(No Model.) 2 Sheets—Sheet 1.

E. EMMERT.

COMBINED SEEDER AND HARROW.

No. 345,289. Patented July 13, 1886.

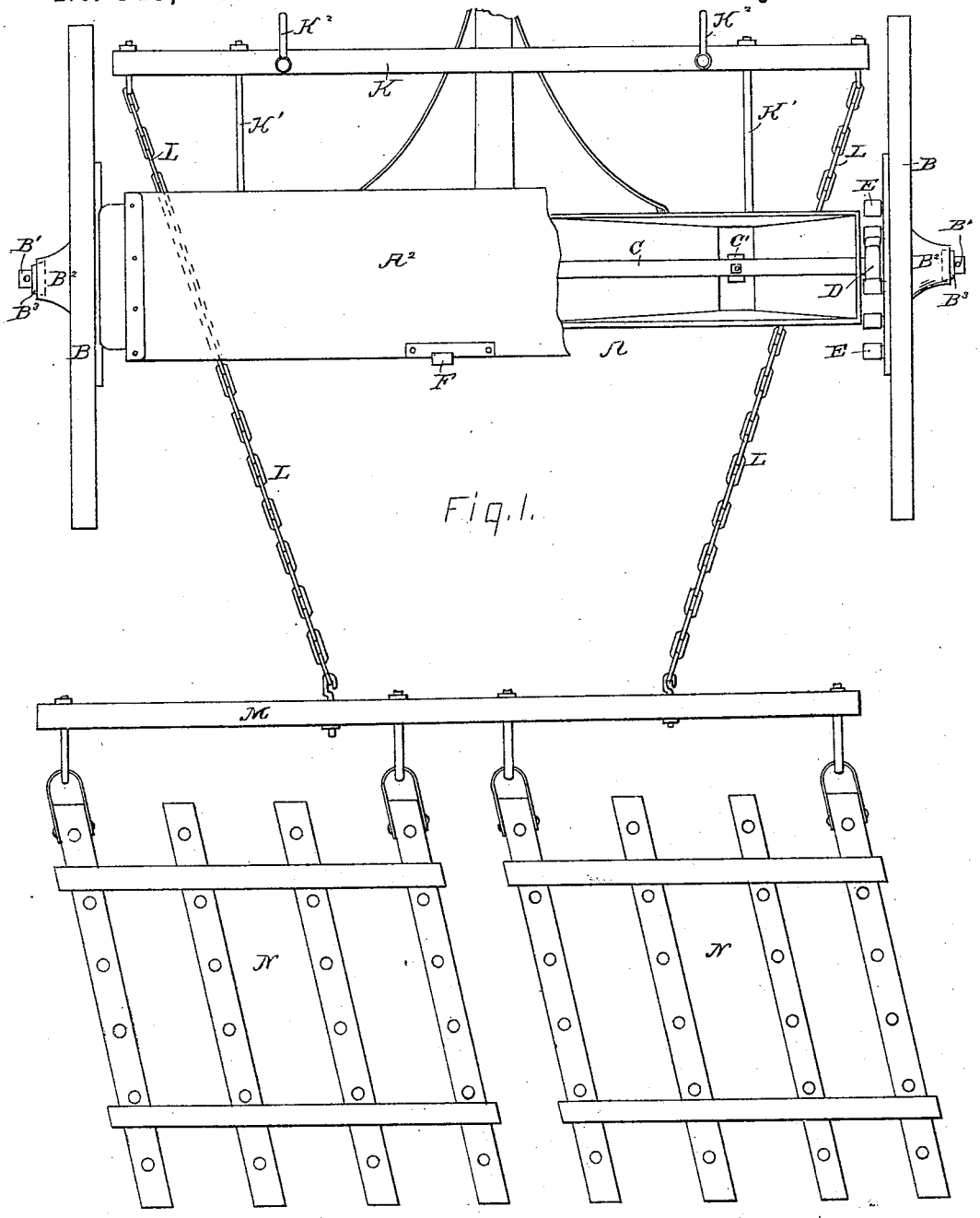

Fig. 1.

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Fig. 2.

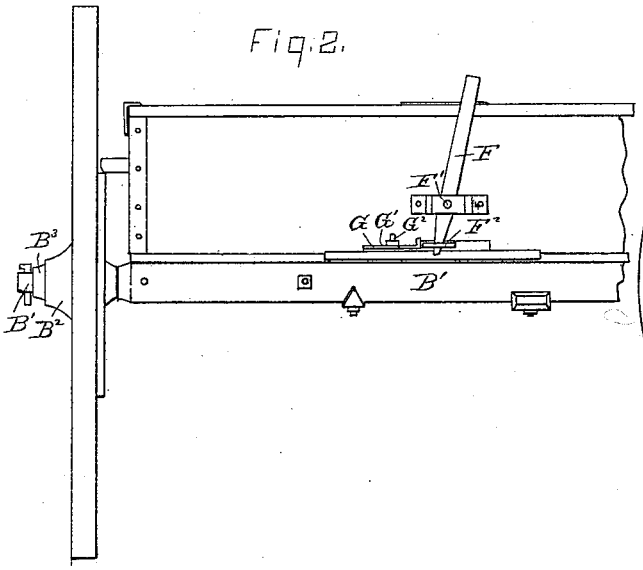


Fig. 3.

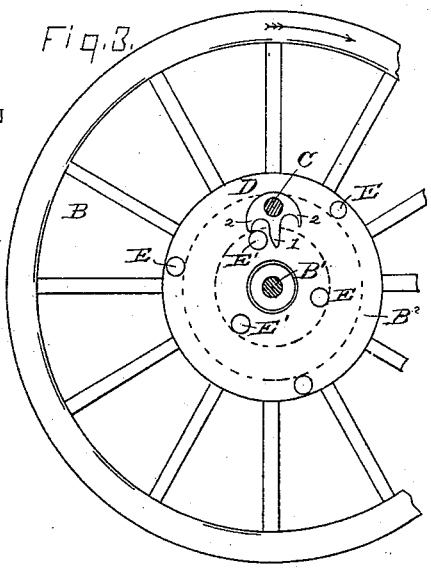


Fig. 4.

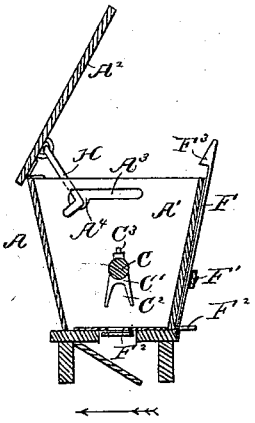
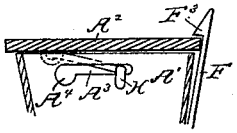


Fig. 5.



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UNITED STATES PATENT OFFICE.

EZRA EMMERT, OF DIXON, ILLINOIS.

COMBINED SEEDER AND HARROW.

SPECIFICATION forming part of Letters Patent No. 345,289, dated July 13, 1886.

Application filed November 21, 1885. Serial No. 183,569. (No model.)

To all whom it may concern:

Be it known that I, EZRA EMMERT, a citizen of the United States, residing at Dixon, in the county of Lee and State of Illinois, have invented certain new and useful Improvements in a Combined Seeder and Harrow; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters or figures of reference marked thereon, which form a part of this specification.

My invention has reference to combined seeders and harrows, and pertains more especially to a new mode of oscillating the stirring-shaft in the seed-hopper, and other improvements in the machine, hereinafter described and claimed.

In the drawings, Figure 1 is a plan view of a machine embodying my invention. Fig. 2 is a partial rear elevation thereof. Fig. 3 is a view of the inner side of the driving-wheel, showing the trip D, which is attached to the end of the stirring-shaft of the seed-hopper, and the relation of such trip to the actuating-studs formed on the inner face of such driving-wheels B. Fig. 4 is a cross-section of the center of the seed-hopper with the lid thereof raised. Fig. 5 is a cross-section of the upper portion of such hopper with the lid closed.

In its general construction my invention involves a seeder of any desired width to be drawn by two or four horses, as the width of such seeder may be more or less. Detachably connected with the rear of such seeder is a harrow of the lateral width of the seeder, composed of two or more sections, as the width desired in any instance may be.

A is the seed-hooper, supported on the axle B′ of the carrying-wheels B.

C is the usual stirring-shaft, passed longitudinally through the hopper, and provided with stirrers C′ to keep the seed-holes free from rubbish and the seed in agitation. The stirrers C′ are formed with a concave head, C^2, which fits against the lower side of the shaft C, and is held in place by means of a bolt, C^3, passed vertically upward through said stirrer and shaft and provided with a nut seated on the upper side of such shaft. The advantage of this construction is that the stirrers, in case of breakage, can be removed and others substituted without removing the shaft C. The latter shaft consists of two equal sections, each section being journaled in the end of the hopper and in a partition, A′, in the center thereof. On the outer end of each section of said shaft C, and outside of the hopper A, is rigidly attached the trip D, the latter formed with one lug, 1, extended vertically downward, and curved slightly to the rear, and side lugs, 2 2, curved downward laterally, inwardly, on each side of the lug 1.

E E E constitute the outer series of studs, and E′ E′ E′ the inner series, which project horizontally from the inner face of the carrying-wheels B, and alternately engage the trip D, and thereby oscillate the shaft C. In the outward rotation of the wheel B the inner stud, E′, strikes the lug 1 and drives to nearly the horizontal. This throws the back of one of the lugs 2 upward in position to be engaged by the next stud E, when the trip D will be driven back to its original position.

The purpose in providing two lugs, 2, is to afford means for the inverting of the shaft C in backing up, and to cause the stirrers in such backing up to project upward and suspend their operation. The advantage of this mode of oscillating the shaft C is that it results in a series of sudden impulses, which has the effect of more uniformly discharging the seed.

Hitherto difficulty has been experienced by dirt working into the open end of the hub B^2 of the wheels B, and in attempting to avoid this washers have been placed at the outer end of such hubs; but the latter have an outward taper, and the dirt and dust sliding outward on such hub sifted between the washer and hub down to and upon the spindle. To overcome this inconvenience, I have provided a sand-cap, B^3, the inner edge of which projects slightly under the outer end of the hub B^2, like the lap of a shingle roof, and descending dust from the hub B^2 falls upon the sand-cap B^3, and from the latter is thrown to the ground, and thus prevented from entering the central cavity or box of the hub.

F is a vertical lever pivoted at F′ against the rear side of the hopper A, and having its upper end adapted to be grasped, and its lower end inserted in a hole formed in the rear ex-

tension, F^2, of the usual gage-plate in the bottom of the seed-hopper. This plate has holes therein corresponding to the seed-holes in the hopper, and by moving such plate endwise the seed-holes of the hopper may be more or less closed, so as to regulate the discharge of the seed. The provision and function of this gage-plate is common, and the usual mode of gaging it was by a ratchet and spring at the upper end of the lever, corresponding to my lever F'. The defect of this mode is that the spring of such lever and the wear at its pivotal point allows some play or variation at the lower end of such lever, and as the machine is sometimes used for sowing small seeds such variation allowed to the gage-plate was objectionable. To obviate this difficulty, I provide a plate, G, having a vertical slot, G', and attached by a vertical bolt, G^2, passed through such slot to a ledge on the rear of the hopper A, and when the gage-plate is set to any desired position by moving the plate G against the extension F^2 of such gage-plate and fastening the bolt G^2 such gage-plate is held from changing its position.

The lever F is provided with the lip F^3, which engages and holds the lid A^2 of the hopper when closed.

A^2 is the lid of the hopper A, and there is pivoted to the under side thereof the folding brace H, the lower end of which is bent laterally and inserted in the slot A^3 in the partition A', and the extreme end of such brace bent slightly downward to prevent the casual withdrawal thereof. A recess, A^4, is formed in the forward end of such slot, in which, when the lid A^2 is raised, the lower end of the brace drops and supports the lid. When it is desired to close the lid, the lower end of such brace is raised from the recess A^4 and allowed to slide to the rear of such slot, as shown in Fig. 5, and the lid allowed to close.

K is the front draw-bar, attached to the machine by means of rods K', passed to the rear under and suitably attached to the axle B', and to which rods K' the hopper A can be fastened by vertical cleats, through the lower ends of which the rods K' can be passed. The draft is applied at the clevises K^2, and may consist of either two or four horses. By this mode of draft the sides of the seeder are prevented from oscillating, and are kept at right angles with the line of draft as distinguished from the lateral oscillation consequent from drawing in the usual mode by an evener pivoted on the tongue. Chains L L are attached to the respective ends of the draw-bar K, passing diagonally inward and under the axle B', and attached to the rear draw-bar, M, of the sections N. By this rearward convergence of the chains L L the sections of the harrow are caused to follow precisely the movement of the draft, and particularly in turning or moving in a circle, the harrow, instead of, as is usual, turning on a pivot, describes the arc of movement of the seeder. If preferred, the draw-bar K can also be pivoted on the tongue in the usual way.

The effect of the oscillation of the stirrers, as distinguised from their rotation, is to keep the refuse on the top of the grain, and here it can be easily removed on replenishing the seed. The rear draw-bar, M, is not indispensable, for the chains L can be connected directly to the sections N.

What I claim as my invention, and desire to secure by Letters Patent of the United States, is—

1. The combination of the stirring-shaft C, stirrers C', provided with the concave head C^2, and the bolt C^1, substantially as shown, and for the purpose described.

2. The shaft C, the trip D, provided with lugs 1 and 2, and the carrying-wheel B, provided with the two series of studs E and E', adapted to alternately engage such trip and thus oscillate such shaft, substantially as shown, and for the purpose described.

3. The combination of the lever F, hopper A, plate G, provided with the slot G', bolt G^2, and the usual gage-plate provided with the extension F^2, substantially as shown, and for the purpose described.

4. The combination of the front draw-bar, K, chains L L, and rear draw-bar, M, such chains converging toward the rear, and thus attached to the interior portion of such rear draw-bar, substantially as shown, and for the purpose described.

In testimony whereof I affix my signature in presence of two witnesses.

EZRA EMMERT.

Witnesses:

WALTER N. HASKELL,

L. P. OSGOOD.