July 24, 1951 S. COLEMAN, JR 2,561,461

FURNACE STACK LINING SUPPORTING PLATE

Filed Nov. 9, 1945

Fig. 1.

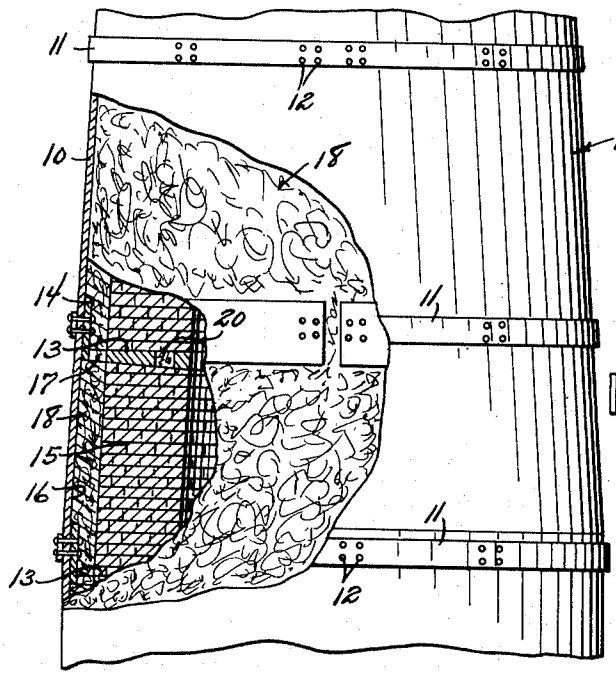


Fig. 3.

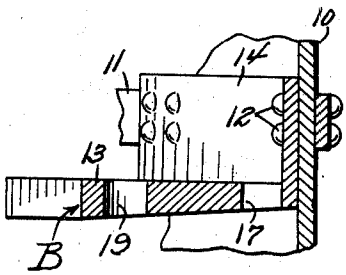


Fig. 4.

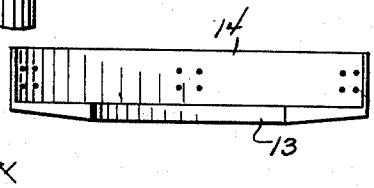
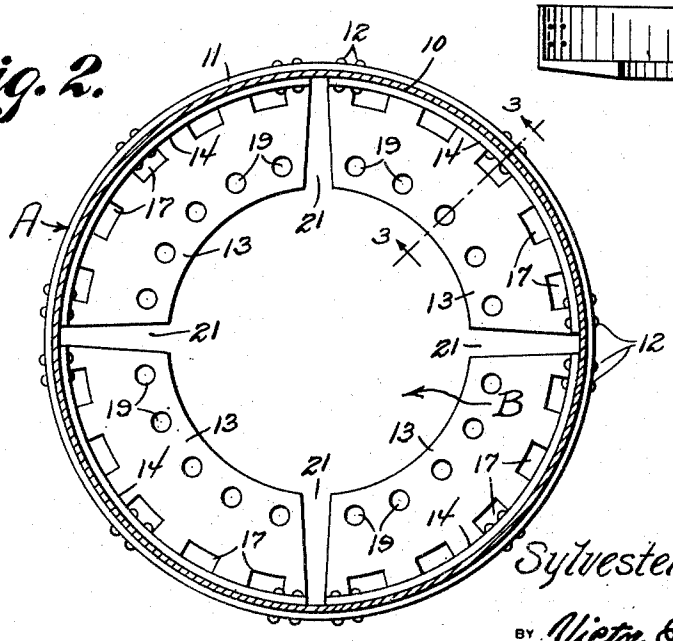


Fig. 2.



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Patented July 24, 1951

2,561,461

UNITED STATES PATENT OFFICE

2,561,461

FURNACE STACK LINING SUPPORTING PLATE

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Application November 9, 1945, Serial No. 627,593

4 Claims. (Cl. 110—1)

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The invention relates to a brick wedge and dry plate construction, and especially to that type used in brick walling.

The primary object of the invention is the provision of a structure of this character, wherein a brick wall is smooth, firm and secure, and permits any portion thereof to be removed and replaced with dispatch, it avoids bulging of such wall, resultant from temperature changes.

Another object of the invention is the provision of a structure of this character, wherein through its use, an outer casing to the brick wall can be firmly and securely anchored thereto, without liability of the brick work becoming loose or pulling out, the structure being adaptable for brick work, whether it be circular, segmental, straight, or any shape in formation when erected.

A further object of the invention is the provision of a structure of this character, which is simple in construction, thoroughly reliable and effective in its purposes, strong, durable, readily and conveniently installed, novel and unique in its construction, and inexpensive to manufacture and install.

With these and other objects in view the invention consists in the features of construction, combination and arrangement of parts as will be hereiafter more fully described, illustrated in the accompanying drawing, which shows one embodiment of the invention, and pointed out in the claims hereunto appended.

In the accompanying drawing:

Figure 1 is a fragmentary side elevation of a blast furnace stack, showing the structure in accordance with the invention applied, the stack being partly broken away.

Figure 2 is a horizontal sectional view thereof.

Figure 3 is a sectional view taken on the line 3—3 of Figure 2 looking in the direction of the arrows.

Figure 4 is an edge elevation of one of the dry plates removed.

Similar reference characters indicate corresponding parts throughout the several views in the drawing.

Referring to the drawing in detail, A designates generally a portion of a blast furnace stack, it being merely illustrated for showing the application of the structure constituting the present invention, which may be installed in many other brick work constructions. In this instance the stack A comprises an upwardly tapered outer cylindrical casing or shell 10, although it may be of any other shape, and for example, is made from sections of sheet metal, having externally

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spaced embracing hoops or bands 11, riveted, bolted or otherwise fastened, as at 12, to the sections of the casing or shell, these sections being secured in end-to-end relation to each other.

Interiorly of the casing or shell 10 in circular arrangement are substantially segmental shaped ring-plates, or what might be termed dry plates 13, which are in horizontally disposed groups, these being upwardly spaced from each other, and each plate has formed therewith an upstanding outer peripheral attaching flange 14, joined in place by the fasteners 12 to the inner face of the casing or shell 10. The plate area of these plates 13 are of outwardly tapered wedge formation in cross-section, and in their groups create an open center B to the stack A.

Built within the casing or shell 10 is a brick-work constituting a lining 15, having the plates 13 embedded and anchored therein, the lining 15 being in this instance cylindrical, effecting a circular body formation with the outermost facing thereof spaced from the sections of the said casing or shell 10, thereby providing a vacancy therebetween to effect an annular spacing 16, the plates 13 being formed with slots 17 opening into the space thereby to form a continuous passage. This space 16 is filled with a packing 18 between the plates 13 and the casing or shell, to eliminate hot spots upon the latter. Also the plates 13 may or may not be provided with expansion openings 19 therein, which, when used, are covered by the brick-work and may contain a packing 20, which is held by the said brick-work. After the way 16 has been so packed, then the slots 17 are sealed to eliminate gas escapage therethrough, the sealing being had in any approved manner.

The plates 13 in their mounting in groups are horizontally spaced from each other, end-to-end, as at 21, and the brick-work covering such spacing. The inner facing of the brick-work in association with the dry plates effects a continuous smooth surface to the open center B in the stack A, without any breaks or separation thereto.

The dry plates 13, and the lining 15, in their assembly and arrangement in accordance with the invention, has the advantages, as before set forth, as well as many others not herein stated, and additionally increases the productive qualities of the furnace, or other like structure, and assures maximum wear with greater life to the inwall brick. It also provides a positive interlock of the inwall brick and strengthens the critical section directly beneath the stack line wearing plates.

The essence of the invention lies in the wedge and dry plate construction, and its association with a brick walling.

I claim:

1. In a furnace stack lining support, the combination which comprises a stack having an outer shell with a fine brick lining, a horizontally disposed plate having arcuate inner and outer edges providing a segment of a circle positioned with the outer edge against the inner surface of the shell of the stack and having an arcuate flange on the said outer edge, the thickness of said plate increasing from the outer to the inner edge.

2. In a furnace stack lining support, the combination which comprises a stack having an outer shell with a fine brick lining, a horizontally disposed plate having arcuate inner and outer edges providing a segment of a circle positioned with the outer edge against the inner surface of the shell of the stack and having an arcuate flange on the said outer edge, the thickness of said plate increasing from the outer to the inner edge, and said plate having openings therethrough.

3. In a furnace stack lining support, the combination which comprises a stack having an outer shell with a fine brick lining, a horizontally disposed plate having arcuate inner and outer edges providing a segment of a circle positioned with the outer edge against the inner surface of the shell of the stack and having an arcuate flange on the said outer edge, the thickness of said plate increasing from the outer to the inner edge, and said plate having openings therethrough, a supporting ring positioned around the outer surface of the stack, and means attaching the said segment through the flange thereof to the ring.

4. In a lining support, the combination which comprises a furnace stack having an outer shell with a brick lining, a plurality of horizontally disposed plates having arcuate inner and outer edges providing segments of a circle positioned in the stack and having arcuate flanges on the outer edges positioned against the inner surface of the shell of the stack, the thickness of said plates increasing from the outer to the inner edges and said plates having openings therethrough, and means attaching the said segments to the shell of the stack through the flanges of the segments and with the plates extended inwardly toward the center of the stack, said plates spaced vertically to receive a plurality of layers of bricks with each section of bricks between the plates independently supported by the plate below.

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REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
237,339	Thompson	Feb. 1, 1881
711,026	Uppike	Oct. 14, 1902
1,664,832	Power et al.	Apr. 3, 1928
1,990,185	Hosbein	Feb. 5, 1935
2,074,874	Vogel	Mar. 23, 1937
2,144,597	Reed	Jan. 17, 1939

FOREIGN PATENTS

Number	Country	Date
312,905	Germany	June 18, 1919
704,077	France	1931