A. W. OLDS.

Improvement in Rotary-Harrows.

No. 131,893. Patented Oct. 1, 1872.

Fig. 1.

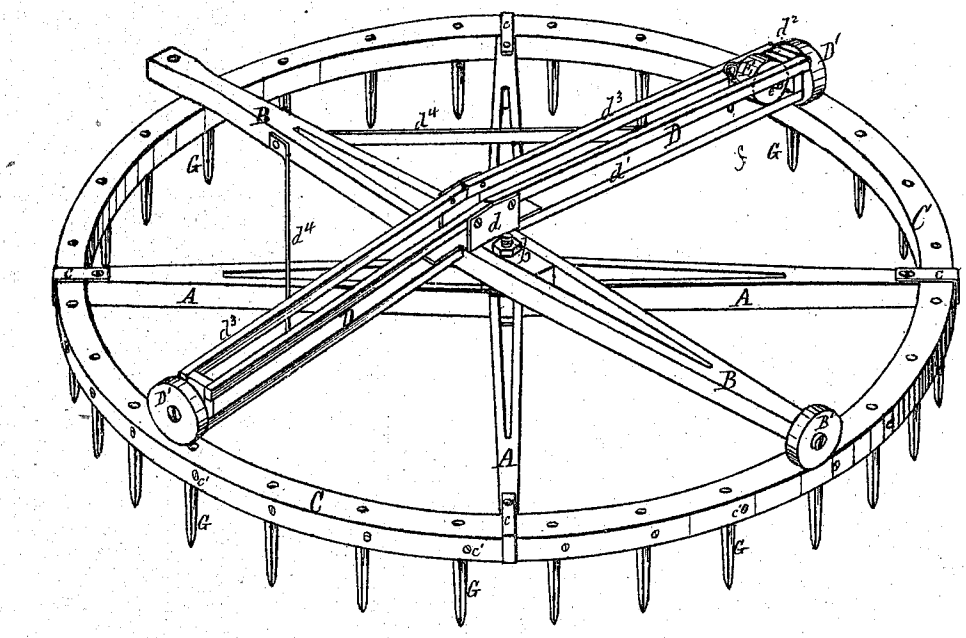


Fig. 2.

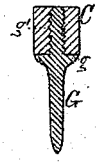
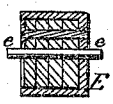


Fig. 3.



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AM. PHOTO-LITHOGRAPHIC CO. N.Y. (OSBORNE'S PROCESS.)

UNITED STATES PATENT OFFICE.

ALONZO W. OLDS, OF GREEN OAK STATION, MICHIGAN.

IMPROVEMENT IN ROTARY HARROWS.

Specification forming part of Letters Patent No. **131,893**, dated October 1, 1872.

To all whom it may concern:

Be it known that I, ALONZO W. OLDS, of Green Oak Station, county of Livingston, State of Michigan, have invented certain new and useful Improvements in Rotary Harrows, of which the following is a full, clear, and exact description, reference being had to the accompanying drawing making part of this specification, in which—

Figure 1 is a perspective view of a harrow embracing my improvements; Fig. 2 is a section through the rim and one of the teeth, showing the construction of the tooth and the manner of applying the same; and Fig. 3 is a section through the weighted roller.

Similar letters of reference denote corresponding parts in all the figures.

My invention consists, first, in the employment or application to a rotary harrow of a self-adjusting weight in such manner as to insure the proper action or rotation of the harrow under all the varying conditions of its use. It also consists in a novel construction and manner of applying the teeth to the rim, whereby the upper face of said rim can be used as a way or track for the roller end of the traveling and weighted arm or arms. It further consists in certain details of construction and arrangement hereinafter described.

In the accompanying drawing, A A′ represent the frame pieces or timbers placed at right angles or thereabout, and intersecting each other midway of their length, where they are notched or let one into the other in such manner as to bring them into the same horizontal plane and strengthened at the joint by metallic plates firmly secured to the upper and lower faces of the timbers or to each other by through bolts, as preferred. These timbers, as also the draft-beam B, are by preference made as shown in Fig. 1—that is to say, with a central vertical slit or kerf extending three-fourths or more of their length, but made solid or joined at the ends, where they connect with the rim C and with the sides, thus formed expanded or wedged apart at the center to give them a bracing position, as shown. By this construction equal or greater strength of timbers may be attained with much less weight of material. The same result may be attained by joining two pieces at the ends and expanding or wedging them apart centrally. These timbers may be connected to the rim C by metallic straps *c*, or in any convenient manner. The rim C may be made either of fellies joined at the ends, or of a series of concentric hoops or bands firmly bound together by bolts or screws *c′*. The upper face of the rim is made a plane surface, and constitutes the track or way for the roller B′ on the rear end of the draft-beam B, and also for the roller at the outer end or ends of self-adjusting weight carriage or frame D. The draft-beam B is pivoted centrally to the frame-timbers A by a through bolt, *b*, and the weight-frame or track D is mounted on the draft-beam transversely just in front of the pivot-bolt *b*, and by preference has its ends made to incline slightly rearward, so as to bring the friction-rollers D′ at the ends thereof diametrically opposite each other, or nearly so, for the purpose of properly balancing the harrow. This carriage D is composed of a central flanged metal plate, *d*, to which the frame or frames of the carriage D are attached, said frames consisting of the floor or way d^1, end piece d^2, rails or bars d^3, and lateral braces d^4 extending to the draft-beam. These frames or carriages may be made and attached separately to the central plate, so that one or both may be used as desired, and are arranged so that the floor or way is slightly elevated in the center, inclining downward to the ends for the purpose of keeping the weight E at the end on level ground. The weight E is made preferably in the form of a hollow cylinder or roller, with a central stationary axle, *e*, attached to one end or head of the cylinder, the other end of said cylinder being made removable for the purpose of adding to or diminishing the weight of the roller, as desired, which is accomplished by inserting or removing metal washers, indicated in Fig. 3, or in any other convenient manner. The ends of the shaft *e* project under the rails d^3 and prevent displacement of the roller. By this construction and arrangement the roller is free, when not restrained by pin *f*, to move from one end of carriage D to the other, and will always rest upon the lower side or end of the harrow, thereby adapting the harrow to hill sides where a fixed weight has been found objectionable in producing side draft, particularly when in moving back and forth it rested on the upper side of the harrow. Where it is desired, the weight may be held at

either end of the carriage by pin *f*. The end pieces d^2 are provided on their inner faces with elastic cushions of rubber or other suitable material, which relieve the harrow from heavy concussion of the weight. On level ground only one end of the carriage need be used, the other being readily detached. G are the teeth, which are of steel, cast to a pattern in form substantially as shown in section, Fig. 2, with the flange *g* and screw-thread *g'* cast thereon. These teeth are rounded near the flange *g* to obviate liability to clog. Lower down they are made square or angular in such manner that by the application of a wrench thereto they may be readily screwed to place. By this construction nuts on the upper ends of the teeth may be dispensed with, leaving the upper face of the rim a plane surface, forming a suitable track for the rollers B' D', as explained. Where it is not desired to use the upper face of the rim as a track for the rollers, nuts may be used on the screws for drawing the teeth snugly into place against the flanges.

I am aware that harrow-teeth have been cast with a thread upon their upper ends, in order to screw them in the frame; but it is apparent that they are weakened at the point where the greatest strain comes—that is, at the lower edge of the frame—and hence there is an increased liability to breakage. In order to remedy this defect I have added the flange *g*, which is drawn tightly against the lower face of the rim, thus relieving the tooth of much of the strain at the point where it is weakest, as will be readily seen without further explanation.

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

1. The traveling or self-adjusting weight, in combination with a rotary harrow, substantially as and for the purpose set forth.

3. The carriage D provided with the buffers or cushions, as described, in combination with the self-adjusting weight.

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Witnesses:
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