June 9, 1925. 1,541,456

H. R. WILSON

FURROWING DEVICE

Filed June 25, 1924 2 Sheets-Sheet 1

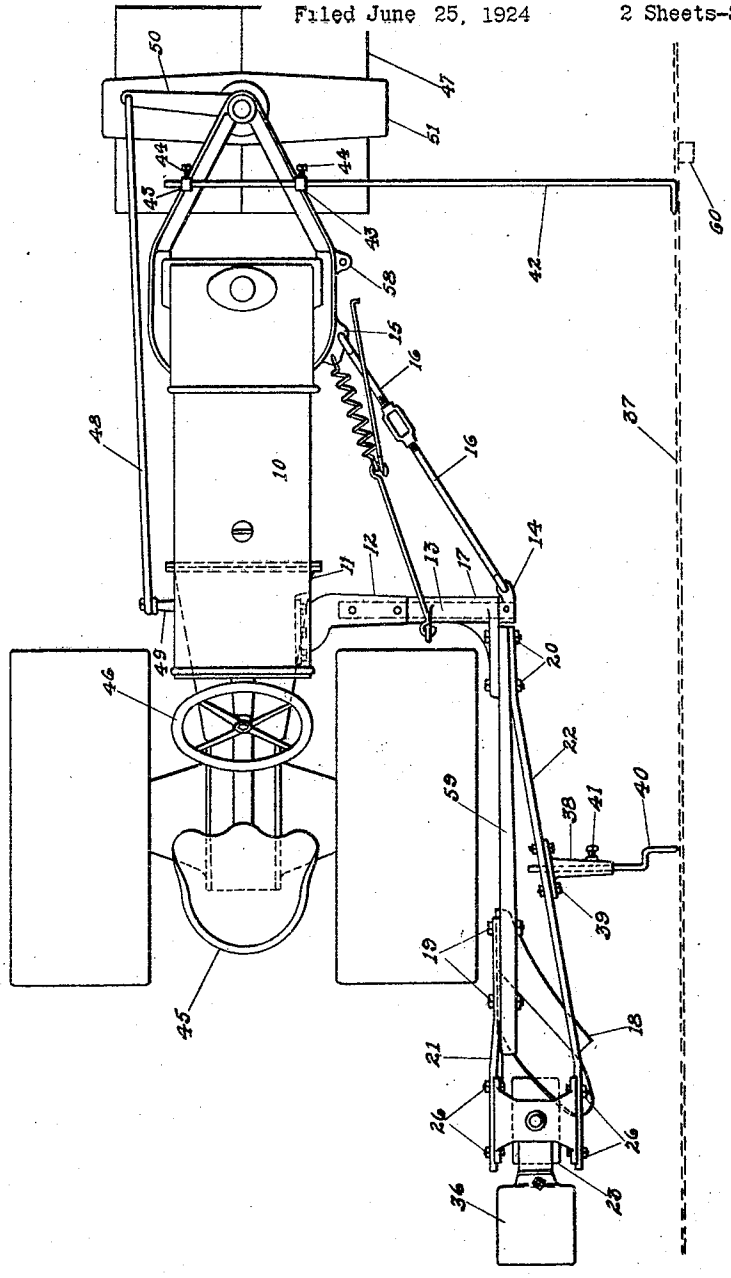


Fig. 1.

INVENTOR.

Horace R Wilson

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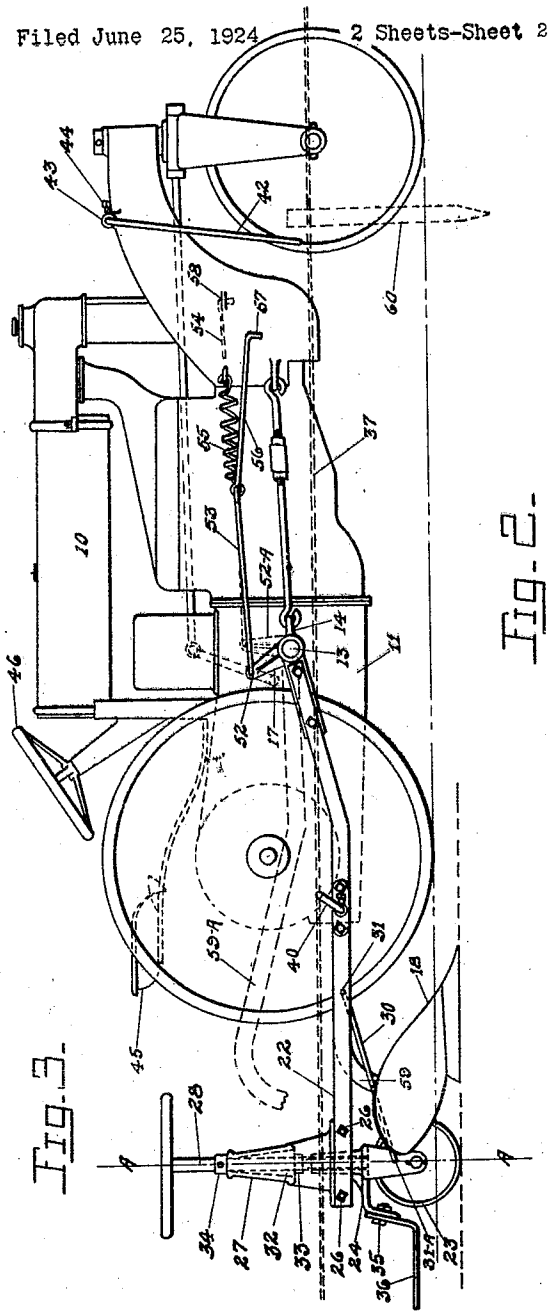


Fig. 2.

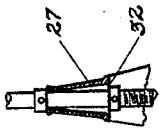


Fig. 4.

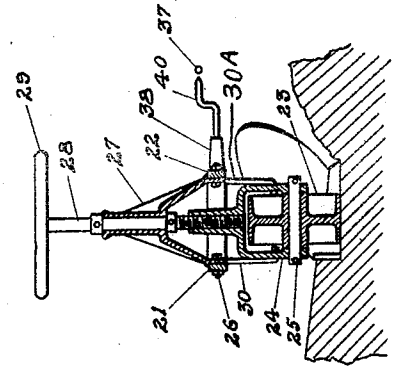


Fig. 3.

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UNITED STATES PATENT OFFICE.

HORACE R. WILSON, OF HARVEY, ILLINOIS.

FURROWING DEVICE.

Application filed June 25, 1924. Serial No. 722,275.

To all whom it may concern:

Be it known that I, HORACE R. WILSON, a citizen of the United States, residing at Harvey, in the county of Cook, in the State of Illinois, have invented certain new and useful Improvements in Furrowing Devices, of which the following is a specification, reference being had to the accompanying drawings.

This invention relates particularly to improvements in that class of plows and other furrow-forming devices wherein the convenient and positive control of the cutting depth is of the utmost importance, and wherein neither the surface of the earth to be plowed or a former furrow can be used as a basis for gauging the cutting depth thereof, and the main object is the construction of a combination by which the vertical position of the furrow-forming device can be indicated by means previously positioned above the surface and parallel to the direction of travel.

The principal use of this device is in the forming of shallow furrows at each side of a roadway for the installation of forms which are generally placed in position at each side thereof, preparatory to the laying of what is known as concrete paving. In the laying of a new road it is the practice to first survey and indicate the grade of same by means of stakes properly positioned at each side thereof, the tops of which indicate the desired level of the surface of the new road. A short distance inside each row of these stakes, and parallel therewith, is placed the before-mentioned forms which are generally about nine inches high, and from the tops of which is gauged the entire surface of the intermediate roadway, both before and after the concrete is poured, and the importance of placing these forms in the proper position relative to the grade stakes will be readily appreciated, and it will also be seen that for the reason of the generally uneven surface of the road to be paved that it cannot be considered from the standpoint of a depth gauging foundation and that the furrow in which the forms are placed must necessarily be very carefully gauged from the suspended means on the grade stakes, namely, a gauge cord, and as it is quite frequently necessary to cut these form furrows deeper than is practical with one operation, I desire to call attention to the position of my plow relative to the tractor, roller, or other propelling means which has a very important relation to the practicability of the combination, since by positioning the plow entirely to one side of the propelling means and throwing the dirt outward, I am enabled to make a plurality of operations in the same path without rolling down the sides of, or disturbing the furrow with the roller wheels, in case this is necessary in order to gain the desired depth.

The usefulness and desirability of my device will be more readily appreciated when it is understood that this work is now done entirely by hand labor, which is always expensive, generally inefficient, and sometimes unavailable and inasmuch as rolling the sub-grade is always required by law, its adaptability, secured to side of the roller as it is, to the work outlined is very apparent and the fact that with this combination the form furrow, or groove, may be formed without interfering with the function of rolling, adds greatly to its value, in fact, it is my intention that the double duty of cutting the furrow and rolling the sub-grade alongside the same be accomplished simultaneously when desired.

By a road roller let it be understood that I refer to a real road rolling machine as shown, one rolling and compressing the soil over the total width of tread which means that my device may repeatedly traverse the same path, not only without damaging the grade, but in case repeated passage is necessary to gain the desired depth of furrow, the grade will, on the contrary, be benefited thereby.

The main object of this invention is to construct an automotive combination for forming furrows at the side of a roadway, and the gauging thereof from a stationary means suspended above the ground.

Another object of this invention is to construct a combination for forming furrows at the side of a roadway, wherein the cutting depth of the furrow-forming device is gauged by means entirely independent of the ground surface adjacent the furrow, and by this I mean there is no gauge wheel or other means connected to, or traveling with, the plow by which its action is automatically influenced by the uneven surface.

It is also an object of this invention to provide a combination, wherein the furrow-forming device can be quickly and easily placed in either the operative or inoperative

position, and can be carried on the roller when not in use without interfering, in any way, with the functions thereof.

It is a further object of this invention to construct a furrow-forming device having an adjustable depth indicator detachably secured thereto whereby the cutting depth of the device can be altered.

It is also an object of this invention to construct a furrow-forming device traveling entirely to one side of the path of the propelling means.

And finally, an object of this invention is the construction of an automotive combination for forming furrows at the side of a roadway, wherein the size and weight and steering of the automotive unit is used advantageously to govern the lateral movement of the furrow-forming device.

With the above, and various other objects and advantages in view, the present invention consists in the combination and arrangement of parts hereinafter more fully described, illustrated in the accompanying drawings, and more particularly pointed out in the appended claims, it being understood that changes may be made in the form, size, proportion and minor details without departing from the spirit or sacrificing any of the advantages of the invention.

In the drawings,

Fig. 1 is a top plan of a furrowing device constructed according to the present invention.

Fig. 2 is a side elevation of same showing the side adjacent the gauge cord.

Fig. 3 is a rear elevation of a cross-section, taken on line A—A, of Fig. 2.

Fig. 4 is a fragmentary cross-sectional elevation of a portion of Fig. 3.

Referring to the drawings by numerals and wherein like parts are designated by similar numerals of reference throughout the several views, 10 designates a road roller, provided with a motor, transmission, carrying wheels and steering means of conventional type, the details of which need not be described here.

To the side of the roller at 11, and extending laterally therefrom, is secured, in any suitable manner, the casting 12, which has secured therein an extension shaft 13, and on the outer end of which is secured a collar 14, which in turn is connected to the roller frame at 15 by means of the tension rod 16, in a manner maintaining relative rigidity between the shaft and the roller body 10.

Pivotally attached to the shaft 13 by means of the casting 17, is the draft beam 59 of the plow 18. By means of bolts, 19 and 20, there are attached to the plow beam, frame members, 21 and 22, which extend backward a sufficient distance beyond the plow to accommodate a supporting wheel 23, said wheel being journaled in the forked casting 24 by means of the pin 25.

Secured to the rear ends of the frame members, 21 and 22, by means of bolts 26, is a supporting casting 27 which is provided with a tubular vertical portion for the reception of the adjusting shaft 28.

Supported on, and secured to, the shaft 28 is a handwheel 29, for the manual rotation of same, and on the lower portion of shaft 29 is formed threads engaging similar threads in the tubular extension on casting 24.

Pivotally connected to casting 24, on each side of the supporting wheel 23 are two radius rods 30 and 30A which are also pivotally connected to the frame members 21 and 22, as shown at 31, and 31A, Figures 2 and 3, the purpose of which is to positively connect the wheel to the plow, yet permit a limited amount of vertical adjustment of the plow relative to the wheel.

Secured on the shaft 28, at each end of the hollow chamber 32, in casting 27, are collars 33 and 34, the purpose of which is to retain the plow in its adjusted position when such position is altered by the rotation of the handwheel, 29, collar 34 holding it in its lowered position and collar 33 sustaining the weight of the plow when in the raised position relative to the supporting wheel 23.

Attached to the rear extended portion of 24, by means of bolt 35, is a downwardly bent plate 36 which serves as a station for the operator of the handwheel 29, and on which he rides.

37 is a cord suspended upon grade stakes 60, driven in the roadway, for the purpose, and secured to the side member 22, is a casting 38, by bolts 39, which has adjustably secured therein a crooked indicator rod 40, held in its adjusted position by set screw 41.

45 is a seat for the operator of the roller and 46 is a steering wheel by which the operator is enabled to control the course of the front roller 47, by means of the rod 48, crank 49 and arm 50, arm 50 being positively connected to the yoke 51 in any suitable manner. The steering wheel 46 is connected to the crank 49 in a workable manner, the mechanism details not being a part of this invention.

Secured to casting 13, on the inner end of the tubular portion, and extending upward therefrom, is formed an arm 52 connected with which, in a pivotal manner, is a tension device consisting of rods 53 and 54, and a spring 55, said spring being flexibly connected at its ends with each of these rods.

Connected to rod 53, in a flexible manner, is rod 56 having, at its forward end, a hook 57, for attachment to the roller frame at 58 when it is desired to retain the plow in its raised position for transportation, or

permit the use of the roller for other purposes.

In operation the cord 37 is placed the desired distance above the bottom of the proposed groove, or furrow, in which the forms are to be placed and the plow 18 is positioned a short distance inside the cord, as shown in Fig. 3, adjusted to the proper vertical position by the operator by means of the handwheel 29 and threaded rod 28, until the indicating means 40, previously adjusted and attached to the side thereof, indicates that the desired depth has been obtained, and it is the business of the plow operator to manipulate the before-mentioned adjusting means and keep the plow and cord in the desired relative position, while the operator of the roller, by virtue of its steering mechanism, 46, 47, 48, 49, and 50, with the assistance of the indicator 42, controls the lateral position relative to the cord, and therefore the plow. It will be seen that in this manner an accurate flat-bottomed furrow or groove may be easily formed, and by going in one direction on the right-hand side and in the opposite direction on the left-hand side, even though more than one operation be required to gain the desired depth, it can be easily and efficiently accomplished.

When it is desired to retain the plow in its inoperative position, its rear end is lifted until it is possible to engage the hook 57 in rod 56 with the hole, 58, at the side of the roller frame, the spring 55 assisting in this operation, the plow beam 59 now assuming the position shown at 59A (in dotted lines) and the position of the spring arm 52 changed to 52A, and the spring 55 contracted.

Obviously, by virtue of the rigid pivot formed by 12, 13, 14 and 16, the slightest lateral movement of the roller 10 will affect the plow, the operator of the plow controls its vertical movements only, and the operator of the roller controls its horizontal movements only. This point is well worth consideration, since only by concentrating on the control of one movement each is it believed possible to accomplish the result obtained.

I claim:

1. An attachment for a road roller comprising a laterally disposed pivot secured to the side thereof, a furrow forming device rotatively secured on the pivot and means for adjusting the device around the pivot for the purpose set forth.

2. A furrowing attachment for road rollers comprising a laterally disposed pivot shaft attached to the roller frame, a brace connecting said shaft and frame, a plow rotatively mounted on the pivot shaft and provided with adjustable ground engaging means for the purpose set forth.

3. An attachment for road rollers comprising a plow, a trailed wheel attached to said plow, an adjustable member connecting the wheel and plow and an operator's station behind the wheel from which said member can be manipulated as desired.

4. An attachment for road rollers comprising a plow, a trailed wheel attached to and behind the plow, an adjustable member connecting the wheel and plow and an operator's station, also behind the plow, from which said member can be manipulated.

5. An attachment for road rollers comprising a laterally disposed pivot rigidly secured to the side thereof, a plow rotatively mounted on the pivot, a wheel supporting the plow and an operator's station carried by the plow, behind said wheel, substantially as shown and described.

6. An attachment for road rollers comprising a laterally disposed member, a plow attached thereto, a vertically adjustable, ground engaging, member attached to and behind the plow, a station for an operator, also behind the plow, and plow adjusting means adjacent the station for the purpose set forth.

7. An attachment for road rollers comprising a rigid, laterally disposed, pivot attached to the roller side, a plow rotatively mounted on the pivot, a vertically adjustable, ground engaging member attached to and behind the plow, a station for an operator, also behind the plow, and vertically adjustable means adjacent the station for the purpose set forth.

8. In a device of the class described including draft means and a grade cord, a plow provided with an indicator, a trailed wheel attached to said plow, an adjustable member connecting the wheel and plow and an operator's station behind the wheel from which said member can be manipulated to adjust the plow relative to the grade cord for the purpose set forth.

9. In a device of the class described including draft means and a grade cord, a plow provided with an indicator, a trailed wheel running in the furrow and adjustably attached to the plow, an adjustable member connecting the wheel and plow and an operator's station behind the wheel from which said member may be manipulated to adjust the plow vertically relative to the grade cord substantially as shown and described.

10. In a device of the class described including draft means and a grade cord, a plow provided with an indicator, a ground-engaging member trailing in the furrow behind the plow and adjustably attached thereto, adjustable means connecting said member and plow and an operator's station behind the plow and adjacent said adjustable means for the purpose set forth.

11. In a device of the class described, including a road roller and a laterally disposed pivot rigidly secured to the side thereof, a plow, a rearwardly extending frame rigidly secured to the plow, a gauge wheel secured to said frame behind the plow and means for adjusting the frame relative to said wheel for the purpose set forth.

12. In a device of the class described, including a road roller and a laterally disposed pivot secured to the side thereof, a plow provided with rearwardly extending members rigidly secured thereto, a ground engaging depth gauge member trailed in the furrow in the rear of said plow and means for adjusting the relative position of the plow and depth gauge while in operation for the purpose set forth.

13. In a device of class described, an attachment for road rollers comprising a plow pivoted at its forward end and having a rearwardly extending frame rigidly secured thereto, a trailed ground engaging member adjustably attached to said frame and means for the manual adjustment of said member while the device is in operation for the purpose set forth.

14. In a device of the class described, an attachment for road rollers comprising a plow pivoted at its forward end and having a rearwardly extending frame rigidly secured thereto, an adjustable depth indicating gauge attached to the frame, a trailed ground engaging member also attached to said frame and in the rear of the plow, and means for raising and lowering the frame from an operator's station, also in the rear of the plow, while the device is in operation, substantially as shown and described.

15. In a device of the class described, an attachment for road rollers comprising a plow pivoted at its forward end and having a rearwardly extending frame rigidly secured thereto, an adjustable depth indicating gauge attached to the frame, a trailed ground engaging member also attached to the frame and in the rear of said plow, an operator's station in the rear of the plow and supported by the ground engaging member, and adjustable means adjacent the station adapted to raise and lower the plow while in operation, substantially as and for the purpose set forth.

HORACE R. WILSON.