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C. L. GEORGE

2,159,554

ROAD MATERIAL SPREADING MACHINE

Filed April 16, 1937

FIG. 1.

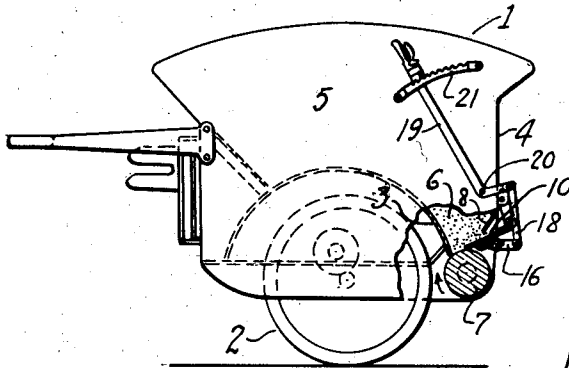


FIG. 3.

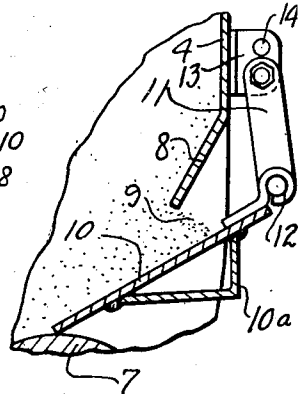


FIG. 2.

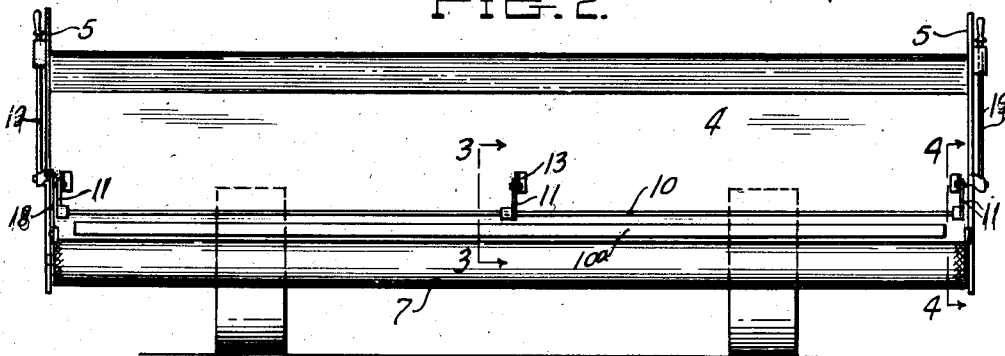


FIG. 4.

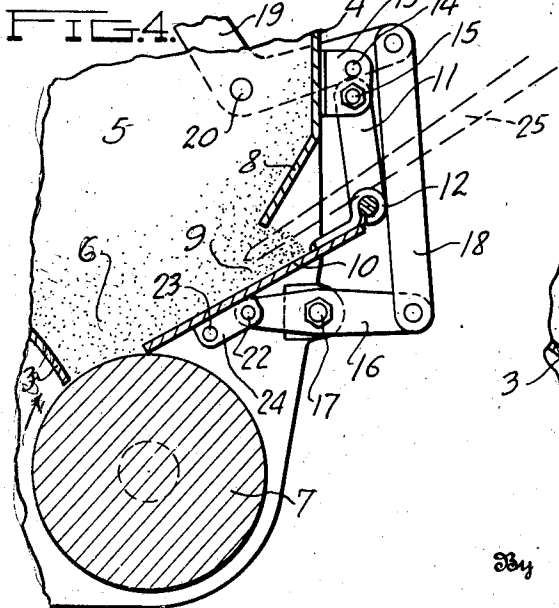
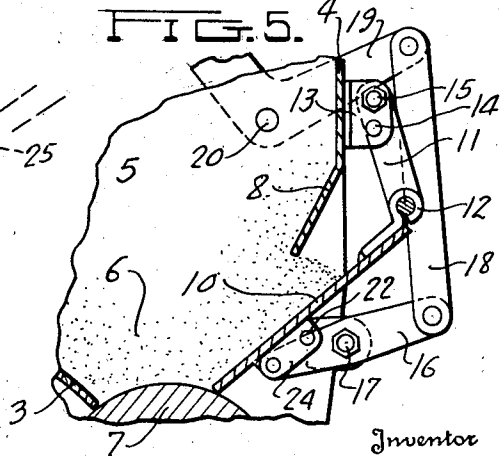


FIG. 5.



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UNITED STATES PATENT OFFICE

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ROAD MATERIAL SPREADING MACHINE

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7 Claims. (Cl. 221—130)

This invention relates to machines for spreading crushed stone, gravel, or other similar road surfacing material, and particularly to the discharge, control feature of such machine.

5 The object of the invention is the provision in a machine of the class described of a discharge control shutter, which is mounted for compound adjusting movements, together with a control therefor, whereby its inclination may be changed without varying the spacing of its free edge with respect to the feed wheel, or the spacing of its free edge with respect to the feed wheel varied without changing its inclination, or both of said adjustments effected together, as the kind of
10 material used, its coarseness and condition, that is, whether dry or moist, may require.

Further objects and advantages of the invention will be apparent from the following description, and from the accompanying drawing,
15 in which—

Figure 1 is an end elevation of a device embodying the invention, with a part broken away; Fig. 2 is a rear elevation thereof; Fig. 3 is an enlarged fragmentary section on the line 3—3 in Fig. 2, and Figs. 4 and 5 are enlarged fragmentary
20 sections on the line 4—4 in Fig. 2, with the control parts in different positions of adjustment.

Referring to the drawing, 1 designates a hopper having a wheel support 2 and having, in the present instance, its bottom 3, its rear wall 4 and its end walls 5 cooperating to form a chute-like passage 6, the lower end of which is closed
25 by a feed roll 7 and by the discharge control means embodying the invention.

30 The feed roll 7 is driven from the wheels 2, as well understood in the art, and has its feeding movements in the direction indicated by the arrows. The low rear edge of the hopper bottom 3 substantially meets the periphery of the feed wheel in a line forward of and parallel to a vertical plane cutting the axis of the roll lengthwise thereof. The rear wall 4 terminates at its lower edge in a forwardly and downwardly inclined lip 8, which is directed substantially
35 toward the axis of the roll 7 and terminates in spaced relation to the roll periphery, as shown at 9.

The discharge control means includes a shutter 10 which is coextensive with the length of the roll 7 and is mounted between the two end plates 5 of the hopper with its forward free edge portion projecting downward and forward through the space 9 between the lip 8 and feed roll. The shutter 10 is preferably flat on its top, as shown,
40 and is supported at its rear edge without the

rear side of the hopper, in the present instance at three spaced points, by hanger links 11, the lower end of each of which is pivoted to a respective eye 12 on the shutter, while its upper end is pivoted to a bracket 13 on the outer side of the rear plate 4 of the hopper. The bracket 13 is preferably provided with at least two vertically spaced apertures 14 into either one of which a connecting bolt 15 for the link may be mounted, thus facilitating the vertical adjustment of the link pivot. A stiffening strip 10^a may, if desired, be secured to the under side of the shutter bar.

The shutter bar 10 at each end is pivotally connected at its under side near its free edge to the forward end of a rearwardly projecting lever 16, each one of which latter is pivoted intermediate its ends to the inner side of each hopper end 5 below the shutter bar, as at 17, and has its rear end connected by a link 18 to the rearwardly projecting end of a bell-crank form of hand control lever 19 pivoted at 20 to the outer side of the respective end 5 of the hopper. This lever has a hand latch engaging a notched sector 21 to hold the lever in adjusted position. The forward end of the lever 16 has a laterally projecting stud 22 which may be engaged to any one of a series of apertures 23 in a bracket plate 24 attached to the under side of the shutter bar.

In use, the inclination of the shutter bar and the spacing of its free edge with respect to the periphery of the feed wheel depends on the coarseness or fineness of the material being spread, and upon the flowing nature of such material. The feed roll 7 is preferably provided with spiral grooves which facilitate the discharge of the material, as shown and described in United States Letters Patent No. 2,046,603, to Versal F. Baumgardner, and if a fine dry material, such as sand, is being spread, the free edge of the shutter plate terminates very close to the periphery of the feed roll and at a point adjacent to the longitudinal vertical plane of the feed roll axis, as shown in Fig. 4. The spacing of the edge of the shutter bar with respect to the feed roll depends on the coarseness of the material handled. For instance, if the material is crushed stone, it is apparent that such spacing must be greater than if sand or a relatively fine gravel is used, and also that such spacing must be varied according to the grade of crushed stone or gravel used. It is also desirable when using some materials, and particularly when they are in a moist or wet condition, to increase the inclination of the shutter bar and advance its edge a

greater or less distance from the vertical center line of the feed roll axis in a feeding direction, as indicated by the position of the shutter bar in Fig. 5 relative to Fig. 4.

5 The inclination of the shutter bar may be varied without affecting the spacing of its free edge with respect to the feed roll either by shifting the vertical position of the pivot bolts 15 for the hanger links 11, or by changing the pivotal
10 connections 22 of the levers 16 with the shutter bar and slightly adjusting said levers through an operation of the control levers 19, as desired. The spacing of the free edge of the shutter bar 10 with respect to the feed wheel, to suit the material being handled, may be effected in any position of inclination of the shutter bar by a manipulation of the control levers 19 to impart the desired, rocking to the levers 16. It is apparent
15 that any adjusting movement of the levers 16 will impart a compound adjusting movement to the shutter bar due to the pivotal connection of the bar not only with the levers 16, but with the swinging hangers 11. It is apparent that inasmuch as an independent adjusting and control
20 lever is provided for each end of the shutter bar, the spacing of such bar lengthwise of the feed roll may be varied so that such space is of tapered form, whereby a greater feed may be effected at one end than the other.

30 It will be apparent that in any operative position of the shutter bar 10 with respect to the feed roll, the top of the shutter bar is spaced with respect to the lower edge of the lower edge lip 8 of the rear wall 4, which space is open to the rear
35 of the hopper so as to enable a bar 25 to be freely inserted into the material in the hopper through said space to loosen any clogging thereof that might occur, as indicated in Fig. 4. While such space is open at all times to the rear of the hopper, the material will not flow from the hopper
40 through such space due to the inward inclination of the lip 8 causing it to serve as a deflecting lip for the material and due to the upward inclination and extension of the shutter bar to the
45 rear of said lip.

I wish it understood that my invention is not limited to any specific construction, arrangement or form of the parts, as it is capable of numerous modifications and changes without departing
50 from the spirit of the claims.

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

1. The combination with a material discharge
55 hopper of the class described having a sidewise opening discharge passage and a feed roll forming the bottom wall of said passage, of a shutter bar projecting downwardly and inwardly into said passage and bodily movable backwardly and
60 forwardly therein with its lower edge adjacent to the feed roll, means supporting said shutter for compound pivotal adjusting movements to vary its spacing with respect to the feed roll, and means connected to said bar and operable to impart
65 predetermined adjusting movements thereto.

2. The combination with a material discharge hopper of the class described having a sidewise opening discharge passage at its lower end and a feed roll forming the bottom wall of said passage,
70 of a shutter bar projecting downwardly and inwardly into said passage and bodily movable backwardly and forwardly therein with its lower edge terminating adjacent to the top portion of the feed roll, means without the hopper attached
75 to the outer portion of said bar for suspending

it for compound swinging movements to vary its position with respect to the feed roll, and means connected to said bar and operable to impart predetermined adjusting movements thereto.

3. The combination with a material discharge
5 hopper of the class described having an elongated sidewise opening discharge passage and a feed roll forming the bottom wall of said passage, links suspendingly pivoted to the outer side of the hopper above said passage, a shutter bar pivoted to said links and projecting downwardly and inwardly therefrom into said passage and bodily movable backwardly and forwardly therein to provide a material discharge space between its lower edge and said feed roll, and manually operable
10 15 means connected to said bar and operable to impart compound adjusting movements thereto relative to the feed roll.

4. The combination with a material discharge hopper of the class described having a sidewise
20 opening discharge passage and a feed roll forming the bottom wall of said passage, of a shutter bar projecting downwardly and inwardly into said passage and bodily movable backwardly and forwardly therein with its top surface in predetermined spaced relation to the top wall of the passage and with its lower edge in predetermined relation to the top surface of the feed wheel, means suspending said bar from the hopper without and above said passage, the bar having
25 30 a double pivotal connection with the hopper through said means, and means connected to said bar and operable to impart compound movements thereto to vary its position relative to the feed roll and top edge wall of said passage.

5. In combination, a material discharge hopper having a wall terminating at its lower edge in a downwardly and inwardly extending lip, a feed roll disposed below and having the vertical longitudinal plane of its axis forward of said lip to form the bottom wall of said hopper and cooperating with said lip to form a material feed passage therebetween, a shutter bar adapted for bodily swinging movement inwardly through the passage toward and away from said vertical longitudinal plane of the feed roll axis to regulate the movement of material through the passage, means for supporting the shutter bar from the hopper, and means connected to the bar and operable to retain the same in predetermined positions of adjustment relative to said feed roll axis.
35 40 45 50

6. In combination, a hopper having a rear side wall formed with a downwardly extending intumed lip portion, a feed roll below and forwardly of said lip portion and cooperating therewith to form a material discharge passage, a shutter bar extending downwardly and forwardly through said passage, with its top surface spaced from said lip portion to provide a material loosening space therebetween and with its lower edge terminating adjacent to the top surface of the feed roll to provide a material discharge space therebetween, means for suspending said bar from the hopper for compound adjusting movements, and means connected to said bar and operable to impart compound adjusting movements to the bar.

7. In combination, a hopper having a rear side wall formed with a downwardly extending intumed lip portion, a feed roll beneath and spaced forwardly of said lip portion and cooperating therewith to form a passage therebetween, a shutter bar extending downwardly and forwardly through said passage with its top surface spaced
75

from said lip portion to provide a material loosening space therebetween and with its lower edge terminating adjacent to the top surface of the said roll to provide a material discharge space therebetween, movable means connected to the hopper and to the bar for supporting the bar from the hopper, and means connected to said hopper and bar and operable to cooperate with

said suspending means whereby to impart compound adjusting movements to the bar so as to vary the inclination of the latter and for moving the lower edge of the same toward and away from the vertical longitudinal plane of the feed roll axis.

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