Jan. 18, 1938. G. J. KUHRTS, JR 2,106,008

PORTABLE PAVING PLANT

Filed Dec. 24, 1934 3 Sheets-Sheet 1

FIG. 1.

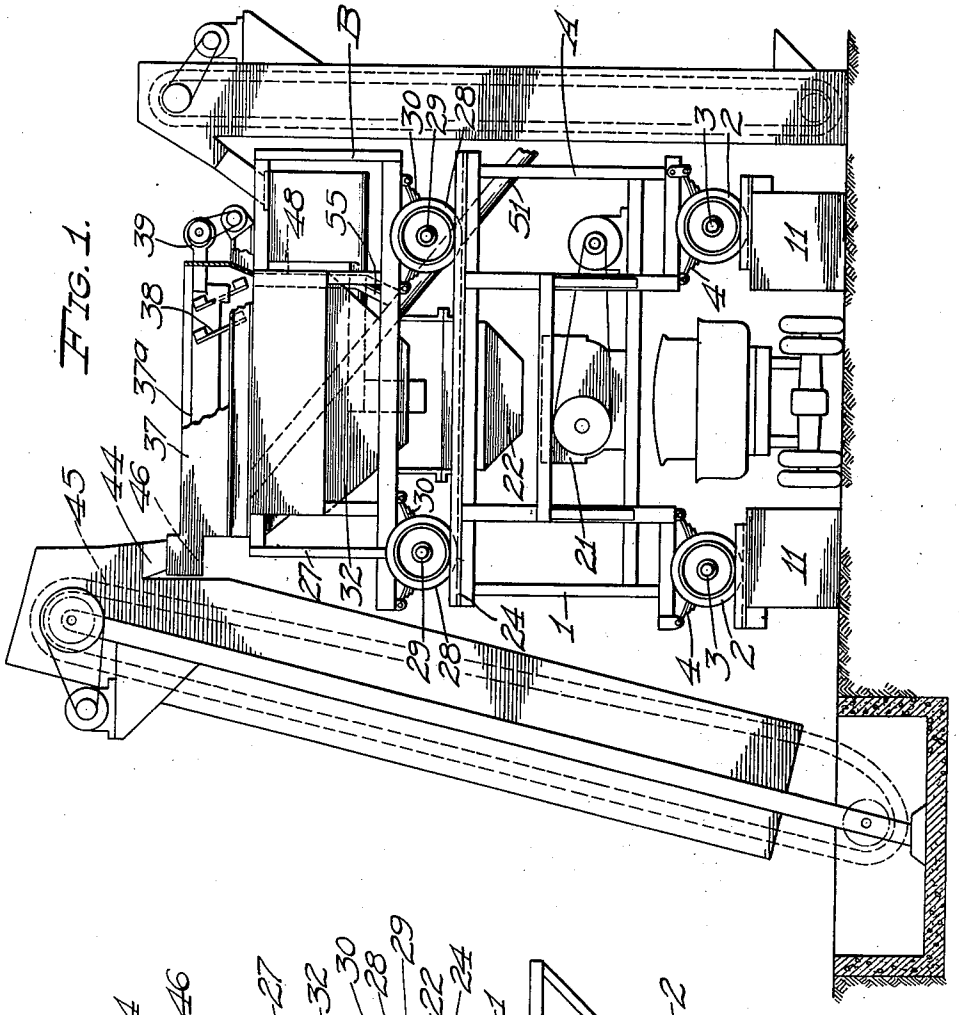
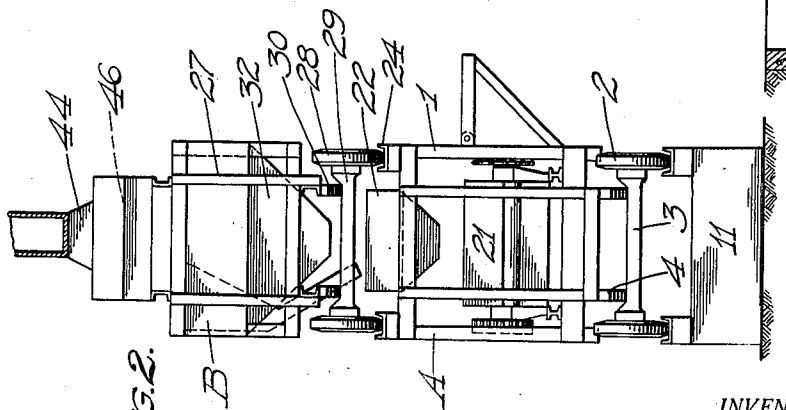


FIG. 2.



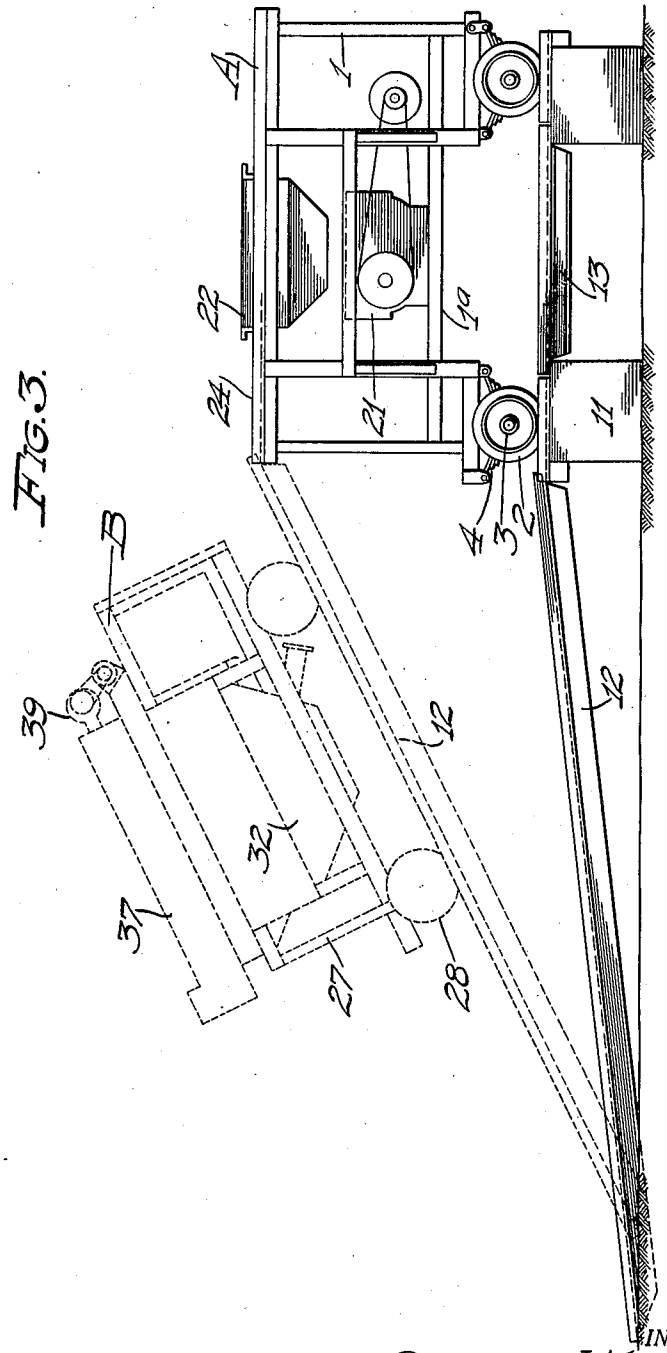
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FIG. 3.



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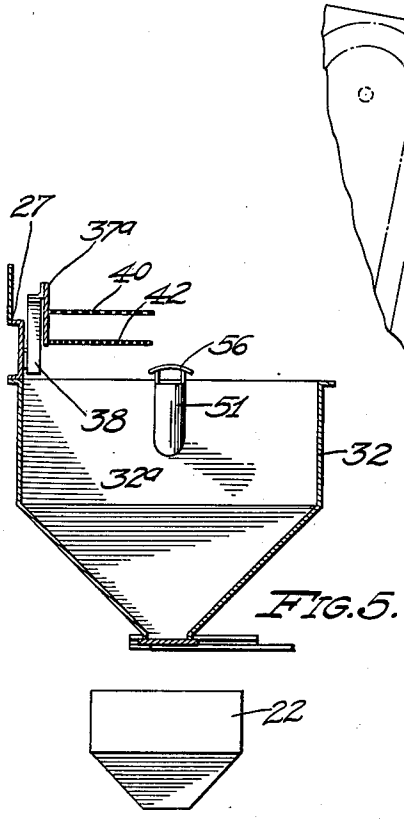


FIG. 5.

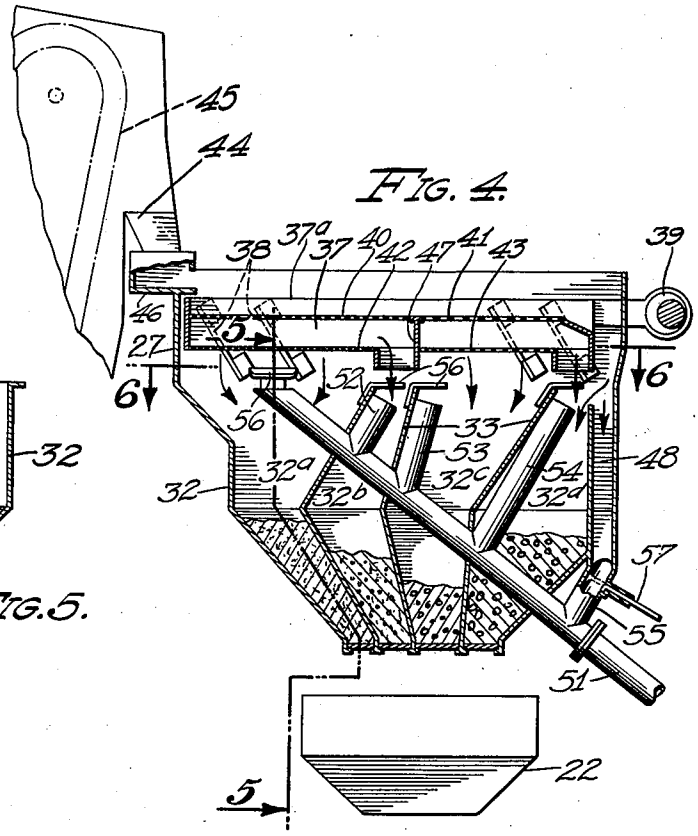


FIG. 4.

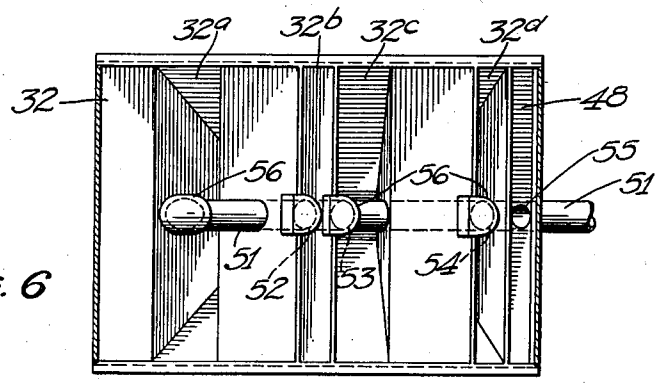


FIG. 6

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UNITED STATES PATENT OFFICE

2,106,008

PORTABLE PAVING PLANT

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Application December 24, 1934, Serial No. 758,954

15 Claims. (Cl. 94—41)

My present invention relates to improvements in portable paving plants, particularly as disclosed in my copending application for a similar structure, Serial No. 428,428.

The objects of my improvements are:

First, to provide a portable paving plant which may be easily and economically conveyed from place to place in a dismantled or knocked-down condition and quickly and easily assembled or put up with the least amount of effort and equipment;

Second, to provide a paving machine having a multiplicity of aggregate-containing bins and a novel, simple and economical overflow means in connection with some or all of said bins, for diverting the overflow therefrom;

Third, to provide a machine of this class having very simple and economical means for diverting some of the aggregate into another bin or channel;

Fourth, to provide a paving machine in which the aggregate to be screened is discharged on to a receiving and distributing plate and therefrom on to the screen, thus more evenly distributing the aggregate over the screen and protecting the screen against rapid or unusual wear;

Fifth, to provide as a whole a novelly constructed paving plant and one which is simple and economical of construction and operation, and which will not readily get out of order.

With the above objects in view, I have devised a paving plant having certain novel features of construction, as will be hereinafter described in detail and particularly set forth in the appended claims, reference being had to the accompanying drawings which form a part of this application, and to like characters of reference designating similar parts on the several views of the drawings, in which:

Fig. 1 is an elevational view taken from the operators' side thereof, showing the relative position of a dump truck for receiving a batch of the mixed material;

Fig. 2 is an end elevational view thereof with parts broken away to facilitate the illustration;

Fig. 3 is a side elevational view of my plant in the process of assembling;

Fig. 4 is an enlarged side elevational view of the storage bins, screens, oversize means, overflow means, and associated parts;

Fig. 5 is a sectional elevational view thereof taken through 5—5 of Fig. 4; and,

Fig. 6 is a sectional view thereof in plan taken at 6—6 of Fig. 4.

My paving plant, as illustrated in the drawings, consists of a normally lower paving plant unit A and a normally upper paving plant unit B, each of which is adapted to be conveyed separately from place to place, and, when set up, are superimposed for cooperative use.

The lower unit is enclosed by and supported on a frame 1, of rectangular shape, which is mounted on pairs of rubber vehicle wheels 2 near the opposite ends thereof. The wheels are mounted on axles 3 having vehicle springs 4 upon which the frame is mounted, providing a structure whereby the unit may be easily drawn over the road bed.

When in operation the wheels 2 of the unit A are supported on pedestals 11, there being provided one for each pair of front and rear wheels, the pedestals extending transversely of the machine. The unit A is drawn into place on the pedestals by a skid 12 which comprises a pair of long channels laterally spaced but rigidly secured together, forming tracks extending on an incline from the ground to the first pedestal. The space between the pedestal is bridged by a suitable truss track 13, which is removed when the unit A is in place.

The frame 1 is arched between the pairs of front and rear wheels, as indicated by 1a, to provide ample clearance space for the passage of a dump truck transversely with respect to the unit A.

Such construction of the unit A provides a relatively low structure which may be readily conveyed from place to place.

On the unit A is a concrete or asphalt mixer 21 having its discharge immediately at the top of the arch for readily discharging the contents of the mixer into the body of the truck below. Above the mixer is located the weigh-hopper 22 which is carried for convenience, and during transportation, by the frame 1, but attached to or suspended from a weighing apparatus 23 carried by the frame 27 of the upper unit B.

The frame 1 is provided with upwardly directed channels 24 at the opposite sides of the upper end, forming spaced tracks extending longitudinally with respect to the frame and its supporting wheels.

The frame 27, of the unit B, is also supported on vehicle wheels 28. These wheels are mounted on axles 29 having vehicle springs 30 upon which the frame 27 is mounted. Such mounting of the unit B also provides a structure which may be easily drawn over the road bed.

It will be here noted that the wheels of both units are preferably so mounted that the units may be readily directed around curves.

In order to mount the unit B on the unit A, the skid 12 is mounted to extend diagonally from the ground to the channels 24, as shown by dotted lines in Fig. 3. The unit B is then run up the inclined runway to the top of the unit A and anchored in place as shown in Figs. 1 and 2.

On the frame 27 is mounted a multiple bin 32 which is divided transversely by walls 33 into a plurality of separate bins, 32*a*, 32*b*, 32*c*, and 32*d*, each of which is adapted to contain different size aggregate. The lower ends of the bins are provided with gates, which may be either manually or automatically controlled for discharging the aggregate directly into the weigh hopper. At the upper end of the frame 27 is mounted a screen apparatus 37. This screen is enclosed in a frame 37*a* resiliently supported on diagonal leaf springs 38 mounted on the frame 31. The screen frame is horizontally reciprocated by an eccentric 39. In the screen frame are different-mesh horizontal screens 40, 41, 42, and 43. The screens 40 and 41 are in the same plane at the upper portion of the frame, the former being of finer mesh than the latter. Spaced below these screens are respectively the screens 42 and 43, the former being of smaller mesh than the screen 40, and the latter being of larger mesh than the screen 40 but smaller than the screen 41. Unscreened aggregate is supplied to the chute 44 by a conveyor 45 from the lower end of the plant and discharged on to a receiving and distributing plate 46. From the plate 46 the aggregate is delivered to the screen 40, the fines dropping to the screen 42. The finest aggregate passes through the screen 42 into the bin 32*a*, while that which does not pass therethrough is directed to the far end of the screen 42, from which it drops into the bin 32*b*. A plate 47 is directed downwardly from and between the screen 40 and 41 and extends adjacent the top of the wall 33 dividing the bins 32*b* and 32*c*. The finer aggregate delivered to the screen 41 drops to the screen 43, the finer dropping through the screen into the bin 32*c* and the coarser passing to the end of the screen and dropping into the bin 32*d*.

At the far end of the screen is a chute 48 for receiving the oversize aggregate passing to and dropping from the far end of the coarsest screen 41, that is, aggregate which does not pass through the screen. This oversize aggregate is diverted or directed to the side of the machine.

To reduce to a minimum the necessary attention to be given to the efficient operation of the plant, I have provided an efficient and economical overflow means which consists of a long large pipe 51 and a plurality of short pipes 52, 53, 54, and 55. The pipe 51 extends from the middle portion of the upper end of the bin 32*a* diagonally through all bins to the outer side and lower end of the opposite end bin 32*d*. The pipes 52, 53, and 54 extend respectively from the middle portions of the upper ends of the bins 32*b*, 32*c*, and 32*d* diagonally backwardly and are connected at their lower ends to the main pipe 51. These pipes are placed at an angle so as to ease the discharge of the overflow aggregate into these overflow pipes. The upper ends of these pipes are preferably provided with hoods or guards 56, or similar means, to prevent screened aggregate falling thereinto directly from the screens.

The pipe 55 connects the lower end of the oversize aggregate chute 48 with the overflow pipe 51 so that all discarded aggregate is diverted in one direction. In this pipe 55 is a manually operated gate 57 which may be closed whereby the oversize chute may be filled and the overflow therefrom discharged directly into the bin 32*d*. Thus the oversize aggregate may be utilized when desired.

Other portions of my apparatus, although shown in the drawings, comprise no part of this invention and are therefore not described. And though I have shown and described a particular construction of my paving plant, I do not wish to be limited to the same, but desire to include in the scope of my invention the construction, combination and arrangement substantially as set forth in the following claims.

I claim:

1. In a paving plant, a plurality of adjacently positioned aggregate bins, means for delivering different size aggregate to the separte bins, and an overflow pipe having a plurality of branches, each branch being open at its upper end and extending to the upper portion of a separate bin.

2. In a paving plant, a plurality of adjacently positioned aggregate bins, means for delivering different size aggregate to the separate bins, and an overflow pipe open at the upper end and extending from the upper portion of one end bin diagonally downwardly through the other bins and discharging at the outer side of the other end bin, and branch overflow pipes open at their upper ends and extending from the upper portions of the other bins, positioned to one side of the first end bin, downwardly in the opposite angular direction and each branch overflow pipe discharging into the first overflow pipe.

3. In a paving plant, a plurality of adjacently positioned aggregate bins, a multiple screen for delivering different size screened aggregate to the separate bins, an oversize aggregate chute positioned adjacent a coarse aggregate bin and at one end of the screen for receiving aggregate not passing through the screen, an overflow pipe having a plurality of branches, each branch being open at its upper end and extending to the upper portion of a separate bin, said chute connecting with said pipe, and a gate for said chute, the overflow of said chute, when said gate is closed, discharging into said coarse aggregate bin.

4. In a paving plant, a plurality of adjacently positioned aggregate bins, a multiple screen for delivering different size screened aggregate to the separate bins, an oversize aggregate chute positioned adjacent a coarse aggregate bin and at one end of the screen for receiving aggregate not passing through the screen, an overflow pipe open at the upper end and extending from the upper portion of one end bin diagonally downwardly through the other bins and discharging at the outer side of the other end bin, and branch overflow pipes open at their upper ends and extending from the upper portions of the other bins, positioned to one side of the first end bin, and each branch overflow pipe and said chute discharging into the first overflow pipe, and a gate for said chute, the overflow of said chute, when said gate is closed, discharging into said coarse aggregate bin.

5. In a paving plant, a plurality of aggregate bins, means for delivering different size aggregate to the separate bins, an inclined overflow pipe for one bin, and other inclined overflow pipes for the other bins and all of the latter pipes connected to the first pipe, each being open at the upper end and inclined downwardly, one extending from the upper portion of each bin.

6. In a paving plant, a plurality of adjacently positioned aggregate bins, a multiple screen for receiving aggregate and delivering portions there-

of in different sizes to the separate bins, an overflow pipe for each bin, and a guard for the upper end of each pipe to deflect aggregate falling from the screen.

7. In a paving plant, an aggregate bin, means for delivering aggregate to the upper portion thereof, and a gradually inclined overflow pipe open at its inclined upper end and extending with said end from the upper portion of the bin at an angle downwardly and outwardly from the bin.

8. In a paving plant, an aggregate bin, means for delivering aggregate to the upper portion thereof, and an overflow pipe open at one end and extending downwardly therefrom and to one side of the lower portion of the bin.

9. In a portable paving plant, a paving plant unit of a height to allow normally free passage over conventional highways, said unit having an arch at the lower portion, said arch being of less than the normal height to allow passage of a conventional dump truck therethrough, and a foundation structure for supporting the opposite sides of the arch at a height sufficient to allow the free passage of said truck under said arch.

10. In a portable paving plant, a paving plant unit having an arch at the lower portion, said arch being of less than the normal height to allow free passage of a dump truck therethrough, a plurality of pedestals, a temporary bridge for spanning the pedestals, and a track skid for running the unit from the ground upon said pedestals and over said bridge, the height of said arch above the ground, when said unit is raised on said pedestals, being sufficient to allow free passage of said truck.

11. In a portable paving plant, a paving plant unit of a height to allow normally free passage over conventional highways, transporting wheels for the unit, said unit having an arch at the lower portion between said wheels, said arch being of less than the normal height to allow free passage of a dump truck therethrough, a plurality of pedestals, a temporary bridge for spanning the pedestals, and a track skid for running the unit from the ground upon said pedestals and over said bridge, the height of said arch above the ground, when said unit is raised on said pedestals, being sufficient to allow free passage of said truck.

12. In a portable paving plant, a pair of separate cooperating paving plant units adapted to be superposed one above the other for cooperative use, the height of each unit being such as to allow normally free passage of each unit separately over conventional highways, the normally lower unit having an arch at the lower portion, said arch being of less than the normal height to allow free passage of a dump truck therethrough, a plurality of pedestals, a temporary bridge for spanning the pedestals, and a track skid for running the lower unit from the ground upon said pedestals and over said bridge, the height of said arch above the ground, when said lower unit is raised on said pedestals, being sufficient to allow free passage of said truck, said track being also capable of extending from the ground to the top of the lower unit for raising the other unit onto the lower unit.

13. The herein described method of erecting a portable paving plant unit having an arch at the lower portion, said arch being of less than the normal height to allow free passage of a dump truck therethrough, said method consisting in spanning the top of the pedestals with a temporary bridge, running the unit over an inclined track skid upon the nearest pedestal and over said bridge to and upon the other pedestal, then removing the bridge to provide an arched passageway between the pedestals and under said arch of sufficient height to allow free passage of said truck.

14. In a paving plant, an aggregate bin, a screen for delivering aggregate to said bin, an oversize aggregate chute positioned adjacent said bin and at one end of the screen for receiving aggregate not passing through the screen, an overflow pipe extending from the upper portion of said bin, said chute connecting with said pipe, and a gate for said chute, the overflow from said chute, when said gate is closed, discharging into said bin.

15. In a paving plant, an aggregate bin, a screen for delivering aggregate into the upper end of the bin, an overflow pipe with the upper end open and extending downwardly from the upper portion of the bin, and a guard for the upper open end of the pipe to deflect to the side of the pipe aggregate falling from the screen.

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