United States Patent

Birtchet

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[54] ROADWAY SLOPING ATTACHMENT FOR ASPHALT PAVING MACHINE

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[52] **U.S. Cl.** **94/45**

[51] **Int. Cl.** **E01c 19/22**

[58] **Field of Search** 94/44, 45, 46

[56] **References Cited**

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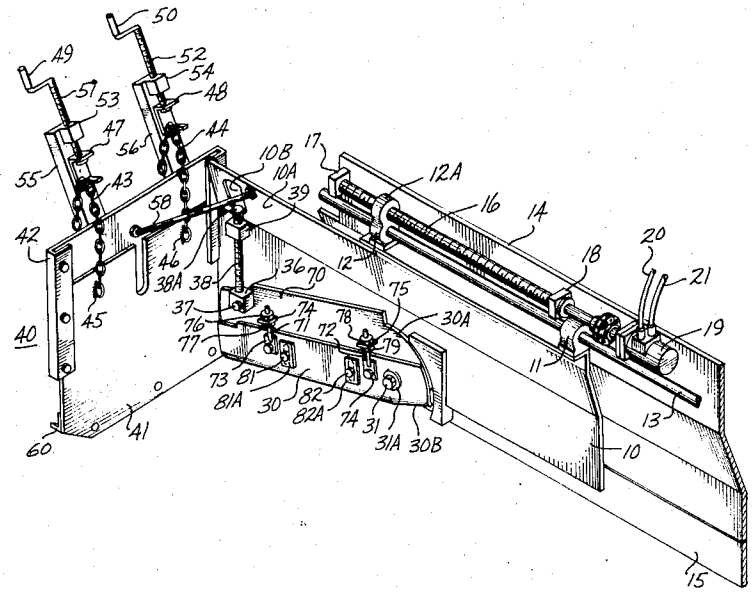
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[57] **ABSTRACT**

An attachment for an asphalt paving machine which permits the machine to slope the outer edge of a roadway to a desired angle. A material spreading assembly in disclosed which includes a pivoted blade having means for adjusting the angle of the lower surface of the blade relative to the bottom line of the strike-off board. The pivoted blade portion is located between the end gate and the main blade (or board) so that the assembly when attached to a paving machine serves to lay down an angled shoulder to the roadway as a part of the continuous surface laying operation.

7 Claims, 4 Drawing Figures



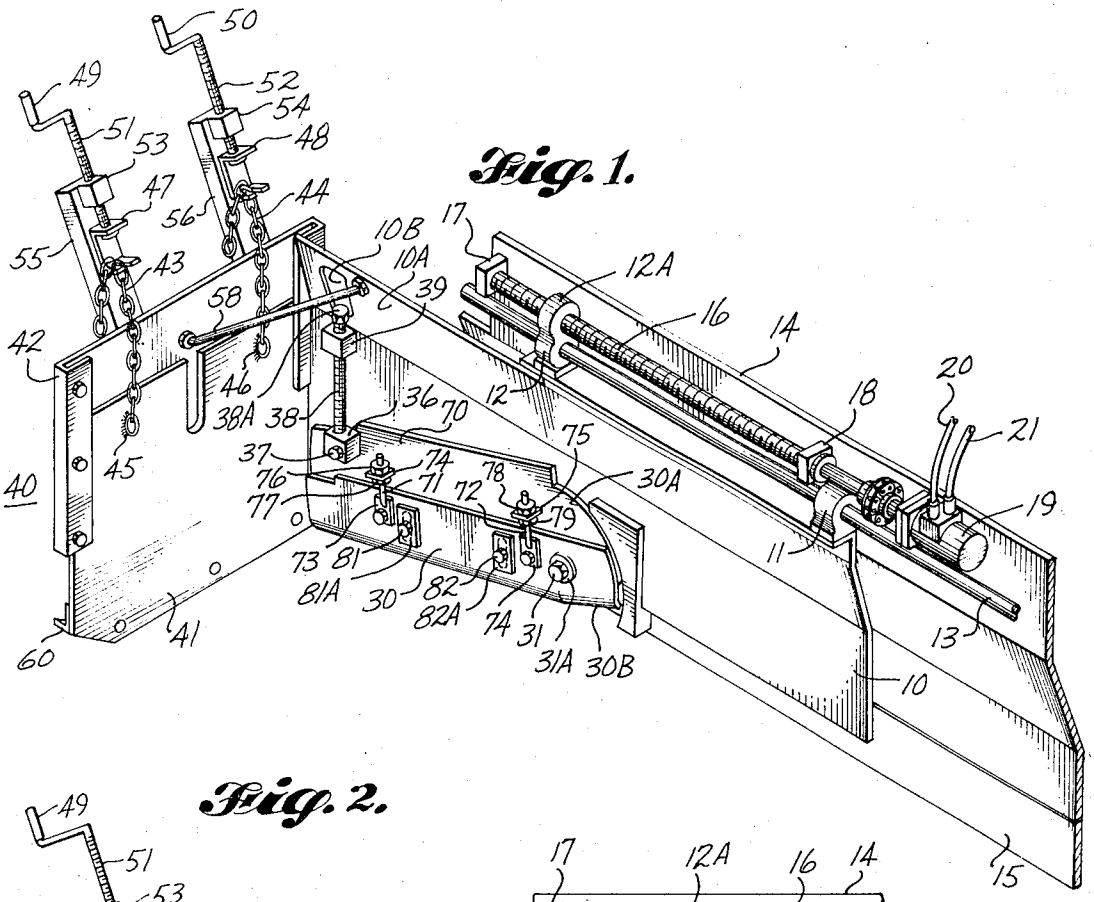
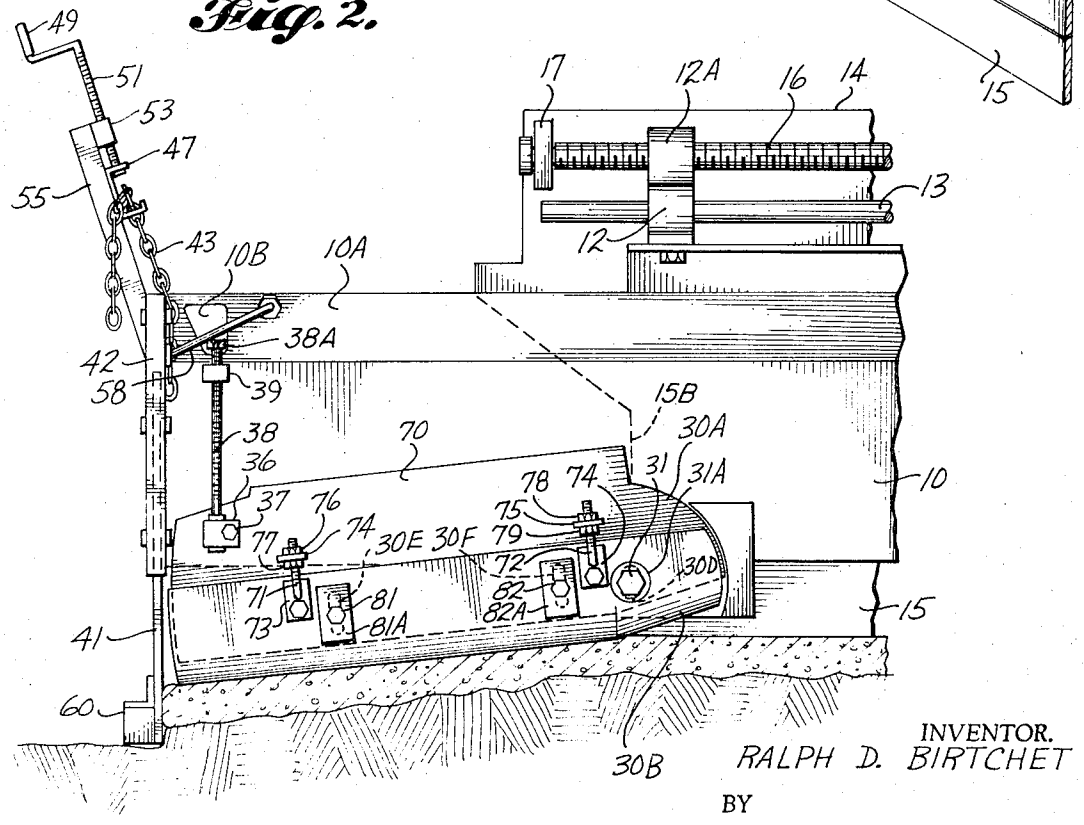


Fig. 1.

Fig. 2.



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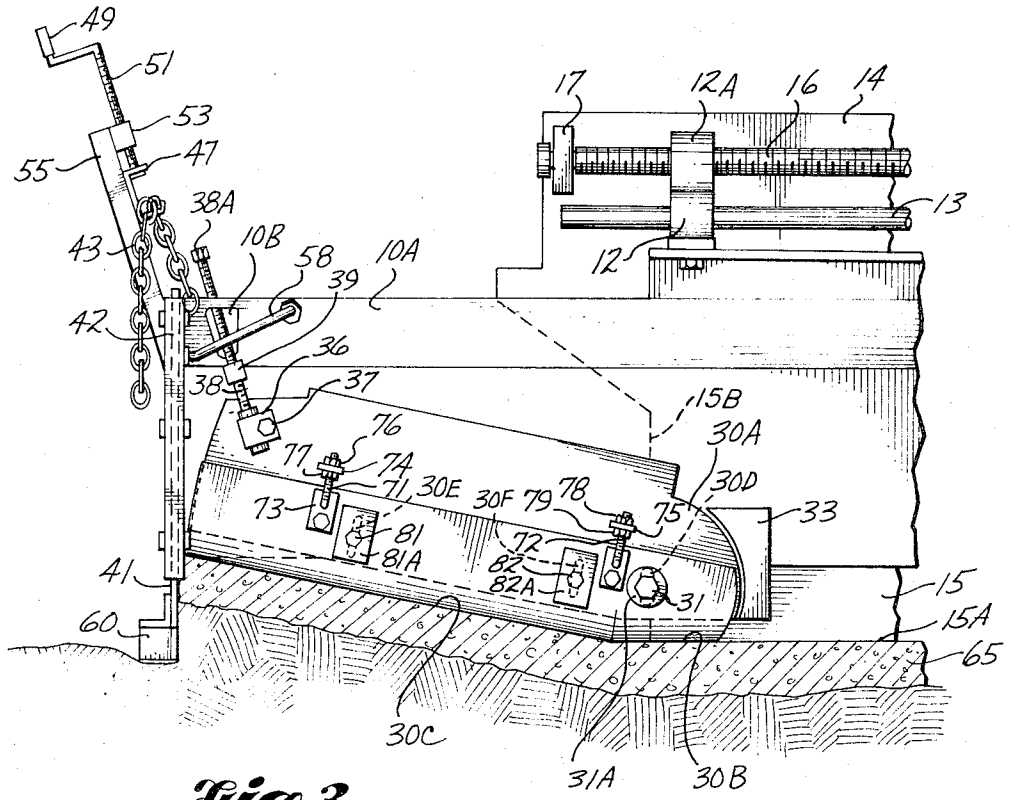


Fig. 3.

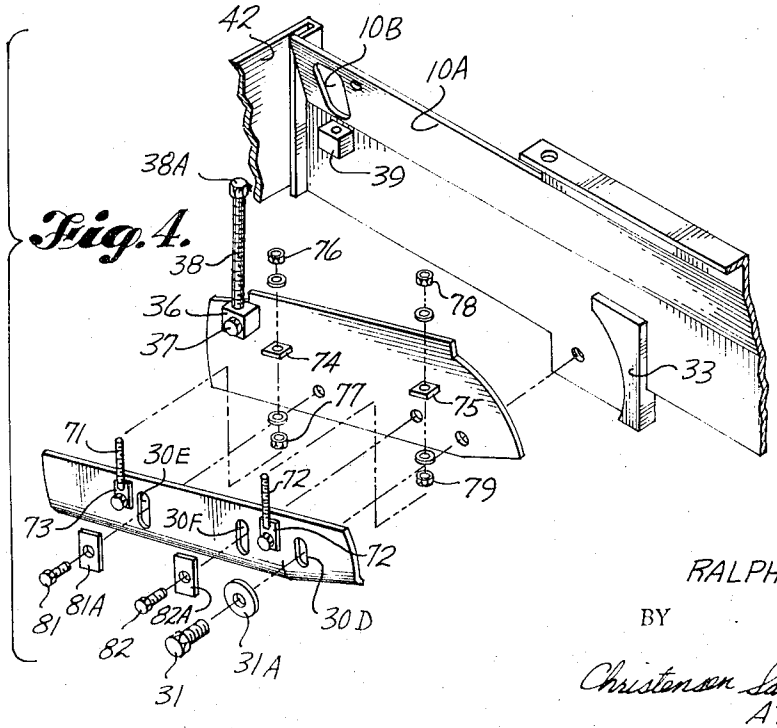


Fig. 4.

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ROADWAY SLOPING ATTACHMENT FOR ASPHALT PAVING MACHINE

In the art of providing an asphalt surface to a road it is frequently necessary to lay a substantially horizontal ribbon of asphalt over the main portion of the roadway and to then provide either an upwardly or a downwardly sloping contiguous edge portion to the roadway. At the present time this is done by means of a separate operation since the screed assemblies or the mold boards which spread the asphalt material are adapted primarily for leveling and/or compacting the asphalt material in a substantially horizontal ribbon with no apparatus being provided to obtain a sloping portion on the edge of the roadway. It is therefore an object of the present invention to provide such an asphalt spreading and sloping attachment for an asphalt paving machine.

Another object of the present invention is to provide a sloping attachment for the asphalt spreading assembly of a paving machine with said sloping attachment including means for presetting the angle of the outer end of the assembly relative to the bottom horizontal line of the main spreading assembly.

Another object of the present invention is to provide a pivoted extension assembly for the asphalt spreading portion of a paving machine together with support means for permitting selective positioning of the extension assembly.

The apparatus for spreading the asphalt is typically called a strike-off board although the term screed is also frequently used even though to many people in the art the term screed refers to an assembly which does more compacting of the asphalt. Since the extension assembly of the present invention can be used to perform some compacting of the material, the terms "screed extension" or "strike-off blade extension" would be appropriate.

The above and additional advantages and objects are achieved through the use of an extension unit incorporating a pivoted blade section near the outer end of the assembly and including an end gate which serves to trap asphalt material and cause the same to flow beneath the pivoted blade extension. The pivot point for the blade section is maintained in line with the end of the main body of the strike-off board forming part of the asphalt machine (or in some cases the screed) so that the sloping portion of the resulting roadway departs from the horizontal at the proper point. The inner end of the pivoted blade section is cut at an angle such that as the angle of the pivoted blade relative to the main blade is changed the departure point of the sloping portion relative to the horizontal portion of the roadway remains the same. The assembly includes a hydraulic drive for selective positioning of the sloping attachment.

The invention will be more clearly understood from the following description when read with reference to the accompanying drawings.

FIG. 1 is a perspective view showing the sloping attachment secured to a support bar carried by the asphalt paving machine.

FIG. 2 is a front elevation of the apparatus of FIG. 1.

FIG. 3 is a front view similar to FIG. 2 but illustrating the sloping attachment positioned for creating an upwardly sloping shoulder instead of a downwardly sloping shoulder.

FIG. 4 shows the rear of the pivoted blade assembly.

Turning now to the drawings, there is illustrated in FIG. 1 a preferred embodiment of the invention which includes the extension support **10** carried by the sliding blocks **11** and **12** which slide along the support bar **13**. The support bar **13** is secured to the mold board **14** which forms part of a conventional asphalt paving machine, such as those which are well known in the art. The main asphalt spreading member of the machine is illustrated as the "strike-off" board or blade **15**. The blade **15** is carried by the mold board **14**. The sliding block **12** on shaft **13** has an upper portion **12A** which is provided with a threaded opening through which the threaded drive bar **16** passes. The drive bar **16** is supported by bearing blocks **17** and **18** and is adapted to be selectively rotated by means of the hydraulic motor **19**. Fluid supply lines **20** and **21** provide the necessary pressurized fluid for selective operation of the motor **19** to cause the sloping attachment to be moved to the desired position relative to the main blade **15**.

The sloping attachment includes a pivoted blade section **30** which is pivoted by means of pin **31** to the extension body **10**. The inner end of the blade **30** is in the shape of an arcuate surface **30A** and is positioned adjacent the heavy steel block **33** which is welded to the main body **10**. This provides protection for the inner end of the blade **30** from the asphalt which might otherwise have a tendency to get in behind the arcuate end of the blade and present a problem when adjustment of the angle takes place.

A threaded block **36** is pivoted at **37** on the upper outer end of the blade support **70** described hereinafter. A threaded adjustment shaft **38** is threaded into the pivoted block **36** and is also threaded through the block or nut **39** which is pinned to the main support **10** of the assembly. The upper portion **10A** of the main body **10** is slightly angled and thus an opening **10B** is provided therein in alignment with the upper end **38A** of the threaded member **38**. Thus a socket wrench is readily engaged with the hex end **38A** for rotation of the bolt **38** to adjust the angle of the blade **30**.

A conventional end gate assembly **40** is positioned at the outer end of the extension support **10** and includes an adjustable gate plate **41** which can be adjusted vertically within the slots provided by the support plate **42**. It will be seen that the ends of the support plate **42** are folded over in order to define the slots in which the plate **41** rides. The chains **43** and **44** secured at **45** and **46** to the plate **41** are coupled with the adjustment members **47** and **48** which are under the control of the rotatable control handles **49** and **50**. The handles **49** and **50** are coupled to the threaded shafts **51** and **52** which pass through the threaded blocks **53** and **54** welded to the support bars **55** and **56** so that vertical adjustment of the plate **41** is readily achieved by operation of the handles **49** and **50**. A bracing bar **58** is welded to the upper end of the main extension body **10** and to the support member **42** which carries the gate plate **41**. A runner **60** is provided along the lower edge of the plate **41** with the leading end thereof being angled upwardly for riding over the ground as the paving operation takes place. The inner lower end **30B** of the blade **30** extends at an upward angle relative to the flat lower edge **30C** of the blade **30**. The edges **30C** and **30B** are rolled slightly rearwardly in order to provide smooth screeding and spreading action as the assembly moves during the asphalt paving operation. It will be

observed that the vertical edge 15B of the main screed 15 is in line with the center line of the pin 31. Thus the pivot point for the blade 30 is such that the slope of the edge of the roadway starts at the edge normally defined by the conventional blade 15. With the angled portion 30B located as shown in FIGS. 2 and 3 the blade 30 then also provides a smooth continuity of the main blade 15 when the lower edge 30C is in a horizontal position. Thus the apparatus can be used as a straightline screed or blade extension as well as for sloping purposes.

It is found in practice that in some cases it may be desirable for economic or other reasons to have the sloping portion of the roadway formed from a different thickness of the asphalt material than is the main body of the roadway. Thus the sloping attachment assembly of the present invention is so constructed that the lower surface 30C of the blade extension 30 can be lowered relative to the lower surface of the main blade 15. Thus the blade extension assembly is constructed with the blade portion 30 being carried by the blade support 70 to which the threaded block 36 is pivoted. The threaded bolts 71 and 72 are welded to the small plates 73 and 74 secured to the blade 30 with the bolts 71 and 72 passing through the openings provided in the tabs 74 and 75 on the blade support 70. The pairs of locknuts 76–77 and 78–79 respectively associated with the bolts 71 and 72 above and below the tabs 74 and 75 permit selective adjustment of the blade 30 relative to the blade support 70 in a generally vertical direction. To permit this vertical adjustment of the blade portion 30 relative to the support 70, the pivot pin 31 passes through a slotted opening 30D in the blade 30 and then through a hole in support 70. The inner end of pin 31 is threaded into the main extension frame 10. The pin 31 has a large heavy washer 31A under the head of the pin so that when the pin is tightened after the blade 30 has been set to the proper elevation relative to the support 70, the desired relationship will be achieved. Bolts 81 and 82 also pass through the blade 30 and through slotted openings 30E and 30F in blade 30 beneath the plates 81A and 82A which act as washers. The inner ends of bolts 81 and 82 engage tapped holes in the support 70. Once the blade 30 has been adjusted relative to the support 70 by means of the bolt and nut assemblies 72–79 the bolts 81 and 82 together with plates 81A and 82A serve to rigidly secure the blade 30 to the support 70. Rotation of the adjustment bolt 38 then sets the blade 30 to the desired angle, the blade 30 and support 70 rotating in unison about the pin 31.

As is known in the art the asphalt machine delivers asphalt to the space between the blade 30 and end gate 40 so that as the machine advances toward the viewer in FIGS. 2 and 3, the blade assembly spreads the asphalt material. With the apparatus of the present invention the machine can be used to lay a strip of asphalt on the main body of the roadway which is of a first thickness while simultaneously laying an angled shoulder portion which is of the same or a different thickness. The apparatus can also be used as a straightline extension of the main screed or spreading blade 15.

What is claimed is:

1. A roadway sloping assembly for an asphalt paving machine comprising in combination: a first elongated blade having a substantially straight lower edge and an outer end; a support frame; a second elongated blade positioned immediately adjacent to and aligned with said first blade, said second blade having a bottom edge and first and second ends; pin means pivotally connecting said second blade to said frame at a location near said first end; adjustment means connected to said second blade and to said frame for adjusting the angular position of said second blade relative to said first blade; and support means connected to said frame and supporting said frame and second blade adjacent said outer end of said first blade.

2. The apparatus of claim 1 wherein a first section of the lower edge of said second blade from a point below said pin means extending in an outward direction to said first end is disposed at an upward angle relative to the remainder of the bottom of said second blade.

3. The apparatus of claim 1 wherein said first end is arcuate with the center of curvature located at said pin means.

4. A roadway sloping assembly for an asphalt paving machine comprising in combination: a first elongated blade having a substantially straight lower edge and an outer end; a second blade having a lower edge defined by first and second sections which are each substantially straight and intersect at an obtuse angle; said first section being shorter than said second section and extending to a first end of the second blade; blade support means including pivot means pivotally supporting said second blade on said support means; means connected to said support means for moving said support means laterally relative to said first blade to selectively position said second blade near the outer end of said first blade with said pivot means aligned with said outer end; and adjustment means connected to said second blade and to said blade support means for rotating said second blade about said pivot means with said first section of said second blade being selectively aligned parallel to and in line with said lower edge of said first blade or at an angle with respect thereto.

5. The apparatus of claim 4 including adjustment means connected to said second blade for selectively lowering or raising said lower edge of said second blade relative to said support means.

6. A roadway sloping assembly for an asphalt paving machine comprising in combination: a support frame, an elongated blade having a bottom edge and first and second ends; pin means pivotally connecting said blade to said frame at a location near said first end, said first end being arcuate with the center of curvature located at said pin means, a first section of the bottom edge of said blade from a point below said pin means extending in an upward angle relative to the remainder of the bottom edge of said blade and the distance from said pin means to said first section along a line perpendicular to said first section being less than the radius of curvature of said first end; adjustment means connected to said blade and to said frame and operable to adjust the angular position of said blade relative to said frame; and extensible support means connected to said frame and adapted for connection to an asphalt paving machine with said blade aligned with the main asphalt spreading member of the machine.

7. The apparatus of claim 6 including a protection block secured to said support frame adjacent said first end of said blade and having an arcuate surface adjacent said first end.

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