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SHOULDER GRADING MACHINE

Filed Aug. 12, 1931

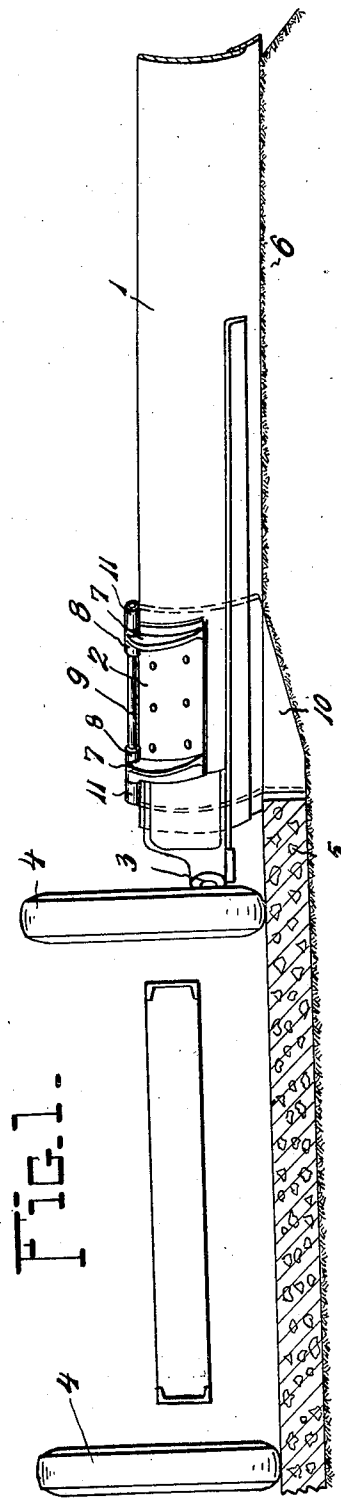


FIG. 1.

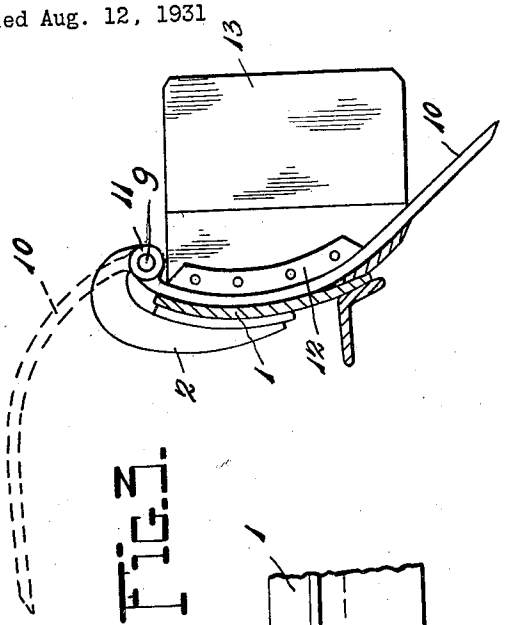


FIG. 2.

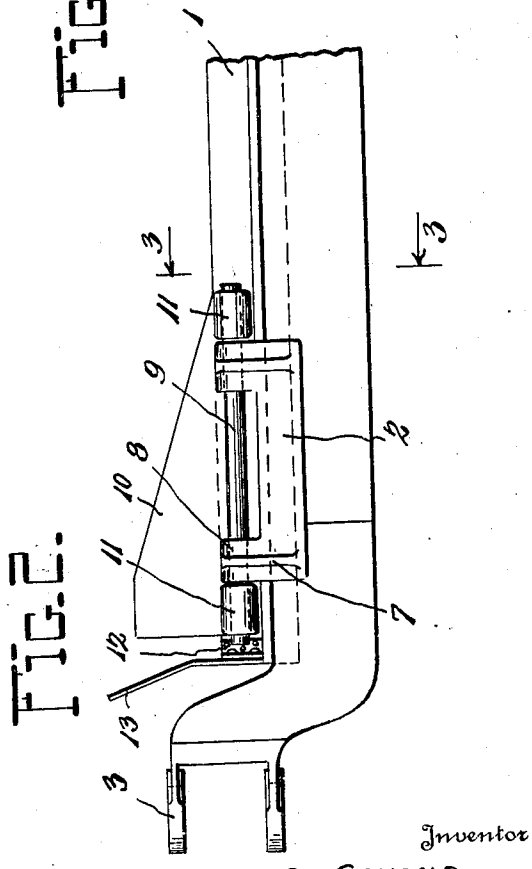


FIG. 3.

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UNITED STATES PATENT OFFICE

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SHOULDER GRADING MACHINE

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In the laying of highways, several State highway departments are adopting a new shoulder construction for concrete roads, which includes a narrow shoulder of macadam or trap-rock between the concrete slab portion of the highway gravel and the dirt shoulder customarily provided. This narrow shoulder varies in different States from approximately 18 to 22 inches in width, or possibly 1 to 3 feet in width, and at an approximate depth of six inches adjacent the concrete portion of the highway to zero at the outside.

Previously to the present invention it has been necessary to excavate for this crushed stone shoulder by hand. The present invention is designed to eliminate the necessity for hand excavation by providing a blade in the nature of an auxiliary blade or excavator which is mounted on the main blade of a shoulder finished machine of standard type; and in order to adapt machines equipped with this auxiliary excavator to general use in localities where this crushed stone shoulder is not required, the blade is designed to be raised out of contact with the ground when it is not to be used.

In practice, it is found convenient to hingedly mount this blade upon a casting and rivet or otherwise secure the casting to the main blade of the shoulder finishing machine in front of the main blade, so that when the auxiliary blade is in operative position it will excavate a trench adjacent the concrete slab of desired depth and width as the finishing machine progresses along the highway, so that the crushed stone trench will be dug simultaneously with the finishing of the shoulder. It will be seen that since the auxiliary blade is mounted forwardly of the main finishing blade and rests against the main finishing blade during operation, it will be held firmly in place by the pressure exerted against the ground being excavated; and the auxiliary blade is so constructed and mounted that when it is brought to inoperative position, it will engage the top of the main blade to rest thereon and be held in its inoperative position by having its center of gravity disposed sufficiently to the rear of the main blade so that the auxiliary blade will be in stable equilibrium when in such inoperative position.

The invention will be more readily understood by reference to the accompanying drawing, which shows a convenient form of the invention, although it will be understood that details of the construction may be varied in many ways without departing from the spirit of the invention.

Referring more particularly to the drawing—

Figure 1 is a rear elevation of a shoulder finishing blade of a well known type provided with the auxiliary excavating blade forming the subject matter of this invention, the propelling vehicle being shown diagrammatically forming no part of this invention.

Figure 2 is a top view of the blade of Figure 1, illustrating more clearly the mounting of the auxiliary blade.

Figure 3 is a sectional view on the line 3—3 of Figure 2, looking in the direction of the arrows.

Referring to the drawing, the numeral 1 represents the main shoulder finishing blade having mounted rearwardly thereof a casting 2, the blade 1 being hingedly mounted at 3 to the frame of a traction vehicle, the driving wheels of which are illustrated at 4 moving over the concrete slab 5 of a roadway, the blade 1 being shown as finishing off to the shoulder 6 of the roadway.

The casting 2 is secured by rivets or other suitable securing means to the blade 1 and is provided with upstanding lugs 7 which are provided with bearing members 8 for the reception of the shaft 9 upon which the auxiliary blade 10 is mounted through hinges 11.

The blade 10 is outwardly tapering or of a configuration to give the desired shape to the trench being excavated along the side of the concrete slabs of the roadway, which trench is to be filled with crushed stone or macadam in such localities where it is required by the regulations.

When it is desired not to use the blade 10 it is simply swung upwardly on the hinges 11 until it becomes in engagement with the top edges of the lugs 7 as shown in dotted

lines in Figure 3. It will be seen that when the blade is in this position, its center of gravity is sufficiently far to the rear of the blade 1 so that the auxiliary blade 10 will be stably held in this position as long as it is desired not to use the blade. To bring this blade into its operative position, it is obvious that it is only necessary to swing the auxiliary blade 10 forwardly on its hinges, and when it is in such operative position, the pressure of the ground being excavated against this blade 10 will firmly hold the blade in position against the front surface of the main finishing blade 1.

It is also found desirable in shoulder finishing operations to provide a guard on the finishing blade to prevent dirt from the shoulder finishing operations falling upon the paved surface of the highway. For accomplishing this purpose, a bracket 12 is riveted or otherwise suitably secured to the blade 1, and to this bracket is secured the plate 13, which is shaped to move along the paved portion of the highway, so as to prevent the dirt from the operations upon the shoulder falling upon the paved surface.

It will therefore be seen that this invention provides a very simple device for forming the trench for the auxiliary reinforcing shoulder simultaneously with the finishing of the main shoulder of the roadway without the necessity of the use of hand labor. It will be understood that the above specifically illustrated and described form of the invention is intended to typify one convenient form which the invention may take, but it will be obvious that the details of the construction can be varied rather widely without departing from the inventive thought, and it will be understood accordingly that it is intended and desired to embrace within the scope of this invention such modifications and changes as may be necessary to adapt it to varying conditions and uses.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent of the United States, is—

1. A shoulder finishing machine comprising the combination with a traction device, of a main shoulder finishing blade, and an auxiliary blade carried by the main blade for excavating a trench of desired configuration between a roadway and the shoulder thereof, and means allowing the auxiliary blade to be freely swung from inoperative to operative positions, and vice versa, the auxiliary blade being supported in inoperative position adjacent the top of the main blade, and engaging the operative surface of the main blade in operative position.

2. A road shoulder finishing machine comprising the combination with a trenching device adapted to move along a roadway, of a main shoulder finishing blade carried by the traction device, and an auxiliary trench excavating blade carried by the said main blade, the auxiliary blade being swingable vertically relatively to the main blade for positioning in operative and inoperative positions, and contrarily, the inoperative position being above the said main blade, the auxiliary blade being gravitationally held in the said inoperative position and bearing against the main blade when in operative position.

3. A road shoulder finishing machine comprising, in combination, a main shoulder finishing blade, and an auxiliary trench excavating blade hingedly mounted upon the main blade for movement into operative and inoperative positions, respectively, the auxiliary blade being freely supported in stable equilibrium in inoperative position and being held against the main blade when in operative position.

4. A road shoulder finishing machine comprising, in combination, a main shoulder finishing blade, an auxiliary blade carried thereby adapted to excavate a trench as the main blade moves along a road shoulder, and hinge means mounted upon the main blade for permitting the auxiliary blade to be freely swung from inoperative to operative positions, and contrarily, the auxiliary blade being raised above the plane of the top of the main blade when in inoperative position and extending beneath the plane of the finishing edge of the main blade when in operative position, the auxiliary blade being arranged relatively to the main blade so as to be maintained in stable equilibrium in the inoperative position and maintained securely in operative position by pressure of the earth being excavated, forcing the auxiliary blade against the main blade during travel of the finishing machine.

5. A road finishing machine comprising the combination with a traction device, of a main shoulder finishing blade carried by the traction device, an auxiliary trench excavating blade carried by the main blade adjacent the traction device, and a hinged mounting for the auxiliary blade positioned adjacent the top and rearwardly of the main blade, whereby the auxiliary blade extends rearwardly of the main blade when in inoperative position while substantially engaging the front of the main blade when in operative position.

6. A road shoulder finishing machine comprising, in combination a main shoulder finishing machine, and an auxiliary outwardly tapering trench excavating blade carried by the said main blade, and being freely movable from inoperative to operative position, and vice versa, the said excavating blade being freely supported in stable equilibrium above the main blade when in inoperative position and bearing against the main blade when in operative position.

7. A road shoulder finishing machine comprising a main shoulder finishing blade, a supporting member mounted on the blade, an auxiliary trench excavating blade carried by the supporting member and hingedly mounted thereon for movement from operative to inoperative position, and contrarily, the said auxiliary blade bearing against the front surface of the main blade when in operative position and resting adjacent the top surface of the main blade and projecting rearwardly thereof when in inoperative position.

In testimony whereof I affix my signature.

CARL G. SCHMID.