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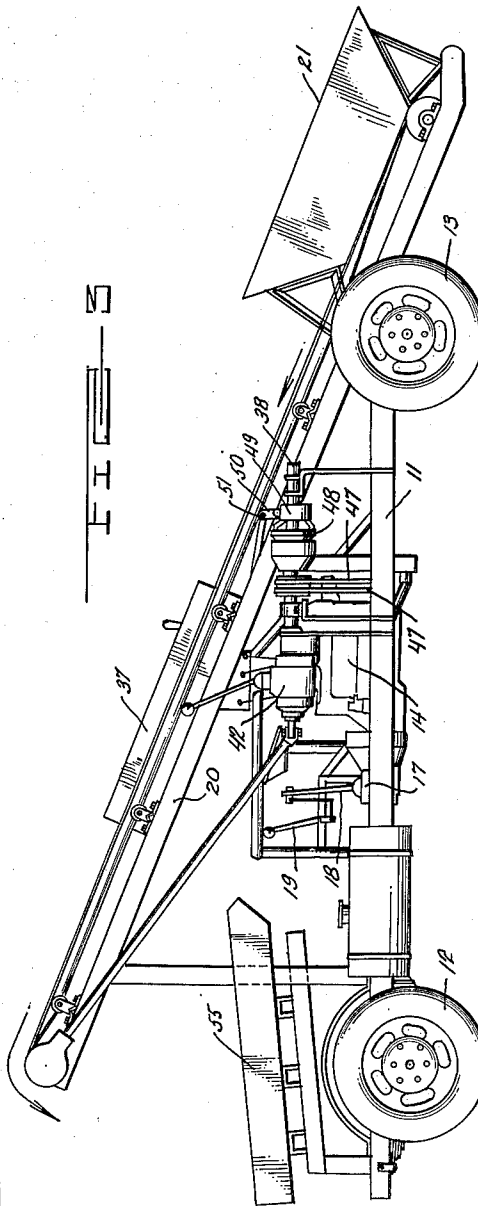
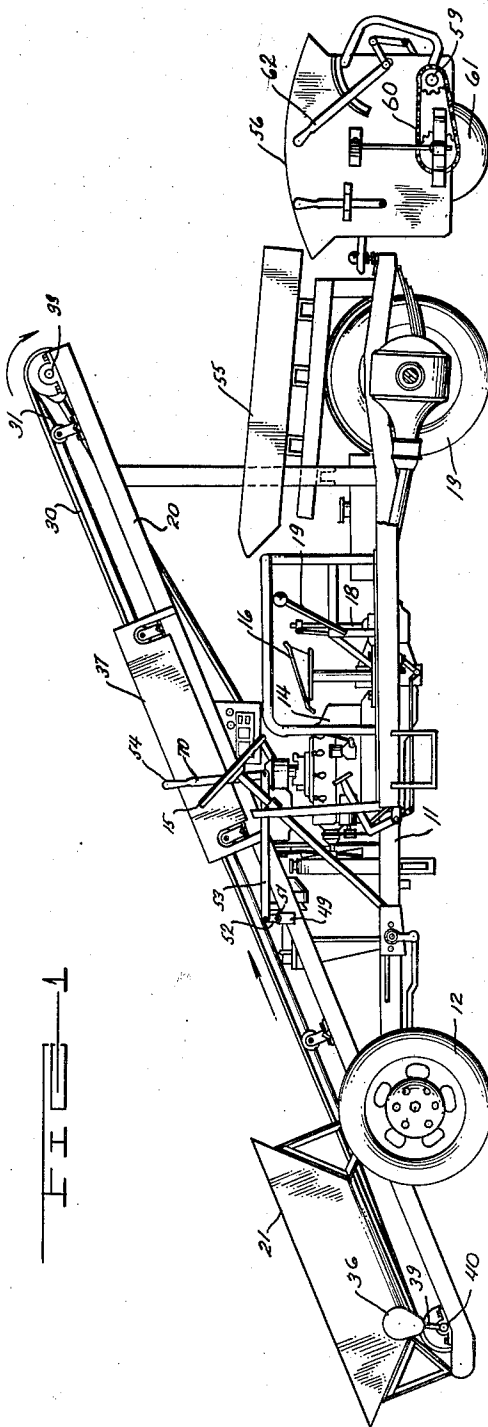
C. L. STODOLKA ET AL

2,600,588

AGGREGATE RECEIVING AND CONVEYING MACHINE

Filed July 8, 1949

2 SHEETS—SHEET 1



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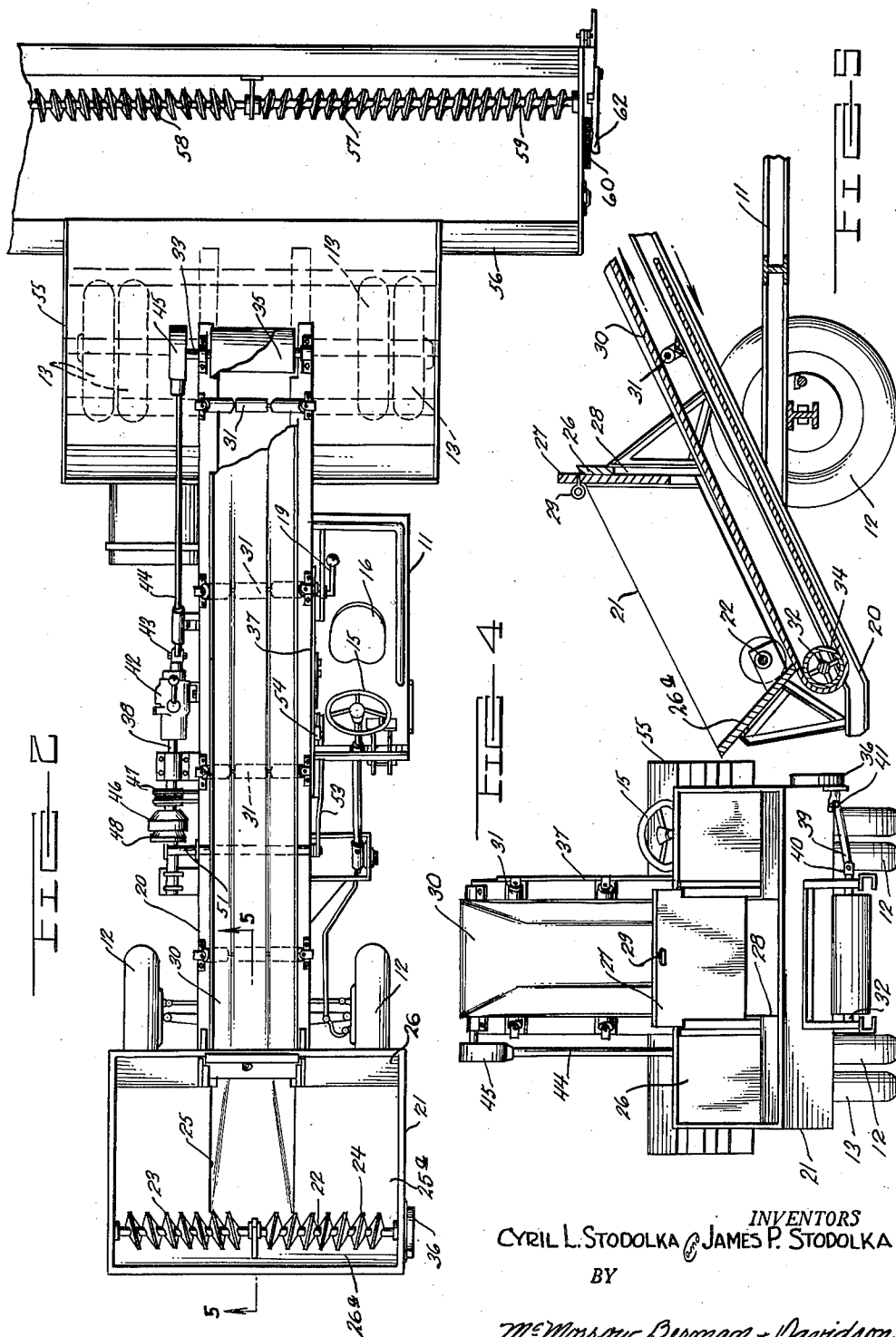
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UNITED STATES PATENT OFFICE

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AGGREGATE RECEIVING AND CONVEYING MACHINE

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3 Claims. (Cl. 198—233)

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This invention relates to machines for spreading or distributing materials over the surface of roads, and more particularly to a machine adapted for use in spreading or scattering fine aggregate material over road surfaces after they have been oiled or otherwise suitably prepared.

A main object of the invention is to provide a novel and improved self-propelled aggregate-receiving and conveying machine for spreading or distributing materials over road surfaces, said machine being relatively simple in construction, easy to control, and arranged so that the operator has a clear view of operations near the machine at all times, making it possible for him to accurately steer the machine along a desired course.

A further object of the invention is to provide an improved aggregate spreading machine wherein the operator has complete control of the conveying and distributing portion of the machine at all times, and in a position to supply the distributing portion with as much aggregate as is required for the operation being performed, the machine enabling a road surface to be sanded or covered with fine aggregate with a minimum amount of labor on the part of the operator, and requiring no special skill on the part of the drivers of the dump trucks which supply the machine with aggregate material to be spread.

A still further object of the invention is to provide an improved self-propelled aggregate-conveying and spreading machine which is easily steerable, which provides a high degree of visibility for the operator during the sanding or aggregate-spreading process, making it possible to operate the machine at close quarters, and which may be loaded by the use of conventional dump trucks or other loading equipment.

Further objects and advantages of the invention will become apparent from the following description and claims, and from the accompanying drawings, wherein:

Figure 1 is a side elevational view of a self-propelled, aggregate-receiving and conveying machine constructed in accordance with the present invention;

Figure 2 is a fragmentary top plan view of the machine illustrated in Figure 1;

Figure 3 is a side elevational view of the machine of Figure 1 taken from the side opposite to that on which Figure 1 is taken;

Figure 4 is front end elevational view of the machine of Figure 1;

Figure 5 is a cross-sectional view taken on line 5—5 of Figure 2.

Referring to the drawings, the machine com-

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prises a frame or chassis 11 provided with the ground-engaging front wheels 12 and rear wheels 13, the rear wheels being driven in a conventional manner from a motor 14 carried on the chassis, and the front wheels 12 being steered by a conventional steering mechanism controlled by a steering wheel 15 located forwardly adjacent the operator's seat, shown at 16. The driving mechanism for the rear wheels 13 includes a conventional transmission 17 having an operating lever 18 controlled through a suitable linkage by a hand lever 19.

Positioned longitudinally of and upon the chassis 11 and fixedly secured thereto is a frame 20, the frame being arranged at an angle with respect to the chassis and having its lower end projecting from and terminating at a point spaced below the forward end of the chassis and having its upper end contiguous to and spaced above the rear end of the chassis. A hopper 21 for containing aggregate is superimposed upon and spaced from the portion of the frame 20 adjacent the projecting end thereof and is fixedly secured to the frame, the hopper including a floor 25a and upstanding front and rear walls 26a, 26 respectively, arranged in converging spaced relation and attached to the floor 25a. The floor 25a has an opening 25 intermediate its sides which extends longitudinally inwardly from the end of the floor adjacent the rear wall 26 to and terminates in the end of the floor adjacent the front wall 26a, the opening being for the discharge of the aggregate therethrough. In the rear wall 26 intermediate its sides there is an opening 28 which extends from a point adjacent the top to the bottom and merges into the opening 25. A gate 27 bridges the opening 28 and is connected to the rear wall 26 for up and down movement with respect to the floor 25a. The gate 27 may be held in an adjusted open position, as by a bolt member 29 extending through the upper portion of gate 27 and engaging the top edge of wall 26, as shown in Figure 5.

Designated at 30 is an endless conveyor belt supported at its intermediate portions on spaced sets of transverse rollers 31 rotatably carried by frame 20. Rotatably mounted on the ends of frame 20 are the respective transverse shafts 32 and 33 carrying the respective drums 34 and 35 over which the belt 30 passes. Shaft 32 is coupled to the worm conveyor shaft 22 by a shaft element 39 connected at one end to conveyor shaft 32 by a universal joint 40 and connected at its other end by a universal joint 41 through a coupling device 36 to the shaft 22. Said coupling device

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provides a speed reduction of shaft 22 with respect to shaft 32, and may comprise, for example, a small sprocket carried by shaft 32 coupled by a sprocket chain to a large sprocket carried by shaft element 39. Accordingly the belt 30 will be driven at a speed in excess of the speed of the shaft 22 of the helical worms 23, 24 to prevent accumulation of the aggregate on the belt 30. The coupling mechanism is arranged so that clockwise rotation of shaft 32, as viewed in Figure 5, produces counterclockwise rotation of shaft 22, whereby material will be moved from the side portions of hopper 21 toward the discharge opening 25. It is to be noted that the conveyor belt 30 includes top and lower flights with the top flight directly below and forming a movable floor for the opening 25, whereby the material will be deposited on the belt and will be moved thereby out of the hopper through the rear wall opening 28 thereof.

Secured to the side of frame 20 adjacent the driver's seat 16 is a vertical longitudinal shield plate 37 protecting the driver against injury from stray fragments of the material carried on the belt 30.

Rotatably mounted on chassis 11 adjacent frame 20 is a longitudinal shaft 33 connected through a conventional speed-changing transmission unit 42 and a universal joint 43 to a shaft element 44. Shaft element 44 is coupled through a suitable speed-reducing unit 45 to the belt conveyor drive shaft 33. Designated at 46 is the driving portion of a conventional clutch rotatively mounted with respect to shaft 33 and coupled to the crankshaft of engine 14 by V-belts 47. Splined on shaft 33 is the driven portion 48 of the clutch. Any suitable control linkage may be employed to engage driven clutch portion 43 with driving clutch portion 46, as for example, a collar 49 rotatably and slidably mounted on shaft 33 having links connected to a ring bearing axially on the driven portion 48. Collar 49 is connected to an arm 50 carried by a transverse shaft 51 rotatably mounted in frame 20. On the opposite side of frame 20, shaft 51 carries an upstanding arm 52 connected by a link bar 53 to a hand lever 54 which is pivotally connected intermediate its ends to the plate member 37, as indicated at 70, and has its lower end pivotally connected to the adjacent end of the link bar 53. The driven portion 48 of the clutch may be engaged or disengaged from the driving clutch portion 46 by means of the hand lever 54. When driven portion 48 is engaged with driving portion 46, shaft 33 is rotated, causing the belt conveyor to move and at the same time causing the auger shaft 22 to be rotated.

Mounted on the rear portion of chassis 11 below the rear end of conveyor belt 30 is a downwardly and rearwardly-inclined chute member 55 extending to the end of chassis 11. As shown in Figures 1 and 2, a conventional aggregate spreader 56 is hitched to the rear end of the chassis 11 underlying the open rear end of chute member 55. The spreader 56 is provided with the usual auger elements 57 and 58 moving the material deposited thereon outwardly from the center portion of the spreader. Said auger elements are carried on a transverse shaft 59 coupled by sprockets and a sprocket chain 60 to the shaft of the ground-engaging wheels 61 of the spreader, so that the auger shaft 59 is rotated automatically as the wheels 61 roll on the ground. The rate of discharge of spreader 56 is regulated by means

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of a hand lever 62 linked to the discharge gate of the spreader.

Since the device is self propelled, it is merely necessary to load the hopper 21 with the desired aggregate material, by ordinary dump trucks or the like, and thereafter the operator of the device may steer the device along the desired course upon which the material is to be spread. By engaging the clutch elements 46 and 48 by means of lever 54, the operator may initiate the operation of the conveyor belt 30 and cause the material to be moved into chute 55 and thence by gravity into the spreader 56. The various components of the machine are at all times in full view of the operator, and the road or other surface to be covered is likewise always within view of the operator. Therefore, the machine may be accurately steered over the oiled road surface or other surface being treated without requiring an additional operator to guide the machine. Corners or turns may be readily negotiated due to the steerability of the machine. The spreader device 56 may be readily unhitched and replaced in the event of breakdown. Due to the high visibility from the operator's seat, the machine may be closely controlled, making it possible to operate same in restricted locations.

Although a specific embodiment of a self-propelled, aggregate-spreading machine has been disclosed in the foregoing description, it will be understood that various modifications within the spirit of the invention may occur to those skilled in the art. Therefore, it is intended that no limitations be placed on the invention except as defined by the scope of the appended claims.

What is claimed is:

1. In an aggregate receiving and conveying machine, a mobile chassis adapted to traverse a road to be surfaced, a frame positioned longitudinally of and upon said chassis and fixedly secured to the latter, said frame being arranged at an angle with respect to said chassis and having its lower end projecting from and terminating at a point spaced below the forward end of said chassis and having its upper end contiguous to and spaced above the rear end of said chassis, a hopper superimposed upon and spaced from the portion of said frame adjacent the projecting end thereof and fixedly secured to said frame for containing aggregate, said hopper including a floor and upstanding front and rear walls arranged in converging spaced relation and attached to said floor, there being an opening in said floor intermediate its sides and extending longitudinally inwardly from the end of said floor adjacent said rear wall to and terminating in the end of said floor adjacent said front wall for the discharge of aggregate therethrough, an endless conveyor including top and lower flights extending longitudinally of and rotatably supported in said frame and having the top flight directly below and forming a movable floor for said opening, said rear wall having an opening intermediate its sides and extending from a point adjacent the top to the bottom and merging into said first named opening, a gate bridging said rear wall opening and connected to said rear wall for up and down movement with respect to said floor, rotatable opposed screws in said hopper arranged in parallel relation with respect to said front wall and contiguous to said floor for feeding the aggregate into said first named opening, a chute positioned below the upper end of said frame and fixedly secured to said chassis for the reception of the conveyed aggregate, and drive means operatively

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connected to the said conveyor and said opposed screws for effecting the rotary movements of said conveyor and said opposed screws.

2. In an aggregate receiving and conveying machine, a mobile chassis adapted to traverse a road to be surfaced, a frame positioned longitudinally of and upon said chassis and fixedly secured to the latter, said frame being arranged at an angle with respect to said chassis and having its lower end projecting from and terminating at a point spaced below the forward end of said chassis and having its upper end contiguous to and spaced above the rear end of said chassis, a hopper superimposed upon and spaced from the portion of said frame adjacent the projecting end thereof and fixedly secured to said frame for containing aggregate, said hopper including a floor and upstanding front and rear walls arranged in converging spaced relation and attached to said floor, there being an opening in said floor intermediate its sides and extending longitudinally inwardly from the end of said floor adjacent said rear wall to and terminating in the end of said floor adjacent said front wall for the discharge of aggregate therethrough, an endless conveyor including top and lower flights extending longitudinally of and rotatably supported on said frame and having the top flight directly below and forming a movable floor for said opening, said rear wall having an opening intermediate its sides and extending from a point adjacent the top to the bottom and merging into said first named opening, a gate bridging said rear wall opening and connected to said rear wall for up and down movement with respect to said floor, a bolt extending through and supported in said gate adjacent the upper end and engageable with the top of said rear wall for holding said gate in the up movement position, rotatable opposed screws in said hopper arranged in parallel relation with respect to said front wall contiguous to said floor for feeding the aggregate into said first named opening, a chute positioned below the upper end of said frame and fixedly secured to said chassis for the reception of the conveyed aggregate, and drive means operatively connected to said conveyor and said opposed screws for effecting the rotary movements of said conveyor and said opposed screws.

3. In an aggregate receiving and conveying machine, a mobile chassis adapted to traverse a road to be surfaced, a frame positioned longitudinally of and upon said chassis and fixedly secured to

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the latter, said frame being arranged at an angle with respect to said chassis and having its lower end projecting from and terminating at a point spaced below the forward end of said chassis and having its upper end contiguous to and spaced above the rear end of said chassis, a hopper superimposed upon and spaced from the portion of said frame adjacent the projecting end thereof and fixedly secured to said frame for containing aggregate, said hopper including a floor and upstanding front and rear walls arranged in converging spaced relation and attached to said floor, there being an opening in said floor intermediate its sides and extending longitudinally inwardly from the end of said floor adjacent said rear wall to and terminating in the end of said floor adjacent said front wall for the discharge of aggregate therethrough, an endless conveyor including top and lower flights extending longitudinally of and rotatably supported in said frame and having the top flight directly below and forming a movable floor for said opening, said rear wall having an opening intermediate its sides and extending from a point adjacent the top to the bottom and merging into said first named opening, rotatable opposed screws in said hopper arranged in parallel relation with respect to said front wall and contiguous to said floor for feeding the aggregate into said first named opening, a chute positioned below the upper end of said frame and fixedly secured to said chassis for the reception of the conveyed aggregate, and drive means operatively connected to said conveyor and said opposed screws for effecting the rotary movements of said conveyor and said screws.

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