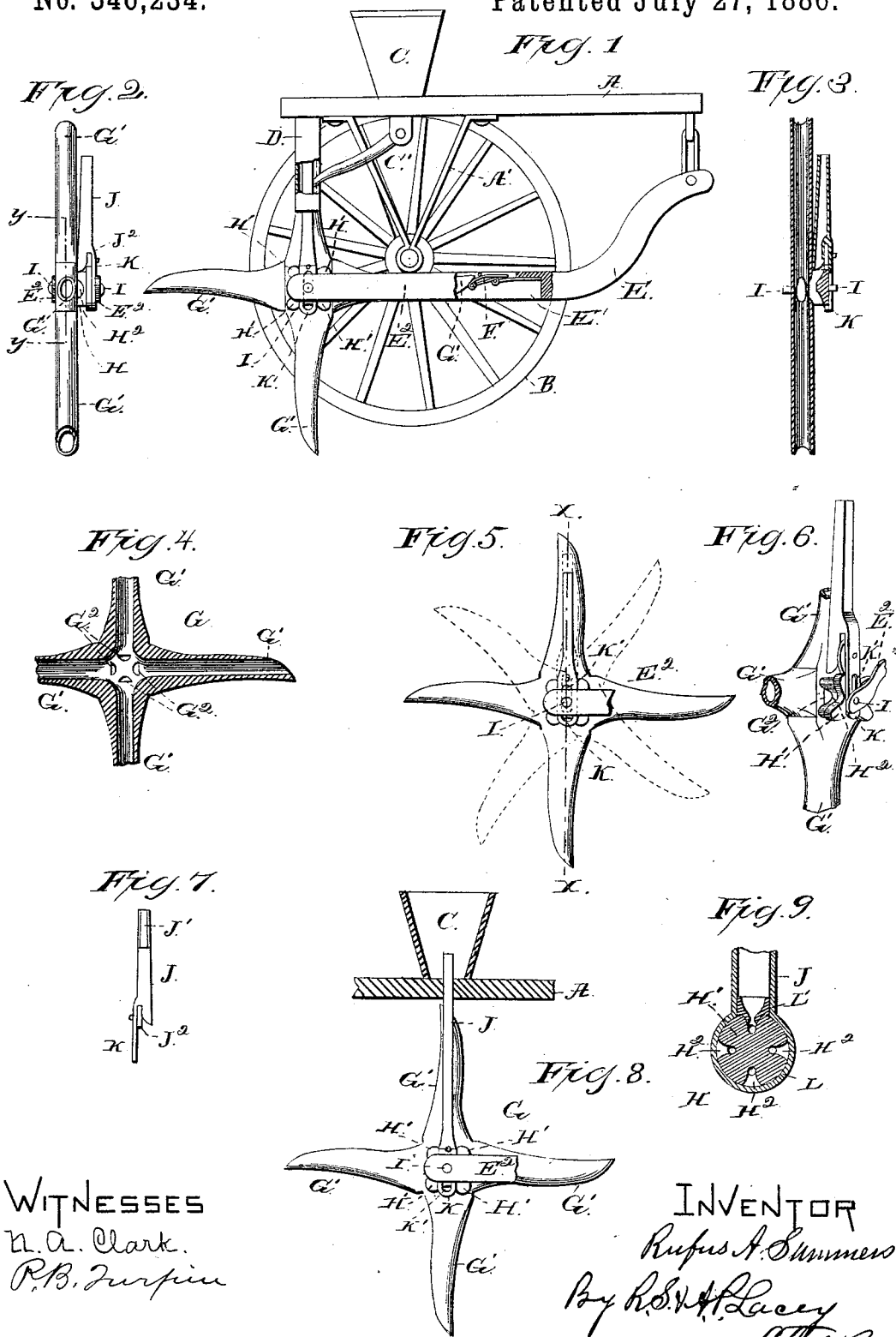


R. A. SUMMERS.

TRASH DRILL.

No. 346,234.

Patented July 27, 1886.



WITNESSES

W. A. Clark.

R. B. Turpin

INVENTOR

Rufus A. Summers

By R. B. Lacey  
att'y

(No Model.)

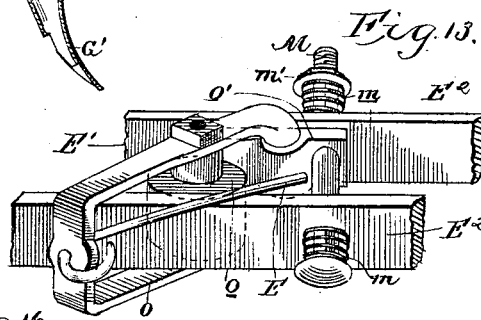
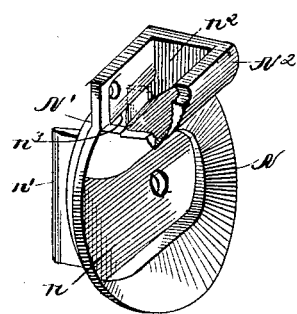
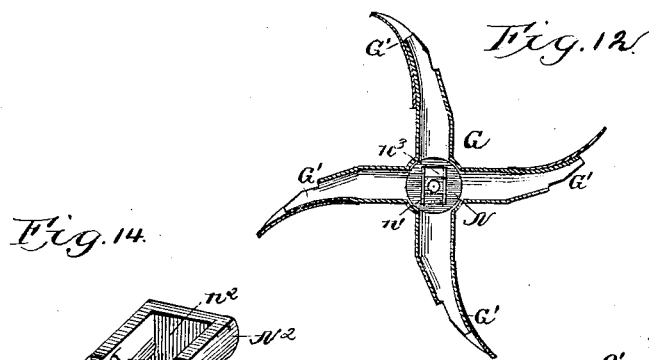
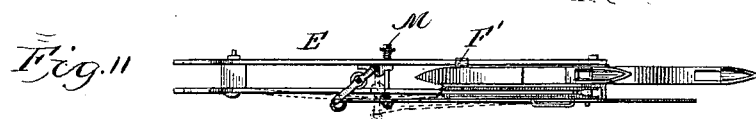
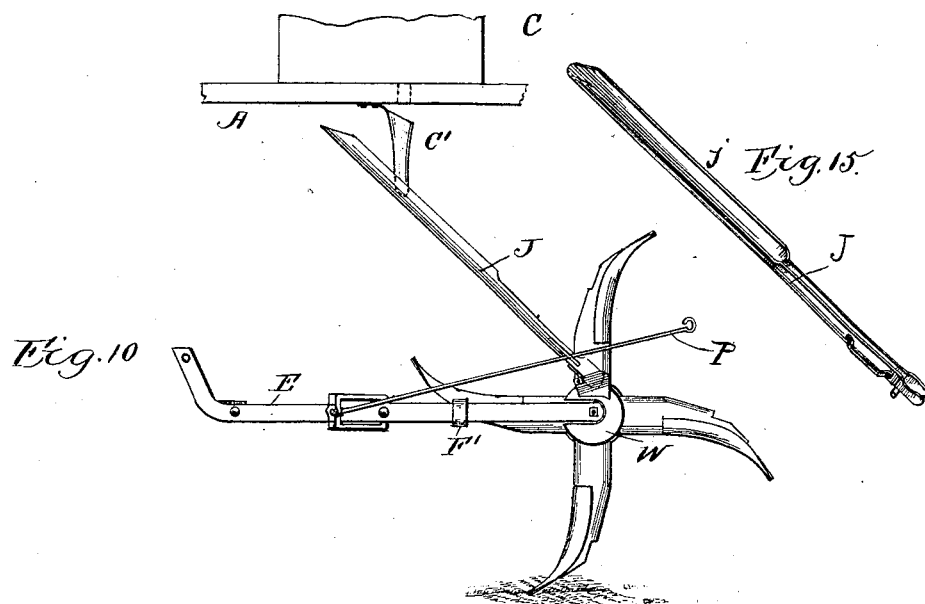
2 Sheets—Sheet 2.

R. A. SUMMERS.

TRASH DRILL.

No. 346,234.

Patented July 27, 1886.



Witnesses  
T. C. Lammie  
Mortimer Redman



Inventor;  
Rufus A. Summers  
By R. O. & A. Lacey  
attys

# UNITED STATES PATENT OFFICE.

RUFUS ARTHUR SUMMERS, OF MOUNT VERNON, ILLINOIS.

## TRASH-DRILL.

SPECIFICATION forming part of Letters Patent No. 346,234, dated July 27, 1886.

Application filed May 20, 1886. Serial No. 202,791. (No model.)

*To all whom it may concern:*

Be it known that I, RUFUS ARTHUR SUMMERS, a citizen of the United States, residing at Mount Vernon, in the county of Jefferson and State of Illinois, have invented certain new and useful Improvements in Trash-Drills, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention relates to improvements in seeding-machines; and it consists in the construction, combination, and arrangement of the several parts, as will be hereinafter more fully described and claimed.

In the drawings, Figure 1 is a side view, part in section, of a machine constructed according to my invention. Fig. 2 is a rear elevation of the revolving shovel. Fig. 3 is a vertical section thereof on about line X X, Fig. 5. Fig. 4 is a vertical section of the middle portion of the shovel on about line Y Y, Fig. 2. Fig. 5 is a detail side view of the shovel and connecting-tube. Fig. 6 is a perspective view of the shovel and connecting-tube. Fig. 7 is a front view of the connecting-tube. Figs. 8 and 9 show modifications, all of which will be described. Fig. 10 is a side view of a modified form of machine. Fig. 11 is a plan view of the same. Fig. 12 is a vertical central sectional view of the shovel, showing the hub in place. Fig. 13 is an enlarged detail perspective view of the mechanism for forcing apart the draw-bars and drawing them together. Fig. 14 is an enlarged detail perspective view, part broken away, of the cap for closing one side of the shovel and forming a hub therefor; and Fig. 15 is an enlarged perspective view of the delivery-spout. Fig. 16 is a detail cross-section taken in front of the stops.

I have shown the supporting or main frame of the machine as composed of top bar or platform, A, provided with bracket A', in which is journaled the wheel B. It will be appreciated, however, that the framing may be modified or altered without departing from the principles of my invention, which will be hereinafter disclosed.

On the platform A, I mount the seed-box C, provided with a suitable discharge-opening, below which projects the spout C', which connects with and extends into a sleeve, D, depending from the platform. The upper end of the spout may be pivoted, if desired, as

shown in Fig. 1, or it may have a fixed connection, as shown in Fig. 10. In the latter case the sleeve is dispensed with. The beam E is suitably supported at its forward end on the main frame, and its rear end is bifurcated by slot E', forming the arms E<sup>2</sup>; or it may be made of two plates E<sup>2</sup> secured together, leaving sufficient space between them for the flukes or shovels to pass through. A spring, F, may be arranged at the inner end of the slot E', or between the plates or arms E<sup>2</sup>, in such position to be engaged by the points of the flukes or arms of the revolving shovel, presently described.

Instead of the spring F, stops F' may be secured on the inner sides of the plates opposite to each other. By these means the shovel is normally held from revolving. A bolt, M, passing transversely through coincident openings in the plates E<sup>2</sup>, has springs *m* inserted between its head and the nut and the sides of the plates, respectively, for normally keeping the plates together and preventing their spreading, except under the conditions hereinafter set forth. It is desirable that the springs F and *n* have sufficient tension—the one upward, the other laterally—to hold the arm engaging with the spring or stops, respectively, and prevent the revolution of the shovel so long as normal or ordinary pressure or force is exerted against the fluke operating the ground, and at the same time permit the partial revolution of the shovel when the fluke in the ground strikes a stone, stump, or other obstruction or accumulates a quantity of trash, as will be readily understood.

The shovel G is composed of hollow arms or flukes G', preferably four in number, and arranged as shown, the adjacent ones being at right angles to each other. These flukes are hollow their full length, and the openings in the opposite flukes meet at the center, thereby forming tubular passages crossing each other at the center, as most clearly shown in Fig. 4. Holes G<sup>2</sup> are formed through the sides of the flukes close to their middle portions.

On one side of the shovel, at the middle thereof, I form a hub or lateral extension, H, and trunnions I are provided whereby to journal the shovel in the arms E<sup>2</sup>. On the outer end of the hub H, I form teeth or projections H', corresponding in number to the flukes G', and

arranged alternately therewith, so that one tooth H' will be arranged on each side of the base of each of the flukes. Depressions or receptacles H<sup>2</sup> are formed in the hub in line  
5 between the teeth H', and so arranged as to deliver grain through the openings G<sup>2</sup> into the flukes.

The central portion of one side of the shovel may be removed, leaving a circular opening,  
10 which may be closed by a cap or hub, N, overlapping the sides of the opening, and having an inwardly-projecting rim or centrally-raised portion, N', fitting within the opening and forming a bearing for the shovel to turn about.  
15 A recess, n, formed in the outerside, receives the outer end of one of the arms E<sup>2</sup>, which is seated therein, and held in place by a bolt, which, passing through the opposite sides of the shovel and the end of the other arm, forms  
20 the trunnion for the opposite side of the shovel. The inner side is provided with vertical flanges n', which register with the bore of the flukes or shovel-arms and give proper direction to the grain. An offset, N<sup>2</sup>, formed on one side  
25 near the upper edge of the cap, is hollowed out, making a receptacle or compartment, n<sup>2</sup>. An opening, n<sup>3</sup>, leading from the bottom of the compartment, and extending through the cap, communicates with the space between the flanges. The tube J communicates with  
30 the spout C' at its upper end, and its lower end extends into the receptacle H<sup>2</sup> or compartment n<sup>2</sup>. The upper end, as shown in Fig. 1, is extended into the sleeve D, and is slotted, as shown in Fig. 7, to receive the  
35 point of the spout C'. A roller, J<sup>2</sup>, is journaled in said tube in position to be engaged by the teeth H' in the operation of the device, as will be presently described. The tube  
40 J is provided on one side with an extension, K, which projects below the open end of the tube, and is provided with a slot, K', which is placed in the trunnion I. This construction serves as a guide support for the lower end  
45 of the tube. It is obvious that the tube may be supported in various ways; but I prefer the construction above described, because of its simplicity and easy operation.

In operation, when the parts are in the position shown in Figs. 1 and 10, the shovel is  
50 held from revolving so long as the fluke in the ground meets no unusual obstruction. When it strikes such obstruction, the fluke, bearing against spring F or stops F', will depress and  
55 pass the spring or force apart the arms E<sup>2</sup> and take the place in the ground of the preceding fluke. The following one engages the spring F or stops F', as will be understood. During this operation the connecting-tube is elevated  
60 by means of the tooth H' in rear of it, and is seated in the next following depression H<sup>2</sup>, as will be most readily understood from Fig. 5, in which the motions are indicated in dotted lines. The upper end of the tube, being pro-  
65 vided with elongated slot J', permits the vertical movements thereof without interfering with the action of the spout C'.

While I prefer the construction before described, it will be understood that when so de-  
sired the sleeve D and spout C' could be dis-  
70 pensed with and the spout J run directly into the grain-box, as shown in Fig. 8; or only the sleeve may be dispensed with and the spout C' have its lower end communicate with the upper end of the tube, as shown in Fig. 10. 75

In practice I prefer to connect the shovel and tube by means of parts K, having slot K' placed on the trunnion I or flanged hub-plate N. However, where so desired, the construction shown in Fig. 9 may be employed.  
80 In this figure the teeth H' are dispensed with, and the depressions H<sup>2</sup> are formed with beveled sides. The tube J has a band or collar, L, which fits around the hub H. Within the tube I arrange a short tube, L', the lower end of  
85 which fits into the receptacle H<sup>2</sup>, and is beveled on its opposite sides corresponding to the receptacles H<sup>2</sup>. This part L' is movable vertically in the tube J, and forms the lower end thereof. The operation in this case would in-  
90 volve the vertical movement of only the lower end, L', of the tube, instead of the whole tube, as in the other construction. This adjustment wou'd be affected by the revolution of the shovel, the beveled sides or receptacles H<sup>2</sup>  
95 bearing against and elevating the part L'. This construction, it will be appreciated, involves no departure from the spirit of my invention, but only modifications of form of  
100 which may be made.

The conveyer or tube J may be open on one side, preferably the upper side, to permit the attendant walking in the rear to observe the seed in its passage from the hopper to the shovel. The bore or passage j is wider near  
105 the upper end and narrower near the lower end, as most clearly shown in Fig. 15, to check the momentum of the grain and being dislodged by the jarring and up-and-down movement of the shovel. The lower end is pivotally connected with the offset N<sup>2</sup> of the cap-  
110 plate N.

In order to spread the arms at any desired turn, to permit the fluke of the shovel in the ground to turn up out of the way, a link, O,  
115 pivotally connected to one arm, extends transversely beyond the other arm, and is provided with a roller, o, for bearing on the inner side of the opposite arm when the link is turned about its pivotal connection by means of a rod,  
120 P, which extends within convenient reach of the attendant. The link is of ordinary construction, and the inner end is pivotally held within the clip o'. The roller is journaled between the arms of the link at such distance  
125 from the pivotal end that when the link is turned about said pivot the roller will contact with the opposite arm and force them apart. The springs m on the bolt M will force  
130 the arms together when relieved from outward pressure occasioned by either the link or one of the flukes in its passage between them. If the arms are sufficiently elastic, the bolt M and springs m may be dispensed with.

From the foregoing description and the accompanying drawings the operation of the device can be readily understood. However, it may be well to note that the grain is discharged from the hopper into the tube leading to the shovel in any well-known manner, the flukes of the shovel serving simply as a continuation of the conductor from the hopper to the ground.

As the mechanism for discharging the grain from the hopper is well known, and the same forms no part of the present invention, it is not shown.

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

1. In a seeder, the combination, with a rotary shovel held normal from rotating, provided with hollow arms or flukes and having a series of openings near its center or axis, of the connecting-tube having its upper end connected with and receiving grain from the grain-box, and its lower end arranged to deliver the grain into the axial openings of the rotary shovel, substantially as and for the purposes set forth.

2. The combination of the rotary shovel provided with hollow arms or flukes and having a series of openings near its middle or axis, and the connecting-tube having its upper end connected with the grain-box and its lower end connected with the axial openings of the shovel and adjustable vertically, substantially as and for the purposes specified.

3. The combination, with the rotary shovel having hollow arms, of the fixed hub-spindle for the shovel to revolve about, having a recessed offset formed on one side, provided with a passage-way for communicating with the arms, and a grain-spout for supplying grain to the recess in the offset, substantially as set forth.

4. The combination, with the hollow rotary shovel held normal from rotating, having a circular portion removed from the middle of one of its sides, of a cap provided with an annular flange fitting in said opening and forming a hub, vertical flanges on the inner side of the cap, registering with the bore of the arms, and having an opening through the cap between the flanges, and a grain-spout for delivering grain through said opening, as and for the purposes described.

5. The combination, in a seeder, of the beam

provided with a yielding stop, and the rotary tooth held normal from rotating, journaled in said beam, and provided with hollow arms or flukes and central perforations leading thereto, of the connecting-tube having its upper end connected with the grain-box and its lower end arranged to deliver grain into the axial openings of the rotary shovel, all substantially as and for the purposes specified.

6. The combination, with the arms having stops, and the rotary shovel journaled between the outer ends and provided with hollow arms or flukes, one of which engages the stops, of a link pivoted to one side of said arms, and a roller connected therewith for engaging the other arm, as and for the purposes described.

7. The combination, with the rotary shovel and the axle thereof journaled in a suitable support, of the hollow connecting-tube having its upper end connected with the grain-box and its lower end arranged to deliver grain into the rotary shovel, said tube being formed at its lower end with a slot placed over the axle of the shovel, substantially as and for the purposes set forth.

8. The combination, with the rotary shovel having hollow arms and perforations  $G^2$ , and provided with the hub or axial extension  $H$ , formed with teeth  $H'$ , and receptacles  $H^2$ , communicating with the perforations  $G^2$ , of the connecting-tube, having its upper end connected with the grain-box and its lower end arranged to deliver grain into the receptacle  $H^2$ , and a roller,  $J^2$ , journaled at the lower end of the connecting-tube in position to be engaged by teeth  $H'$ , substantially as described, and for the purposes specified.

9. The combination, in a seeding-machine, of the revolving shovel having hollow arms, the grain-box, the spout  $C'$ , the sleeve  $D$ , and the connecting-tube having its upper end projected into sleeve  $D$  and its lower end arranged to deliver grain into the arms of the shovel, all substantially as and for the purposes specified.

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

RUFUS ARTHUR SUMMERS.

Witnesses:

JOHN LIBENGOOD,  
I. ISAACS.