May 21, 1935. O. F. CHURCH 2,002,431

ROAD MACHINE

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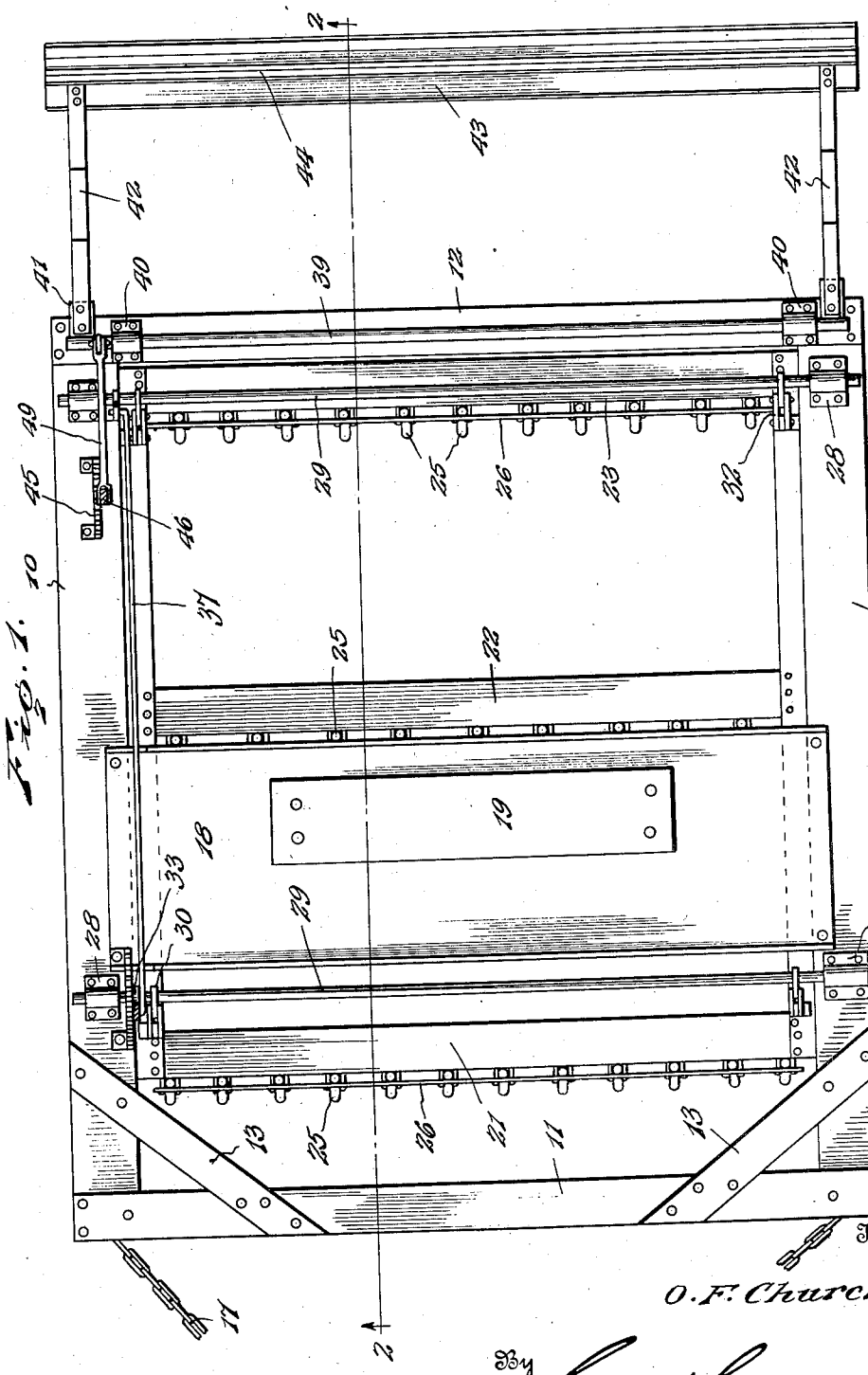



Fig. 1.

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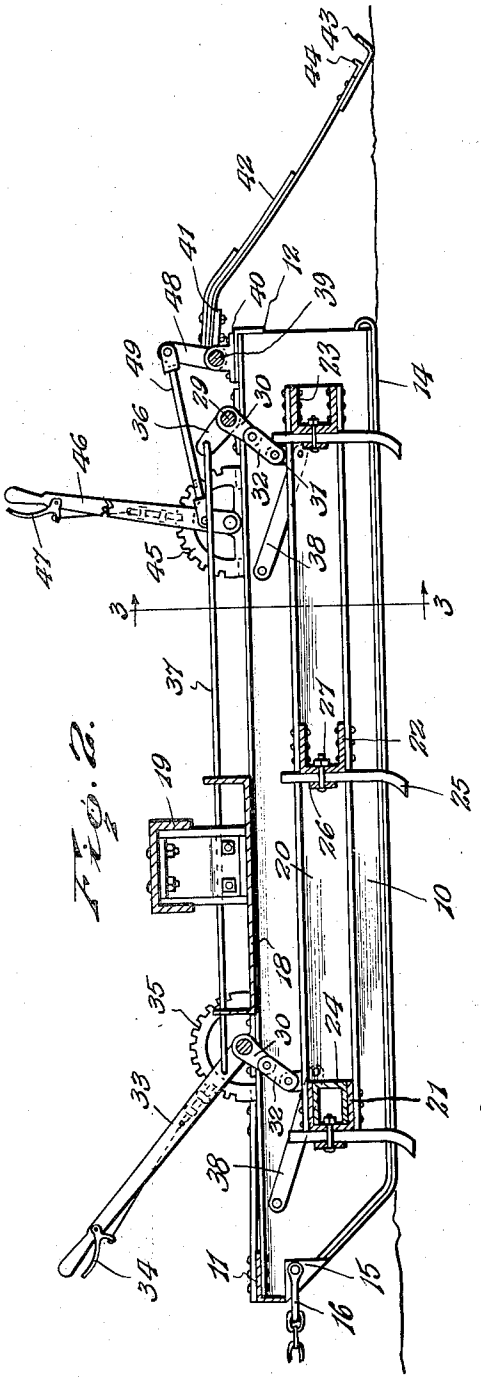


Fig. 2.

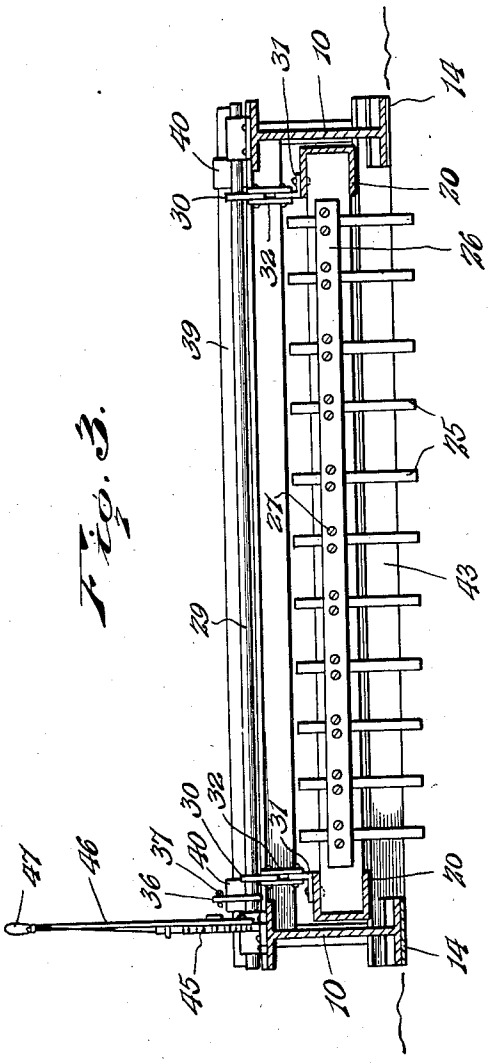


Fig. 3.

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Patented May 21, 1935

2,002,431

# UNITED STATES PATENT OFFICE

2,002,431

## ROAD MACHINE

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Application January 26, 1933, Serial No. 653,691

3 Claims. (Cl. 37—145)

This invention relates to an improved road machine and seeks, among other objects, to provide a machine which will effectively scarify and level a road surface.

The invention seeks, as a further object, to provide a machine embodying a scarifier and a sled supporting the scarifier in such a way that the machine will slide over the low places in the roadway while the scarifier will be caused to dig into the high places in the roadway and the loosened material will be carried along into the low places by the drag of the machine.

A further object of the invention is to provide a machine adapted for use on ordinary dirt roads and gravel roads, as well as oil roads, and wherein the scarifier may be adjustably raised or lowered upon the sled.

And the invention seeks, as a still further object, to provide a machine embodying an improved drag in the rear of the scarifier and wherein the drag may be adjustably raised or lowered.

Other and incidental objects of the invention, not specifically mentioned in the foregoing, will be apparent during the course of the following description.

In the accompanying drawings forming a part of this application, Figure 1 is a plan view of my improved machine,

Figure 2 is a vertical longitudinal sectional view on the line 2—2 of Figure 1, and

Figure 3 is a transverse sectional view on the line 3—3 of Figure 2.

Referring now more particularly to the drawings, I provide a sled embodying side runners 10 which are preferably formed of suitable I-beams, and extending transversely between the runners, at their ends, are front and rear cross bars 11 and 12, preferably formed of suitable angle irons. The runners are beveled at their forward ends, as particularly seen in Figure 2, and extending across the angles between the forward end portions of said runners and the cross bar 11 are braces 13. Overlying the bottom flanges of the runners, to extend up the inclined forward ends of said runners are appropriate shoes 14 provided at their forward extremities with ears 15 which are bent inwardly to overlie the inner side faces of the runners, and swingingly connected to the forward ends of the runners are clevises 16, the pivot bolts of which extend through said ears. Connected to said clevises is an appropriate pull chain 17. Near its forward end, the sled carries a channel shaped cross plate 18 bolted or otherwise secured at its ends to the top flanges of the runners and fixed to said plate is a seat 19.

In conjunction with the sled, I provide a scarifier, the oblong frame of which is freely received between the runners 10. The scarifier frame preferably includes channel shaped side bars 20 and extending transversely between said bars is a front bar 21, a center bar 22 and a rear bar 23, all of which are also preferably of channel shape. Fitting in the front bar 21 is a channel shaped reinforcing bar 24 appropriately secured to the front bar for lending added rigidity thereto and it is now to be observed that the scarifier frame is of such width that the side bars 20 thereof project between the top and bottom flanges of the runners 10 at the inner sides of the runners so that the scarifier cannot accidentally drop between the runners to become displaced. Furthermore, as will be noted, the side bars 20 of the scarifier frame more or less closely approach the runners 10 at their inner sides so that the runners will hold the scarifier against angular displacement. Lying flat against the front faces of the bars 21, 22 and 23 are rows of teeth 25 and overlying the rows of teeth are clamping plates 26 secured to the bars by bolts 27 arranged at opposite sides of the teeth close thereto. The teeth will thus be securely connected with the bars while the bolts will prevent angular displacement of the teeth and, as will be noted upon reference to Figure 1, the teeth of all of the rows are staggered with respect to each other.

Secured to the top flanges of the runners 10, near the ends thereof, are pairs of alined bearing plates 28 and journaled in said plates are front and rear cross shafts 29. Fixed to these shafts, near the ends thereof, are crank arms 30. Fixed to the end portions of the side bars 20 of the scarifier frame are angle plates 31 and swingingly connecting the cranks 30 with said plates are pairs of links 32. Fixed to the forward cross shaft, near one end thereof, is a hand lever 33 carrying an appropriate latch 34 to cooperate with a segment 35 fixed to the adjacent runner of the sled, and upstanding from the rear cross shaft is a crank arm 36 connected with the lever 33 by a rod 37.

Thus, as will now be seen, the hand lever 33 may be swung forwardly for lowering the scarifier so that the teeth 25 may dig into the roadway to any desired depth, while, by rocking the lever 33 rearwardly, the scarifier may be elevated and, if so desired, lifted to inactive position with the lower ends of the teeth clearing the roadway and, of course, the latch 34, in conjunction with the

segment 35, provides a means for locking the scarifier in any position of adjustment. Secured at their forward ends to the inner sides of the runners 10 and at their rear ends to the side bars 20 of the scarifier frame, are links 38 preferably connected with said side bars near the forward and rear ends thereof. These links will, of course, sustain the rearward thrust on the scarifier when the teeth thereof are engaged with the roadway and as the greatest strain will be imposed upon the front row of teeth, the reinforcing bar 24 is provided in conjunction with the front cross bar 21 of the scarifier frame.

Mounted to cooperate with the scarifier is a drag. This drag preferably includes a cross shaft 39 which is supported above the rear cross bar 12 of the sled and fixed to said cross bar, at the ends thereof, are bearing plates 40 journaling the shaft. Fixed to the projecting ends of the shaft are plates 41 and secured at their forward ends to said plates are the leaves of a pair of springs 42, the spring leaves being graduated in length. Secured to the outer ends of said springs is an angle shaped drag plate 43 and fixed to the plate at its upper side is a reinforcing angle bar 44. Fixed to the adjacent runner 10 of the sled, forwardly of the rear cross shaft 29, is a segment 45 to which is pivoted a hand lever 46 carrying a latch 47 to coact with said segment, and upstanding from the shaft 39, at the adjacent end thereof, is a crank arm 48 connected with the lever 46 by a rod 49.

Accordingly, as will now be understood, the hand lever 46 may be rocked forwardly for elevating the drag plate 43 to inactive position out of engagement with the roadway, while, by swinging said lever rearwardly, the drag plate may be brought into engagement with the road surface. Furthermore, as will be particularly observed, the hand lever 46 may, after the drag plate 43 has been brought into engagement with the road surface, be further swung rearwardly for tensioning the springs 42 and causing said springs to press downwardly in desired degree upon the drag plate and, of course, the latch 47 provides a means for locking the lever 46 in any position of adjustment.

Thus, after the scarifier has loosened the material of the roadway, the drag will follow in the rear of the scarifier so that the drag plate 43, under the tension of the spring 22 will smooth the loosened material as well as carry the loosened material along from the high places in the road surface into the low places therein so that the finished roadway will be smooth and even.

Having thus described the invention, I claim:

1. A road machine comprising runners, downwardly and rearwardly inclined links disposed adjacent the front and rear ends of the runners and pivoted at their front upper ends upon the inner sides of the runners, a scarifier frame including side bars disposed adjacent and parallel to the respective runners and pivoted to the lower ends of the links, series of scarifier teeth carried by said frame, means carried by the runners and connected with the front and rear ends of the frame for raising and lowering the frame, and a drag carried by the rear ends of the runners and arranged transversely thereto.

2. A road machine comprising runners, a scarifier frame hung upon and between the runners, said frame consisting of longitudinal and transverse channel bars and a reversed channel bar secured in the front transverse channel bar, longitudinal bars disposed adjacent the respective runners, scarifier teeth carried by the transverse bars, and means on the runners for raising and lowering the scarifier frame.

3. A road machine comprising runners, a scarifier frame carried by and between the runners, a rock shaft mounted on the rear ends of the runners, means for setting said shaft, rearwardly projecting plates secured to said shaft, leaf springs secured at their front ends to said plates and extending downwardly and rearwardly therefrom, and a drag secured to the rear ends of the springs.

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