D. F. SHAW.

Sulky Harrow.

No. 166,033. Patented July 27, 1875.

Fig. 1.

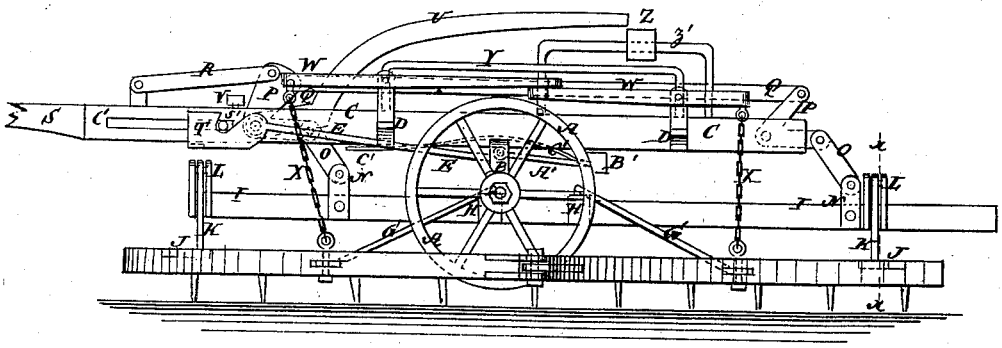


Fig. 2.

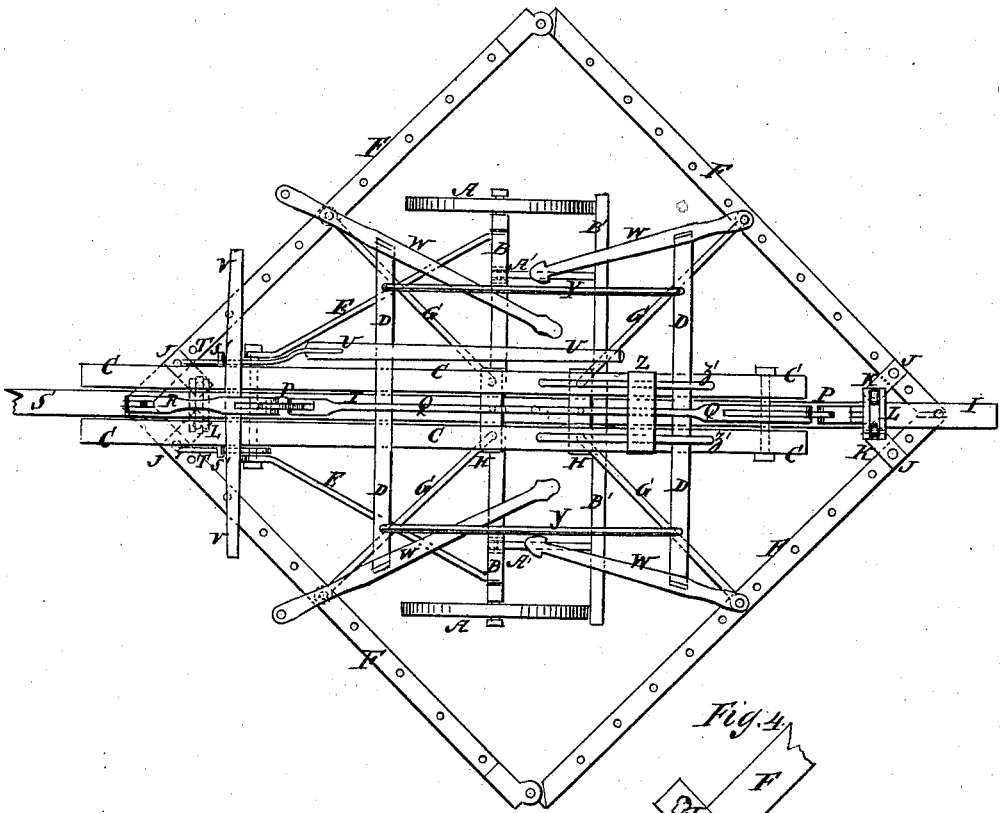


Fig. 4.

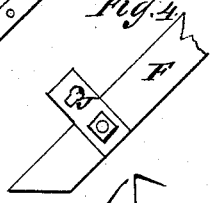
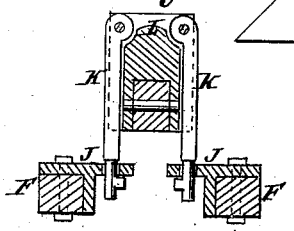


Fig. 3.



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DANIEL F. SHAW, OF HAMILTON, MISSOURI.

IMPROVEMENT IN SULKY-HARROWS.

Specification forming part of Letters Patent No. **166,033**, dated July 27, 1875; application filed May 28, 1875.

To all whom it may concern:

Be it known that I, DANIEL F. SHAW, of Hamilton, in the county of Caldwell and State of Missouri, have invented a new and useful Improvement in Sulky-Harrow, of which the following is a specification:

Figure 1 is a side view of my improved harrow. Fig. 2 is a top view of the same. Fig. 3 is a detail section taken through the line *x x*, Fig. 1. Fig. 4 is a top view of the inner end of one of the bars of the harrow-frame.

Similar letters of reference indicate corresponding parts.

The object of this invention is to furnish an improved harrow, which may be readily adjusted to make a wide or a narrow cut, and to work as a diamond harrow or as a double-A harrow, which may be readily raised from the ground to clear it of weeds, grass, stubble, &c., and for convenience in passing from place to place, and which shall be easily manipulated and controlled.

The invention consists in the combination of the perforated plates, the two sets of arms, the two sets of blocks, and the long bar with each other, and with the bars of the harrow-frame, to enable said harrow-frame to be adjusted; in the combination of the blocks, the pivoted connecting links or bars, the pivoted bent levers, the pivoted connecting-bars, and the sliding tongue with the parallel bars of the carriage, and with the bar with which the harrow-frame is connected; in the combination of the lock-catch and its lever with the parallel bars of the carriage, and with the sliding tongue.

A are the wheels, which revolve upon the journals of the axle B. The axle B is bent twice at right angles near each end, to bring its middle part to the proper height, and to the upper side of its middle part, upon the opposite sides of, and equally distant from, its center, are attached two parallel longitudinal bars, C. The bars C are held parallel with each other by cross-bars D, attached to them in front and rear of the axle B, and the ends of which project nearly to the plane of the wheels A. E are braces, the rear ends of which are attached to the upright parts of the axle B, and their forward ends are bolted to the forward parts of the bars C. F are four bars of equal length, which form the frame of the harrow, and to which the harrow-teeth are to be attached. In the drawings the bars F are shown as arranged to form a square, which is placed diagonally with respect to the carriage, and surrounds the said carriage. The adjacent ends of the bars F, at the front and rear angles of the frame, are left free, and at the side angles are hinged to each other by means of eye-straps and bolts. To the centers of the four bars F are pivoted the outer ends of four arms, G. The inner ends of the front and rear pairs of arms G are pivoted to the side lugs or flanges of two blocks, H, which are notched upon their lower sides, to receive and ride upon the bar I, and are secured to said bar I adjustably by bolts, which pass vertically through the said blocks and bar. To the upper sides of the bars F, near their free ends, are attached inwardly-projecting plates J, in the projecting parts of which are formed key-holes or short slots, to receive the keys formed upon the lower ends of the bars K, which, when passed through said holes and turned one-quarter around, cannot be withdrawn until turned back. The bars K pass up through grooves in the sides of the blocks L, and are pivoted at their upper ends to the upper parts of the said blocks L. The blocks L are notched upon their lower sides to receive and fit upon the bar I, to which they are adjustably secured by bolts passing horizontally through them and the said bar I. The bar I is placed paralled with, and directly beneath, the space between the bars C, and to it, near its ends, are attached two blocks, N, to the upper sides of which are pivoted short connecting bars or links O. The upper ends of the bars O are pivoted to the lower arms of the bent levers P, which are pivoted at their angles to and between the bars C. To the upper arms of the bent levers P are pivoted the opposite ends of the connecting-bar Q, so that the said levers may always move together. To the upper end of the forward bent lever P is pivoted the rear end of a short connecting-bar, R, the forward end of which is pivoted to the upper side of the tongue S at a little distance from its rear end. The rear end of the tongue S is inserted in the space between the forward ends of the

bars C, and is connected with said bars C by one or two bolts, s', which pass through longitudinal slots in the said bars C. By this construction, when the tongue S is pushed back into the position shown in Fig. 1, the bent levers will be so adjusted that the harrow will rest upon the ground in working position. When the tongue S is drawn forward the bent levers P will be operated to raise the harrow away from the ground. The harrow is locked in either position by the catches T, pivoted to the sides of the bars C, which are connected by a bar passing beneath the bars C, so that the two catches T may be moved together. To the double catch T is attached a lever, U, which extends back into such a position that it may be reached and operated by the driver from his seat to lock and unlock the tongue. The tongue may be operated to raise and lower the harrow by means of the team. V is the double-tree, which is pivoted to the upper side of the rear end of the tongue S. To the ends of the cross-bars D are pivoted four levers, W, the outer ends of which are connected with the middle parts of the bars F of the harrow-frame by short chains X. The inner ends of the levers W project into such a position that they may be reached and operated singly or all together by the driver with his feet, to raise a part or the whole of the harrow-frame F away from the ground, to clear it from rubbish or to pass obstructions. The inner ends of the levers W may be passed beneath the rods Y to keep them from swinging about. The ends of the rods Y are bent downward, and are attached to the cross-bars D. Z is the driver's seat, which slides upon two rods, z', the ends of which are bent downward, and are attached to the bars C, so that the driver, by moving his seat forward or back, may balance the machine by his weight. The harrow-frame F may be expanded or contracted, to make a wider or narrower cut, by adjusting the blocks H L upon the bar I. When the harrow is made narrow the forward and rear ends of the bars F are spread apart, so that the harrow may be used for cultivating corn and other plants planted in rows. By disconnecting the outer ends of the bars F, detaching the rear bars F, and adjusting the rear blocks H L, the harrow may be adjusted for use as a double-A harrow. To the middle part of the axle B is pivoted the forward ends of two arms, A', to the rear ends of which is attached the brake-bar B', which is held up by a spring, C', attached to its center, and which passes over the axle B and under the forward cross-bar D, so that the driver, by putting his feet upon the brake-bar B', may press it against the wheels A and hold them, to enable the team to be started up or backward, to raise and lower the harrow-frame without moving the harrow forward or back.

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

1. The combination of the perforated plates J, the arms K and G, the blocks L H, and bar I with each other, and with the bars F of the harrow-frame, to enable said harrow-frame to be adjusted, substantially as herein shown and described.

2. The combination of the blocks N, the pivoted connecting links or bars O, the pivoted bent levers P, the pivoted connecting-bars Q R, and the sliding tongue S with the parallel bars C of the carriage, and with the bar I, with which the harrow-frame is connected, substantially as herein shown and described.

3. The combination of the lock-catch T and the lever U with the parallel bars C of the carriage, and with the sliding tongue S, substantially as herein shown and described.

DANIEL F. SHAW.

Witnesses:
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