

No. 774,243.

PATENTED NOV. 8, 1904.

A. A. GERY.
CAR FOR TUNNEL KILNS.
APPLICATION FILED MAY 17, 1904.

NO MODEL.

2 SHEETS—SHEET 1.

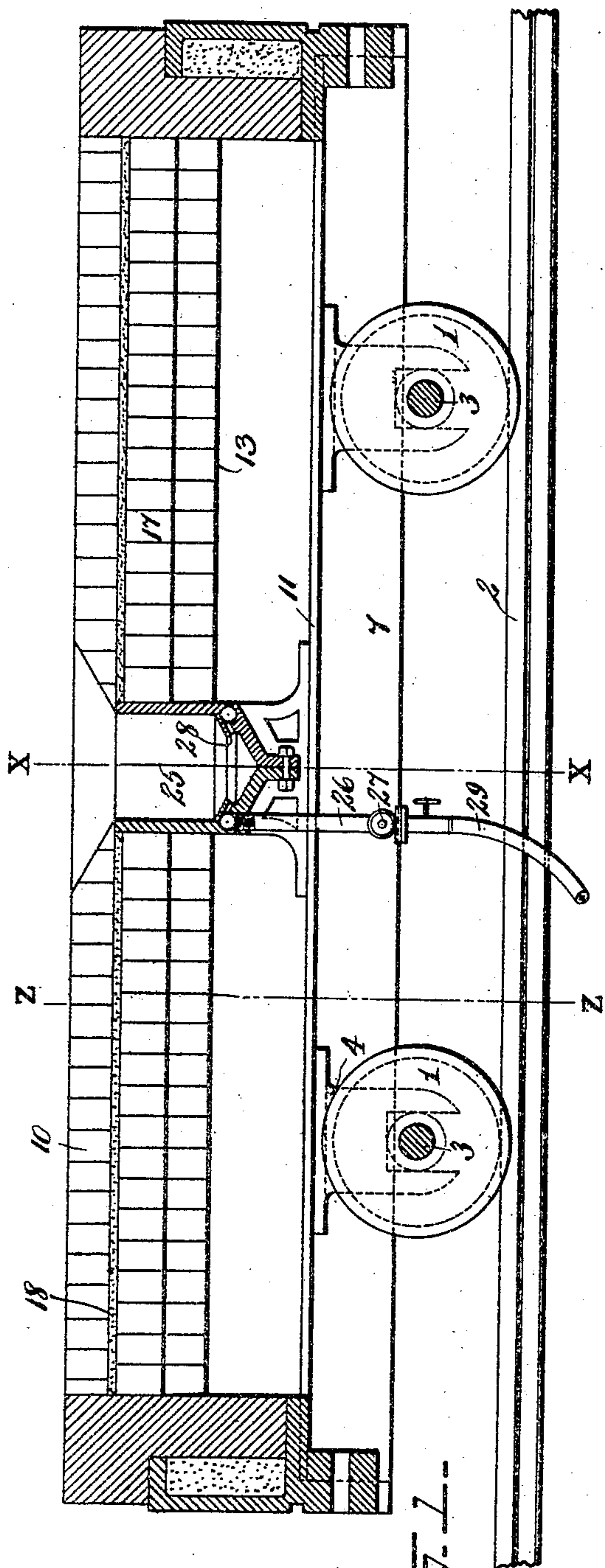


Fig. 1.

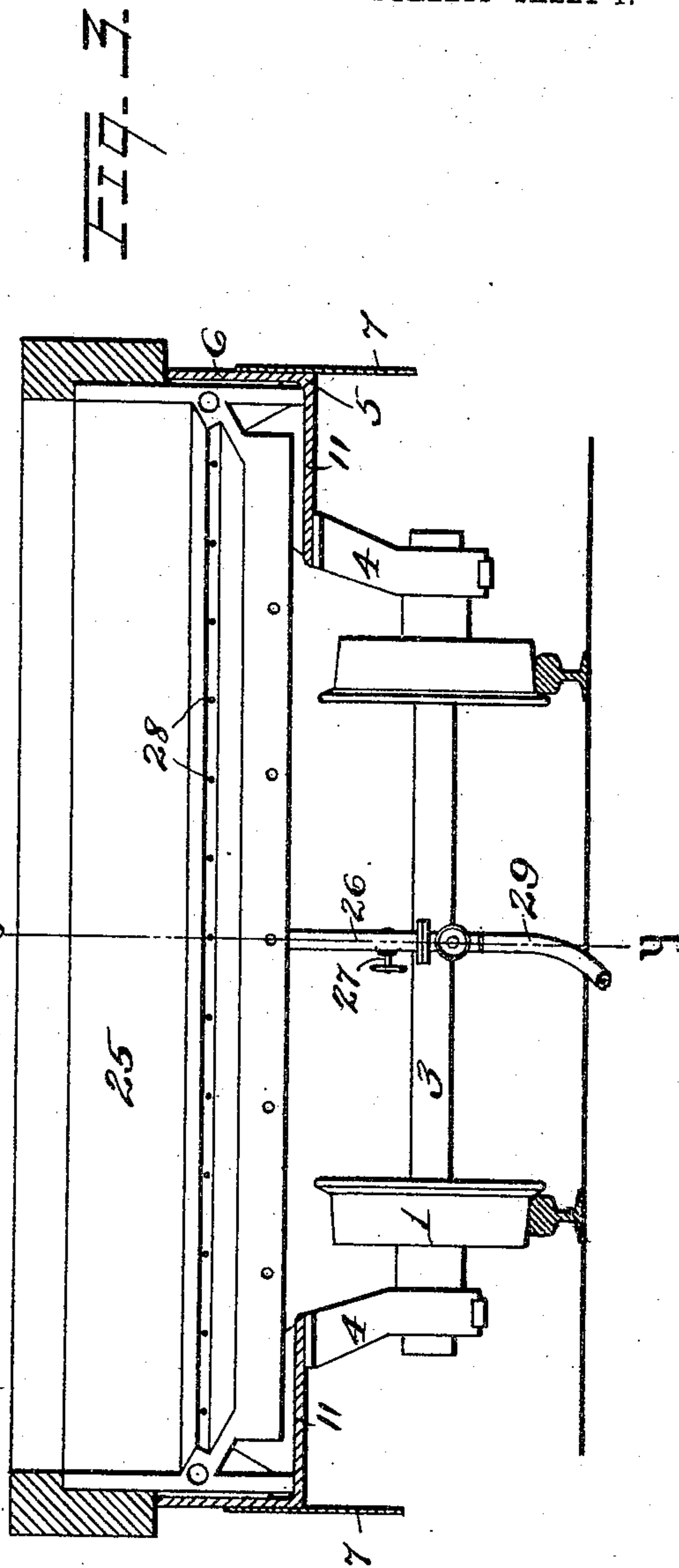


Fig. 2.

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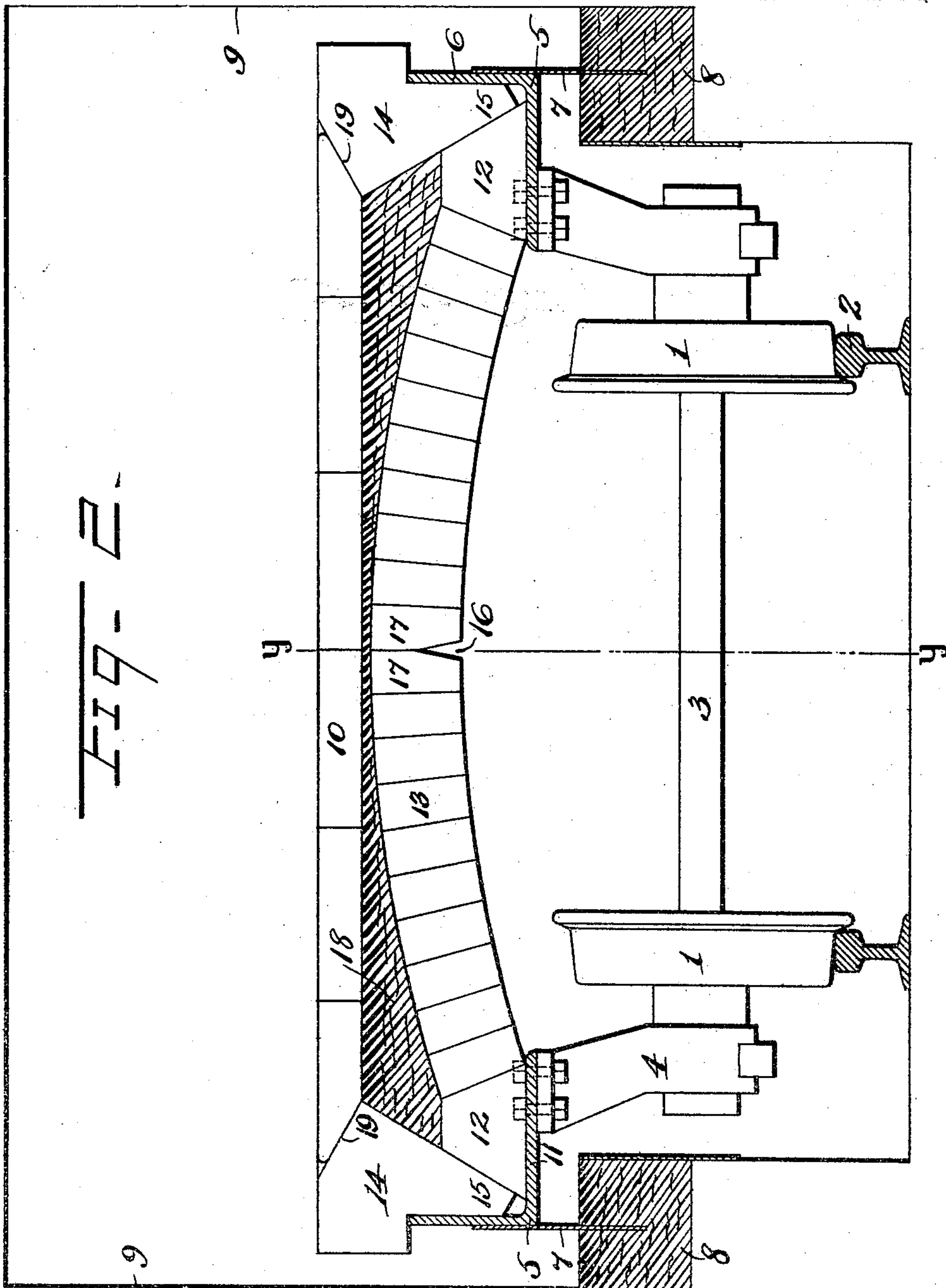
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2 SHEETS—SHEET 2



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CAR FOR TUNNEL-KILNS.

SPECIFICATION forming part of Letters Patent No. 774,243, dated November 8, 1904.

Application filed May 17, 1904. Serial No. 208,387. (No model.)

To all whom it may concern:

Be it known that I, ALBERT A. GERY, a citizen of the United States, residing in the city of Reading, county of Berks, State of Pennsylvania, have invented certain new and useful Improvements in Cars for Tunnel-Kilns, of which the following is a specification.

My invention relates to cars for tunnel-kilns, and particularly to the improved car-floor structure fully described hereinafter in connection with the accompanying drawings, and specifically pointed out in the claims.

The main objects of the invention are, first, to provide for maintaining the integrity of the arch and floor structure notwithstanding the distorting strains due to alternating contraction and expansion to which they are subjected, and, second, to provide in the floor structure special provision for firing, so as to secure a uniform burning of the bricks or other articles piled upon the floor of the car.

Figure 1 is a vertical longitudinal section on the line *y y* of Figs. 2 and 3 of a car embodying my improvements in preferred form. Fig. 2 is a cross-section on the line *z z* of Fig. 1, showing clearly the floor-carrying structure; and Fig. 3 is a cross-section on the line *x x* of Fig. 1, passing through the fire-box structure.

In tunnel-kilns, as is well known, the green bricks or other articles, as the case may be, are entered at one end of the tunnel and after being dried, burned, and cooled during their passage through the tunnel are finally removed at the other end, the cars upon which they are piled being advanced at intervals, and the floor portions thereof being subjected to the great heat required during a portion of the passage for properly burning the material piled upon them.

In Fig. 2 the relative arrangement of the tunnel and the movable car adapted thereto is indicated. The car-wheels 1 ride on longitudinal rails 2 in the tunnel, and the car-body is carried upon the car-axles 3 by means of bearing-pedestals 4, depending from the side frames 5 of the body. These frames, as shown, are formed of angle-irons, below the outer vertical members 6 of which depend, as usual, longitudinal sealing strips or flanges 7,

the lower edges of which run in sand-troughs 8, extending lengthwise of the tunnel on each side for the purpose of cutting off communication between the upper portion of the tunnel bounded by the side walls 9 and the portion thereof beneath the car-body.

The bricks, for instance, to be burned are piled upon the floor 10 of the car with passage-ways between them for the distribution of the heat. As already stated, my present invention relates to the improved floor-carrying structure and the fire-box feature provided in connection therewith now to be particularly described.

Upon the horizontal members 11 of the parallel angle-bar side frames 5 are carried the skewbacks 12, which in my improved construction are adapted to serve as automatically-adjustable abutments for the floor-arch 13 sprung between them. These skewbacks, as shown, are of frusta-pyramidal form, and in connection with them I employ spandrel-blocks 14, having wedge-shaped lower portions 15, which lie between one inclined face of the skewbacks and the vertical wall portions 6 of the side frames. The arch 13, which is sprung from the reversely-inclined face of the skewback, is formed with a crown portion having an undercut 16 between the double keys 17, as shown, and the horizontal floor 10 is carried upon the arch on an interposed spandrel-fill 18, of sand or the like, and with its outer edges supported upon inclined floor-abutments 19, formed on the upper portions of the spandrel-blocks. The purpose and effect of this improved construction is to provide for permitting the change in the arch and connected parts resulting from the great changes in temperature to which they are subjected without seriously distorting the floor structure itself or the symmetrically-piled bricks upon it during the burning operation and to provide for its being readily reused after cooling. The increased rise of the arch naturally resulting from the expansion occurring during the burning operation is provided for directly by the undercut 16, and the effects of such expansion are distributed upon the floor-surface through the movement of the skewbacks under the undue strain resulting

and the consequent lifting of the wedge-shaped spandrel-blocks with the outer edges of the floor supported thereon.

To provide for securing more uniform burning of the material piled upon the car-floor, I preferably employ in connection with the latter one or more transversely-arranged fire-boxes 25, supported, as shown, upon the horizontal members 11 of the angle-bar side frames 5 between the upright members 6 thereof. These depressed fire-boxes, as shown, open at the top through the car-floor, so as to permit the introduction of fuel to the fire-box through the firing-openings in the top of the kiln and at the same time permit the distribution of the heat produced by the combustion of the fuel furnished to the material piled upon the floor-surface adjacent to such opening. To promote and regulate this combustion as required, the bottom of the fire-box is provided with an air-inlet connection 26, having a regulating-valve 27, and with suitably-placed inlet-openings 28 to the fire-chamber, said connection being readily coupled to a valved hose 29, attached to a suitable blast-pipe in the lower portion of the tunnel, whereby an air-blast is continuously furnished to the fire-box during a desired portion of the progressive movement of the car in the tunnel.

By means of the improved floor construction described it will be readily understood that the object of securing more uniform burning of the bricks is attained, in the first place, by maintaining a practically level floor, and thus avoiding disarrangement of the piled bricks or other material and of the passageways provided between them, and, in the second place, by providing the special heating means described at one or more points in the length of the car, while at the same time the distortion of the car-floor structure, which is otherwise apt to occur upon the cooling of the same, is avoided. The preferred construction specifically described and shown may obviously be modified without departing from the invention.

What I claim is—

1. In a car for tunnel-kilns the combination with the angle-bar side frames and connecting-arch, of horizontally-movable pyramidal skewbacks for the arch, and wedge-shaped spandrel-blocks between said skewbacks and the vertical portions of the side frames.

2. In a car for tunnel-kilns the combination with the angle-bar side frames and connecting-arch, of pyramidal skewbacks for the arch, and wedge-shaped spandrel-blocks between said skewbacks and the vertical portions of the side frames, the upper portion of said spandrel-blocks being formed with inclined floor-abutments.

3. In a car for tunnel-kilns the combination

with the angle-bar side frames, of pyramidal skewbacks, a connecting-arch between said skewbacks having an undercut crown portion, wedge-shaped spandrel-blocks between said skewbacks and the vertical portions of the side frames, and a floor supported upon said arch and spandrel-blocks.

4. In a car for tunnel-kilns the combination with the angle-bar side frames, of pyramidal skewbacks, a connecting-arch between said skewbacks having an undercut crown portion, wedge-shaped spandrel-blocks between said skewbacks and the vertical portions of the said frames, having their upper portions formed with inclined floor-abutments, and a floor supported upon said arch and inclined abutments.

5. In a car for tunnel-kilns the combination with the angle-bar side frames, of pyramidal skewbacks, a connecting-arch between said skewbacks having a double-key undercut crown, wedge-shaped spandrel-blocks between said skewbacks and the vertical portions of the side frames, and a floor supported upon said arch and spandrel-blocks.

6. In a car for tunnel-kilns, the combination with the frame and floor supported thereon, of one or more depressed fire-boxes supported on said frame below the floor-level and opening through the floor of the car.

7. In a car for tunnel-kilns, the combination with the frame and floor supported thereon, of one or more depressed fire-boxes supported on said frame below the floor-level, and provided with bottom blast connection and inlets, said fire-box opening through the floor of the car.

8. In a car for tunnel-kilns, the combination with the frame and floor supported thereon, of one or more transversely-arranged fire-boxes supported on said frame below the floor-level, and opening through the floor of the car.

9. In a car for tunnel-kilns, the combination with angle-bar side frames and raised floor supported thereon, of a transversely-extending fire-box carried upon said angle-bars between the upright members thereof and opening through the floor of the car.

10. The combination with a tunnel-kiln, of a movable car having the floor thereof provided with a depressed fire-box, a fixed blast-pipe in the tunnel, and a flexible valved connection between said pipe and fire-box affording air communication during a desired portion of the car travel.

In testimony whereof I affix my signature in the presence of two witnesses.

ALBERT A. GERY.

Witnesses:

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