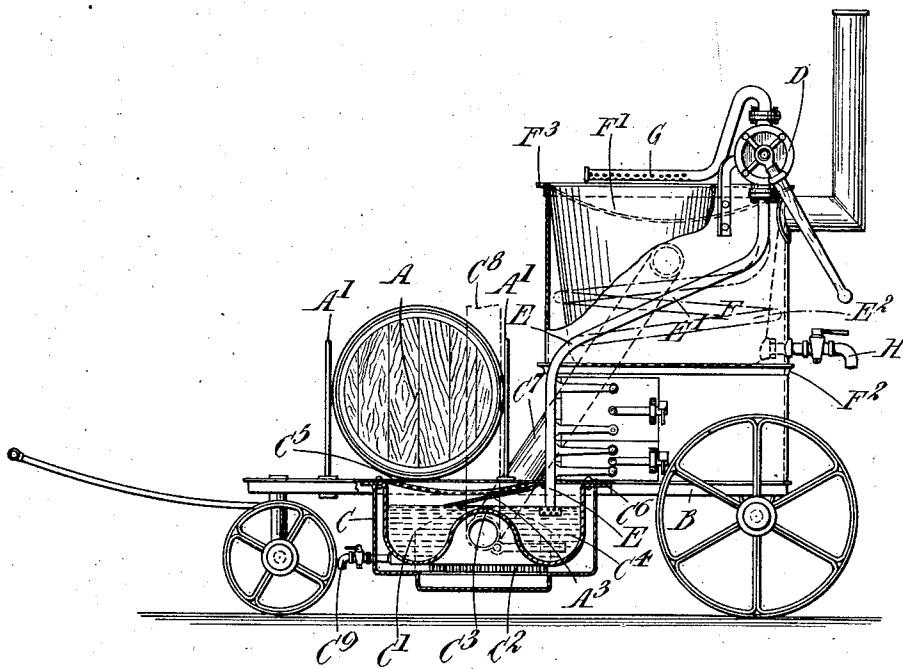


J. T. M. JOHNSTON.
 PORTABLE TAR BOILING APPARATUS.
 APPLICATION FILED MAY 31, 1912.

1,061,916.

Patented May 13, 1913.



Witnesses.

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UNITED STATES PATENT OFFICE.

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PORTABLE TAR-BOILING APPARATUS.

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Specification of Letters Patent.

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Application filed May 31, 1912. Serial No. 700,892.

To all whom it may concern:

Be it known that I, JAMES THOMAS MITCHELL JOHNSTON, a subject of the King of England, residing at London, England, have invented certain new and useful Improvements in Portable Tar-Boiling Apparatus, of which the following is a specification.

This invention relates to portable tar-boiling apparatus and the like, of that class in which a heated receiver is provided between the cold tar receptacle and the tar boiler and used in connection with the surface treatment of roads, either in the course of their construction or to allay the dust nuisance upon existing roads. It is desirable in the operation of such apparatus that the tar-boiler or the like should constantly be kept fairly full and in continuous operation, rather than that it should have a single charge of its contents used completely. Further it is an advantage that the apparatus should be readily handled by one man in all the processes connected with the tarring of roads, and with a view to facilitating the operation of road-tarring machines, improvements have been made and are described in the specifications of my previous British applications Nos. 13423 of 1911 and 14522 of 1911, to both of which the present specification refers. The improvements in part refer to a portable road-tarring machine which has been described in my previous British Patent No. 29615 of 1910 which comprises the combination with a portable tar-boiler of a barrel-holder adapted to receive and temporarily retain an ordinary barrel such as tar or the like is commonly sold in, a pump appertaining to or carried by the boiler to raise and deliver the tar from the barrel thereinto, and a flexible or other suction tube on the pump for establishing connection between successive barrels placed on the said holder and the boiler; preferably also, the body of the apparatus is low enough to permit of the placing of fresh barrels of tar in the holder from the road level or from a low cart without mechanical aid.

It is therefore also the purpose of the present invention to make such modifications and additions to this combination as may be required to satisfy the conditions above stated. Enhanced rapidity of heating tar in tar-boiling apparatus is also sought.

Previous apparatus for boiling tar and

similar materials have employed devices for giving a preliminary heat to the mass in which a point has been made of keeping the incoming cold tar from that just previously heated in the boiler. One form has employed a baffle or a series of baffles for directing the cold fluid away from the hot, the hot liquid however being withdrawn from a part of one and the same vessel while the vessel itself has been so constructed as to present a considerable mass of the colder material for heating by the fire. Other devices are known in which two chambers are used separately heated and divided from one another by a partition which either serves the purpose of further distributing the heat of the fire throughout the mass of the material to be heated, or in other cases acts simply as a wall between the two chambers, the contents of only one of which is heated while the already heated contents of the other are being used.

According to the present invention a preheating means is provided for use in tar-boiling apparatus of the type having a heated receiver intermediate of the cold tar receptacle and the tar boiler wherein the heating surface is of such shape that one part of the said surface forms a division between two chambers one of which chambers receives the cold tar while the other retains a quantity of the tar heated in the receiver, said dividing member and chambers being so disposed that tar passes from the cold to the hot chamber in a thin stream and is heated during its passage. Provision is therefore made according to the present invention whereby a heated receiver preferably intermediately placed of a cold tar-receptacle and a boiler for heating the tar is employed which has a heating surface of sinusoidal form whereby the bulk of heated tar is kept from the cold tar in order that the preheated tar may not be unduly cooled by the introduction of fresh material. Preheating of the tar is as stated, in itself known but the rapidity with which machines constructed according to the present invention are enabled to be worked, is largely due to the special form of heater hereinbefore referred to. It is also in accordance with the present invention to provide a modified form of the apparatus described in my previous British patent above referred to whereby a heated receiver of sinusoidal form, and still other additional

means are provided for preheating the tar, that is to say, in the suction tube which carries tar from the heated receptacle to the boiler, as will presently be described.

5 The accompanying drawing illustrates a front elevation of one form of road-tarring apparatus in which the sinusoidal heater is employed. Parts are shown in section.

A receptacle for cold tar is shown at A placed in a holder A¹ of any suitable form arranged in the fore part of the body B of the machine. Cold tar passes from A into the heated receiver C direct, or over the plate or deflector A³ into the part C¹, whence as it is heated by the furnace C² it passes over the part C³ by convection into the part C⁴. It is drawn therefrom by the pump D through the suction tube E the end of which is placed at about the level of the part C³ of the heated receiver. The pipe E may be coiled about the boiler F (see Fig. at E²) but preferably is arranged thereon as shown at E¹ either within or outside the boiler casing when such is used and it discharges by the pump through the distributing arm G into the boiler. Both the heated receiver and the boiler may be provided with strainers as at C⁵ and F¹, and as desired, may be provided with flanges such as C⁶ and F², F³ to prevent the tar from firing should it boil over. The barrel-holder may be arranged so that the barrel comes immediately over the heated receiver as shown, while the products of combustion from the furnace of the heated receiver may discharge either into the boiler flues as at C⁷ or separately into the open air as indicated at C⁸. Suitable lagging may be provided where desirable.

In the operation of this particular machine the barrel of fresh tar conveniently placed in the holder A¹ from the road level as described in my previous British Patent No. 29615 of 1910 is rolled over or tilted so that the tar will issue into the portion C¹ of the sinusoidal heater. The plate or trough A³ is arranged so that the issuing cold tar, especially when the barrel is nearly emptied, will not fall into the bulk of heated tar. The heat of the furnace C² will bring the tar in the part C¹ to such a temperature that the more highly heated mass will, by convection rise and pass in a shallow stream over the portion C³ of the heater into the portion C⁴, where will therefore be retained a quantity of the liquid which has meanwhile been more highly heated in passing over C³. The position of the barrel, by reason of the heat rising from the heated receiver, will also be favorable to a quicker flow of tar into the part C¹. The pipe E will draw off the heated tar as required, but, because of its position, may not draw off so much of the tar as to leave the heated part C³ uncovered by the liquid. The attendant operates the pump to draw the al-

ready heated tar through the coiled part E¹ of the suction tube E. As the temperature of the boiler is usually high, some of its heat will be given up to the tar in the suction tube at E¹ so that the now fairly hot liquid will pass through the distributor G and strainer F¹ into the boiler and be here brought to the boiling point, ready for application to the road. The function of the distributor G is to break up the tar into small streams in order to avoid the cooling to any degree of the heated tar already in the boiler, but it may on occasion be desirable to omit this part of the device. The boiler is provided with a withdrawal-cock at H, while a drainage cock may be applied to the heated receiver at C⁹.

An examination of the drawing will show that the heated receiver, or the suction tube or both, may be heated by any convenient means other than a separate fire box.

By the several means hereinbefore described it will be clear that the rapidity with which the apparatus may be worked is much enhanced, as the temperature of the tar already in the boiler is not reduced to any extent during charging. Moreover by the use of the heated receiver various road-treating compounds of a solid or exceptionally thick kind may be added to the tar in the heated receiver or the latter may itself be utilized to give the preliminary heating which is necessary before solid material can be conveniently transferred to the boiler. The general arrangement also is such that the apparatus can be used with a minimum of labor.

What I claim as my invention and desire to secure by Letters Patent is:—

1. An apparatus of the character described comprising a receiver and means for heating same, a curved inner bottom in said receiver, dividing the same into substantially two chambers, separated by an arch in said bottom, means for supplying heat to the chamber beneath said arch, and means for feeding the cold tar into one chamber and for drawing off the heated tar near the top of the other chamber, substantially as described.

2. An apparatus of the character described comprising a receiver and means for heating same, a curved inner bottom in said receiver, dividing the same into substantially two chambers, and means for feeding the cold tar into one chamber and for drawing off the heated tar near the top of the other chamber, and means for further heating the tar drawn off from said second chamber, substantially as described.

3. An apparatus of the character described comprising a receiver and means for heating same, a curved inner bottom in said receiver, dividing the same into substantially two chambers, means for feeding the

cold tar into one chamber and for drawing off the heated tar near the top of the other chamber, comprising a barrel holder above said receiver with a deflecting plate mounted
5 above said receiver and beneath said barrel holder, adapted to deflect the cold tar into one of said chambers and to permit the heated tar to flow in a thin stream to the other chamber, substantially as described.

10 4. An apparatus of the character described comprising a receiver and means for heating same, a curved inner bottom in said receiver, dividing the same into substantially two chambers, means for feeding the
15 cold tar into one chamber and for drawing off the heated tar near the top of the other chamber, comprising a barrel holder above said receiver with a deflecting plate mounted above said receiver and beneath said barrel
20 holder, adapted to deflect the cold tar into one of said chambers, and means for further heating the tar drawn off from said second chamber, substantially as described.

25 5. An apparatus of the character described comprising a receiver and means for heating same, a curved inner bottom in said

receiver, dividing the same into substantially two chambers, means for feeding the cold tar into one chamber and for drawing off the heated tar near the top of the other
30 chamber, strainers for the heated tar, and a pump for pumping said heated tar through said strainers, substantially as described.

6. An apparatus of the character described comprising a receiver and means for
35 heating same, a curved inner bottom in said receiver, dividing the same into substantially two chambers, means for feeding the cold tar into one chamber and for drawing off the heated tar near the top of the other
40 chamber, means for further heating the tar drawn off from said second chamber, strainers for the heated tar, and a pump for pumping said heated tar through said strainer, substantially as described. 45

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

JAMES THOMAS MITCHELL JOHNSTON.

Witnesses:

FRANK BATES,

HARRY B. BRIDGE.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."