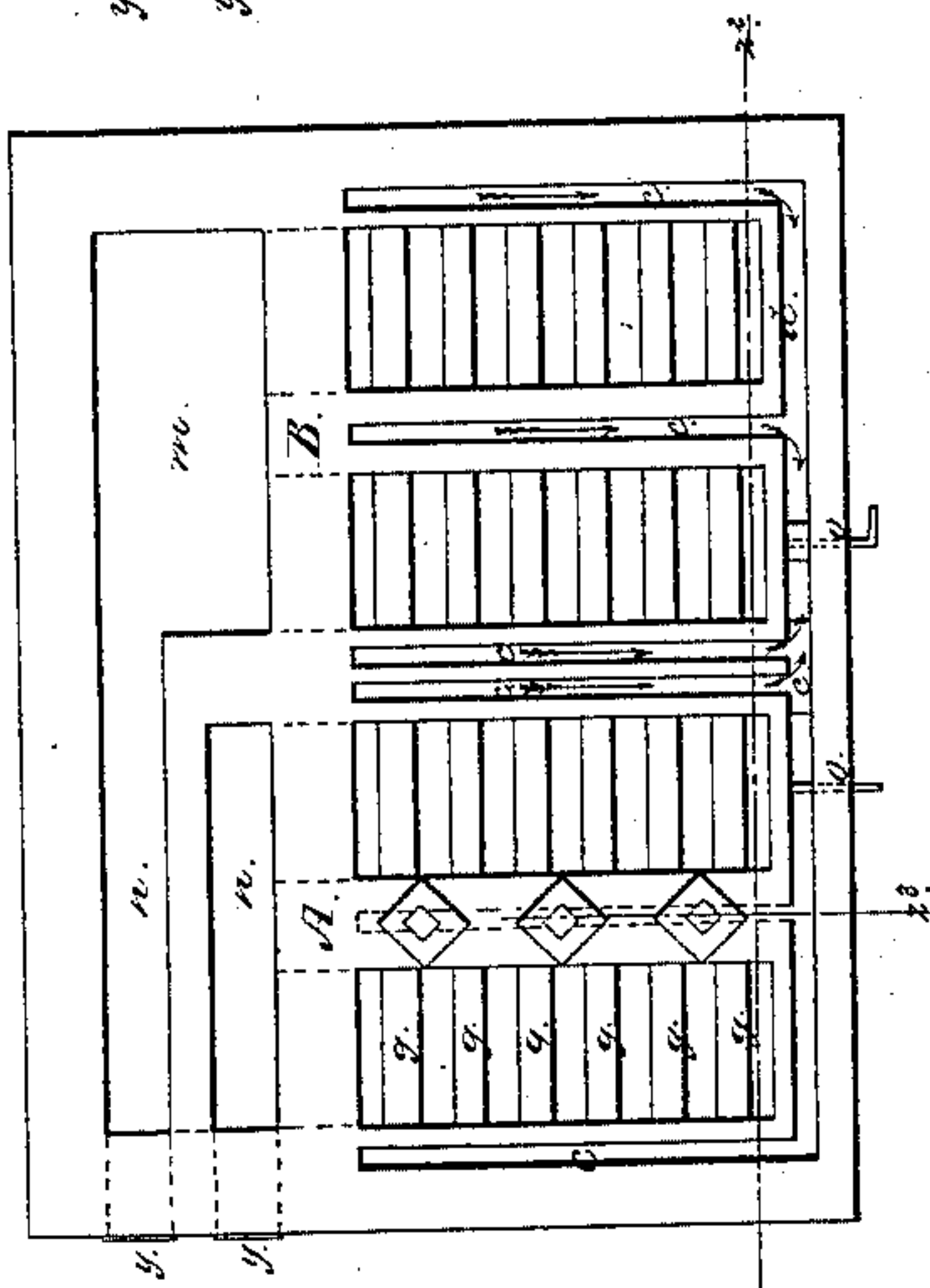


Fig. 7.

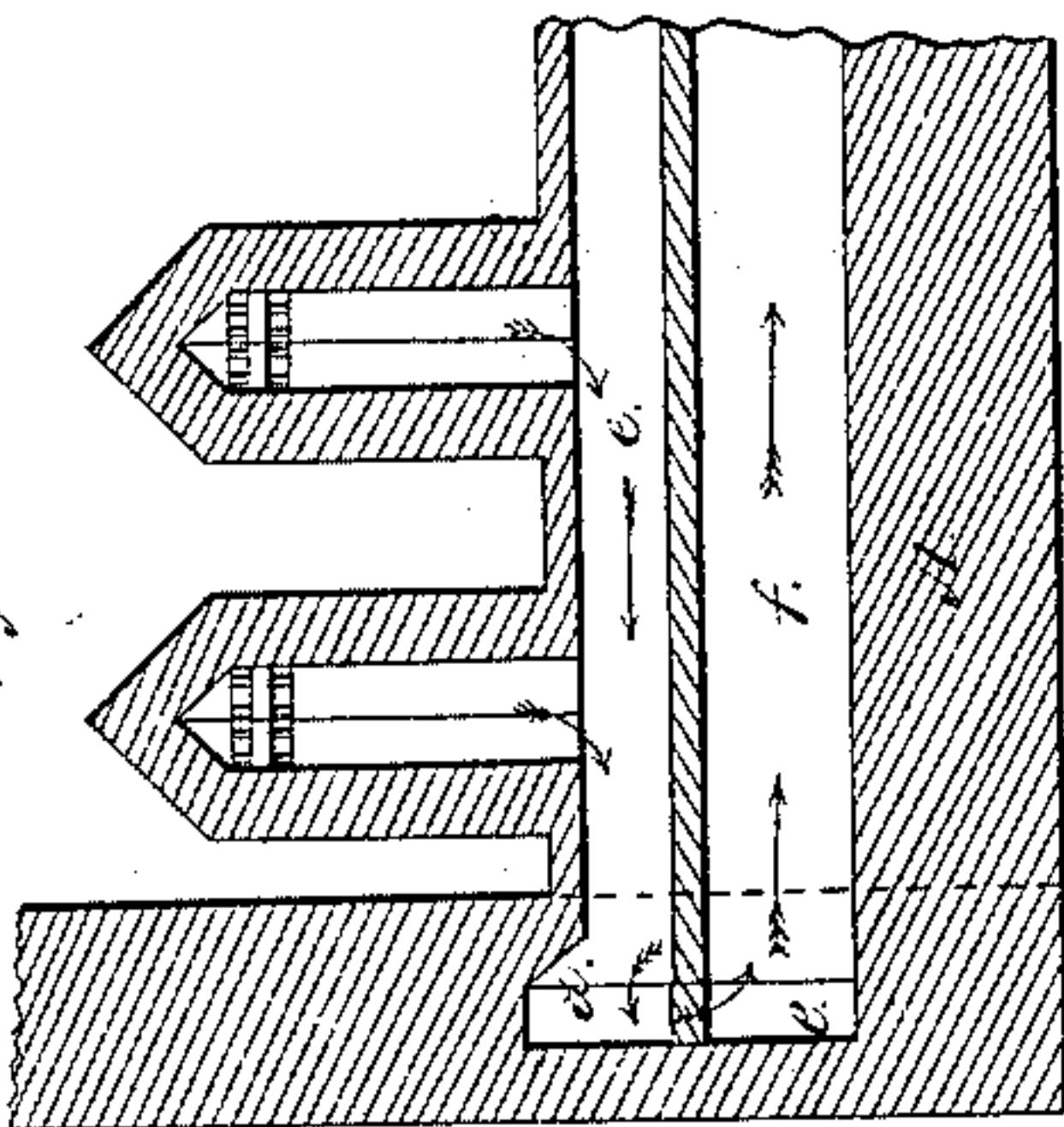


Fig. 1.

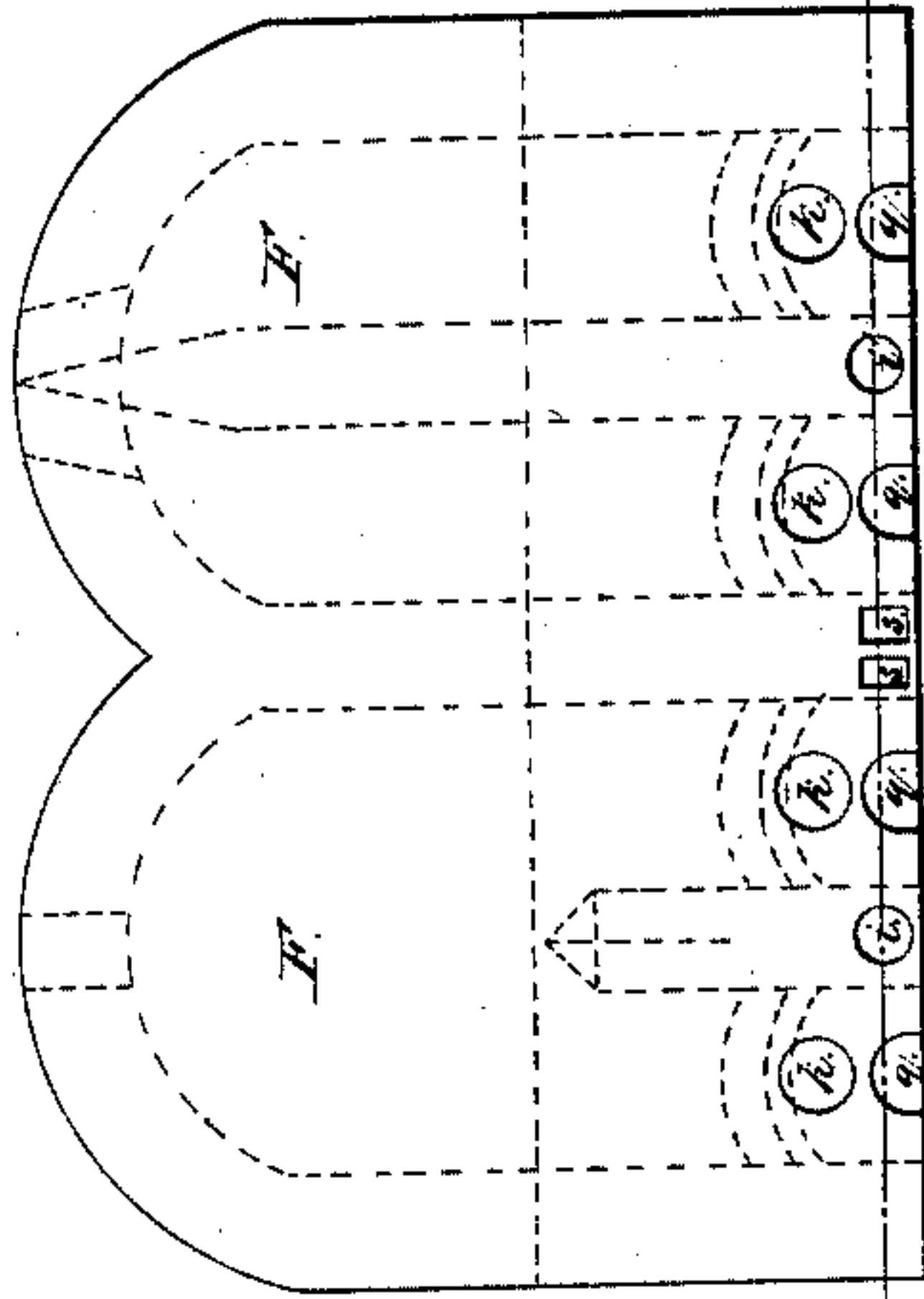


Fig. 2.

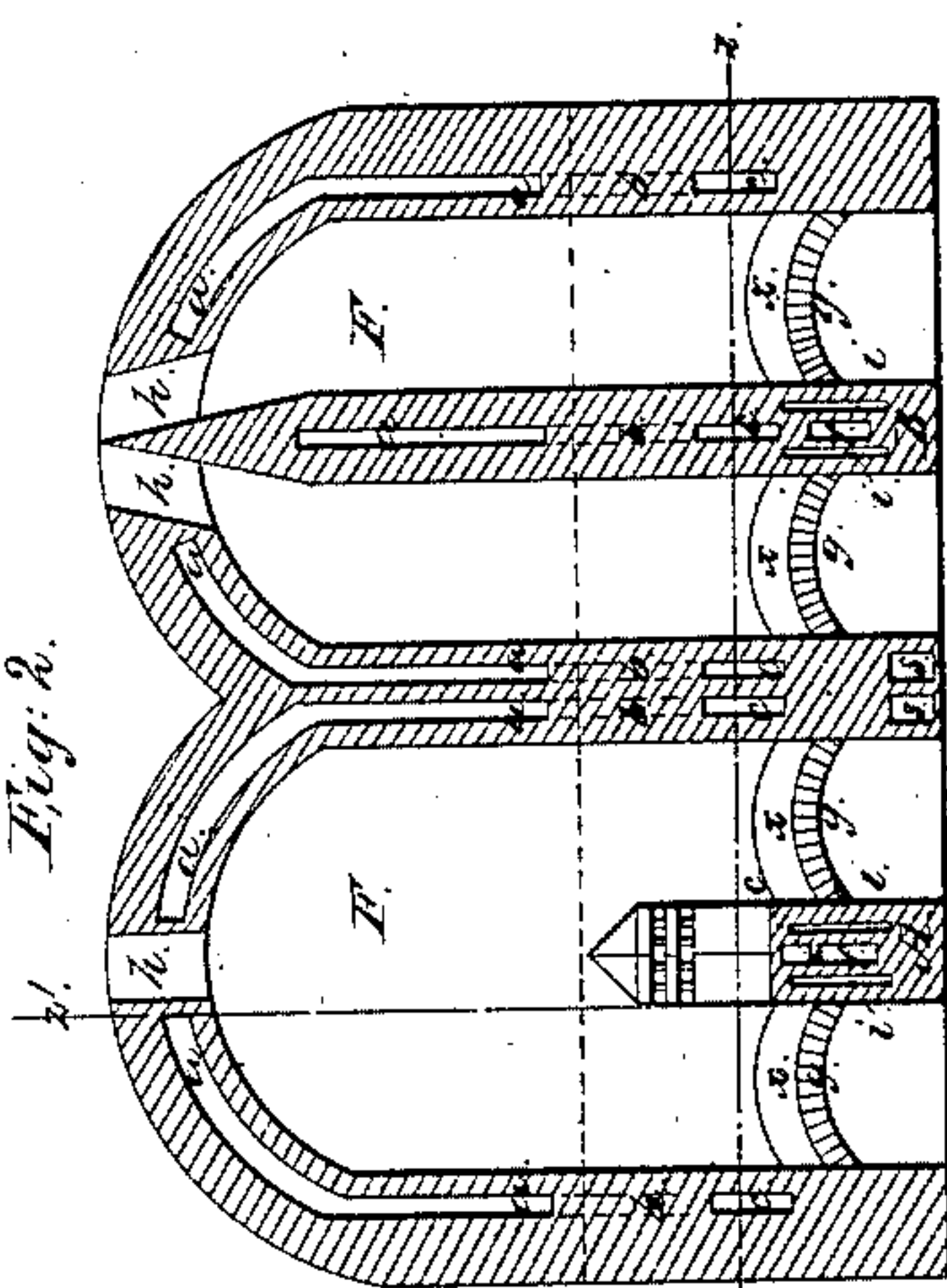
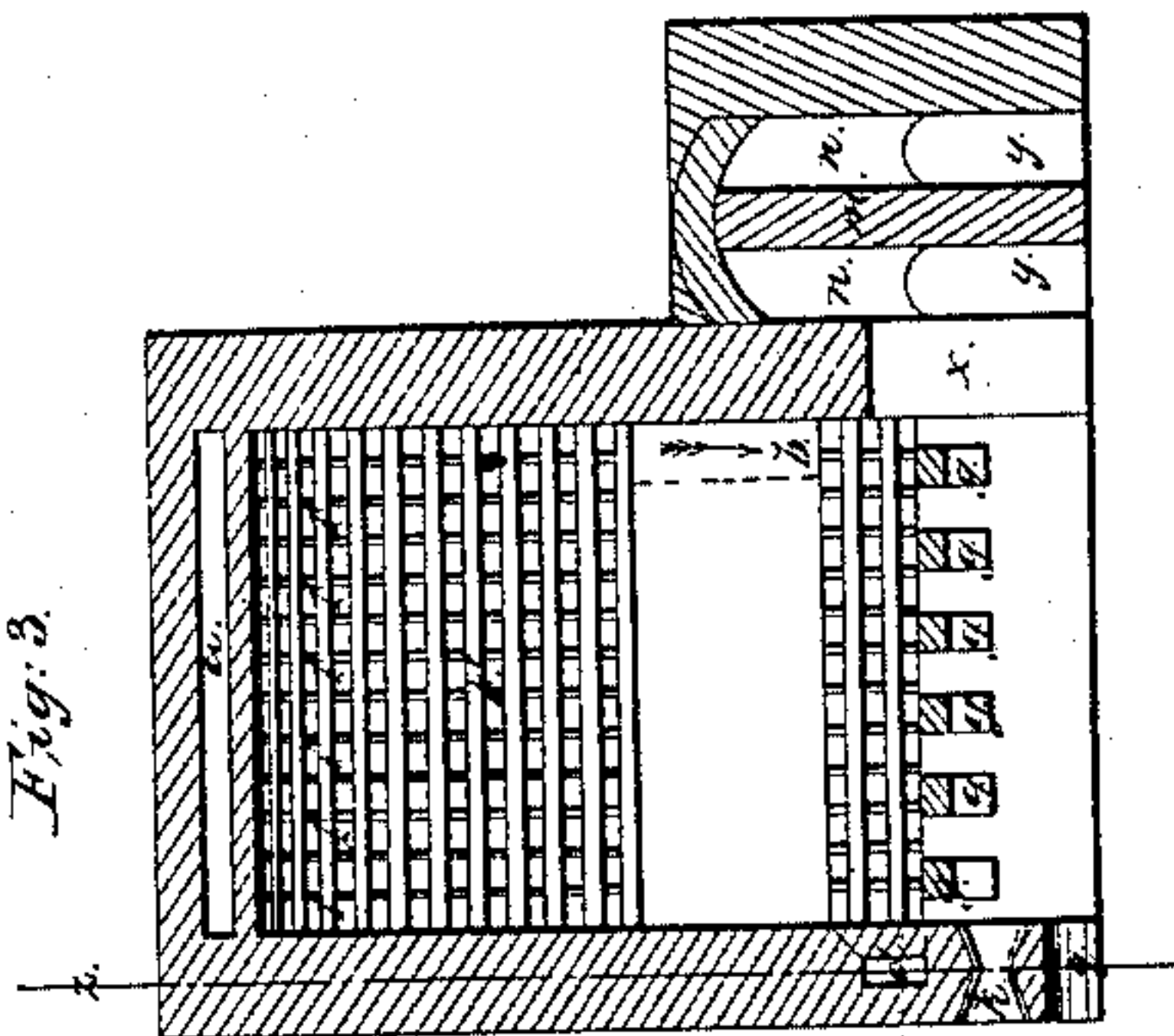


Fig. 3.



Witnesses:

R. H. Glemmon
C. Broome

Inventor:

Charles Neames

UNITED STATES PATENT OFFICE.

CHARLES NEAMES, OF NEW ORLEANS, LOUISIANA.

BAGASSE-FURNACE.

Specification of Letters Patent No. 27,146, dated February 14, 1860.

To all whom it may concern:

Be it known that I, CHARLES NEAMES, of the city of New Orleans and State of Louisiana, have made a new and useful Improvement in Bagasse-Furnaces; and I hereby declare that the following is a full, clear, and exact description thereof, references being had to the accompanying drawings, and to the letters of references marked thereon, making a part of this specification, the same letters being used to show the same parts in the different views, to which—

Figure 1 is a front elevation. Fig. 2 is a sectional front elevation taken from line z^2 in Fig. 4. Fig. 3 is a sectional side elevation taken from line, z' , in Fig. 2. Fig. 4 is a section ground view taken from line, z , in Fig. 2. Figs. 5, 6 and 7 are reference views which will be used in explaining the other figures; that of Fig. 6, however is more specific than the others, it shows a section of the front wall as seen from line, z^5 , in Fig. 3.

When the combustion of bagasse is going on, the vapor leaving it during the drying process, is very light, and ascends to the upper part of the furnace chamber. This being largely composed of oxygen, and valuable as a supporter of combustion, when brought in contact with a highly heated combustible—for instance carbon, and as this substance when in this state, is at or near the base of the burning mass, the object of this arrangement is to secure this vapor being drawn from the upper part of the fuel chambers, by the influence of the draft of the chimney; and brought within the influence of chemical affinity of the carbon for this oxygen, so its uses as a supporter of combustion can be secured.

The furnace as set forth in Fig. 2, has three chambers, the letter, F, being used to designate them. The number of chambers however, will depend on which mode is adopted in the construction above the grates, by the walls A, and B, that of, A, having hollow brick pillars mounted on it, as seen in Figs. 2 and 4—with a sectional view of this wall in Fig. 7, making but one chamber above the grates, and two below—requiring but one hopper, to admit the fuel, and that mounted over opening, h , that of B extending from the base to the crown, therefore making two chambers in this compartment entire, requiring two hoppers to admit the fuel through openings as shown

by the same letter. This arrangement I consider better than the other in one respect, there being a larger wall surface in the furnace. The heat reflected from the same will cause a more rapid drying of the fuel.

In the employment of the pillars as set forth mounted on wall A important advantages are secured over the arrangement as designated by wall, B. The openings in the pillars to receive the vapor are in the center of the furnace, and in direct proximity to the wet mass, giving out its vapor. This vapor can leave the mass more readily, than if counteracted by external currents around the pile of bagasse, in its getting into the openings in the sides.

I omit showing any boilers or such subjects on which the heat has to act.

The flues, n , n , in the rear are the exit flues for the gas to leave the chambers. Each has a damper, y , seen in Figs. 3 and 4 by which the discharge from the chambers can be regulated. In the rear of chamber, B, the flue, m , is enlarged, not made so for any particular object, but only to allow room for its exit flue being divided by wall, m , seen in Fig. 3. If the discharge is made in the rear, such flues would have a different form, this particular part having to be made to suit the position of the furnace with the subject on which the heat has to act, and being arrangements well understood by the constructors of this kind of furnace, any further explanation is deemed to be useless.

During the burning of bagasse, a strong, massive cinder is formed, which has to be taken out of the chambers from time to time; and to do this, the combustion in such chamber to be cleaned, must be suspended, and it is all important that the other chambers should not be counteracted in their efficiency to keep a strong heat acting at the same time, so the supply of steam necessary is continuous; and to prevent the air which enters the empty chamber, when being cleaned, passing with the gas from the other chambers, and thus reducing its temperature and efficiency, in heating power I conduct this air direct to the chimney, through other channels.

In the dividing wall of the two separate furnaces, near the base, I construct the flues, s , s , seen in Figs. 1, 2 and 6, Fig. 5 showing them horizontal, and sectional, each having an opening to its respective chamber,

and at the rear, as indicated by the arrows, which is also used in the front ends, showing the direction of the air and smoke, in leaving the furnace during the time the cleaning is going on, and from the front, I have a flue connected with these, and leading to the chimney, the flues, *s, s*, having each a damper, that when open brings the chimney in connection with the chamber it is the exit from, the damper, *y*, from the same chamber, being used to close its flue, and shut off the exit from that place, in the meantime.

In order to bring the vapor down from the upper portion of the furnace, I construct in the walls, chambers, indicated by letter, *a*, beginning near the openings, *h*, and extending about one half the distance between the crown and the grates *g'* (see Fig. 2). These chambers longitudinally, are the same as the length of the interior of the furnace. The bricks in each alternate course, are separated a short distance (as seen in Fig. 3) for the purpose of connecting chambers, *a*, with the interior, so the vapor can pass. The middle wall, *B*, has also a chamber, *a*, with the bricks laid on either side in the same manner, and for the same purpose, the pillars on wall, *A*, having similar laid brick work to receive the vapor. Below each of the chambers, *a*, are chambers, *c*, having their sides next the furnace made open brick work, as seen in Fig. 3. Each of these chambers is connected to its corresponding chamber, *a*, by a vertical flue at the back end, marked *b*, shown by dotted lines in Figs. 2, and 3; the latter figure also indicating the flue, and the direction of the vapor, by an arrow; and Fig. 4 by the same indication shows a continuation of the same, and the connection of chambers, *c*, to the flue, *d*, constructed in the front wall of the furnaces. In the walls, *A*, and *B*, I place the flues, *f*; and connect *d*, to *f*, by the flue, *e*, see Figs. 4 and 6. The flue, *e*, being immediately below *d*, and *f*, starting from *e*, continues through the walls, *A*, and *B*, at the rear, and is brought under the action of the chimney. The vapor in passing through the chambers, *c*, which is not drawn into the fire, by the affinity of the highly heated carbon for oxygen, is brought in contact with carbonaceous gas at the rear of the furnace.

The temperature at that point being high, and the flues filling the office of mixing chambers, brings a decomposition of the vapor and its oxygen into use. In flue, *d*, I have dampers, *o*, see Fig. 6, by which the connection between *c*, and *e*, on either side can be suspended if desired, except the two middle chambers, *c*. Should the pillars be used instead of chambers, *a*, Fig. 7 will show the arrangement as made to join chamber, *c*, being only a continuation of the same opening from *c* into the pillars.

In the walls, *A*, and, *B*, and on each side of flue, *f*, I have air flues, *i*, seen in Fig. 2, and shown horizontal, and sectional in Fig. 5. These flues have doors, *i*. In the construction, their sides next the fuel are made with open brick work, to allow the air to pass into the chamber, and supply oxygen to facilitate the combustion of the bagasse, at, or near the base, which is in a dry state. The air when acting on the base when in this condition, causes it to burn rapidly, which exhausts the base, and causes the bagasse above to tumble over and come down to a position where its combustion will proceed uniformly.

After this my description, what I claim as new, and desire to secure by Letters Patent—

1. I do not claim the use of chambers constructed in the sides or crowns of furnaces for the purpose of receiving and distributing atmospheric air, as I am aware this has been done before but what I do claim, is the use of chambers in wet fuel furnaces, which have their receiving openings exclusively in and from the interior of the furnace, to receive the vapors arising from the fuel, and which will convey and distribute the same at points meeting the carbonaceous gases, to allow the oxygen from the vapor to be brought in contact with highly heated carbon to support combustion.

2. I also claim the hollow pillars mounted on wall, *A*, in combination with flue, *c*, when arranged and operated as, and for the purpose herein set forth.

CHARLES NEAMES.

Witnesses:

ROBERT GLENNON.
S. W. BROOKS.