Jan. 6, 1970 T. ROBERTS, JR 3,487,603

METHOD AND MEANS FOR LAYING BOILER FLOORS

Filed Aug. 15, 1968

FIG. 1

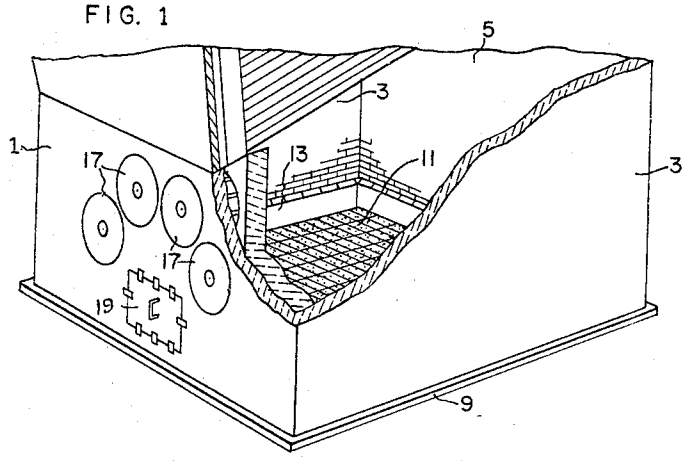


FIG. 2

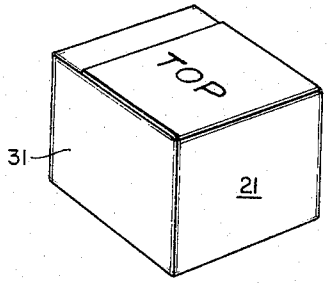


FIG. 3

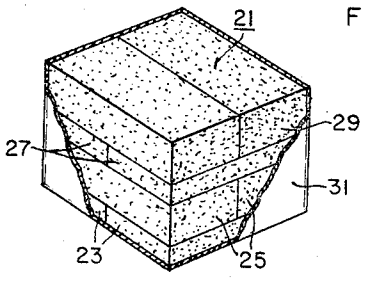
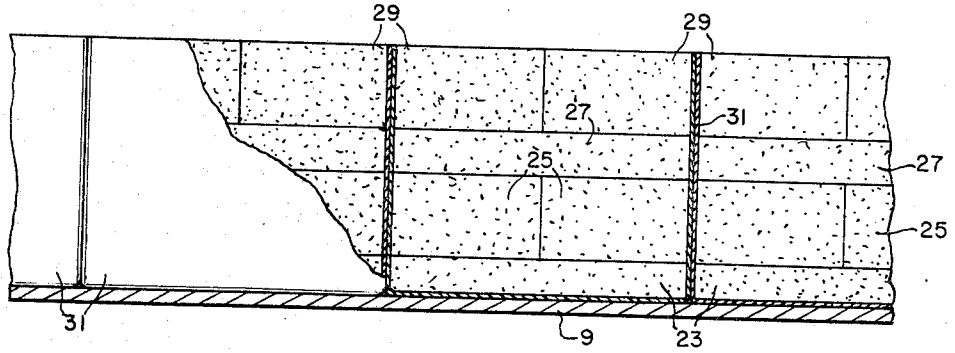


FIG. 4



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METHOD AND MEANS FOR LAYING BOILER FLOORS

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ABSTRACT OF THE DISCLOSURE

A method of installing a boiler floor involving laying adjacent one another over the floor area, a plurality of unitized assemblies of brick, the bricks in each assembly being arranged in accordance with a pre-determined pattern and held together by combustible material, and then burning away the combustible material to create expansion spaces between brick assemblies.

My invention relates to boilers such as employed on board ship for example, and more particularly to a method and means for laying a floor in such a boiler.

The floor of a boiler to which the present invention relates, is made up of a layer of high temperature insulation on which a number of layers of brick are laid loosely one upon the other, leaving expansion spaces between bricks in the process of laying the floor.

The high temperature insulation layer may be formed of insulating blocks which are usually of magnesia and supplied in length of 36 inches and widths of 6 inches, while the thickness may be of the order of one inch or more.

While all the bricks are standardized as to length and width, the bricks in any one layer will be of a different character than those in adjacent layers and may also differ as to thickness. Thus, for example, it is conventional in laying such floor, to form the bottom layer of insulation fire-brick of 2½ inch thickness, with the bricks of this layer resting on the insulating blocks of magnesia. On this layer is placed a layer of fire-brick of thickness of 1¼ inches, with each brick at right angles to the bricks of the preceding layer, and on top of this layer of fire-brick is super-imposed a layer of fire-brick having a thickness of 2½ inches.

During the operation of such boiler, the floor is exposed to an accumulation of slag, and it becomes incumbent therefore, to periodically remove the existing floor with its accumulation of slag and replace it with a new one. In view of the necessity for proving adequate expansion space and in view of the fact that the makeup of the floor calls for a pre-determined arrangement of brick of different types, substantial opportunity exists for error in the laying of such floor, and particularly if the workmen are inexperienced.

Among the objects of my invention are:

(1) To provide a novel and improved method of installing a boiler floor;

(2) To provide a novel and improved method of installing a boiler floor which minimizes the possibility of error in the arrangement and spacing of brick involved in such an installation;

(3) To provide a novel and improved method of installing a boiler floor, which method effects a substantial savings in time and labor;

(4) To provide a novel and improved unitized assembly of brick for use in carrying out the method of the present invention;

(5) Additional objects of my invention will be brought out in the following description of a preferred embodiment of the same, taken in conjunction with the accompanying drawings wherein:

FIGURE 1, is a framgentary view of a boiler of the type to which thep resent invention relates;

FIGURE 2, is a three dimensional view of a package involving a unitized assembly of brick, which makes possible the method of the present invention;

FIGURE 3, is a view of the package of FIGURE 2, with a portion of the outer wrapping removed to expose the contents;

FIGURE 4, is a fragmentary view in section through a floor installed by the method of the present invention.

For details of my invention, reference will be had to the drawings wherein, in FIGURE 1 there is depicted a boiler floor installation of the character to which the present invention relates. Only the lower portion of the boiler is deemed pertinent, and aside from the front, side and back walls **1**, **3** and **5** respectively, it involves a bottom including a brick pan **9** of metal on which the brick work **11** of the floor is laid. Bordering the floor area is the core-bell **13** to which the brick work of the floor may be sealed, if desired, by suitable packing.

In the front wall **1** of the boiler are installed a plurality of burners **17** and a cleanout door **19** of a size permitting an individual to crawl through for the purpose of removing the slag and old floor brick work, and replacing the same with a new floor.

Critical to the method of the present invention, is a package constituting a unitized assembly **21** of brick involving a plurality of layers **23**, **25**, **27** and **29** of brick arranged in a pre-determined pattern and held together by a combustible material, the bottom layer of brick being formed of high temperature insulation such as the material employed in the insulating blocks previously mentioned. In its preferred form, the combustible material holding the brick together into a unitized assembly, will constitute a conventional type carton **31** of a size to comfortably package the necessary layers and type of brick, with the bricks of each layer at right angles to the bricks of adjacent layers.

Thus, to conform to the practice in the laying of floors in a boiler, the bottom layers **23** will be of a thickness of one inch or more and of insulation material such as magnesia, with the second layer of insulation fire-brick of a thickness of 2½ inches, while the third layer will be formed of fire-brick of 1¼ inches thickness, and the top layer of 2½ inch thick fire-brick. Each layer will preferably constitute two bricks of multiples thereof.

In installing the floor, the cartons of brick are laid adjacent one another over the entire area of the floor space, which operation of course involves no skill. All cartons may be left sealed, though some installers may prefer, as to the outermost rows adjacent the corebell, that the covering layer of the carton be removed to permit of sealing the brick to the corebell by suitable packing. To assure that the unitized brick assemblies will be laid right side up, that is, with fire-brick layer uppermost, each package may be suitably stamped with a simple indication, such as the word "TOP," preferably parallel to the bricks in the proximate layer so as to further indicate the direction of such bricks in the package.

Following the laying of the unitized brick assemblies over the floor area as indicated, one may place a layer of fire-brick grog, which is ground fire-brick. Following thus, the boiler is closed and the burners are ignited, as a result of which, the cartons will be burned away, thus leaving expansion spaces between brick assemblies, equal to twice the thickness of a carton wall.

The method of laying a boiler floor by utilizing unitized brick assemblies, as described, eliminates all guesswork and probability of error, and makes it possible for the

most inexperienced individual to make an installation of this character and one which is bound to meet all the requirements of such installation.

The method described above may, with slight modification, be applied in the construction or laying of the rear wall of the boiler toward which the burners are directed. The package being laid against a vertical wall, some means must be provided to support and maintain the individual assemblies of brick, to not only assure stability but also to assure expansion space when the carton material is burned out.

One manner of accomplishing this is to provide bolt holes through the layers of brick and carton, so that the packages may be securely bolted to the proximate metal wall of the boiler. When the carton material is subsequently burned away, the brick contents will remain bolted to the metal wall.

Accordingly, insofar as the present invention is concerned, the term "floor" may be broadly considered as including a wall. The method basically remains the same, the only difference being that one installation is horizontal, while the other is vertical.

I claim:

1. The method of installing a boiler floor comprising laying adjacent one another over the floor area of said boiler, a plurality of utilized assemblies of bricks, the bricks of each assembly being held together by combustible material with each unitized assembly being of a height corresponding substantially to the desired thickness of the floor, and then burning away said combustible material to create expansion space between the bricks of one assembly and the bricks of adjacent assemblies.

2. The method of installing a boiler floor in accordance with claim **1**, characterized by each unitized assembly of brick including a plurality of bricks packaged in a carton of combustible material.

3. The method of installing a boiler floor in accordance with claim **1**, characterized by each unitized assembly of brick including a plurality of layers of brick, with the bricks of each layer at right angles to the bricks of an adjacent layer.

4. The method of installing a boiler floor in accordance with claim **2**, characterized by each unitized assembly of brick including a plurality of layers of brick, with the bricks of each layer at right angle to the bricks of an adjacent layer.

5. A package for use in the installation of boiler floor comprising a unitized assembly of brick, including a plurality of layers of bricks held together in a predetermined arrangement by combustible material, and said unitized assembly being of a height corresponding substantially to the thickness of the floor to be fabricated by the use of such packages.

6. A package in accordance with claim **5** characterized by the bricks occupying one of said layers being of a different type than the bricks in an adjacent layer.

7. A package in accordance with claim **6**, characterized by the bricks of each layer being at right angles to the bricks of adjacent layers.

8. A package in accordance with claim **6**, characterized by said combustible material being in the form of a carton with said bricks packaged therein.

9. A package in accordance with claim **8**, characterized by said layers of bricks including a first layer of high temperature insulation brick of magnesia, a second layer of insulating brick, and a third layer of firebrick.

10. A package in accordance with claim **7**, characterized by said combustible material being in the form of a carton with said bricks packaged therein, and means on a surface of said carton for indicating the location of the row to be positioned uppermost in a floor installation and the direction of the bricks in such row.

11. A package in accordance with claim **5** characterized by said combustible material being in the form of a carton with said bricks packaged therein, and means on a surface of said carton for indicating the position of the layer of bricks to be exposed in an installation, following combusting away of the combustible material.

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U.S. Cl. X.R.

52—596; 206—46, 65