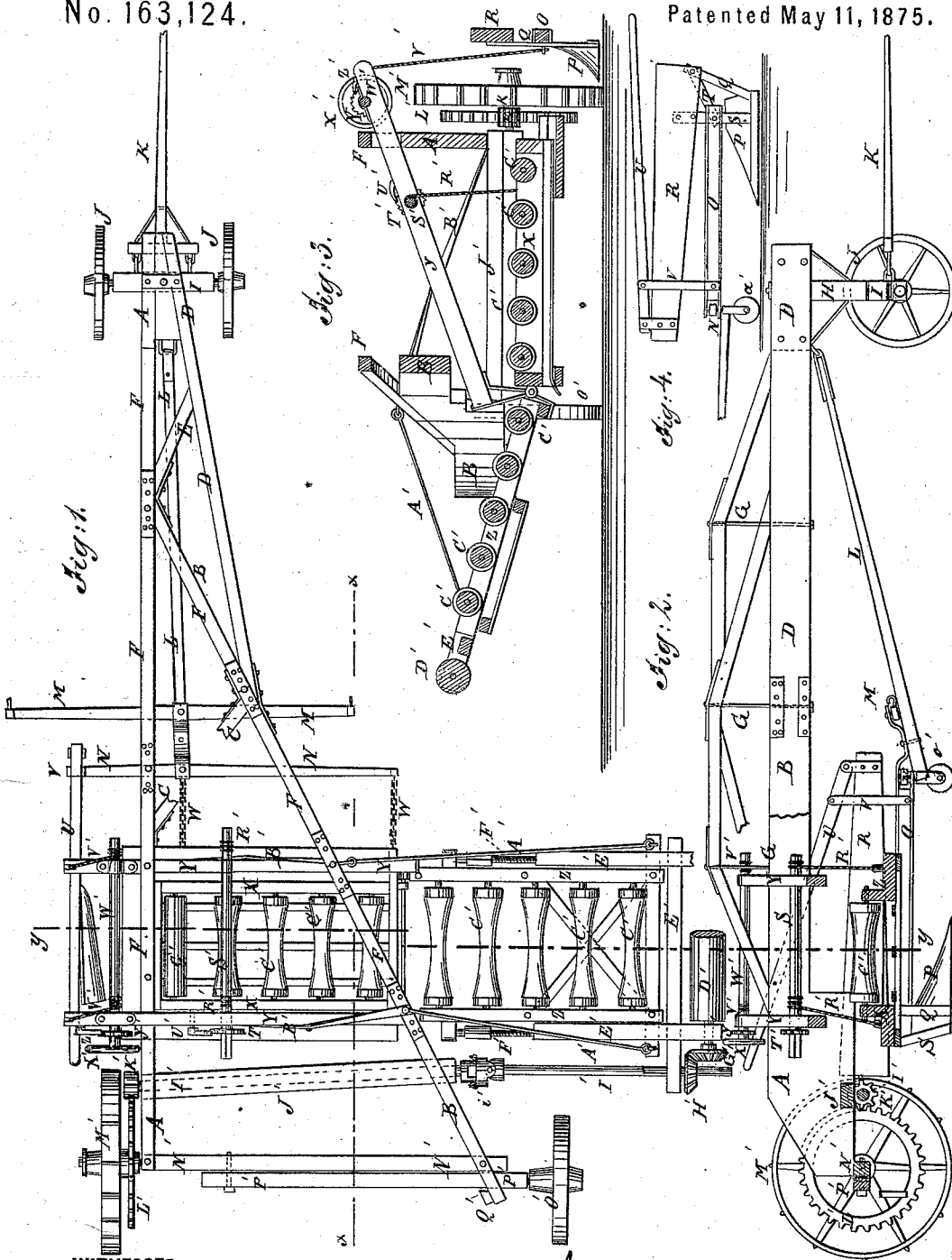


J. S. & W. C. WHITESCARVER.

Excavator.

No. 163,124.

Patented May 11, 1875.



WITNESSES:

Chas. Nida  
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BY  
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# UNITED STATES PATENT OFFICE.

JOHN S. WHITESCARVER AND WILLIAM C. WHITESCARVER, OF PONTIAC,  
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## IMPROVEMENT IN EXCAVATORS.

Specification forming part of Letters Patent No. **163,124**, dated May 11, 1875; application filed  
March 29, 1875.

*To all whom it may concern:*

Be it known that we, JOHN S. WHITESCARVER and WILLIAM C. WHITESCARVER, of Pontiac, in the county of Livingston and State of Illinois, have invented a new and useful Improvement in Road Grader and Ditcher, of which the following is a specification:

Figure 1 is a top view of our improved machine, parts being broken away to show the construction. Fig. 2 is a side view of the same, partly in vertical section, through the line *xx*, Fig. 1. Fig. 3 is a vertical cross-section of the same, taken through the line *yy*, Fig. 1. Fig. 4 is a detail view of the plow-beams.

Similar letters of reference indicate corresponding parts.

The invention will first be fully described, and then pointed out in the claims.

A is a side bar of the frame, which is placed parallel with the line of draft. B is an inclined bar, the forward end of which meets, and is secured to, the side of the bar A, at a little distance from its forward end, at an acute angle, so that the bars B and A may represent the hypotenuse and perpendicular of a right-angled triangle. The rear parts of the bars A B are strengthened against side strain by an inclined bar, interposed between, and secured to, them. D is a brace-bar, the forward end of which is secured to the forward end of the bar A, a wedge-shaped block being interposed between said ends. The rear end of the bar D is secured to the side of the bar B, at or near its point of intersection with the brace-bar C. E is a brace-bar, one end of which is attached to the bar D, and at its other end is attached to the bars A B, at their point of intersection. The two main bars A B are strengthened against a downward pressure by arched braces F, the ends of which are attached to the said bars A B, and the middle parts of which are connected with said bars by tie-bolts G. To the lower side of the forward ends of the bars A D is attached a block, H, which rests upon the short axle I, and through which passes the king-bolt that pivots the said axle to the forward end of the frame. Upon the journals of the short axle I revolve the small wheels J, and to the forward side of said axle is attached the tongue K. The

truck I J K supports the forward end of the frame, and guides the machine when in motion. To the under side of the forward parts of the bars A D is pivoted the forward end of a tongue, L, to which, near its rear end, is pivoted the double-tree M, to the ends of which the draft is attached. To the rear end of the tongue L is pivoted, at one side of its center, a lever, N, the end of the short arm of which is pivoted to the forward end of the plow-beam O. P is the plow, the standard Q of which is pivoted to the rear end of the beam O, and is rigidly bolted to the beam R, near its rear end. The connection of the plow P with the beams O R is strengthened by braces S T. The lower end of the brace S is attached to the rear end of the land-side of the plow, and its upper end is attached to the lower corner of the rear end of the beam R. The upper end of the brace T is attached to the end of the beam R, at the same point as the brace S, and its lower end is attached to the standard P, at the point at which it is pivoted to the beam O. The beam R projects forward above the beam O, and to the upper side of its forward end is pivoted the forward end of the lever U. To the opposite sides of the lever U, at a little distance from its forward end, are attached the upper ends of two bars, V, which pass down upon the opposite sides of the beam R, and their lower ends are attached to the opposite sides of the beam O. To the forward end of the beam O is pivoted the gage-wheel *a'*, by which the depth to which the plow can enter the ground is regulated.

By this construction, by operating the lever U, the point of the plow P may be raised and lowered, to cause it to run shallower or deeper in the ground.

To the lever N, at or near the rear end of the tongue L, and at the end of its long arm, are attached the forward ends of two short chains, W, the rear ends of which are attached to the forward bar of a transverse frame, X, the outer end of which is hinged to the lower end of two inclined bars, Y, which are attached to the lower edge of the bar B, and to the upper edge of the bar A. To the outer end of the frame X, or to the lower

ends of the bars Y is hinged the inner end of the frame Z, the outer end of which is supported by the rods or chains A, the outer ends of which are connected with the outer end of the frame Z, and their inner ends are attached to the upper edge of the bar B.

The bar B is strengthened against the draft-strain of the rods A by the braces B, which are attached to the upper edge of the bar B, to the sides of the inclined bars Y, and to the lower edge of the bar A. To the frames X Z are pivoted rollers C', to receive an endless belt, which also passes around a roller, D', pivoted to and between the outer ends of the side bars of the frame E'. The side bars of the frame E' extend along the outer sides of the frame Z, and rest upon the projecting ends of the cross-bars attached to the said frame Z. To the inner parts of the side bars of the frame Z are swiveled screws F', which enter screw-holes in the inner ends of the side bars of the frame E', so that by turning the screws F' the frame E' may be moved out and in to tighten or slacken the endless apron.

To the end of the journal of the roller D' is attached a bevel-gear wheel, G', the teeth of which mesh into the teeth of the bevel-gear wheel H', placed upon the outer end of the shaft I'. The gear-wheel H' is connected with the shaft I' by a groove and key, so that it may slide upon the said shaft I', as the frame E' is moved out and in. The shaft I' is made in two parts, connected by a universal joint, i', so that the inclination of the frames Z E' may be varied without interfering with the operation of the shaft I'. The outer part of the shaft I' revolves in bearings attached to the outer part of the frame E', and its inner part revolves in bearings attached to the bars A B. The inner part of the shaft I' may be covered and protected by a cross-bar, J', attached to the bars A B.

To the inner end of the shaft I' is attached a small gear-wheel, K', the teeth of which mesh into the teeth of the large gear-wheel L', rigidly attached to the drive-wheel M'. The drive-wheel M' revolves upon the journal of the axle N', rigidly attached to the bars A B.

The wheel M' is toothed or spiked to prevent it from slipping upon the ground.

O' is the right-hand wheel, which revolves upon the journal of the axle P'. The inner part of the axle P' is bolted to the axle N', several holes being formed in the said axle P' to receive the said bolt, so that wheel O' can be moved out or in, as may be desired. The rearward pressure of the axle N' is sustained by a downward-projecting bar, Q', attached to the bar B.

By this construction, by placing a block of the required thickness between the axle N'

and the lower edge of the bar B, the machine may be adjusted to carry the earth up a high grade, or even discharge it into a wagon.

The inner end of the inner carrier-frame X is supported by two chains, R', the upper ends of which are attached to a shaft, S'. The shaft S' revolves in bearings attached to the inclined bars Y, and has its rear end squared off to receive a band-wheel or crank for operating it.

To the shaft S' is attached a ratchet-wheel, T', upon the teeth of which rests a pawl, U', so that the inner end of the carrier may be readily adjusted into, and held securely at, any desired height from the ground to receive the earth from the plow.

V' are two chains, the lower ends of which are attached to the plow-beam, and their upper ends are secured to a shaft, W', which revolves in bearings attached to the upper parts of the inclined bars Y. The shaft W' is provided with a hand-wheel or crank, X', for turning it, and with a ratchet-wheel, Y', and pawl Z' for holding it in place when adjusted.

This construction enables the plow to be readily adjusted to work at any desired depth in the ground.

Having thus described our invention, we claim as new and desire to secure by Letters Patent—

1. The combination of the plow P, the standard Q, the braces S T, the two beams O R, the lever U, and the connecting-bars V, with each other, substantially as herein shown and described.

2. The elevator or carrier formed by the combination of the two hinged frames X Z, the rollers C' D', the sliding frame E', the swiveled screws F', and the supporting rods or chains A', with each other, and with the frame and plow of the grader or ditcher, substantially as herein shown and described.

3. The combination of the gear-wheels G' H' and K' L', and the jointed shaft I' i', with the roller D' of the sliding frame E' of the elevator or carrier, and with the drive-wheel M' of the machine, substantially as herein shown and described.

4. The combination of the stationary axle N' and the adjustable axle P' with the wheels M' O', and with the bars A B of the frame, substantially as herein shown and described.

5. The combination of the lever N and tongue L with the plow, the carrier-frame, and the frame of the machine, substantially as herein shown and described.

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Witnesses:

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