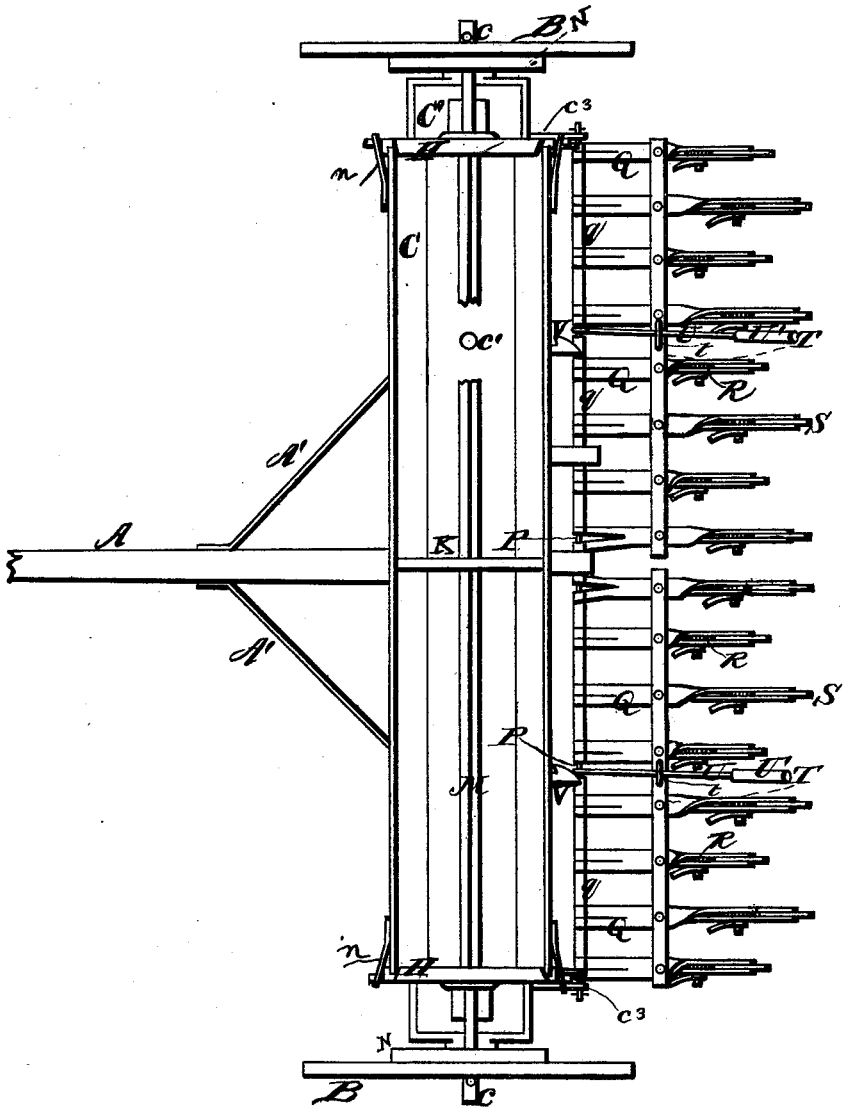
2 Sheets—Sheet 1.

E. EMMERT.

SEED-SOWER AND CULTIVATOR.

No. 190,839. Patented May 15, 1877.

Fig. 1.



WITNESSES

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2 Sheets—Sheet 2.

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Fig. 2.

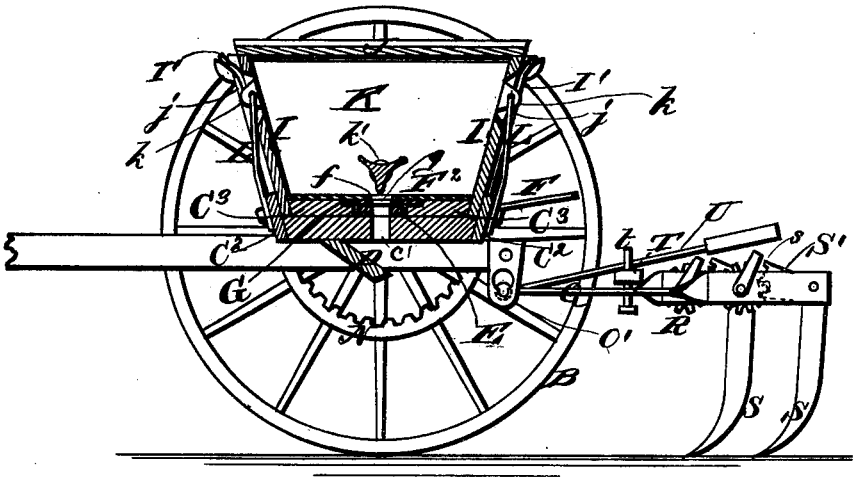


Fig. 3.

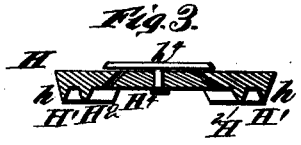


Fig. 4.

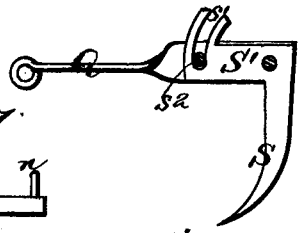


Fig. 5

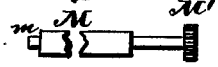


Fig. 6

Fig. 7.

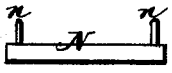


Fig. 8

Fig. 9.

Fig. 10.

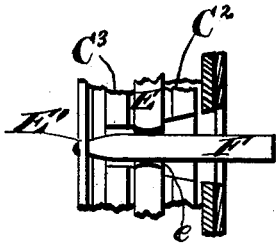
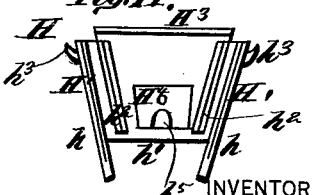


Fig. 11.



WITNESSES

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UNITED STATES PATENT OFFICE.

EZRA EMMERT, OF FRANKLIN GROVE, ILLINOIS.

IMPROVEMENT IN SEED-SOWERS AND CULTIVATORS.

Specification forming part of Letters Patent No. **190,839**, dated May 15, 1877; application filed February 24, 1877.

To all whom it may concern:

Be it known that I, EZRA EMMERT, of Franklin Grove, in the county of Lee and State of Illinois, have invented a new and valuable Improvement in Seed-Sowers and Cultivators; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, making a part of this specification, and to the letters and figures of reference marked thereon.

Figure 1 of the drawings is a plan view of my seed-sower and cultivator, and Fig. 2 is a longitudinal vertical sectional view of the same. Figs. 3, 4, 5, 6, 7, 8, 9, 10, and 11 are detail views thereof.

This invention relates to combined seed-sowers and cultivators.

The nature of said invention consists in the novel construction and arrangement of the parts, as will be hereinafter more fully set forth.

In the accompanying drawings, A designates the draft-pole of my vehicle; A′, the hounds thereof, and B the transporting-wheels, which turn on journals *c c*. These journals are formed upon the ends of the bottom C^1 of long feed-box C, which bottom is provided with a series of seed-perforations, one of which, marked c^1, is shown in Figs. 1 and 2. An inclined scatter-board, D, is fixed to said bottom, extending under said holes c^1. Said bottom is provided with raised front and rear rims C^2 C^2, and also with guide-strips C^3 C^3, which are parallel therewith, as shown in Figs. 2 and 10. Said guide-strips extend from end to end of said box, and between them works a perforated slide, E, which is operated by means of a lever, F, so as to open or close the seeding-perforations c^1 at will. One end of said adjusting-lever F extends outward behind said seed-box, and the other end is pivoted to the inside of front rim C^2, so as to have lateral vibration. Said lever sets within recess *e* of slide E and the guide-strips C^3 C^3, and the rear rim of said seed-box has enlarged openings for allowing said lateral vibration.

Above slide E are two metal plates, F^2 and G, provided, respectively, with registering-perforations *f* and *g*. Upper plate F^2 is fixed, but lower plate G is movable longitudinally, so as to regulate the supply of seed through the perforations c^1, which are directly below said holes *f* and *g*. H designates two end pieces, one of which is shown in detail in Figs. 3 and 11. Each end piece H has two downwardly-extending perforated lugs, *h h*, and is detachably but firmly secured to bottom piece C^1 by means of a rod or long bolt, c^3, passing transversely through said perforated lugs and said bottom piece. The middle of the bottom of each end piece is also recessed at h^1 to allow the endwise play of extension on the end of plate F^2. By means of these extensions the said plate is moved to regulate the feed of grain, as described. Each end piece H is also provided on its inner face at its edges with upright slightly-inclined flanges H^1. Parallel to these are shorter flanges or ribs H^2, the lower ends h^2 of which are cut away, so as to allow the end of plate G to set under them. They prevent the end of said plate G from being displaced. On the top of said end piece is formed a horizontal inwardly-extending flange, H^3, and on the sides of said end piece, near the top are two small lugs, h^3 h^3, which are flat on top. In the middle (or near the middle) of each end piece is a detachable bearing-block, H^4, which is perforated at h^5, for a purpose hereinafter stated, and held to said end piece by a button, h^4, on the outside of said block H^4. To remove said bearing-block, turn said button diagonally. The construction of the two end pieces H H is substantially the same.

I designates the two side pieces. Their ends set in the grooves or channels between ribs H^1 H^2 of the end pieces H, and their bottoms set in the grooves or channels between rims C^2 and guide-strips C^3. Each side piece is provided near its upper corners with hooks I′, which catch over lugs h^3, and help to hold box C together. J designates the top piece of said seed-box, which rests upon said side pieces I, and the ends of which set under flanges H^3 H^3 already described.

Said side pieces are perforated at *j j* to allow perforated lugs *k k* to pass outward, so as to be engaged by hooks L L pivoted to the sides of bottom piece C^1. These lugs are

formed on the sides of a detachable transverse partition, K, which divides said seed-box into two equal portions. Said partition is perforated at k' near its bottom to serve as a bearing for the inner journals m of feeders M. The feeders are triangular in cross-section, and have their three sides curved or hollowed, as shown. Said feeders M agitate the seed in the seed-box and force it through the seeding-holes already described.

Each feeder-shaft is provided on its outer end with a spur-pinion, M′. (Shown in detail in Fig. 5.) These pinions, respectively, engage with internally-geared rings or wheels N N, which are arranged on the inside of the transporting-wheels and hung to the spokes thereof by hooks. Said rings are easily detachable from said transporting-wheels, but will not be casually displaced. They give rotary motion to said shafts.

All the parts hereinbefore described may be readily separated for convenience in storing and transportation as freight; but when secured together, as above described, their attachment is firm enough to answer all practical purposes.

Bottom piece C^1 is provided with two perforated supporting plates or brackets, O, extending obliquely downward and rearward from near the ends of said bottom piece, and the end of tongue A is provided with a perforated double plate or bracket, O′. The aforesaid plates or brackets O O′ support shafts or rods P, on which are pivoted the front upper ends of draft-bars Q separated by sleeves q. The rear ends of said drag-bars are cleft, and in each of them turns a small gear-wheel, R. S designates a series of cultivator-teeth, which are pivoted in the cleft rear ends of said draft-bars or drag-bars Q. Each of said teeth is provided with a bar, S′, extending forward from above its pivotal point, and having cogs s which mesh with said wheel R. Should a tooth come into contact with an unyielding substance, pinion or wheel R will turn sufficiently to allow said tooth to be freed, though holding it firmly enough to overcome the ordinary resistance of the soil. By means of said pinion or gear-wheel R the said tooth can be set at any angle desired.

Fig. 4 shows a modification of said cultivator-tooth, in which the forward end of arm S′ is provided with a curve-slotted upward extension, s^1, that works tightly over a pin or bolt, s^2, fixed to drag-bar Q. Both forms of cultivator tooth and attachment may be used in the same machine, if desired.

T designates two brace-bars, each of which is secured to the back of one of the two series of drag-bars Q, and provided with a staple, t, on the top of its middle portion. Through said staple passes an adjusting-lever, U, which turns loosely on one of the rods P, and is provided with a handle, U′. Each lever U catches, when in its highest position, upon one of two hooks, V V, which are fixed to bottom piece C^1. By means of these devices the cultivator-teeth may be raised out of engagement with the ground whenever desired, and locked in such position, so as to be inoperative. The feeder-shafts are journaled at their outer ends in holes h^5 of detachable bearing-blocks H^4.

Many changes may be made in the apparatus above described without departing from the spirit of my invention.

What I claim as new, and desire to secure by Letters Patent, is—

The combination of bottom piece C^1, having front and rear rims C^2 and guide-strips C^3, with perforated side pieces I, partition K, having lugs $j\,j$, and pieces H, having flanges H^1 H^2 H^3 and hooks I^1, substantially as shown and described.

In testimony that I claim the above I have hereunto subscribed my name in the presence of two witnesses.

EZRA EMMERT.

Witnesses:

HARVEY MORGAN,

HENRY E. PAINE.