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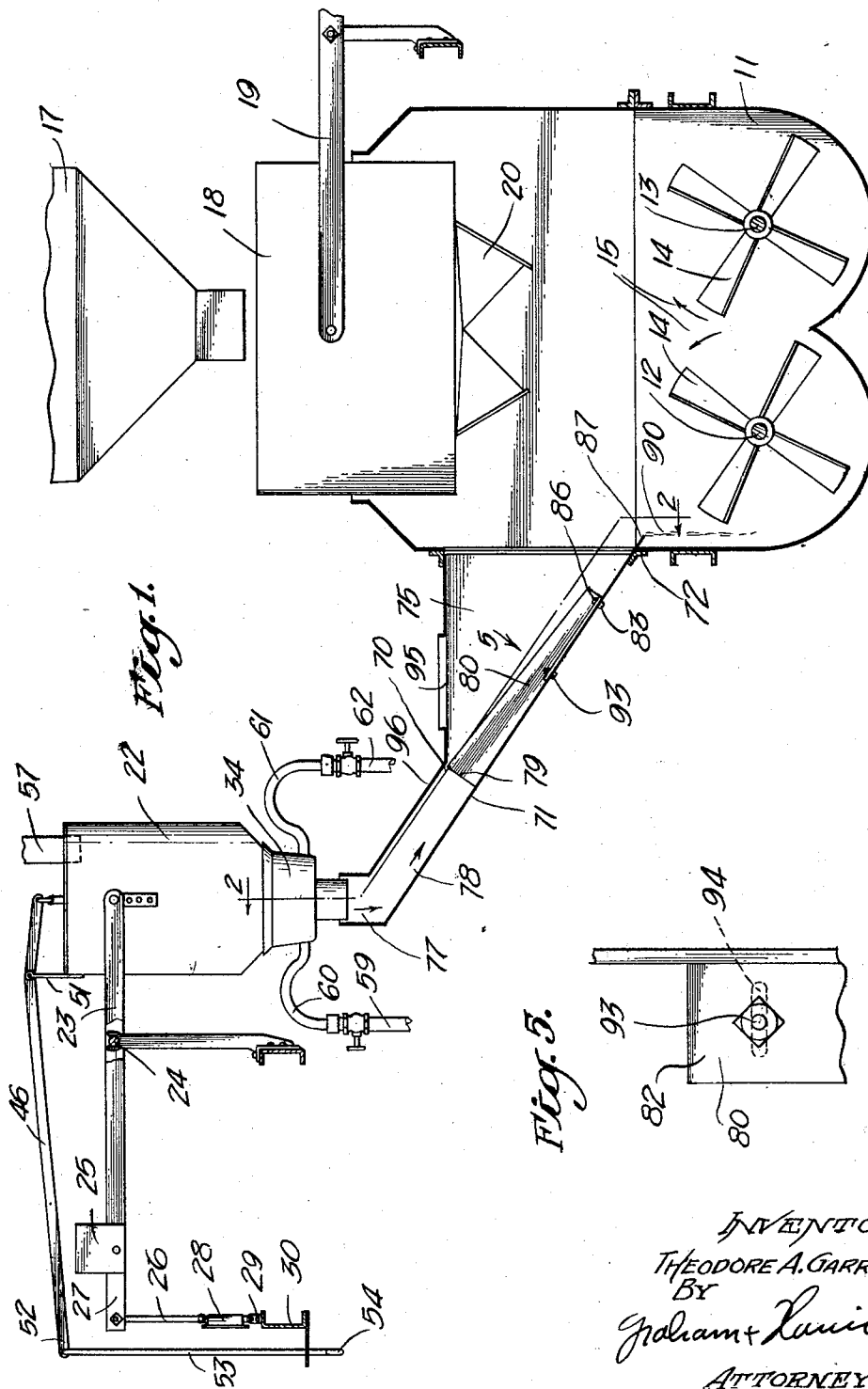
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1,750,264

SPREADER FOR MIXING MACHINES

Filed Nov. 28, 1923

2 Sheets-Sheet 1



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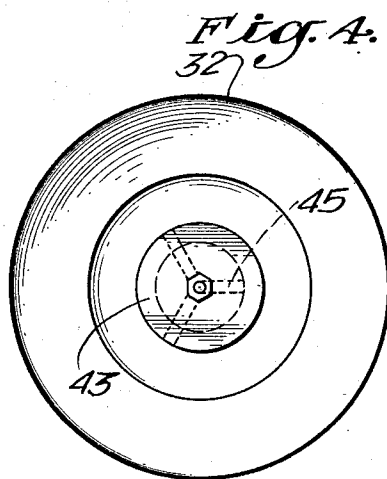
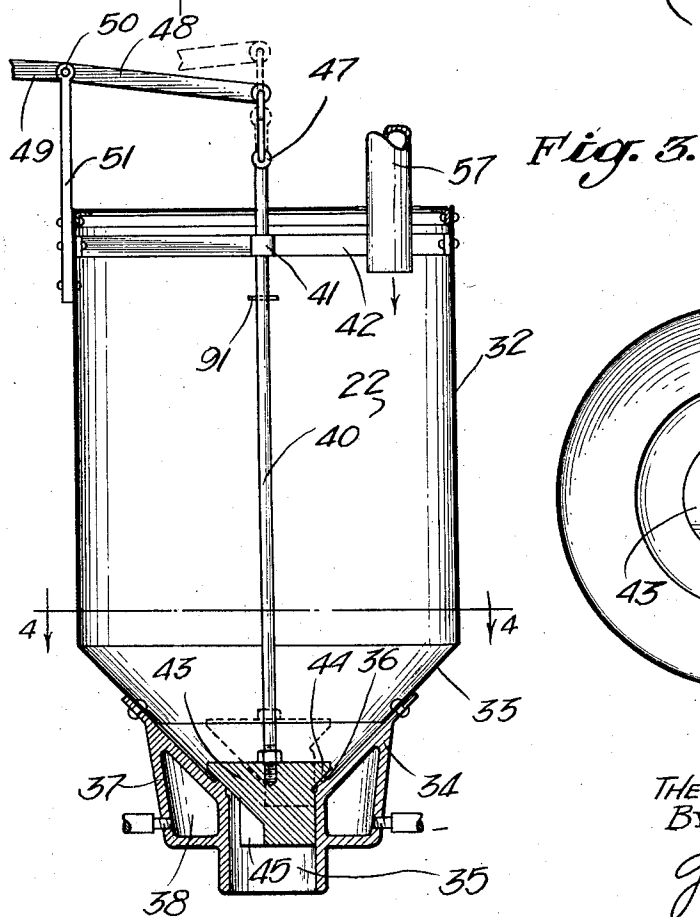
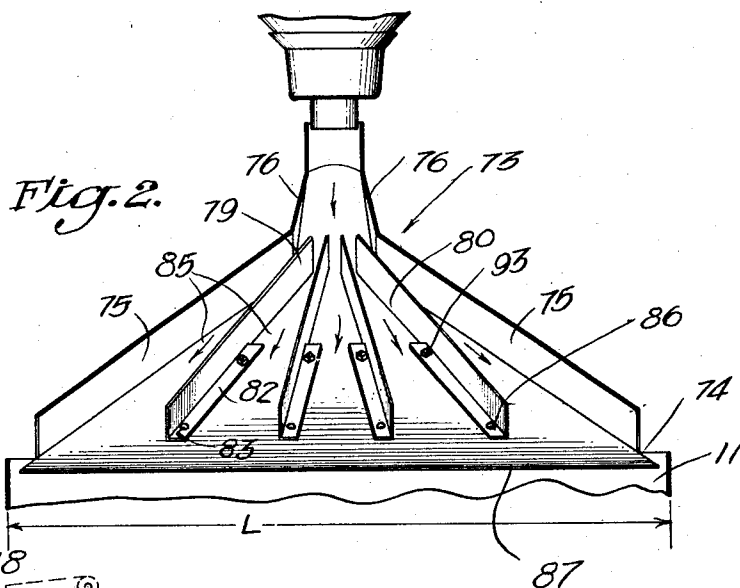
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SPREADER FOR MIXING MACHINES

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2 Sheets-Sheet 2



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SPREADER FOR MIXING MACHINES

Application filed November 28, 1923. Serial No. 677,391.

This invention relates to devices for mixing dry and liquid materials and relates particularly to a machine for mixing dry comminuted materials and melted materials of pitch characteristics such as asphaltums and tars.

Although the invention is particularly adapted to employment in the mixing of paving materials, it will be understood there are other arts in which the mechanism and principles thereof may be employed to advantage. In the preparation of asphaltum paving materials, various combinations of rock, sand, and clay are mixed with melted asphaltum. It is customary to place the dry materials in a mixer having moving agitators and to pour heated asphaltum over these materials by use of large ladles or buckets. There are certain disadvantages to this practice, the most important thereof being the extreme danger to workmen from being severely and often fatally injured by the hot tar spilled from the pouring ladles which are generally handled by overhead cranes. The asphalt is generally heated to 300 degrees Fahrenheit or over before sending to the mixing machine. This asphaltum is extremely adhesive in nature and cannot be readily removed, thus the spilling of the hot tar on a workman often proves fatal. Another pronounced disadvantage in the present practice is that in pouring from a ladle into the mixer, the distribution of asphalt over the dry materials is very uneven and in order to provide a thorough and even mix, considerable time is required.

It is an object of the invention to provide a stationary weigh or measuring hopper or bucket into which the hot asphaltum is delivered through piping, and from which hopper the asphaltum is delivered to the mixer by a fan shaped spreader or distributor which delivers the liquid asphaltum into the mixer in the form of a thin sheet extending substantially the full length of the mixer, thus providing a very even distribution of the asphaltum over the dry materials with which it is to be mixed.

Referring to the drawings which are for illustrative purposes only:

Fig. 1 is a diagrammatic view showing a mixer and equipment incorporating the features of my invention.

Fig. 2 is a section taken as indicated by the line 2—2 of Fig. 1.

Fig. 3 is an enlarged section through the asphaltum measure hopper.

Fig. 4 is a section taken on a plane represented by the line 4—4 of Fig. 3.

Fig. 5 is an enlarged elevational view taken as indicated by the arrow 5 of Fig. 1.

In the equipment any suitable type of mixer may be employed, that shown at 11 being equipped with a pair of shafts 12 and 13, having paddles or agitators 14 mounted thereon and being arranged for rotation as indicated by the arrows 15. The dry materials which in the mixing of paving materials may be rock, sand or clay, or various combinations thereof, are supplied from a storage hopper 17 arranged to deliver into a measure hopper 18 which is mounted on a scale beam 19 and measures the materials through consideration of the weight thereof which is determined by a suitable scale associated with the beam 19. From the weigh hopper 18, the dry materials are delivered into the mixer through doors 20, wherein they are thoroughly agitated by the paddles 14.

Adjacent to the mixer 11 is an asphaltum measure hopper 22 which is hung on a forked beam 23 which swings on a fulcrum 24, the tare weight of the hopper 22 being counterbalanced by a weight 25. By means of a rod 26, the end 27 of the beam is attached to a spring balance 28 or other weighing mechanism which is attached at 29 to a beam 30.

As shown in Figs. 3 and 4, the weighing hopper 22 consists of a cylindrical shell 32 having a conical bottom member 33 to which a casting 34 is riveted or otherwise suitably secured. This casting 34 provides a central discharge opening 35 having a valve seat 36 formed at the upper end thereof, and walls 37 which enclose a circular chamber 38 surrounding the valve seat. On the lower end of a vertically extending rod 40 which is supported at 41 by a cross member 42, is secured a valve closure plug 43 which is preferably

cast in fairly massive form so that it will have considerable weight. This valve plug provides a conical face 44 arranged to engage the seat 36, and downwardly extending are wings 45 which serve to centralize the plug 43 when it is in raised position. The upper end 47 of the rod 40 is linked to the inner end 48 of a valve operating lever 49 which pivots at 50 to a supporting member 51 secured to the upper edge of the hopper 22. The outer end 52 of the lever 46 may be equipped with a downwardly extending rod 53, Fig. 1, having a handle loop 54 formed at the lower end thereof for manual engagement when it is desired to discharge asphaltum from the hopper 22.

Asphaltum heated to a temperature of substantially 300 degrees F. is delivered into the hopper through piping 57, the amount thereof being noted and gauged by reference to the spring balance 28. To prevent hardening of the asphaltum around the valve at the lower end of the hopper 22, steam from piping 59 is injected through a hose 60 into the chamber 38 provided by the casting 34, this steam being discharged through a hose 61 and piping 62, thus raising the temperature of the casting and the valve plug to above the melting point of asphaltum, thus allowing the valve to be operated freely. From the asphaltum hopper 22, the measured charge of asphaltum is delivered into a distributor 70 which extends between a casting 34 and one side of the mixer 11. This distributor provides a bottom plate 71 which slopes downwardly toward the edge 72 of the mixer and flares outwardly from a point 73 to substantially the full length of the mixer as indicated at 74. Side walls 75 shown as extending to a housing above the mentioned mixer are provided which follow the contour of the edge of the plate and run substantially parallel for a short distance as indicated at 76, thus forming an entrance channel into which a hot asphaltum enters as indicated by the arrow 77 of Fig. 1. From this point 73, the stream of asphaltum flows downwardly as indicated by the arrow 78 and is divided into separate streams by the upper ends 79 of vanes 80. The lower ends of the vanes are provided with laterally extending flanges 82 and are pivoted upon rivets 83, in converging positions as shown in Fig. 2, thus dividing the area of the plate 71 into a number of diverging channels. The small streams of asphaltum flow downwardly through the channels between the vanes 80 in the manner indicated by the arrows 85 and spread out over the plate 71 in separate fairly thin downwardly moving or flowing layers. It will be noticed that the lower ends 86 of the vanes 80 are spaced away from the lower edge 87 of the plate, thus allowing the separate streams to merge as they flow beyond the lower portions of the vanes into a continuous

layer or sheet of asphaltum which runs off the edge 87 of the plate in a substantially continuous sheet as indicated at 90, which sheet extends the full length L, Fig. 2, of the mixer 11.

The speed at which the asphaltum is delivered to the mixer may be gauged by the extent to which the valve plug 43 is lifted from the valve seat 36, a pin 91 or other stop means serving to limit the distance at which the valve plug may be raised. For the purpose of regulating the distribution of the liquid material, the vanes are made swingable upon the rivets 83 so that the upper ends 79 thereof may be moved back and forth thereby to intercept the entering stream of asphaltum at the desired point to give the required amount of asphaltum flow in each of the distributing channels. The vanes 80 are held in place by bolts 93 which extend through holes drilled near the upper ends of the flanges 82 and through slots 94 in the plate 71 as indicated in Fig. 5. For adjustment, even while the asphaltum is flowing through the distributor, downward access to the vanes 80 may be had through use of an opening such as is shown at 95 in the cover plates 96, and the vanes 80 then clamped securely down by tightening the bolts 93.

The equipment shown relieves workmen from all danger from burns by heated asphaltum and enables the handling of the asphaltum in large charges because of the fact that the hopper 22 may be made of any size so that one filling or charge thereof will suffice for each mix. The spreading of the hot asphaltum in sheet form over the dry materials in the mixer enables the attainment of a thorough mixture in a minimum time owing to the fact that the heretofore encountered disadvantage of uneven distribution of the heated asphalt in the mixture does not have to be overcome by an extended agitation of the materials in the mixer.

I claim as my invention:

1. In a machine for mixing paving material for road and street work, a receptacle adapted to receive and weigh a required quantity of hot liquid asphaltum, a mixer adapted to receive a predetermined quantity of dry paving material and the weighed quantity of hot asphaltum and mix the two materials together and a fan shaped spreader intermediate the asphaltum determining apparatus and the apparatus for commingling the asphaltum and dry material, said spreader being adapted to deliver the asphaltum into the mixer in a continuous sheet of even depth.

2. In a machine of the character set forth in claim 1, a receptacle adapted to receive and weigh a required quantity of hot liquid asphaltum, a mixer adapted to receive a predetermined quantity of dry paving material and the weighed quantity of hot asphaltum

and mix the two materials together and a fan shaped spreader having vanes on its upper surface, said spreader being intermediate the asphaltum determining apparatus and the apparatus for commingling the asphaltum and dry material, and being adapted to deliver the asphaltum into the mixer in a continuous sheet of even depth.

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3. In a machine of the character set forth in claim 1, a receptacle adapted to receive and weigh a required quantity of hot liquid asphaltum, a mixer adapted to receive a predetermined quantity of dry paving material and the weighed quantity of hot asphaltum and mix the two materials together and a fan shaped spreader having vanes swingingly mounted on its upper surface, said spreader being intermediate the asphaltum determining apparatus and the apparatus for commingling the asphaltum and dry material, and being adapted to deliver the asphaltum into the mixer in a continuous sheet of even depth.

In testimony whereof, I have hereunto set my hand at Los Angeles, California, this 23rd day of November, 1923.

THEODORE A. GARROW.

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