

H. E. HILTS.
 FINISHING MACHINE FOR ROADS AND THE LIKE.
 APPLICATION FILED FEB. 9, 1921.

1,392,161.

Patented Sept. 27, 1921.

3 SHEETS—SHEET 1.

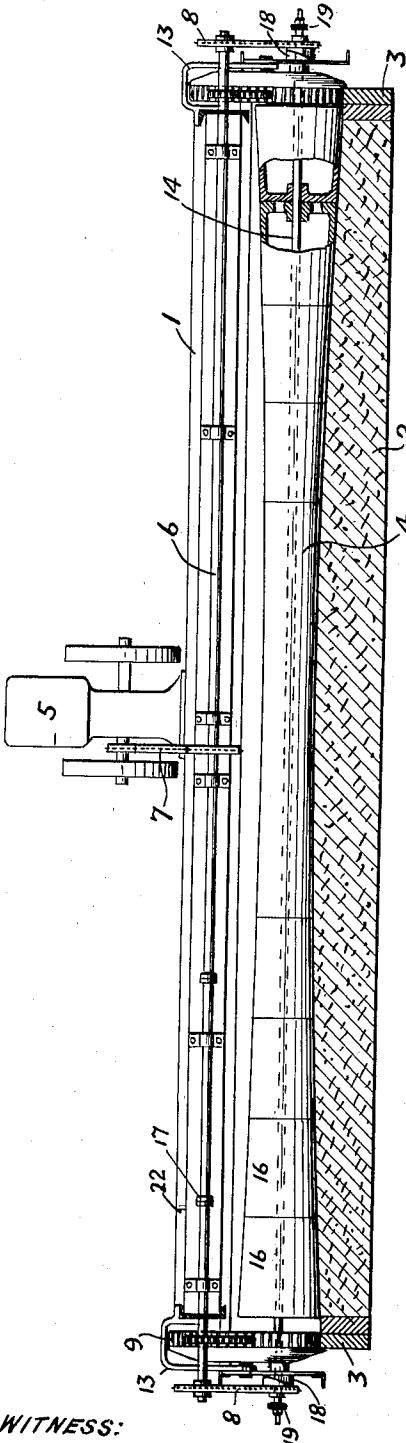


FIG. 2.

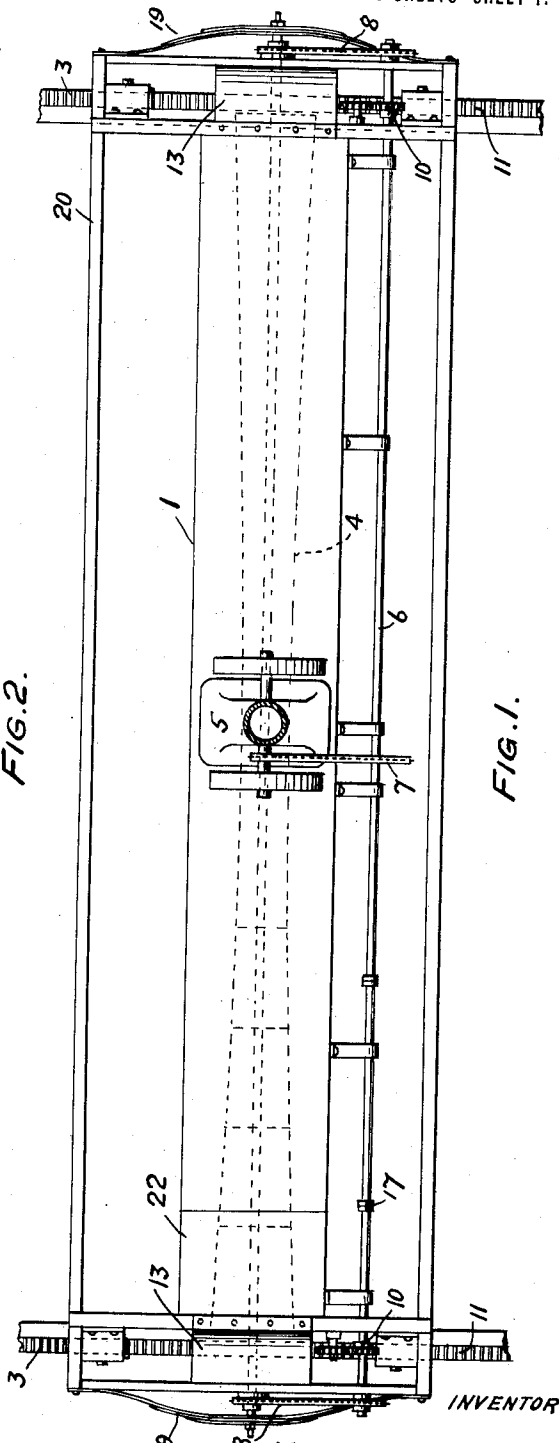


FIG. 1.

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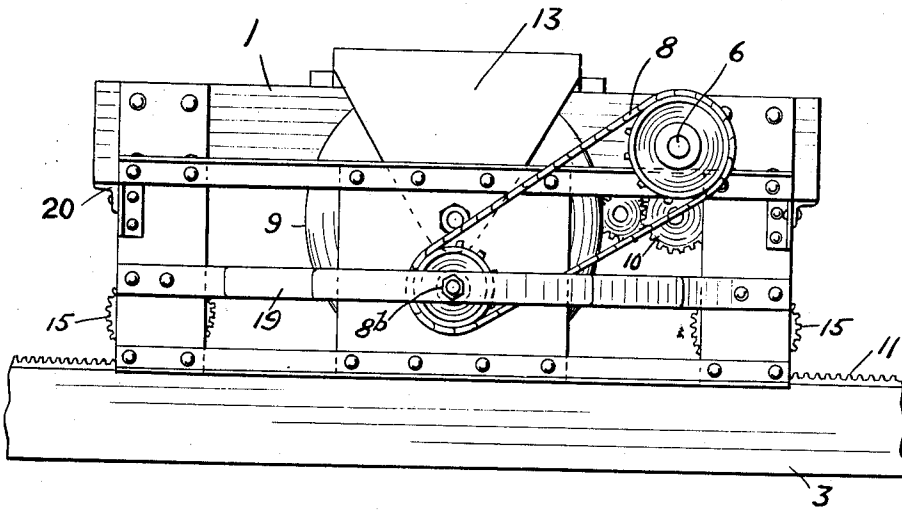


FIG. 3.

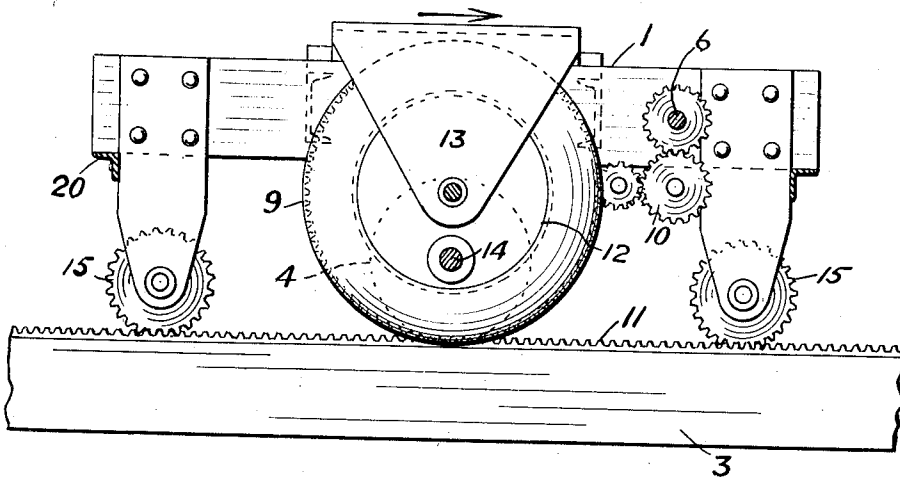


FIG. 4.

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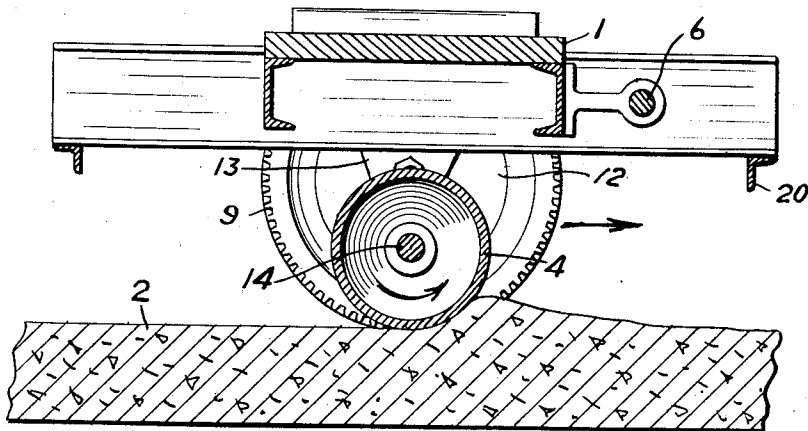


FIG. 5.

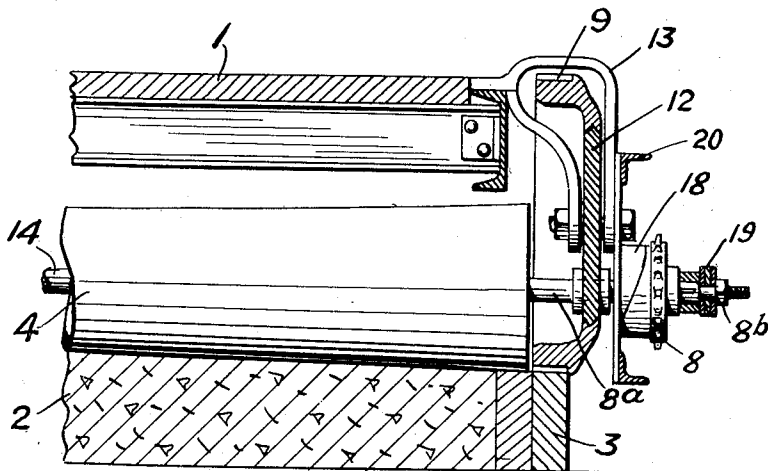


FIG. 6.

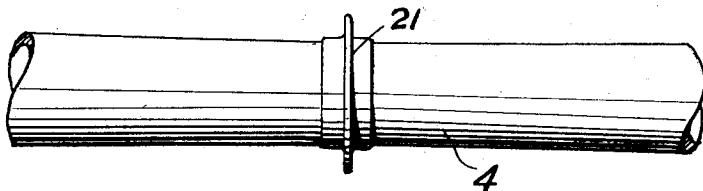


FIG. 7.

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FINISHING-MACHINE FOR ROADS AND THE LIKE.

1,392,161.

Specification of Letters Patent. Patented Sept. 27, 1921.

Application filed February 9, 1921. Serial No. 443,539.

To all whom it may concern:

Be it known that I, HAROLD E. HILTS, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented a certain new and useful Finishing-Machine for Roads and the like, of which the following is a specification.

The principal objects of the present invention are to improve and cheapen the operation of finishing the convex or crowning surface of roads or parts of roads, more especially when made of concrete; to provide a machine for this purpose which will not only impart the required conformation to the surface but will also work the concrete to bring the mortar to the face, or "screed" it as it is sometimes called, and to adapt the machine for use in construction of roads, or the like, of different widths.

The invention will be claimed at the end hereof, but will be first described in connection with the embodiment of it chosen from other embodiments for the sake of illustration in the accompanying drawings, in which—

Figure 1 is a top or plan view, with the power device removed, of a finishing machine embodying features of the invention.

Fig. 2 is an elevational view of the same with parts in section.

Fig. 3 is an end view.

Fig. 4 is an end view with parts removed.

Fig. 5 is a sectional view taken on the line 5—5 of Fig. 2.

Fig. 6 is a sectional view taken on the line 6—6 of Fig. 4, and

Fig. 7 is a view illustrating a modification of the roller.

In the drawings 1 is a carriage movable along the roadway 2. As shown it is movable along the side-forms 3. 4 is a roller tapering toward its center so that it conforms to the convexity that is to be imparted to the finished surface. This roller is carried by the carriage 1 and is driven in a direction opposite to the movement of the machine as a whole. This is indicated by the arrow in Fig. 5, and the result of it is the formation of a wave on the surface in advance of the roller. In the case of concrete the formation of this wave operates to work the mortar to the surface while the surface is being formed in respect to the side-forms, or to "screed" the surface, as it

is sometimes called. At the ends of the roller axle are placed cams 18, so that as the axle rotates a transverse motion is imparted to the roller, the cams being held in direct contact by the flexible springs 19. The carriage may, if necessary, be supplied with structural stiffeners 20. The combination of these motions of the roll screed the surface of road and thoroughly embed its constituent aggregates. In order to form a semi-longitudinal joint in the pavement and thus localize unsightly longitudinal cracks in the pavement, a collar or jacket 21, Fig. 7, may be placed on the roll and while forming the joint no transverse motion is imparted to the roll.

While any power device or provision, including man power, may be used for operating the machine, I have shown an internal combustion engine 5 mounted on the carriage 1. Whatever the power may be, it turns the shaft 6 carried by the carriage—in the present instance, this shaft 6 is connected with the engine 5 by gearing 7. At the ends of the shaft 6 there are duplicate provisions, so that a description of one set will suffice.

The shaft 6 is directly connected with the roller 4 by the sprocket chain and wheels 8. The sprocket wheels 8 are movable endwise of the spindle 8^a, but are turnable therewith, so that by backing off the nuts 8^b one way of throwing the cams out of action is provided and can be used in making the joint with the collar 21. The shaft 6 runs counter-clockwise in Fig. 3 so that the roller also runs counter-clockwise. The shaft 6 is connected with the driving wheels 9 of the carriage through the intervention of gears 10 which turn the driving wheels clockwise in Fig. 3. The driving wheels are shown as provided with teeth and these teeth mesh with racks 11 on the side-forms 3. The driving wheel may also be provided with a smooth surface for rolling on the side-form in which event the driving cogs will project over the side-forms. The driving wheel turns about a disk 12 carried by a bracket 13 and the roller shaft 14 is journaled in the disk 12. The weight of the roller opposes rotation of the disk 12. 15 are guide wheels which may be smooth but are shown as toothed, and they run on the side-forms and steady the carriage with which they are connected. The roller 4 is shown as made in

sections so that one or more of its sections 16 can be removed or replaced to fit the roller to the width of the surface upon which it operates. The shaft 6 is provided with 5 couplings 17 by means of which sections of different length can be inserted so as to adjust the shaft to the length of the roller. The length of the carriage 1 is, of course, made to correspond with the length of the 10 roller employed as will be well understood by those skilled in the art. For instance this can be accomplished by removing the section 22 and moving up the bracket 13.

In use the side-forms are set up and the 15 material, the surface of which is to be finished, is inserted between the side-form. While this material will usually be concrete, the invention is not necessarily limited to that material. The carriage is, of course, 20 adjusted to run on the side forms and it is propelled along the roadway with its roller revolving in a direction opposed to the movement of the machine, as a whole, at the same time being given a relatively quick trans- 25 verse motion, thus a proper contour is given the surface while in the case of concrete the surface is properly worked as has been described. Evidently very little labor is required to do the work and the cost of the machine is not great, so that the surface can be 30 finished both cheaply and quickly. It will be understood that the side-forms are taken from the finished part of the work and moved forward as the work progresses in the 35 ordinary way.

It will be obvious to those skilled in the art that modification may be made in details of construction and arrangement of one roll or nest of rolls and that the machine can be 40 used in connection with various materials without departing from the spirit of the invention, hence the latter is not limited as to these matters or in any way other than as the appended claims and the prior state of 45 the art may require.

I claim:

1. A finishing machine for roads comprising the combination of side-forms, a carriage movable on the side-forms, a roller tapering toward its center and carried by the 50 carriage, means for rotating the roller in a direction opposite to the movement of the carriage, and mechanism for, at the same time, imparting a transverse motion to the 55 roller.

2. A finishing machine for roads comprising the combination of a carriage movable along the roadway, a roller tapering toward its center and carried by the carriage,

means for rotating the roller in a direction 60 opposite to the movement of the carriage, and mechanism for, at the same time, imparting a transverse motion to the roller.

3. A finishing machine for roads comprising the combination of a carriage provided with driving wheels, a roller tapering 65 toward its center and carried by the carriage, mechanism carried by the carriage for turning the driving wheels in one direction and the roller in the opposite direction substantially as described, and mechanism for, 70 at the same time, imparting a transverse motion to the roller.

4. In a finishing machine for roads the combination of a roller having a rigid uninterrupted rolling surface, a carriage, means 75 for moving the carriage and revolving the roller in a direction opposite to the movement of the machine to screen and smooth the surface upon which the machine is working, and mechanism for, at the same time, 80 imparting a transverse motion to the roller.

5. In a finishing machine for roads the combination of side-forms, a wheeled carriage adapted to travel on the side-forms, a 85 roller having a rigid uninterrupted smooth rolling surface and carried by the carriage, means for turning the roller in a direction opposite to the movement of the machine as a whole, substantially as described, and 90 mechanism for, at the same time, imparting a transverse motion to the roller.

6. In a machine of the type described the combination of a carriage, a roller, brackets 95 connected with the carriage and provided with disks, driving wheels revolubly mounted on the disks, roller spindles revolubly mounted in the disks, and means for driving the wheels and roller spindles in opposite 100 directions substantially as described.

7. In a machine of the type described the combination of a carriage, a roller, brackets 105 connected with the carriage and provided with disks, driving wheels revolubly mounted on the disks, roller spindles revolubly mounted on the disks, means for driving the wheels and roller spindles in opposite directions substantially as described, and a jacket or collar on the rotating roll to form a semi-longitudinal joint in the pavement. 110

8. A finishing machine for roads comprising the combination of a carriage movable along the roadway, a roller tapering toward its center and carried by the carriage, and means for rotating the roller in a direction 115 opposed to the movement of the carriage, substantially as described.

HAROLD E. HILTS.