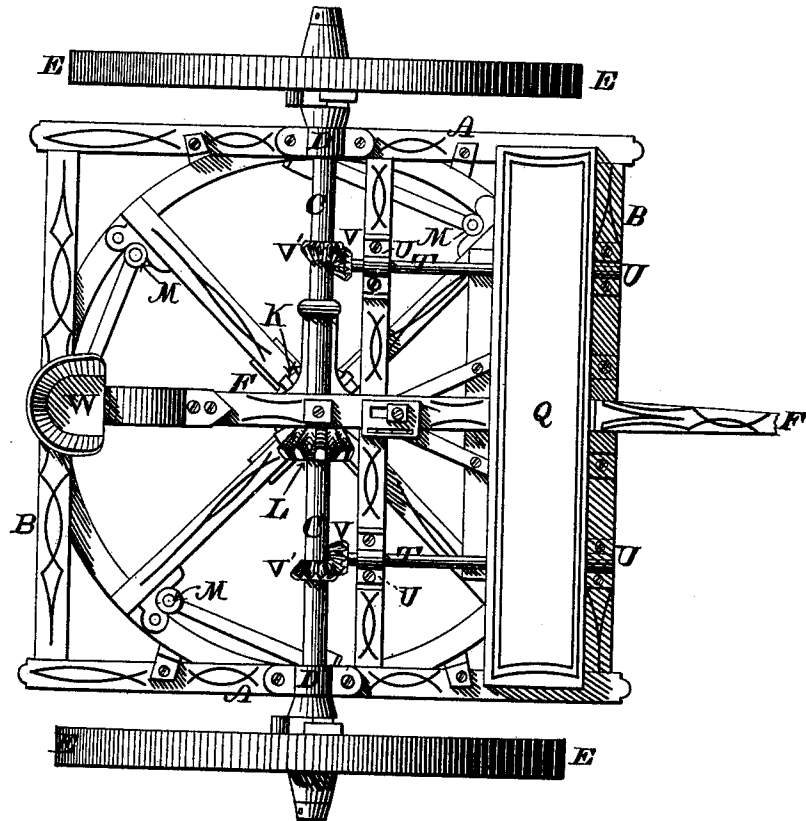


I. TURMAN.
SEEDER AND CULTIVATOR.

No. 175,210.

Patented March 21, 1876.

Fig. 2.



WITNESSES=

Jas. Hutchinson

John R. Young

INVENTOR.

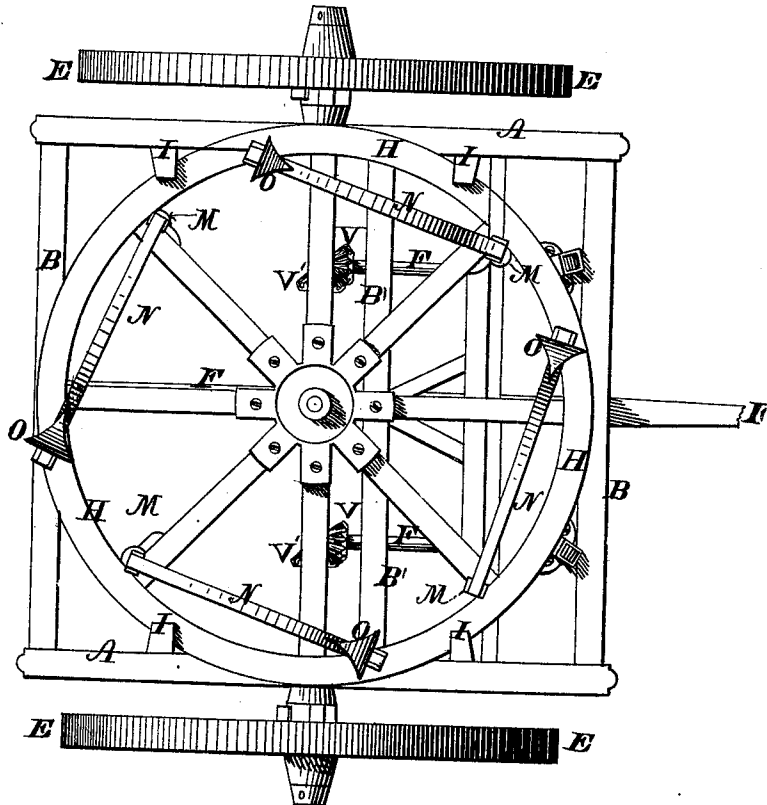
Isaac Turman, by
 Prindle and Co. his Attys.

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Fig. 3.



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Fig. 4.

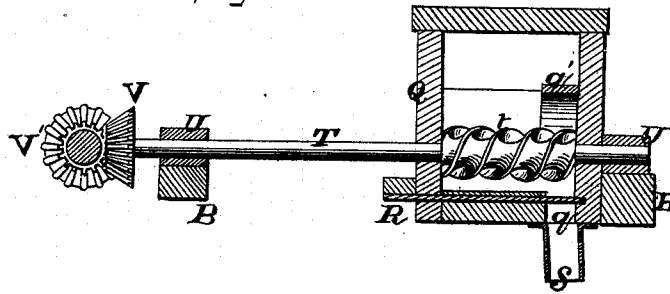


Fig. 5.

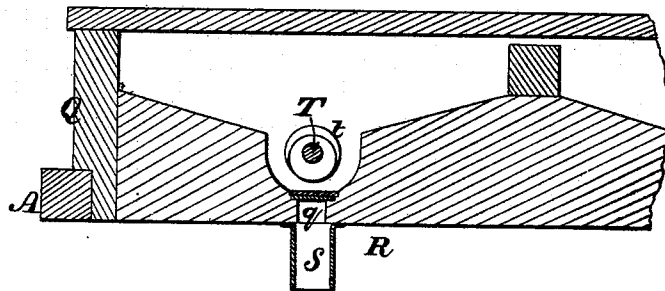


Fig. 6.

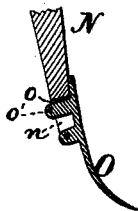


Fig. 7.



WITNESSES=

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John R. Young

INVENTOR.

Isaac Turman, by
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UNITED STATES PATENT OFFICE.

ISAAC TURMAN, OF WOODBURY COUNTY, IOWA.

IMPROVEMENT IN SEEDERS AND CULTIVATORS.

Specification forming part of Letters Patent No. **175,210**, dated March 21, 1876; application filed December 28, 1874.

To all whom it may concern:

Be it known that I, ISAAC TURMAN, of Woodbury county, State of Iowa, have invented certain new and useful Improvements in Broadcast-Seeders and Cultivators; and do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 is a perspective view of my machine arranged for use. Fig. 2 is a plan view of the upper side of the same. Fig. 3 is a like view of the lower side of said machine. Fig. 4 is a vertical cross-section of the seed-box, showing the mechanism employed for feeding grain to and causing the same to be discharged through the chutes. Fig. 5 is a longitudinal section of said seed-box upon a line which passes through the centers of the discharge-openings; and Figs. 6 and 7 are vertical central sections of a shovel, and the lower end of its beam, and show, respectively, said shovel in its normal position and after it has yielded to an obstruction.

Letters of like name and kind refer to like parts in each of the figures.

The design of my invention is to enable ground upon which corn has been grown, and where the stalks have been left, to be sown with grain and easily and thoroughly harrowed; and to this end it consists, principally, in a revolving harrow in which the shovel-bars are connected with the frame by a hinge and swivel joint, substantially as and for the purpose hereinafter specified. It consists, further, in the construction and combination of the seed-sowing and harrowing devices, substantially as and for the purpose hereinafter shown and described.

In the annexed drawings, A and A represent two rails arranged in parallel lines, and secured together at their ends by means of two cross-bars, B and B, while a third bar, B', extends between said rails at one side of their longitudinal centers. The parts described form the main frame of the machine, which frame is supported upon or by means of an axle, C, that is journaled within suitable bearings, D and D, attached to the side rails A and A, and has journaled upon its ends two ground-wheels, E and E, of usual construction. A pole, F,

secured upon and extending across the upper side, at the center of said frame, in a line at a right angle to said axle, materially strengthens said parts, besides furnishing means for attaching draft-animals to the machine. Journaled upon a suitable vertical bearing, G, that is secured to and extends downward from the pole F, in a line with the axle C, is a circular frame, H, that has any desired form of construction, and such size as to bring its periphery to or near the outer edges of the main frame, and is capable of revolution in a horizontal plane. At suitable points upon said frame are provided lugs I and I, which extend downward and beneath said frame H, and furnish a support for its rim. Secured to or upon the upper end of the hub of the circular frame H is a bevel-gear, K, which meshes with and receives motion from a similar gear, L, that is secured upon the axle C, by which means the motion of said axle within its bearings will cause said frame to revolve. The ground-wheels D and D are connected with the axle C by means of pawls and ratchets or friction-clutches, so as to cause their motion to be communicated to said axle when the machine is moved in a forward direction, and to revolve freely and independently when said machine is moved so as to turn them rearward. At four or more points at or near the periphery of the frame H are swiveled a corresponding number of vertical pins, M and M, and to the lower end of each of said pins is hinged or pivoted one end of a shovel-bar, N, that has, in side elevation, the form shown in Fig. 1, and at its opposite end is provided with a shovel, O, of usual form. The peculiar attachment of the shovel-bar enables each to maintain a position substantially in a line with the draft as the machine moves forward, while their lateral and fore-and-aft positions, with relation to each other and to the main frame, are constantly changed by the revolution of the circular frame. Each shovel O is hinged, at or near its longitudinal center, to the lower end of its bar N, and is capable of being turned from a position having a right angle therewith, so that when its point meets with an obstruction said shovel may yield and prevent breakage. In order that each shovel may be held in its normal position under ordinary circumstances, and yet permitted to

yield to an unusual strain, a lug, *o*, is provided upon its rear side, above its pivotal bearing, which lug projects rearward through a corresponding slot, *n*, in the bar *N*, and is provided with a transverse opening, *o'*, which is wholly in rear of said bar and receives a wooden pin, *P*, that has sufficient strength to enable it to resist any strain that will not break said shovel, but will yield and permit the latter to turn when such strain becomes severe. Resting upon and secured to the forward portion of the main frame is a seed-box or hopper, *Q*, which has the form shown in Fig. 1, and is provided at two or more points within its bottom, near its front side, with a discharge-opening, *q*, that is opened or closed at will by means of a slide, *R*, and at its lower end communicates with the chute *S*.

In order that grain may be prevented from clogging within the hopper, and may be caused to pass with uniform speed through the opening *q*, a shaft, *T*, is journaled within suitable bearings *U* and *U'* upon the main frame, and, extending horizontally through said hopper, directly over said opening, has its rear end near to the axle *C*, and at such point is provided with a bevel-pinion, *V*, which meshes with and receives motion from a similar pinion, *V'*, that is secured upon and revolves with said axle. Within the hopper *Q* the shaft *T* is provided with an enlarged spirally-grooved portion, *t*, which is nearly in contact with the bottom of said hopper directly beneath, while upon each side of said enlargement said bottom inclines upward and outward, so as to cause grain to pass downward to said point by the force of gravity. Immediately over each opening *q* is placed a shield, *q'*, which incloses the forward end of the spiral enlargement *t*, and prevents grain from passing di-

rectly into and through said opening by the force of gravity.

When thus constructed the operation of parts is as follows: The rotation of the shafts *T* and *T'* causes grain to be moved forward within the spiral grooves of the enlargements *t* and *t'* until said grain reaches the openings *q*, when it will fall through the proper channels to the ground. No grain can pass from the hopper, except as it is fed to the discharge-openings by the rotation of the shafts, and as such rotation is uniform in velocity, the discharge of grain will be equally uniform, whatever the quantity contained within said hopper, the force of gravity having no effect upon the result named.

A driver's seat, *W*, secured to or upon the pole *F*, completes the machine, the operation of which has been sufficiently illustrated.

Having thus fully set forth the nature and merits of my invention, what I claim as new is—

1. A revolving harrow in which the shovel-bars are connected with the frame by a hinge and swivel joint, substantially as and for the purpose specified.

2. The hereinbefore-described machine, in which are combined with the main frame the axle *C*, ground-wheels *E* and *E'*, circular revolving frame *H*, shovel-bars *N* and *N'*, shovels *O* and *O'*, hopper *Q*, shafts *T* and *T'*, and pinions *K*, *L*, and *V* and *V'*, said parts being arranged to co-operate in the manner and for the purpose shown and described.

In testimony whereof I have hereunto set my hand this 23d day of December, 1874.

ISAAC TURMAN.

Witnesses:

S. B. ATWOOD,
J. P. BLOOD.