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Puckett et al.

[11] **3,874,807**

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[54] **SELF-PROPELLED ASPHALT SPREADER**

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[52] **U.S. Cl.** **404/110**

[51] **Int. Cl.** **E01c 19/18**

[58] **Field of Search** 404/110, 108, 101

[56] **References Cited**

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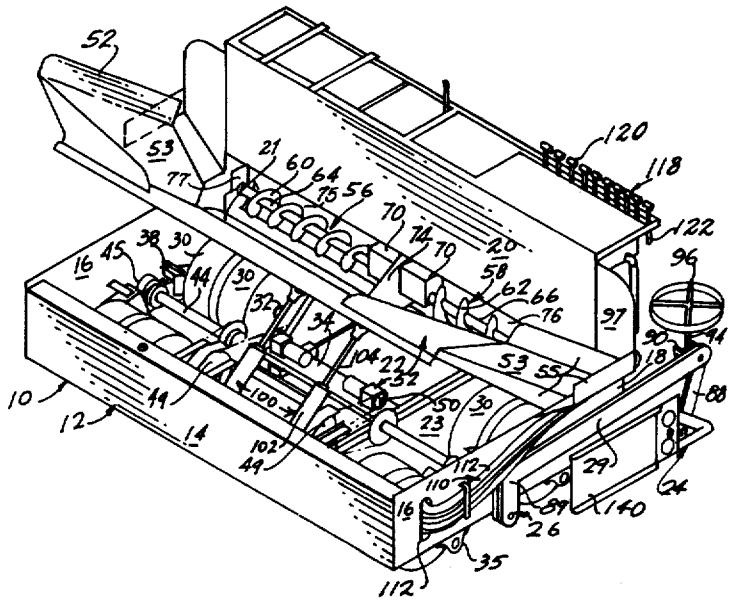
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Primary Examiner—Nile C. Byers, Jr.
Attorney, Agent, or Firm—Patrick F. Henry

[57] **ABSTRACT**

An asphalt spreader mounted on its own ground supporting wheels including driven wheels which are power operated by means of a chain driven from a hydraulic motor operated by a pump driven by an engine mounted on the asphalt spreader. The asphalt spreader includes a heavy steel structure frame having a platform at the rear on which the operator stands and having a large movable asphalt bed separated from the operator's platform by a large vertical wall. The bed is selectively operable to be raised or lowered by means of hydraulic cylinders and the asphalt is distributed from the bed by means of an elongated opening at the back of the machine separated into two spaces each having a power driven helical conveyor mounted therein to distribute the asphalt through the exit opening. The operator platform is adjustable and is stabilized.

7 Claims, 8 Drawing Figures



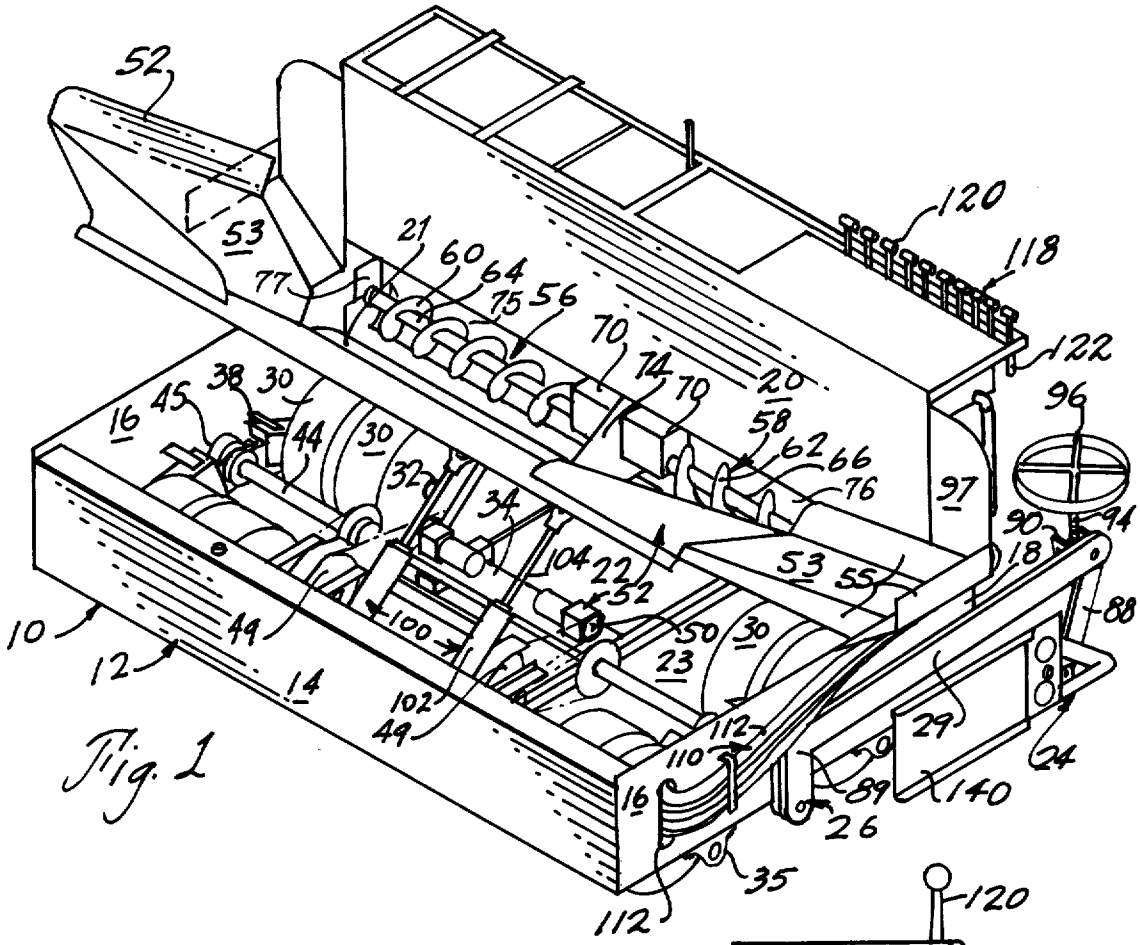

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Fig. 1

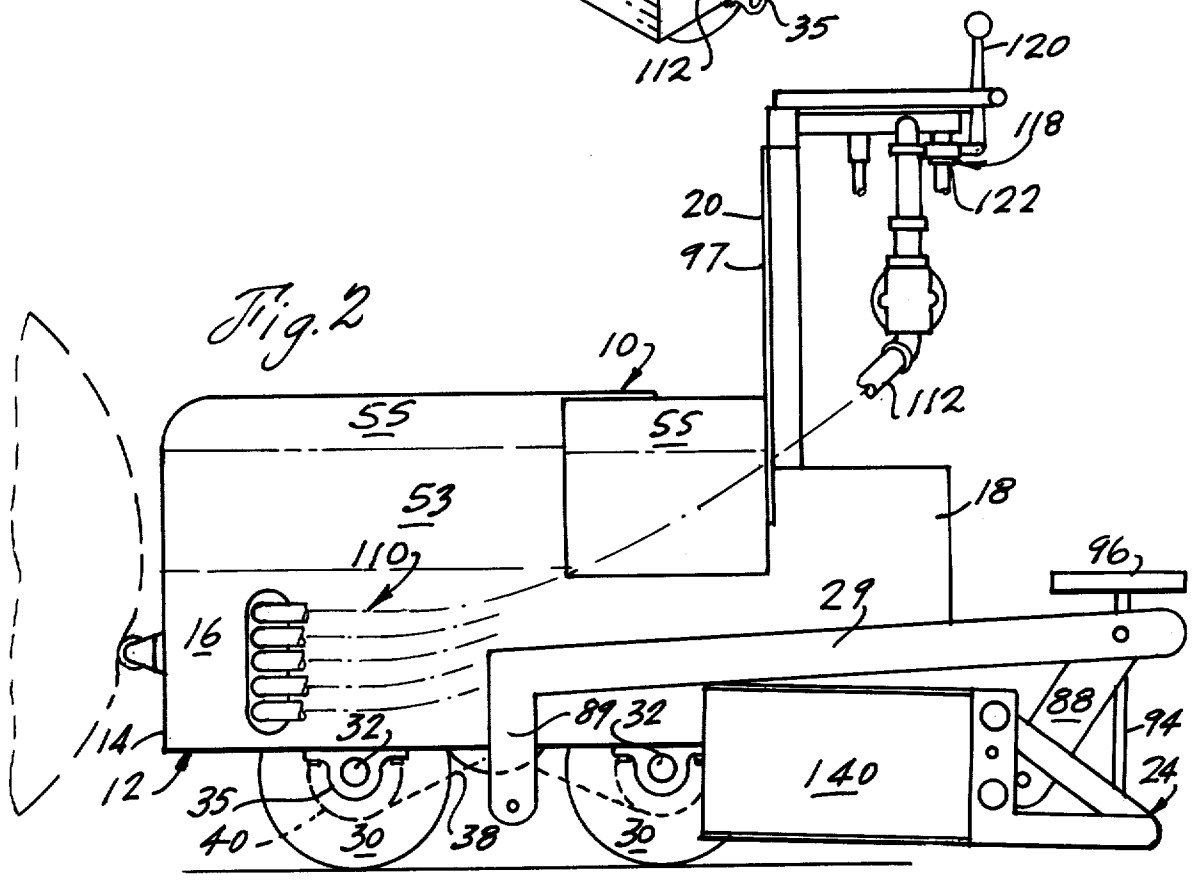

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Fig. 2

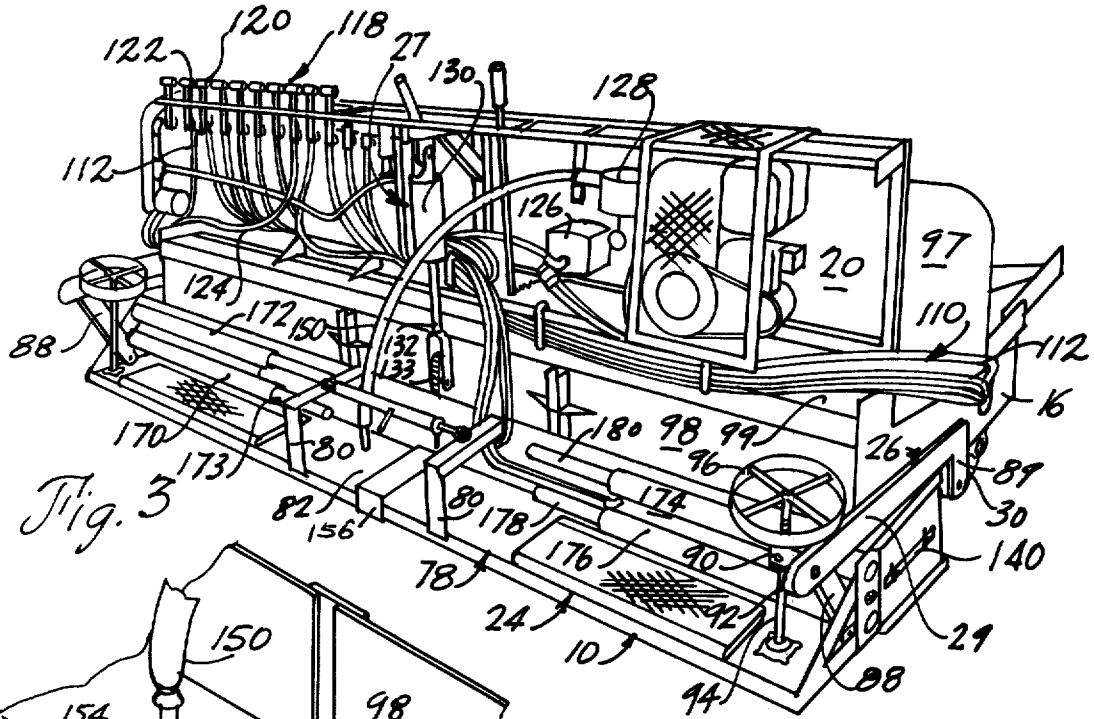


Fig. 3

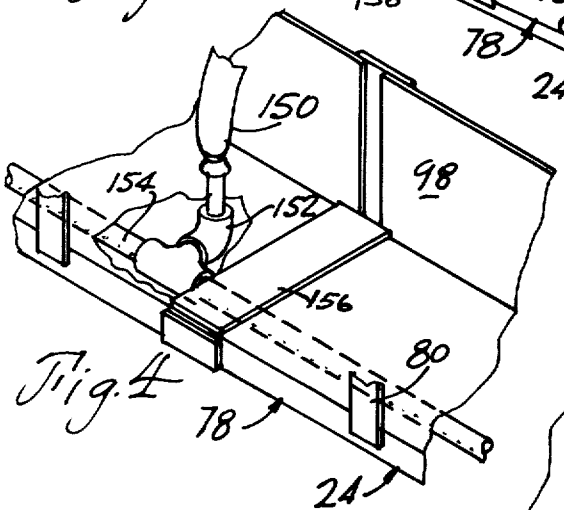


Fig. 4

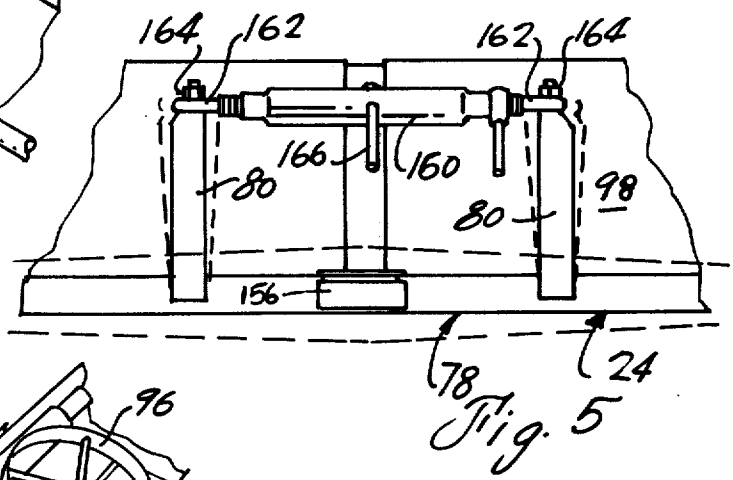


Fig. 5

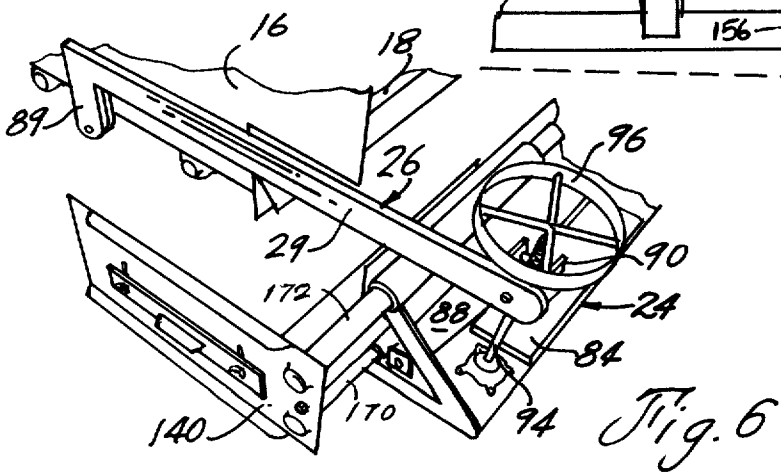


Fig. 6

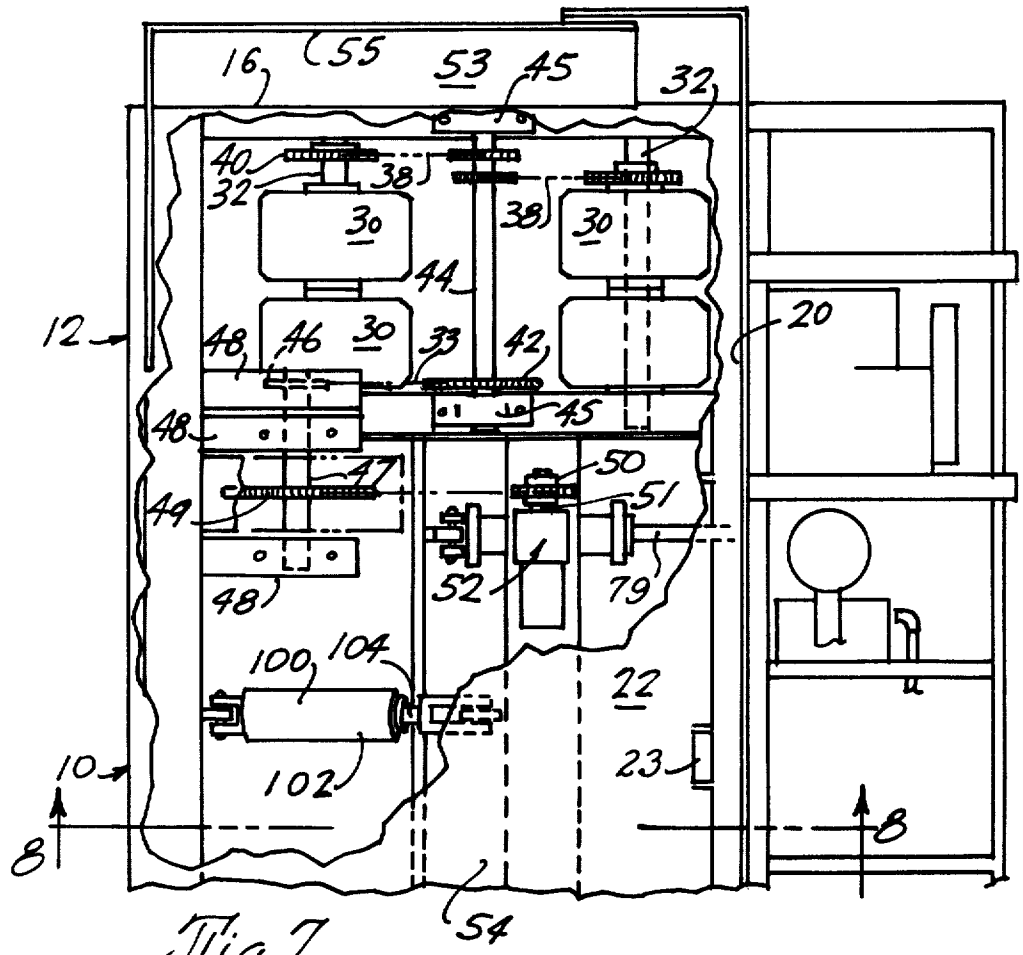

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Fig. 7

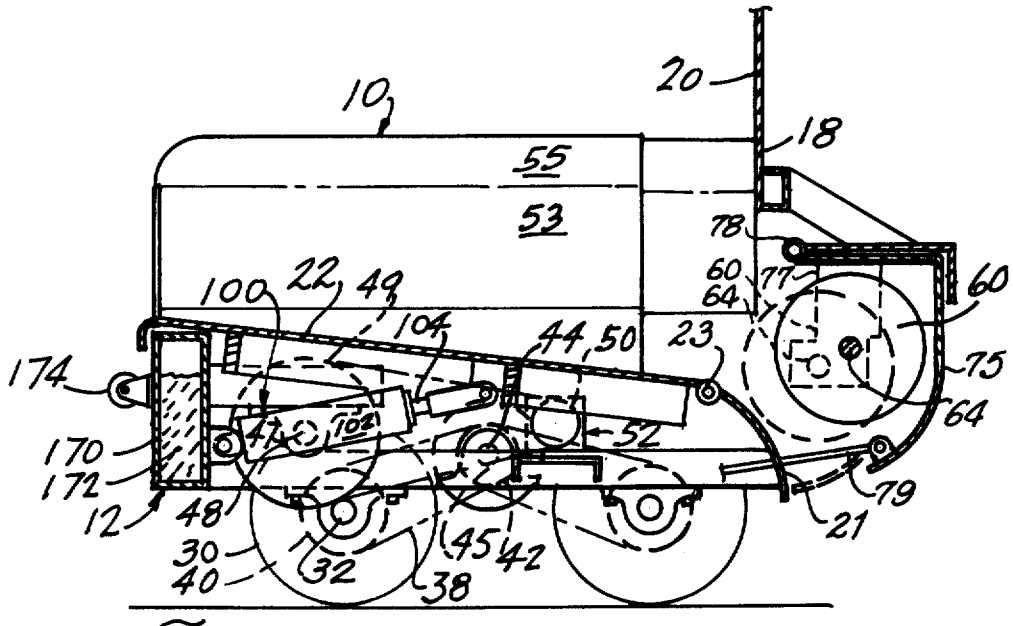

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Fig. 8

SELF-PROPELLED ASPHALT SPREADER

BACKGROUND OF THE INVENTION

1. Field of the Invention

Self-propelled machines and special vehicles mounted on wheels for distributing asphalt and the like. Vehicle spreaders.

2. Description of the Prior Art

Asphalt spreaders are well known in the art. One type is not self-propelled and is pushed by a truck or some other means of power. The self-propelled asphalt spreaders of the prior art present various problems such as the failure of the asphalt properly to be fed and distributed through the discharge openings in the machine and also since asphalt is usually very hot sometimes the operator is uncomfortable or the mechanisms of the spreader are exposed to excess heat causing trouble with the bearings and other parts of the machine. Furthermore, on some of the existing machines the controls are not easily manipulated and the response is not satisfactory. An important consideration with respect to spreaders of hot asphalt is the cost of construction and purchase price of such machines but still maintaining quality and dependability of operation.

SUMMARY OF THE INVENTION

An object of this invention is to provide a self-propelled asphalt spreader which properly distributes the hot asphalt for discharge and also provides easy and acceptable controls therefor.

Another object of this invention is found in the particular arrangement of the asphalt bed which can be elevated and the separate discharge openings each having its own helical conveyor.

Another advantage of this invention is found in the construction of the machine whereby the operator stands on a platform at the rear separated by a vertical wall from the hot bed of asphalt and the controls are shielded by the vertical wall.

Still another advantage of the present invention is found in the particular manner of supporting the ground support wheels and the drive wheel on the frame and for placing the elevating and control mechanism for the bed and the discharge openings with helical conveyors in connection with this arrangement.

Other and further objects and advantages of this invention will become apparent upon reading the following description taken in conjunction with the accompanying drawings, in which:

FIG. 1 is a perspective view of the present machine with the asphalt bed partially elevated.

FIG. 2 is a side elevation view of the machine shown in FIG. 1 showing an asphalt truck in dotted lines.

FIG. 3 is a perspective view of the machine shown in FIG. 1 looking from the rear.

FIG. 4 is a partial perspective view of a platform detail.

FIG. 5 is an elevation view of another detail.

FIG. 6 is a partial perspective view.

FIG. 7 is a top plan view of the spreader shown in FIG. 1 with a portion of the bed broken away and with one end of the machine broken away.

FIG. 8 is a cross-sectional view taken substantially along lines 8—8 in FIG. 7.

DESCRIPTION OF A PREFERRED EMBODIMENT

The machine is designated generally by reference numeral **10** and comprises a rectangular machine frame **12** of a generally open construction made from heavy metal plates including a front plate **14**, side plate **16**, and a rear plate **18** above which is a heavy metal vertical plate wall **20** separating the hot asphalt on the machine from the operator's location. The hot asphalt is distributed and discharged over a fixed, curved exit plate **21** from a pivoted asphalt bed designated generally by reference numeral **22** and pivoted on pivots **23**.

The operator stands on an adjustable platform assembly and arrangement designated generally by reference numeral **24** and stabilized means of an adjustable arm assembly designated generally by reference numeral **26**. Platform **24** is adjusted by means of a hydraulic cylinder and chain assembly **27**.

Machine **10** is power driven from a gasoline motor **28** which drives respective pairs of ground supporting rubber tired wheels **30** through a hydraulic paver arrangement described later. The wheels **30** are mounted in side-by-side pairs on a common axle **32** and each wheel **30** is supported on a rigid longitudinal frame member **34** inside the framework of frame **12** by means of wheel shaft bearing assemblies **35** thereon. The respective pairs of wheels **30** are driven by means of a respective drive chain **38** for each front and rear pair of wheels **30** driving a sprocket **40** on each of the shafts **32** and being driven by chain **33** driving a sprocket **42** on a shaft **44** extending transversely across said frame **12** and being supported in shaft bearing assemblies **45**. Sprocket **42** is driven from a sprocket **46** and a shaft **47** in bearing assemblies **48** and shaft **47** is driven by a sprocket **49** from a sprocket **50** on a shaft **51** of a hydraulic motor transmission unit **52**.

There is a space below the wall **20** and within the frame **12** and above bottom **23** for distribution of the hot asphalt from the bed **22**. The hot asphalt bed **22** comprises a generally, flat heavy metal plate **54** over the frame **12** and presenting the main asphalt bed on which each end thereof are slanting and elevated end plates **53** each having upstanding edges **55**. The asphalt is distributed by elevating the entire bed **22** to raise it at the front thereby causing the asphalt to distribute into the opening below the wall **20** which is separated into two long openings **56, 58** each having a respective helical conveyor **60, 62** therein and each conveyor **60, 62** is mounted on its own shaft **64, 66** driven by means of a hydraulic pump **68** operating a respective hydraulic motor **70** driving each of the respective shafts **64, 66**. Therefore, hot asphalt dumped into the spaces **56, 58**, which are separated by means of a baffle wall **74** is conveyed by the respective conveyors **60, 62** along the spaces below the wall **20** and distributed out of the machine through respective gates **75, 76**, and having the respective shafts **64, 66** supported and attached for movement, as shown in FIG. **8**, by means of end plates **77** and each respective housing of the hydraulic motor **70** to the respective conveyors **60, 62** on a respective gate pivot **78** there is respective, selective movement of each respective gate **75, 76** and the respective helical conveyor **60, 62** attached thereto by means of a respective hydraulic cylinder rod **79** over the curved plate **21** which extends from bottom **23** and covers the rear part of the mechanism under the machine.

The operator's platform **24** comprises an angular steel frame member **80** and longitudinal frame members **82** covered by steel tread plate **84**. The platform **78** is suspended from the main frame **12** by means of

the support arm system **26** mentioned previously which comprises a lever arm **29** having one end connected to another second lever arm **88** which is pivotally mounted on the frame **78** at one end and pivoted at the other end to the lever **29**. The other end of lever **29** has a member **89** pivoted to frame **12**. Lever **29** has a pair of projections **90** supporting a bearing assembly **92** in which is mounted a shaft **94** on which is attached a control wheel **96** for turning the shaft **94** into bearing **92** and adjusting the lever arm **29** to adjust the elevation of the entire platform **78**. There are identical lever arrangements **29** on opposite ends of the machine each supporting one end of the platform **78** in the manner shown in FIG. **3**. Heavy steel plate wings **97** extend outwardly from the ends of wall **20**. Platform **78** has a vertical steel plate wall **98** at one end thereof with a stair-step top **99** thereon attached to wall **20**.

The asphalt bed **22** is raised and lowered by means of a pair of hydraulic piston and cylinder assemblies **100** each comprising a cylinder **102** and a piston rod **104** connected to the bottom side of the bed plate **54**.

A bundle of hydraulic hoses **110** on both sides comprises individual hydraulic hose lines **112** each connected to a respective hydraulic element such as the motor **70**, the hydraulic cylinders **102**, hydraulic motor unit **52** which drive the respective shafts **44** to drive the wheels **30**. The hydraulic lines **112** are controlled by means of individual valve control devices designated generally by reference numeral **118** having individual control handles **120** controlling conventional hydraulic valves **122** each of which has an input hydraulic line designated generally by reference numeral **124** leading from a large hydraulic motor **126** driving hydraulic pump arrangement **128** which is operated by the internal combustion engine.

The chain adjustment assembly **27** for platform **24** comprises large hydraulic cylinder **120** and a piston rod **132** connected at the bottom. Piston rod **132** has a bifurcated attachment bracket **134** carrying a pin and sprocket **136** over which is a chain **138** having one end attached to the platform **24** and the cylinder **130** attached to the machine frame **12**. The platform **24** is adjusted by moving piston rod **132** and chain **138**.

The operator's platform **24** has side plates **140** which are spaced from the sides **16** and determine the width of the asphalt being distributed and laid.

A hydraulic cylinder **144** inside frame **12** has a piston rod **146** connected to the curved plate **75** to selectively move the plate **75** from open to closed position and increments therebetween as shown in FIG. **8**.

It is important to note the wheel **30** drive arrangements permit the location of the two hydraulic cylinders **100** close to one another on opposite sides of the center of the frame **12** for support of bed.

A fluid line **150** is connected to a combustible mixture outlet from the hydraulic pump arrangement **128** and is connected to a fitting arrangement **152** leading to a heater pipe **154** having a plurality of heater outlets or orifices therein. The pipe **154** runs along the edge of the operator's platform **24** close to the frame member **80** and when lit and ignited heats the asphalt.

The operator's platform **24** has a joint **156** therein which allows the platform to bend about this joint. Supported on the frame members **80** and extending thereacross is a means for moving the two longitudinal frame members **82** of the platform **24** in the manner shown by the dotted lines in FIG. **5** and comprising a transverse screw connector **160** operated to move the ends **162** to which it is screw threaded to cause the ends **162** to move the tops **164** of members **80** inwardly or outwardly depending upon the direction of operation of a hand handle **166**. This action causes the platform to assume a slanted condition leading from the outside edges at side plates **140** to the inside center line to determine the contour of the asphalt since the platform **24** edge acts as a scraper and shapes the surface of the asphalt being heated by the outlets in the pipe **154**. The height of the asphalt is determined by the control of the levers **26** by the wheels **96** as mentioned previously. The width of the asphalt laid is controlled by the space of the side plates **140** and the distance therebetween.

Side plates **140** are controlled by separate hydraulic cylinders **172**, **174** having telescopic rods **180** therein and the cylinders are attached at respective ends on the platform **24** to the side frame members which support the side plate **140** and the rod **180** is attached to the inside of the platform **24**. The hydraulic cylinders **172**, 174 have respective hydraulic lines **183** which lead to the controls **120** to be operated by the operator. Side plates **140** have slots therein which permit relative movement with the stationary parts on the machine **10**. Thus, the lever arrangement **26** provides a means of raising and lowering the ends of the platform **20** as well as elevating the terminal and outer edge of the platform **78** to determine the height of the edge and the hydraulic cylinder **130** provides the control means for lifting the entire platform **24** for a greater and more pronounced distance upwardly or downwardly while the handle **26** may be actuated to control the movement of the opposite sides of the platform **24** about the center joint **156** thereby determining the slope and heat may be applied continuously through the pipe outlets in pipe **154**.

While I have shown and described a particular embodiment of this machine together with a suggested mode of operation this is just to illustrate a preferred embodiment and since there are various alterations, changes, deviations, eliminations, substitutions, additions, revisions, omissions, and departures which may be made in the machine this is not to be construed as any sort of limitation on the scope of the machine as defined only by interpretation of the appended Claims.

What is claimed is:

1. In a machine for distributing hot asphalt and the like wherein there is a machine structure comprising a machine frame having ground support wheels thereon, a movable bed mounted on the top of said frame and being movable to elevate same to distribute hot asphalt on said bed from the machine, said machine structure having a conveyor space defined by the machine structure on the frame through which the hot asphalt and the like is distributed, the improvement comprising:

a conveyor means operatively related to said machine frame and mounted for operation in said space, said conveyor directing the hot asphalt to respective sides of said frame, and out of said space, a pivoted gate on said machine operatively mounted on said machine frame to adjust the space from which said asphalt is distributed, said conveyor and said gate being operatively mounted on said machine frame for simultaneous movement on said machine frame whereby said conveyor is moved either toward or away from said movable bed when said gate is opened or closed to increase

or reduce the space from which the asphalt is conveyed and to adjust said conveyor in said space.

2. The device claimed in claim **1** wherein there are at least two separate and independent conveyors operatively mounted on said frame in said space and at least one of said conveyors on each side conveying asphalt toward a respective side.

3. The device claimed in claim **1** wherein there are at least two conveyors operatively mounted on said frame in said space, said space being divided into at least two separate sections in which at least one of each of said conveyors is positioned, there being a respective gate for each of said conveyors separate and independent from the other gates, and means operatively mounted on said machine frame for causing simultaneous movement of said respective gate and the respective conveyor therewith when said gate is opened or closed.

4. The device claimed in claim **3**: said conveyor and a respective gate being mounted together operatively on said frame for simultaneous movement.

5. The device in claim **3** wherein said conveyors are helical screw conveyors.

6. The device claimed in claim **4** wherein each respective conveyor has a respective power means connected thereto and said respective gate and said respective conveyor being mounted together for simultaneous movement independently of the other conveyors and gates.

7. The device claimed in claim **6** wherein said power means for said respective conveyors is a hydraulic motor and said conveyor has a shaft thereon which is driven by said hydraulic motor.

* * * * *