

No. 650,273.

Patented May 22, 1900.

M. F. POTTER & H. J. MINAR.
WHEEL HARROW.

(Application filed Jan. 17, 1900.)

4 Sheets—Sheet 1.

(No Model.)

Fig. 1.

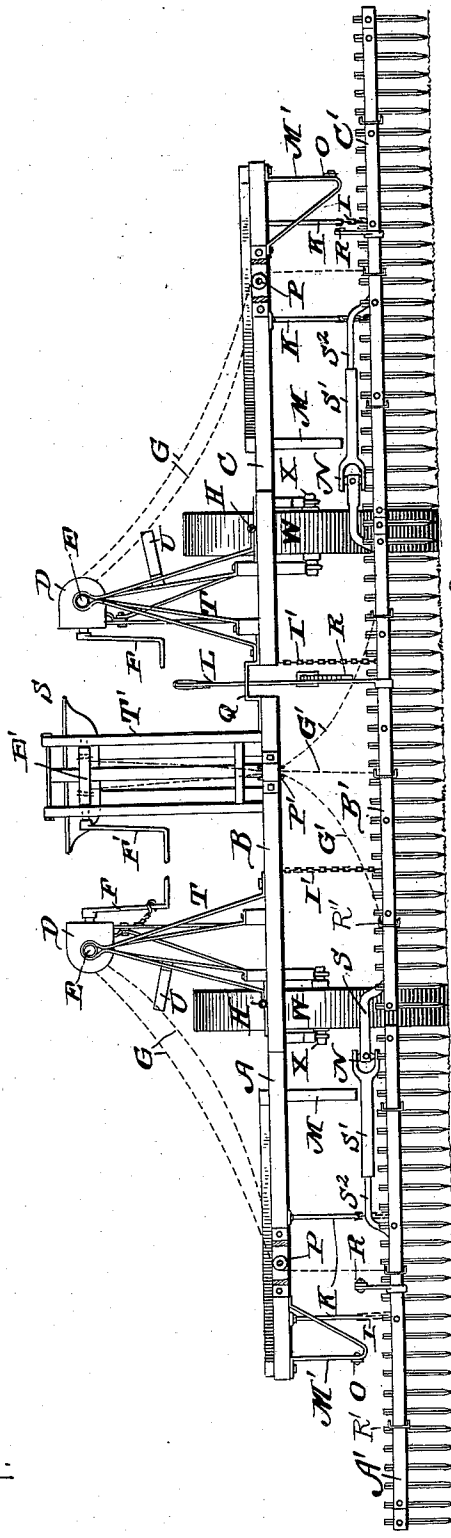
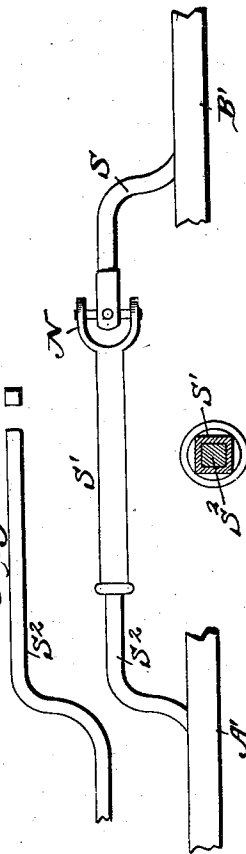


Fig. 6.



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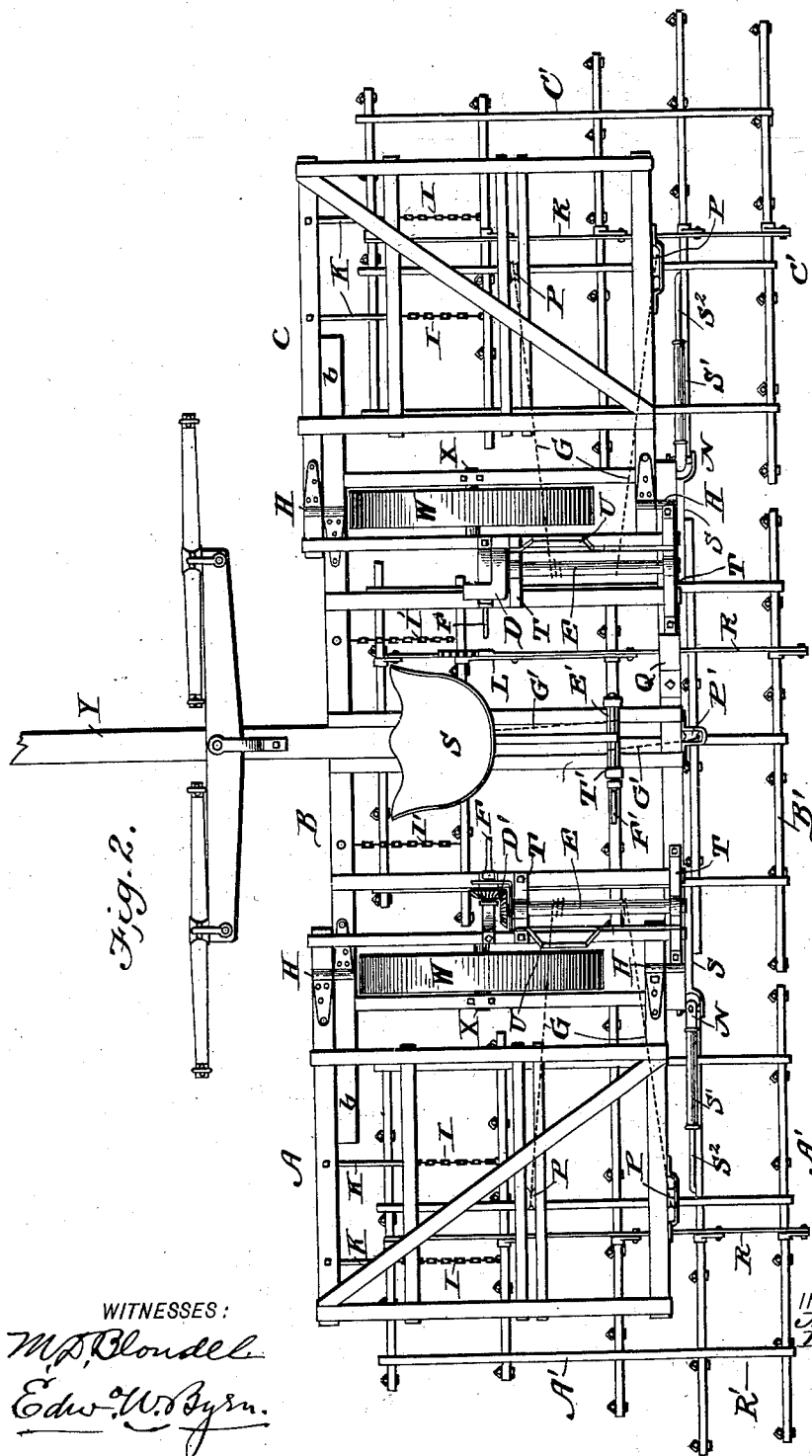
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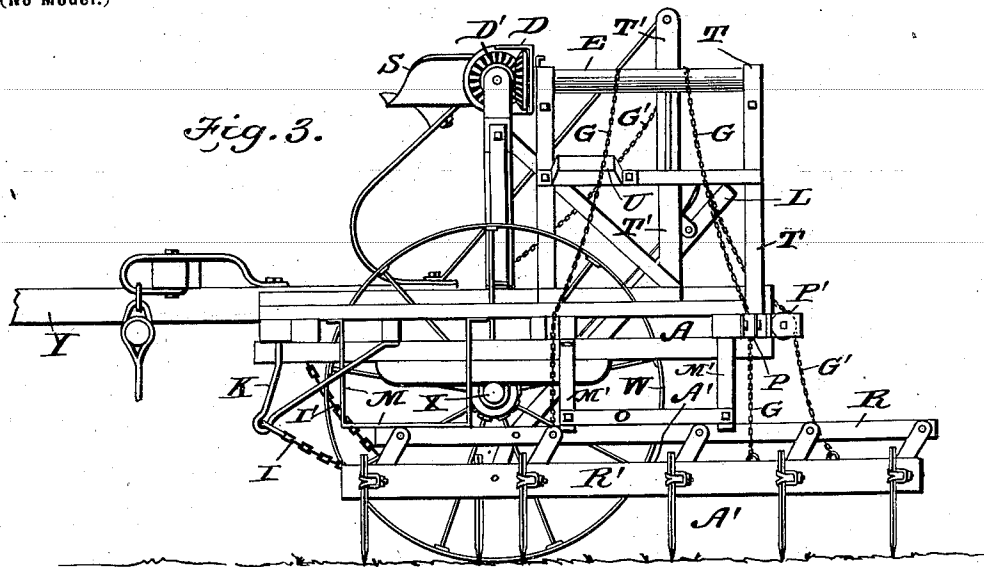
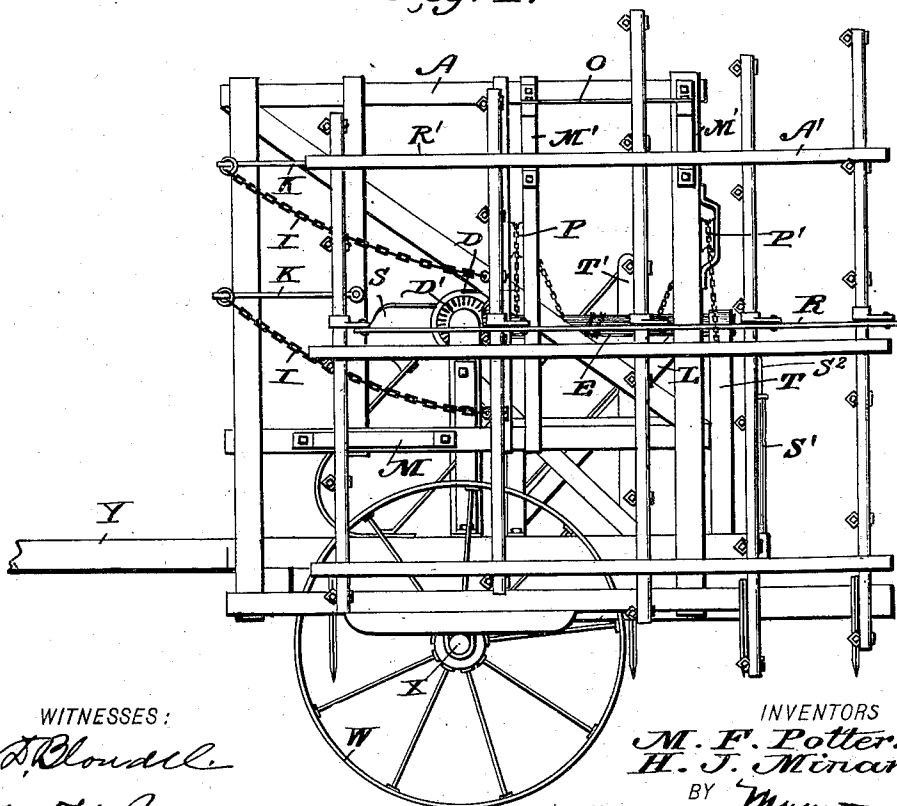


Fig. 4.



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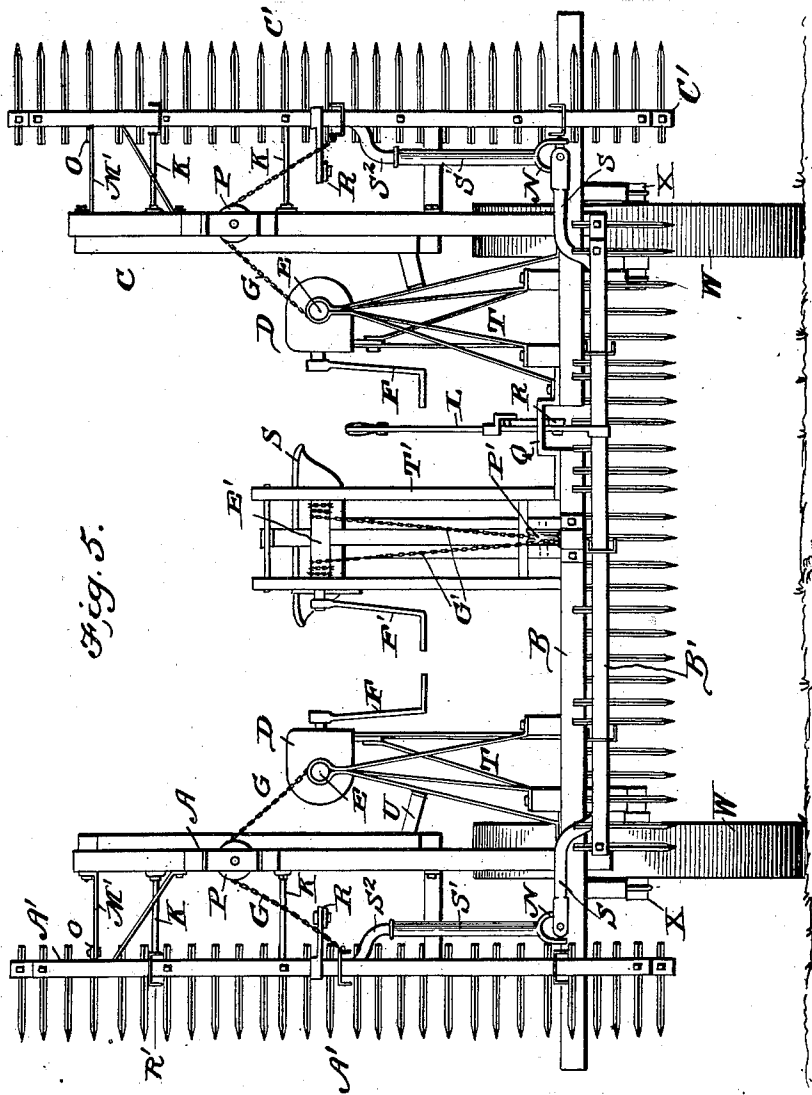
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MILLARD F. POTTER AND HENRY J. MINAR, OF AUSTIN, MINNESOTA.

WHEEL-HARROW.

SPECIFICATION forming part of Letters Patent No. 650,273, dated May 22, 1900.

Application filed January 17, 1900. Serial No. 1,744. (No model.)

To all whom it may concern:

Be it known that we, MILLARD F. POTTER and HENRY J. MINAR, of Austin, in the county of Mower and State of Minnesota, have invented a new and useful Improvement in Wheel-Harrows, of which the following is a specification.

Our invention relates to wheel or riding harrows of that type in which the harrow-frame is made in sections, the two side sections of which are hinged so as to be turned up on each side into a vertical position for more convenient transportation and to avoid stumps, stones, or other obstructions or to relieve them from accumulated rubbish.

Our improvements comprehend various features designed to improve the action and adjustment of parts, to facilitate the management of the harrow, and increase its efficiency, as will be hereinafter more fully described with reference to the drawings, in which—

Figure 1 is a rear elevation of the harrow when down and ready for work. Fig. 2 is a top plan view in the same position. Fig. 3 is an end elevation with all of the sections down. Fig. 4 is an end view with an end section raised. Fig. 5 is a rear elevation with the drags raised and the end section folded into vertical position for transportation, and Fig. 6 shows enlarged details of the tilting device for altering the inclination of the harrow-teeth.

Referring to Fig. 2, Y is the draft-tongue, attached to the middle frame B, and A and C are respectively the two side sections or folding wings of the framework, which are hinged at H H to the sides of the main frame B.

W W are the running-wheels, which are arranged upon short axles X X, (see Fig. 1,) held in brackets or hangers in the main frame B.

Beneath each one of the main-frame sections A B C are corresponding drags A' B' C', containing the harrow-teeth, and these teeth are connected to rocking shafts in bars R', (see Fig. 3,) which shafts have crank connections with a connecting-bar R, by which the shafts are rocked and the inclination of the teeth changed. Each of the drags has a vertical adjustment beneath the main-frame sections A B C to remove its teeth from the ground, and the two side drags A' C' and

their superposed frame-sections A C have also a swinging hinged action that allows them to be turned from the position shown in Fig. 1 up to that shown in Fig. 5.

In hinging the side frames A and C to the middle frame B the front bar of the middle frame is extended on each side at b b, Fig. 2, beyond the hinges H H and behind the front bar of the side frames to a point near the middle draft-line of said side frames, so that the latter may be drawn forward in a manner that relieves the hinges H of damaging strain.

To raise the side sections about their hinges, chains G G are attached to the drags A' C' and then pass over pulleys P P in the superposed main-frame sections A C and pass thence to windlasses E E, arranged parallel with the line of draft on each side of and a little to the rear of the seat. These windlasses are mounted in bearings in A-shaped braced frames T, (see Fig. 1,) carried on the main section, and they are turned by bevel-gears D', Fig. 2, within a housing D, which gears are turned by crank-handles F in position within easy reach from the driver's seat.

I, Figs. 2 and 3, represents the draft-chains for the side drags, which draft-chains are attached to the lower ends of bent draft-hangers K, extending downwardly from the front part of the upper frame-sections A and C, and I' represents the draft-chains for the middle drag B'.

To raise and lower the middle drag, chains G' G', Figs. 1 and 2, are connected to said drags and pass up over pulleys P' in the main-frame section B to a winding-shaft E', arranged at right angles to the line of draft in an upright frame T' immediately behind the seat and having a crank-handle F' for turning it. When the side drags are raised by the chains G, they first come to a bearing against downwardly-projecting bracket-rests M and M', the brackets M' being connected by bars O, as seen in Fig. 3, and then after the hinged sections are turned up, as in Fig. 5, said hinged sections are brought to a bearing against other rests U, projecting laterally from the upright frames T.

L is the hand-lever for tilting or rocking the harrow-teeth of the drags. This hand-lever (see Fig. 3) is pivotally connected to the bars R R', and in moving one of these

bars R in relation to the other rocks the shafts bearing the harrow-teeth.

To impart the rocking action of the shafts of the middle drag to the shafts of the side drags, a special connection is employed.

Referring to Figs. 1 and 6, S is an offsetting-bar connected to the rocking portion of the drag B' and having a knuckle or universal joint N connecting it to a hollow section S', which has a square hole in the same, in which fits and loosely slides an offset bar S², rising from a rocking portion of the side drags A' and C'. This connection causes the rocking of the shafts of the middle drag to be imparted to the shafts of the side drags and yet accommodates all the necessary adjustment as follows—that is to say, the universal joint or knuckle N allows the side drags to be turned up to the vertical position shown in Fig. 5, while the telescopic sliding action of the bar S² into hollow sleeve S' allows the drags, which are drawn by chains I in front, to have a slight swinging motion to right or left, and by endwise take-up accommodates the lifting of the drags to the vertical position, thus adapting all the adjustments of the drags to each other in a harmonious and practical way.

Q, Fig. 1, is a metal yoke bent upwardly and connecting a break in the main frame B to accommodate the rise of bar R when the central drag is raised.

In our invention the several drags run freely and independently of each other, the driver may ride to and from the field, it is impossible to turn the drags over onto the horses, and in turning the drags are neither liable to get thrown against the wheels nor the horses against the drags, while the drags themselves may be tilted to change the inclination of the teeth and raised bodily or on their hinges to free them from rubbish or other obstruction.

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

1. A harrow having a central drag and upwardly-folding side drags with rocking shafts and tilting teeth, the rocking parts of the central drag and side drag being connected by a jointed bar and a longitudinally-sliding connection substantially as shown and described.

2. A harrow having a central drag and upwardly-folding side drags with rocking shafts and tilting teeth, the rocking parts of the central drag and side drags being connected by a bar having a universal joint and a longitudinally-sliding connection substantially as shown and described.

3. A harrow having a central drag and upwardly-folding side drags with rocking shafts and tilting teeth, the rocking parts of the central drag and side drags being connected by a jointed bar and a telescopic slide the parts of which are arranged to move longitudinally in relation to each other but turn rigidly together substantially as described.

4. In a harrow with jointed side drags, a coupling device consisting of offset bars S S², a universal joint N and a telescopic tubular section S' having an angular opening substantially as and for the purpose described.

5. In a harrow having folding side drags, the combination with an upper hinged framework, of a subjacent drag connected thereto in front by draft-chains, and having at the rear a jointed and sliding connection with the central drag substantially as and for the purpose described.

6. In a harrow having folding side drags, the combination with an upper hinged framework, with downwardly-projecting rests for the drag to bear against when raised; said rests consisting of downwardly-projecting brackets M and M' with cross-bars O; of a subjacent and freely-moving drag, chains attached thereto, and pulleys and a winding-shaft for lifting the drag to the superposed frame and turning them together on their hinges substantially as described.

7. The center or main frame B having a break in its rear bar connected by an elevated yoke Q; in combination with the central drag having a vertical adjustment and provided with a rocking and tilting bar R with lever for operating it substantially as described.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

MILLARD F. POTTER.
HENRY J. MINAR.

Witnesses:

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J. C. BELDING.