

Aug. 18, 1953

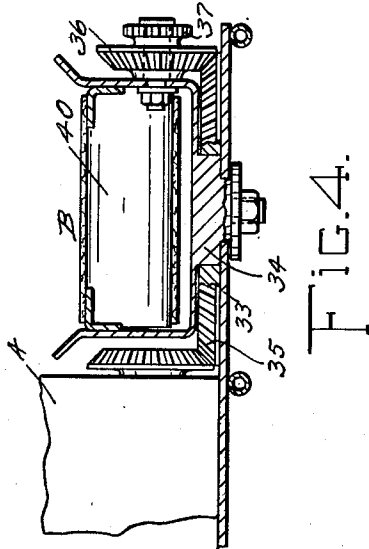
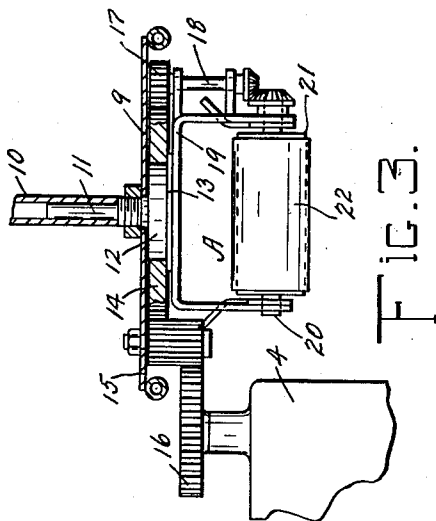
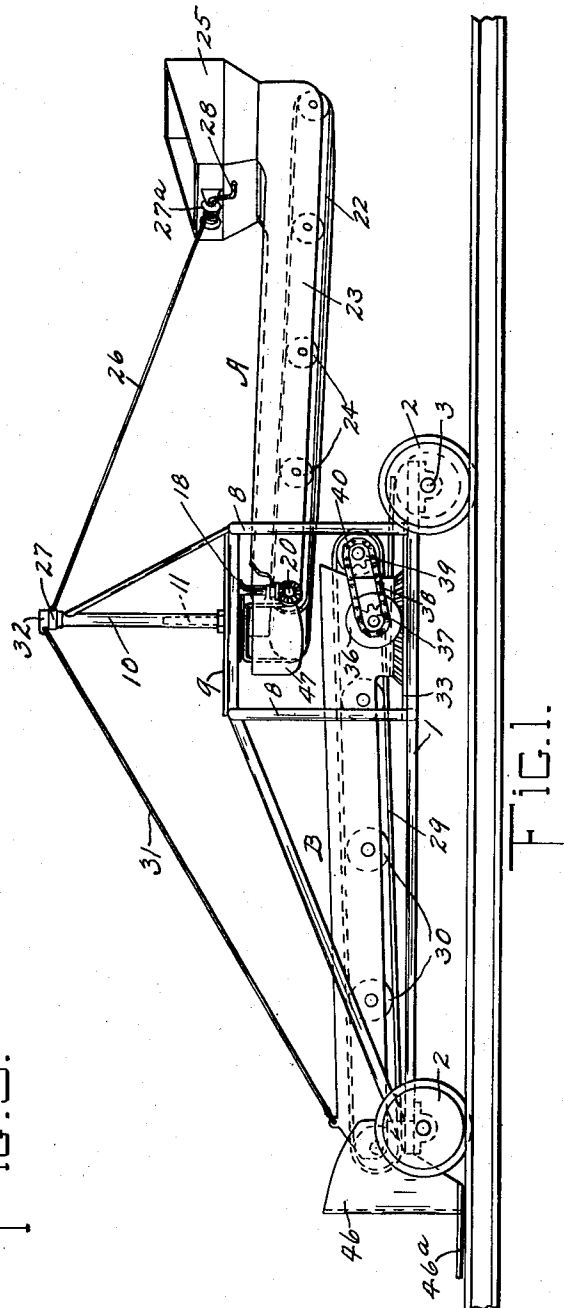
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2,649,185

CONVEYER TYPE CONCRETE DISTRIBUTING MACHINE

Filed Oct. 28, 1946

3 Sheets-Sheet 1



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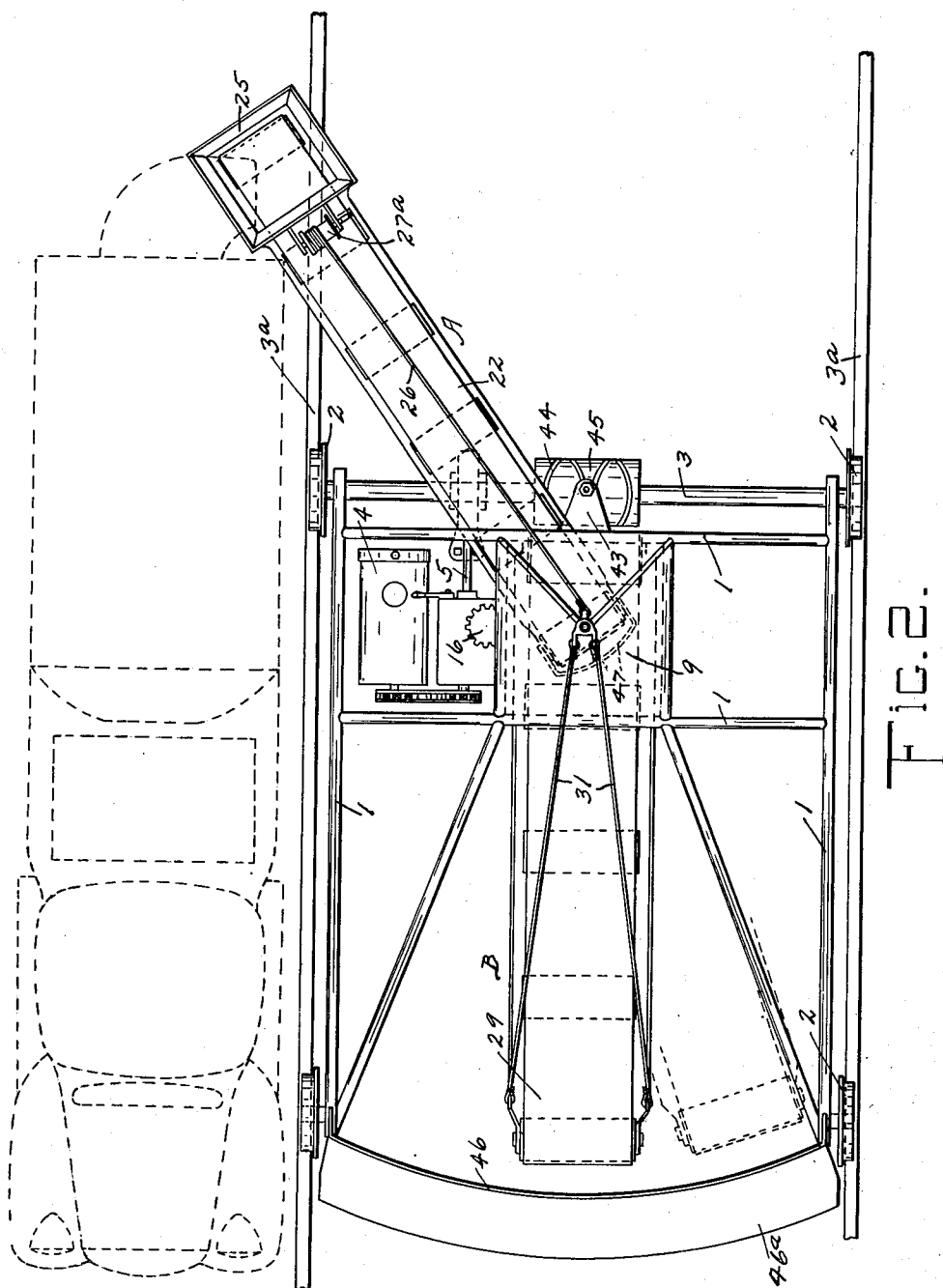
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CONVEYER TYPE CONCRETE DISTRIBUTING MACHINE

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3 Sheets-Sheet 2



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3 Sheets-Sheet 3

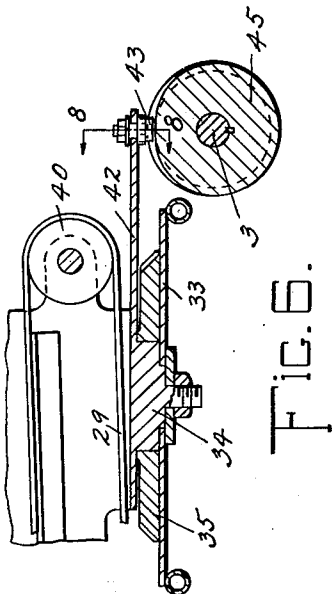


FIG. 6.

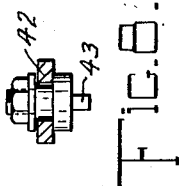


FIG. 6A.

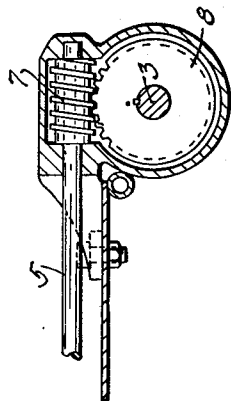


FIG. 7.

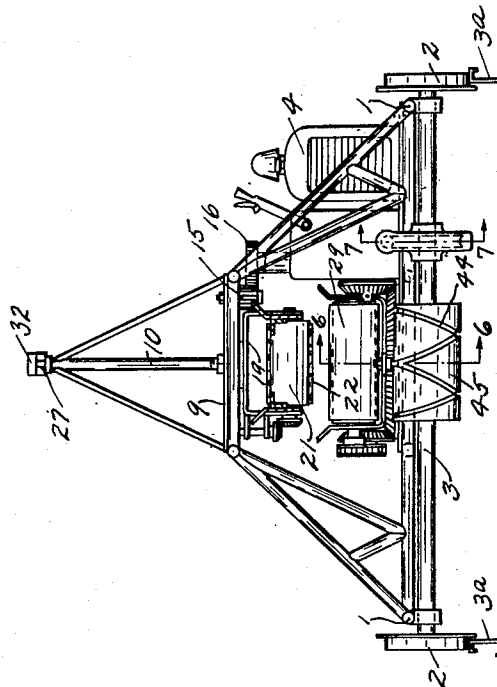


FIG. 5.

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UNITED STATES PATENT OFFICE

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CONVEYER TYPE CONCRETE DISTRIBUTING MACHINE

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2 Claims. (Cl. 198—86)

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The object of the present invention is to provide a novel type of paving machine useful for laying concrete or like pavement, the machine having provision in the nature of a receiving conveyor for receiving the mixed concrete aggregates or other paving material from a supply truck or vehicle, to carry the said material to a distributing or delivery conveyor which is adapted to spread or distribute the material over the road sub-grade. Characteristic features of the invention involve the employment of a suitable portable or wheeled support adapted to travel longitudinally of the road sub-grade in the pavement laying operation, said support carrying the receiving conveyor which is adapted to receive materials from either of both sides of the sub-grade, or from the space between the side road forms, and said portable support likewise carrying the distributing conveyor which takes the materials from the receiving conveyor. Suitable means are provided for automatically or periodically swinging the distributing conveyor in a direction transversely of the road sub-grade whereby to perform the spreading operation of said materials over the sub-grade in a substantially uniform amount or layer.

The means for distributing the mixed paving materials by machine instrumentalities is designed to reduce to a minimum the necessity for manual spreading of the materials after they have been deposited upon the sub-grade.

This invention also involves other detailed features of construction of the machine above generally described which features will be more fully understood upon reference to the detailed description hereinafter, in conjunction with the annexed drawings in which—

Figure 1 is a side elevation of a machine embodying the general features of my invention.

Figure 2 is a top plan view of the machine showing the disposition of the same to travel upon side forms upon the road sub-grade, dotted lines illustrating the supply vehicle for the mixed concrete materials which may be a truck mixer according to the illustrative showing, or any other type of vehicle adapted to dump the material in the receiving hopper of the receiving conveyor.

Figure 3 is a vertical transverse sectional view, fragmentary in nature and illustrating primarily the driving means for the receiving conveyor.

Figure 4 is a view somewhat similar to Figure 3 but illustrating the driving means for the distributing conveyor.

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Figure 5 is a front end elevation of the machine.

Figure 6 is a view taken about on the section line 6—6 of Figure 5 and showing primarily the automatic means for shifting the distributing conveyor back-and-forth laterally over the road sub-grade in its distributing operation.

Figure 7 is a detailed sectional view taken about on the line 7—7 of Figure 5.

Figure 8 is a detailed sectional view taken on the line 8—8 of Figure 6.

In the accompanying specification and drawings similar reference characters are referred to as denoting similar parts throughout referring to the drawings and describing in detail the various structural features of my machine. It is noted in reference particularly to Figures 1, 2 and 3 that the machine comprises a portable base including the chassis or frame 1 supported by wheels 2, the latter adapted to travel on side forms 3a at opposite sides of the road sub-grade, when forms of this character are provided. The portable base or supporting frame of my machine however may within the contemplation of my invention be mounted upon crawlers capable of traveling directly upon the sub-grade, dependent upon the nature of the road to be built, its width, and other phases of its construction.

Carried by side members of the chassis of frame 1, at the front end of the latter is a front driving shaft or axle 3 for the front wheels 2, see Figure 7, and upon the frame 1 is carried a suitable engine 4 having a drive take-off shaft 5 carrying a worm 7 disposed in an engagement with the worm gear 8 which is keyed or otherwise secured for rotation with the driving axle 3. When in operation the shaft 5 will be driven relatively slowly to correspondingly drive the front wheels 2 from the axle or shaft 3 so that my machine may be continuously moving forward in the operation of distributing the concrete aggregates upon the road sub-grade between the road forms 3a.

My chassis frame 1 is equipped with a super structure frame work generally designated at 8 and including a series of uprights carrying at their upper ends a platform 9 having a centrally disposed hollow mast or post 10 in which is mounted a shaft 11 equipped at its lower end with a bearing member 12, said bearing member 12 being flanged as at 13 in order to support thereon an idler gear 14 which is adapted to be driven by a pinion 15 engaging a spur gear 16 driven from the engine 4. The idler gear 14 is a transmitting gear which meshes with a pinion 17 or a vertical

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shaft 18 mounted in a conveyor frame supporting yoke member 19 disposed beneath the platform 9 and supported by means of being attached to the lower flanged portion 14 of the bearing member 12.

The yoke member 19 supports the inner roller shaft 20 carrying the inner roller 21 of the receiving conveyor which generally is designated at A and which comprises the endless belt 22, a suitable conveyor frame 23, belt supporting rollers and a hopper 25 carried by the frame 23. The hopper 25 is of course located at the front or outer end of the conveyor A and is adapted to receive concrete aggregates in mixed condition from a truck or other suitable vehicle which may be driven along the side road sub-grade, somewhat as illustrated in dotted lines in Figure 2. As shown in Figure 1 the conveyor A with its hopper 25 is supported at the outboard end of the conveyor by means of a cable 26 attached by a rotating collar 27 deposited at the upper end portion of the mast or post 10. The other end of the cable 26 is attached to a windlass 27a operable by a crank handle 28 and locked by a ratchet or other means, whereby slight vertical adjustment of the outer end of the conveyor A may be obtained.

Supported on the chassis or frame 1 of the vehicle or portable support of my machine is the distributing conveyor generally designated as B and having its receiving end portion mounted beneath the uprights 8 of the super structure frame on the frame or chassis 1. Said receiving end of the conveyor B is located beneath the delivery end of the conveyor A or beneath the yoke support 19 for said conveyor end as seen clearly by reference to Figure 1.

The conveyor B is of a type generally similar to the conveyor A in that it comprises the endless belt 29 having the upper lap thereof supported by rollers 30, the rear or outer end of the conveyor B being supported by guy wires or cables 31 attached to a swiveled bracket 32 on the upper end of the post or mast 10. A suitable frame is of course provided for the conveyor B as is true in reference to the conveyor A and I will now describe means provided for causing horizontal shifting or swinging movement of the conveyor B during the travel movement of the machine in the laying of a concrete road. As seen in Figures 1 and 4 the inner or front end of the conveyor B is supported on a platform 33 by means of a bearing member 34 having swivel connection with said platform, said bearing member 34 being connected with the inner or forward end of the frame of conveyor B. The drive for the belt 29 of the conveyor B is taken from the engine 4 by means of a shaft driven bevel gear 34a driving a large bevel gear 35 mounted to idle on the bearing member 34 previously referred to and in turn driving the bevel gear 36 on the frame of the conveyor B. The bevel gear 36 has integral or connected therewith to rotate with the same, a sprocket gear 37 connected by a chain 38 with a sprocket gear 39 which is mounted on the inner end driving roller 40 of the conveyor belt 29. The conveyor B may be constantly operated or its operation discontinued by the employment of any suitable clutch means desired and this is true also in reference to the driving of the conveyor A. For the swinging of the conveyor B in a horizontal direction of the road sub-grade, as the machine progresses forwardly in its operation I employ a swing arm 42 which is integral with the bearing member 34 of the conveyor frame, and extends

forwardly as shown in Figure 6 and Figure 1. The swing arm 42 is equipped with a pilot pin 43 which enters grooved portion 44 of a swing drum 45, said grooved portion being arranged in continuous form to cause back-and-forth self reversing operation of the pilot member 43 and the arm 42, whereby the conveyor B will in turn be caused to swing transversely of the road sub-grade as the material conveyed thereon are deposited from the delivery end of the conveyor B on the sub-grade.

Extending transversely across the rear or delivery end of the portable support of my machine is a curved strike-off blade 46; the Figures 1 and 2, the opposite ends of said blade being attached to the rear ends of the chassis frame 1.

With the foregoing construction of my machine in mind, the operation of the machine generally is as follows:

The machine will be positioned substantially as shown in Figures 1 and 2, upon the sub-grade, supported by the sub-grade forms 3a or other traveling crawler supports which may be directly mounted on the chassis or frame 1 and with the engine in operation the machine will progress slowly along the sub-grade for the concrete laying operation. The concrete in mixed condition is supplied to the hopper 25 of the receiving conveyor A by chute means leading from a dumping vehicle or from a truck mixer said chute means directing the material into hopper 25. For this purpose conveyor A may be disposed in an angular position such as shown in Figure 2 to carry the hopper 25 to one side of the sub-grade or practically so, and then under other conditions the hopper 25 may be located on the other side of the sub-grade if it is more convenient for the materials to be brought up to my machine from the latter side. The truck mixer or other vehicles supplying the hopper 25 may be caused to progress along the road sub-grade with its movement substantially the same in degree, and synchronized with the movement of the machine.

The concrete materials are conveyed by the conveyor A to its delivery end adjacent to the super structure marked 8 and gravitates from the conveyor belt 22 upon the receiving end or inner end of the distributing belt 29 of the conveyor B; thence the materials pass to the delivery end or the rear end of the conveyor B as the conveyor B is being slowly moved transversely across the road sub-grade with a swinging movement produced by the means including the swing arm 42, the pilot pin 43 and the grooved cam roller 45. The operation of the distributing conveyor B will be automatic in view of the instrumentalities employed, though it is within the purview of the invention that I may utilize hand control means to effect the swinging movement of the conveyor B should such be desired. Cam roller 45 is fixed to the shaft 3.

As the concrete materials in their plastic form are deposited upon the road sub-grade from the delivery end of the conveyor B, the strike-off blade 46 engages said materials and tends to spread and level the same in the well known manner to establish the general ultimate or true surface of the ultimate road building aggregates that are deposited on the sub-grade.

It is to be understood that I do not wish to be limited to the specific details of my construction of machine as hereinbefore set forth because it is contemplated that various changes in the details may be effected so long as the

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changes are within the purview of the claims hereinafter appended.

As seen in Figures 1 and 2 there is provided on the inner end of the frame of the receiving conveyor A, a baffle or retarding plate in the form of a curved shield 47, which compels the mixed aggregates to drop in a sort of column of compact nature, to the adjacent end of the distributing conveyor B. My object in this expedient is to prevent of scattering or segregation of the mixed aggregates by the action of delivery from the conveyor A.

The strike-off member 46 is equipped with a horizontal finishing plate 46a comprising an extension flange of the member 46, preferably, This part 46a will flatten and partially surface or finish the struck-off materials delivered to and distributed upon the road sub-grade to form the pavement.

The member 46 may be vertically adjustable, as well known in the art.

Having thus described my invention, what I claim as new is:

1. In a paving machine, in combination, a traveling base and chassis, adapted to move longitudinally of a road sub-grade, a receiving conveyor carried by the chassis and extending from one end of the same, a distributing conveyor having its receiving end arranged to receive materials from the delivery end of the receiving conveyor, and automatic reversing means for moving the delivery end of the distributing conveyor back-and-forth transversely of a road sub-grade comprising an axle shaft and wheels for supporting the chassis, a motor drivingly connected to the shaft to propel the machine and a member on the shaft for causing the said movement of the delivery end of the conveyor.

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2. In a paving machine, in combination, a traveling base and chassis, adapted to move longitudinally of a road sub-grade, a receiving conveyor carried by the chassis and extending from one end of the same, a material receiving hopper on the outer end of the receiving conveyor and spaced from said chassis, a distributing conveyor extending from the base in a generally opposite direction from the receiving conveyor and having a receiving end supported on the chassis and arranged to receive materials from the delivery end of the receiving conveyor, and means to swing the distributing conveyor at its delivery end transversely of a road sub-grade, and means to move the outer hopper supporting end of the receiving conveyor transversely of the chassis, combined with a baffle member spaced from the delivery end of the receiving conveyor to retard movement of the materials passing on to the distributing conveyor.

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