June 4, 1957 R. M. ROBINSON 2,794,274

PAVING ATTACHMENT FOR GRADERS

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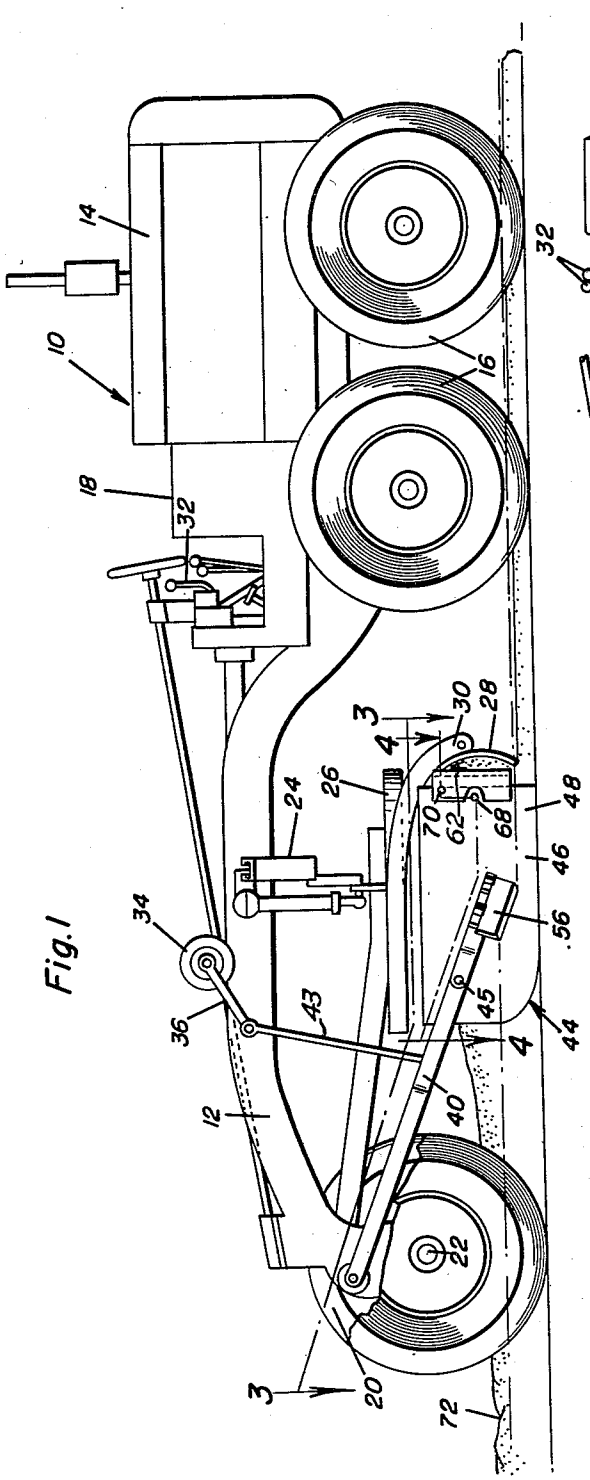


Fig. 1

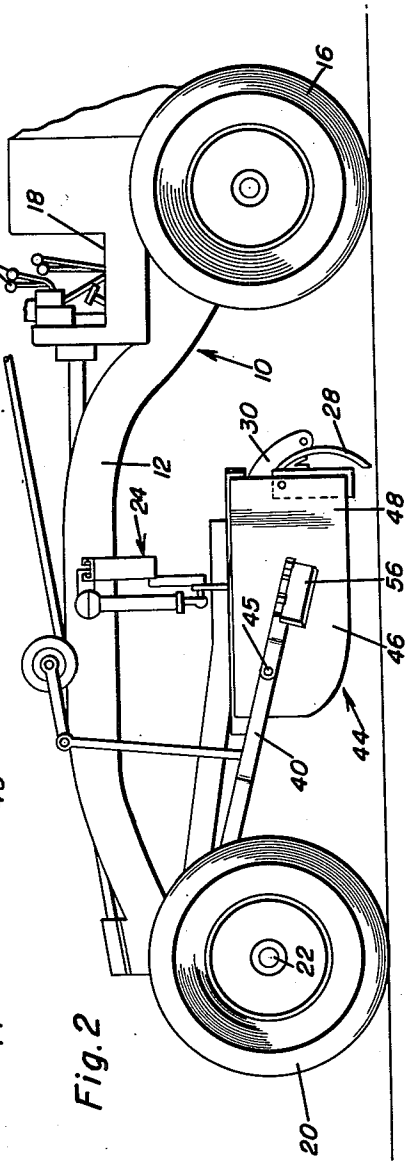


Fig. 2

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Fig. 3

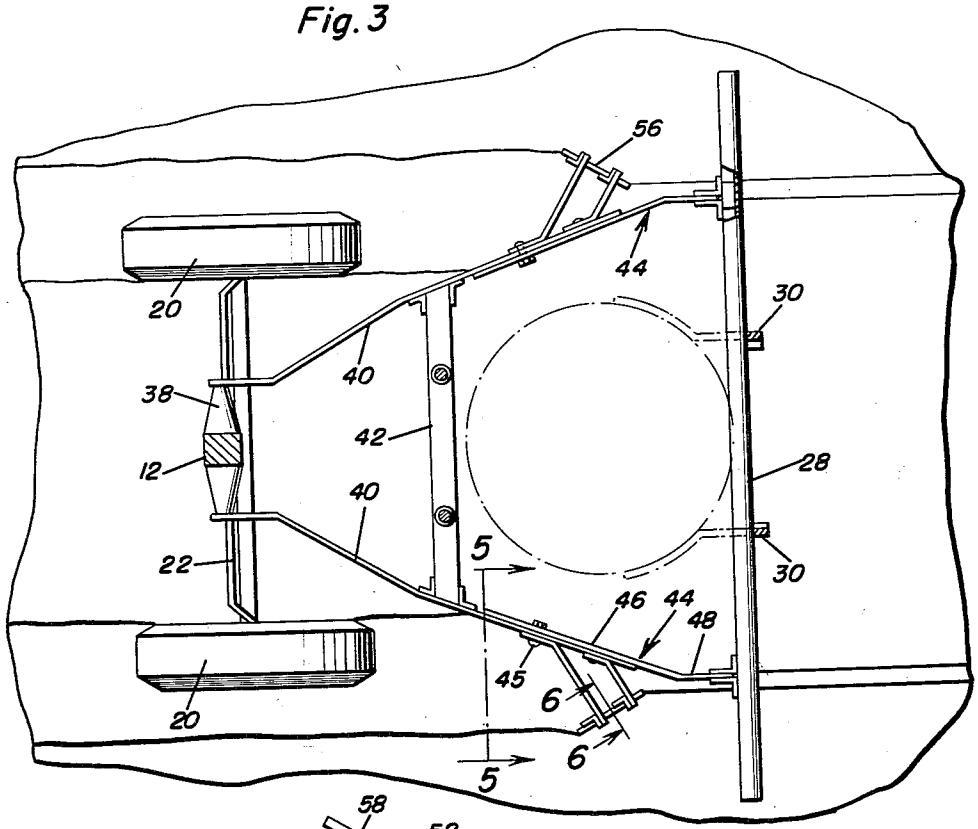


Fig. 4

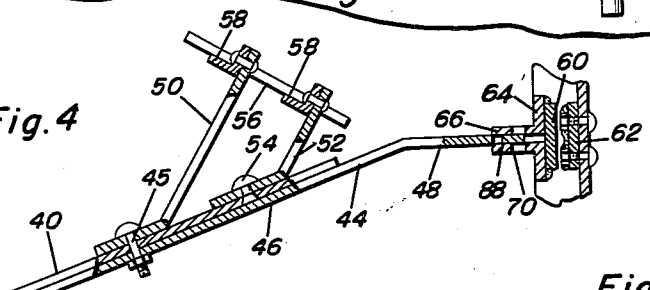


Fig. 6

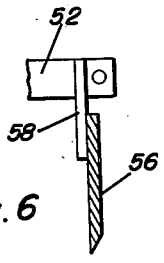
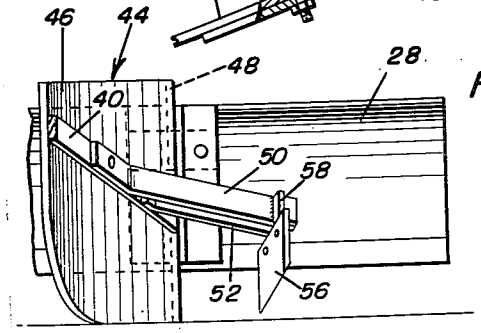


Fig. 5



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PAVING ATTACHMENT FOR GRADERS

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Application December 28, 1953, Serial No. 400,549

2 Claims. (Cl. 37—153)

This invention relates generally to an attachment for use with road graders which will enable such machines to spread paving material such as crushed stone and the like which has been deposited in a windrow, as by the use of the device shown in my co-pending application Serial No. 402,867, filed January 8, 1954, entitled Windrow Type Spreader Box, uniformly to a desired width prior to the compacting process.

A primary object of this invention is to make use of conventional equipment, a road grader, and to convert the same, by utilizing this invention as an attachment therefor, for use in spreading paving material in the manner above set forth. By utilizing a road grader, not only is this invention enabled of use by even the most meagerly equipped community, but also the spreading action attained is of far greater uniformity than is accomplished by any known special equipment. That is, since road graders are so universally necessary for many different types of work, even a very small community or contractor possesses one. Also since road graders have a very long wheel base and since the invention is to be utilized substantially midway between the front and rear wheels thereof, unevenness of an existing road surface will be transmitted only to a very small degree to the new surface formed by spread paving material. This is particularly important when old road surfaces have holes, undulations and bumps therein.

Another important object of this invention is to provide an attachment of the character and for the purpose described above which will direct earth from the shoulders of a roadway against the sides of the strip of paving material during the spreading operation so that during the compacting process the earth thus directed will form a stop and hold the material against further spreading, assuring an even and desired width of proper density and uniformity even after an extreme compaction.

These together with other objects and advantages which will become subsequently apparent reside in the details of construction and operation as more fully hereinafter described and claimed, reference being had to the accompanying drawings forming a part hereof, wherein like numerals refer to like parts throughout, and in which:

Figure 1 is a side elevation of the invention as applied to and in use with a conventional grader;

Figure 2 is a view similar to Figure 1 but showing the wing and outrigger blades in elevated position;

Figure 3 is a horizontal section taken substantially along the plane of section line 3—3 in Figure 1;

Figure 4 is another horizontal section showing details of the blade assemblies on enlarged scale;

Figure 5 is an elevational view taken in the direction of line 5—5 in Figure 3; and

Figure 6 is a vertical section taken along the plane of section line 6—6 in Figure 3.

Referring now more particularly to the drawings in detail and most specifically at this point to Figures 1 and 2, reference character 10 is utilized to designate a conventional road grade assembly which employs the usual main

frame member 12 extending forwardly from the rear portion of the grader wherein the motor and drive assembly 14, rear wheels 16 and operator's station 18 are located. The forward end of the main frame member carries the usual dirigible wheels 20 mounted on front axle member 22. The usual mechanism 24 is employed in mounting and actuating the frame assembly 26 on which the scraper blade 28 is suspended as by the arms 30. At the operator's station controls 32 are located for manipulating the various hydraulic mechanism conventionally supplied with graders, including the assembly 34 normally used for raising and lowering a scarifying attachment by means of vertically swingable links or arms 36. The forward end of the frame journals a trunnion shaft 38 to which the usual scarifier carrying arms are secured, one on each end thereof.

All the above described mechanism is conventional in nature and forms, in itself, no part of this invention although its use, or equivalents thereof, are necessary to complete the total combination of elements with which the following invention may be successfully used.

Further reference is now had to Figures 3–6.

At the opposite ends of the trunnion shaft, a pair of arm members 40 are rigidly attached. These arm members project rearwardly and are suitably interconnected by a cross-brace member 42 at an intermediate point. The lower ends of rods 43 are pivotally secured to the cross-brace and the upper ends of these rods are pivotally carried by the free ends of the movable links 36 such that arms 40 are swingable, under control of the operator, in a vertical plane. The rearward ends of the arms are mutually divergent and each carries a wing blade 44, secured thereto as by a fastener 45. The wing blades are formed with laterally, inwardly bent forward end portions 46 the purpose of which will be presently apparent, and rear portions 48. When properly set up, the rear portions of the wing blades are disposed in parallelism with each other and the longitudinal axis of the grader.

Also carried by each arm 40 are a pair of support arms 50 and 52, the former of which is secured to the arm by the previously mentioned fastener 45 and the latter of which is connected to the arm as by a rivet or other suitable fastener 54. The support arms are angulated with respect to the arms 40 as shown and rearward support arms 52 are shorter than the other support arms such that outrigger blades 56, carried by the depending brackets 58 at the free ends of the support arms, are inclined inwardly from their forward ends, toward the wing blades. It will be noted that a projection of the outrigger blades intersects the wing blades just forward of the point of their juncture between the front and rear portions thereof, the purpose of this construction being presently apparent.

A vertically disposed strap or plate 60 is secured adjacent each end of the scraper blade 28, this being accomplished by any suitable means such as the angle brackets 62. A pair of guide members 64 are secured to each strap such that their vertically disposed, horizontally spaced guide portions 66 receive the rear edge of the wing blades therebetween. For the purpose of maintaining the blade assemblies in elevated position, it will be noted that the wing blades are provided with apertures 68 and the guide members 64 with apertures 70 which are in alignment when the blades are elevated and through which a suitable latch pin may be inserted, a portion of one of the guide members being broken away in Figure 1 to illustrate the position of apertures 68.

In operation, it will be seen that the vertical height of the scraper blade 28 is adjusted to desired position for topping and leveling the windrow 72 of paving material. The material dragged along by the scraper blade is piled

up and thrown against the wing blades to be confined therebetween. The inclined forward end portions of the wing blades impart lateral movement to the paving material and assure a proper density thereof, while the rear portions of the wing blades form the opposite sides of the paving material strip.

Simultaneously, the outrigger blades are engaged in the earth forming the roadway shoulders and direct earth toward the wing blades just ahead of the rear portions thereof. Thus, the earth is first pushed toward and against the wing blades and then away from them by the forward blade portions 46 such that the earth will be somewhat compacted by this two-way movement and will be directed by the rear blade portions 48, at the opposite side edges of the material strip to prevent further outward movement or spreading of the strip during subsequent compaction.

Of course, it will be manifest that the wing assemblies may be utilized in only one side of the grader under those circumstances which a double width of windrow is to be spread. That is, for spreading one windrow both blade assemblies one on either side will be utilized while spreading of the other windrow will be accomplished by omitting the inside blade assemblies.

From the foregoing, the construction and operation of the device will be readily understood and further explanation is believed to be unnecessary. However, since numerous modifications and changes will readily occur to those skilled in the art, it is not desired to limit the invention to the exact construction shown and described, and accordingly all suitable modifications and equivalents may be resorted to, falling within the scope of the appended claims.

What is claimed as new is as follows:

1. An attachment for a road grader that has a levelling blade, said attachment comprising a pair of elongated arms adapted to be pivotally attached at their forward ends to the road grader, a pair of wing blades secured to the rearward ends of said arms and located in advance of and near the ends of the levelling blade, and outrigger blades secured to said arms outwardly of said wing blades, said outrigger blades being inclined, from their front to their rear portions toward said wing blades, each of said wing blades having a forward portion and a rear portion, said forward portions being mutually divergent from front to back, and said rear portions being parallel.

2. An attachment for road graders comprising a pair of elongated arms adapted to be pivotally attached at their forward ends to a road grader, a pair of wing blades secured to the rearward ends of said arms, and outrigger blades secured to said arms outwardly of said wing blades, said outrigger blades being inclined, from their front to their rear portions toward said wing blades, each of said wing blades having a forward portion and a rear portion, said forward portions being mutually divergent from front to back, and said rear portions being parallel, said outrigger blades being inclined such that a line of extension thereof intersects said wing blades slightly forward of the juncture of the front and rear portions of an associated wing blade.

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