Jan. 3, 1928.

1,655,383

G. M. BEAN

LOCOMOTIVE FIRE BOX STRUCTURE

Filed Sept. 22, 1921

2 Sheets-Sheet 1

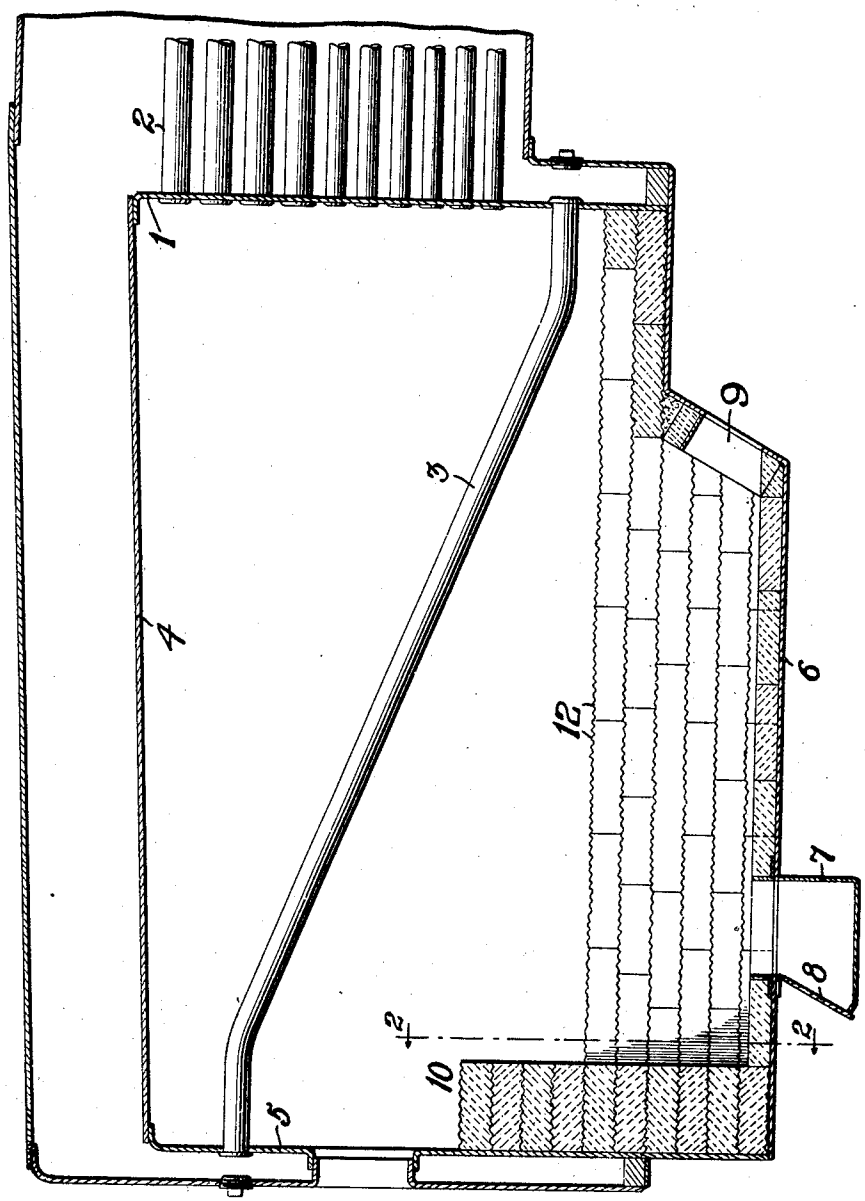


Fig. 1.

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2 Sheets-Sheet 2

Fig. 2.

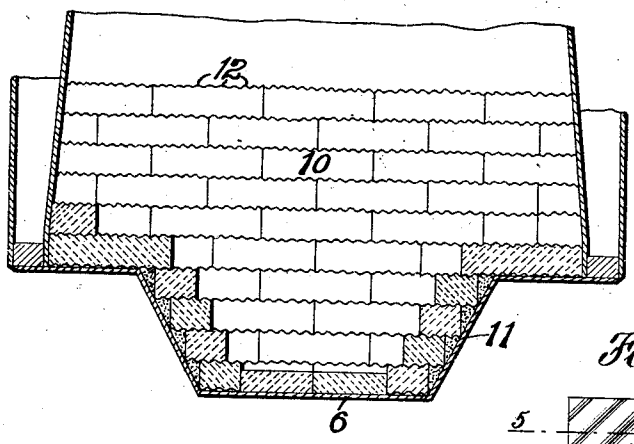


Fig. 4.

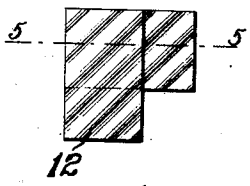


Fig. 3.

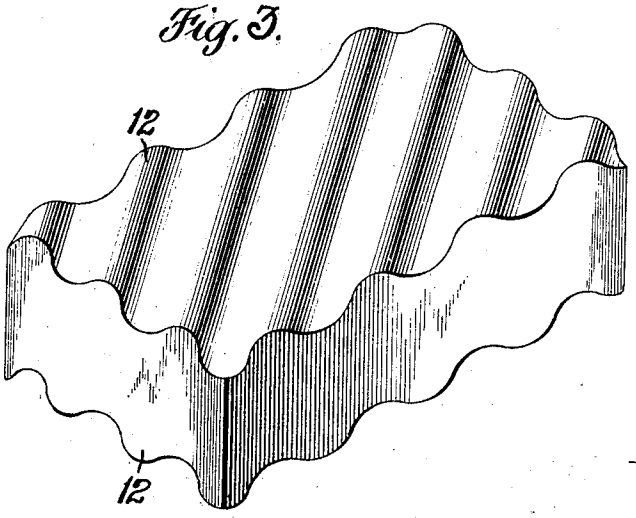


Fig. 5.

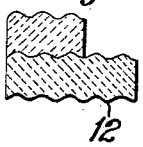


Fig. 6.

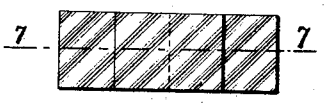


Fig. 8.

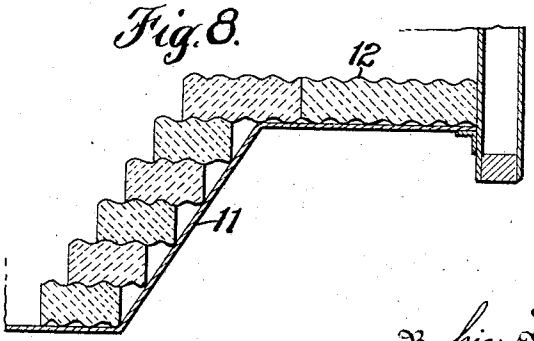
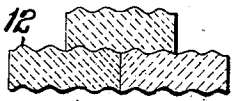


Fig. 7.



Inventor

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UNITED STATES PATENT OFFICE.

GUY M. BEAN, OF LOS ANGELES, CALIFORNIA.

LOCOMOTIVE-FIRE-BOX STRUCTURE.

Application filed September 22, 1921. Serial No. 502,346.

This invention has reference to the lining of refractory material employed on the inside of fire boxes more particularly such as are used in locomotive constructions and has for its object the provision of a refractory structure of the character referred to which will not only be easy to manufacture and of low cost, but which will also provide means for efficiently and readily locking the different parts of the structure together in any one of a number of different positions and this without requiring the use of different forms of interlock means and while preserving a certain standard in configuration and size so as to avoid the need of a large number of different patterns which cuts down the maintenance cost.

A further object of this invention is the provision of a refractory brick of such form that it may be placed with its major dimension extending in the same direction or at right angles and in either position will effectively interlock and be held against lateral displacement.

A further object of this invention is the provision of a refractory structure of the character indicated in which broken joints can be made by piling in a wall in a certain specified relation and at the same time have the members interlocked against lateral displacement.

In order that my invention may be better understood I have illustrated the same in preferred form in the accompanying drawings wherein.

Fig. 1 shows a longitudinal vertical sectional view through the fire box of a locomotive such as is commonly used in oil burning practice and Fig. 2 shows a transverse sectional view taken on the line 2—2 of Fig. 1.

Fig. 3 is an enlarged perspective view of one of the bricks constructed in accordance with my invention showing how the upper and lower surfaces of the same are provided with corrugations or ribs and grooves extending diagonally across the face at an angle of approximately 45°.

Fig. 4 shows one brick superposed upon another the two being placed at right angles to each other.

Fig. 5 is a sectional view taken on the line 5—5 of Fig. 4.

Fig. 6 shows one brick placed upon two others with the longitudinal axes in parallelism.

Fig. 7 is a section on the line 7—7 of Fig. 6 and Fig. 8 is a partial sectional view similar to that of Fig. 2 showing the arrangement of the bricks where they are placed along an inclined pan or trough on the underside of the fire box and present toward the fire a series of corners or steps while at the same time being interlocked by means of the angularly disposed irregularities.

In connection with this figure it is to be observed that by merely sliding the bricks along the corrugations or irregularities a greater or less distance they can be fitted to varying degrees of inclination of the wall of the fire box.

Referring now more particularly to Fig. 1 it will be seen that I have therein indicated a fire box having the usual arrangement of flue sheet 1 with flues 2, arch supporting tubes 3, crown sheet 4 and rear inside sheet 5 there being a bottom plate 6 having a hopper 7 with door 8 and burner opening at 9 and lined on its upper face with bricks made in accordance with my invention, the end or flash wall at the rear marked 10 having the brick superposed in a common plane vertically while the bricks lining the sides of the trough are arranged as shown in Fig. 8 and Fig. 2, the successive superposed layers presenting a series of steps upon the inside extending out a distance to correspond with the degree of inclination of the metal sheet 11.

At the corners the bricks are arranged as indicated in Figs. 4 and 5 in which position because the corrugations or irregularities 12 are placed at 45° with respect to edges of the brick, corresponding irregularities or corrugations will interfit and hold the bricks against lateral displacement.

The corrugations or irregularities are so disposed on the upper and lower surfaces of the bricks that when bricks are superposed upon each other as indicated in Figs. 6 and 7 with the proper grooves and projections interengaging they will rest preferably with the joints in staggered or broken relation as shown plainly in Fig. 7.

It will also be observed that the irregularities or corrugations should be placed on opposite faces of the bricks with the point of greatest depression on one face opposite

the point of greatest projection on the opposite face and on both faces the line should be at the same angle with the longitudinal axis of the bricks.

I have illustrated my invention in connection with the refractory lining of a locomotive firebox where, on account of its adaptability, the brick will be especially useful owing to the irregularity of the surface to be lined. It will be understood however that the use of my invention is not limited to locomotives as it is evident that bricks constructed in accordance with my invention can be used as building blocks or in refractory linings of stationary furnaces with equal success.

Having thus described my invention what I claim is the following:

1. A block provided on opposite faces with corrugations disposed at an angle of 45° to the longitudinal axis of the block, said corrugations extending in one direction across the entire faces of the block.

2. A block provided on opposite faces with complementary corrugations disposed at an angle of 45° to the longitudinal axis of the block, said corrugations extending in one direction across the entire faces of the block.

3. A block provided on opposite faces with complementary parallel corrugations disposed at a substantial angle with respect to both the longitudinal and transverse axes of the block and extending in one direction across the entire faces of the block.

In testimony whereof, I have hereunto signed my name.

GUY M. BEAN.