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Gutman et al.

[11] **3,843,274**

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[54] **ASPHALT RECLAIMER**

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[52] **U.S. Cl.** **404/91**

[51] **Int. Cl.** **E01c 23/12**

[58] **Field of Search** 404/91, 92, 93, 95, 83, 404/84, 101, 108, 105

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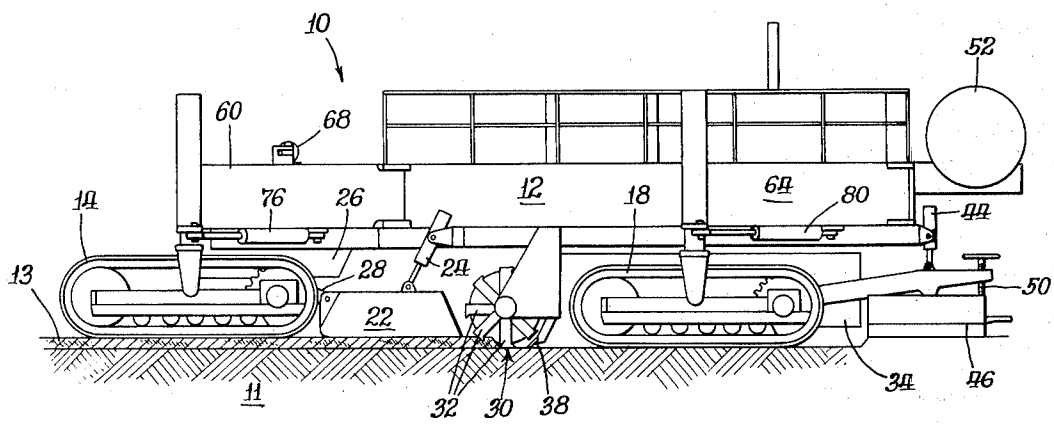
Primary Examiner—Nile C. Byers, Jr.

Attorney, Agent, or Firm—Phillips, Moore, Weissenberger Lempio & Strabala

[57] **ABSTRACT**

A vehicle rides on a front pair and a rear pair of tracks, each pair straddling apparatus for working the upper layer of asphalt of a road as the vehicle is driven forwardly over the road. The apparatus includes means for heating the upper layer of asphalt, a rotating cutter for lifting the heated asphalt, a pugmill for pulverizing the lifted asphalt, a spreader for distributing the pulverized asphalt, and a leveler for leveling the distributed asphalt. Such operations take place continuously as the vehicle is driven forwardly over the road. In addition, the distance between the front pair of tracks and the distance between the rear pair of tracks may be varied to alter the stance of the vehicle.

10 Claims, 4 Drawing Figures



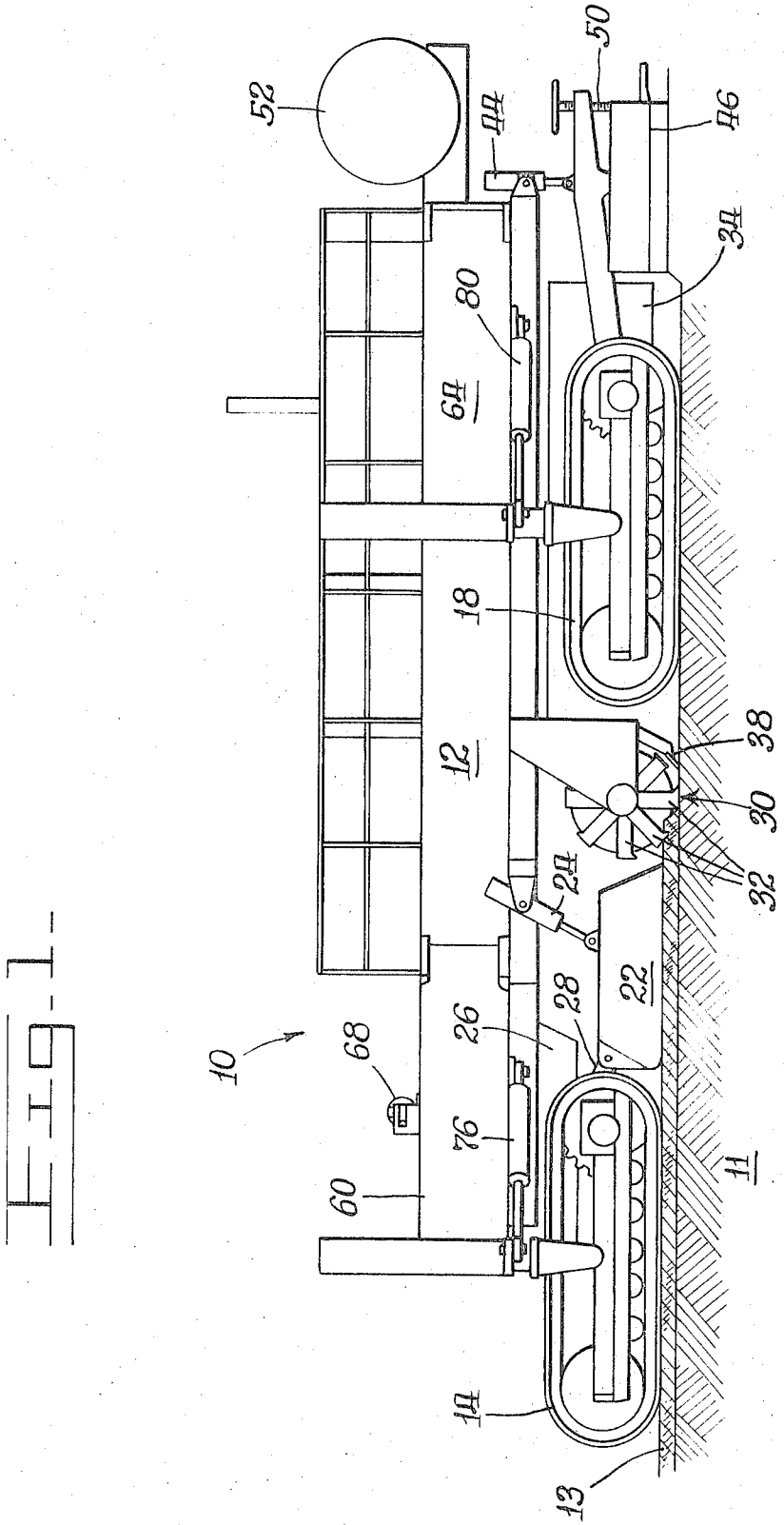


FIG. 1

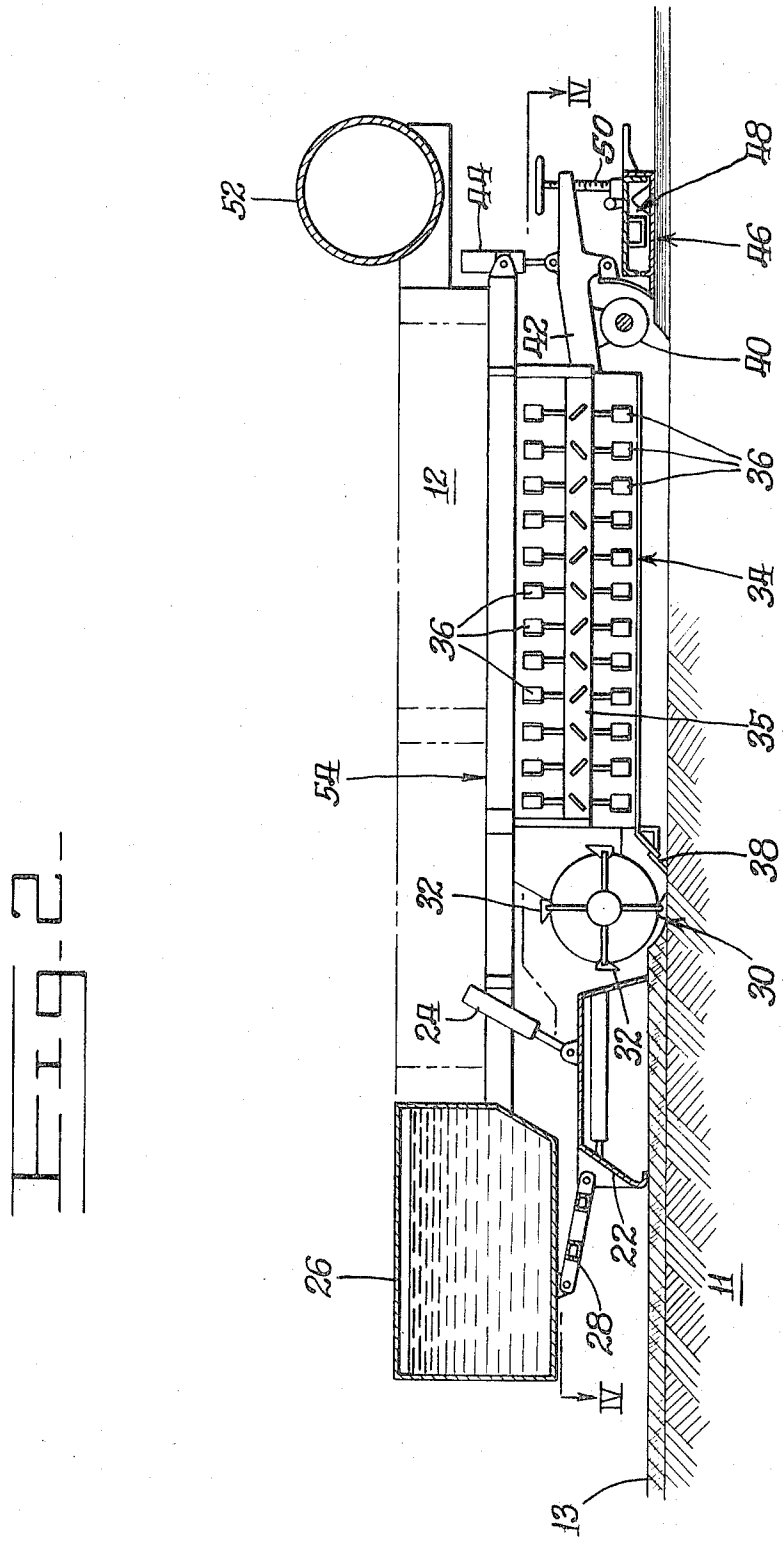

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Fig. 2

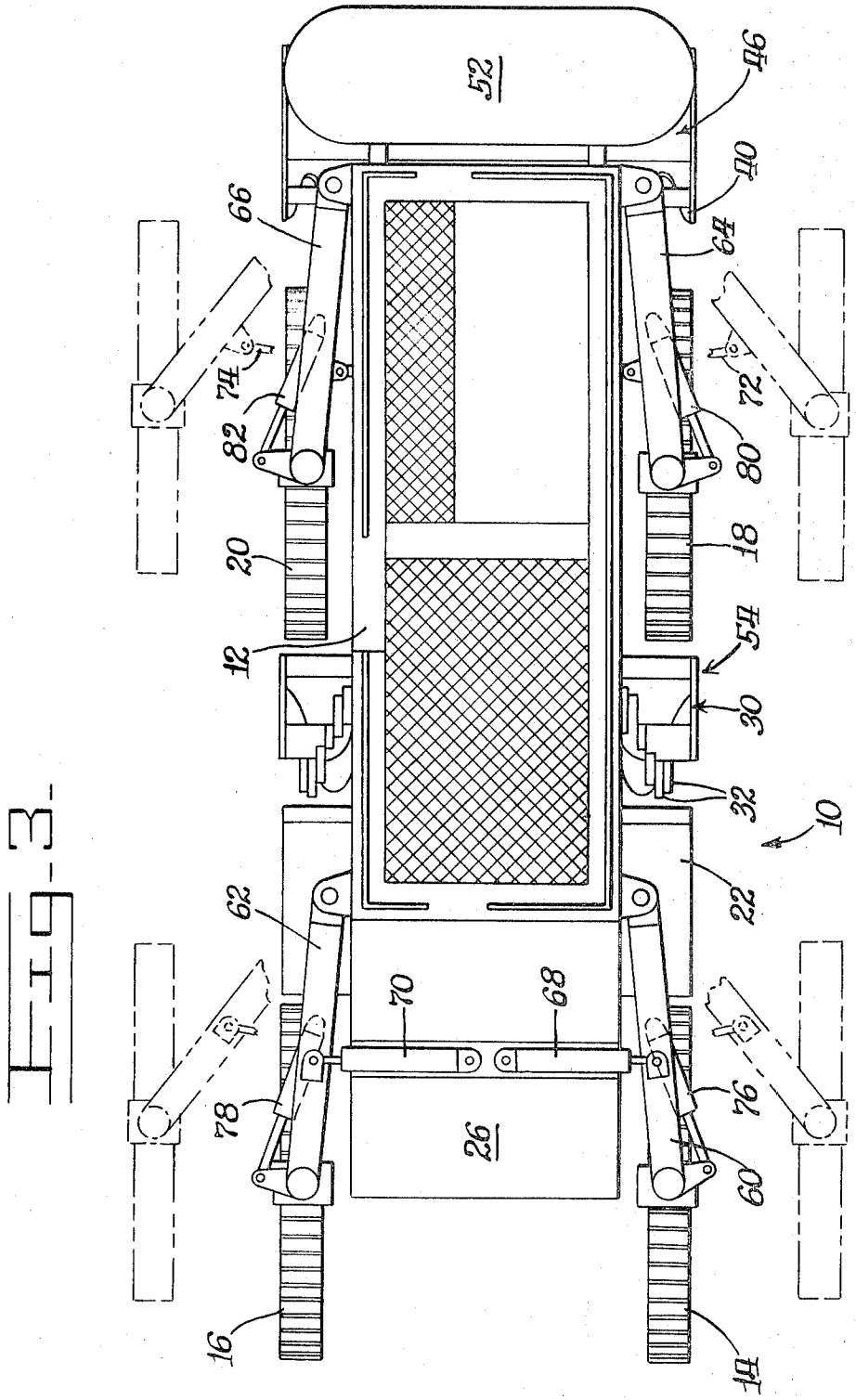

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Fig. 3

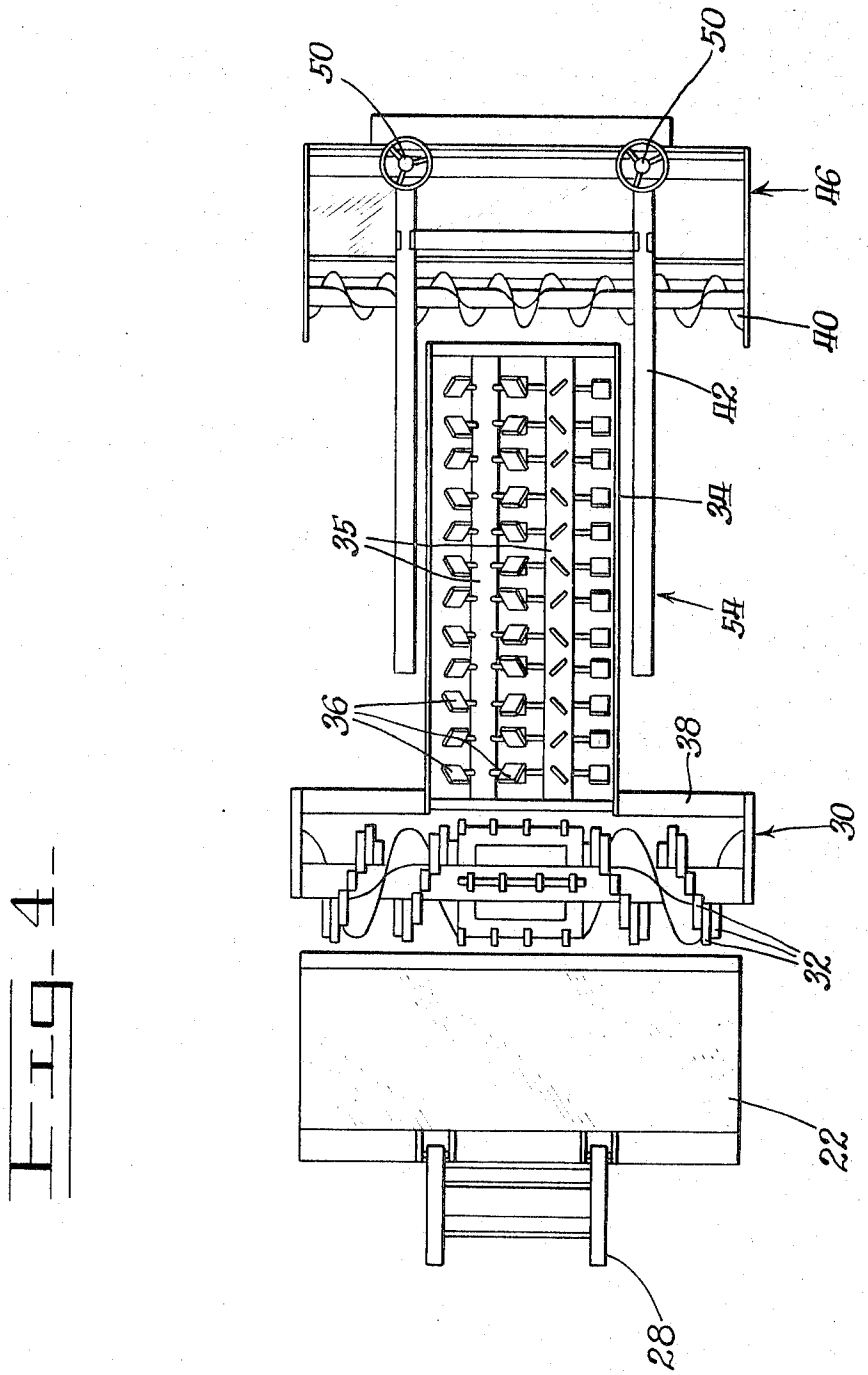


Fig. 4

ASPHALT RECLAIMER

BACKGROUND OF THE INVENTION

This invention relates to asphalt reclaiming or reworking apparatus, and more particularly, to a vehicle which performs a continuous series of operations on an upper layer of asphalt as the vehicle is driven.

Heretofore, reclaiming or working operations on the upper surface of road asphalt or tarmacadam have been usually undertaken in independent steps (i.e., heating, lifting, etc.). While such reclaiming is generally satisfactory, it is of course quite time consuming and inconvenient to move one machine in for its operation, then move it away and replace it with another machine for another operation, etc. Also, the expense involved with the use of multiple operating vehicles is relatively high. It would clearly be advantageous to provide a single vehicle which is capable of performing a series of working operations on the upper layer of asphalt or tarmacadam in a continuous manner as the vehicle is moved forwardly over the road.

SUMMARY OF THE INVENTION

It is therefore an object of this invention to provide a vehicle which includes apparatus for performing a series of working operations on the upper layer of road asphalt or tarmacadam in a continuous manner as the vehicle is driven over the road.

It is a further object of this invention to provide a vehicle which, while fulfilling the above object, is stable in operation, and is adaptable to a variety of conditions, meanwhile being effective under such conditions.

Broadly stated, the invention is in combination with a vehicle, and comprises apparatus for working a layer of workable material which makes up the upper covering layer of a road, as the vehicle is driven forwardly over the road. Such apparatus comprises means associated with the forward end of the vehicle for lifting the upper layer of material, and means associated with the vehicle rearwardly of the lifting means for pulverizing the lifted upper layer of material. Means are associated with the vehicle rearwardly of the pulverizing means for distributing the pulverized upper layer material generally evenly transversely of the vehicle, so that said lifting means, pulverizing means and distributing means operate in a continuous manner as the vehicle is driven forwardly. The vehicle further includes and is supported by a forward pair of tracks disposed on opposite sides of the apparatus and a rearward pair of tracks disposed on opposite sides of the apparatus, said tracks being rotatable over the surface of the road. Further included are means for selectively increasing and decreasing the distnce between the forward pair of tracks and between the rearward pair of tracks.

BRIEF DESCRIPTION OF THE DRAWINGS

These and other objects of the invention will become apparent from a study of the following specification and drawings, in which:

FIG. **1** is a side elevational view of the vehicle incorporating the invention;

FIG. **2** is a view similar to that of FIG. **1**, but with portions removed;

FIG. **3** is a plan view of the vehicle; and,

FIG. **4** is a view taken along the line IV—IV OF FIG. **2.**

DESCRIPTION OF THE PREFERRED EMBODIMENT

Shown in the drawings in the reclaiming vehicle **10** positioned on a road **11,** the upper covering layer **13** of which is workable material such as asphalt, tarmacadam, or the like. Such vehicle includes a frame assembly **12** and is supported by a forward pair of tracks **14, 16,** and a rearward pair of tracks **18, 20.** Associated with the forward end of the vehicle **10** is a hooded infra-red heater **22.** Such heater **22** is connected to frame assembly **12** by a cylinder **24.** A tank **26** is fixed to the forward part of the vehicle **10** and is used as an asphalt storage and supply tank. A link **28** interconnects heater **22** with tank **26.** It will be seen that, by extending and retracting cylinder **24,** the heater **22** may be adjusted upwardly and downwardly relative to the road **11** to vary the distance therebetween. The application of heat to the upper layer of asphalt **13** softens such upper layer **13** so that it is more workable, the cylinder **24** providing that the distance between the heater **22** and upper layer of asphalt **13** is correct for proper heating and softening thereof.

A rotary cutter **30** is associated with the vehicle **10,** being fixed to frame assembly **12** rearwardly of the heater **22.** The cutter **30** is disposed transversely of the vehicle **10,** and the cutting blades **32** thereof cut the heated upper layer of asphalt **13** to thereby lift the upper layer of asphalt **13,** the heated upper layer of asphalt **13** being presented to the cutter **30** as the vehicle **10** is driven forwardly.

Associated with the vehicle **10** rearwardly of the cutter **30,** being fixed to frame assembly **12,** is a pugmill **34** including longitudinal rotating members **35** each having mounted therein a plurality of radially spaced blades **36** for pulverizing the lifted upper layer. Such lifted asphalt is pushed up a ramp **38** adjacent to and rearwardly of the cutter **30** and is presented to the pulverizing means **34** as the vehicle **10** is driven forward. The pugmill **34** is heated by means well known, so that the asphalt being pulverized thereby is heated, making it easier to work. Asphalt oils are supplied from tank **26** to the asphalt being pulverized.

Associated with the vehicle **10** rearwardly of the pugmill **34** is a spreader screw **40** disposed transversely of the vehicle **10.** Such spreader screw **40** distributes the pulverized asphalt across the road **11,** such pulverized asphalt having been presented to the spreader screw **40** as the vehicle **10** is driven forwardly. Such spreader screw **40** spreads the pulverized asphalt generally evenly transversly of the vehicle **10.** The spreader screw **40** is disposed on a rear link **42** pivotally fixed to frame assembly **12,** and rear link **42** is connected to frame assembly **12** by cylinder **44,** so that the spreader screw **40** may be moved upwardly and downwardly relative to the vehicle **10** so that the height thereof relative to the vehicle **10** may be chosen. Through such means, spreader screw **40** may be made to operate in an efficient manner.

Leveling means **46** are associated with the vehicle **10** rearwardly of the spreader screw **40.** Such leveling means **46** include vibrating and heating means **48.** The leveling means include adjustment means **50** interconnecting the leveling means with rear link **42,** so that the leveling means **46** may be moved upwardly or downwardly relative to the vehicle **10.** Leveling means **46** generally evenly level the pulverized distributed asphalt

presented thereto as the vehicle **10** is driven forwardly, the adjustment means **50** allowing a choice of level material height relative to the vehicle **10.** The vibrating and heating means **48** aid in such leveling.

It is to be understood that the fuel for the various heating implements is supplied thereto from a propane storage tank **52** fixed to the rear of the vehicle **10.**

The actual working apparatus **54** of the vehicle is made up of heater **22,** cutter **30,** pugmill **34,** spreader screw **40,** and leveling means **46,** and the structure associated therewith. It should be clear from the above description that the apparatus **54** operates in a continuous manner as the vehicle **10** is driven forwardly.

It should also be understood that the vehicle **10** use is not limited to working on asphalt or tarmacadam, but can be used with any workable road material of this type.

The tracks **14, 16** are disposed on opposite sides of the apparatus **54,** and the tracks **18, 20** are also disposed on opposite sides of the apparatus **54.** The tracks **14, 16, 18, 20** are rotatable over the surface of the road **11,** and means are included for driving them, and thus the vehicle **10,** as is well known. Arms **60, 62, 64, 66** have ends pivotally fixed to the frame assembly **12,** and thus pivotally fixed relative to the vehicle **10.** The opposite ends of arms **60, 62, 64, 66** are pivotally fixed to the tracks **14, 16, 18, 20** respectively, as shown. The arms **60, 62, 64, 66** extend generally forwardly of the vehicle **10.** Cylinders **68, 70, 72, 74** interconnect the frame assembly **12** with the arms **60, 62, 64, 66,** respectively, so that extension of any cylinder pivots the arm associated therewith outwardly of the vehicle **10,** and retraction of any cylinder pivots the arm associated therewith inwardly of the vehicle **10.** It will be seen that extending cylinders **68, 70** selectively increases the distance between the tracks **14, 16,** and retraction of cylinders **68, 70** selectively decreases the distance between tracks **14, 16.** Likewise, the extension of cylinders **72, 74** selectively increases the distance between tracks **18, 20** and retraction of cylinders **72, 74** selectively decreases the distance between the tracks **18, 20.**

Cylinders **76, 78, 80, 82** pivotally extend from frame assemlby **12** and are associated with tracks **14, 16, 18, 20** so that upon chosen extension and retraction of these cylinders, proper track alignment may be maintained and the vehicle **10** may be properly steered thereby.

Thus, the "stance" of the vehicle **10** may be easily and conveniently altered, insuring that the vehicle **10** is extremely stable in operation, and may be adapted to a variety of conditions, meanwhile insuring that the tracks will not interfere with the reworking apparatus **54** of the vehicle **10.**

What is claimed is:

1. In a vehicle, apparatus for working a layer of workable asphalt or the like which make up the upper covering layer of a road, as the vehicle is driven forwardly over the road, said apparatus comprising: infra-red heating means associated with the forward end of the vehicle for heating the upper layer of asphalt to a soft and more workable condition; rotating cutting means associated with the vehicle and disposed transversely thereof rearwardly of the heating means for cutting the heated upper layer of asphalt, whereby the upper layer of asphalt is lifted; means associated with the vehicle rearwardly of the cutting means for pulverizing the lifted asphalt; a spreader screw associated with the vehicle and disposed transversely thereof rearwardly of the pulverizing means for distributing the pulverized asphalt across the road; and, leveling means associated with the vehicle rearwardly of the spreader screw for generally evenly leveling the distributed asphalt, werein the apparatus further comprises means for heating the pulverizing means to thereby heat said asphalt being pulverized.

2. The vehicle of claim **1** werein the apparatus further comprises means for vibrating and heating the leveling means as said leveling means levels the distributed asphalt.

3. The vehicle of claim **2** wherein the apparatus further comprises means for adjusting the infra-red heating means upwardly and downwardly relative to the road to vary the distance therebetween.

4. The vehicle of claim **3** wherein the apparatus further comprises means for adjusting the leveling means upwardly and downwardly relative to the vehicle so that the height of the leveled material relative to the vehicle may be chosen.

5. The vehicle of claim **4** wherein the apparatus further comprises means for adding oil to the asphalt being pulverized.

6. The vehicle of claim **5** wherein the apparatus further comprises means for adjusting the spreader screw upwardly and downwardly relative to the vehicle so that the height thereof relative to the vehicle may be chosen.

7. The vehicle of claim **1** wherein the vehicle includes and is supported by a forward pair of members disposed on opposite sides of the apparatus and a rearward pair of members disposed on opposite sides of the apparatus, said members being rotable over the surface of the road, and further comprising means for selectively increasing and decreasing the distance between the forward pair of members, and for selectively increasing and decreasing the distance between the rearward pair of members.

8. The vehicle according to claim **7** wherein the means for selectively increasing and decreasing said distances comprise (i) four arms, one arm associated with each member, each arm having one end pivotally fixed relative to the vehicle and the other end pivotally fixed to its associated member, the pivoting of the arms outwardly of the vehicle increasing the distances between the respective pairs of members, the pivoting of the arms inwardly of the vehicle decreasing the distances between the respective pairs of members, and (ii) cylinder means associated with each arm to provide such pivoting of the arms.

9. The vehicle of claim **8** wherein the arms extend generally forwardly of the vehicle.

10. The vehicle of claim **9** wherein each member comprises an endless track.

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