

(No Model.)

2 Sheets—Sheet 1.

S. R. SCHARF.

APPARATUS FOR TREATING ASPHALTIC MIXTURES.

No. 499,256.

Patented June 13, 1893.

Fig. 1.

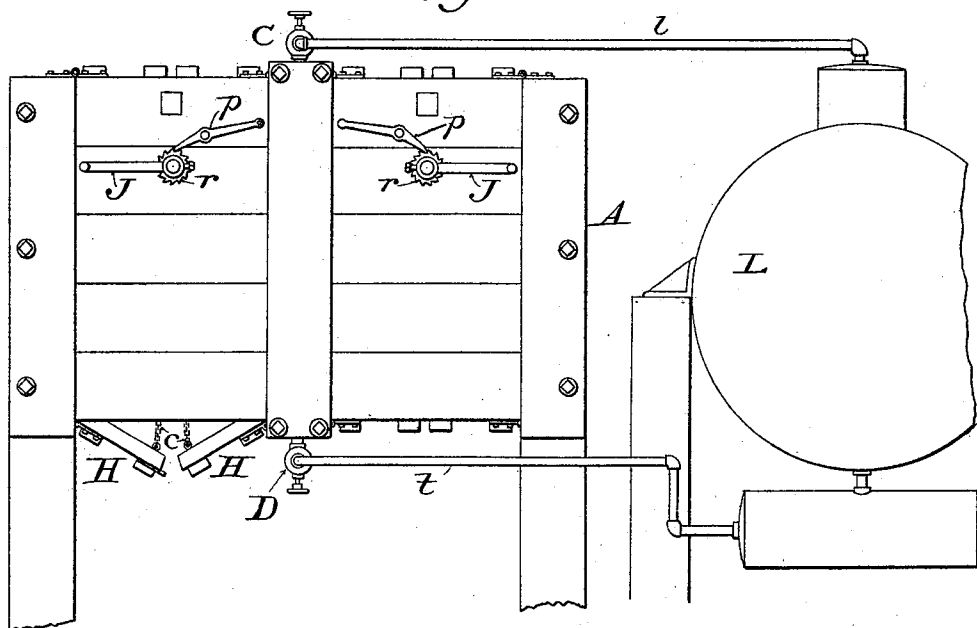
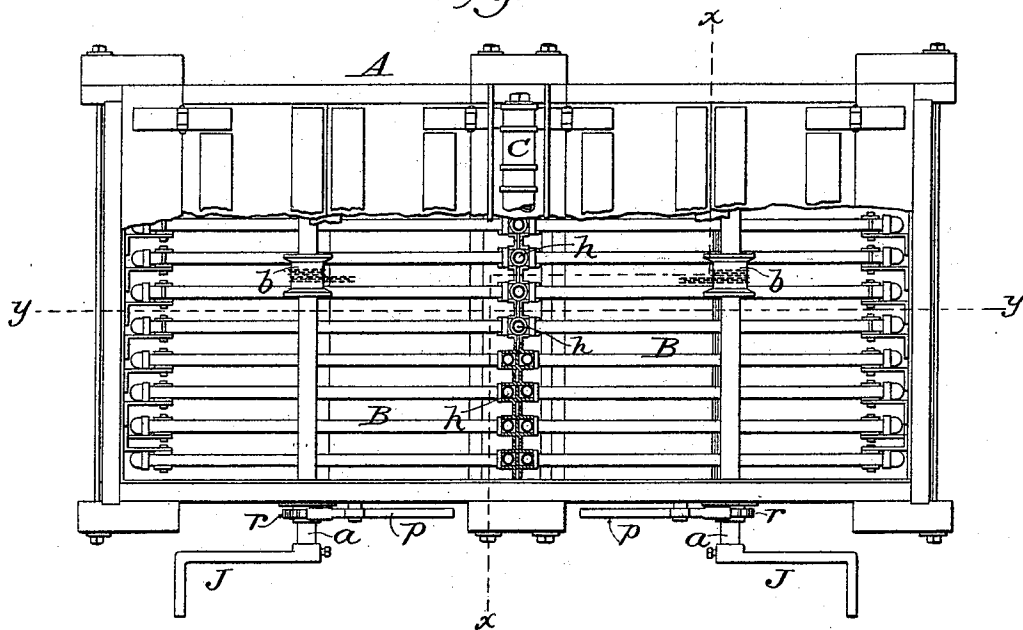


Fig. 2.



Witnesses

James F. Duhamel
Horace A. Dodge.

Inventor:

Samuel R. Scharf.
by Dodge & Sons
Atty.

(No Model.)

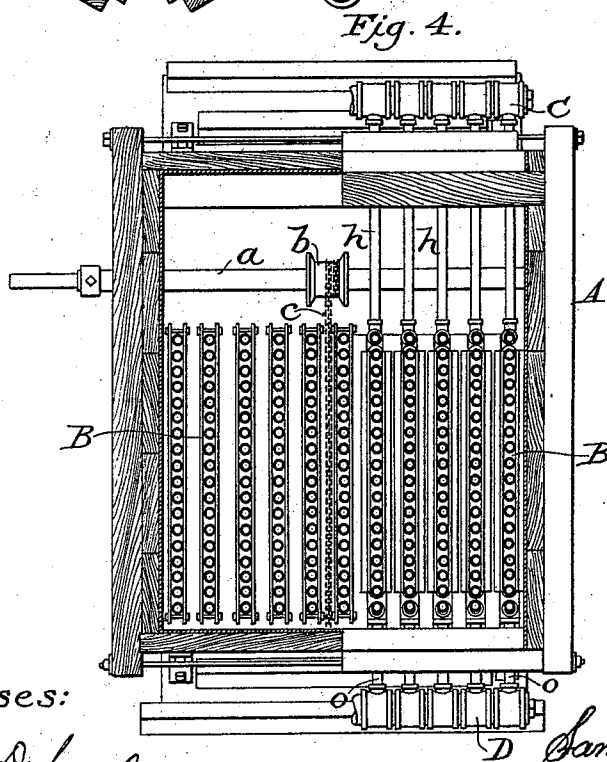
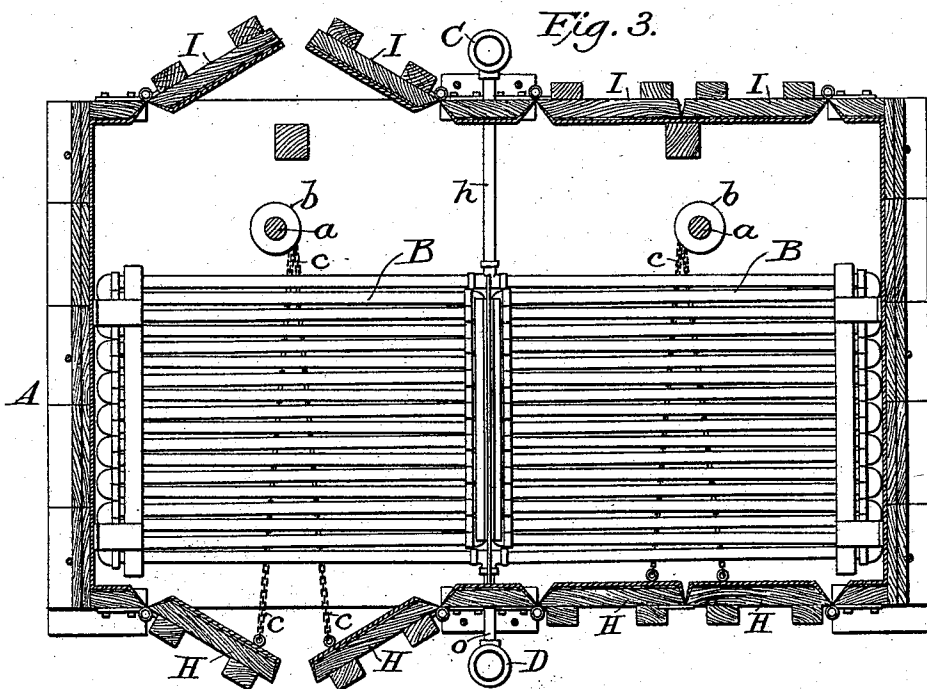
2 Sheets—Sheet 2.

S. R. SCHARF.

APPARATUS FOR TREATING ASPHALTIC MIXTURES.

No. 499,256.

Patented June 13, 1893.



Witnesses:

James F. Duhamel.
Horace A. Dodge.

Inventor,
Samuel R. Scharf
by Dodge & Sons
Attys.

UNITED STATES PATENT OFFICE.

SAMUEL R. SCHARF, OF WASHINGTON, DISTRICT OF COLUMBIA.

APPARATUS FOR TREATING ASPHALTIC MIXTURES.

SPECIFICATION forming part of Letters Patent No. 499,256, dated June 13, 1893.

Application filed January 4, 1893. Serial No. 457,236. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL R. SCHARF, a citizen of the United States, residing at Washington, in the District of Columbia, have invented certain new and useful Improvements in Apparatus for Treating Asphaltic Mixtures, of which the following is a specification.

My invention consists of an apparatus for treating asphaltic and similar bituminous compounds by means of steam, as hereinafter more fully set forth.

Figure 1 is an elevation of the apparatus, and boiler for supplying the same with steam. Fig. 2 is a top plan view, with a portion of the top broken away. Fig. 3 is a longitudinal vertical section on the line $y-y$ of Fig. 2; and Fig. 4 is a transverse vertical section on the line $x-x$ of Fig. 2.

In the construction and repair of pavements composed of asphalt or similar bituminous matter, and which is usually mixed with sand or similar material, it is very desirable to use a portion of the material a second time, or indeed, several times if suitable for the purpose. The part of the pavement thus utilized is usually the upper or surface layer only; and as this is composed of the finest material and contains a larger proportion of the asphalt or bituminous matter, it is very desirable to be able to re-melt it, and put it into proper condition for relaying it, and thus saving or utilizing it. Heretofore this has been done by heating it in pans or tanks over an ordinary fire; and as it is difficult to regulate the heat properly with such devices, the result is that the material is often burned or scorched, thereby rendering it unfit for use, this defect often developing only after it has been laid, thus not only destroying the material, but also necessitating the taking of it up and replacing it with other, thereby greatly increasing the labor and expense. Moreover, owing to the peculiar nature of these asphaltic or bituminous mixtures, it is difficult to melt and heat them uniformly throughout when treated in large masses, as is necessary in laying street pavements; and if not uniformly heated and mixed, the pavement is rendered defective.

My present invention is designed to overcome these difficulties, and to that end it consists in treating or melting the material by

means of steam, in a vat or apparatus which I have invented for that purpose.

This apparatus consists of a large tank or box made of wood, preferably of two or more thicknesses of plank with an interposed layer of non-conducting material to retain the heat, securely fastened together by supporting timbers and bolts or rods, as indicated in the several figures, in which A indicates the tank or box. It is provided at top with hinged doors or lids I, I, for receiving the material, and at the bottom with similar doors or lids H, H, as shown more clearly in Fig. 3. These bottom doors are connected by chains c, c , to a drum b on a shaft a mounted transversely in the upper portion of the tank, as shown in Figs. 1, 2 and 3, this shaft projecting through the wall of the tank at one side, where it is provided with a crank J to operate it, and with a ratchet r to engage with a pivoted pawl p to lock it fast and hold the doors H, H, closed, and by which means these doors can be opened, as shown in the left hand portions of Figs. 1 and 3, when it is desired to remove any portion of the melted material. Gear may be applied to the shaft to increase the power if required.

The tank will be mounted on suitable supports, at such a height as will enable the cart or wagon which is to receive the melted material to be driven or backed under it, so that when the doors H, H are partially opened as shown in Fig. 3, the material will drop directly into the cart or wagon, and thus save the time and labor usually necessary to remove it by hand from the pans and place it in the carts or wagons. A platform will be provided at the side where the cranks are, for the attendant; and preferably a jib crane with a suitable dumping bucket will be used for hoisting the material and placing it in the tank; but as these are well known mechanical devices, and as other means may be used for these purposes, I have not thought it necessary to show them in the drawings.

Within the tank A, I arrange a series of steam pipes in the form of coils or manifolds B, as shown in Figs. 2, 3 and 4, the coils being arranged parallel with each other, and at uniform distances from each other, preferably about six inches apart, as I have found by experiment that ordinary steam when ap-

plied in this manner will melt the material for only a little over three inches from the surface of the pipes outward in the mass. This space between the coils may of course
 5 be varied more or less, but for steam at the ordinary temperature I find six inches to give good results. In case superheated steam be used, it is obvious that the space between the coils may be increased, but it is not generally
 10 convenient to furnish superheated steam; and moreover, if the steam be superheated to a very high degree, there would be danger of injuring the material by an excess of heat. In arranging these coils they are so located
 15 as to reach as near the bottom of the tank as possible, in order to keep the material which gradually melts and runs to the bottom in a suitable condition to be drawn off and used at any time; there being a space left above
 20 the coils within the tank for receiving the mass to be melted, as shown in Figs. 3 and 4, this space being refilled from time to time as the melted material is discharged from the bottom.

For convenience I have shown what may be termed a double tank, with two sets of coils set end to end, so that they can be supplied with steam from a central cross-pipe C at the top, connected to the coils by a series
 30 of branch pipes *h*, as shown in Figs. 3 and 4, thereby distributing the steam equally to all the coils, thereby securing a uniformity of heat throughout, and enabling all the coils to be connected at their bottom with a cross pipe D which, by means of branch pipes *o* receives
 35 the condensed steam, and which as a matter of economy is returned to the boiler L by a single pipe *t* which may lead to a hot water tank as shown, or the boiler direct, as may be
 40 preferred.

While I consider the arrangement shown to be the best for the purpose, I do not limit myself to this special arrangement as it is obvious that the arrangement of the heating coils
 45 and their connecting pipes may be varied and still be made to operate in the same manner. The central supply pipe C may be placed within the tank, it being merely a question of convenience in making the connections; and
 50 if placed outside as shown, it together with the pipe *l* which connects it with the boiler, should be jacketed to prevent the escape of heat and condensation of steam therein.

Any form of boiler may be used to supply
 55 the steam, it only being necessary that the coils be kept full, at a pressure of about eighty pounds more or less.

From the foregoing description any person familiar with the art will readily understand
 60 how to use the apparatus, it only being necessary to place the material in the tank upon and between the coils, close the doors and see that the supply of steam is kept up. The smaller pieces will drop down between the
 65 coils while the larger ones will rest upon the top of the same, and all will gradually melt

and drop or flow to the bottom until the tank becomes filled to any desired height with the melted mixture, which by keeping the steam on, will be retained in a condition ready for
 70 instant use, as long as desired. By these means the operation may be rendered continuous, so long as the supply of material and steam is kept up; and this, in cities having a large extent of this class of pavements, and
 75 where therefore more or less repairing is constantly required is a matter of importance.

By filling the tank at the close of the day's work, and simply having a fireman to keep up the steam, it may be left with entire
 80 safety to perform its work during the night, as the heat of the steam thus applied cannot injure the material, and thus is insured a supply ready for use the next morning.

While this apparatus has been designed
 85 more especially for treating the surface layer of asphalt and sand, or any similar bituminous mixture which has been removed from street pavements, it is obvious that it is
 90 equally well adapted for treating some of the raw material adapted for use in making this class of pavements, as for instance, the rock which is permeated with bituminous matter, and is extensively used in some places in the
 95 construction of this class of pavements, the rock being first crushed or ground.

The advantages and economy of this method of treating the material, and such an apparatus, are too obvious to require enumeration.

One of the most important advantages is
 100 the certainty that the material will be heated uniformly to a certain temperature and no more; and that all danger of injuring the same by burning or scorching the same is absolutely prevented, no matter how unskilled
 105 or negligent the attendants may be.

I am aware that patents have been granted for machines for reducing bituminous rock, and also for a machine designed to crush the rock and lay the pavement all at one operation
 110 and in which steam is used in the hollow shafts and in a jacket applied to the exterior of the tank or cylinder, but such machines are not adapted to the purpose for which my apparatus is designed, and I do not claim anything shown in said patents, but
 115

What do I claim is—

1. The herein described apparatus for treating asphaltic or bituminous compounds for street pavements, which consists of a tank
 120 having its walls composed of wood or similar heat retaining material, provided with doors at top and bottom, and having arranged therein a series of pipe coils for the reception of steam, substantially as and for the purpose
 125 set forth.

2. In combination, the tank A provided with a series of pipe coils, and a steam boiler L, connected to the coils by a supply and return pipe, substantially as shown and described.
 130

3. In combination with a boiler for supply-

ing steam, the tank A provided with a series of steam coils, and having doors in its bottom arranged to swing downward with means for closing and holding them closed, said
5 tank being elevated to enable the vehicle which is to receive the material therefrom to be driven or placed under the same, and also cause the water produced by the condensed steam to flow by gravity to the boiler or tank

arranged to receive it, substantially as shown in the drawings and described.

In witness whereof I hereunto set my hand in the presence of two witnesses.

SAML. R. SCHARF.

Witnesses:

HORACE A. DODGE,
W. C. DODGE.