J. H. MORGAN.

COKE OVEN STEAM GENERATOR.

APPLICATION FILED JULY 28, 1909.

1,050,679.

Patented Jan. 14, 1913.

2 SHEETS—SHEET 1.

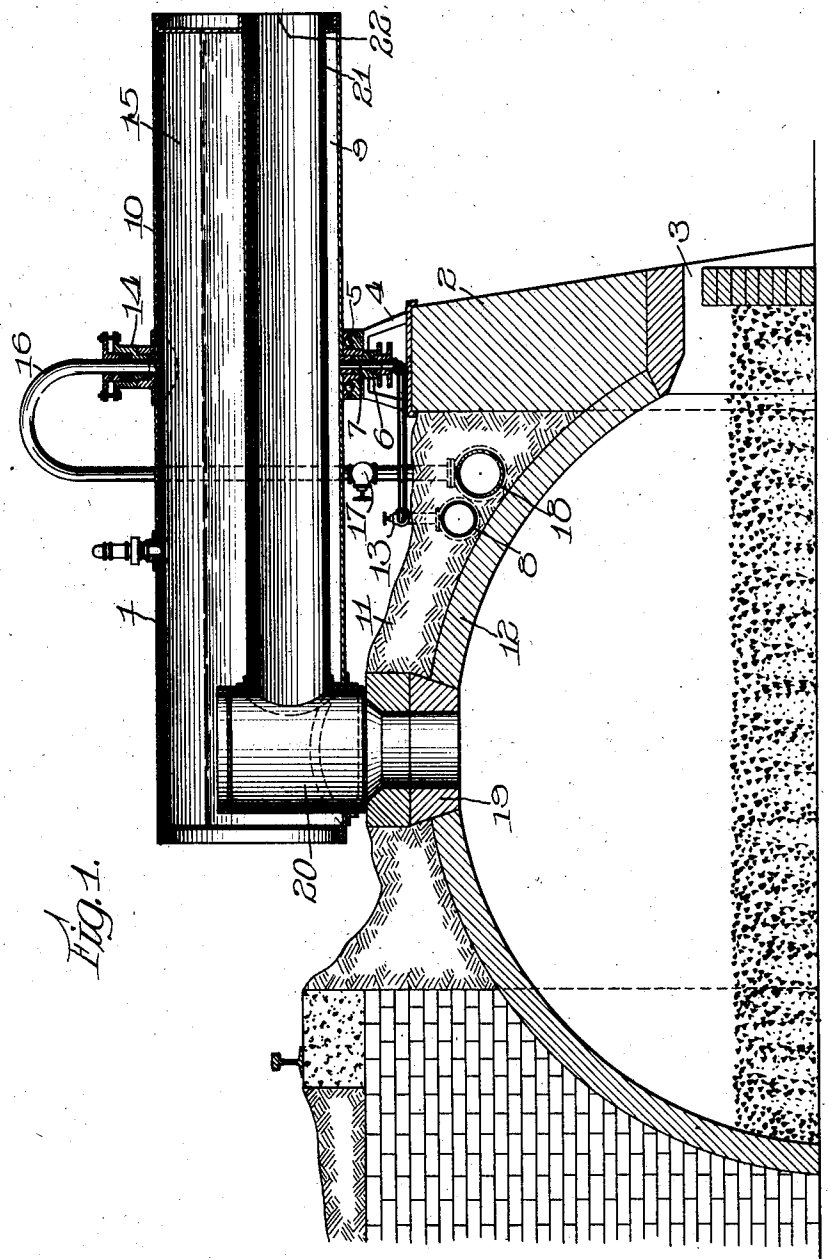

Fig. 1.

Witnesses

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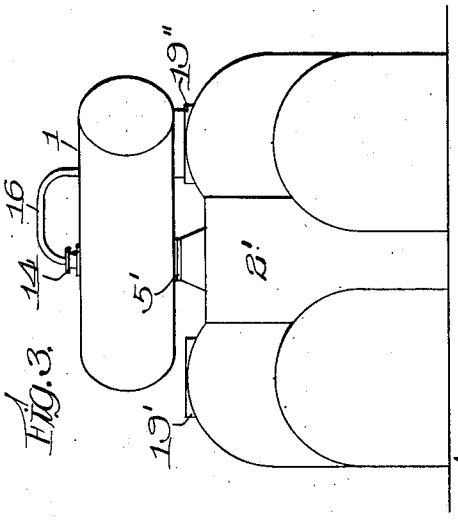

Fig. 3.

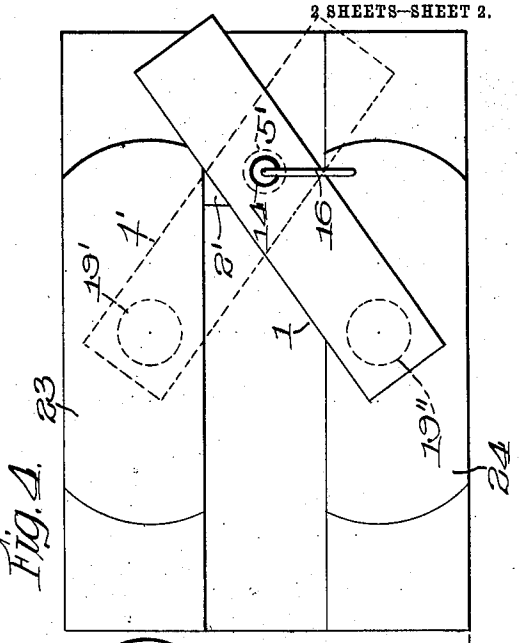

Fig. 4.

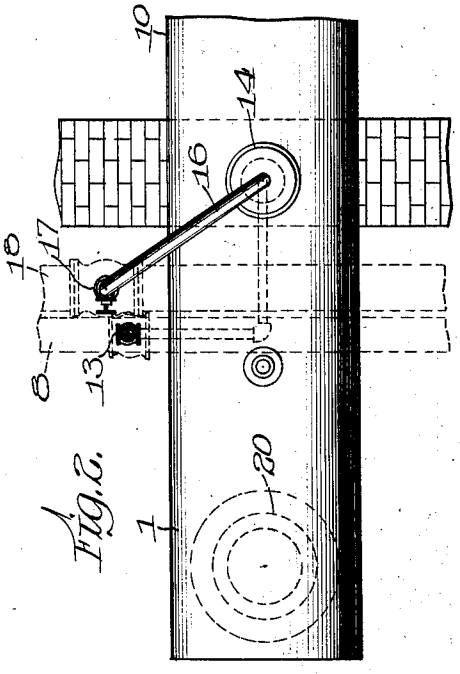

Fig. 6.

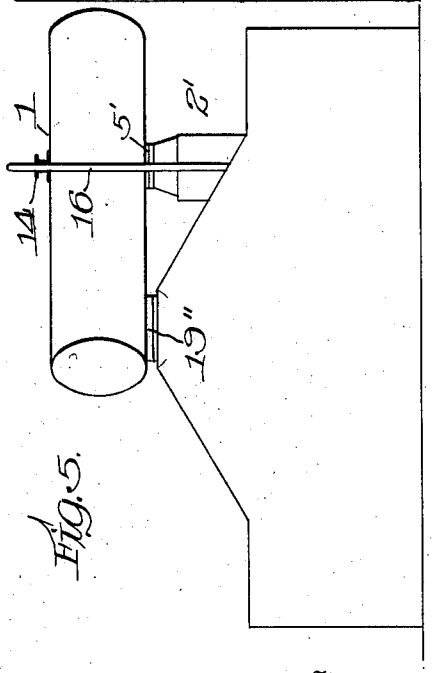

Fig. 5.

Witnesses

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UNITED STATES PATENT OFFICE.

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COKE-OVEN STEAM-GENERATOR.

1,050,679. Specification of Letters Patent. Patented Jan. 14, 1913.

Application filed July 28, 1909. Serial No. 510,091.

To all whom it may concern:

Be it known that I, JOHN H. MORGAN, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Coke-Oven Steam-Generators, of which the following is a specification.

My invention relates to apparatus for utilizing coke oven heat to generate steam, and one of its objects is the provision of a balanced boiler to facilitate shifting or oscillating the same on its pivot.

Other objects of the invention will appear hereinafter, the novel combinations of elements being set forth in the appended claims.

In the accompanying drawings, Figure 1 is an elevational view in section of my improved boiler mounted on a coke oven in position to utilize the heat therefrom to generate steam; Fig. 2 is a plan view of the boiler shown in Fig. 1 and a portion of the supporting wall; Figs. 3 and 4 are rear end and plan views of the pivoted balanced boiler mounted between two coke ovens of a different type than that shown in Fig. 1; and Fig. 5 is a side view of Fig. 4.

Similar reference characters refer to similar parts throughout the various views.

Referring to Fig. 1, it will be seen that I have shown the boiler 1 mounted on the front wall 2 directly over the arched opening 3 of the coke oven or to either side thereof. A standard 4 of suitable construction rests on top of the wall 2 or is fastened thereto. Preferably ball-bearings are provided at 5. Through the center of this ball bearing pivot and through the stuffing box 6 extends a fixed water supply pipe which connects the main supply pipe 8 with the interior 9 of the boiler shell 10. The stuffing box 6 may be fixed to and oscillate with the boiler and the pipe 7 may assist in holding the pivotal point of the boiler in proper position. If desired, the main water supply pipe may be buried in the filling material 11 on top of the oven wall 12 but preferably separated a short distance therefrom, as shown, to prevent the intense heat of the oven from burning the material of which the pipe is constructed. However, the placing of the main water supply pipe 8 near the wall 12 effects the heating of the water before it reaches the boiler. The flow of water through the pipe 7 may be controlled by a valve 13. Diametrically opposite the ball bearings 5, that is, on top of the boiler shell 10, and fixed to the latter, is a stuffing box 14 through which into the steam chamber 15, extends the comparatively large and strong steam pipe 16. The flow of steam from the boiler through this pipe into the steam supply pipe 18 may be controlled by the valve 17. This steam supply pipe may be so constructed and mounted as to hold the boiler in proper position or maintain it in equilibrium. Obviously the construction for pivoting the boiler may be varied as desired and may in some cases be such that a large cylindrical bearing block on the wall 2 fitting into a corresponding recess on the under side of the boiler may take all the side thrusts as well as the weight of the boiler and contents. Or the ball bearing may be sufficiently large in diameter to properly support the boiler at all times. The steam supply pipe may also be buried in the filling material 11 but not too near the wall 12 unless superheated steam is desired and the pipe will withstand the intense heat. If the steam supply pipe 18 is thus buried in the material 11 the steam may be carried a greater distance without condensation, particularly where the pipe passes along a series or row of such coke ovens. When the boiler is shifted to proper position to take advantage of the heat passing from the coke oven, through the trunnel head 19, the chamber 20 is directly over the trunnel head as shown in Fig. 1, and the heat from the oven passes through the flue 21 to the atmosphere at the opening 22. If the heat which passes through the opening 22 interferes with the workman handling the coke at the opening 3, the flue 21 can be made to extend to the upper side of the boiler shell at the right as seen in Fig. 1, in which case the draft will be increased and the coke prepared in a shorter time. Instead of one large flue 21, as shown, there may be a plurality of smaller flues each immersed in the water in the boiler.

In Figs. 3, 4 and 5 I have diagrammatically shown a boiler pivotally mounted on a strong supporting wall 2′ between two

coke ovens of a different type than that shown in Fig. 1. By this arrangement only one boiler need be supplied for two ovens for while the coke is being cooled and removed in one, the heat from the other may be utilized for generating steam. For instance, if the boiler 1 is moved to the position shown in Fig. 4 with its mouth over the trunnel head 19, the coke may be removed from the oven 23 while coke in oven 24 is being prepared, and when the coke in oven 24 is to be cooled and removed the boiler may be rotated to the dotted line position 1′ (Fig. 4) and the heat from oven 23 used to generate steam while coke is being prepared therein.

Obviously, those skilled in the art may make various changes in the details and arrangement of parts without departing from the spirit and scope of the invention as defined by the claims. I wish therefore not to be limited to the precise construction herein disclosed.

Having thus fully described my invention and an embodiment thereof, what I claim and desire to have protected by Letters Patent of the United States is—

1. In apparatus for utilizing coke oven heat, the combination with a coke oven having an opening in its top, of a steam generator, and a central pivotal supporting means therefor under the generator, permitting movement of the generator over the opening in an oven or away from the same.

2. In apparatus for utilizing coke oven heat, the combination with a coke oven of the bee-hive type, of a steam generator, and means under the generator for pivotally supporting the same in a horizontal balancing position, permitting movement of the generator over an opening in the oven or away from the same.

3. In apparatus for utilizing coke oven heat, the combination with a coke oven, of a steam generator associated therewith, and means for pivotally supporting the generator in a balanced position and to enable it to be moved in a horizontal plane over the opening in the oven or entirely clear therefrom.

4. In apparatus for utilizing coke oven heat, the combination of a steam generator, and means for pivotally supporting the generator in balancing positions in a horizontal plane and to enable the same to cover the opening in the top of the oven or to be entirely clear of such opening.

5. In apparatus for utilizing heat, the combination of a boiler, and means for pivoting the same intermediate its ends thereby supporting the boiler in different horizontal positions but in the same horizontal plane.

6. In apparatus for utilizing coke oven heat, the combination with a horizontal boiler, of a support, and a pivot between the support and the boiler at a point intermediate its ends.

7. In apparatus for utilizing coke oven heat, the combination with a coke oven, of a boiler, a fixed support, a pivotal bearing on the support to carry the boiler in a balancing position and enable it to be oscillated to a position where the flue receives the heat from the top opening in the coke oven and to positions where the flue is entirely clear of the said opening, a supply pipe connected to the boiler and embedded near the upper wall of the oven, and a steam pipe connected to the boiler and embedded in a similar position.

8. In apparatus for utilizing the heat from coke ovens, the combination with a boiler, of a plurality of coke ovens, and means for pivotally supporting the boiler in a balancing position and enable it to be moved to positions over the top opening of any one of said ovens in its arc of movement.

9. In apparatus for utilizing coke oven heat, the combination with two coke ovens, of a fixed wall between said ovens, a pivotal bearing on said wall, and a horizontal boiler centrally mounted on said bearing in balanced position and capable of being oscillated to receive the heat from the top opening of said ovens alternately.

10. In apparatus for utilizing the heat from coke ovens, the combination of a horizontal boiler having a horizontal flue, and a bearing at or near the central portion of said boiler to support the latter in balanced positions and enable one end of the flue to receive the heat from the top opening of the oven or entirely clear the same.

11. In apparatus for utilizing coke oven heat, the combination with a horizontal boiler, of a pivotal bearing intermediate the ends of the boiler to support the latter in balanced positions, a water supply pipe extending through said bearing into the boiler, and a steam supply pipe extending from the boiler diametrically opposite said bearing.

12. In apparatus for utilizing coke oven heat, the combination with a coke oven, of a steam generator having a longitudinal flue opening extending to an opening in the bottom of the generator at or near one end thereof, and means for pivotally supporting said generator with its longer dimension arranged horizontally and said lower opening at or near one end of the generator registering with the trunnel head of a coke oven when said generator is moved over the same.

13. In apparatus for utilizing coke oven heat, the combination of a coke oven having an opening in its top, a horizontal steam boiler having an opening at the lower side thereof near one end of said boiler, con-

necting with the flue passage in said boiler, and means for supporting said boiler for movement of the said lower side opening therein over the coke oven opening or away from the same.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, on this 24th day of July, A. D. 1909.

JOHN H. MORGAN.

Witnesses:
RICHARD F. BEUTLICH,
HUGH BARKER.