May 7, 1963 R. W. HEER ETAL 3,088,384

BITUMINOUS PAVER

Original Filed Feb. 21, 1957 5 Sheets-Sheet 1

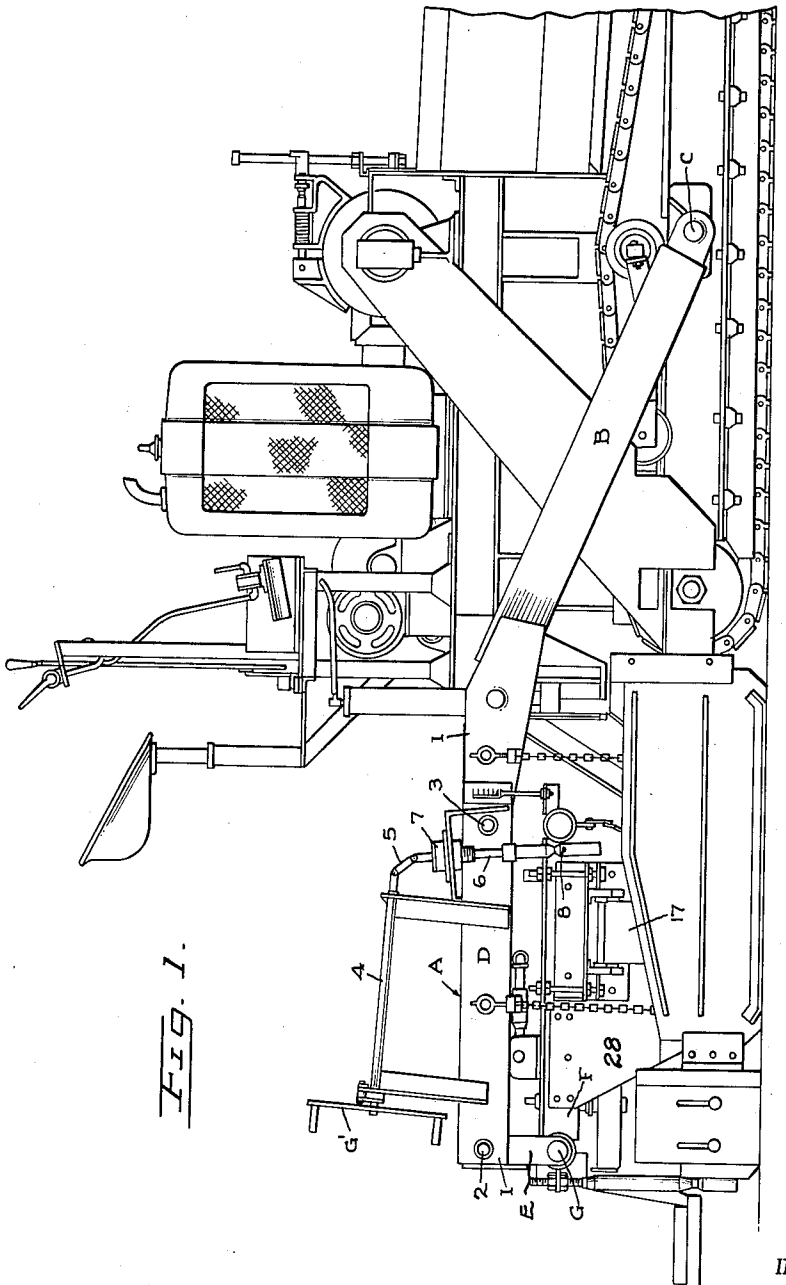


Fig. 1.

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BITUMINOUS PAVER

Original Filed Feb. 21, 1957 5 Sheets-Sheet 2

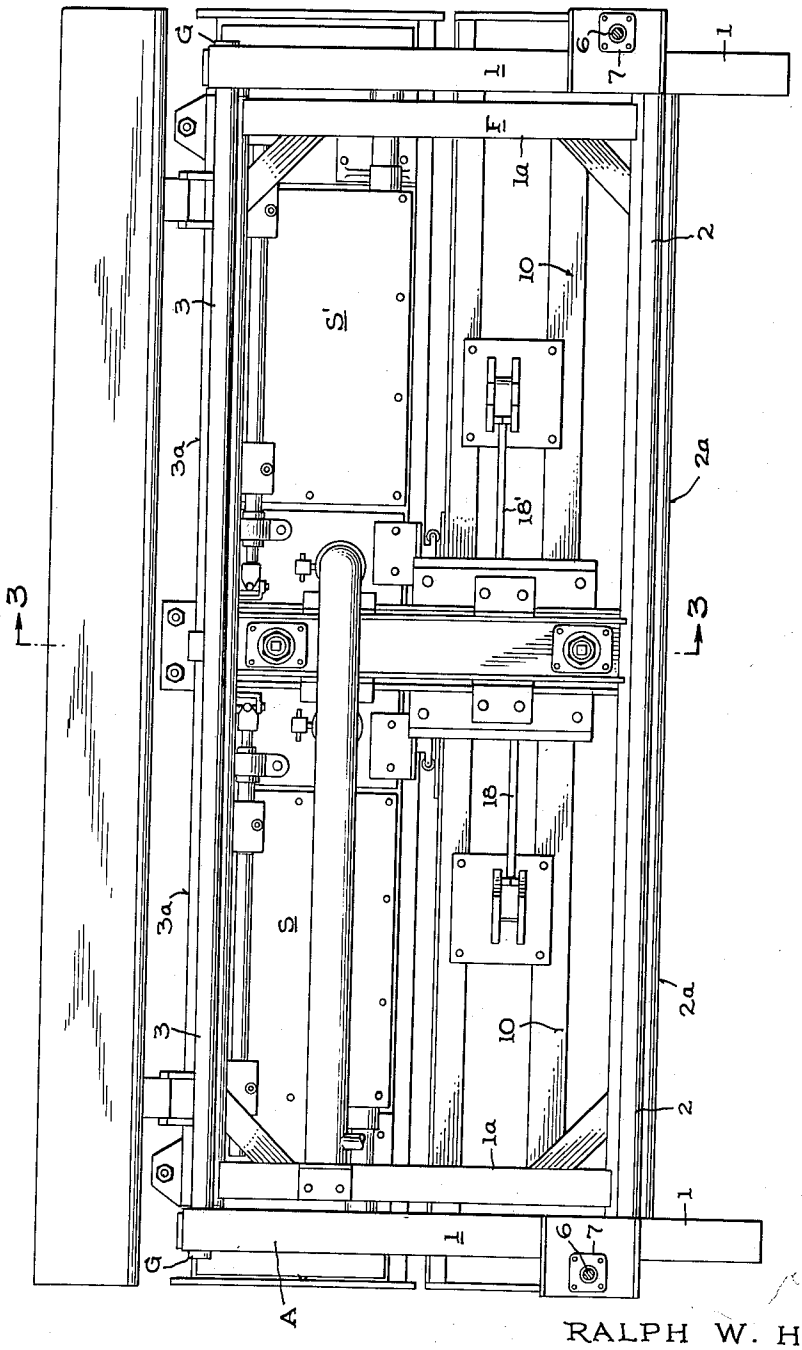


Fig. 2.

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Original Filed Feb. 21, 1957 5 Sheets-Sheet 3

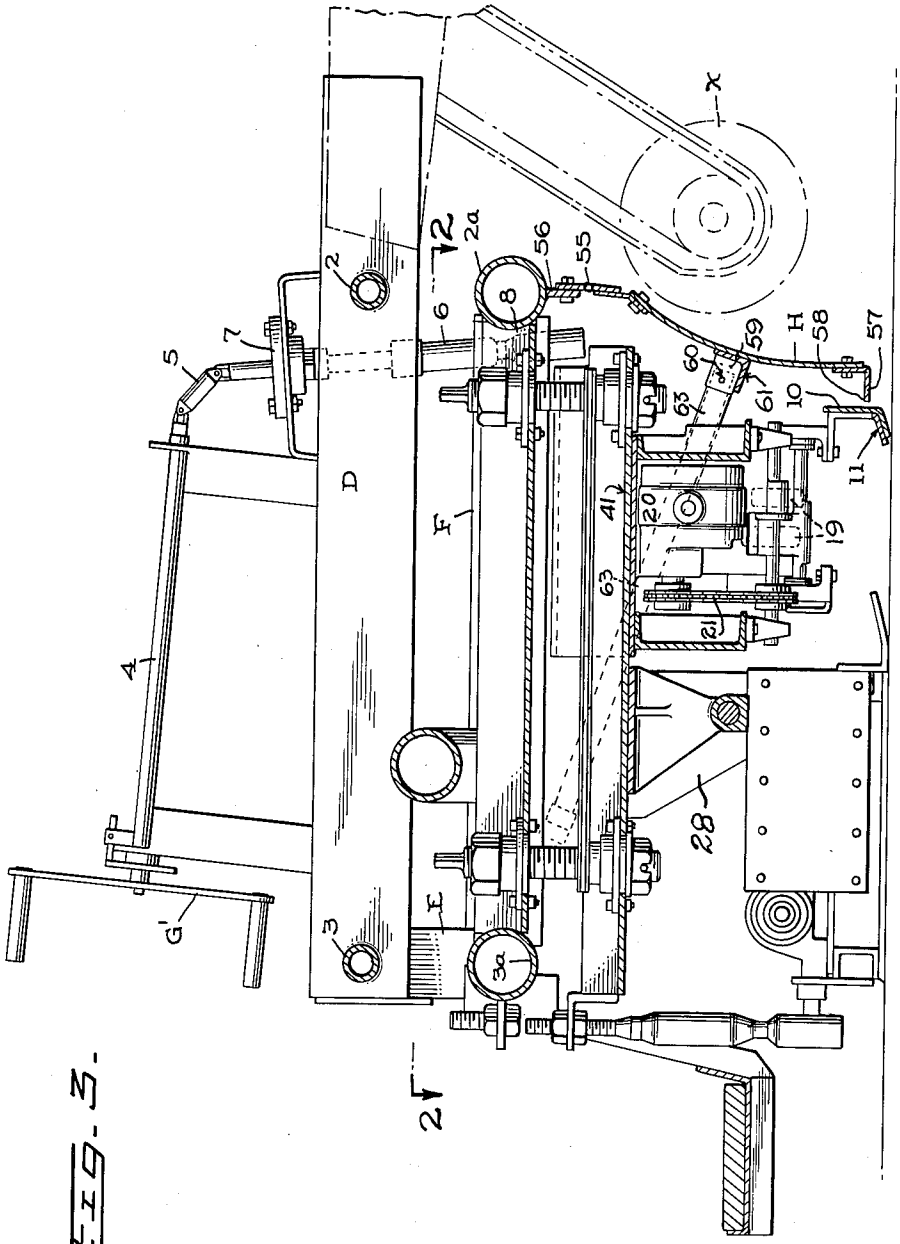


Fig. 3.

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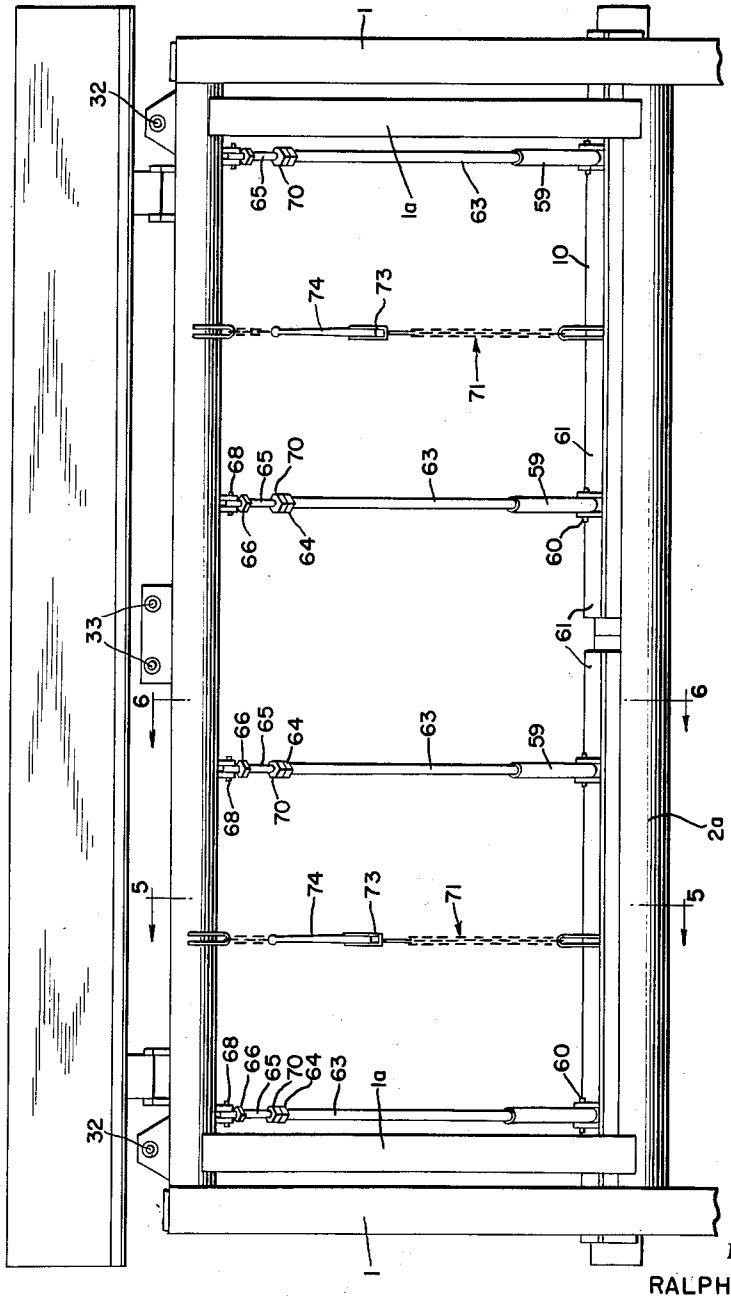
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BITUMINOUS PAVER

Original Filed Feb. 21, 1957 5 Sheets-Sheet 4

FIG 4.



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BITUMINOUS PAVER

Original Filed Feb. 21, 1957 5 Sheets-Sheet 5

Fig 5.

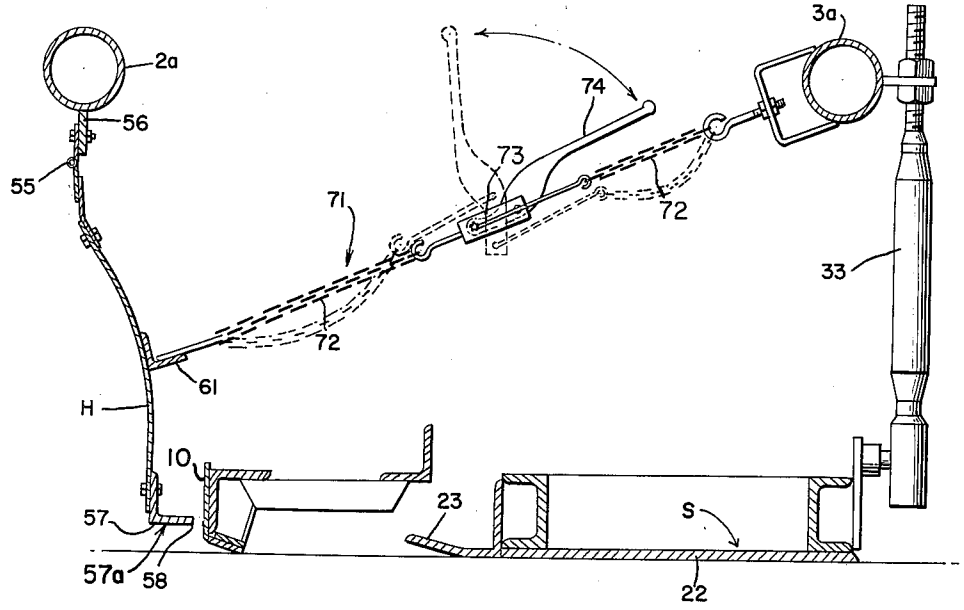


Fig 6.

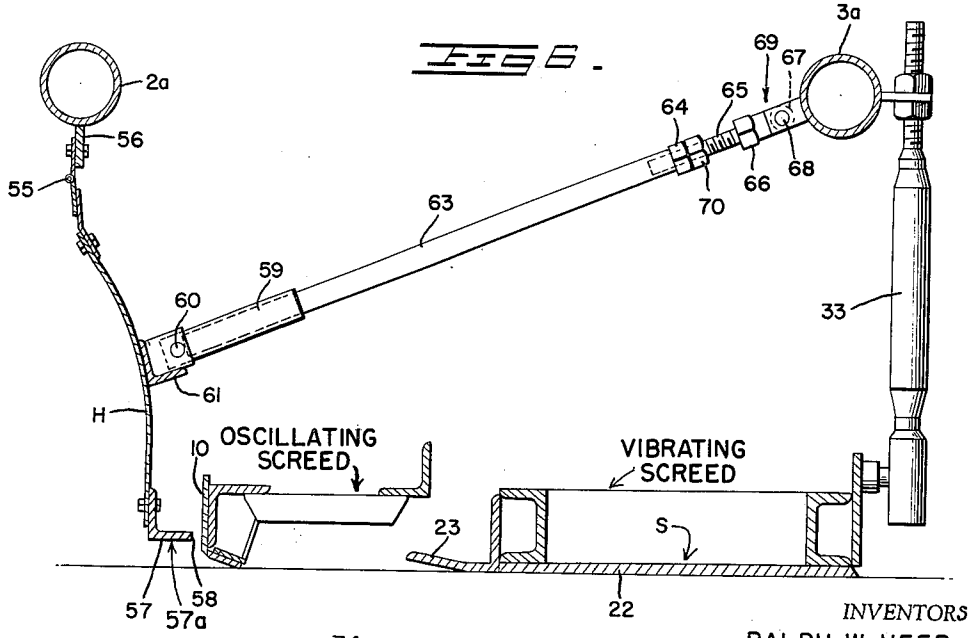
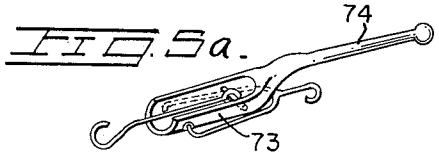


Fig 5a.



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BITUMINOUS PAVER

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Original application Feb. 21, 1957, Ser. No. 641,533, now Patent No. 2,947,230, dated Aug. 2, 1960. Divided and this application May 8, 1959, Ser. No. 812,573

4 Claims. (Cl. 94—46)

This invention relates to bituminous road paving apparatus and is a division of our application Serial No. 641,533, filed February 21, 1957, now Patent No. 2,947,230.

An object of the invention is to provide novel mold board means for insuring a more effective distribution of the road-mix before it passes to the oscillating screed sections, and also to enable the operator to more easily and readily clear accumulated residual portions of the mix from in front of said oscillating sections after the pavement has been laid, as for example, after a completed run or at the end of a day.

With the above and other objects in view which will more readily appear as the nature of the invention is better understood, the same consists in the novel construction and arrangement of parts hereinafter more fully described and claimed in the accompanying drawings, in which:

FIG. 1 is a partial view of a tractor showing the paving unit carried thereby in side elevation.

FIG. 2 is a top plan view of the sub-frame which carries the screed and is taken on the line 2—2 of FIG. 3.

FIG. 3 is a vertical cross sectional view taken on the line 3—3 of FIG. 2.

FIG. 4 is a top plan view of the main or tow frame omitting the details of FIG. 2 to better illustrate the means for supporting, locking and unlocking the movable material distributing plate.

FIG. 5 is a cross section taken on line 5—5 of FIG. 4 and omitting details for sake of clarity.

FIGURE 5ª is a detail perspective view of the toggle used to release the tension on the flexible member.

FIG. 6 is a cross section similar to FIG. 5 and taken on line 6—6 of FIG. 4.

Similar reference characters designate corresponding parts throughout the several views.

Referring to FIG. 1, it will be observed that the paver unit designated generally as A is towed by the tractor through the arms B, one at each side of the tractor, and pivoted at C.

The paving unit A includes a main or tow frame D of substantially rectangular formation and has side frame members 1 whose forward ends are connected to the arms B and the front and rear members 2 and 3, respectively.

The tow frame D has at each rear corner thereof depending straps or brackets E for pivotally supporting a sub-frame F at the pivot points G. The sub-frame F is also of generally rectangular formation and includes the side members 1ª, front member 2ª, and rear member 3ª, (FIG. 2). The said sub-frame has its front end moved upwardly and downwardly about the pivot G by the manually controlled adjusting and setting means (FIGS. 1, 2, 3) including a handle portion G' connected with the shaft 4, which, in turn, has universal connections 5 with a vertical screw shaft 6 journalled in a bearing 7 and having its lower end 8 connected to the sub-frame F as indicated at 8 in FIG. 3.

The sub-frame F has, at its leading or front edge, a mold board H, later to be described more in detail, and which is located immediately behind conventional screw feeding or spreading mechanism X.

The mold board is disposed in advance of the oscillating screeds 10 each having a bottom angle member 11 inclined rearwardly and downwardly to preliminarily level off the road surfacing material prior to final compaction by the main vibrating screed which is in trailing relation thereto. These oscillating screeds are suspended below the sub-frame by a plurality of plate-type hangers 17 connected with an adjustable support as later described and with the oscillating screeds 10. Also, the hangers are disposed edgewise to the line of material flow and reciprocated by the links 18 connected with eccentrics 19 and driven by motor 20 through chain 21, FIG. 3.

Referring now to the mold board H and the manner of mounting the same in relation to the oscillating screeds and also that it can be moved by the machine operator to dislodge accumulated residue, FIGS. 3, 4, 5 and 6, show that the said mold board is connected by a hinge 55 at its upper end to a bracket 56 depending from the front member 2ª of the sub-frame F.

Thus, it will be understood that the mold board is free to swing about the axis of the hinge 55. The medial portion of the mold board which receives the material spread by the conventional screws X is bowed while its lower end is provided with a material levelling member 57 whose rear edge 58 is held in spaced relation to the plain surface of the distributing member 10. The member 57 has a substantially horizontal face 57ª extending rearwardly from the moldboard to the edge 58 and this face extending from the leading edge or toe of the moldboard to the heel thereof adjacent the material distributing means, constituted by the screeds 10, serves as an initial cut-off in advance of said material distributing means and provides in effect a throat between said face 57ª and the road to loosely compact a layer of material in front of the moldboard as the paver progresses over the roadway. While some of the material is churned up against the leading face of the moldboard, nevertheless, a useful pre-formed loosely or partially compacted layer of material is effectively prepared in front of the material distributing means. Therefore, as the vibrating screeds S are traveling over the preliminarily formed mat, an exceptionally smooth textured mat surface, free of voids, is provided as demonstrated many times during the use of the apparatus. As shown, the face 57ª is disposed at an elevation above the lower edge of the material distributing means 10 to gauge the depth of the loosely compacted material, which when finally compacted by the traveling vibratory screeds S produces the final pavement.

In order to maintain the edge 58 of the angle in relatively close spaced relation to the oscillating screed members 10, it will be observed from FIGS. 4 and 6 that the rear portion of the mold board is provided with mold board positioning means including socket members 59 pivotally connected at 60 to the members 61 on the rear face of the mold board.

These sockets receive one end of an adjustable rod 63 whose extremity is bottomed in the socket while the opposite end has a nut element 64 welded thereto for receiving a screw 65 whose head 66 is provided with an eye 67 pivoted on pin 68 between brackets 69 carried by the frame member 3ª. A nut 70 on the shank of screw 65 is in abutting turnable relation to fixed nut 64 so that rod 63 may be lengthened or shortened relative to pin 68. This arrangement permits the mold board to be readily adjusted to keep the edge 58 out of abrasive contact with the oscillating screed members 10, although the mold board is releasably tensioned by means now to be described, and also permits said mold board to move away therefrom when the tensioning means are relaxed.

Referring to FIG. 5, it will be seen that the releasable tensioning means includes flexible elements 71 connected

at one end with the rear member 3a of the sub-frame and at the other end with angle 61. More especially from FIG. 5 it will be seen that these flexible elements 71 comprise chain sections 72 whose intermediate ends are connected to a conventional adjustable cam type toggle fastener 73. When the handle 74 is in the solid line position shown in FIG. 5 the sections 72 tension the mold board so that it bears against the lower ends of the rods 63 and 58 is out of contact with 10. On the other hand, when the handle is pulled upwardly the chain sections are relaxed to let the mold board freely swing down on the hinge. As will be apparent from FIGURES 5 and 5a, the toggle fastener includes an integral U-shaped body and handle with the opposite chain engaging hooks pivotally supported on spaced pins.

As will be clear from FIG. 4, the rods 63 and flexible tensioning elements 71 alternate with each other between the mold board H and the rear portion of the sub-frame 3a.

When the apparatus is in operation the mold board H assumes the position shown in better detail in FIGS. 5 and 6. However, when it is desired to clear road-mix from the mold board and the oscillating screeds 10, all the operator needs to do is to pull up on the handle 74 of the flexible locking means and the chain sections thereof will be released so that the mold board can move to a position far enough away from the oscillating screeds to permit a service man to scrape out congealed material with a hoe or the like. The braces or rods 63 have sufficient penetration in the sockets 59 to avoid them being disconnected when the mold board moves through the maximum arc permissible by the released flexible elements 72. The operator may restore the handle 74 to the position of FIG. 11 and the machine is ready for further use.

We claim:

1. In a paver for laying bituminous mats, a frame comprising front and rear frame members, screed means carried by the frame, a moldboard arranged in the frame in advance of the screed means, a hinge connecting the upper edge portion of the moldboard with the front frame member, and control means for determining the position of the lower edge portion of the moldboard in relation to said screed means, said control means including, rods adjustable in the direction of their longitudinal axes and carried by the said rear frame member, socket members carried by the rear face of the moldboard and telescopically receiving the forward ends of said rods, flexible tension means also between the moldboard and the rear portion of said frame for holding the bottoms of said sockets against the adjacent ends of the rods when said flexible means is taut to firmly and positively position the moldboard in selected operating proximity to the screed means, and a quick release toggle in said flexible tension means to cause the same to become slack, whereby the moldboard will swing on said hinge so that its free lower edge can be moved away from the screed means facilitating cleaning out of material accumulated between the rear face of the moldboard and said screed means.

2. In a paver for laying mats of bituminous material, the combination, including, a frame having front and rear members, a screed carried by said frame, a mold board hingedly suspended from said front member, a socket on the rear face of the moldboard, an adjustable rod between said rear member and said socket which slidably receives the end of the rod, and tension means provided with a quick release toggle extending between said moldboard and said rear member of the frame to seat the moldboard socket against the end of the rod to determine the spacing of said moldboard from said screed, said

toggle releasing said tension means, whereby the moldboard can be swung outwardly from the end of the rod to increase the space between the bottom of the moldboard and the screed for cleaning.

3. In a paver for laying mats of bituminous material, the combination, including, a frame, means suspended from said frame for distributing said material over a surface to be paved, means constituting a moldboard hingedly suspended from a portion of said frame in advance of said first named means, expandable and terminally separable compression means for selectively fixing the space between said second named means and said first named means, and means provided with flexible sections connected by a quick release toggle and extending from said second named means to a portion of said frame, whereby, upon toggle take up, to position said second named means against an end of said compression means to provide an operative position for mat laying, and upon toggle release, to permit an advance swing of the second means with an increase in the space between the bottom of the second means and the first means sufficient for cleaning therebetween.

4. In a travelling bituminous paver, the combination comprising a frame,

a feeding means on the frame for spreading bituminous materials on the roadway in a rearwardly direction with respect to the direction of movement of the paver frame,

a vertically extending moldboard including a plate presenting in vertical cross section a shallow concave forward surface facing said bituminous material feeding means, said moldboard hingedly connected at its upper end to the frame,

moldboard positioning means between the back of the lower moldboard portion and frame portion for supporting the lower edge of the moldboard relative to said feeding means,

a material leveler member on the lower edge of the moldboard presenting a substantially flat horizontal face for evenly distributing and preliminarily compacting the bulky mass of bituminous material sliding downward from the concave side of the moldboard into a relatively loosely packed mat of greater thickness than the finished mat,

an oscillating screed suspended from the frame close to but out of abrasive contact with the lower rear of said moldboard by said moldboard positioning means for compacting the leveler-formed bituminous mat to a lesser thickness, said oscillating screed having an imperforate front portion including an upper vertical portion, and therebelow a downwardly and rearwardly inclined portion, the trailing portion of the lower flat horizontal face of the leveler member of the moldboard terminating slightly above the level of said downwardly and rearwardly inclined portion of the screed, whereby, said lower inclined portion gives further compaction to the preliminarily compacted bituminous material.

References Cited in the file of this patent

UNITED STATES PATENTS

2,035,627	West	Mar. 31, 1936
2,351,592	Barber	June 20, 1944
2,589,257	Horning	Mar. 18, 1952
2,623,446	Clark	Dec. 30, 1952
2,796,811	Barber	June 25, 1957

FOREIGN PATENTS

514,341	Italy	Feb. 9, 1955