

No. 748,379.

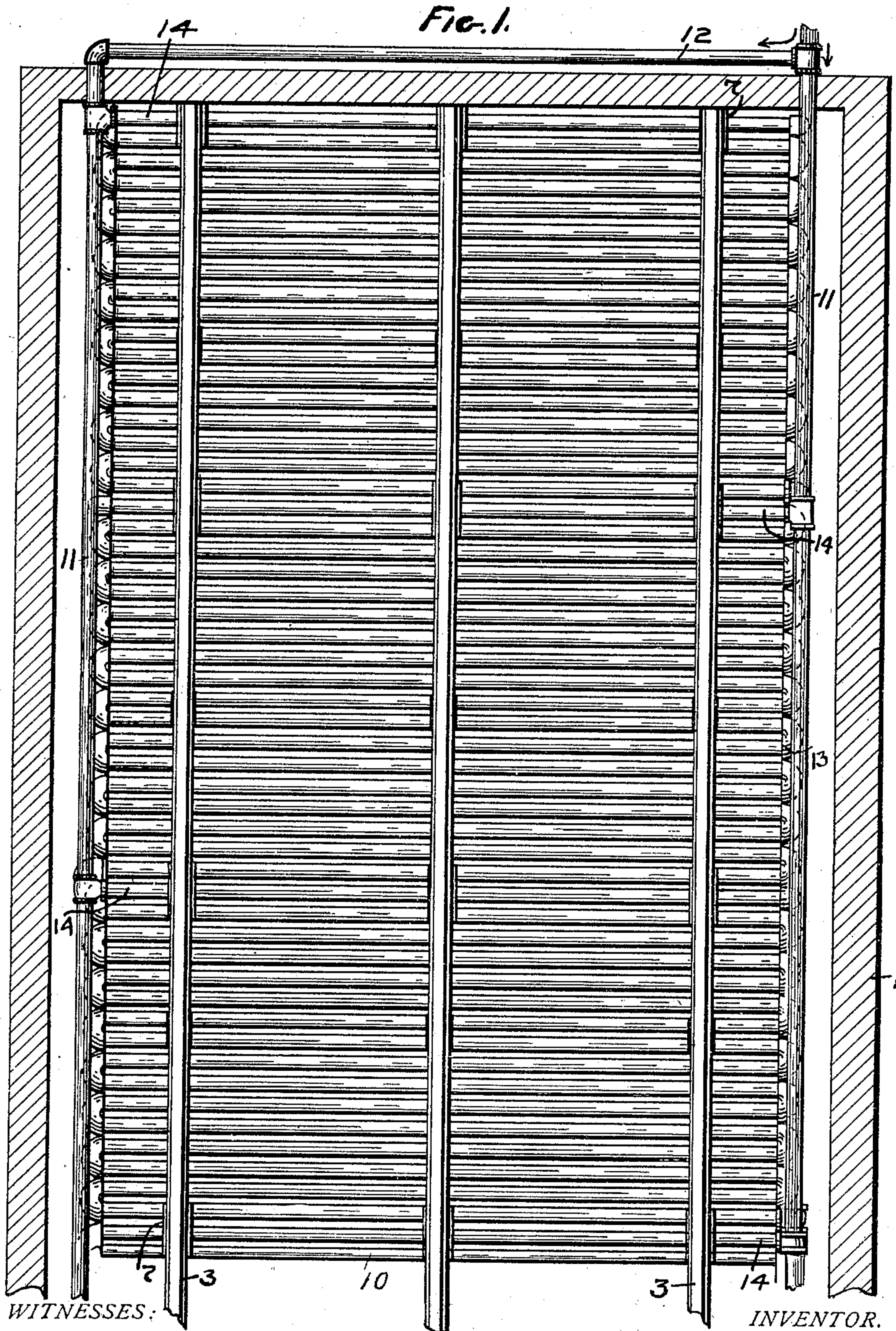
PATENTED DEC. 29, 1903.

W. P. HUSSEY.
STEAM HEATER.

NO MODEL.

APPLICATION FILED APR. 22, 1901.

2 SHEETS—SHEET 1.



WITNESSES:
G. H. Baker
Florence C. Bryant.

INVENTOR.
William P. Hussey
BY
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His ATTORNEY.

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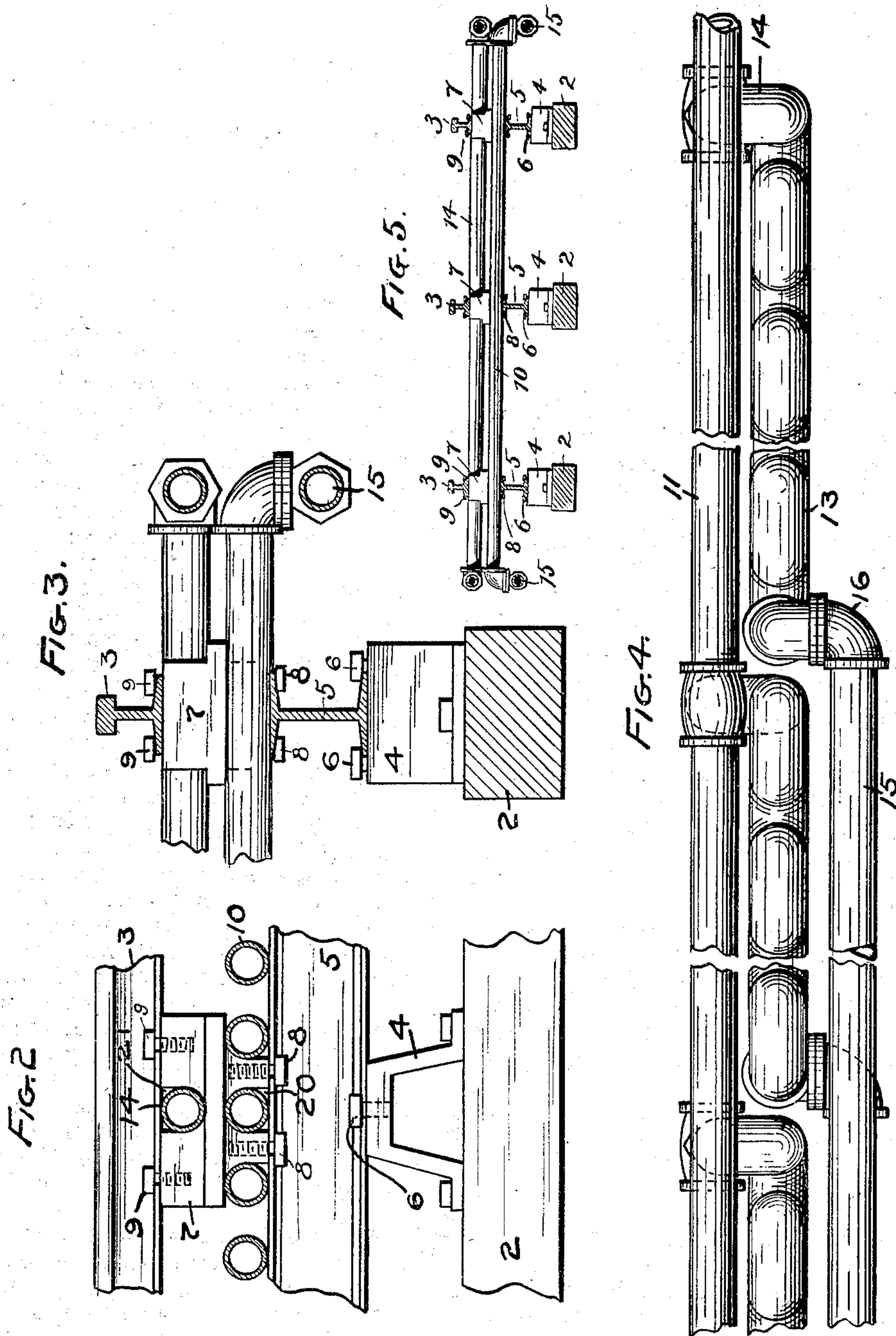
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UNITED STATES PATENT OFFICE.

WILLIAM P. HUSSEY, OF INDIANAPOLIS, INDIANA.

STEAM-HEATER.

SPECIFICATION forming part of Letters Patent No. 748,379, dated December 29, 1903.

Application filed April 22, 1901. Serial No. 56,997. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM P. HUSSEY, of Indianapolis, county of Marion, and State of Indiana, have invented a certain new and useful Steam-Heater; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, in which like numerals refer to like parts.

10 The object of this invention is to simplify and cheapen the construction of steam-heaters for dry-kilns.

One novel feature consists in the pipe system herein shown, which is built up of transverse heating-pipes of uniform length and which are also each separately movable. It is formed wholly of pipes, there being no specially-formed headers. Pipes of uniform length being readily and cheaply obtained, as they are kept in stock, this system is rendered much cheaper than pipe systems formed of pipes of varying lengths. It is also an easy matter to remove a pipe and substitute another for it.

25 Another feature of my invention resides in the means for supporting the heating-pipes, whereby the whole structure can creep.

These features of my invention will be understood from the accompanying drawings and the following description and claims.

30 In the drawings, Figure 1 is a horizontal cross-section of a dry-kiln with the heating-pipes and longitudinal rails or bars shown in plan. Fig. 2 is a side elevation of a portion of a track-rail and its support, parts being broken away and the heating-pipes being shown in central cross-section. Fig. 3 is a cross-section of Fig. 2. Fig. 4 is a side elevation of a portion of the heating-pipe system partly broken away. Fig. 5 is an end elevation of the pipe system and its supporting means on a scale reduced from that of the other figures, the walls of the kiln being omitted.

45 In Fig. 1 the walls of the building 1 are shown, in which the heating system is located. As appears in Fig. 2, suitable sills 2 extend longitudinally of the building immediately under the longitudinal rails or bars 3. (Shown in Fig. 1.) These sills may be held in place by any suitable means, none here being shown excepting the superstructure. Upon the sills at suitable intervals—about

every four feet preferably—metallic chairs 4 are bolted to carry the I-beam 5. There is one of these I-beams for each rail or bar 3 55 and located beneath the track-rails and parallel therewith. The I-beam is held in place upon the chairs 4 by the headed bolts 6, secured on each side of the I-beam, the heads of the bolts overlapping the lower flanges of 60 the I-beam to prevent vertical movement of the I-beam, and by placing bolts on both sides lateral movement of the I-beam is prevented, but longitudinal movement or creeping of the I-beam is permitted. 65

Metal frames or what may be called "secondary chairs" 7 are secured on top of the I-beam at suitable intervals—four feet preferably—and these carry the rails or bars. They are secured to the upper flange of the I-beam 70 by screw-bolts 8, extending through notches in the I-beam, as appears in Fig. 2. Bolts 9 similarly secure said frames or secondary chairs to the lower flanges of the rails or bars 3. This construction secures the track-rail, 75 the I-beam, and the intermediate frame-pieces 7 together so securely that none of the parts has independent movement; but the whole structure creeps under the influence of heat or cold upon the chairs 4, that carry the I-beam. This gives solidity of structure, with ample provision for creeping and uniformity in the relative position of the parts in spite of the creeping. Three sets of track rails or bars 3 and longitudinal supports are shown 85 in Fig. 1. The heating-pipes 10 extend crosswise beneath the rails and rest upon the I-beam.

Along each side of the construction I mount a steam-supply pipe 11, connected at one end 90 by the pipe 12. In the device, as shown in Fig. 1, steam enters one end by one of the side pipes 11 and a portion of it passes through the pipe 12 to the pipe 11 on the other side. These side pipes supply the steam to the heating-pipes 10. The heating-pipes are all of uniform length—sixteen feet as herein shown—and are formed into a coil by end bends or heads 13, into which the pipes 10 are screwed, the arrangement and connection being, like 100 radiator-pipes, in a horizontal position and resting upon the I-beam 5. In Fig. 1 three sets or coils of these pipes are shown. The first coil is supplied with steam from the pipe

11 on the left side of Fig. 1, through the pipe 14, that is connected with and leads from said pipe 11. The pipe 14 extends across under the track-rails on a plane higher than the pipes 10, as appears in Fig. 2, and at its right end turns down, as appears in Fig. 4, to the pipes 10. The steam passes through the coil and out through the exhaust or condensation pipe 15, as appears in Fig. 4. The outlet of each coil is on the side of the device opposite the inlet. The inlet to the second coil is from the pipe 11 on the right side of Fig. 1 instead of the left, so that the inlets of steam for each coil alternate from side to side. This is not that the steam may be distributed, but that the side pipes 11 may be of uniform length, like the pipes 10 and 14. In the device here illustrated the side pipes 11 are made up of sixteen-foot sections. The second pipe 14 leads from the right-hand-side pipe 11, and the third pipe 14 leads from the left-hand-side pipe, and thus they alternate throughout the system. The end bends or connections 13 are all the same for connecting the pipes 10 and 14 in their various positions. The connection 16, (shown in Fig. 4,) with the condensation-pipe 15, is differently formed, as there shown, for not only is there a drop, but the pipe 15 extends away at a right angle from the pipe 10, with which it is connected. The unions or connections between these pipes are familiar to all skilled in the art and will be understood without further specification. From this description of the pipe system it is seen that the whole system may be made with section of heating-pipes 10 and supply-pipes 11 and 12 of the same length and a supply of end connections 13 and 14 of uniform make and size. The width of the coil is equal to the length of a section of the supply-pipe 11. The whole system can be built, extended, decreased, repaired, or replaced by anybody with a pipe-wrench. There is no complexity. No pipes need to be cut and no special pipes be obtained.

The pipes 10 extend through the frames or secondary rails 7, as shown in Figs. 2 and 3, and are clamped therein, so as not only to be held in place, but so they will constitute lateral braces for holding the track rails or bars 3 in place laterally. To accomplish this, the frame 7 has central on its under side a recess 20 and also a recess at each side thereof for the passage of three of the pipes 10. The frame 7 is placed upon said pipes and is clamped down upon them by the bolts 8, whereby they are tightly secured in place. Likewise a recess 21 is centrally provided on the upper side for the passage of the pipe 14, which lies in a higher plane than the pipes 10, and it is clamped in place by the bolts 9. Since these pipes extend entirely across and through the structure and are clamped in place, they perform the function of tie-beams

or other cross-braces for holding the track rails or bars 3 in place. It will also be observed that the pipes 10 are arranged in sets or series, said pipes occupying the same horizontal plane, and that the first pipe of each set or series occupies a plane above that of the other pipes of the respective sets or series, but lies in the same plane as the supply-pipes 11. Hence the connection 13 between the pipes 14 and the immediately adjacent pipe 10 extends in a vertical plane and at right angles to the plane occupied by the connections 13 between the other pipes 10, and consequently each set may be readily repaired without interfering with or affecting the other sets. The desired heating capacity is also secured within a comparatively small space and an even distribution of the steam from the supply-pipes effected.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. In a steam-heater, the combination with a pair of parallel supply-pipes, of heating-pipes arranged in sets or series between said supply-pipes and extending at right angles thereto, each of said sets or series of heating-pipes being alternately connected with the supply-pipes, the first pipe of each of said sets or series being arranged in a plane above the other pipes but in the same plane as the supply-pipes, whereby an even distribution of the steam from the supply-pipes is effected and the desired heating capacity secured within a comparatively small space.

2. In a steam-heater, the combination with a pair of parallel supply-pipes, of heating-pipes arranged in sets or series between said supply-pipes and extending at right angles thereto, each of said sets or series of heating-pipes being alternately connected with the supply-pipes, connections arranged at the ends of the pipes of the respective sets or series for forming a continuous passage there-through, the first pipe of each of said sets or series being arranged in a plane above the other pipes but in the same plane as the supply-pipes, whereby an even distribution of the steam from the supply-pipes is effected and the desired heating capacity secured within a comparatively small space, and a connection between the first pipe of each set or series and the immediately adjacent pipe thereof, said connection extending in a vertical plane and at right angles to the plane occupied by the connections between the other pipes of the set or series.

In witness whereof I have hereunto affixed my signature in the presence of the witnesses herein named.

WILLIAM P. HUSSEY.

Witnesses:

FLORENCE E. BRYANT,
V. H. LOCKWOOD.