

C. E. FULLER.
 PROCESS FOR TREATING PAVING BLOCKS.
 APPLICATION FILED JAN. 30, 1912.

1,063,964.

Patented June 10, 1913.

2 SHEETS—SHEET 1.

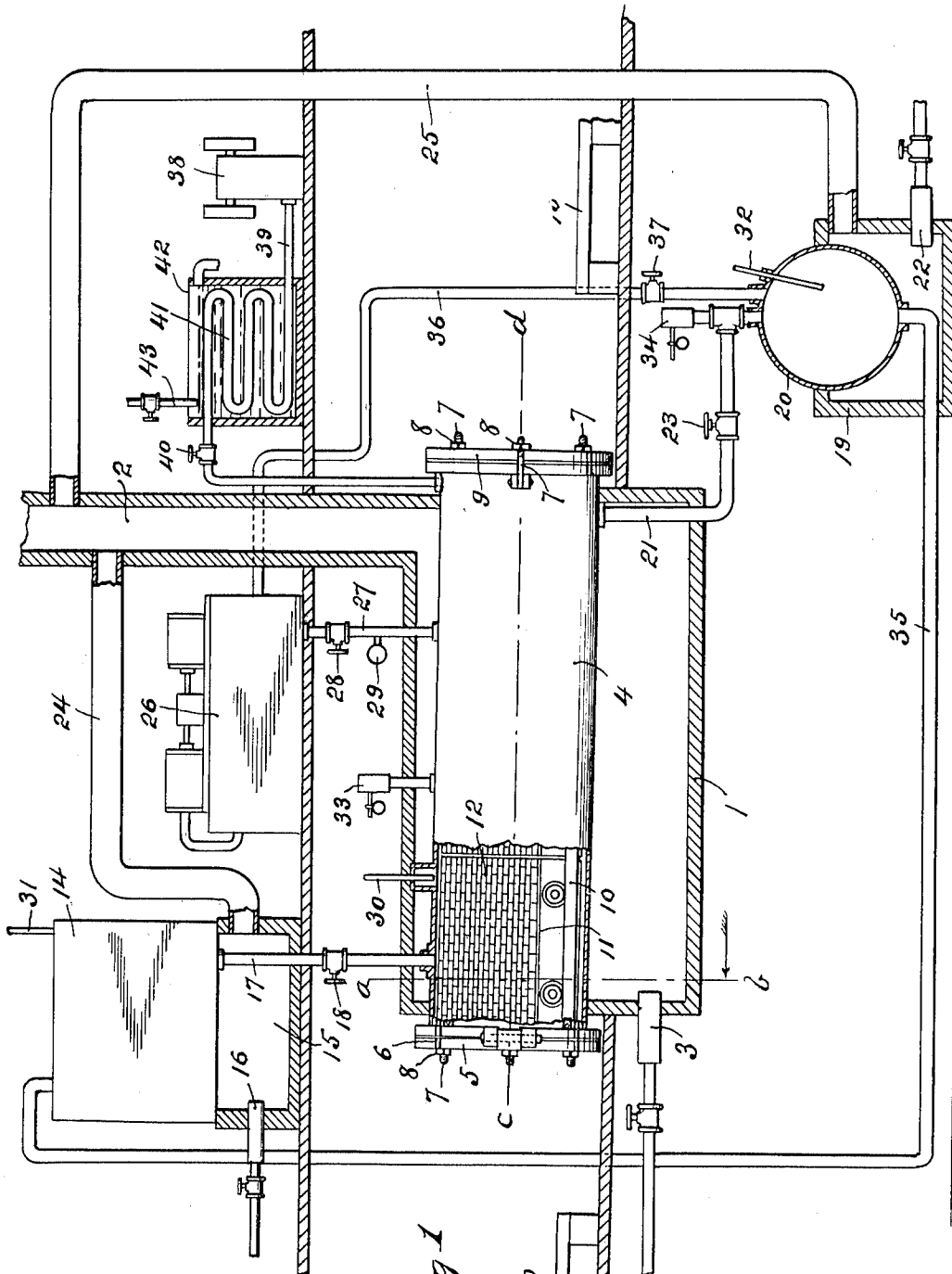


Fig 1

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2 SHEETS—SHEET 2.

Fig 2

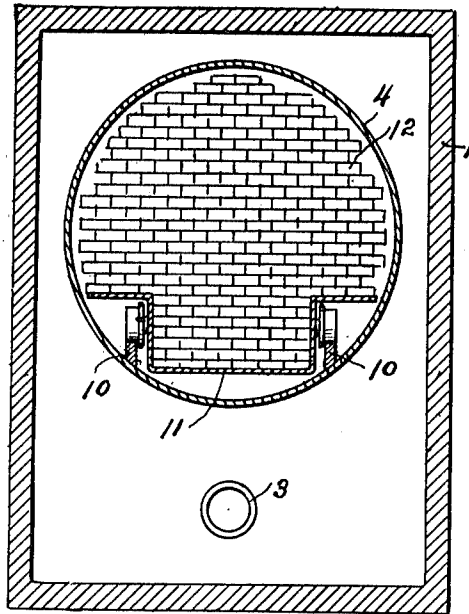


Fig 3

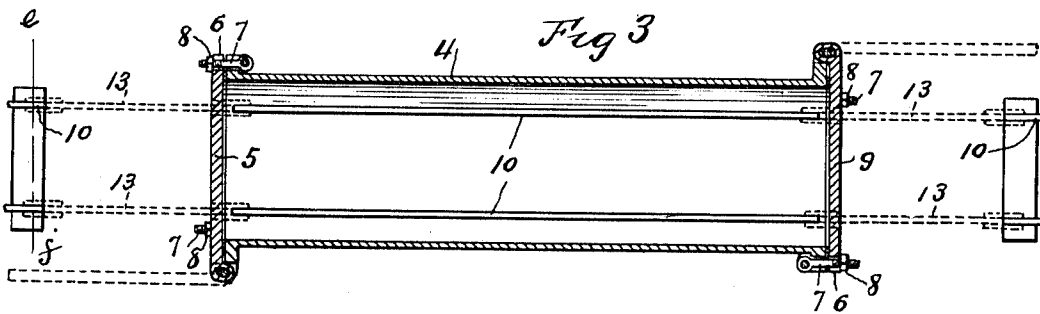


Fig 4

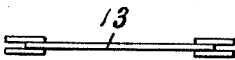
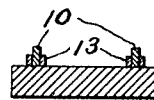


Fig 5



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UNITED STATES PATENT OFFICE.

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PROCESS FOR TREATING PAVING-BLOCKS.

1,063,964.

Specification of Letters Patent.

Patented June 10, 1913.

Application filed January 30, 1912. Serial No. 674,260.

To all whom it may concern:

Be it known that I, CLAUD E. FULLER, a citizen of the United States, residing in Buffalo, in the county of Wilson and State of Kansas, have invented a certain new and useful Improvement in Processes for Treating Paving-Blocks, of which the following is a specification.

My invention relates to improvements in processes for treating paving blocks.

Porous paving blocks, such as bricks, which have their pores filled with a filling material of an oily nature, such as bitumen, in the form of asphalt, are rendered very durable, will not absorb moisture, and a paving formed of such blocks will be comparatively noiseless under traffic conditions.

The object of my invention is to provide a novel process by which the pores of the blocks may be thoroughly filled with the filling material.

The novel features of my invention are hereinafter fully described and claimed.

In the accompanying drawings which illustrate an apparatus for carrying into effect my improved process, Figure 1 is a view partly in elevation and partly in vertical section of the apparatus. Fig. 2 is an enlarged vertical section on the line *a-b* of Fig. 1. Fig. 3 is a horizontal section on the line *c-d* of Fig. 1 with the loaded car removed. Fig. 4 is a top view of one of the removable rails. Fig. 5 is a cross section on the line *e-f* of Fig. 3.

Similar reference characters designate similar parts in the different views.

1 is a furnace having a stack 2 and a burner 3 of any desired type. Extending through this furnace is a treating chamber 4, preferably a hollow cylinder which inclines slightly downward from the entrance to the exit end thereof. The entrance end is provided with an opening which is normally closed by a door or closure 5, having peripheral notches 6 for receiving pivoted locking bolts 7 provided with nuts 8 adapted to bear against the outer side of the door or closure 5. The other end of the chamber 4 has an opening normally closed by a hinged closure 9 also having peripheral notches 6 adapted to receive bolts 7 having nuts 8. A track extends through the treating chamber 4 and is provided with stationary rails 10 adapted to support cars 11 which support the blocks 12 which are to be treated.

The track at the ends of the chamber 4 is provided with removable rails 13 which are removed when it is desired to close the doors 5 and 9. Higher than the chamber 4 is a supply tank 14 adapted to contain filling material, such as bitumen in the form of asphalt. This tank is heated by a furnace 15 having a burner 16 of any desired kind. A conductor 17 is connected at one end to the bottom of the tank 14 and at the other end with the chamber 4. In said conductor is a shut off valve 18. Lower than the chamber 4 upon a furnace 19 is a drain receptacle 20 connected to the lower end of a conductor 21 the upper end of which is connected to the bottom of chamber 4 near the lower end thereof. The furnace 19 has a burner 22 of any desired type. In the conductor 21 is a shut off valve 23. A smoke pipe 24 connects the furnace 15 with the stack 2. A smoke pipe 25 connects the furnace 19 with the stack 2. An air compressor 26 of any desired type and operated in any suitable manner by mechanism not shown, is connected by a conductor 27 with the chamber 4. In the conductor 27 is a shut off valve 28. A pressure gage 29 of any desired kind is connected to the conductor 27 between the valve 28 and chamber 4. For determining the temperatures therein, the chamber 4, tank 14 and receptacle 20 are provided with thermometers 30, 31 and 32. Safety valves 33 and 34 are provided respectively in the chamber 4 and in conductor 21 between valve 23 and the receptacle 20. A conductor 35 is connected at one end to the bottom of the receptacle 20 and at its other end discharges into the tank 14. A conductor 36, in which is located a shut off valve 37, is connected at one end to the compressor 26 and at the other end to the receptacle 20. A vacuum pump 38, of any desired type and operated by suitable means, not shown, is connected by a conductor 39 with the upper side of the chamber 4. A shut off valve 40 is located in the conductor 39. Preferably the conductor 39 has a coil 41 located in a tank 42 which may be supplied by water from a water pipe 43.

In operating my invention, the door 5 is swung open, the nuts 8 being loosened and the bolts 7 swung from the notches 6. The removable rails 13 are then placed in alignment with the rails 10 at the entrance end of the chamber 4. The cars 11 loaded with

the blocks 12 to be treated are then run on the rails 10 and 13 into the chamber 4. The rails 13 are then removed and the door 5 swung to the closed position and sealed by swinging the bolts 7 into the notches 6 and tightening the nuts 8. The valve 40 is then opened and valves 18, 23 and 28 are closed. The burner 3 is operated so as to heat the interior of the chamber 4 to about 300 degrees Fahrenheit. The exhausting of air from the chamber 4 is then begun by operating the vacuum pump 38, the air drawn from the chamber being cooled in the coil 41 so as not to injuriously affect the pump. After the air has been sufficiently exhausted from the chamber 4, the valve 40 is closed. In the meantime filling material, such as asphalt, has been placed in the tank 14 and melted by operating the burner 16, the interior of the tank being heated to about 300 degrees Fahrenheit, the temperature required depending upon the nature of the filling material employed. The valve 18 is then opened to permit sufficient filling material to pass through conductor 17 into the chamber 4 to submerge the blocks 12 supported on the cars 11 in said chamber.

When the air in the chamber 4 is exhausted, the air is also exhausted from the pores of the blocks 12 so as to effect a partial vacuum in said pores. The filling material will thus more completely fill the pores than would be the case if the blocks were merely submerged in the filling material without previously being heated and the air exhausted therefrom. In order that the pores may be even more completely filled with the liquid asphalt, the pressure in the chamber 4 is raised above atmospheric, after the blocks have been submerged, by closing the valve 18 and opening the valve 28. The air compressor 26 is then operated thereby forcing air into the chamber 4 through the conductor 27. The increased pressure in the chamber 4 will cause more liquid asphalt to enter the pores of the blocks, the small amount of air still remaining in the pores after the exhausting operation being compressed into smaller space. The valve 23 is then opened so as to permit the excess of filling material not absorbed by the blocks 12 to pass from the chamber 4 through the conductor 21 into the drain receptacle 20. After the excess of filling liquid has been ejected from chamber 4, the valve 23 is again closed, the compressor 26 being operated meanwhile so as to prevent the small amount of air still remaining in the pores of the blocks in compressed condition from expanding and forcing any of the filling liquid from the pores. The chamber 4 and blocks 12 are then permitted to cool, the pressure in chamber 4 being retained by the operation of the compressor 26 until the filling material has hardened in the pores of the blocks.

When the blocks have sufficiently cooled, the door 9 is opened, the removable rails 13 placed in alinement with the rails 10 at that end of the chamber 4, and the cars 11 with the blocks 12 thereon are removed from the treating chamber. In the meantime the burner 22 has been operated so as to heat the receptacle 20 to about 300 degrees Fahrenheit, thus retaining the filling material in said receptacle in a liquid condition. The valve 37 is then opened to permit compressed air to pass through conductor 36 into the receptacle above the filling material therein. The pressure thus produced in receptacle above the filling material will force it from said receptacle through conductor 35 into the supply tank 14. The valves 28 and 37 and closure 9 may be closed, the door 5 opened, more loaded cars run into chamber 4 and the hereinbefore described operations repeated.

The chamber 4 is preferably downwardly inclined toward the exit end thereof, as shown, to enable the cars being easily run into and from the chamber.

The blocks which have been treated in the manner described will be more completely impregnated with the filling material than would be possible by merely immersing the blocks in the filling material.

Bricks treated in the manner just described will have great durability, are not permeable to moisture, and a paving made of them will be comparatively noiseless under traffic conditions.

My invention may be subjected to modifications, within the scope of the appended claims, without departing from its spirit.

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

1. The method consisting in forcing by pressure greater than atmospheric into the pores of a porous paving block a substance liquefied by heat and which solidifies at ordinary temperatures, then permitting the block to cool until the liquid substance becomes solidified, the pressure being retained until the filling substance has solidified.

2. The method of treating a porous paving block, consisting in forcing liquid bitumen under pressure greater than atmospheric into the pores of the block and then, while retaining the pressure, permitting the bitumen to solidify.

3. The method of treating a porous paving block, consisting in forcing liquid asphalt under pressure greater than atmospheric into the pores of the block, and while retaining the pressure permitting the asphalt to solidify.

4. The method of treating a porous paving block, consisting in exhausting the air from the pores, then forcing into the pores by pressure greater than atmospheric, a sub-

stance liquefied by heat and which solidifies at ordinary temperatures, and while retaining the pressure, permitting the block to cool until the liquid substance becomes solidified.

5 5. The method of treating a porous paving block, consisting in exhausting the air from the pores, then forcing liquid bitumen into the pores of the block under pressure greater than atmospheric, and then permitting the bitumen to solidify while retaining the pressure.

15 6. The method of treating a porous paving block, consisting in exhausting the air from the pores, then forcing liquid asphalt into the pores at a pressure greater than atmospheric and then permitting the asphalt to solidify while retaining the pressure.

20 7. The method of treating a porous paving block, consisting in heating the block, then exhausting the air from the pores, then forcing into the pores, at a pressure greater than atmospheric, a substance liquefied by heat and which solidifies at ordinary temperature, and then, while retaining the pres-

sure, permitting the block to cool until the liquid substance becomes solidified.

8. The method of treating a porous paving block, consisting in heating the block, then exhausting the air from the pores, then forcing into the pores, at a pressure greater than atmospheric, liquid bitumen, and then, while retaining the pressure, permitting the block to cool until the bitumen becomes solidified.

9. The method of treating a porous paving block, consisting in heating the block, then exhausting the air from the pores, then forcing liquid asphalt into the pores at a pressure greater than atmospheric, and then permitting the block to cool until the asphalt becomes solidified while retaining the pressure.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

CLAUD E. FULLER.

Witnesses:

GEO. LANDRITH,

A. H. LYONS.