MACHINE FOR HEATING AND MIXING PAVING MATERIALS.

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To all whom it may concern:

Be it known that we, THOMAS L. SMITH and EDWARD W. BRACKENBURY, the former a subject of the King of England, both of whom reside at Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented a new and useful Machine for Heating and Mixing Paving Materials, of which the following is a specification.

Our invention relates to improvements in devices for heating and mixing paving materials that require the application of heat, and the object of our invention is to provide a portable simple and efficient machine for this purpose.

The subject matter of our invention is illustrated in the accompanying drawings in which—

Figure 1 shows a side view of the complete machine and Fig. 2 an end view of the same as viewed from the right of Fig. 1.

The same reference numerals refer to the same parts in the different figures of the drawings.

10 is a truck frame provided with the necessary wheels and axles for supporting the entire machine and rendering the same portable.

11 represents the drum or mixing receptacle of the mixer, which is here shown as of the well known tilting type of batch mixers, provided with the usual blades for lifting and moving the material.

12 represents a steam engine for furnishing the motive power for the mixer and its loading attachment.

13 represents the car or bucket of the loading attachment, and 14 shows the boiler which supplies steam for the engine and heat for drying the paving materials and assisting it to form an intimate mixture.

As these devices are well known to constructing engineers and engineering contractors, detailed description will be confined to the additions and modifications which adapt the machine as a whole to hot mixing.

In order to provide the necessary heat to the mixer, the discharge end of the drum is connected to the fire box of the boiler by a pipe 15. At the boiler end this pipe is provided with an elbow 16 secured over an opening, through the water leg of the boiler, into the fire box similar to the opening at 55 the fire box door 17. A sliding valve 18 operated by the lever 19, is provided in the elbow 16, and a damper 20 is provided in the smoke stack. By adjusting this valve and damper the products of combustion of the fire may be sent wholly through the pipe 15 or the stack, or partly through both.

The elbow 16 is connected to an elbow 21 on the pipe 15 by a swinging joint and the boiler end of the pipe is supported by the elbow 16. The drum end of the pipe 15 is suspended by a link 22 which is hinged to the frame at its upper end and to the pipe at its lower end, by the bolts 23 and 24 respectively. The drum end of the pipe is also provided with an elbow having a flange 26 on its end which flange bears against the discharge end of the drum.

The pipe 15 has a link 27 hinged thereto at 28 and this link is also swingingly attached at 29 to the tilting frame 30 of the mixer. The frame 30 tilts or swings on the trunnions 31 and as those are below the point of attachment 29 of the link, the tilting of the mixer to discharge will swing the pipe 15 outward away from the drum and leave the discharge end of the drum entirely free when in its discharging position.

The top of the side loader frame 32 is extended across the machine to carry the cross piece 33 from which the link 22 is suspended, and the extended bars 32 are braced by the inclined struts 34 extending upward from the lower transverse frame members 35.

The side loader car or bucket 13 is moved upward by the hoist 36, its rollers traveling in and on the curved tracks 37 and 38, and when in its upper position shown in dotted lines at Fig. 2 it delivers its load of material to the feed end of the drum. The car 13 has suitable brackets 39 in which the ladle 40 is rotatably carried. The tar or other liquid bituminous binder for the stone is carried in the ladle 40 to avoid clogging the discharge of car 13 by the introduction thereto of a sticky material. Ladle 40 when in its upper position is tipped as shown in dotted lines to discharge its contents into a tank or hopper 41, supported on the upper part of the side loader frame, and provided with a discharge pipe 42 leading into the feed end of the drum. A plug cock

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or other valve 43 governs the discharge of the tank 41.

In order to force the fire of the boiler and create a draft through the pipe 13, a blower 44 is provided. Jests of dry steam for this blower are supplied from the top of the boiler by the pipe 45, Fig. 1, and the air actuated by these steam jets is taken in through the large upper end of the blower and delivered under the fire grates through the pipe.

To prevent destructive heating of the pipe 15 and its connecting elbows, these parts, 25, 15, 21 and 16 are all made in halves and are clamped together by bolts as shown, around a thick asbestos lining.

In operation the valve 18 and damper 20 are adjusted as is required to supply the heated steam pressure and the needed draft through the drum. The batch of stone and sand is delivered to the drum by the car 13 and the tar to the tank 41. As the drum is rotated the stone and sand is continually lifted and poured through the stream of hot gases passing through the drum and in this way is rapidly dried and heated. During the heating interval the tar is also being heated in the tank 41 which is directly over the feed opening of the drum through which the hot gases pass out from the drum and naturally rise around the tank 41. When the stone is dry and hot the plug cock 43 is opened and the tar flows into the drum and is thoroughly mixed with the stone and sand. As the hot gases enter at the discharge end of the drum this end of the drum is the hottest and the discharge is perfectly free and expeditious, as it is effected from the hot end of the drum while this is in motion. When the drum is tilted to discharge the pipe 15 and elbow 25 are automatically swung away from the drum so the discharge is unimpeded. During the discharge the valve 18 may be closed and the entire heat of the fire passed through the boiler.

What we claim as our invention is—

1. In a machine for mixing tar macadam and the like, a rotatably mounted mixing drum, means for feeding material to one end of the drum and for discharging it from the other end thereof, a conduit connected to a furnace immediately above the fire thereof and connecting with the discharge end of said drum, means for swinging said conduit away from the drum during the discharge thereof and means for forcing the products of combustion through said conduit.

2. In a machine for mixing tar macadam and the like, a rotatably mounted mixing drum, means for feeding material to one end of the drum, and for discharging it from the other end thereof, a conduit connected to a furnace immediately above the fire thereof and connecting with the discharge end of said drum means for swinging said conduit automatically away from the drum by the operation of the discharge mechanism and means for forcing the products of combustion of the fire through said conduit.

3. In a machine for mixing tar macadam and the like, a rotatably mounted mixing drum, means for tilting said drum to discharge the material, means for feeding solid material to said drum, means for separately feeding liquid material to said drum, a conduit connected to a furnace immediately above the fire thereof and connecting with said drum, a conduit connected to a furnace immediately above the fire thereof and connecting with said drum through the discharge end thereof, means for automatically swinging said conduit away from the drum by the tilting thereof for discharge, and means for governing the flow of hot gases to the drum.

4. In a machine for heating and mixing tar macadam and the like a mixing receptacle, means for rotating the same, means for feeding material to one end of said receptacle and for discharging it from the other end thereof, a conduit connected at its lower end to a source of heated gases and registering at its other and upper end with the discharge opening of the receptacle and means automatically moving said conduit away from the discharge opening by the operation of the discharging means.

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Witnesses:

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