

Aug. 3, 1937.

C. G. KIME

2,089,094

STONE SPREADING MACHINE

Filed Nov. 30, 1931

3 Sheets-Sheet 1

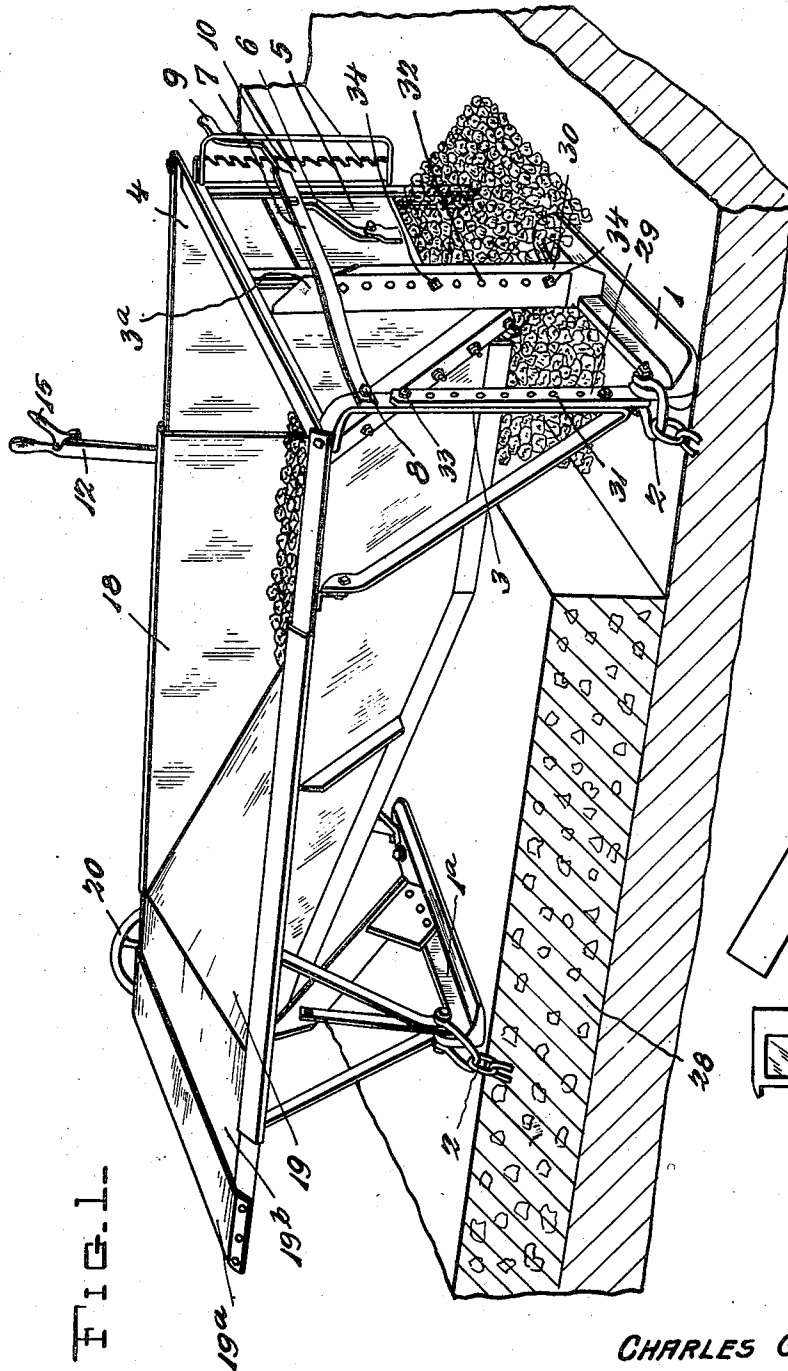


FIG. 1.

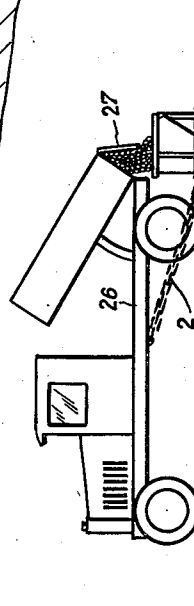


FIG. 5.

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3 Sheets-Sheet 2

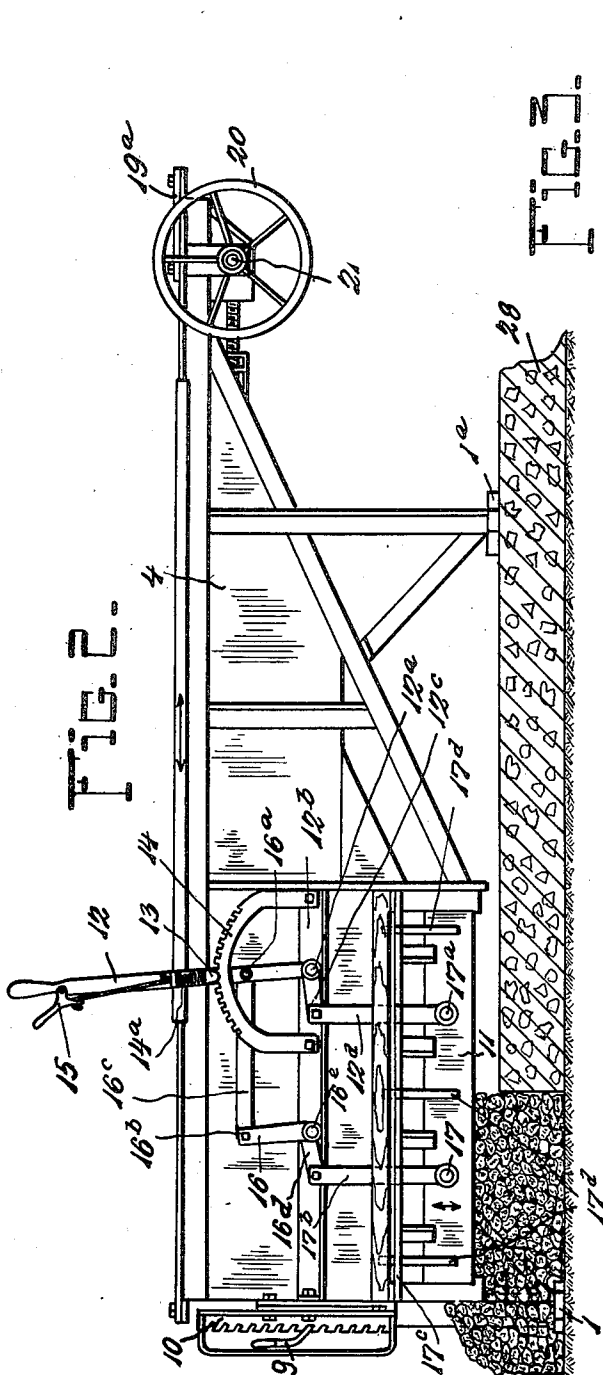
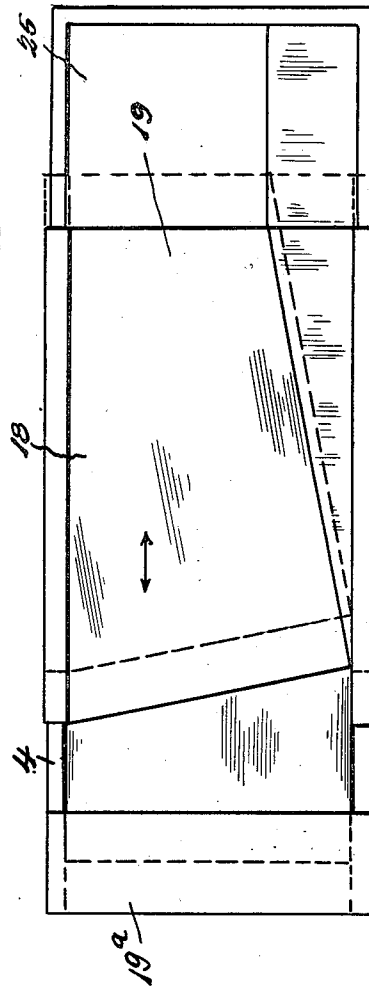


FIG. 3.



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3 Sheets-Sheet 3

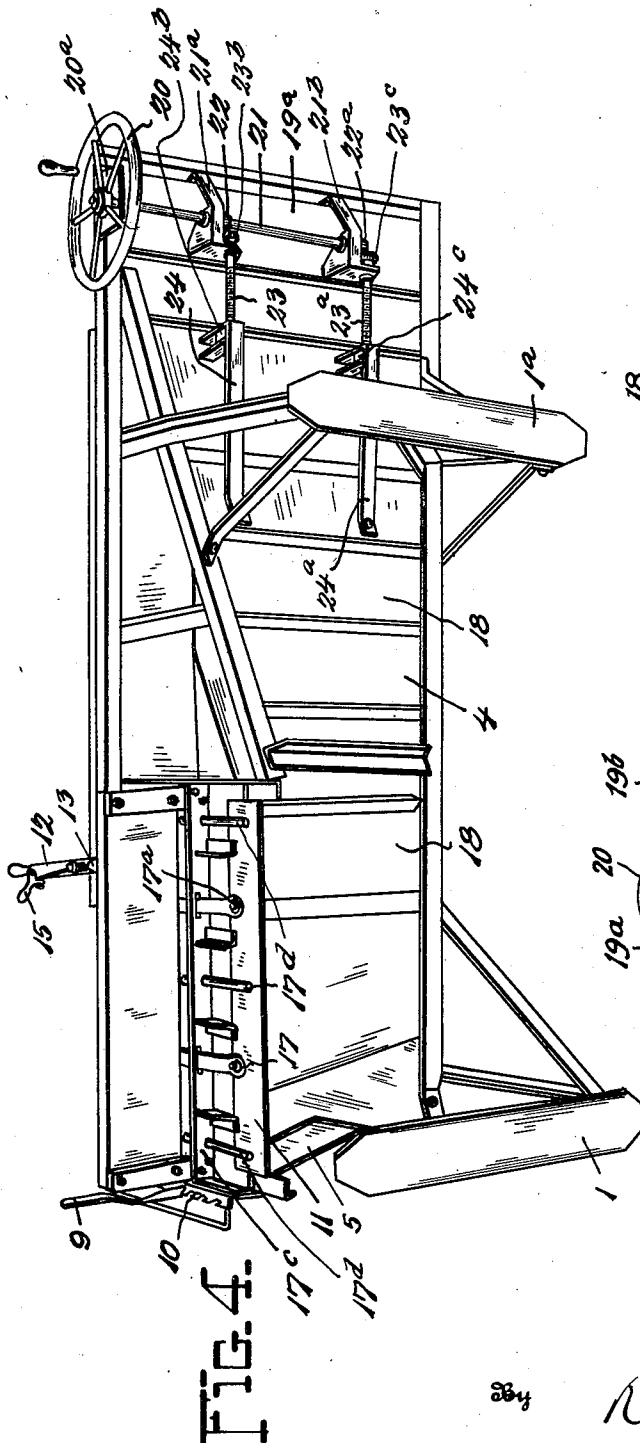
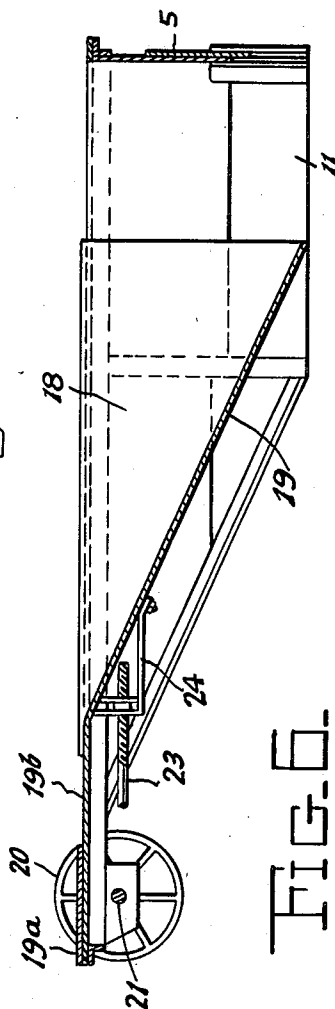


FIG. 5.

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UNITED STATES PATENT OFFICE

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STONE SPREADING MACHINE

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Application November 30, 1931, Serial No. 578,130

14 Claims. (Cl. 94-44)

Spreading machines for spreading road building materials, such as stone, granite, slag, asphalt, or concrete, are well known in the art. These machines are built, in general, by securing metal sheets together to form a hopper, the hopper having an open bottom and provided with means for regulating the materials discharged or spread from the hopper.

In the completed machine, the hopper is mounted on a carrying frame, and is provided with traction shoes or rollers, or equivalent instrumentalities, which permits the machine to be moved along the roadway through pulling force transmitted thereto from a truck or similar traction vehicle through chains or equivalent devices secured to the truck and machine by means of which the machine is towed along the road.

The materials to be spread are usually discharged directly into the hopper from the truck, and as the hopper is towed along the roadway, the materials are discharged through the open bottom of the hopper and laid in a layer of even thickness.

In accordance with the present invention, this general type of machine has been modified to particularly adapt it to ditch filling purposes, such as for example, the building of shoulders along a roadway. To this end the open bottom of the hopper is positioned at one side of the machine, and to accommodate different widths which may be required to be filled, means are provided for regulating or adjusting the width of the discharge opening through the bottom.

For this purpose the hopper is formed of two members, a stationary member, immovable relatively to the carrying frame, a movable member mounted within the stationary member and movable back and forth therein, this member usually completing the hopper and by its movement, controlling the area of the bottom discharge opening, or the hopper may be a complete hopper and the movable member serving as a deflector member for directing the materials to one side of the hopper and also serving as a gate to control the discharge of materials through the bottom opening, and also to control the area of the bottom opening as has been already described. These control actions are common to the various instrumentalities which may be employed.

As is customary, the hopper and frame are carried on traction shoes, but in view of the fact that the present machine is designed as a trench filler, one of these shoes must travel in the trench being filled. To accommodate different depths of trench and different thicknesses of road pave-

ment, this shoe is made vertically adjustable. As in the standard construction of machines of this type, the filling end of the hopper is provided with adjustable means for allowing discharge from the end of the hopper, but the adjusting mechanism has been improved in the present construction so as to facilitate the adjustment of the means; and also with respect to the conventional rear strike-off gate employed in this present device there have been improvements made in the adjusting and mounting means thereof.

The details of these features and the advantages of the present construction will become apparent from a consideration of the following description when taken with the accompanying drawings, in which—

Figure 1 represents a perspective view of the machine embodying the principles of this invention, showing the machine filling a trench along a surface or paved road.

Figure 2 is a rear elevation of the machine shown in Figure 1, and illustrating means for controlling the width and depth of the spread.

Figure 3 is a diagrammatic top view showing the direction of movement of the hopper, parts being omitted.

Figure 4 is a bottom view of the machine.

Figure 5 is a diagrammatic side elevation of the machine showing it attached behind a truck and receiving materials from the truck.

Figure 6 is a diagrammatic sectional view of the machine, parts being omitted.

Referring more particularly to the drawings, it will be seen that the machine comprises a frame formed of a plurality of standards which carry a hopper having an open bottom for the discharge of road materials therethrough. The frame and hopper are carried by traction shoes 1 and 1a, of which the shoe 1 is adapted to run along the bottom of a ditch or trench alongside a roadway, the other shoe 1a being adapted to rest upon the surface of the road itself. The shoes are secured to respective parallel and vertical standards of the frame, which standards and shoes have a chain 2, or equivalent towing means secured thereto.

Of these shoes, the trench shoe 1 is adjustable vertically, the aforesaid standards, indicated at 3 and 3a, respectively, serving as guides for corresponding standards secured to the shoe, the respective standards being provided with suitable holes for the passage of securing members there-through to hold the shoe in required position of adjustment.

The frame carries a hopper, as previously men-

tioned, and is formed of a stationary and movable member. The stationary member 4 has an open bottom for discharge of materials from the hopper, as will be seen from Figure 1, and it also has end discharge means controlled by an adjustable, vertically movable end gate 5, secured by a bracket 6 to its adjusting arm 7, which is pivotally mounted at one end to the top of standard 3, as indicated at 8, the other end of the adjusting arm terminating in a handle 9, which rests in the teeth of a vertical rack 10, which is carried by a frame standard at the rear of the machine. Obviously the engagement of the handle 9 with the rack 10 determines the height of the adjustment of the gate 5.

Extending across the back of the stationary hopper member 4 is the strike-off and levelling gate 11, which is also vertically adjustable, through the instrumentalities of adjusting comprising a pivotally mounted handle 12, which is adapted to swing around the pivot 12a, which secures the lever 12a to the frame member 12b, there being a suitable shaft serving as the pivot, the shaft rotating as the handle 12 is operated, which actuates the short arm 12c of a bell crank, the long arm 12d of which extends substantially straight downwardly and is connected with the gate 11 at 17a.

Connected with the lever 12 is a pawl 13, normally held in position in the teeth of a segmental rack 14 by the pressure of a spring 14a, the pawl 13 being retracted from its engaging position by operation of the handle 15 in a manner which will be readily understood.

The lever 12 has connected to it at a suitable point, such as 16a, a bell crank, the long arm 16 of which is pivoted at 16b to a link 16c, this link being, therefore, the connection between the bell crank arm 16 and the lever 12. The short arm 16d of the bell crank, which is fulcrumed at 16e to the frame member 12b, is connected with a link 17b which in turn is connected to the gate 11 at 17. The frame member 12b also has secured to it the rack 14.

The members 12d and 17b are guided behind a cross piece 17c, and the gate 11 has suitably secured to it, as by bolting or welding, a series of members 17d which are slidably mounted within the cross piece 17c, for properly guiding the gate 11 in its vertical movement.

This brings us to the consideration of the adjusting means for the bottom discharge opening of the stationary hopper member 4. It has been said already that the hopper is completed by providing a member which is movable within the stationary member. This movable member is illustrated in the drawings as 18, which is formed with vertical sides corresponding to the sides of the hopper member 4, a closed bottom and a closed end, the end sloping inwardly as shown at 19, terminating in the horizontal member 19b which slides beneath the guide 19a. The top edges of the sides of the hopper member 4 serve as guides upon which the movable member 18 operates. It will be understood that the member 18 may take many forms, so long as the function includes the adjustment of the bottom opening in the member 4 and the guiding of the materials being spread into the discharge opening. The action of this movable member is therefore principally that of an adjusting gate for the bottom opening.

Adjustment of the member 18 is obtained by operation of a handwheel 20, which is supported by the frame of the machine at 20a, and which

carries the shaft 21, bearing in brackets 21a and 21b secured to the frame of the machine. The shaft 21 has the spaced gears 22 and 22a thereon, which coact with gears 23b and 23c to turn the spindles 23 and 23a, which operate in brackets 24 and 24a secured to the underside of the movable hopper member 18; or it may be more satisfactory to have the spindles 23 and 23a acting in nut-like members 24b and 24c held between bifurcations in the brackets 24 and 24a, as will be apparent from the drawings. It will therefore be seen that movement of the member 18 back and forth in the member 4 adjusts the area of the bottom discharge opening 25 in response to operation of the handwheel 20, correspondingly controlling discharge of road materials therefrom as the member 18 moves relatively to the member 4.

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

1. A machine of the character described, comprising the combination with a supporting frame adapted to be towed along a roadway, of a hopper carried by the frame and adapted to discharge road materials therefrom, the hopper being provided with an open bottom through which materials are deposited along the roadway, and instrumentalities forming a partial inner hopper positioned within the hopper for adjustably controlling the guiding of said materials in the hopper to a predetermined area of the open bottom of the hopper for the discharge of material therefrom.

2. A machine of the character described, comprising the combination with a supporting frame adapted to be attached to a truck for towing along a roadway, of an open bottom hopper mounted in the frame for discharging road materials therefrom, and a supplemental partial hopper member movable over the bottom of the hopper for adjusting the bottom opening of the hopper for positioning the discharged material therefrom.

3. A machine of the character described, comprising the combination with a supporting frame, of an open bottom hopper carried by the frame and adapted to discharge road materials therefrom, traction shoes carrying the frame and hopper, means for vertically adjusting one of the traction shoes, instrumentalities connected to the shoes for connecting the machine to a truck for towing the machine along a roadway, adjustable means within the hopper for varying the bottom opening thereof and for directing the materials toward the adjustable shoe, and mechanism for adjusting the position of the said means for controlling the discharged material from the hopper.

4. A machine of the character described, comprising the combination with a supporting frame adapted to be towed along the roadway, of a hopper having an open bottom carried by the frame, and adapted to discharge road materials therefrom, the said hopper having a road clearance at one end less than at the other end, and a member positioned within the hopper for adjusting the area of the open bottom, the said member having a sloping end to direct the road materials toward the discharge opening in the bottom of the hopper for positioning the discharged materials.

5. A trench filling machine comprising the combination with a supporting frame adapted to be towed along a roadway, of a hopper carried

by the frame and adapted to discharge road materials therefrom, the said hopper having an opening in the bottom through which the materials are discharged into a trench within the roadway, the hopper increasing in depth toward the discharge opening for directing the materials through the opening, and an adjustable sloping ended member within the hopper for controlling the area of the discharge opening.

6. A trench filling machine comprising the combination with a supporting frame adapted to be towed along a roadway, of a hopper carried by the frame and adapted to discharge road materials therefrom, the said hopper having an opening in the bottom through which the materials are discharged into a trench within the roadway, the hopper increasing in depth toward the discharge opening for directing the materials through the opening, traction shoes carrying the frame and hopper, one of the traction shoes being adapted to move along a paved roadway, the other shoe being adapted to move along a trench alongside the roadway, the trench shoe being vertically adjustable to compensate for varying thicknesses of road paving, the bottom opening of the hopper being disposed toward one side of the hopper to overlie the trench, and means for adjusting the said vertically adjustable shoe.

7. A trench filling machine comprising the combination with a supporting frame adapted to be towed along a roadway, of a hopper carried by the frame and adapted to discharge road materials therefrom, the said hopper having an opening in the bottom through which the materials are discharged into a trench within the roadway and over which the opening is adapted to lie, the hopper increasing in depth towards the discharge opening for directing the materials through the opening, traction shoes carrying the frame and hopper, one of the traction shoes being adapted to move along a paved roadway, the other shoe being adapted to move along the trench alongside the roadway, the trench shoe being vertically adjustable to compensate for varying thicknesses of road paving, and means for adjusting the said shoe, the said means comprising standards secured to the shoes and adapted to engage supporting standards on the frame, the said standards secured to the shoe and the standards on the frame being provided with apertures adapted to be brought into registration with each other, and fastening means adapted to pass through the openings for holding the shoe in desired adjustment.

8. A machine of the character described, comprising the combination with a supporting frame, of a hopper carried by the frame, the hopper having an open bottom, the said hopper laterally increasing in depth to provide road clearance less at one end than at the other, discharge of road materials being effected through the portion of the hopper having the least road clearance, an adjustable end gate for controlling lateral discharge of materials from the hopper, and an adjustable bottom gate for adjusting the area of the open bottom.

9. A machine of the character described, comprising the combination with a supporting frame, of a hopper mounted on the frame for discharging road materials therefrom, having a discharge opening and a supplemental means for closing said opening comprising a concave unit lying within the hopper and movable in the direction

of the length of the hopper, and instrumentalities for moving said unit.

10. A machine of the character described, comprising the combination with a supporting frame, a hopper having a discharge opening, and means for varying the area of said discharge opening comprising a movable unit including opposed side members conforming to and coacting with the front and rear walls of the hopper, a surface joining said side members and normally lying as an inclined plane surface, for directing materials toward said discharge opening.

11. A machine of the class described, comprising the combination with a supporting frame, a hopper having a discharge opening in two zones, and means for closing the discharge opening in one zone comprising a unit mounted on said frame and having the major portion of its body lying within said hopper, said body comprising a pair of side members conforming to and coacting with the front and rear walls of the hopper, by virtue of which said body is supported, an inclined member connecting said side members and presenting an inclined surface to direct materials introduced into said hopper toward said discharge opening, instrumentalities for moving said unit to closing position with respect to the zone of the discharge opening which it closes, secondary means for closing the other zone of said discharge opening, and means for reciprocating said secondary member into and out of closing position.

12. A machine for building shoulders along the marginal edges of a roadway, comprising a frame adapted to be towed along the roadway, a hopper carried by said frame and from which suitable shoulder building materials may be discharged and applied to the shoulder area, said hopper including a body, the major portion of which is adapted to traverse over the roadway proper but which extends laterally to position a portion thereof in an overlying relation to the marginal shoulder area, and from which latter portion the materials are discharged from the hopper, means within the hopper for directing said materials onto the shoulder area, supporting means for the frame, which supporting means is adapted to support the roadway traversing portion of the hopper body and arranged to traverse the roadway proper, and separate supporting means for supporting the lateral shoulder overlying portion of the hopper and arranged to directly traverse the marginal shoulder, said last mentioned supporting means being adjustable to accommodate differences in relative elevation of the roadway proper and the marginal shoulder before the shoulder building materials have been applied to the latter.

13. A machine for building shoulders along the marginal edges of a roadway, comprising a frame adapted to be towed along the roadway, a hopper carried by said frame and from which suitable shoulder building materials may be discharged and applied to the shoulder area, said hopper including a body, the major portion of which is adapted to traverse over the roadway proper but which extends laterally to position a portion thereof in an overlying relation to the marginal shoulder area, and from which latter portion the materials are discharged from the hopper, means within the hopper for directing and adjustably confining the discharge of said materials to a predetermined shoulder width, supporting means for the frame, which supporting means is adapted to support the roadway traversing portion of the

hopper body and arranged to traverse the roadway proper, and separate supporting means for supporting the lateral shoulder overlying portion of the hopper and arranged to directly traverse the marginal shoulder, said last mentioned supporting means being adjustable to accommodate differences in relative elevation of the roadway proper and the marginal shoulder before the shoulder building materials have been applied to the latter.

14. In a material spreader, the combination with a hopper having an open top and an offset open bottom, of means for rendering said hopper self-supporting on the surface along which the spreader is adapted to travel, and a guard plate in advance of the inner edge of the open bottom in position to prevent material from spreading into the path of said supporting means.

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