Nov. 5, 1963 W. V. MACK 3,109,352

SPREADER

Filed Jan. 26, 1960 4 Sheets-Sheet 1

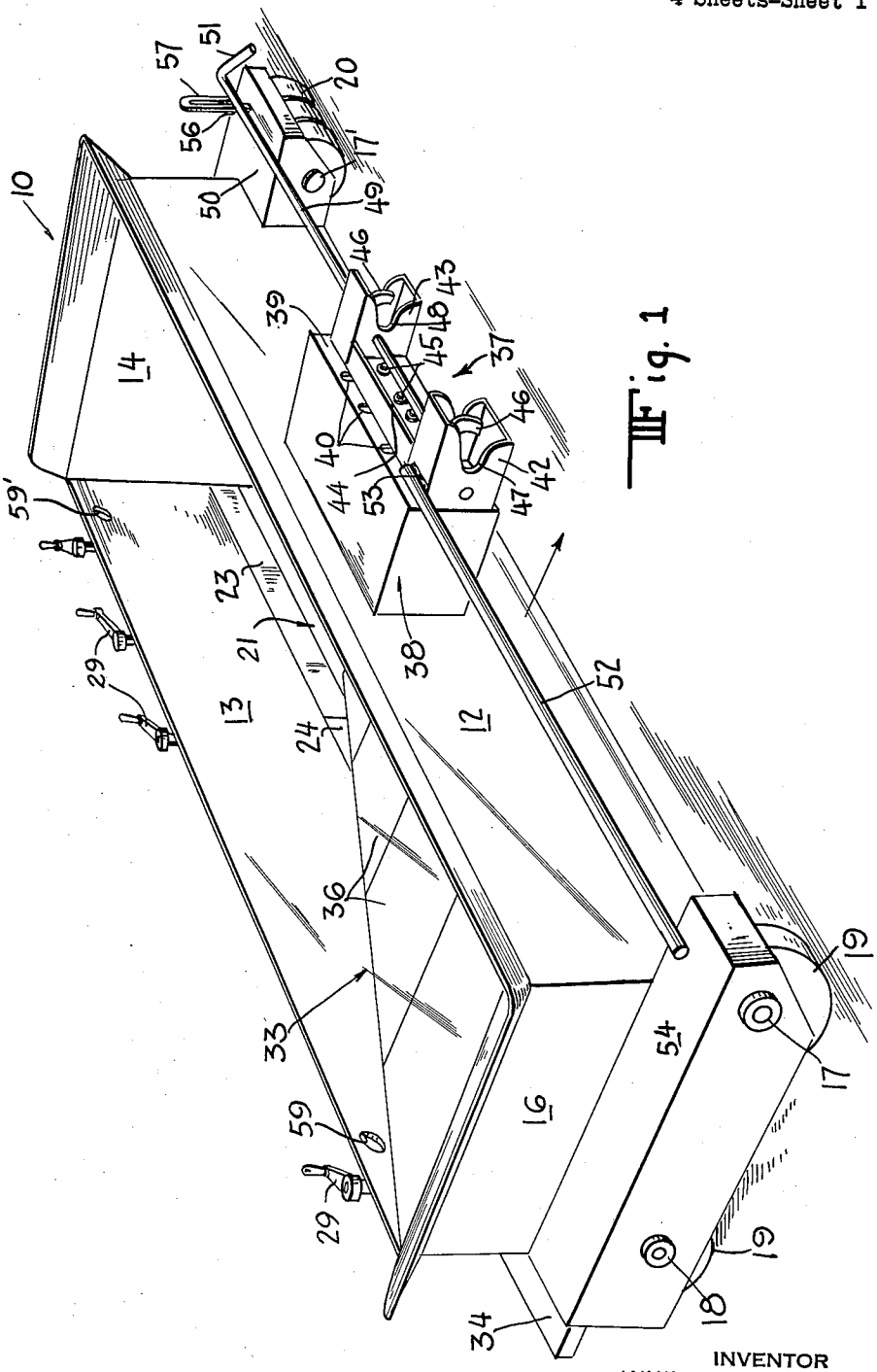


Fig. 1

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SPREADER

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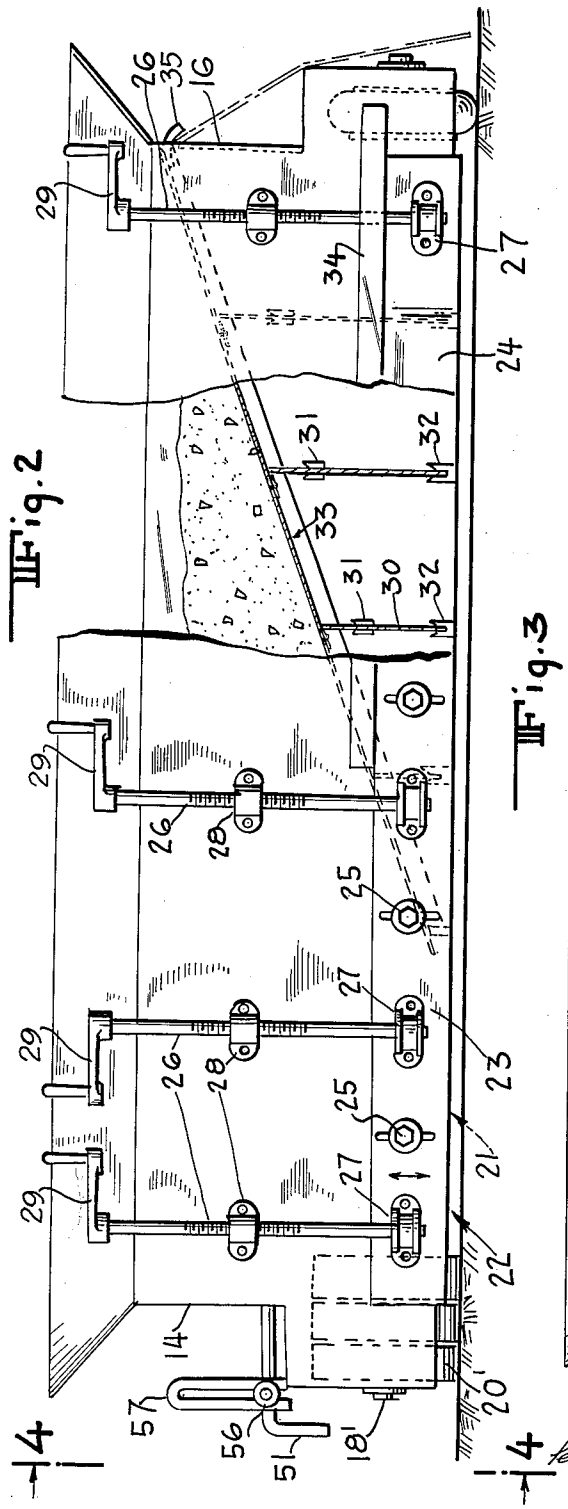


Fig. 2

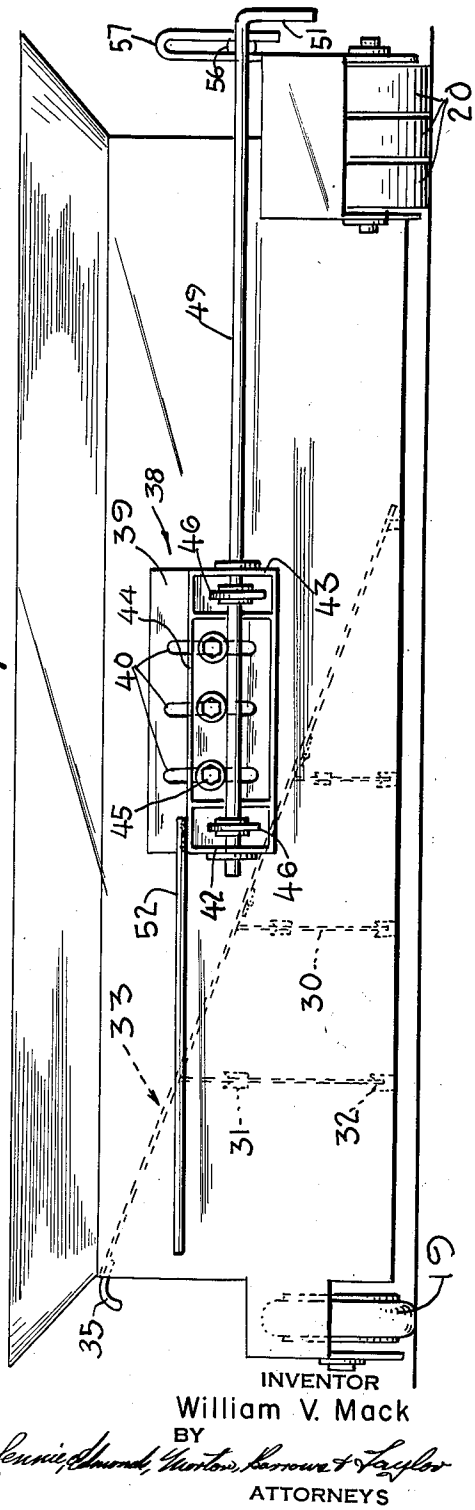


Fig. 3

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SPREADER

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Fig. 6

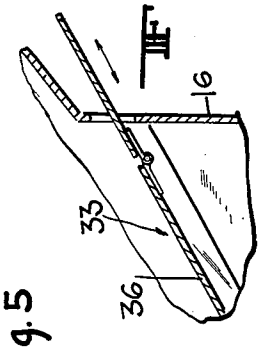


Fig. 5

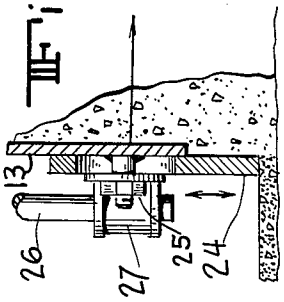


Fig. 8

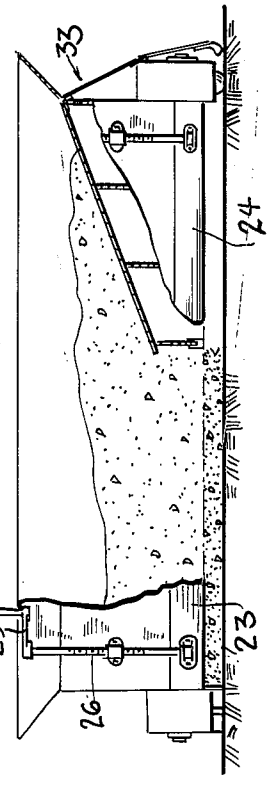


Fig. 4

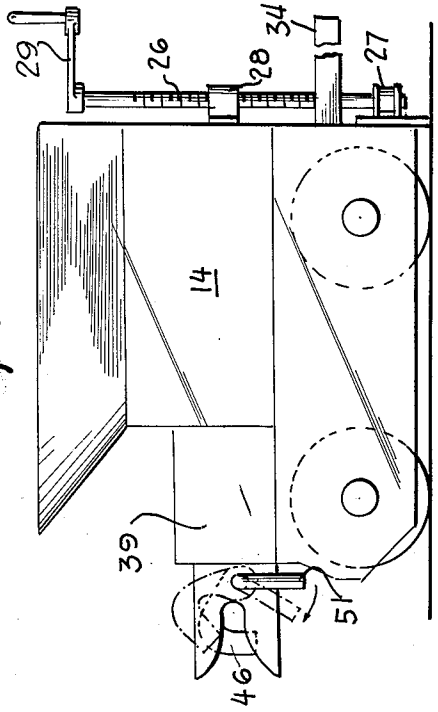
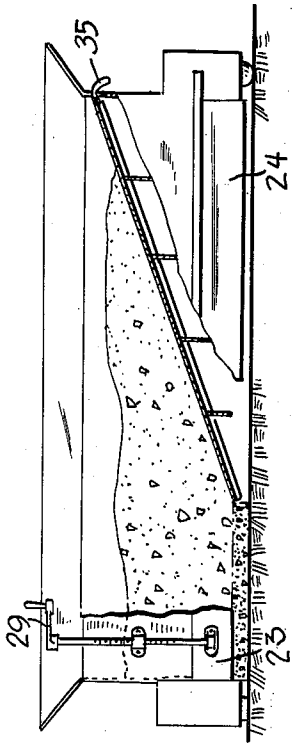


Fig. 7



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SPREADER

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Fig. 9

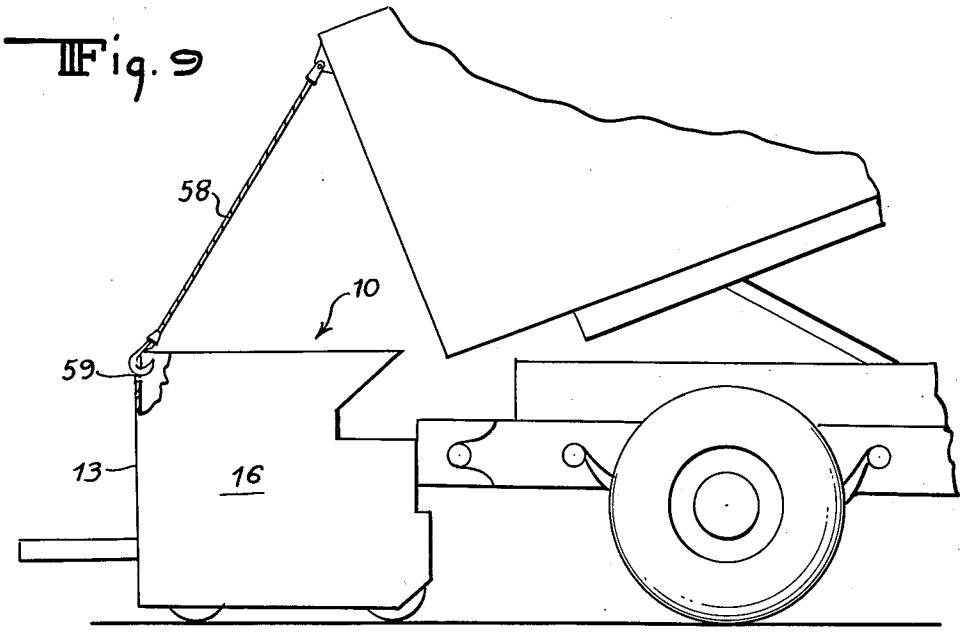
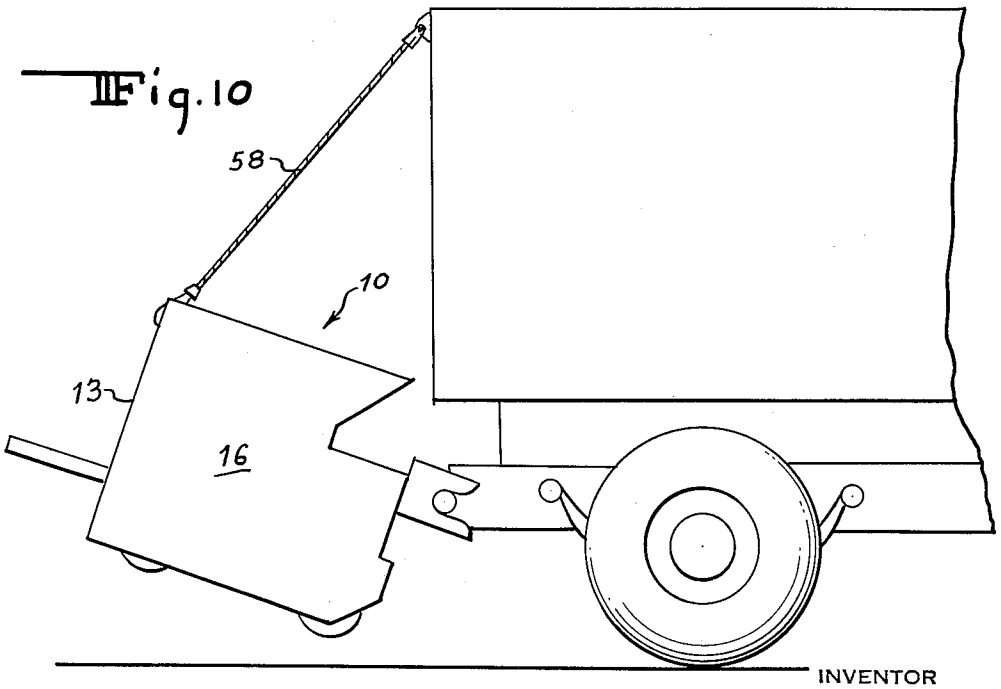


Fig. 10



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SPREADER

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Filed Jan. 26, 1960, Ser. No. 4,697
3 Claims. (Cl. 94—46)

This invention relates generally to road surfacing machines and, more particularly, to an improved machine for spreading various road surfacing materials by which the width and depth of the material spread may be quickly and easily controlled.

Road surfacing machines for laying roadways of concrete or asphalt and the like are well known. A machine of this type is essentially a large hopper which is either self-propelled or is adapted to be towed by another vehicle. This hopper is provided with an open bottom through which surfacing materials are deposited as the hopper is moved along a prepared roadbed. The depth and level of the material deposited is regulated by a plate or plates attached to the trailing lower edge of the hopper adjacent its discharge opening.

Up to the present time, surfacing machines have ordinarily been designed so that any given machine will deposit material across only one of several so-called standard widths. Consequently, construction projects requiring several different widths of roadway, sidewalk or the like have required a different machine for each part of the project or have required that some areas be surfaced by costly hand methods.

In recognition of this problem, it has been proposed to build a surfacing machine equipped with an adjustable telescoping hopper to provide various surfacing widths. However, the mechanism for controlling this adjustment requires screw jack actuation and the sliding of several parts together. Because road surfacing materials are notoriously apt to harden and foul sliding machine parts, the telescoping structure would inherently require a high degree of maintenance.

I have invented a novel road surfacing machine or spreader which is quickly and easily accommodated to various spreading widths differing by small useful increments. It has been the experience of those who have tested a spreader constructed according to the invention, that the width of the surfacing material deposited can be varied from a fraction of one foot to the full width for which the spreader is designed in only a few minutes of changeover time.

A road spreader according to my invention has a hopper with an open bottom, a portion of which forms a discharge orifice to which road surfacing materials are adapted to flow from an inclined chute located within the interior of the hopper. The chute is arranged above a plurality of removable, horizontally spaced, vertical partitions, each of which extends from front to rear across the interior of the hopper. Each of the partitions, together with the front and rear walls and one side wall of the hopper, defines a discharge orifice of different width and thus, a different width of roadway, sidewalk and the like. In order to select a given discharge orifice width, the chute is first withdrawn from the hopper to a position where the lower end thereof is generally vertically above the partition chosen to define one side of the discharge orifice. The intervening partitions, between the selected partition and the side wall forming the opposite side of the discharge orifice, will then be removed to form an unobstructed opening in the hopper bottom.

As a further aspect of the invention, the chute may rest upon the upper ends of the several partitions and extend transversely through a portion of the side wall opposite that side wall which defines, in part, the discharge orifice. Accordingly, the chute may be withdrawn from the hopper until the inner end thereof rests upon the partition which has been selected to define the discharge orifice.

It has been found advantageous to construct the chute of linked, flat segments, each having a horizontal traverse equal to the distance between separate partitions dividing the bottom of the hopper. Thus, when a given number of partitions have been removed or conversely, have been replaced to change the discharge portion of the hopper bottom to a desired dimension, the chute may be easily shortened or lengthened by an equal number of linked segments. Any linked segments not then required for the chute may be folded down adjacent the sidewall supporting the upper end of the chute for convenient storage thereof. This construction has the correlative advantage that the part of the chute which is withdrawn from the hopper will normally hook over the end wall of the hopper and will consequently secure the interior portion of the chute from shifting inwardly toward the hopper bottom.

Further aspects of the invention reside in an automatically vertically adjustable hooking means which is provided for attaching the spreader to a truck. The latter ordinarily carries surfacing material which are fed to the hopper and also pulls the spreader as the surface is laid. As the truck lightens due to the discharge of surfacing materials therefrom into the road spreader, the disclosed hooking mechanism automatically compensates for the gradual raising of the truck body to which it is attached.

Attention is now invited to the following description of a particular embodiment incorporating the present invention and to the drawings in which:

FIG. 1 is a perspective view of a spreader constructed according to the invention;

FIG. 2 is a rear elevation of the spreader of FIG. 1 with a portion thereof illustrated in cross-section;

FIG. 3 is a front elevation of the spreader shown in FIG. 1;

FIG. 4 is a side view taken along the lines 4—4 of FIG. 2;

FIG. 5 is a detail in cross-section of a portion of the spreader's adjustable screed apparatus;

FIG. 6 is a detail in cross-section of a portion of the supply chute provided by the invention

FIG. 7 is a rear elevation partially broken away; and

FIG. 8 is a view similar to that of FIG. 7 after two vertical partitions have been removed to change the effective width of the area being surfaced.

FIGS. 9 and 10 show the spreader attached to a dump truck in operative and inoperative positions, respectively.

Referring now to the drawings and more specifically to FIGS. 1–3 perspective, forward and rear views have been shown illustrating a road surfacing machine or spreader 10 constructed according to the invention. Spreader 10 includes a large mobile hopper, having front and rear walls 12, 13 and side walls 14, 16. The front and side walls are funnelled at their tops to facilitate efficient top loading of the hopper. The hopper is equipped with forward and read axles 17, 18 upon which are mounted a single set of wheels 19, on the left as viewed in FIG. 1, and on the right are provided axles 17', 18' upon which triple sets of wheels 20, 20' are mounted for increased stability. The hopper body 12 has been provided with an open rectangular bottom, a portion of which forms a discharge orifice 21 through which the road surfacing materials are deposited upon the area to be surfaced.

It will therefore be understood, that when the hopper has been filled or partially filled with a surfacing material such as asphalt or concrete (see FIGS. 7 and 8) and when the road spreader is pulled in the direction indicated in FIG. 1 by the arrow, a quantity of the surfacing material will be continuously deposited in a path following the

spreader. The level and average depth of the material deposited is determined by a vertically adjustable leveling device or screed 22.

As best seen in FIGS. 2 and 5, screed 22 may be composed of separate plates 23 and 24 which are independently mounted for sliding vertical movement by pin and slot connections 25 against the lower face of the rear wall 13 of the hopper. Hence, plates 23 and 24 are manually adjustable in varying degrees of height above the ground by a plurality of individual screw jacks 36 which are fastened at their lower ends to plates 23, 24 by means of straps 27. Threaded portions of jacks 26 are engaged by series of threaded blocks 28 affixed to the rear wall 13 of the hopper body 12, so that rotation of the jacks by means of cranks 29 will cause vertical translation of plates 23, 24 attached thereto.

The width of the area which will be surfaced by the spreader is determined by the width of the discharge orifice 21. This dimension is defined by the bottom edge of side wall 14 and by one of a series of vertical partitions 30 which are mounted within the interior of the hopper. Partitions 30 extend from front to rear walls 12, 13 and are advantageously mounted for vertically slideable withdrawal from the interior of the hopper from within a plurality of paired slotted support brackets 31, 32 which are attached to the the interiors of front and rear walls 12 and 13 of the hopper. As shown in FIG. 2, the lower brackets 32 are slotted only at their upper ends so that the partitions 30 will rest upon the bottom of the slotted portions thereof.

An inclined supply chute 33 is situated within the interior of the hopper and rests upon the upper ends of each of the vertical partitions 30 and upon a portion of the side wall 16 through which it extends. Surfacing materials placed within the hopper will tend to slide down the chute toward the open bottom of the hopper to be discharged as heretofore described. A platform 34 is secured to the rear wall 13 of the hopper so that a workman stationed thereon may assist the movement of surfacing materials down the chute toward the discharge orifice 21 of the hopper.

The chute 33, may be slidably withdrawn from the hopper by means of a chute handle 35 extending through the opening provided in the side wall 16 of the hopper. Chute 33 has been constructed of linked hinged segments 36 which bridge the horizontal distances between the side wall 16 and its adjacent partition 30 and between the adjacent partitions themselves. Accordingly (see FIGS. 7 and 8), whenever one or more of the partitions are to be removed to widen the hopper bottom, the chute will first be withdrawn for a corresponding number of segments 36. The inner end of the chute 33 will then rest upon the partition 30 which has been chosen together with side wall 14, to define the lateral dimension of the hopper bottom. The partitions 30, thus exposed, will be removed by simply pulling them upward and out of the slots in brackets 31, 32.

That portion of the chute which is withdrawn from the hopper is permitted to fold downwardly adjacent the side wall 16 (as indicated in FIG. 8 and by the dotted lines shown in FIG. 2) for convenient storage thereof. The withdrawn portion also hooks against the side wall 16 to prevent the chute from being pulled into the hopper by the action of the surfacing materials in flowing down the inclined surface of the chute toward the discharge orifice 21 of the hopper. When the chute is extended for its full length within the hopper, handle 35 checks any tendency of the chute to slide inwardly.

The present invention also includes a hooking mechanism 37 for attaching the road spreader to a truck which supplies surfacing materials to the spreader and the motor power for pulling the spreader in the direction shown by the arrow in FIG. 1. The spreader will normally be attached to a rear part of the truck body by a drawbar (not shown) which will be engaged by the hooking mechanism 37 in a manner to be described. Normally, road surfacing materials will be transferred from the truck to an upper part of the chute 33. A workman stationed upon the platform 34 will push or otherwise assist the flow of the surfacing materials down the chute 33 toward the discharge orifice 21 of the hopper. As the truck pulls the spreader forward and the flow of materials from the truck into the hopper continues, the truck body will tend to rise as the load therein is lightened. It is a feature of the present hooking mechanism that different drawbar levels will be compensated for automatically.

As shown, the hooking mechanism 37 is attached to an oblong supporting enclosure 38 constructed of heavy guage sheet steel or the like which is attached centrally by suitable means such as by welding or riveting to the forward wall 12 of the hopper. Enclosure 38 has a forward face 39 in which three generally vertical slots 40 have been cut. The drawbar engaging portion of the hooking mechanism comprises two generally rectangular hook receptacles 42, 43 which are attached by a channel member 44. Channel 44 has been provided with bolts 45 therethrough which are spaced apart laterally to coincide with the horizontal distance between the slots 40. The bolts 45 extend through the channel 44 and through the slots 40, the interior ends of the bolts 45 (not shown) having nut fasteners thereon for attaching the channel 44 to its supporting enclosure 38. The attachment of the channel member and its associated hook receptacles 42, 43 to the enclosure 38 is such as to permit vertical sliding movement of the channel member and hook receptacles, relative to the enclosure 38.

The receptacles 42, 43 each encloses a downwardly facing hook 46 which will be pivoted upwardly upon the entry of a drawbar into key-shaped cutouts 47, 48 within the respective receptacles 42, 43. A bar 49 extends through the receptacles 42, 43 and through both hooks 46 therein to support the pivotal movement of the hooks. Bar 49 extends laterally to rest upon a fender 50 which covers a set of triple wheels 20 and is downwardly hooked at its end to form a handle portion 51. Another horizontally extending bar 52 is attached by welding an inner portion 53 thereof to the upper surface of hook receptacle 42. Bar 52 extends horizontally to rest upon the fender 54. Thus, the bars 52 and 49 act as stops to limit the extent to which the hook receptacles 42 and 43 may move downwardly.

The hook receptacles may be fixed at some intermediate height, if desired, through the cooperative action afforded by a clamping device which has been provided near the handle portion 51 of the bar 49. The clamping device consists of a hand clamp 56 which is threaded into a portion of the bar 49 and which may be operated to clamp the bar 49 against an upright U-shaped member 57 secured to the fender 50. When it is desired to place the hook receptacle 42, 43 at a given height preparatory to engagement with the drawbar of a truck, workmen will first grasp the bars 49, 52 to raise the hook receptacles to a given height. The hand clamp 56 may then be used to maintain the bars 49, 52 and the hook receptacles at the height selected. After the truck drawbar has been caught by the hooks 46 and before the spreader operation is begun, the clamp 56 will be released to permit the automatic adjustment of the hooking mechanism to the truck body as it lightens.

Normally the truck to which the spreader is attached will be of the dump variety (see FIGS. 9 and 10). One useful feature of this arrangement is that as the spreader is being pulled by the truck to spread material upon the roadbed, the truck body may be raised or tipped to assist the flow of material therefrom into the hopper. When the work is completed, two chains 58, only one of which appears in the drawing, may be hooked through openings 59 and 59′ in the rear wall 13 of the spreader and fastened to the dump body as illustrated while in its tipped position.

With hooking mechanism 37 still securing the front of the spreader to the truck drawbar, the body of the dump truck may be then lowered into a horizontal position. This will draw the rear wall of the spreader upwardly as shown in FIG. 10 and the spreader will hang from and be supported by the rear of the truck, its wheels clear of the ground for transport to another site.

It will be appreciated from the above description that the road spreader constructed according to the present invention will be readily adaptable to perform many surfacing operations heretofore accomplished by hand. The partitions which successively define different widths of the material spread may be spaced apart within the hopper at sufficiently small increments so that, as a practical matter, any width of roadway, sidewalk, etc. may be accommodated. The quickly removable partitions and the withdrawable segmentally hinged chute cooperate to provide extremely short changeover times in making the spreader ready for different surfacing widths.

In combination with these advantages, the disclosed spreader is of relatively simple construction, requiring no motor power except that furnished by the truck which supplies the material for loading the hopper. A specific feature of this arrangement is that the hooking mechanism connecting the spreader to the rear of the truck body, automatically compensates for various heights as the truck body lightens.

This detailed description and the drawings of a particular embodiment are merely illustrative. The full scope of the invention is defined in the appended claims.

I claim:

1. In a road spreader having front, rear and side walls forming a hopper adapted to receive road surfacing materials and the like, said hopper having an open bottom defining a discharge orifice, the width of said orifice determining the width of the deposit of said surfacing materials upon forward movement of said spreader, and means supporting said hopper for movement, the improvement comprising a plurality of generally parallel vertically disposed partitions within said hopper, means for removably securing the ends of said partitions to front and rear walls of said hopper, an inclined chute for supplying road surfacing materials to said discharge orifice, the innermost one of each partition together with one side wall of said hopper defining a predetermined width of said discharge orifice, said partitions being arranged in spaced parallel relationship to said one side wall, each partition being of successively increasing height in a direction toward the other side wall to support the chute in inclined position, said chute being mounted within said hopper above said

partitions and being supported by the upper end of each partition in said inclined position for withdrawal from said hopper to a position where the lower end thereof is supported on the innermost partition which defines in part the width of said discharge orifice, said chute adjacent its upper end extending transversely through an aperture defined by said other side wall opposed to said one side wall defining in part the width of said discharge orifice, said chute resting upon said other side wall and being withdrawable through said aperture to expose said partitions within said hopper, said chute being constructed of linked hinged segments whose transverse span individually correspond to the distances between adjacent partitions and to the distance between the side wall supporting said chute and the partition adjacent thereto such that a given number of partitions will be exposed by the withdrawal of an equal number of segments from said hopper, said segments when withdrawn being foldable downwardly adjacent the exterior of said side wall supporting said chute.

2. A road spreader according to claim 1 in which the means for fastening the ends of said partitions includes members attached to said front and rear walls defining slots for the reception of the ends of said partitions, said slots being open at the top to permit slideable withdrawal of said partitions from said hopper.

3. A road spreader according to claim 1 wherein said spreader includes adjustable leveling means slideably mounted for vertical movement upon the rear wall of said hopper adjacent said discharge orifice.

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