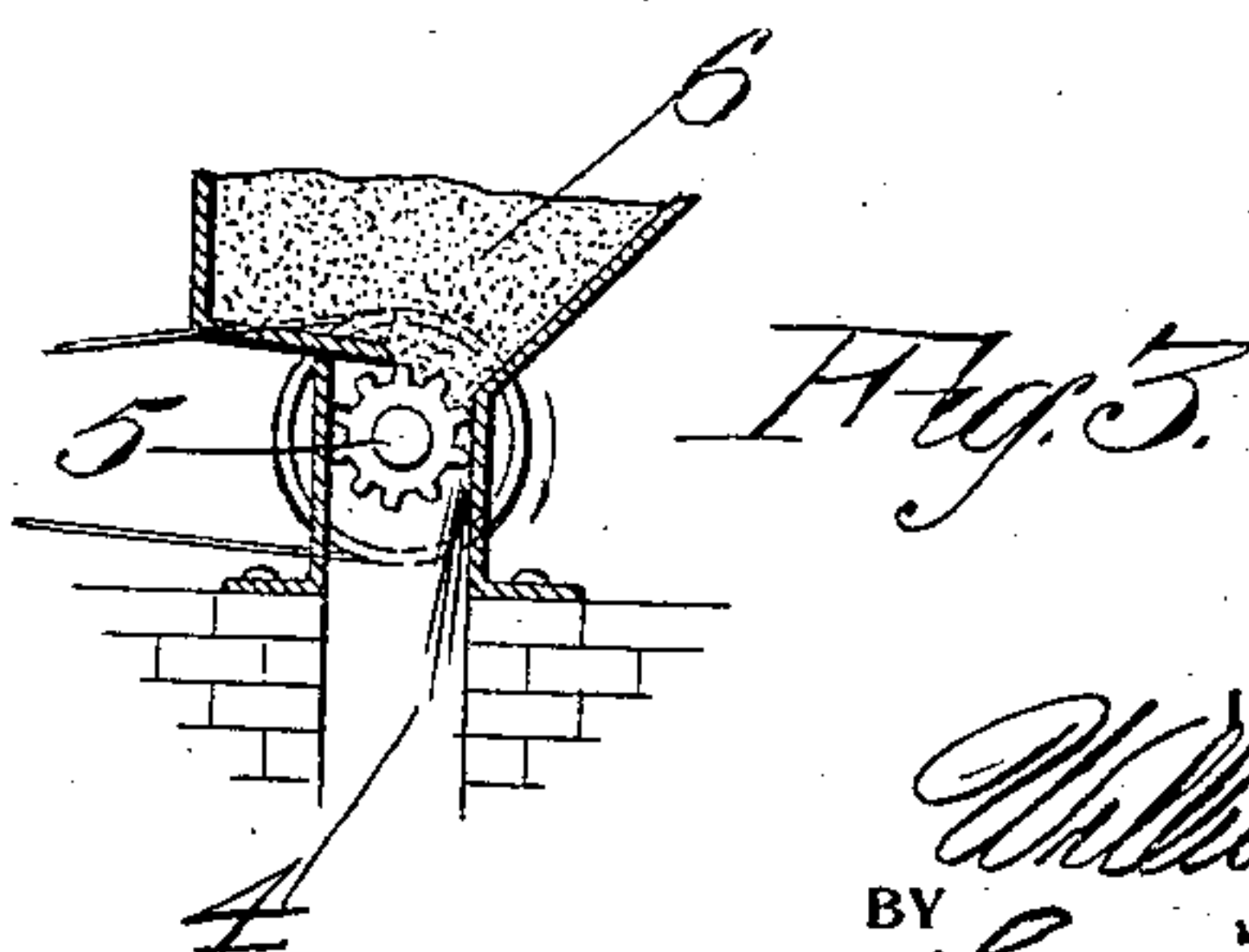
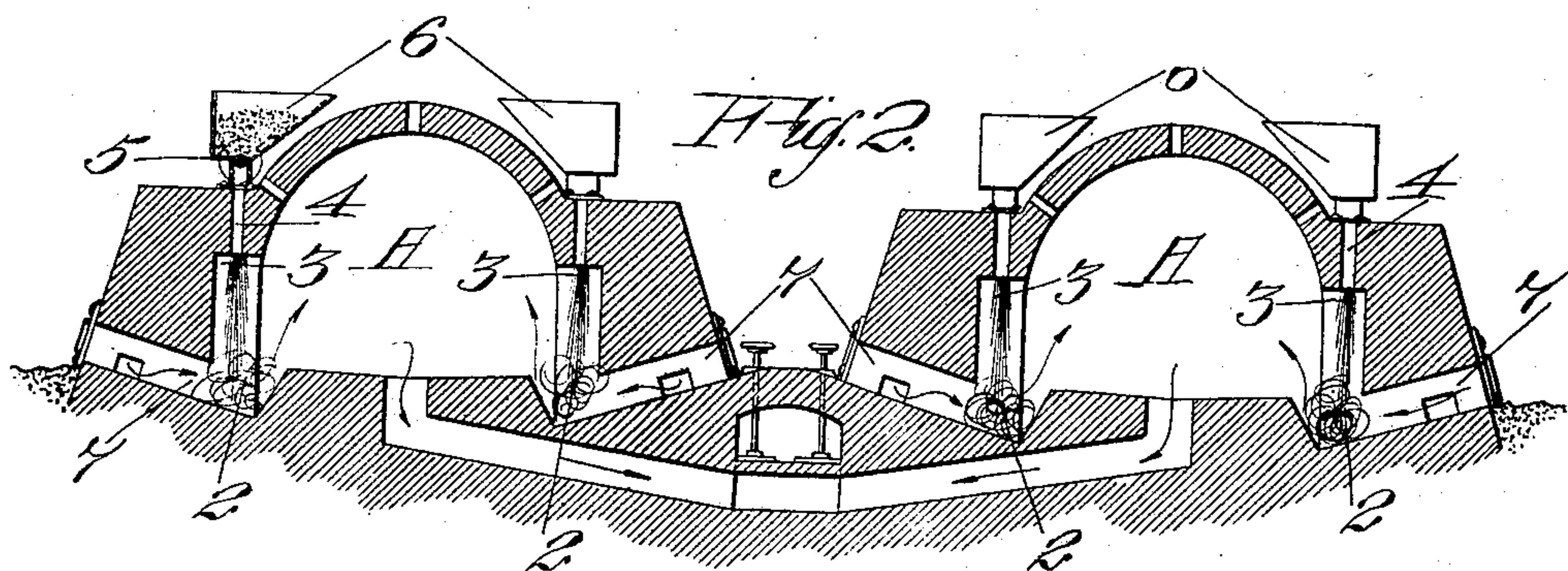
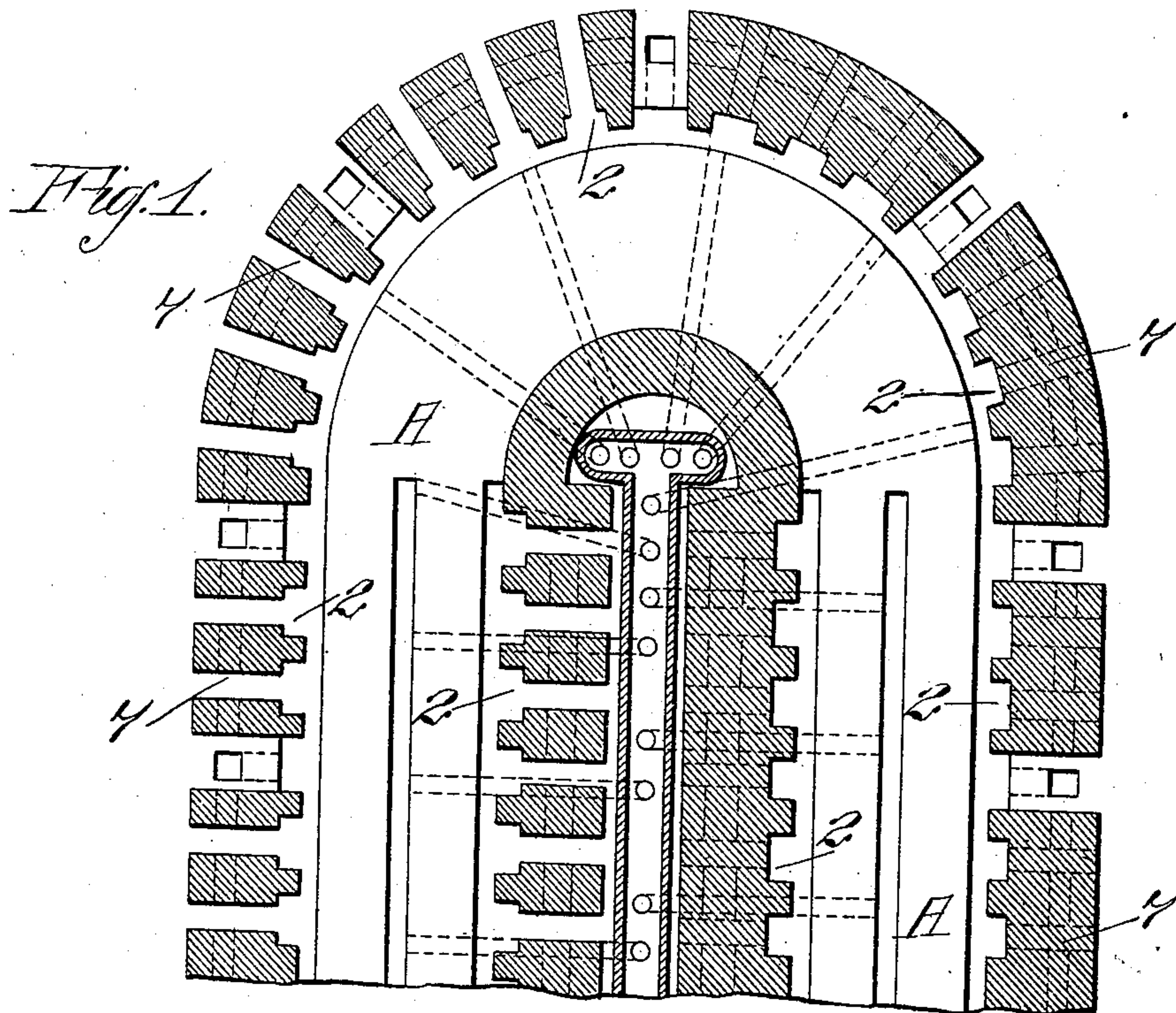


W. A. BUTLER.  
CONTINUOUS KILN.  
APPLICATION FILED MAY 8, 1908.

969,034.

Patented Aug. 30, 1910.



WITNESSES

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# UNITED STATES PATENT OFFICE.

WILLIAM A. BUTLER, OF SAN FRANCISCO, CALIFORNIA.

CONTINUOUS KILN.

969,034.

Specification of Letters Patent.

Patented Aug. 30, 1910.

Application filed May 8, 1908. Serial No. 431,626.

*To all whom it may concern:*

Be it known that I, WILLIAM A. BUTLER, citizen of the United States, residing in the city and county of San Francisco and State of California, have invented new and useful Improvements in Continuous Kilns, of which the following is a specification.

My invention relates to improvements in continuous kilns for burning bricks and other wares.

My present invention is an improvement upon a patent issued to me June 5th, 1906.

It consists in a means for preparing and supplying fuel and controlling said supply, and in details of construction which will be more fully explained by reference to the accompanying drawings, in which—

Figure 1 is a horizontal section of the kiln. Fig. 2 is a vertical cross section of same. Fig. 3 shows the controlling mechanism for the fuel supply.

In my former patent I have shown means for supplying the fuel for burning the wares within the chambers, through inclined passages at the bottom, with deflecting devices for discharging the heat upwardly into the burning chambers, and suitable passages and dampers in connection therewith.

My present invention is designed to provide a better control of the fuel supply, and of the heat introduced into the burning chambers so that a more regular burning of the wares may be effected without the danger of vitrifying or destroying them by a high and uncontrolled heat.

A is the chamber of a kiln, the walls of which may be made continuous having any suitable or desired length with relation to the width, and the ends of any suitable form to connect the sides so that a series of burning chambers may be disposed continuously around the kiln.

In a kiln of considerable length, the sides may be approximately parallel, and the ends semi-circular to effect the above result. The usual destructible partitions are employed to separate the chambers. The burning chambers of such a kiln are filled successively with the wares to be burned, and the fires are started in such a manner as to heat up the chambers gradually and successively, the heat being shut off after the contents of the chambers have been sufficiently burned,

and when they are cool enough, the contents may be removed. Thus one or two, or more, of said chambers may be under the condition of discharge; others that have already been discharged are being filled, and intermediate ones are in various stages of burning.

I have found that for properly controlling the heat within the furnace, and for the economical use of fuel the following apparatus is very suitable:

2 is the fuel chamber of the furnace which is located contiguous to the burning chamber A and sufficiently below so that the heat may be directed therefrom into the burning chamber, as shown in my former patent. Above this combustion chamber is a high arch 3, which continues the chamber upward to near the top of the kiln. From the top of this arch a passage 4 extends upwardly to the top of the kiln, and within the upper part of this passage may be any suitable mechanism for controlling the passage of the fuel. Such a device is shown at 5, and fuel may be supplied through a spout or funnel as at 6.

In the present device I have shown the apparatus as intended for using pulverized coal or like fuel, which is introduced through the funnel 6, and is discharged downwardly through the passage 4 in a substantially vertical line into the arch 3.

The feed tube 4 is preferably of parallelogram form in horizontal section, and may be proportionately about 2 feet in length by 4 inches in diameter. The pulverized fuel entering the upper part of the arch, and falling therethrough to the bottom, is spread and distributed in a very fine shower, and meeting the air which is supplied through the transverse damper controlled passages 7 which open inwardly from outside the kiln walls, also from the longitudinal passages between and from the pre-heated re-oxygenated air from the chambers from the already burned bricks and discontinued chambers, this fuel will be rapidly and evenly ignited, and the heat and gases therefrom will be diverted into the fuel chambers A through the connecting and distributing passages between the fuel chamber and kiln. These fuel supply devices and burning chambers are located at intervals around the kiln, and



the supply of fuel may be very minutely regulated to produce the required heat, and the falling of the fine fuel through the space from the top of the arch, allows it to become  
 5 ignited during its fall so that a very perfect combustion is effected.

Where the fuel is discharged inwardly from the sides with a blast of air, it takes too large a quantity, and the supply cannot  
 10 be so well adjusted, and as a consequence too much heat is produced at the point of introduction.

I have found that in my present apparatus from two hundred to two hundred and fifty pounds only of the pulverized fuel is necessary for a thousand bricks, while if blown or discharged in upon the side, a much larger quantity is required. In my present method I have found that I am able  
 15 to much more perfectly control the heat which increases with the distribution of the burning gases from the point of ignition.

The passages 7 coincide in position with the main openings through the side of the kiln, through which the wares are introduced or removed; these main openings being bricked up after the chambers are filled. The openings and doors or dampers, as at 7<sup>a</sup>, control the admission of air to the passages  
 20 7. These passages are open at a point some distance behind the actual burning chamber. There may be as many as four or more intervening chambers which have been completed and are still hot. The air then admitted through the opening in the passages 7 passes directly into the interior of the kiln, thence along there-through to the chamber or chambers in which the burning is being carried on.

The usual destructible partitions are burned or broken so as to allow the air to pass, and it is gradually heated up by the heat of the already burned wares, so that it is delivered to the burning chamber at a high temperature. Passages 8 connect the openings 7 through the walls of the kiln, and these passages serve to supply an additional amount of air, if needed. Subterranean passages 9 connect with each chamber of the kiln, and these passages connect through gates or dampers 10, with the passage 11, which leads to the discharge flue or chimney. By opening either of the dampers 10, it will be seen that the draft through the passages 7 and 8, and the subterranean flue 9 of the chambers, through which the draft is desired, will be established.

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

1. A continuous kiln consisting of outer and inner walls with an intermediate chamber for the reception of wares to be burned, said walls being recessed at regular intervals to form fuel chambers, contiguous to the  
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inner chamber and below the kiln floor level, said fuel chambers being offset from the sides of the burner chambers and opening thereinto and being of substantial height to allow the fuel to separate and be ignited as it falls, and passages opening into the tops of said fuel chambers to admit fuel by gravitation.

2. A continuous kiln consisting of outer and inner walls with an intermediate chamber for the reception of wares to be burned, said walls being recessed at regular intervals to form fuel chambers, and superposed arches opening into the burning chamber, said fuel chambers being of substantial height to allow the fuel to separate and be ignited as it falls to the bottom thereof, and having controlled vertical fuel feed openings into the crowns of the arches.

3. A continuous kiln consisting of outer and inner walls inclosing an intermediate burning chamber in which the wares to be burned are stacked with intermediate destructible transverse partitions, said walls having recessed arches and combustion chambers opening into the burning chambers, said combustion chambers being of substantial height to allow the fuel to separate and be ignited as it falls to the bottom thereof, gravity feed openings through the crowns of the arches, and transverse gate-controlled passages through the outer walls communicating with the combustion chambers.

4. A continuous kiln consisting of outer and inner walls inclosing an intermediate burning chamber in which the wares to be burned are stacked, with intermediate destructible transverse partitions, said walls having recessed arches and combustion chambers opening into the burning chambers, gravity feed openings through the crowns of the arches, transverse gate-controlled passages through the outer walls communicating with the combustion chambers, and passages parallel to the walls connecting said transverse passages.

5. A continuous kiln having interspaced outer and inner walls, with recessed arches in their inner faces, and combustion chambers at the bottom of said recesses and below the kiln floor level, gate-controlled inclined passages leading transversely through the walls, the inner ends connecting with the combustion chambers, and passages connecting said inclined passages to transmit air to burning chambers distant from the inlet.

6. A continuous kiln having interspaced outer and inner walls with recessed arches in their inner faces, and combustion chambers at the bottom of said recesses and below the kiln floor level, gate-controlled inclined passages leading transversely through the walls, the inner ends connecting with

the combustion chambers, passages connecting said inclined passages to transmit air to burning chambers distant from the inlet, a subterranean central flue leading to a chimney, and similar flues connecting the kiln floor and chambers with said central flue.

In testimony whereof I have hereunto set

my hand in presence of two subscribing witnesses.

WILLIAM A. BUTLER.

Witnesses:

B. B. LEE,

J. B. LORGOMER.