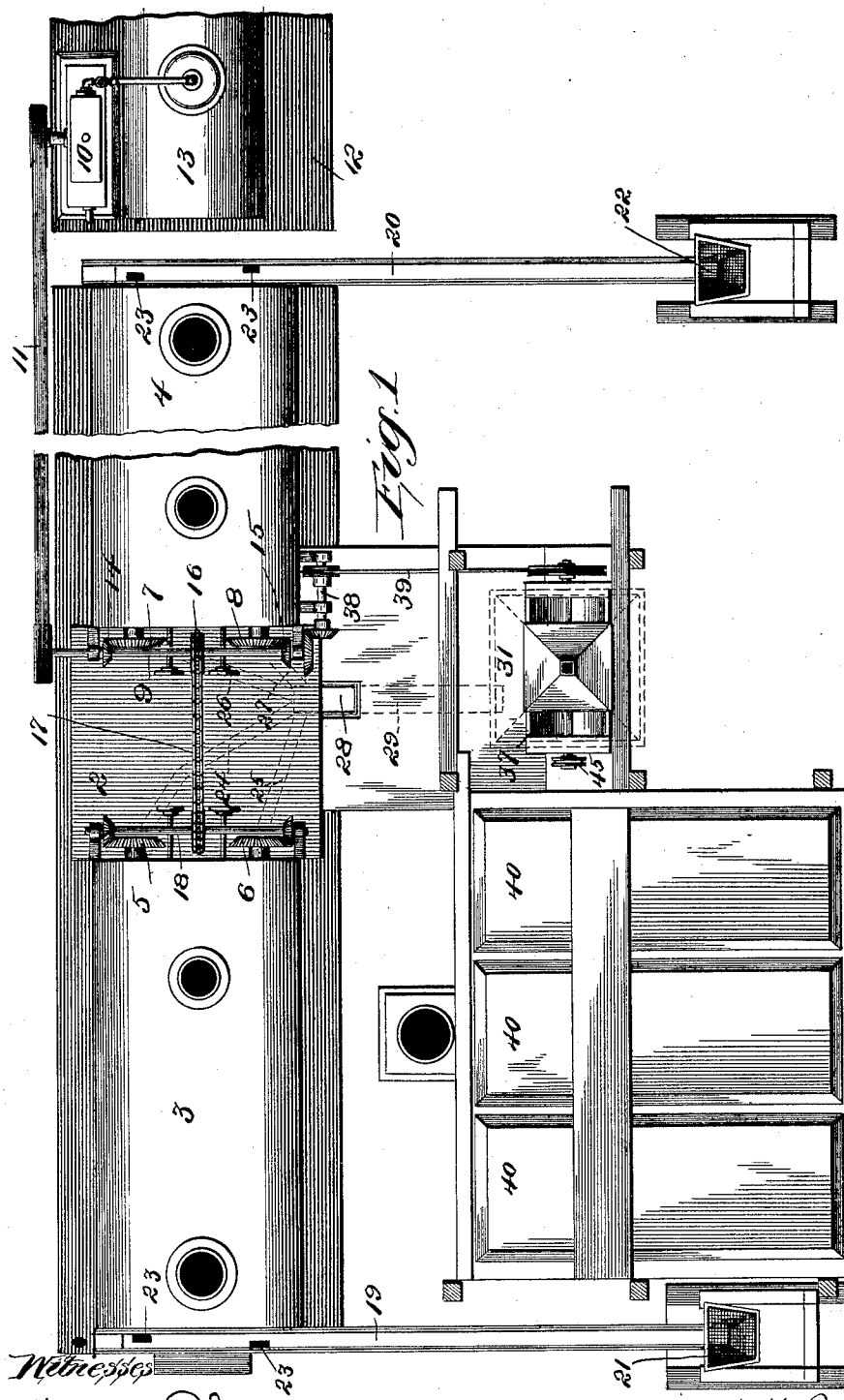
(No Model.) 4 Sheets—Sheet 1.

A. H. PERKINS.

ASPHALT PAVING APPARATUS.

No. 476,814. Patented June 14, 1892.



Witnesses:
Wm. M. Sheem.

Inventor:
A. H. Perkins
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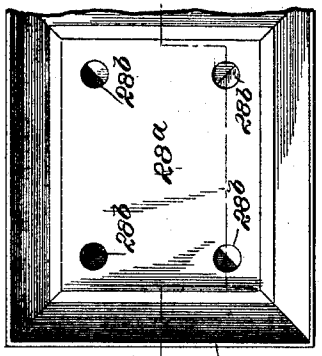
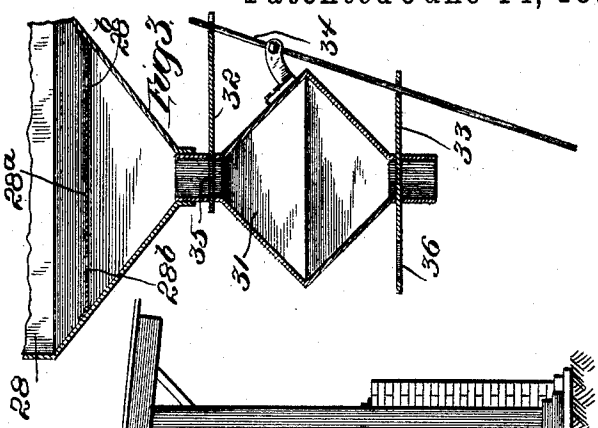
(No Model.) 4 Sheets—Sheet 2.

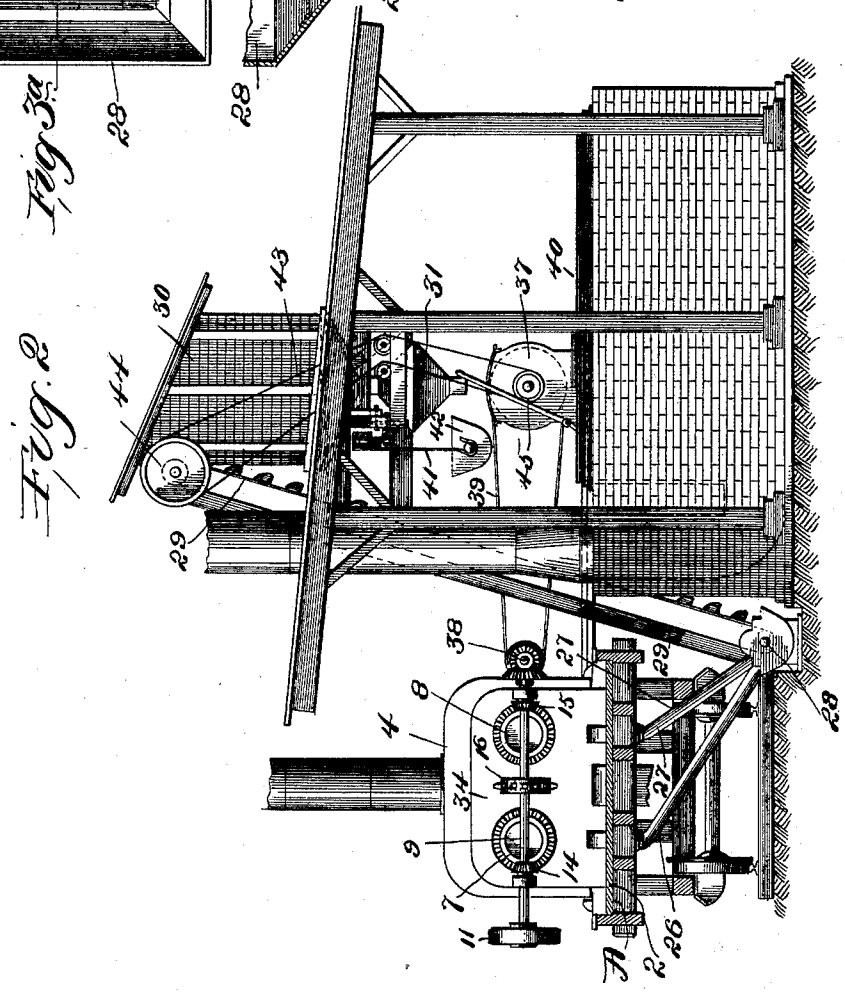
A. H. PERKINS.

ASPHALT PAVING APPARATUS.

No. 476,814. Patented June 14, 1892.







Witnesses:
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Wm. A. Fox.

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(No Model.) 4 Sheets—Sheet 3.

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ASPHALT PAVING APPARATUS.

No. 476,814. Patented June 14, 1892.

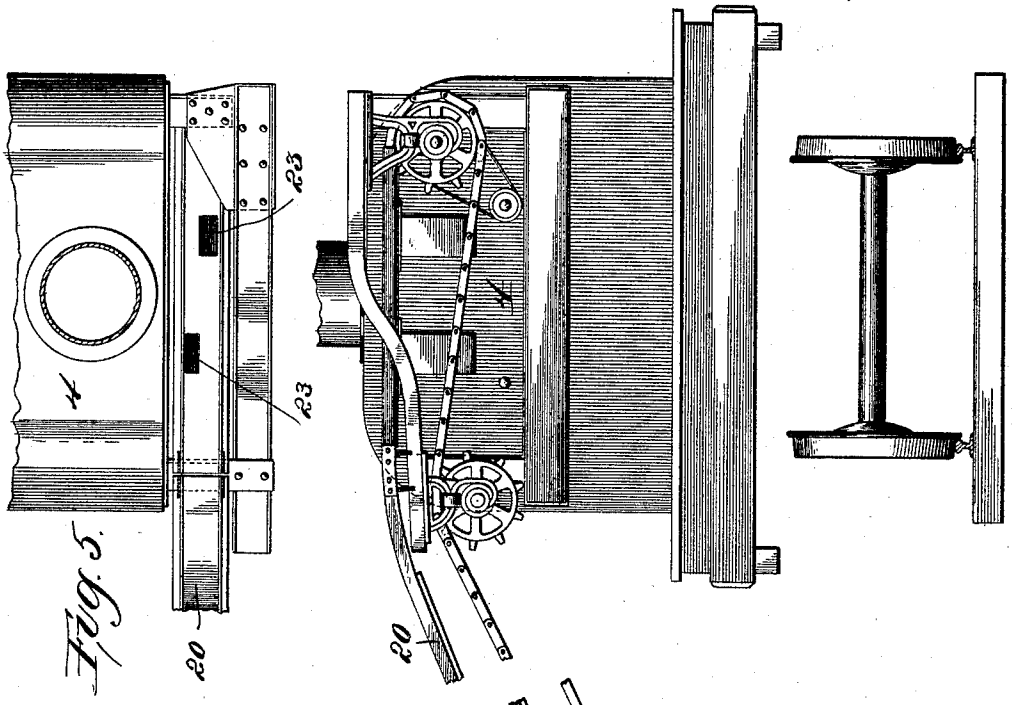

Fig. 5.

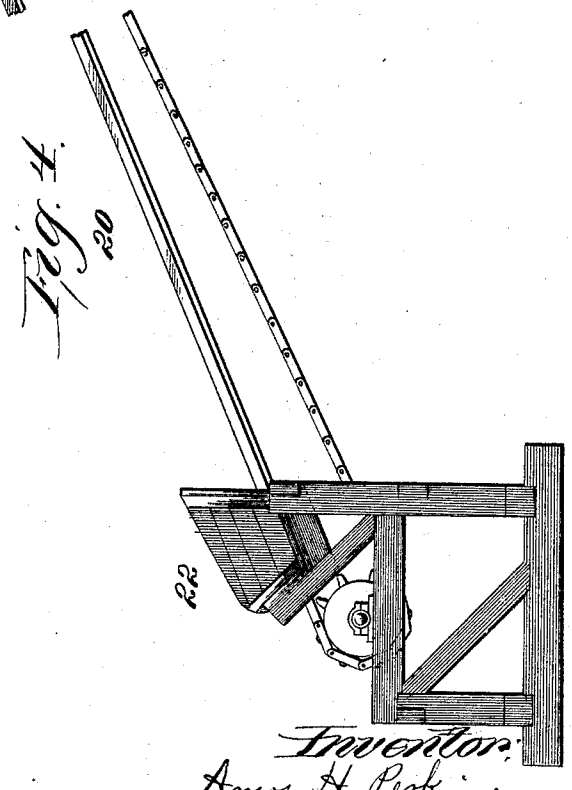

Fig. 4.

Witnesses:
Wm. A. Rheem.
W. A. Gerhardt.

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(No Model.) 4 Sheets—Sheet 4.

A. H. PERKINS.

ASPHALT PAVING APPARATUS.

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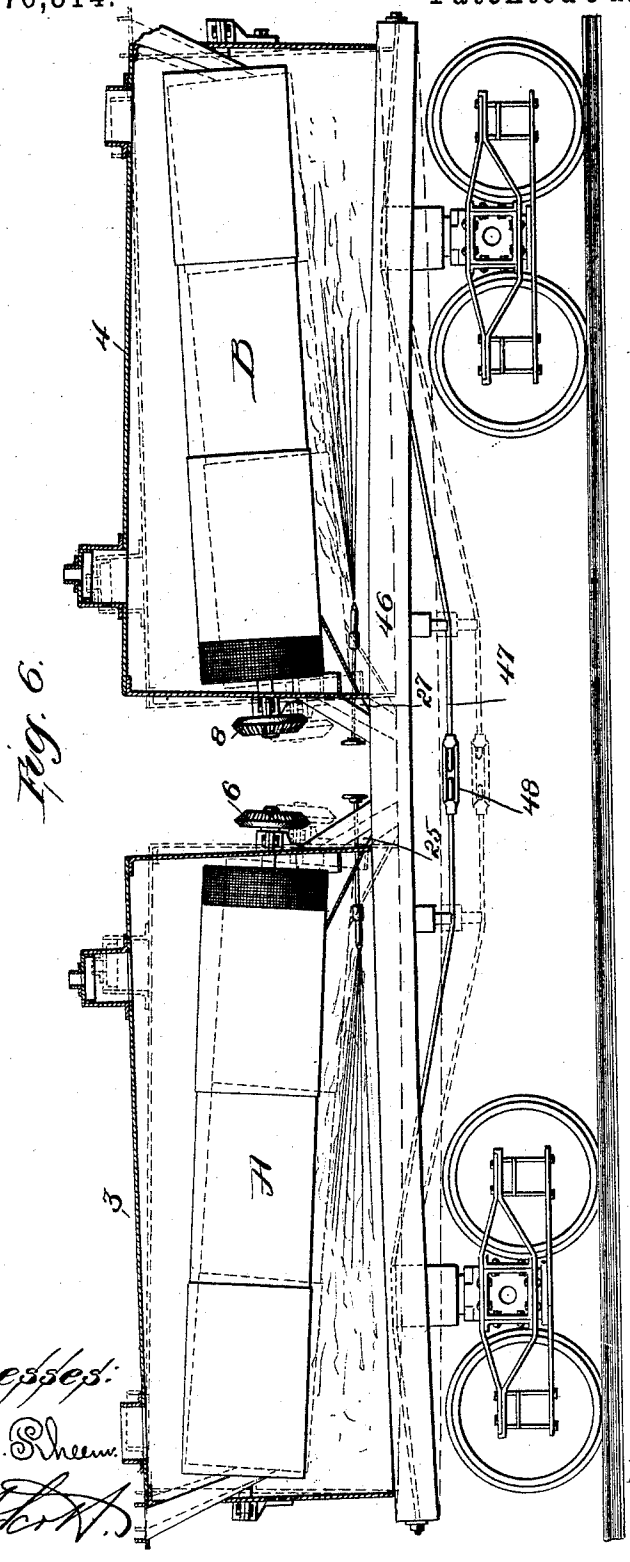

Fig. 6.

Witnesses:
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Wm. F. Gerhard.

Inventor:
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Attys

UNITED STATES PATENT OFFICE.

AMOS H. PERKINS, OF CHICAGO, ILLINOIS, ASSIGNOR TO THE WESTERN PAVING AND SUPPLY COMPANY, OF ILLINOIS.

ASPHALT-PAVING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 476,814, dated June 14, 1892.

Application filed February 13, 1892. Serial No. 421,424. (No model.)

To all whom it may concern:

Be it known that I, AMOS H. PERKINS, a citizen of the United States, residing in Chicago, county of Cook, and State of Illinois, have invented certain new and useful Improvements in Asphalt-Paving Apparatus, of which the following is a specification, reference being had to the accompanying drawings.

In the preparation of the mixture of sand and asphalt, which is used for paving and similar purposes, it is necessary that the sand should not only be perfectly dry, so that the asphalt may adhere thereto, but that the temperature of the sand and asphalt should be uniform, for the reason that excessive temperature produces hardness and brittleness in the asphalt, and too low a temperature makes it impossible to properly incorporate the sand with the asphalt.

It is the purpose of the apparatus herein shown and described to provide for such a steady and uninterrupted carrying forward of the process as shall result in a uniform mixture of proper consistency.

It is a further purpose of the apparatus to economize in labor and to make the operation as nearly automatic as possible.

As it is necessary to move the apparatus from time to time, I have provided for making it portable as to all its machinery, so that it may be readily transferred and set up.

In the drawings, Figure 1 is plan showing the general arrangement of the apparatus. Fig. 2 is an end elevation, some of the apparatus, however, being shown in section. Fig. 3 is a detail on a larger scale showing the measuring-hopper and a part of the sand-receiving hopper. Fig. 3ª shows the sand-receiving hopper as seen from the top. Fig. 4 is an end elevation of a part of the sand conveyer and drier. Fig. 5 is a view from above of a portion of the latter; and Fig. 6 is a side elevation of the car carrying the sand-drying drums, the outer shell protecting them being sectioned in order to show the interior.

2, Figs. 1 and 2, is a car-body, upon which are mounted, facing each other, two sand-driers 3 and 4, each sand-drier being provided with drums A and B, &c., (*vide* Fig. 6,) of the ordinary inclined-cylinder type, whose positions correspond to that of their respective driving-shafts 5, 6, 7, and 8. All four drums are driven by a single shaft 9, which receives its power from the engine 10 through the belt 11. The said engine is placed upon a car 12 adjacent to the car 2, upon which is also located the boiler 13, which supplies steam to the engine. The shaft 9 carries beveled pinions 14 and 15, which drive the shafts 7 and 8, respectively, and it also carries a sprocket and chain wheel 16, the latter driving a chain 17, which transmits power to the shaft 18, and the latter shaft, by means of bevel-gearing, drives the second pair of drum-shafts 5 and 6. At the outer end of each drier is mounted a conveyer 19 and 20, respectively, which receives motion from the sand-drum and serves to deliver a regulated quantity of sand to each of the four drums.

Sand is supplied to the conveyers through screens 21 and 22, situated at the lower ends of the conveyers, and passes through the openings 23 and 23 in the bottom of the conveyer-trough, and passes thence through the drums and through the spouts 24, 25, 26, and 27 at their inner ends, (shown in dotted outline in Fig. 1,) two of the spouts being also shown in elevation in Fig. 2. Thence it passes to a receptacle 28, whence it is taken by a conveyer 29, Fig. 2, to a hopper 30. The latter is supported at an elevation upon a suitable framework, and has connected with it at its bottom a measuring-hopper 31. (Shown on a larger scale in Fig. 3.)

In order to provide for sufficient capacity without undue length and to insure the perfect filling of the measuring-hopper at each charge, the measuring-hopper is enlarged in diameter across the center and tapers gradually each way above and below. It is provided at its top and bottom openings with slides 32 and 33, respectively, and the slides are connected by a pivoted lever 34. The slides 32 and 33 are thus connected so as to move simultaneously, and each is provided with openings 35 36, so located that they coincide with the openings leading to and from the hopper, respectively, in alternation, one opening being closed before the other begins to open. Instead of having openings, the slides 32 and 33 may be made of such a length as to permit of their being withdrawn alter-

nately, their action being the same in either instance.

The bottom of the receptacle 28, as shown in Figs. 3 and 3ª, is provided with a diaphragm 28ª, having near its margin holes 28ᵇ. The center of the diaphragm 28ª is imperforate and the sand is taken from the outer part of the receptacle at several points. The temperature of the sand is thus kept much more uniform, as the interior of the mass being continually surrounded with fresh hot sand cannot lose its heat, and the outer portion, whether the receptacle be full or nearly empty, does not remain long enough to become materially cooled. To further secure uniformity in the heat of the sand, I provide for changing the speed of its passage through the inclined drums in the manner indicated in Fig. 6, the drums being located, as before described, upon the platform of a car and impose a weight upon the center thereof quite sufficient to flex the timbers 46, if unsupported. I utilize the truss-rod 47, running longitudinally under the car, to adjust the height of the center thereof by means of the turnbuckle 48.

The drums are so constructed that their inclination is suitable for the ordinary conditions of working when the truss-rod 47 is tightened to a moderate degree, as shown in full lines; but if the sand is passing too slowly through the drums and becomes more heated than is necessary or desirable the truss-rod may be slackened by unscrewing the turnbuckle 48, and the flexure of the car-body will allow the inner ends of the drums to settle sufficiently to increase the speed of the sand in passing through. By varying the degree of inclination the temperature of the sand can be more closely regulated than by any amount of care that may be used in regulating the heat under the drums. As the driving-gear and housing of the drums are all supported on the same platform, no derangement of their action arises from the movement of the drum.

Referring to Fig. 2, the mixing-machine, which may be of any approved kind, is seen located immediately below the discharge-spout of the hopper 31. It is driven by a shaft 38 upon the car which carries the sand-driers, a belt 39 making the connection between the mixer and the shaft. The asphalt-melting-tanks 40 (see also Fig. 1) are located at one side of and immediately adjacent to the asphalt-mixer, and an overhead trolley 41, running on a track extending over the melting tanks and carrying a ladle 42, conveys melted asphalt to the mixer. The latter is located at such a height as to permit the passage of a wagon or other vehicle beneath it. A measured quantity of asphalt and sand being introduced into the mixer and properly commingled may then be dumped from the mixer into the vehicle below. The conveyer 29 is most conveniently operated by a belt 43, which passes over pulley 44 at the top of the conveyer, and a small pulley 45 upon the mixer at the end opposite belt 39.

By the construction and arrangement of apparatus herein described the amount of hand-labor employed is reduced to a minimum and the process is made practically continuous, the sand being automatically fed to and through the driers and stored in the reservoir by a regular and uninterrupted movement. Its temperature is thus made uniform and it is not subjected to irregular exposures to the atmosphere, as it is supplied in regular quantities almost instantaneously to the mixer. No time is given for it or the melted asphalt to cool before it is mixed and the resulting product is thus much more uniform in texture and more homogeneous than where hand-labor is depended upon for doing the work. A saving is also effected in the quantity of labor necessary for producing a given output.

What I claim as new, and desire to secure by Letters Patent, is as follows:

1. In an asphalt-mixing apparatus, the combination of sand-drying drums, a motor for driving the same, a conveyer receiving motion from said drums, adapted to supply sand thereto, a conveyer adapted to move the sand discharged therefrom and deliver it to a storage-receptacle, and a measuring-hopper located below and connected with said storage-receptacle and provided with slides to alternately open and close the inlet and discharge passages of said measuring-hopper, substantially as described.

2. An asphalt-mixing apparatus consisting of sand-drying drums, a motor for driving the same, a conveyer receiving motion from said drums, adapted to supply sand thereto, a conveyer adapted to move the sand discharged therefrom and deliver it to a storage-receptacle, a measuring-hopper located below and connected with said storage-receptacle, a mixer below said measuring-hopper, a driving apparatus connecting said mixer with the motor driving the sand-drier, and means for supplying a measured quantity of asphalt to said mixer, all combined and operating substantially as described.

3. An asphalt-mixing apparatus consisting of sand-drying drums, a motor for driving the same, a conveyer receiving motion from said drums, adapted to supply sand thereto, a conveyer adapted to move the sand discharged therefrom and deliver it to a storage-receptacle, a measuring-hopper located below and connected with said storage-receptacle, a mixer below said measuring-hopper, a driving apparatus connecting said mixer with the motor driving the sand-drier, and means for supplying a measured quantity of asphalt to said mixer, said means consisting of a trolley supporting a measuring-ladle carried upon an overhead track extending from the mixer across the melting-tank, substantially as described.

4. The combination, in an asphalt-mixing

apparatus, of a receptacle for the heated sand, having a diaphragm near its bottom, said diaphragm being provided with perforations near its margin, and a measuring-hopper connected to the bottom of said receptacle below said diaphragm, substantially as and for the purpose described.

5. The combination, in an asphalt-mixing apparatus, of sand-drying drums and their driving-gear, a platform supporting said drums and gearing capable of flexure under the weight of the drums, and a truss-rod extending across the unsupported part of said platform and provided with a turnbuckle, whereby the flexure of said platform may be varied to adjust the inclination of said drums, substantially as and for the purpose described.

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