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MACHINE FOR SURFACE-FINISHING ROAD PAVING

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Fig. 1.

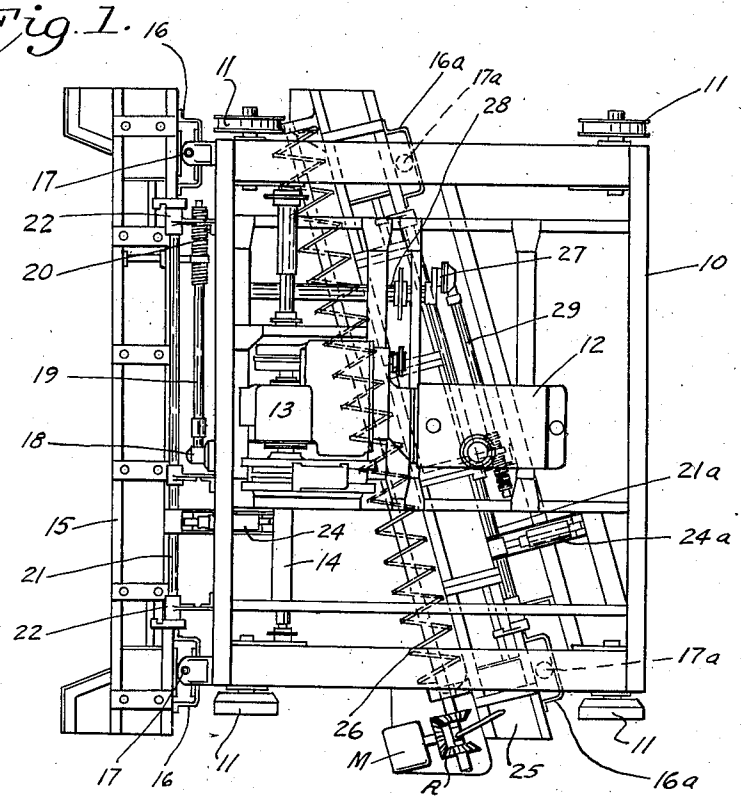
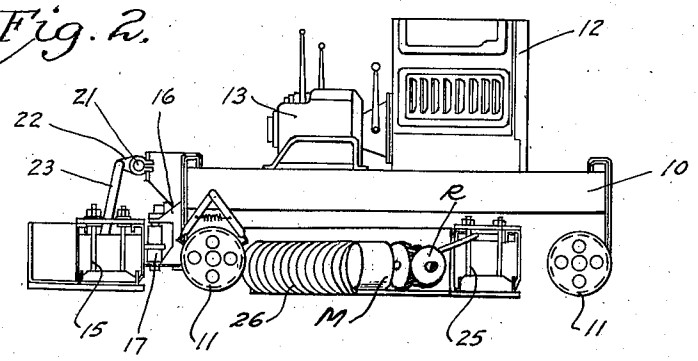


Fig. 2.



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MACHINE FOR SURFACE-FINISHING ROAD PAVING

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5 Claims. (Cl. 94—45)

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This invention relates to road-paving machines and more particularly to machines employed in the operation of finishing or smoothing the top surfaces of freshly laid beds of road paving material, such as asphalt, concrete and the like.

Such machines, as now ordinarily constructed, employ wheeled frames adapted for travel over the rails provided by spaced molding forms positioned longitudinally at each side of the paving. The frames are each equipped with spaced parallel front and rear troweling screeds disposed substantially at right angles to the length of the roadway. Due to this parallelism in operating positions of the two screeds, the rear or trailing screed is apt to produce or leave the same or equivalent irregularities, unevenness or roughness in the upper surface of the new paving as were left therein by the forward screed. Thus, the intended function of the trailing screed is rendered ineffectual to a very considerable degree.

In accordance with the present invention, a road surface finishing machine is provided in which the rear or trailing screed, instead of being disposed in parallel order with the forward screed, is arranged in angular relation therewith, extending diagonally with respect to the frame of the machine, whereby to enable the rear screed to remove more effectively any irregularities left in the freshly laid paving by the front screed.

It is, therefore, an object of the invention to provide a finishing machine for road paving in which the frame of the machine is equipped with a pair of troweling screeds, the front screed being mounted to extend transversely across the paving at an angle of substantially 90 degrees to the longitudinal axis of the paving and wherein the rear or trailing screed is disposed diagonally of the frame, occupying an acute angle with respect to the front screed.

It is another object of the invention to provide a finishing machine of the character set forth having a diagonally disposed rear screed with means arranged at the front of the rear screed for effecting positive advance of material loosened or removed by the operation of the screed to the ends thereof, so that the loosened or free material may be moved toward either side of the finishing machine.

With these and other objects in view, the invention consists in the novel features of construction, combinations of elements and arrangements of parts, hereinafter more fully described and pointed out in the appended claims.

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In the accompanying drawings:

Fig. 1 is a plan view of a machine for finishing highway paving having a fixed diagonally disposed rear screed arranged in accordance with the present invention.

Fig. 2 is a side elevational view thereof.

The finishing machine disclosed in Figs. 1 and 2 of the drawings comprises a rectangular frame 10 having track-engaging wheels 11. The frame of the machine is provided, as usual, with a power plant, such as an internal combustion engine 12. Through a standard clutch controlled shifting-gear transmission 13, the engine drives shafts 14, by means of which power may be transferred to the traction wheels 11 to effect forward or rearward movement of the machine on its supporting rails. The front of the machine includes the usual forward screed 15, which may be of any standard construction; for example, that disclosed in our prior Patent No. 2,299,700, October 20, 1942. As shown, however, the rear surface of the screed 15 is provided with brackets 16 which maintain the screed in contact with vertical thrust-receiving rolls 17 projecting from the front transverse member of the frame 10. The slots formed by the brackets 16 are elongated so that the usual reciprocating motion may be imparted to the screed, such reciprocation being effected by an engine-driven crank 18 with which is connected a crank rod 19, the outer or lower end of the latter having a spring-cushioned connection 20 with the screed, whereby through the rotation of the crank, the screed may be reciprocated in its horizontal plane of operation, the ends of the screed resting on the wheel-receiving rails. Also, the front member of the frame 10 supports a rock shaft 21 carrying cranks 22. These cranks are linked as at 23 with the top of the screed, the rock shaft being oscillated by a piston disposed in a hydraulic cylinder 24, so that the screed may be raised or lowered as desired. Since all of the parts so far described are of conventional construction and operation, a more detailed explanation accordingly has been omitted.

A distinguishing characteristic feature of the finishing machine forming the present invention

resides in mounting a rear screed shown at 25 so that it will extend diagonally of the frame 10 or in acute angular relationship to the forward screed 15. In previous types of machines of this character, the rear screed has been located in substantially true parallelism with the front screed, with the result that irregularities left in the top surfaces of freshly laid beds of paving are not completely nor satisfactorily removed by the trailing screed. Therefore, in order to improve and facilitate the operation of such finishing machines, we provide the same, as in Figs. 1 and 2, with a fixed diagonal screed and a forwardly positioned conveyor 26, the latter serving to carry the loosened or freed material along the diagonal screed to one end or the other thereof. With the front screed 15 arranged at an angle of 90 degrees to the road and the rear screed set at an acute angle with respect to the front screed, the rear screed will remove efficiently any irregularities left in the paving by the front screed. Further, the angularity of the rear screed will facilitate surface smoothing or finishing of newly laid beds of road paving, such facility being due to the fact that it is easier to remove transverse irregularities by cutting or shearing the same by the employment of angularly directed forces than by a direct frontal attack. Also, the angularity of the rear screed permits the same to correct paving irregularities as a result of the distance between its forward and rearward ends, thus giving the effect of a longer wheel base, without actually increasing the length of the machine.

The rear screed is reciprocated by the provision of a crank 27 carried by a frame-mounted shaft 28, the latter being driven in any suitable manner by the engine 12. The crank 27 is connected by a crank rod 29 with the frame of the rear screed so that as the crank rotates, the usual reciprocating stroke will be imparted to the screed. The frame of the rear screed is equipped with rearwardly disposed brackets 16*a*, which engage with stationary guide rolls 17*a*. A rock shaft 21*a*, actuated by a fluid pressure cylinder 24*a*, is employed to raise or lower the rear screed in a customary manner.

When a fixed diagonally extending rear screed is employed as in Fig. 1, there is arranged in front of the same a rotary helically bladed conveyor 26, which is adapted to be rotated, for example, by power derived from a motor M through any suitable reversing gear mechanism R. The advantage in using the conveyor 26 resides in the fact that if the same or its equivalent were not present, the loose paving material freed or scraped from the freshly laid bed by the operation of the rear screed would tend to move along its forward face in a direction toward the end of the screed located nearest to the rear end of the frame. It is often desirable that the freed material should move toward the opposite end of the rear screed, particularly when the paving is banked or sloped, as in producing curved roadways. By governing the direction of rotation of the conveyor 26, the material freed by the rear screed may be advanced positively toward either end of the latter.

In view of the foregoing, it will be seen that the present invention provides a finishing and smoothing machine for facilitating and rapidly and accurately performing the operations of leveling and removing surface undulations, irregularities or roughness in the upper surfaces of freshly laid beds of road paving. The angularity

of the rear screed overcomes the objections noted with reference to the employment of rear screeds mounted to extend in true parallel relation with the front screed, and produces an improved finish, minimizing unevenness in the vehicle-engaging surface of the paving.

While there has been described and illustrated certain preferred embodiments of the invention, nevertheless, it will be understood that the same are subject to considerable variation or modification without departure from the fundamental features set forth in the appended claims.

We claim:

1. A machine for surface finishing newly laid beds of road paving material comprising a wheel-supported frame, a screed arranged at the forward end of said frame and disposed substantially perpendicularly to the longitudinal axis of the frame, a second screed caried by said frame and disposed rearwardly of said forward screed, said second screed being arranged diagonally of the frame and in acute angular relationship to the forward screed, and conveyor means mounted adjacent to the front face of said rear screed for advancing loosened materials engaging the front face of the rear screed toward an end thereof.

2. In a machine for surface finishing newly laid beds of road paving material, a portable base, a screed having its working face disposed at an acute angle to the transverse axis of the base, means mounted on said base for imparting reciprocatory motion to the screed, and power driven conveyor means disposed at the front of the working face of said screed for advancing the material dislodged by the screed positively toward either end of the latter.

3. A machine for surface smoothing beds of newly laid paving material, comprising a portable base, a prime mover mounted on said base for imparting tractive effort thereto, a screed movable in unison with said base, said screed having its working face disposed in acute angular relationship with respect to the transverse axis of the base, means driven by said prime mover for imparting reciprocatory motion to said screed, and material-conveying means arranged at the front of and extending parallel to the working face of said screed for positively advancing material loosened by the action of the screed toward either end of the latter.

4. A machine for surface smoothing beds of newly laid paving material, comprising a portable base, a prime mover mounted on said base for imparting tractive effort thereto, a screed movable in unison with said base, said screed having its working face disposed in acute angular relationship with respect to the transverse axis of the base, means driven by said prime mover for imparting reciprocatory motion to said screed, a material-conveying means arranged at the front of and extending parallel to the working face of said screed for positively advancing material loosened by the action of the screed toward either end of the latter, and means actuated by said prime mover for driving said material-conveying means.

5. A machine for surface finishing newly laid beds of road-paving material, comprising a portable base frame, a forwardly disposed screed carried by the forward part of said base frame with its principal axis substantially perpendicular to the longitudinal axis of said base frame, a second screed carried by said frame and disposed rearwardly of said forward screed, the working face

of said second screed being arranged diagonally of the frame and in acute angular relationship to that of the forward screed, means carried by said frame for raising and lowering said screeds between inactive and active positions, means carried by said frame for imparting limited reciprocating movement to said screeds when the same are in their lowered active positions, and a conveyor rotatably supported by and arranged in adjacent parallel relationship with the working face of said rear screed and operative to advance road-paving material along the working face of the screed in a direction opposed to that afforded by the angularity of the rear screed when the base frame is advanced longitudinally.

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REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
1,611,412	Carr	Dec. 21, 1926
2,041,350	Johnson	May 19, 1936
1,990,931	Colbert	Feb. 12, 1935
1,103,435	Powers	July 7, 1914