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SPADING DEVICE

Filed April 14, 1939

Fig. 1.

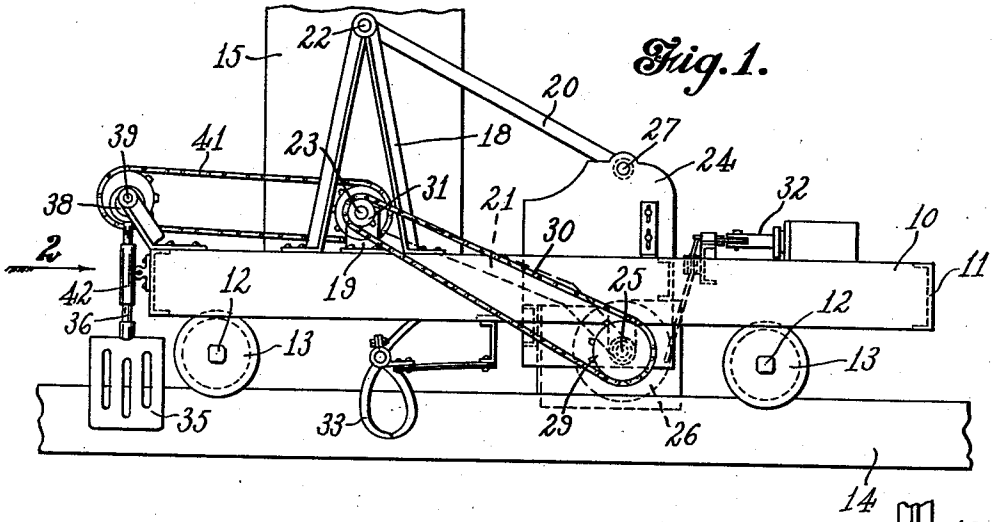


Fig. 2.

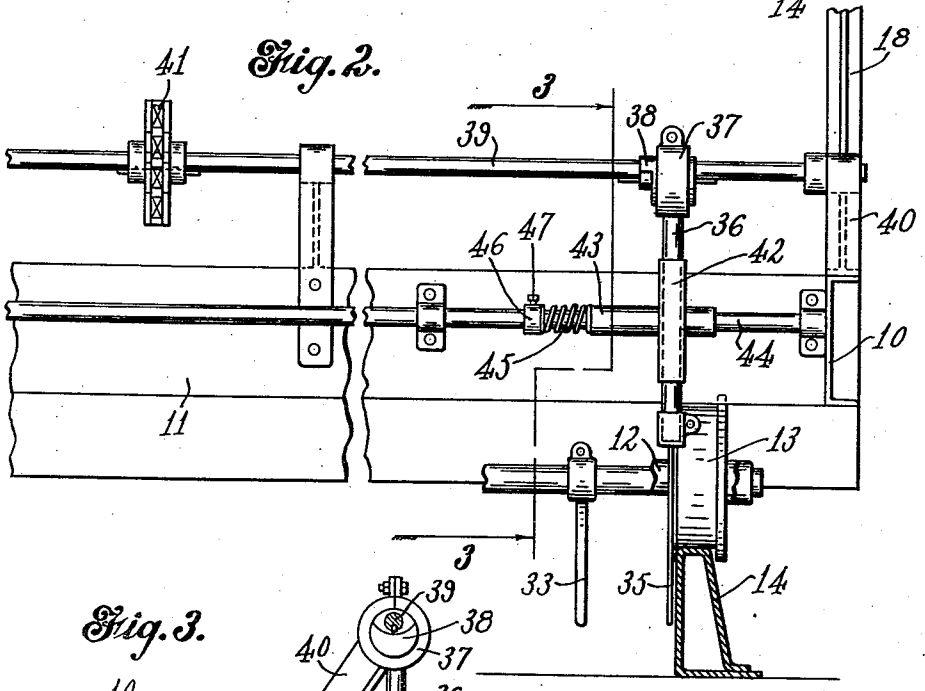
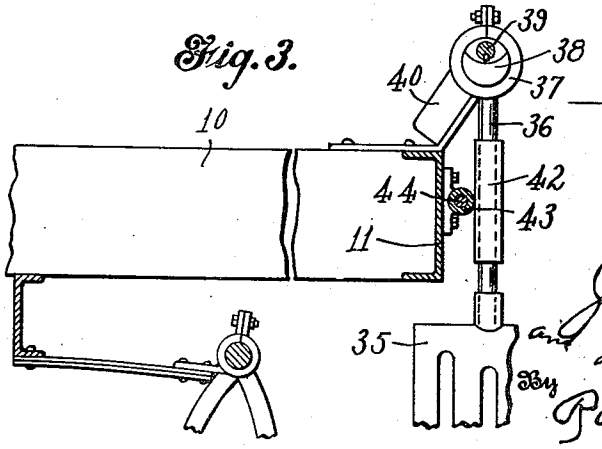


Fig. 3.



Inventor

John Arborio

and Mario Bottino

By Rockwell & Barchelow

Attorneys

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SPADING DEVICE

John Arborio, Poughkeepsie, N. Y., and Mario Bottino, Hamden, Conn.

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5 Claims. (Cl. 94—39)

This invention relates to a machine designed to be employed in the construction of roads, and more particularly to a device designed to be supported on the forms at the edges of the pavement between which the pavement is laid, and to spread level and consolidate the paving material, such as concrete, for example, in order to leave the material in substantilly finished form for hardening after the machine has passed over it.

In the making of roads such as concrete roads, for example, although it will be understood that the invention is applicable to other types of paving material, the concrete may be delivered to a machine by which it is spread over the surface to be paved, or it may be dumped directly upon the grade and then spread by a machine such as the one shown herein. The illustrated device is adapted particularly to operate upon concrete dumped upon the surface of the road in front of the machine itself, although it will be understood that the invention may be utilized in machines provided with hoppers wherein to receive the concrete and deliver it to the spreading apparatus.

In the making of concrete roads it is usual to provide forms at the edges of the portion which is to be paved, and to spread the concrete between these forms. The present machine is designed to be supported upon wheels on these forms, and to be propelled at a relatively slow speed over the surface of the roadway. The concrete being dumped in front of the machine, the device will act to spread and level the aggregate, to agitate or consolidate it so as to release all air bubbles, and cause it to settle and pack firmly against the forms, and it is also contemplated to provide upon the machine spading devices which operate closely against the side form to finish the side edges of the concrete slab and cause it to present a uniformly smooth and finished appearance.

One object of the present invention is to provide a machine of the character described, having improved means for finishing the edges of the paving material adjacent to the side forms between which it is laid.

Another object of the invention is to provide a device designed for the spreading of roadway paving material, and also providing upon the same machine edge spading devices designed to operate in close proximity to the side forms between which the paving is laid in order that the material at the edges will be placed in substantially finished condition after the device has passed thereover.

A still further object of the invention is to provide a machine of the character described for spreading and finishing roadway paving material, which is provided adjacent each of its side edges with spading devices of improved form, and so mounted that the spading devices will have an up-and-down spading movement adjacent the forms between which the material is laid, and also will be capable of a lateral movement, while at the same time being spring pressed against the forms so as to be urged in close proximity to the latter.

To these and other ends the invention consists in the novel features and combinations of parts to be hereinafter described and claimed.

In the drawing:

Fig. 1 is a side elevational view of a concrete spreading machine embodying our invention;

Fig. 2 is a partial rear elevational view of the device looking in the direction of the arrow 2 on Fig. 1; and

Fig. 3 is a partial sectional view on line 3—3 of Fig. 2.

To illustrate a preferred embodiment of our invention we have shown a concrete spreading machine comprising a main framework consisting of longitudinal members or beams 10 and connected by transverse beams 11. These beams are designed to be supported in any suitable manner from rotatable axles 12 having mounted thereon supporting wheels 13 which are designed to support the frame from the side forms 14 extending along the roadway, which forms serve not only as the tracks upon which these wheels are designed to run, but as the side forms for the paving material, as is usual.

Upon the frame is mounted a power source 15, and at each side of the machine upon the longitudinal frame members 10 are positioned brackets 18 and 19, the former being of triangular shape and the latter being mounted between the legs of the former.

To the bracket 18 an arm 20 is pivotally mounted as at 22, and a substantially parallel arm 21 is pivotally mounted upon a shaft 23 carried by the brackets 19. The forward ends of these arms are designed to support an auxiliary spreader frame comprising a pair of end members or plates 24, one positioned adjacent each of the side frame members 10, these plates being suitably connected (by means not shown) to form a rigid frame. Rotatably mounted in this frame is a shaft 25, the shaft extending transversely across the machine and carrying thereon

a spreader or conveyor screw, shown diagrammatically at 26.

In order that this auxiliary frame may be raised and lowered to suit the level of the road bed, the arms 20 are pivoted to the end plates 24, as shown at 27, while the arms 21 pivotally embrace the shaft 25. It will be apparent that the arms 20 and 21 are substantially parallel so that the auxiliary frame will be maintained in a substantially vertical position with respect to the main frame of the machine during its raising and lowering movements, and it will also be obvious that the shaft 25 is maintained at a constant distance from the shaft 23, so that the conveyor may be driven through a sprocket 29 secured upon the shaft 21, and a sprocket chain 30 trained around the sprocket 29, and also a sprocket 31 on the shaft 23. The shaft 23 is driven from the motor 15 in any suitable manner.

Secured upon the main frame of the machine is a raising and lowering device for the auxiliary frame, this device being shown diagrammatically at 32, and also mounted upon the main frame are agitating devices 33 designed to penetrate and agitate the paving material after it is spread. As claims to neither of these features are made in the present application, no further description thereof is necessary.

Disposed at the rear of the machine and at each side thereof so as to operate adjacent the inner surface of each of the forms 14, is a reciprocating or oscillating spading device 35. These spading devices are mounted at the lower ends of stems or shanks 36 having at their upper ends collars 37 embracing eccentrics 38 mounted upon a transverse shaft 39, which extends across the rear of the frame and is rotatably mounted thereon by brackets 40. This shaft may be conveniently driven, as shown in Fig. 1, from the shaft 23 by means of the sprocket chain 41. It will be apparent that when the shaft 39 is rotated the eccentrics will effect a reciprocating or oscillating movement of the spading members 35 in a generally vertical direction, and it will be seen, from Fig. 2, for example, that these spaders operate close to the inner surface of the forms 14.

The shanks or stems 36 of the spaders are guided in a vertical sleeve 42, which is in turn secured to a horizontal sleeve 43, the latter being slidably mounted upon a rod 44 extending transversely of the main frame. The sleeves 42 and 43, which are rigid with each other, are urged outwardly or in a direction toward the side frames 14, by means of a spring 45 surrounding the rod 44 and acting against the sleeve 43 at one end and against a collar 46 at the other end, which collar is adjustably secured on the rod 44 by means of the set screw 47. With this arrangement, it will be apparent that, while the spading device will be constantly urged into close relation with the inner surface of the form 14, it will, upon striking any irregularity such as a joint between two lengths of the form, be permitted by the spring 45 to move away from the form. After such an irregularity or joint has been passed, it will be immediately urged against the form again, as is desirable. It will also be understood that the rod 44 is rigidly mounted on the frame, and that the sleeve 43 enjoys a slight rocking movement on this shaft to accommodate the movement of the stems or shanks 36 of the spades in the sleeves 42 as effected by the eccentrics 38.

It will also be obvious that by guiding the stem 36 of the spading devices in the vertical one of a pair of sleeves extending transversely to each other, and rockably and slidably supporting the other sleeve of the pair upon the main frame, constitutes a simple and convenient way of guiding the spading devices, and at the same time mounting them for transverse or lateral movement relative to the direction of progress of the machine. At the same time the spacing devices are urged toward the concrete forms by means of the springs 45, so that they will operate closely adjacent these forms at all times, and finish the side edge of the pavement, rendering this edge of the concrete, for example, smooth and free from air bubbles adjacent the forms.

While we have shown and described a preferred embodiment of our invention, it will be understood that it is not to be limited to all of the details shown, but is capable of modification and variation within the spirit of the invention and within the scope of the appended claims.

What we claim is:

1. A machine for spreading paving materials comprising a frame adapted for movable support on spaced form members, a horizontal rod mounted to extend transversely of the frame, a guide member carried by said rod and movable therealong laterally of the frame, a spading device located adjacent the inner face of one of said form members and having a shank slidably mounted in said guide member to reciprocate in a substantially vertical direction, means on the frame connected to said shank to reciprocate the latter through said guide, and spring means acting on said guide to urge the spading device toward the associated form member.

2. A machine for spreading paving materials comprising a frame adapted for movable support on spaced form members, a rod mounted transversely of the frame, a guide member carried by said rod and movable therealong laterally of the frame, a spading device located adjacent the inner face of one of the form members and having a shank slidably mounted in said guide member to reciprocate in a vertical direction, means to reciprocate said shank through said guide, said means comprising an eccentric on said frame and a cooperating sleeve on the shank, and spring means carried by the rod and acting on the guide member to urge the spading device along the rod toward the face of the associated form.

3. Spading mechanism for a concrete spreader having a frame movably supported on spaced form members, said mechanism comprising a horizontal rod member carried by the frame and extending transversely thereof, a sleeve slidably mounted on said member, a second sleeve secured to the first and having its axis vertically disposed, a shank slidably mounted in said second sleeve and carrying a spading device at its lower end, a shaft rotatably carried by the frame and extending substantially parallel to said rod, means to rotate said shaft, and connections between said shaft and said shank to reciprocate the latter vertically in said sleeve.

4. Spading mechanism for a concrete spreader having a frame movably supported on spaced form members, said mechanism comprising a horizontal rod member carried by the frame and extending transversely thereof, a sleeve slidably mounted on said member, a second sleeve secured to the first and having its axis vertically disposed, a shank slidably mounted in said sec-

ond sleeve and carrying a spading device at its lower end, a shaft rotatably carried by the frame and extending substantially parallel to said rod, means to rotate said shaft, connections between said shaft and said shank to reciprocate the latter vertically in said sleeve, and a spring on said rod acting against said first sleeve to urge the spading device toward the associated form.

5. Spading mechanism for a concrete spreader having a frame movably supported on spaced form members, said mechanism comprising a horizontal rod member carried by the frame and extending transversely thereof, a sleeve slidably mounted on said member, a second sleeve secured to the first and having its axis vertically disposed, a shank slidably mounted in said second sleeve and carrying a spading device at its lower end, a shaft rotatably carried by the frame and extending substantially parallel to said rod, means to rotate said shaft, connections between said shaft and said shank to reciprocate the latter vertically in said sleeve, and a spring on said rod acting against said first sleeve to urge the spading device toward the associated form, said connections between the shaft and shank comprising an eccentric on the shaft and a strap on the upper end of the shank embracing said eccentric.

JOHN ARBORIO.
MARIO BOTTINO.