No. 846,559. PATENTED MAR. 12, 1907.

J. GAMBLE.

CONTINUOUS DECORATING KILN.

APPLICATION FILED APR. 16, 1906.

6 SHEETS—SHEET 1.

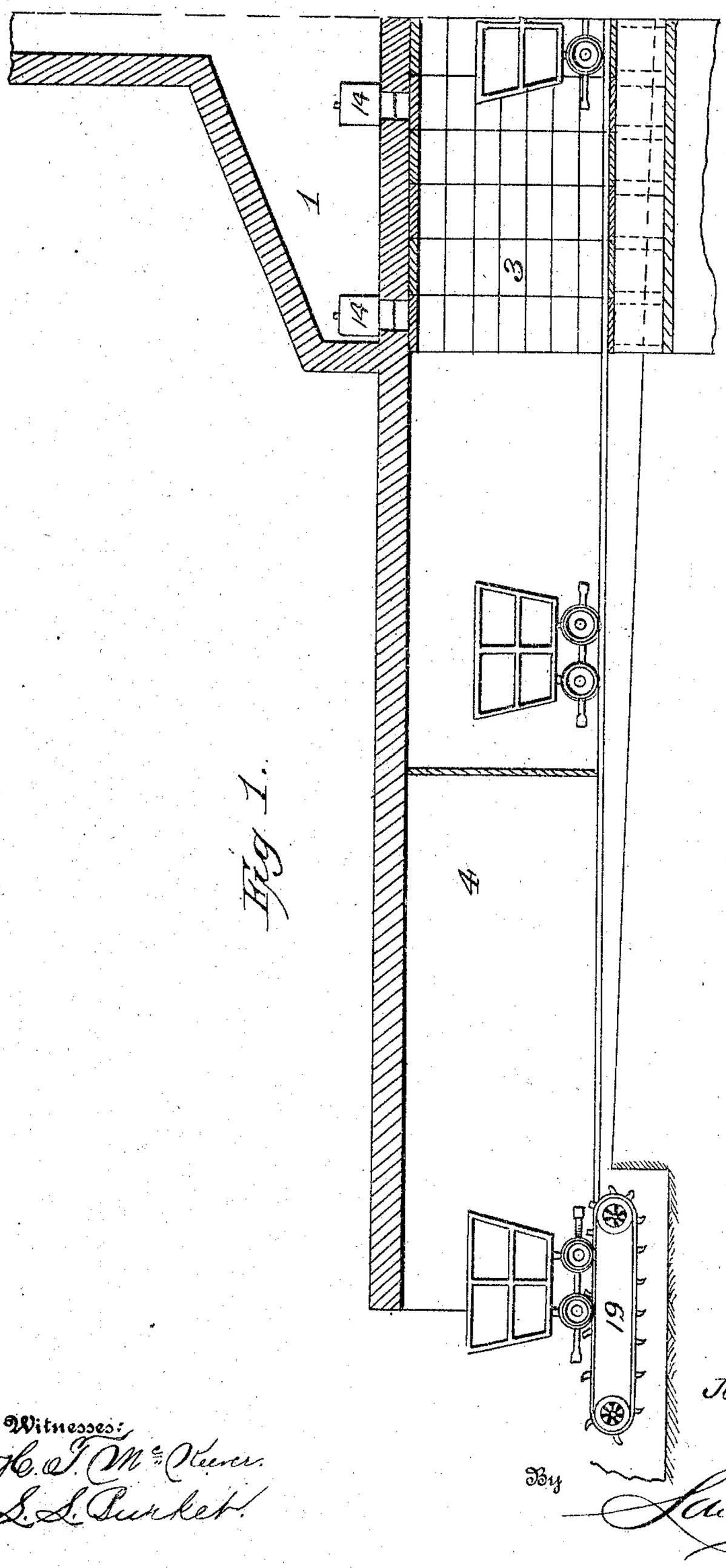

Fig. 1.

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L. L. Burkett.

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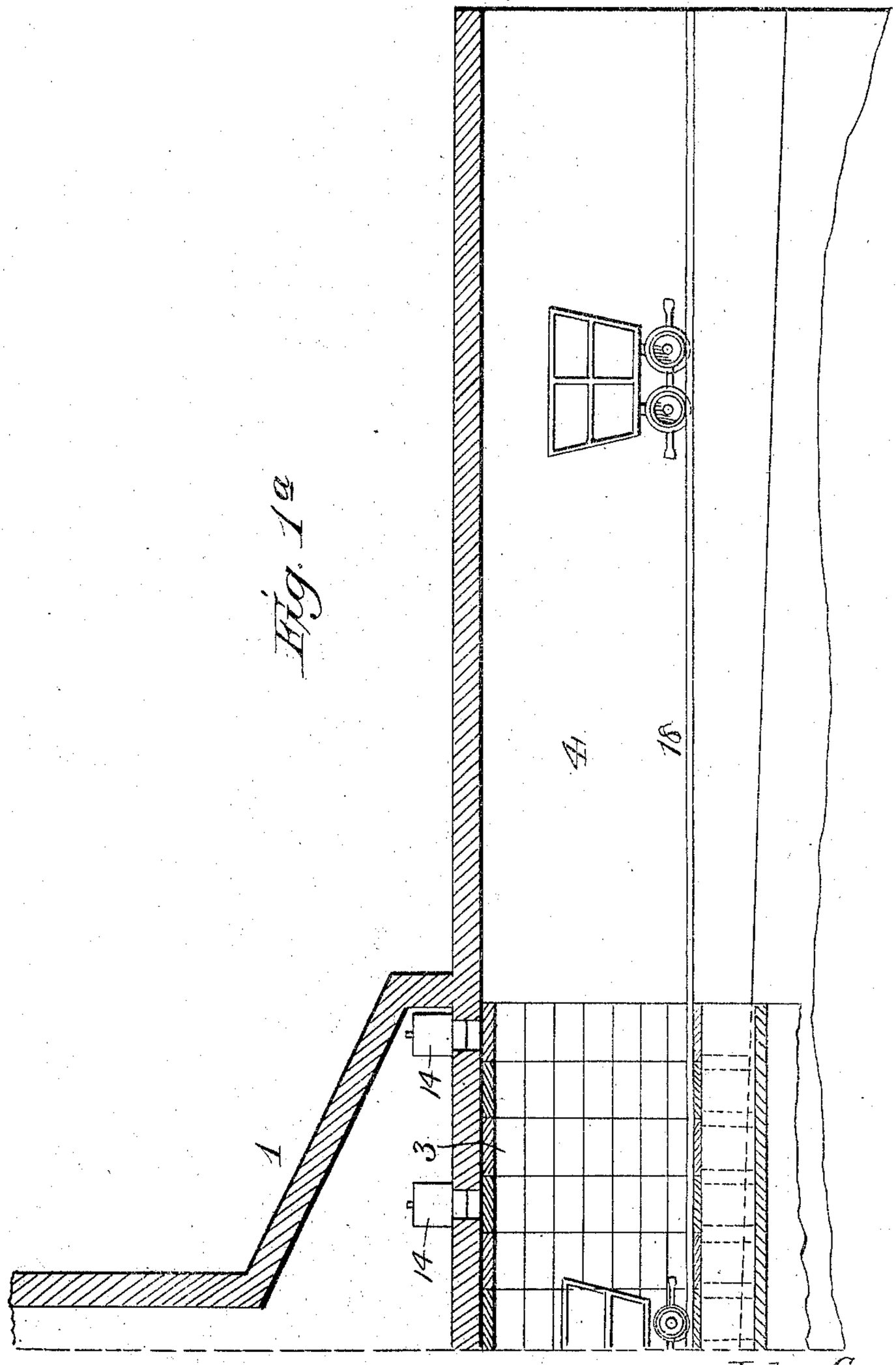
6 SHEETS—SHEET 2.

Fig. 1a



Witnesses:
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6 SHEETS—SHEET 3.

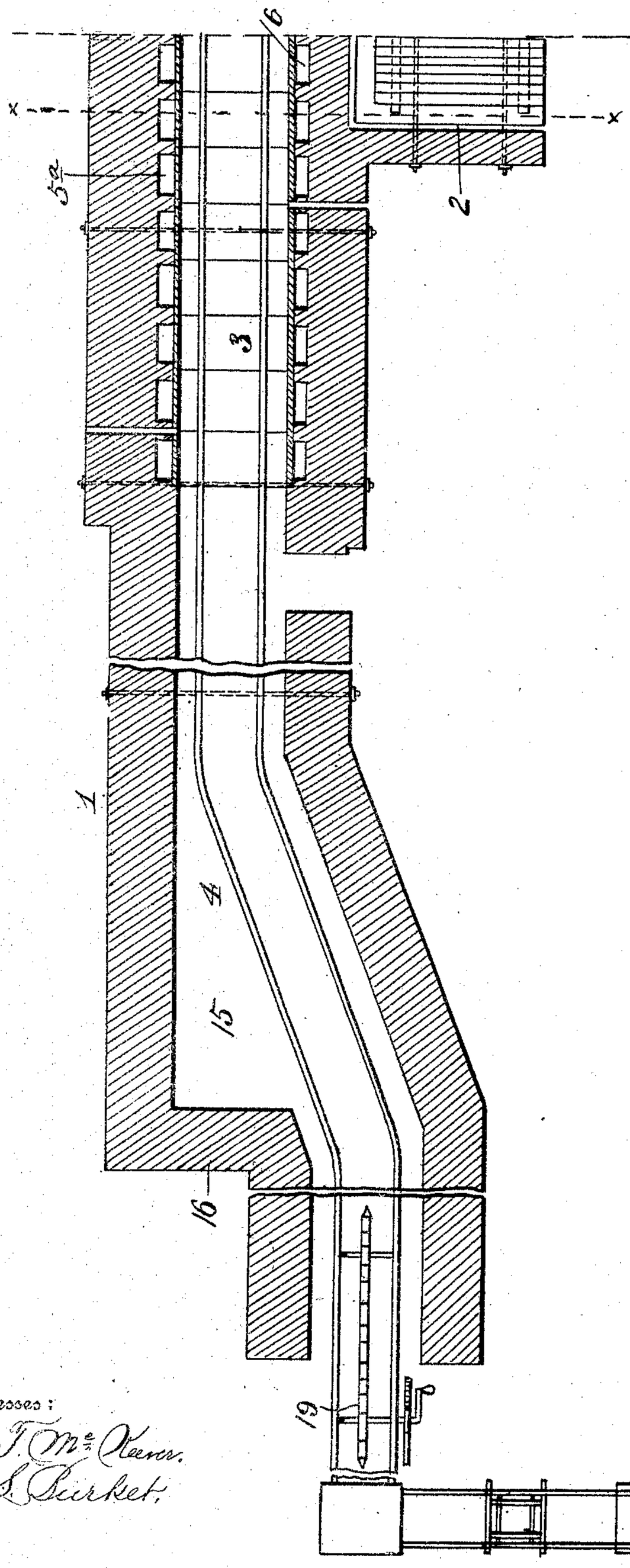

Fig. 2.

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6 SHEETS—SHEET 4.

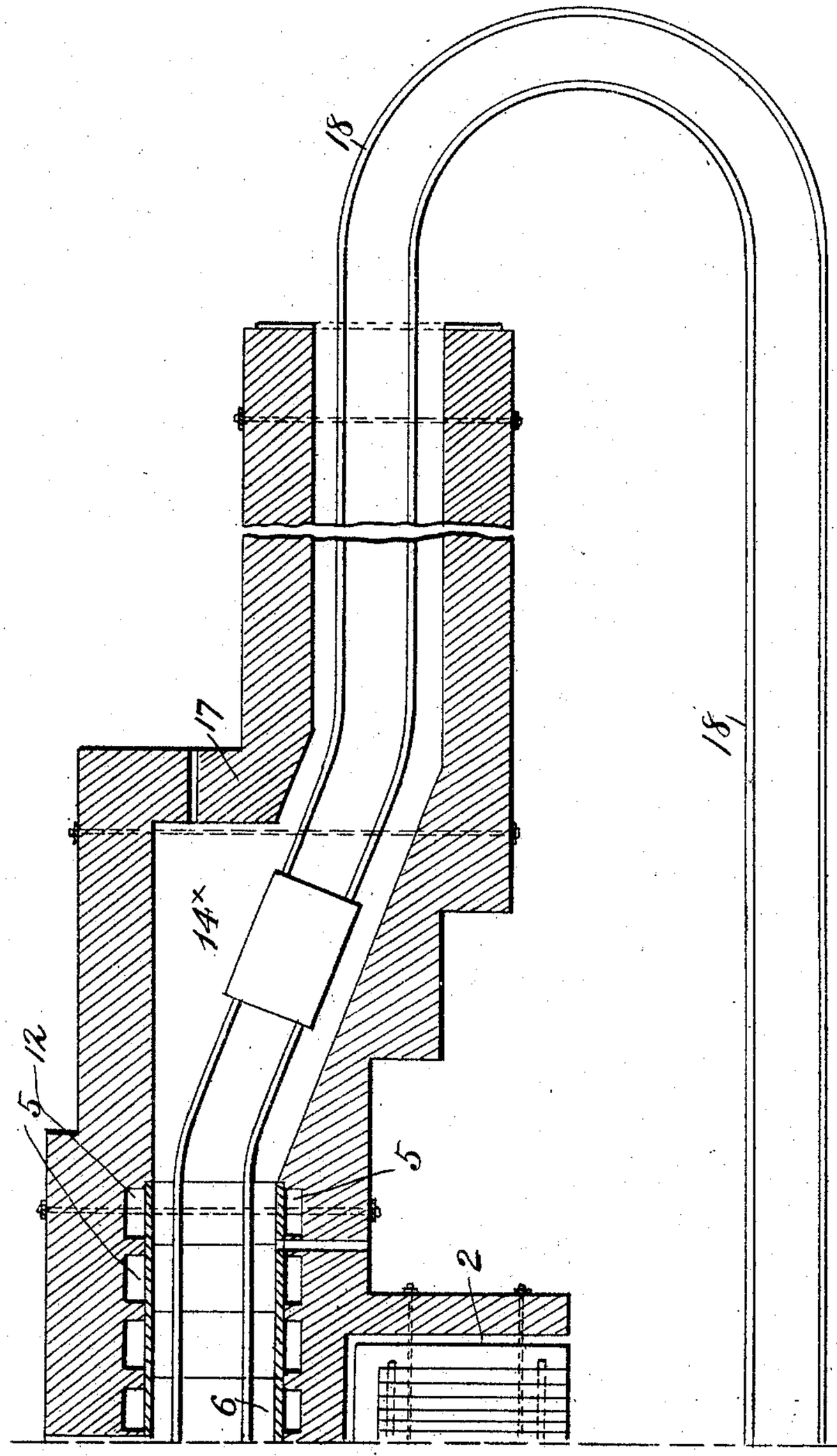

Fig. 2a

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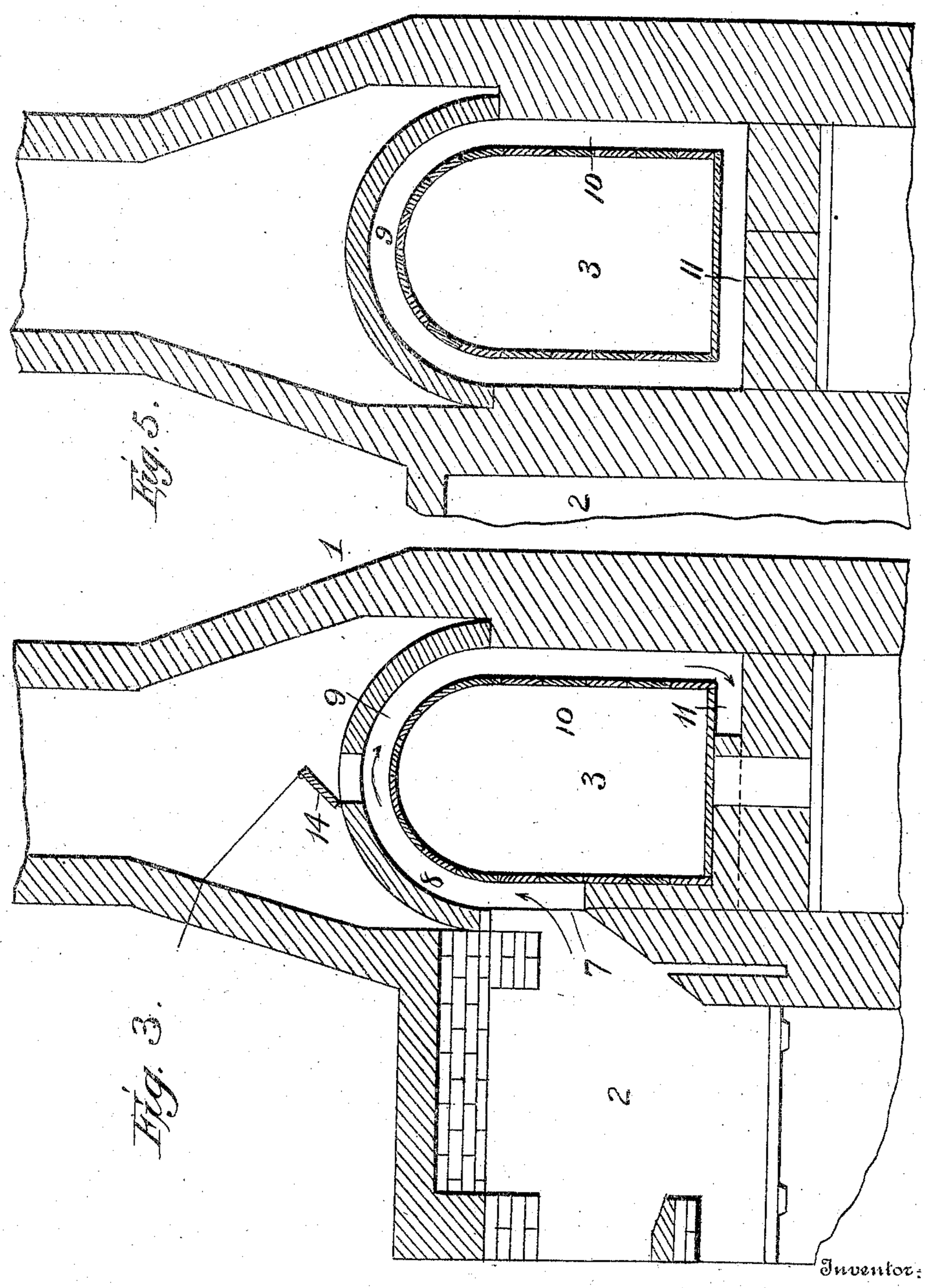
6 SHEETS—SHEET 5.



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No. 846,559. PATENTED MAR. 12, 1907

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6 SHEETS—SHEET 6.

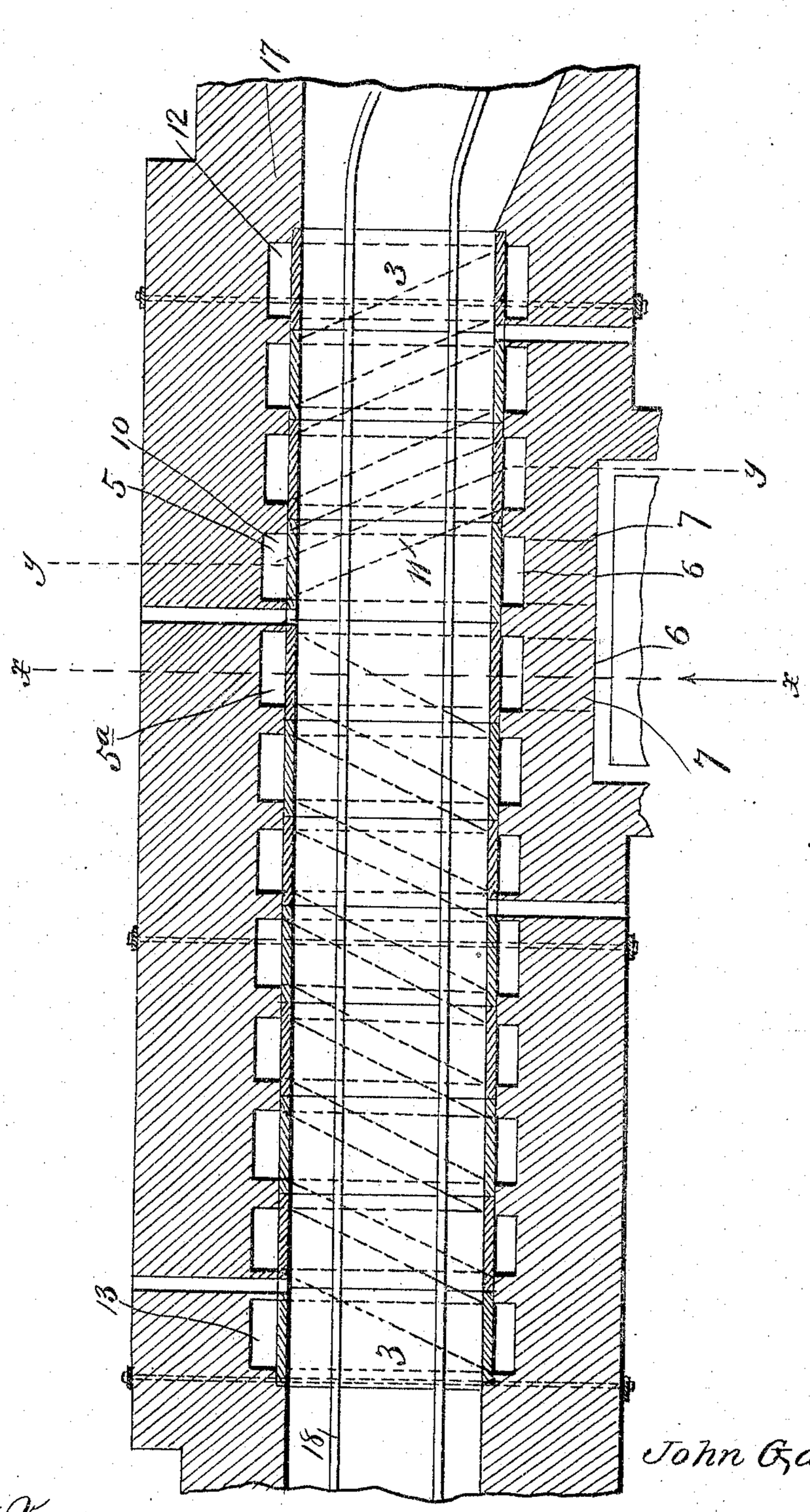

Fig. 4

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UNITED STATES PATENT OFFICE.

JOHN GAMBLE, OF EAST LIVERPOOL, OHIO.

CONTINUOUS DECORATING-KILN.

No. 846,559. Specification of Letters Patent. Patented March 12, 1907.

Application filed April 16, 1906. Serial No. 311,999.

To all whom it may concern:

Be it known that I, JOHN GAMBLE, a citizen of the United States, residing at East Liverpool, in the county of Columbiana and State of Ohio, have invented certain new and useful Improvements in Continuous Decorating-Kilns, of which the following is a specification.

My invention pertains to improvements in what may be termed "kilns" for treating decorated pottery-ware. Its object is to provide for the requisite or uniform distribution of the heat supplied from the furnace through the kiln for the effective treatment of the pottery-ware during the "firing" or "burning-in" operation or setting the decorations thereon; secondly, to neutralize or counteract the draft action when the kiln-door may be standing open, so as to prevent the draft passing through the heating or firing section or portion of the kiln, which would result greatly disastrous to the burning-in operation and to the pottery-ware, and in order to shut off which draft an inner closure or closures or like means has been heretofore employed, and to provide for accomplishing the aforesaid objects in a simple, expeditious, and effective manner.

Said invention therefore consists of certain features substantially as hereinafter fully disclosed, and particularly pointed out by the claims.

In the accompanying drawings, illustrating the preferred embodiment of my invention, Figures 1, 1ª are vertical longitudinal sections read in continuation one of the other thereof. Figs. 2, 2ª are horizontal sections in continuation of the same. Fig. 3 is a transverse vertical section produced through the furnace and kiln on the line *x x* of Fig. 2. Fig. 4 is a broken horizontal section of the heating-section of the kiln, and Fig. 5 is a vertical section produced upon the line *y y* of Fig. 4.

In the disclosure of my invention I suitably erect or construct the kiln 1 and the furnace 2, generally as outlined or shown, of masonry, preferably of tiles and bricks, the latter being arranged laterally of the former and relatively centrally thereof about. Said kiln has what may be styled a central "heating" or "firing" section or chamber 3, and beyond the latter it is extended in both directions, as at 4 4, in tunnel form, forming a covered approach and a corresponding exit therefrom. Said heating or firing chamber or section 3 is provided or equipped with practically two series of heat conducting or distributing passages or flues 5 5ª, a series being arranged each side of a line continuously passing transversely through said section or chamber and through the longitudinal center of the furnace 2, the latter being considerably nearer the feeding or receiving end of said section or chamber. Thus the greater heating or firing action is effected nearer the point the pottery-ware is initially introduced or received into the heating section or chamber, and said heating or firing action is gradually abated as said pottery-ware is conducted or taken through said chamber, and yet it is exposed sufficiently long to the heat therein to provide for the effective burning-in or setting operation. Said two series of heat-conducting passages consist each of a continuous passage or flue having its receiving end 6 connecting upon each side of the line aforesaid with the furnace by a short flue 7 and passing upward, as at 8, through the front wall, through the arching roof-wall, as at 9, and downward through the back wall, as at 10, continuing or returning to the opposite or forward side in a diagonal line, as at 11, in the bottom of the heating or firing section of the kiln, such flue formation being continued in like manner throughout from said line toward each end of said kiln-section, thus forming series of tortuous flues or passages traversing or encompassing the chamber of said kiln-section for the uniform distribution of the heat to said chamber for the effective treatment of the pottery-ware passed therethrough. An upright flue member 12 and 13, respectively, at diagonally opposite corners of the extreme ends of the two series of flues is, however, what may be styled "dead," not being in communication with either of said flue series, and therefore not serving any practical purpose in that connection.

Certain of the vertical flue members of each continuous-flue formation are provided with dampers 14 of suitable or well-known form for controlling the division and distribution of the heat or heat-currents as may be found necessary in conducting the burning-in or firing operation, as will be readily appreciated.

The tunnel-chamber is formed in practical continuation of the heating or firing section 3 with extension-chambers 14 15, respectively, that connecting with the delivery end thereof being the longer in proportion to the

greater length of said end of the heating section or chamber, as shown. The extension-chambers 14× 15 have each one wall in alinement with the corresponding wall of said heating or burning-in chamber or section, while the opposite walls of said extension-chambers are deflected or inclined laterally and in a direction away from the aforesaid walls, said alining walls having right-angled inward-extended end walls 16 17, respectively, each terminating a suitable distance from the deflected walls and intercepting a straight or right line touching any point within the cross-section of said heating section or chamber.

From the foregoing it will be noted that the draft which would be induced when the doors of the tunnel or kiln may be standing open would be prevented from setting up a current of cold air through the operating or heating section, with disastrous effects upon the pottery-ware, but that a reactionary current would result by the backing up of the combined heat and air currents against the walls 16 17, thus baffling or intercepting the passage of such cold-air currents as aforesaid.

Any suitable track or railway 18 may be laid extending through the kiln or tunnel and adapted by being suitably inclined, as indicated, for aiding the moving by gravity of the cars or trucks laden with the pottery-ware for treatment through the tunnel or kiln, said track or railway being continued outside laterally of the latter and returning from the delivery end of the kiln to and merging with the entrance end portion of the trackway.

Any suitably-equipped endless-belt mechanism 19, as shown, may be employed for transferring the pottery-ware-laden trucks or cars from the tunnel track or railway to the outside or returning section of said track or railway, the latter also being so inclined as to aid the movement by gravity of said cars toward the entrance end of the tunnel or kiln for a new supply of pottery-ware needing treatment, as well understood.

The great importance and advantages of my aforesaid described improvements in this line of kilns will doubtless be appreciated from what has already been stated, and it is therefore thought that further or extended remarks in that direction would be unnecessary.

I claim—

1. A kiln of the character described, provided with a heating or "firing" tunnel-section having two series of heat-conducting flues or passages communicating with a source of heat and extending tortuously in opposite directions through the walls of said tunnel-section.

2. A kiln of the character described, provided with a heating or "firing" tunnel-section having two series of heat-conducting flues or chambers, tortuously traversing the walls thereof in opposite directions and communicating with a source of heat, said source of heat being arranged nearer the entrance end of said heating chamber or tunnel-section and the series of heat-conducting flues toward the delivery end having a greater range than the series of heat-conducting flues toward the entrance end.

3. A kiln of the character described, having a heating or "firing" section and an extension-chamber with a right-angled end wall opposed to the plane of the entrance to the chamber of said heating or "firing" section, and a tunnel extension beyond said wall communicating with said extension-chamber said extension-chamber having an inclined lateral wall deflected oppositely to said end wall substantially out of the plane of said chamber-entrance.

4. A kiln of the character described, having a heating or "firing" section and end extension-chambers each having a right-angled end wall opposed to the plane of the entrance to said "firing" section and having an inclined lateral wall forming with said right-angled wall the entrance to said extension-chamber at a point substantially out of alinement with the aforesaid entrance.

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

JOHN GAMBLE.

Witnesses:
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ROBT. E. THOMPSON.