(No Model.) 2 Sheets—Sheet 1.

K. M. MITCHELL.

BENCH FOR INCLINED RETORTS.

No. 524,856. Patented Aug. 21, 1894.

Fig. 1.

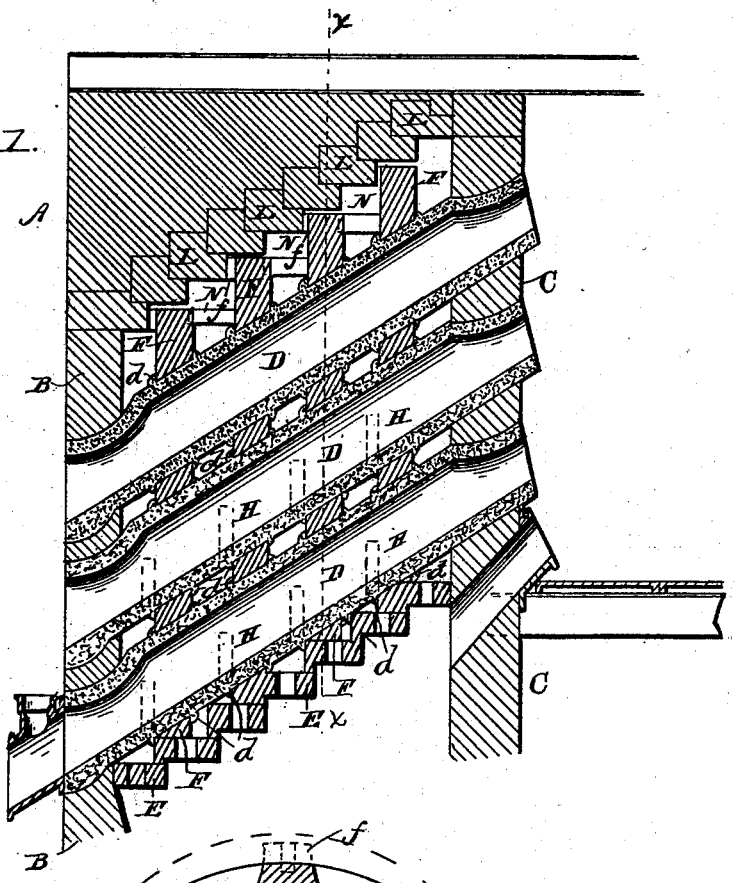

Fig. 2.

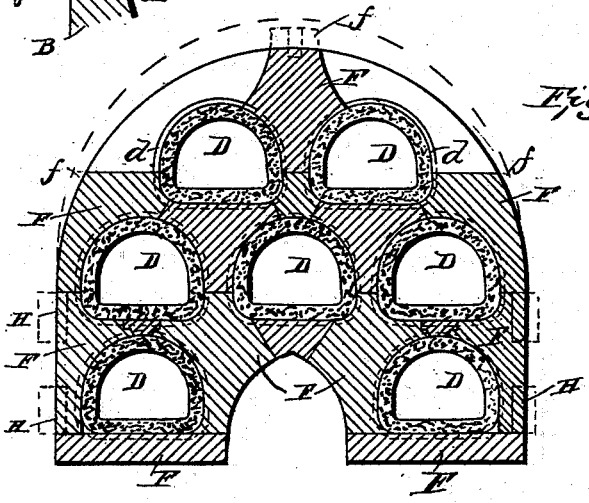

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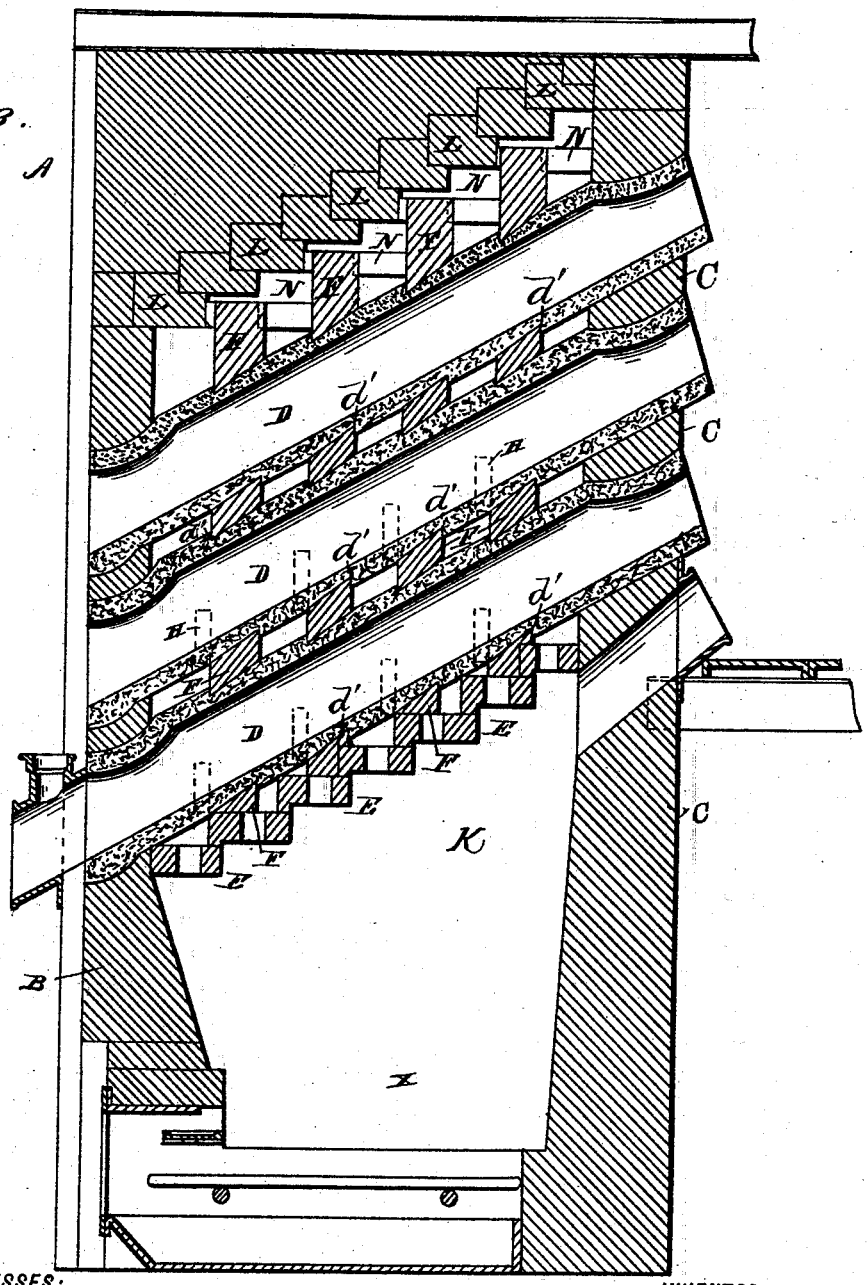
Fig. 3.



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UNITED STATES PATENT OFFICE

KERR M. MITCHELL, OF ST. JOSEPH, MISSOURI.

BENCH FOR INCLINED RETORTS.

SPECIFICATION forming part of Letters Patent No. 524,856, dated August 21, 1894.

Application filed May 5, 1891. Serial No. 391,620. (No model.)

To all whom it may concern:

Be it known that I, KERR M. MITCHELL, a citizen of the United States, residing at St. Joseph, in the county of Buchanan and State of Missouri, have invented certain new and useful Improvements in Benches for Inclined Retorts; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to gas retort furnaces, and more particularly to the setting and bracing of inclined retorts.

The object of my invention is to so brace and support inclined retorts by means of lugs or shoulders forming recesses on the outer surfaces of the retorts,—transverse saddle tiles fitting against such lugs or shoulders,—key-pieces projecting from the side walls and arches at the top of the furnace—as to prevent the inclined retorts from slipping forward and forcing outward the front walls of the furnace and disarranging the recuperating chambers connecting with the benches.

In inclined retort benches heretofore erected much trouble has arisen from the tendency of the retorts to slide forward and push out the front wall of the bench, resulting in the serious cracking and opening of the setting inside and in the derangement of the whole system of air recuperating chambers, flues, &c., with which the benches are provided. By means of my invention these annoyances and difficulties are overcome and a secure and stable setting or bench for inclined retorts is provided.

The novel features of construction and arrangement constituting my invention will be defined in the claims.

My invention is illustrated in the accompanying drawings, in which—

Figure 1 represents a vertical longitudinal section of the upper part of a retort bench. Fig. 2 represents a transverse section thereof on line *x*—*x*, Fig. 1. Fig. 3 represents a vertical longitudinal section of a retort bench and furnace showing some modified features of construction.

The retort bench A, is constructed with the front and rear walls B and C, and side walls K, and is provided with the usual fire-box X, and also with the usual grate and ash-pit. The retorts D, are supported in the front and rear walls in a suitably inclined position, as shown in the drawings. The retorts have cast with or otherwise formed upon their outsides the shoulders *d*, *d'*, of which there may be eight, as shown in the drawings, or any other desired number. These shoulders may be in the nature of lugs suitably disposed around the retort or may be in the nature of ribs diagonally encircling the retorts, as indicated by dotted lines in Figs. 1 and 2. These encircling ribs are placed in planes which are slightly inclined to the longitudinal axis of the retort, forming transverse spaces or recesses between two adjacent shoulders *d*, (see Fig. 1) as shown, so that when the retorts are set in an inclined position in the bench the perpendicular saddle tiles will be neatly fitted in such spaces or recesses and form a strong solid setting.

Instead of forming shoulders by the projecting lugs or ribs, *d*, I may form the depressions or cuts in the body of the retort (Fig. 3) and thus provide shoulders, *d'*, and fit the transverse saddle tiles F, into such depressions or cuts against the shoulders, *d'*, as before explained. By either arrangement of the shoulders or depressions a transverse bearing is formed for the saddle tiles, which thereby support the retorts and prevent them from slipping out of their proper position. The saddle tiles F, are supported at the bottom on suitable transverse horizontal bearings E, and the bearings at the top of the first tier or series of tiles are also horizontal for supporting the successive tiers of tiles above, as clearly shown in Fig. 2. By means of these saddle tiles F, the retorts are securely braced and held in proper position with relation to each other and by means of the shoulders *d*, *d'*, the retorts are prevented from sliding forward.

For the purpose of supporting and holding the transverse saddle tiles in their proper positions I provide the projecting key pieces H, built into the side walls K on each side of the bench, as shown in Fig. 2. These key pieces bear against the front faces of the tiles F, on each side of the bench and prevent their longitudinal displacement. The key pieces are also indicated by dotted lines in Figs. 1 and 3.

The top of the bench is constructed with a transverse arch, Fig. 2 inclined longitudinally and formed with successive ledges or offsets L, one above the other, so as to make interior projections, as shown in Figs. 1 and 3, and I utilize such projections as bearing surfaces to support the front faces of the saddle tiles F, at the top, as shown at the points *f*, Figs. 1 and 2. The saddle tiles are each recessed at the top, as shown in Figs. 1 and 2, to receive one end of a brace N, which extends longitudinally across to the adjacent tile, close to the top of the retort. Since the front faces of the tiles F, bear at their tops against the projections of the arch L, it is evident that the horizontal braces N, will materially assist in holding the retorts in place and in making a strong stable setting.

It will be seen from the above description that the retorts are well supported and held against both lateral and longitudinal displacement by means of the saddle tiles F, fitted in contact with the transverse bearing surfaces in the nature of transverse shoulders *d*, or *d'*; and that the saddle tiles are braced and held in proper position by means of the key pieces H, fixed in the side walls and by means of the inward projections L of the arch at the top and the braces N, extending between the tiles. This construction produces a very effective and durable setting for inclined retorts and results in preserving the recuperating chambers and flues,—usually connected with such benches,—in effective working condition.

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

1. Inclined retorts having transverse shoulders or ribs on their outer surface, combined with transverse saddle-tiles having their under faces correspondingly inclined and held in position by such shoulders or ribs, substantially as set forth.

2. In combination with a retort bench or furnace, a retort set and held therein in an inclined position against lateral or longitudinal displacement, and having transverse ribs or projections serving as bearings to hold and sustain transverse saddle tiles, combined with such tiles fitted in contact with the vertical faces of such ribs or projections.

3. An inclined retort having the transverse ribs or projecting shoulders, as described, on its outer surface, in planes inclined to its longitudinal axis, combined with and constructed to bear against perpendicular transverse saddle tiles having the under face thereof inclined to fit the space between two such adjacent ribs.

4. In combination with a bench or furnace having retorts considerably inclined, and having side and end walls, the transverse ribs or projections having the described positions on said retorts, the transverse saddle tiles having their under faces or lower ends inclined to correspond with the inclination of the retorts and fitting against the vertical face of such ribs, and means in the side walls for supporting said tiles, all substantially as shown and described and for the purposes set forth.

5. In combination with a retort bench or furnace having inclined retorts, and having side and end walls, the described transverse ribs or projections on the retorts and performing the duty as set forth, the transverse saddle tiles fitted against and between such ribs, and the key-pieces H, secured in the side walls and bearing against said tiles, all substantially as shown and described.

6. In a bench or furnace having deeply inclined retorts and having side walls, the described exterior ribs or projections on such retorts, the saddle tiles fitted against and between such projections or ribs and serving to support the retorts both laterally and longitudinally, and the key-pieces secured to the side walls and bearing against these tiles, all substantially as shown and described.

7. A retort bench or furnace having side walls and an arch at the top, in combination with the retorts and the saddle-tiles bearing against said retorts and against the arch at the top, substantially as described.

8. A retort bench or furnace having side walls and an arch at the top in combination with the retorts provided with transverse shoulders and the transverse tiles fitted against said shoulders and bearing against the arch at the top, substantially as described.

9. In combination with a retort bench or furnace having side walls and an arch provided with internal projections or offsets, the retorts provided with transverse shoulders forming bearing surfaces, the transverse saddle-tiles bearing against such shoulders and against the projections or off-sets in the arch, and the key-pieces H, secured in the side walls, and bearing against said saddle-tiles, substantially as described.

10. In combination with a retort bench or furnace having side walls and an arch provided with internal projections or offsets, the retorts provided with transverse shoulders forming bearing surfaces, the transverse saddle tiles bearing against such shoulders and against the projections or offsets in the arch, the key-pieces H, secured in the side walls, and bearing against said saddle tiles and the longitudinal braces N, between the tiles, substantially as described.

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

KERR M. MITCHELL.

Witnesses:
FRIEDRICH FORNEFETT,
D. H. A. MCNEILL.