

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

1,063,965.

Patented June 10, 1913.

2 SHEETS—SHEET 1.

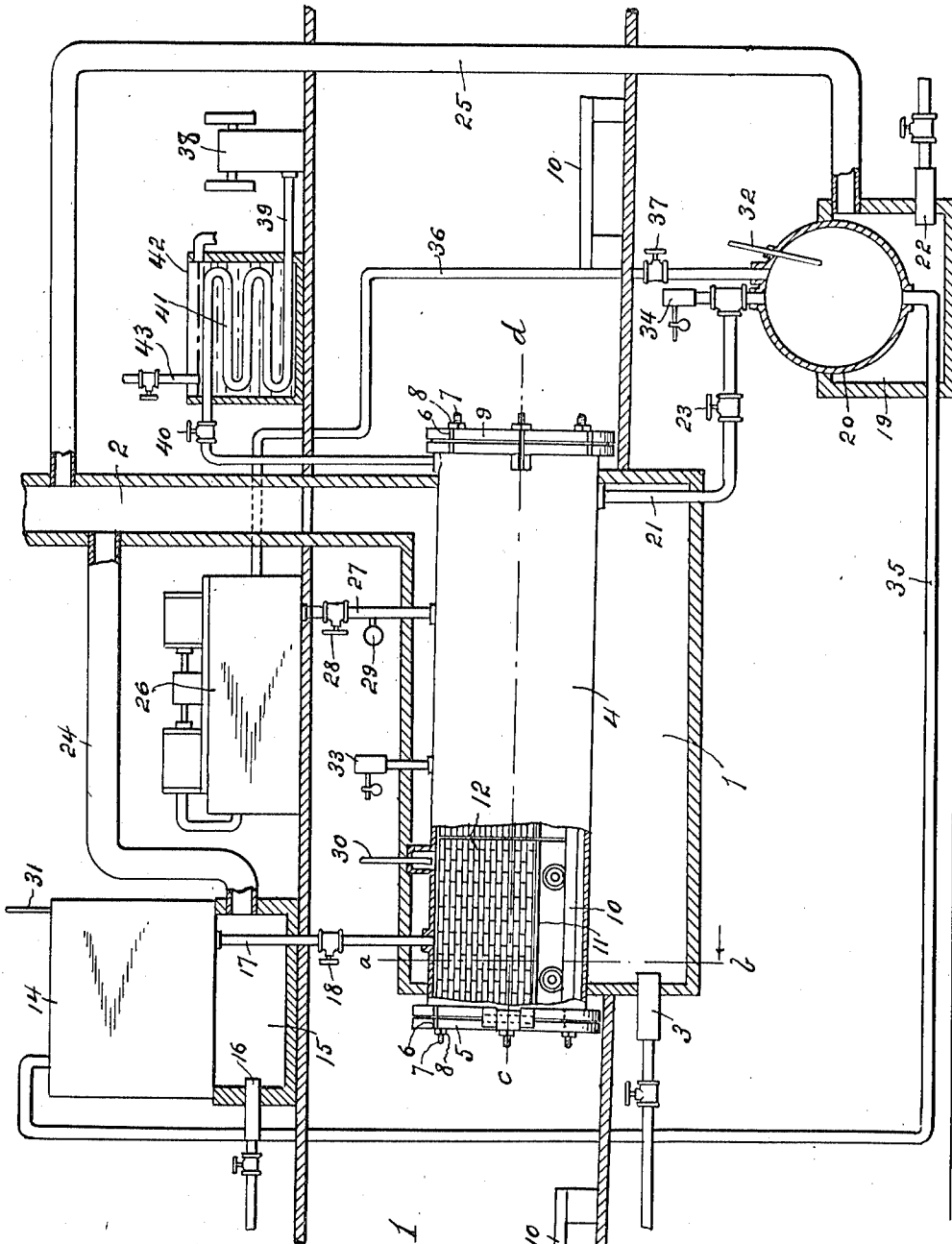


Fig. 1

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INVENTOR.
Claud E. Fuller
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 His ATTORNEY.

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2 SHEETS—SHEET 2.

Fig 2

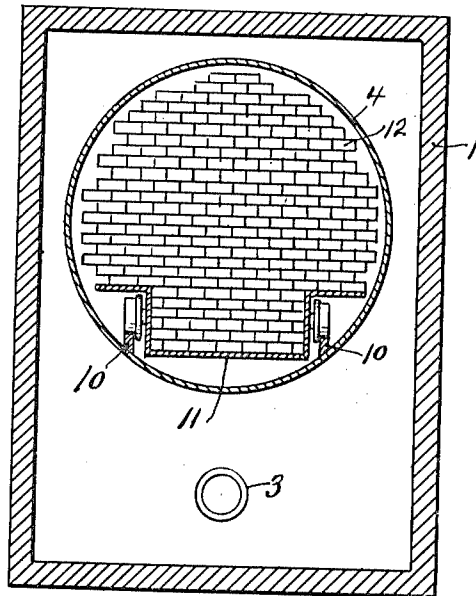


Fig 3

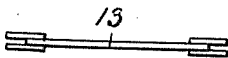
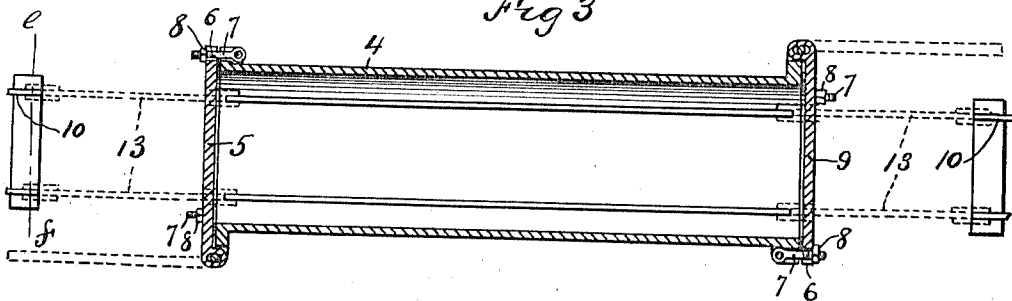


Fig 4

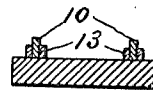


Fig 5

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UNITED STATES PATENT OFFICE.

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APPARATUS FOR TREATING PAVING-BLOCKS.

1,063,965.

Specification of Letters Patent.

Patented June 10, 1913.

Application filed January 30, 1912. Serial No. 674,261.

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 Apparatus for Treating Paving-Blocks, of which the following is a specification.

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

I have found that porous paving blocks, such as bricks, after having their pores filled with a filling material of an oily nature, such as bitumen in the form of liquid asphalt, are rendered much more desirable for paving purposes. Paving consisting of blocks so treated is very durable, is not liable to chip, is comparatively noiseless and possesses other desirable qualities.

The object of this invention is to provide an efficient and novel apparatus by which the paving blocks may have their pores thoroughly filled with the filling material.

The process herein described forms the subject matter of an application filed by me Jan. 30, 1912, having S. No. 674,260, and entitled "Process for treating paving blocks."

In the accompanying drawings which illustrate my invention, Figure 1 is a view partly in elevation and partly in vertical section of the preferred form of my invention. Fig. 2 is an enlarged vertical section on the line *a-b* of Fig. 1. Fig. 3 is a horizontal sectional view on the line *c-d* of Fig. 1. In this view the closures for the entrance and exit openings are shown in solid lines in the closed positions and in dotted lines in the open positions. 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 designates a furnace having a stack 2 and a burner 3 of any suitable type. Extending through the furnace 1 is a treating chamber 4, preferably a hollow cylinder, slightly inclined from the horizontal and having at one end an entrance opening normally closed by a closure 5, which may be a hinged door having peripheral notches 6 for receiving pivoted locking bolts 7 having nuts 8 adapted to bear against the outer side of the door or closure 5. The other end of the chamber 4 is also provided with an opening, the exit opening, normally closed by a closure 9, similar to the closure 5 and also hav-

ing peripheral notches 6 for receiving pivoted bolts 7 provided with nuts 8.

A track extends through the chamber 4 and is provided with stationary rails 10 adapted to support the wheels of cars 11 which are designed to support the paving blocks 12 which are to be treated in the chamber 4. The track is provided at opposite ends of the chamber 4 with removable rails 13, which are removed in order that the doors or closures 5 and 9 may be closed and opened.

Located higher than the chamber 4 is a supply tank 14, which is adapted to contain the filling material. The tank 14 is mounted on a furnace 15, which is provided with a burner 16 of any suitable type. A conductor 17 connected at one end to the bottom of the tank 14 is connected at its other end to the chamber 4. In the conductor 17 is provided a shut off valve 18.

Located lower than the chamber 4 upon a furnace 19 is a drain receptacle 20, which is connected to the lower end of a conductor 21, the upper end of which is connected to the bottom of the chamber 4 near the lower or exit end thereof. The furnace 19 is provided with a burner 22 of any suitable type. In the conductor 21 is provided a shut off valve 23.

The furnace 15 is connected by a smoke pipe 24 with the stack 2. A smoke pipe 25 similarly connects the furnace 19 with the stack 2.

An air compressor 26, of any suitable 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 located a shut off valve 28. A pressure gage of any suitable type and designated by 29 may also be connected with the conductor 27 between the valve 28 and the chamber 4.

The chamber 4, tank 14, and receptacle 20 are provided respectively with thermometers 30, 31 and 32 for ascertaining the interior temperature of said vessels.

A safety valve 33 is provided in the chamber 4. A safety valve 34 may also be provided in the conductor 21 between the valve 23 and the receptacle 20.

A conductor 35 has its lower end connected to the bottom of the receptacle 20 and its upper end is disposed so as to discharge into the tank 14.

A conductor 36 connects the receptacle 20

and the air compressor 26. A shut off valve 37 may be located in the conductor 36.

A vacuum pump 38 of any suitable type and operated by any suitable means, not shown, is connected to one end of a conductor 39, the other end of which is connected to the upper side of the chamber 4. In the conductor 39 may be located a shut off valve 40. Preferably the conductor 39 has a coiled portion 41 located in a tank 42, which may be supplied with water from a water pipe 43.

In the operation of my invention, the nuts 8 on the bolts 7 which hold the door 5 closed, are loosened, and the bolts are swung from the notches 6, thereby releasing the door 5. The door 5 is then swung to the open position shown in dotted lines in Fig. 3, and the removable rails 13 placed in alinement with the rails 10. The cars 11 loaded with the blocks 12 which are to be treated, are run on the track into the treating chamber 4. The removable rails 13 are then removed and the door 5 is closed and locked by swinging into the notches 6 the bolts 7, the nuts 8 being turned so as to clamp the door 5 tightly in its closed position. It will be understood that the door 9 is in the closed position. The valve 40 is opened and the valves 18, 23 and 28 are closed. The burner 3 is operated in the furnace 1 so as to heat the interior of the chamber 4 to about 300 degrees Fahrenheit. The vacuum pump 38 is then operated to exhaust the air from the chamber 4, the air passing through the coil 41 being cooled thereby 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 the filling material, such as asphalt, has been placed in the tank 14 and the burner 16 has been operated so as to heat the tank 14 sufficiently to melt the asphalt held therein. The interior of the tank 14 is preferably heated to a temperature of about 300 degrees Fahrenheit, the temperature required depending upon the material which is to be melted. The valve 18 is then opened, thus permitting the liquid asphalt to run through the conductor 17 from the tank 14 into the chamber 4. Sufficient filling material is permitted to enter the chamber 4 to submerge the blocks 12, which are held therein upon the cars 11. When the pump 38 exhausted the air from the chamber 4, the air in the pores of the blocks 12 was also exhausted so as to effect a partial vacuum in said pores. After the blocks 12 have been submerged, the filling liquid will enter the pores of the blocks. In order that the pores may be more completely filled with the filling material, the valve 18 is closed and the valve 28 opened. The air compressor 26 is then operated and air is forced by said compressor through the conductor 27 into the chamber 4. The increased pressure in the chamber due to the air being pumped therein

from the compressor 26 will force more filling liquid into the pores of the blocks 12, the small amount of air which has remained in the pores after the exhausting operation being compressed into smaller space by the liquid entering the pores of the blocks under compression. The valve 23 is then opened so as to permit the excess filling liquid to pass from the chamber 4 through the conductor 21 into the drain receptacle 20. After the excess has been ejected from the chamber 4, the valve 23 is again closed, the compressor 26 being operated meanwhile so as to prevent the small amount of air which is compressed and which still remains in the pores of the blocks, 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 being retained in the chamber 4 by the operation of the compressor 26 until the filling material has hardened in the pores of the blocks 12. When the blocks 12 have cooled sufficiently, 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 removed from the chamber. In the meantime, the burner 22 may be 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, so as to permit compressed air from the compressor 26 to pass through the conductor 36 into the receptacle 20 and above the filling material in said receptacle. The pressure thus produced in the receptacle 20 above the liquid asphalt therein will force the asphalt from the receptacle 20 through the conductor 35 into the supply tank 14.

The valves 28 and 37 and closure 9 may be closed, the closure 5 opened, more cars loaded with blocks 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 said 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 hereinbefore described will have great durability, are not permeable to moisture, and a paving made of them will be comparatively noiseless under traffic.

I do not limit my invention to the structure shown and described, as modifications of my invention, within the scope of the appended claims, may be made without departing from the spirit of my invention.

Having thus described my invention, what

I claim and desire to secure by Letters Patent, is:—

1. In an apparatus for treating paving blocks, an immersing chamber, a supply tank disposed higher than the chamber, a conductor connecting the tank and chamber, a drain receptacle disposed lower than the chamber, a conductor connecting the chamber and the said receptacle, an air compressor, a conductor connecting the compressor and the chamber, shut off valves located in said conductors respectively, a conductor connecting the compressor and the receptacle, and a conductor connecting the receptacle and the tank.

2. In an apparatus for treating paving blocks, an immersing chamber for receiving the blocks, a supply tank and a drain receptacle disposed respectively higher and lower than the chamber, two conductors respectively connecting the chamber with the tank and receptacle, a vacuum pump, an air compressor, two conductors respectively connecting the chamber with the compressor and the pump, and shut off valves located respectively in said conductors.

3. In an apparatus for treating paving blocks, an immersing chamber for receiving the blocks, means for heating the chamber, a tank located higher than the chamber, means for heating the tank, a drain receptacle located lower than the chamber, means for heating the receptacle, two conductors respectively connecting the chamber with said tank and receptacle, a vacuum pump, a conductor connecting the pump and cham-

ber, and shut off valves located respectively in said conductors.

4. In an apparatus for treating paving blocks, an immersing chamber for receiving the blocks, means for heating the chamber, a tank located higher than the chamber, means for heating the tank, a drain receptacle located lower than the chamber, means for heating the receptacle, a vacuum pump, an air compressor, conductors respectively connecting the chamber with the tank, receptacle, compressor and pump, and shut off valves located respectively in said conductors.

5. In an apparatus for treating paving blocks, an immersing chamber for receiving the blocks, means for heating the chamber, a tank located higher than the chamber, means for heating the tank, a drain receptacle located lower than the chamber, means for heating the receptacle, a vacuum pump, an air compressor, conductors respectively connecting the chamber with the tank, receptacle, compressor and pump, shut off valves located respectively in said conductors, and two conductors respectively connecting the receptacle with the compressor and tank.

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.