

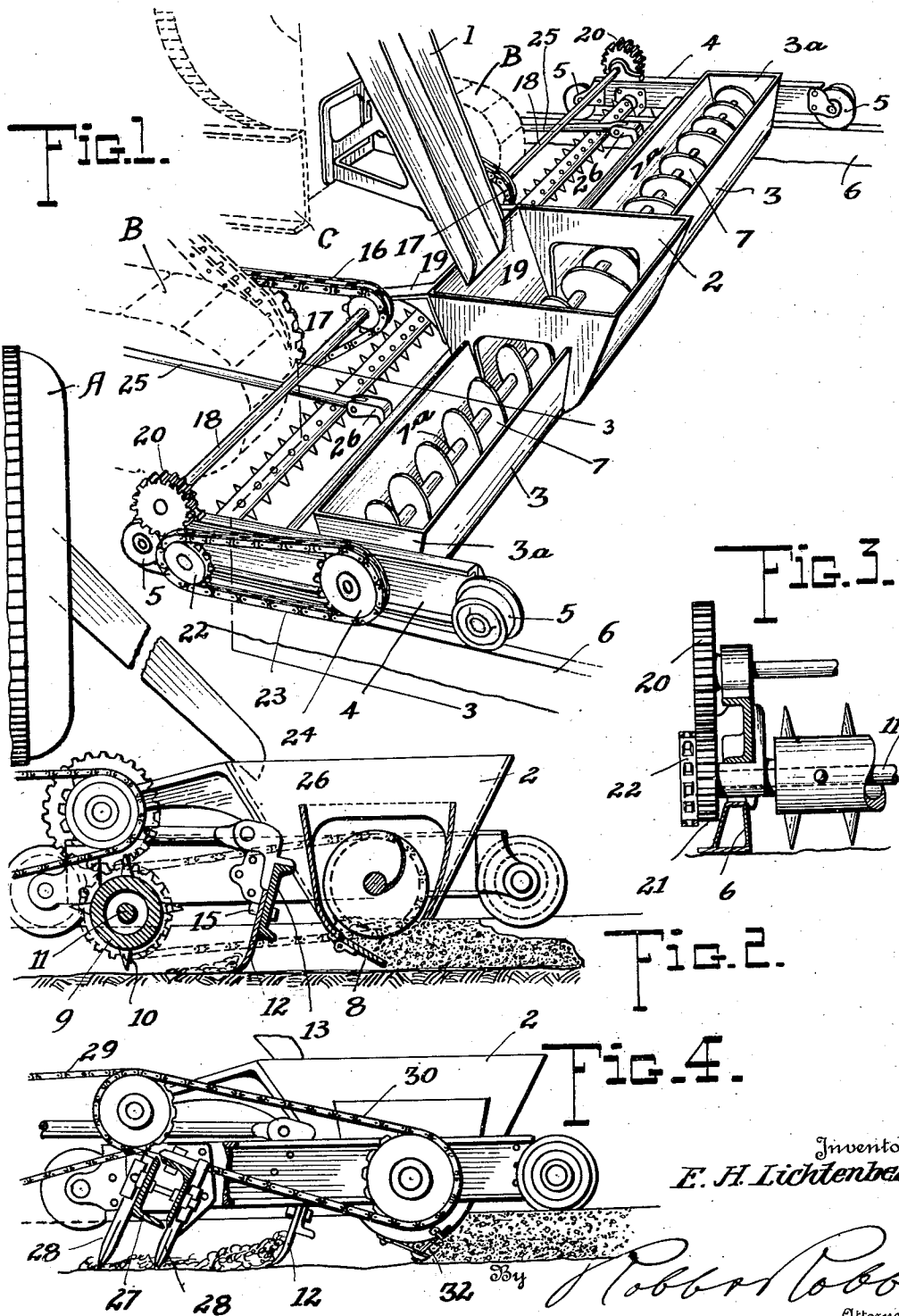
March 18, 1930.

E. H. LICHTENBERG

1,750,896

SUBGRADE PLANER AND CONCRETE DISTRIBUTING MACHINE

Filed Jan. 27, 1928



Inventor
E. H. Lichtenberg

Robert Robb
Attorneys

UNITED STATES PATENT OFFICE

ERICH H. LICHTENBERG, OF MILWAUKEE, WISCONSIN, ASSIGNOR TO KOEHLING COMPANY, OF MILWAUKEE, WISCONSIN, A CORPORATION

SUBGRADE PLANER AND CONCRETE-DISTRIBUTING MACHINE

Application filed January 27, 1928. Serial No. 249,929.

This invention has to do with machines for the preparation of the sub-grade of a road or pavement area upon which concrete pavement is to be laid, and for supplying the necessary concrete aggregates in mixed condition to the subgrade for the formation of said pavement. It has heretofore been proposed to utilize what are known as sub-grading machines for cutting and leveling off the area upon which the concrete pavement is to be laid, and of course, concrete mixing and distributing machines, known as pavers, are commonly employed in the art.

The primary object of the present invention, however, has been to design a general machine including a concrete mixing unit, with associated distributing means for depositing the concrete in properly distributed condition upon the sub-grade, said machine including additionally, cooperatively mounted sub-grading instrumentalities adapted to be actually caused to progress with the main machine, and driven under certain conditions as to certain instrumentalities thereof by the same general power plant which advances the mixing unit, the distributing means and the sub-grading appliances.

A further object of the invention resides in assembling in a portable unit, concrete distributing instrumentalities in advance of which are arranged as a part of the same unit, the sub-grade instrumentalities, the two sets of means in their unit form being connected up so as to be advanced by the mixing plant working in conjunction therewith, as the latter progresses over the sub-grade which is to be formed and upon which the concrete aggregates are to be deposited.

So far as I am aware, the assemblage of sub-grading and concrete distributing means in a unit is new in the art, as well as the driving of the sub-grading instrumentalities of such a unit by the mixing machine power plant, whether these latter sub-grading instrumentalities are assembled in unit with the distributing means, or not.

In the accompanying drawings, I have illustrated certain types of my invention, which I prefer to employ, but I do not wish to be limited to the exact constructions depicted

for they may be considerably changed within the purview and spirit of the invention as presented in my finally annexed claims. However, referring to the drawings, the figures thereof may be briefly described as follows:—

Figure 1 is a perspective view showing a mixing machine or certain parts thereof, in dotted lines, and the sub-grading and distributing unit machine connected up therewith in full lines.

Figure 2 is a vertical longitudinal sectional view through the sub-grading and distributing instrumentalities primarily, the concrete mixer and its discharge chute being just generally shown in the relation of their cooperation.

Figure 3 is a fragmentary sectional view taken about on the line 3—3 of Figure 1.

Figure 4 is a side view of a modified form of sub-grading and distributing unit.

The mixing machine which I use as a part of my invention may be of any conventional type affording a portable construction wherein the concrete mixing drum A is carried by suitable traction devices such as the endless treads or belts B, the said parts being suitably associated by being mounted upon or connected with a chassis or frame structure C in any well known manner. A discharge chute 1 is adapted to conduct the mixed aggregates from the mixing drum A, and in this construction said discharge chute will supply said mixed aggregates to the combined sub-grading and distributing unit machine of my invention.

To the above end, the chute 1 discharges into a hopper 2 located centrally of the sub-grading and distributing machine and equipped with oppositely extending troughs 3 which are virtually hopper extensions, these troughs being in complete communication at their inner ends with the hopper and having their outer ends closed as at 3^a. The parts 2 and 3 constitute a distributing device mounted at its ends upon frame members or channels 4 which are equipped with wheels or rollers of the flange type, designated 5, adapted to travel upon road rails or forms 6 of any well known type.

Arranged within the parts 2 and 3 of the

distributing device are oppositely disposed screw leveling or conveying members 7 by which the concrete fed into the hopper 2 is carried outwardly so as to fill the troughs or hopper extensions 3 from which the concrete is adapted to feed through an outlet opening at the bottom of the parts 2 and 3 which opening is substantially continuous and which is controlled by a door 8.

In advance of the distributing device thus far described, are located earth-working means comprising the sub-grade scarifying roller 9 having the scarifying teeth 10 and mounted upon a suitable axis 11 adapted to be driven so as to rotate the teeth 10 for earth-working operations. In rear of the parts just mentioned is the scraper blade 12 which may be made in sections and may be suitably adjustable upon a supporting beam 13 by means of the fastenings 15 provided as shown. It is contemplated to drive the scarifying device 9 positively by taking off power from the engine plant of the mixing machine, and to this end I utilize driving sprocket chains 16 which are engaged with sprockets 17 upon the inner ends of short shafts 18 disposed in alignment and mounted upon brackets 19 at their inner adjacent ends and in suitable bearings upon the frame members 4 at their outer ends. Spur gears or any other suitable means 20 may be used to transmit motion from the shafts 18 to the scarifying device 9, by being geared to similar gears 21 upon the shaft 11. From the shaft 11 by means of sprockets 22 at the outer sides of the gears 21, and sprocket chains 23 connected with other sprockets 24, I am enabled to transmit power from the power plant of the mixing machine to the outer ends of the screw members 7. For the above purpose, the sprockets 24 are carried by the opposite outer ends of the screw conveyor shafts 7^a. As a means of bracing the scraping device 12, the beam 13 thereof may be connected by bracing and connecting rods 25 to any suitable portion of the chassis or traction frame of the mixing machine, the rods 25 being directly attached to brackets 26 secured to the beam 13.

In Figure 4 I have illustrated a modified form of the scarifying means. In this instance, the scarifier comprises a beam 27 that is made up of fabricated units of any suitable type to which beam are attached front and rear inclined scarifying teeth 28. The scraper 12 will be used in conjunction with the scarifying means illustrated in this view, and the driving connections may include sprocket chains 29 and 30, traveling around suitable sprockets, and used primarily only for the purpose of transmitting power for the driving of the screw conveyor parts 7.

With the machine of my invention as above described, there are combined concrete mixing and distributing devices and sub-grading appliances for leveling the sub-grade in ad-

vance of laying the concrete thereon by the distributing devices, all in one machine. Moreover, the distributing scarifying and scraping features are assembled in a single unit, and moving parts of the sub-grading device are driven by the power plant of the main machine, which is a mixer in this particular instance, but might be any suitable traction machine for advancing the distributing and sub-grading unit.

As the main machine including the various devices described is advanced, it is obvious that batches of concrete may be deposited in the hopper 2 and will be forcibly carried into the extensions 3 thereof, so as to fill up the hopper. Thereupon, the said materials will be fed out from the bottom of the hopper upon the sub-grade previously prepared by being cut and smoothed off by the scarifying and scraping appliances operating in advance of the distributing device.

In Figure 4 is shown an adjusting device for the bottom door of the hopper 2 and trough extensions thereof, said adjusting means comprising one or more adjustable bolt and nut connections 32.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent of the United States, is:—

1. In combination, a concrete mixing machine, and a concrete distributing and earth-working unit associated therewith, comprising a distributing device arranged to deposit the concrete upon the sub-grade, earth leveling means arranged in advance of said distributing device, with common supporting means for the distributing device and the earth leveling means, and means common to the distributing device and earth working unit for driving the said instrumentalities and moving the machine over the subgrade.

2. In combination, a concrete mixing machine, and a concrete distributing and earth-working unit associated therewith, comprising a distributing device arranged to deposit the concrete upon the sub-grade, and earth leveling means arranged in advance of said distributing device, with common supporting means for the distributing device and the earth leveling means, the earth leveling device comprising moving parts, and means for driving the moving parts of the earth-working device from the concrete mixing machine.

3. In combination, a concrete mixing machine, and a concrete distributing and earth-working unit associated therewith, comprising a distributing device arranged to deposit the concrete upon the sub-grade, and earth leveling means arranged in advance of said distributing device, with common supporting means for the distributing device and the earth leveling means, the earth leveling device comprising a rotary scarifier, and means

for driving said scarifier from the concrete mixing machine.

4. In combination, a concrete mixing machine, and a concrete distributing and earth-working unit associated therewith, comprising a distributing device arranged to deposit the concrete upon the sub-grade, and earth leveling means arranged in advance of said distributing device, with common supporting means for the distributing device and the earth leveling means, the earth-working device comprising moving parts and the distributing device including a moving part, with connections for driving the said moving parts of the earth-working and distributing devices from the concrete mixer.

5. In a machine of the class set forth, a concrete mixer comprising suitable traction means for advancing it over a sub-grade, an earth working and concrete distributing unit having moving parts for leveling the subgrade and arranged to travel over the sub-grade with said concrete mixing machine, and driving connections between the concrete mixing machine and the earth-working unit for operating the latter and for moving the same over the sub-grade.

6. In combination, a concrete mixing machine, an earth-working unit arranged to travel therewith and including earth leveling devices, and means for driving the earth leveling devices from the said concrete mixing machine during the travel and independently of their traversing movement with the concrete mixing machine, to effect a leveling operation.

In testimony whereof I affix my signature.
ERICH H. LICHTENBERG.

40

45

50

55