Oct. 14, 1958 W. M. MADSEN 2,856,106

MECHANISM FOR ASPHALT MIXING PLANTS AND THE LIKE

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Fig. 1.

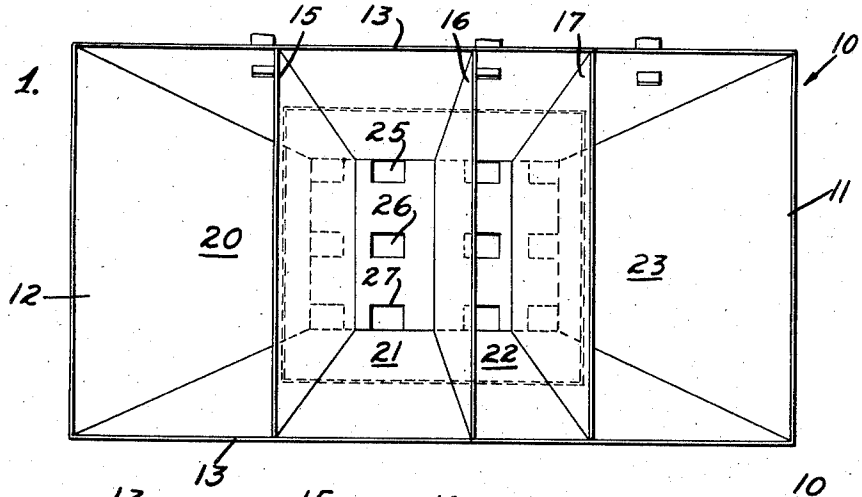


Fig. 2.

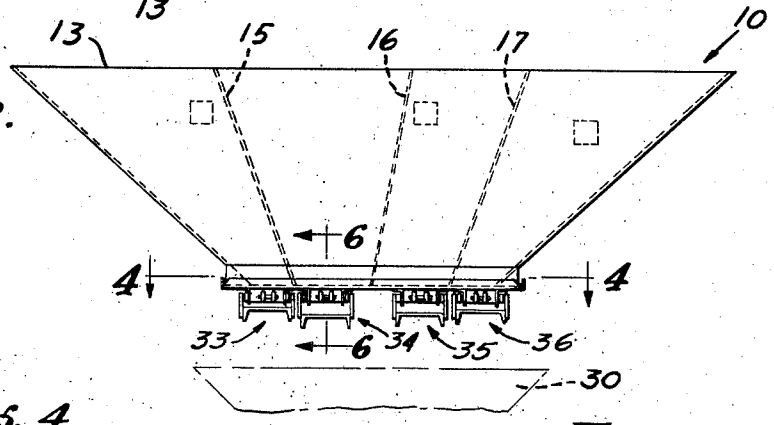


Fig. 4.

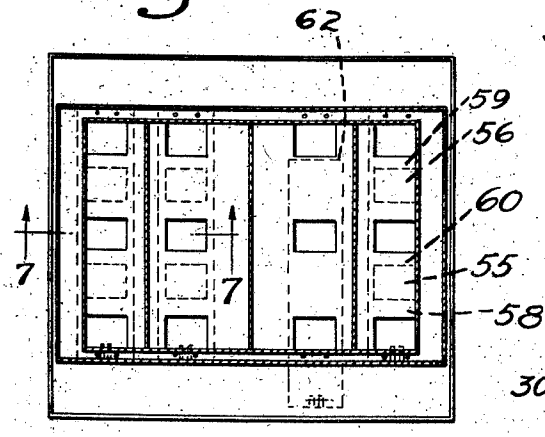
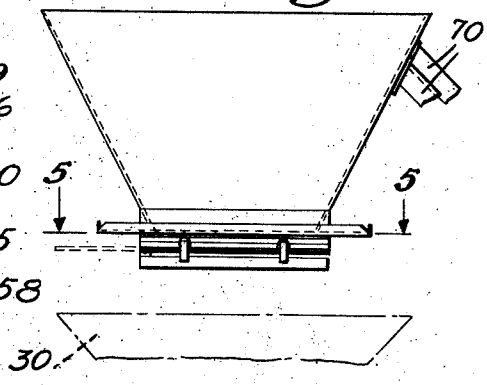


Fig. 3.



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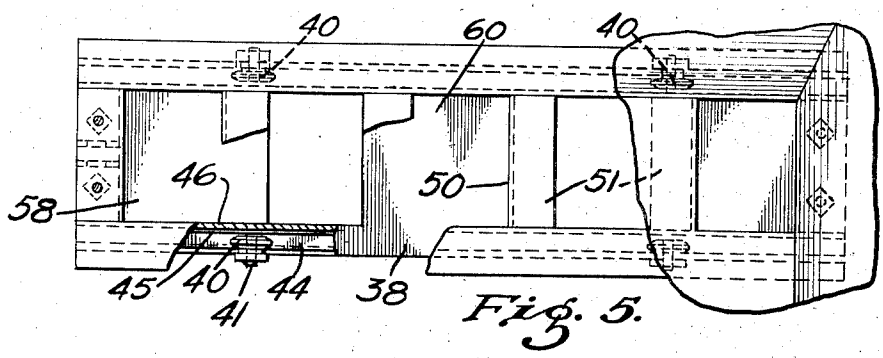


Fig. 5.

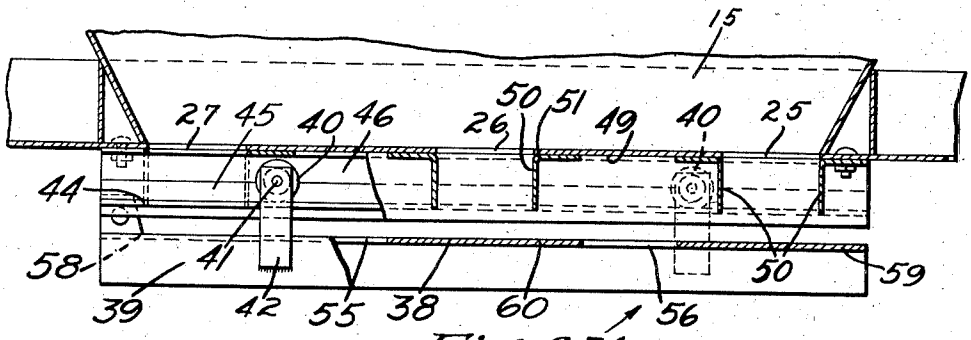


Fig. 6.

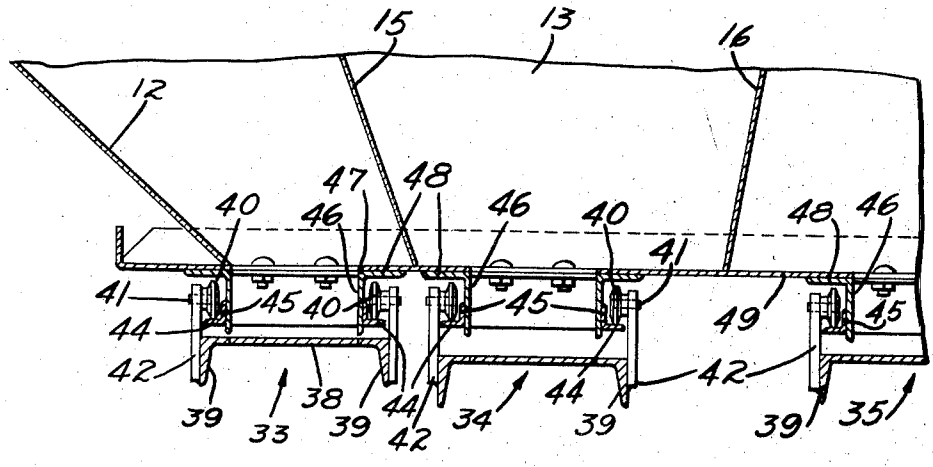


Fig. 7.

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MECHANISM FOR ASPHALT MIXING PLANTS AND THE LIKE

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Application September 28, 1953, Serial No. 382,533

3 Claims. (Cl. 222—485)

This invention relates generally to material mixing apparatus and relates more particularly to improvements in apparatus for mixing paving and road building material, etc.

While the invention has particular utility in connection with a batch-type mixing apparatus and is shown and described as embodied in such type of mixing apparatus, the use of said invention is not limited thereto.

Various such batch types of apparatus or plants employ a dryer for heating the rock and sand aggregates, a vibrating screen which screens the rock and sand into various grades and deposits the screened aggregates into bins of one or more compartments. This material is discharged from the various compartments of a bin into the weigh box. Such bins have tapered side walls tapering down to a narrow portion adjacent the bottom plate which contains a single gate aperture.

The aggregate which is screened into the bin segregates, that is, the coarser particles roll to the sides of the bin and the finer particles are more or less confined to the center of the compartment. Due to the fact that these aggregates are hot and dry and generally carry with them a substantial percentage of dust, the coarser materials along the side of the bin are inclined to become locked there due to the coarse rocks keying together with the finer particles of sand and dust falling into the cavities or interstices between said rocks.

This keying together of said rocks, coupled with the friction developed immediately adjacent to the bin wall, plus the effect of mechanical vibration occurring from the vibrating screen of the apparatus and general plant operation tend to cause a locking action at the bin wall contact with the result that the material in the center of the bin, vertical as it were to the gate opening, flows through the gate opening, leaving the other material against the bin walls dead.

Such coring out or draining of the center column of the bin storage negatives the above mentioned segregation of the materials. However, periodically, there is a rush of the stabilized aggregate adjacent to the bin walls which results in the discharge of a batch of primarily the larger particles which is also undesirable. Further in the operation of the plant, the aggregates require heating and any materials lying against the bin wall, particularly on a cool windy day, become cold and will not mix properly because they chill the viscous bitument with which they are mixed.

It is an object of the present invention to provide apparatus which will overcome the above described difficulties.

Another object of the invention is to provide apparatus of this character that is more efficient in effecting drainage of the bins.

Still another object of the invention is to provide apparatus of this character for effecting proper draining of the sides and center of the bin with each discharge of aggregate.

Directly beneath the bin is the above referred-to weigh

box for weighing the several sizes of aggregates contained in the compartments in the bin above said box and it is another object of the invention to provide apparatus of the present character which will fill the weighing batcher or weigh box, as it is called, so that the upper level of the material discharged in said box is more level with a minimum of peaks and valleys.

Still another object of the invention is to provide apparatus of this character which makes it possible for the bin to yield a greater volume of material than in previous types of bins.

A further object of the invention is to provide apparatus of this character that is relatively simple in construction and effective in operation.

Other objects and advantages of the invention will appear in the following part of the specification.

Referring to the drawings, which are for illustrative purposes only,

Fig. 1 is a plan view of apparatus embodying the present invention;

Fig. 2 is a side elevation of the same;

Fig. 3 is an end view of such apparatus;

Fig. 4 is a sectional view taken on line 4—4 of Fig. 2;

Fig. 5 is an enlarged sectional view taken on line 5—5 of Fig. 3;

Fig. 6 is an enlarged section taken on line 6—6 of Fig. 2; and

Fig. 7 is an enlarged section taken on line 7—7 of Fig. 4.

Referring more particularly to the drawings, there is shown a bin 10 for aggregates which are used in the asphalt mixing plants. The bin comprises end members 11 and 12 and side members 13. The bin tapers downwardly and is provided with a plurality of transverse partitions 15, 16 and 17 which divide said bin into a plurality of compartments indicated generally at 20, 21, 22 and 23. Each compartment is of smaller cross sectional size at the bottom than at the top and each is provided with a plurality of discharge openings 25, 26 and 27 located for discharge into a weight box 30 disposed beneath the bin, said openings 25, 26 and 27 being spaced apart laterally and laterally aligned.

The openings 25, 26 and 27 of each compartment are controlled by a gate, there being gates 33, 34, 35 and 36 for the respective compartments 20, 21, 22 and 23. The gates are similarly constructed so that but one will be described, for example gate 33.

The gate comprises a channel member having a body portion 38 which extends transversely of the bin 20 and has lonigtudinally extending depending flanges 39 along the respective side edges. Each side of the gate is provided with a plurality of rollers 40 spaced apart longitudinally of the gate. As shown in Figs. 5, 6 and 7, each side is provided with two rollers and each roller is rotatably mounted on a shaft 41 secured in the free or upper end of a supporting member 42, the lower ends of said members 42 being secured to the flanges 39 by any suitable means such as, for example, welding or brazing. The rollers 40 are adapted to travel on tracks 44 which are arranged horizontally and which have upstanding flanges 45 secured to depending sides 46 of angle irons 47 extending transversely of the bin. These angle members include sides 48 which are secured to the bottom 49 of the bin by any suitable means such as, for example, welding or the like. It is to be noted that the tracks, which have the sides 44 and 45, also are angle members. The sides 46 of the angle members 47 form sides of chutes for the respective openings 25, 26 and 27, the other sides of said chutes being defined by the depending sides 50 of angle pieces 51 which are suitably secured to the bottom 49 of the bin and which extend transversely between the angle members 47 of the respective com-

partments. The body portion 38 of the gate 33 is spaced downwardly, as shown in the drawings, from the lower or free ends of the chutes of the openings 25, 26 and 27. The amount of spacing of the gate from the adjacent ends of the chutes for said openings is determined by the size of the material to be handled by the particular compartment. Where the material is relatively fine, the gate body is located closer to the lower ends of the chutes than where the material is composed of larger pieces in which case the spacing is greater, as best shown in connection with gates 34 and 35 in Fig. 7. The gate body 38 is provided with a pair of openings 55 and 56 which are spaced apart longitudinally with respect to the gate and there are solid portions 58 and 59 at the respective ends of said gate and an intermediate solid portion 60 between the openings 55 and 56. When the gate is in the closed position, the portions 58, 59 and 60 are disposed beneath the chutes of the respective openings 27, 25 and 26. When the gate is in the open position, the holes 55 and 56 are in register with the openings 27, and 26 to permit the flow of material therethrough. With the gate in this position, the trailing end 62 (Fig. 4) has been moved past the chute of the opening 25 so that material may flow therefrom simultaneously with the flow of material from the openings 26 and 27.

Overflow chutes 70 (Fig. 3) may be provided, said overflow chutes being of known character.

I claim:

1. In apparatus for mixing paving material and the like: a bin having a compartment defined by side and end walls tapering inwardly toward the bottom of said compartment and a bottom wall extending across the lower ends of said side and end walls, said bottom wall having a first discharge opening adjacent the center thereof spaced from the lower ends of said side walls and second discharge openings laterally spaced on opposite sides of said first discharge opening with said discharge openings being aligned across the bottom of the compartment, each of said second discharge openings having one side thereof aligned with the juncture of one side wall and said bottom wall to permit free unobstructed flow of material along the inclined side walls of said compartment through the second discharge openings, a gate for controlling discharge of material from said compartment through said openings, means mounting said gate parallel to said bottom wall to be movable from a first position blocking material flow through openings to a second position for discharge of material, said gate having longitudinally spaced openings therein with solid portions at each end of said gate and between the openings of the gate, said solid portions being disposed beneath said discharge openings in said first position of said gate and the gate opening being disposed beneath said discharge openings in said second position of said gate.

2. In apparatus for mixing paving material and the like: a bin having a compartment defined by side and end walls tapering inwardly toward the bottom of said compartment and a bottom wall extending across the lower ends of said side and end walls, said bottom wall having a first discharge opening adjacent the center thereof spaced from the lower ends of said side walls and second discharge openings laterally spaced on opposite sides of said first discharge opening with said discharge openings being aligned across the bottom of the compartment, each of said second discharge openings having one side thereof aligned with the juncture of one side wall and said bottom wall to permit free unobstructed flow of material along the inclined side walls of said compartment through the second discharge openings, a gate for controlling discharge of material from said compartment through said openings, said gate having a width greater than the width of said discharge openings and having longitudinally spaced openings therein with solid portions at each end of said gate and between the openings of the gate, means mounting said gate parallel to and spaced beneath said bottom wall to be movable from a first position blocking material flow through said openings to a second position for discharge of material, said solid portions being spaced beneath said discharge openings in said first position of said gate whereby material within said compartment will flow through said discharge openings onto said solid portions to bridge the space between said gate and said discharge openings to block further material flow, said gate in said second position having the gate openings disposed beneath said discharge openings.

3. In apparatus for mixing paving material and the like: a bin having a compartment defined by side and end walls tapering inwardly toward the bottom of said compartment and a bottom wall extending across the lower ends of said side and end walls, said bottom wall having a first discharge opening adjacent the center thereof spaced from the lower ends of said side walls and second discharge openings laterally spaced on opposite sides of said first discharge opening with said discharge openings being aligned across the bottom of the compartment, each of said second discharge openings having one side thereof aligned with the juncture of one side wall and said bottom wall to permit free unobstructed flow of material along the inclined side walls of said compartment through the second discharge openings, means defining a discharge chute beneath said bottom wall for each of said discharge openings, said chutes having open lower ends in a plane substantially parallel with said bottom wall, a gate for controlling discharge of material from said compartment through said chutes, said gate having a width greater than the width of said discharge openings and having lonigtudinally spaced openings therein with solid portions at each end of said gate and between the openings of the gate, means mounting said gate parallel to and spaced beneath the open lower ends of said chutes to be movable from a first position blocking material flow through said chutes to a second position for discharge of material, said solid portions being spaced beneath the lower ends of said chutes in said first position of said gate where material within said compartment will flow through said chutes onto said solid portions to bridge the space between said gate and the lower ends of said chutes to block further material flow, said gate in said second position having the gate openings disposed beneath the lower ends of said chutes.

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