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ROAD ROLLING MACHINE

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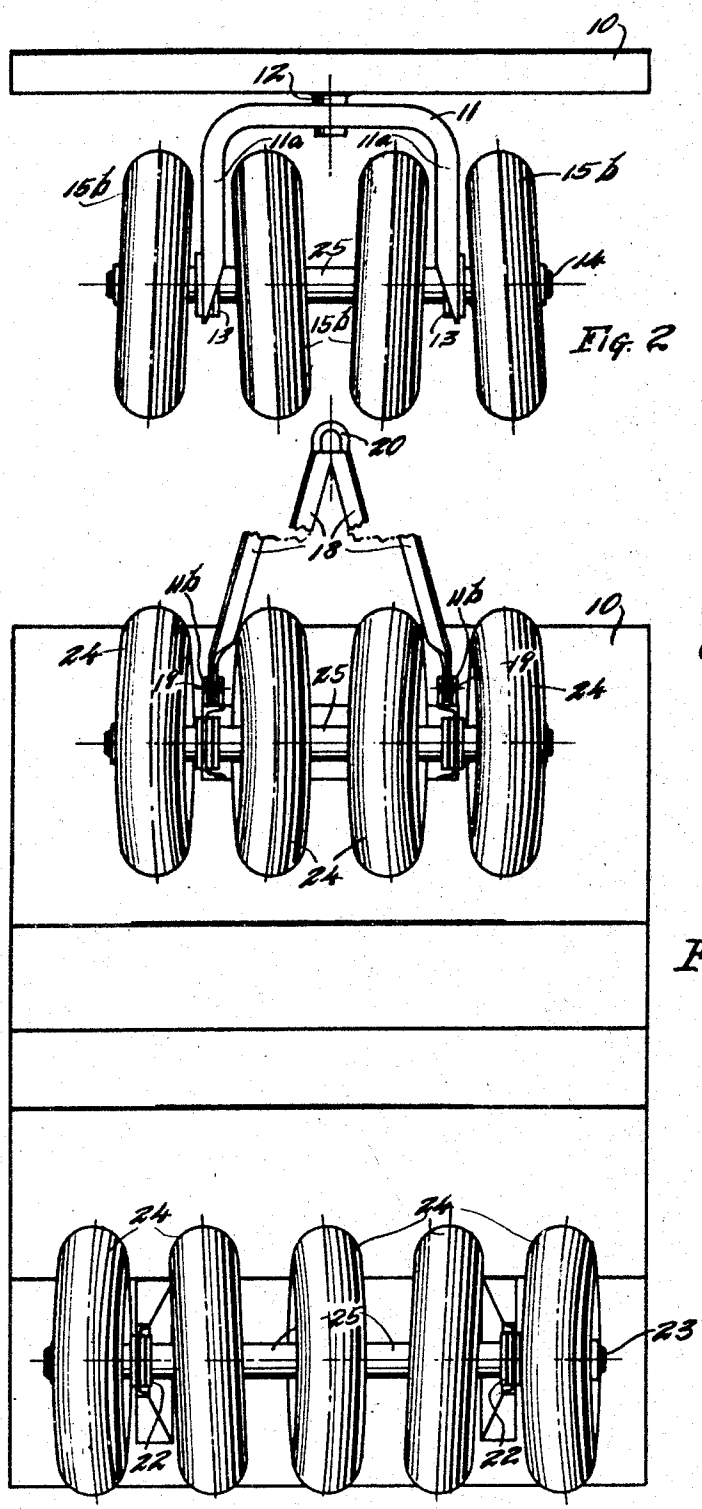


FIG. 1.

FIG. 2

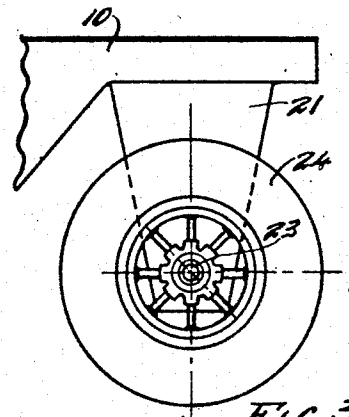
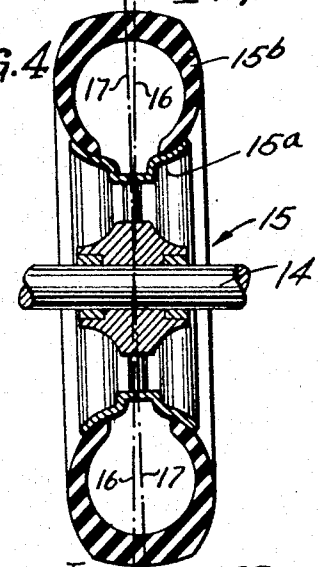


FIG. 3.

FIG. 4



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ROAD ROLLING MACHINE

Arthur S. Miller, Fargo, N. Dak., and John R. Ritchie, Minneapolis, Minn., assignors, by direct and mesne assignments, to Wm. Bros. Boiler & Mfg. Company, Minneapolis, Minn., a corporation of Minnesota

Application July 13, 1938, Serial No. 219,022

5 Claims. (Cl. 94—50)

This invention relates to a machine for operating on roads and other places and properly preparing the surface thereof. A great many roads are now being constructed which have their surfaces made of gravel, macadam or similar material which is mixed with oil. Different kinds of oil are used on the roads, some of oil being mixed with bitumin, tar, asphalt or similar substances. Some of the latter substances may be mixed with the gravel, macadam or similar material. The machine is also used for packing roads made of rock asphalt. The mixed material is spread out on the roads and must then be packed to a certain extent. The material does not roll down in a satisfactory manner when acted upon with a roller having a hard or steel surface or a continuous surface. It has been found that when a road is rolled with repeated contacts of wheels having yielding tires of comparatively large size that the surface is formed into the best condition.

The machine of this invention also has a high degree of utility for use in packing fills of various kinds and stabilized base or surface material in various places. The machine is also used for packing crushed rock bases.

This invention is an improvement upon that disclosed and claimed in Patent No. 2,024,184, granted December 17, 1935 to J. R. Ritchie, one of the applicants herein.

It has been found that with the use of the machine disclosed in said patent, a great many of which are in operation that small ridges sometimes appear on the rolled surface particularly if the machine has been moved wholly or nearly so longitudinally of the road. It is an object of this invention to provide a machine of the type disclosed in said patent, the tires of one or more of the wheels being so arranged that it makes a wavy track instead of a rectilinear track when the machine is moved in a substantially straight path.

It is still another object of the invention to provide a machine having a plurality of series of wheels thereon, the wheels of said series being arranged to extend transversely of the vehicle and preferably in spaced relation, the tires of said wheels being disposed in planes making an acute angle with the axis about which the wheels rotate so that the wheels wobble or so that the tires make a sinuous path as the machine progresses along the road.

These and other objects and advantages of the invention will be fully set forth in the following description made in connection with the accompanying drawing in which like reference characters refer to similar parts throughout the several views and in which:

Fig. 1 is a bottom plan view of the machine;

Fig. 2 is a view in front elevation of the machine;

Fig. 3 is a partial view in side elevation showing the rear of the machine; and

Fig. 4 is a vertical section through one of the wheels and the axle.

Referring to the drawing a machine is shown comprising a body or platform 10. A yoke 11 is pivotally mounted centrally of its top portion on a pivot member 12 secured to the body 10 and held thereon in any suitable manner. Yoke 11 has depending vertical arms 11*a* in the lower ends of which are secured ball bearing members 13. A front axle 14 is mounted in bearings 13 and a plurality of wheels 15 are mounted on axle 14, being disposed in spaced relation thereon. Each wheel 15 comprises a rim 15*a* for receiving a tire 15*b* which is of relatively large size and of yielding material. In the embodiment of the invention illustrated tires 15*b* are shown as of the pneumatic type. The rim 15*a* and tire 15*b* are disposed in a plane making a slight angle to a plane normal to the axis of axle 14. As shown in Fig. 4, line 16—16 indicates a plane perpendicular to the axis of axle 14 and line 17—17 indicates the central plane of tire 15*b*. Said planes are thus at a slight angle and the plane of tire 15*b* or the central plane of said tire makes an acute angle with a plane extending perpendicular to the axis of axle 14. While the tires may be arranged in various ways in the embodiment of the invention illustrated, as shown in Fig. 1, the central planes of the tires 15*b* of the outer pairs of wheels on axle 14 as shown as at an angle to each other or as intersecting planes. The yoke member 11 has spaced lugs 11*b* projecting forwardly from each side 11*a* and a tongue 18 has its side members pivotally connected to the lugs 11*b* by pivots 19. The sides of tongue 18 converge and are joined together at their forward ends and have a clevis 20 secured thereto adapted to be connected with a suitable traction means.

Adjacent the rear end of body 10 the same has secured thereto downwardly extending brackets 21. Brackets 21 are disposed adjacent and at equal distances from opposite sides of body 10 and the same have secured therein at their lower ends ball bearing members 22. A rear axle 23 is mounted in the bearings 22 and a plurality of wheels 24 are mounted on axle 23. The wheels

24 are similar to the wheels 15 already described. The hubs of the wheels are concentric with axle 23 but the rims and tires have their central planes making a slight angle with a plane perpendicular to the axis of axle 23. The spokes connecting said hubs or rims may or may not be perpendicular to said axis. In Fig. 4 said spokes are shown as perpendicular to the hub. In other words, the tires are disposed in planes or have their central planes disposed at an acute angle to a plane extending perpendicular to the axis of axle 23. Suitable spacing sleeves 25 are disposed between the hubs of the wheels on axles 14 and 23. These are indicated more specifically in the above mentioned patent.

In operation, the machine disclosed will be used to pack a road of the oil mixed or other type and for this purpose will be drawn over said road. Preferably the machine will be drawn back and forth over a certain area until the surface is in the desired position. Any suitable weight desired can be placed upon the body or platform 10 and this weight is often provided by putting bags of sand or stones on the said platform or in a body carried on the machine. As the machine is drawn forward the wheels rotate and due to the inclination of the central plane of the tire the wheels have a wobbly motion. This causes the tire to make a wavy or sinuous path. The successive paths made by the wheels thus will cross each other. While with the present type of wheel it may not be absolutely necessary, yet in the present machine as in the prior patent, the wheels on axle 14 are disposed substantially in longitudinal alignment with the spaces between the wheels on axle 23. The sinuous tracks made by the various wheels, which as stated, will cross each other in successive operations, will prevent the formation of longitudinal ridges on the surface treated. The present machine has been found to make a much more uniform and improved surface. The present machine, therefore, solves the problem and overcomes the difficulty of the wheels tracking to such an extent as to cause the objectionable ribs or ridges.

From the above description it will be seen that we have provided a very simple and efficient machine for producing a smooth and desirable surface on a road of the oil mixed or other type. The invention constitutes quite an advance in the art and it will be seen that the same has a high degree of utility for the purpose intended.

It will, of course, be understood that various changes may be made in the form, details, arrangement and proportions of the parts, without departing from the scope of applicants' invention, which generally stated, consists in a device capable of carrying out the objects above set forth, in the parts and combinations of parts disclosed and defined in the appended claims.

What is claimed is:

1. A device for rolling and packing material having in combination, a frame, an axle mounted on said frame, a plurality of laterally spaced wheels each provided with a hub and making a fixed acute angle with said hub, each of said hubs revolving concentrically with said axle and said wheels having tires thereon of yielding material whereby said wheels will wobble when said device is progressed.

2. A device for rolling and packing material having in combination, a frame, an axle mounted on said frame, a series of laterally spaced wheels each provided with a hub and making a fixed acute angle with said hub, each of said hubs revolving concentrically with said axle, said wheels having pneumatic tires of relatively large size thereon, a second axle mounted on said frame substantially parallel to and spaced longitudinally from said first mentioned axle and a series of laterally spaced wheels each provided with a hub and making a fixed acute angle with said hub, each of said hubs revolving concentrically with said second axle, said latter series of wheels each having pneumatic tires of relatively large size thereon and said latter wheels being disposed in longitudinal alinement respectively with the spaces between said first mentioned series of wheels whereby as said device is advanced the tires on said wheels will have a wobble motion and make a wavy track.

3. A device for rolling and packing material having in combination, a frame, an axle mounted in said frame, a series of laterally spaced wheels thereon, said wheels having tires of yielding material and relatively large size thereon, a second axle mounted in said frame spaced longitudinally from and substantially parallel to said first mentioned axle, a series of laterally spaced wheels on said second axle, each of which has a tire of yielding material and of relatively large size thereon, certain of said second series of wheels being provided with hubs and making respectively fixed acute angles with said hubs, each of said hubs revolving concentrically with the axle on which it is disposed whereby said tires on said second axle will have a wobble motion when said device advances.

4. A device for rolling and packing material having in combination, a frame, an axle mounted in said frame, a series of laterally spaced wheels mounted on said axle, said wheels having tires of yielding material and of relatively large size thereon, a second axle mounted in said frame substantially parallel to and spaced longitudinally from said first mentioned axle, a series of laterally spaced wheels mounted on said second axle each having a tire of yielding material and of comparatively large size thereon, adjacent pairs of said wheels on both of said axles being provided with hubs and making fixed acute angles with said hubs respectively, each of said hubs being rotatable concentrically with the axle on which it is mounted, said tires being of such size and said wheels being so spaced that substantially the entire area of the surface traversed is engaged when said wheels on said first and second axles pass thereover.

5. A device for rolling and packing material having in combination, a frame, a front axle mounted in said frame, a series of laterally spaced wheels on said axle, said wheels having pneumatic tires thereon, a rear axle mounted in said frame spaced longitudinally from said front axle, a series of wheels mounted on said rear axle and having pneumatic tires thereon, certain of said wheels being provided with hubs respectively making fixed acute angles with said hubs, each of said hubs revolving concentrically with the axle on which it is mounted whereby when said device is progressed said latter wheels will wobble and the tires thereon will make a wavy track, said tires on the wheels on both axles being of such size and said wheels being so spaced that substantially the entire area of the surface traversed is engaged when the wheels on said front and rear axles pass thereover.

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