(Model.) 2 Sheets—Sheet 1.

J. L. RITER.

Force Feed for Seeding Machine.

No. 234,335. Patented Nov. 9, 1880.

Fig. 1.

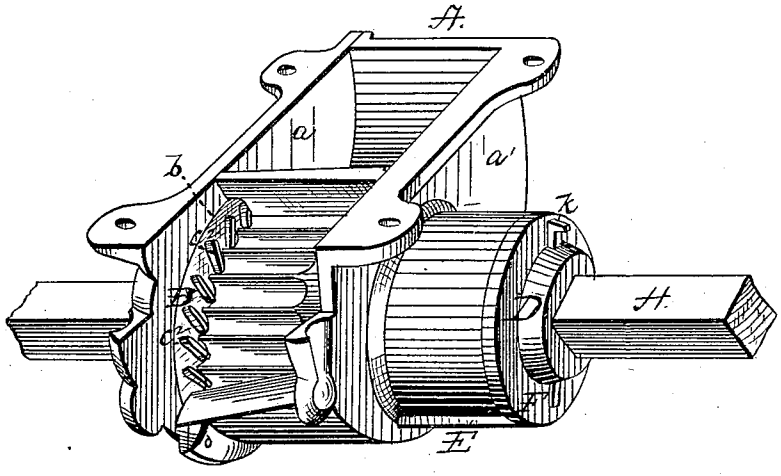


Fig. 2.

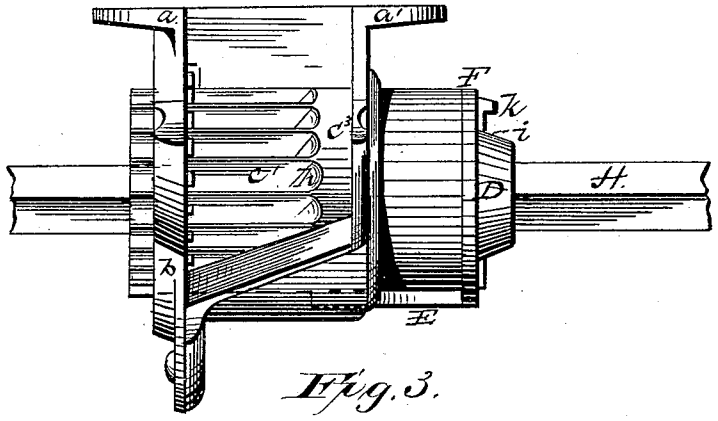
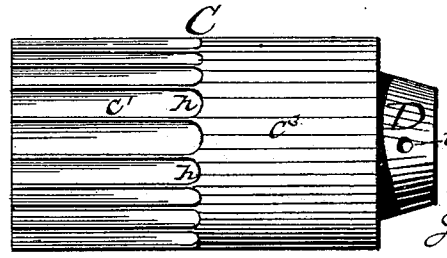


Fig. 3.



Witnesses.
Frank L. Ourand
Jas' H. Clark.

Inventor:
John L. Riter
by Hyltmunt Kaus
Attys

N. PETERS, PHOTO-LITHOGRAPHER, WASHINGTON, D. C

(Model.) 2 Sheets—Sheet 2.

J. L. RITER.

Force Feed for Seeding Machine.

No. 234,335. Patented Nov. 9, 1880.

Fig. 4.

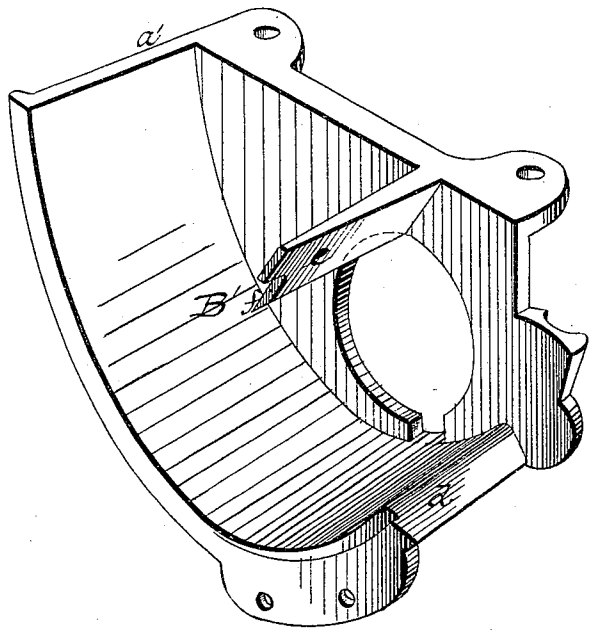


Fig. 5.

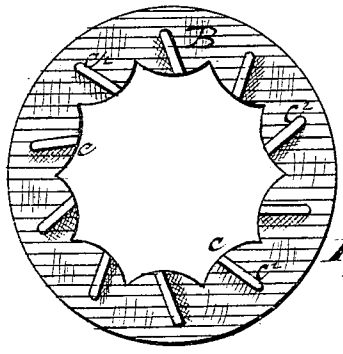


Fig. 6.

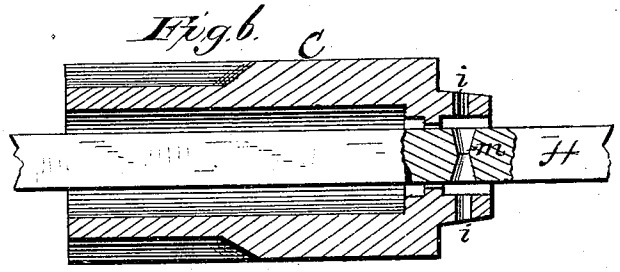


Fig. 7.

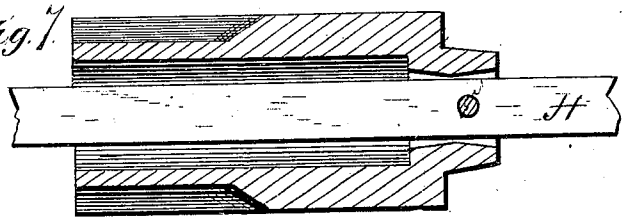
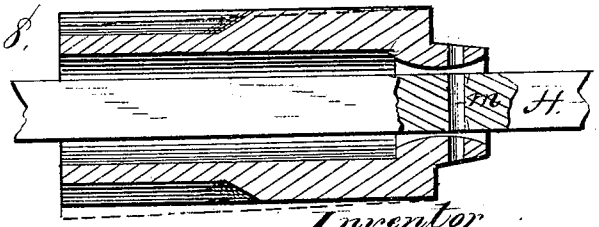


Fig. 8.



Witnesses.
Frank L. Durand
Jas. H. Clark.

Inventor.
John L. Riter
by Haylmann & Kane
Attys.

N. PETERS, PHOTO-LITHOGRAPHER, WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

JOHN L. RITER, OF BROWNSVILLE, ASSIGNOR OF ONE-HALF TO SYLVESTER SCOFIELD AND JOHN L. GILCHRIST, OF CONNERSVILLE, INDIANA.

FORCE-FEED FOR SEEDING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 234,335, dated November 9, 1880.

Application filed July 31, 1880. (Model.)

To all whom it may concern:

Be it known that I, JOHN L. RITER, a citizen of the United States, residing at Brownsville, in the county of Union and State of Indiana, have invented certain new and useful Improvements in Force-Feeds for Seeding-Machines; 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 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 relates to that subdivision of the class of seeding-machines which are known as "force-feed;" and the objects are to provide an easily-operated and effective force-feed, and to permit a slight tilting or oscillating movement of the feed-wheel while in the seed-cup, to prevent binding in its bearings in the seed-cup, and generally to perfect and improve this class of machines.

Heretofore a feed-wheel having scalloped and smooth portions of the same diameter, and straight ribs on an annular rose, has been employed; but in practice it discharges the seed in lumps, thereby destroying the uniform and continuous feed.

My feed-wheel differs in the curved scallops and obliqued or inclined ribs arranged on the rose, which extend to the bottom or deepest portion of the scallops, whereby the seed is regularly subdivided in the respective seed-cavities and lifted gradually for a continuous discharge from the seed-cup.

My improvement therefore consists in the combination, with a feed-wheel, of an annular ring or rose-washer having upon its inner or grain face a series of obliqued or inclined ribs or projections extending within the seed-chamber of the seed-cup to more evenly deliver the seed.

My invention also consists in combination, with a feed-wheel having the scalloped or fluted and smooth portions of the same diameter, of a notched annular ring or rose-washer having upon its inner or grain face a series of obliqued or inclined ribs or projections, which is passed over the said scalloped portion of the feed-wheel, whereby the feed-wheel is adapted to have an endwise movement and impart a rotary motion to said ring to produce a combined vertical and horizontal feed.

My invention also consists in combination, with a feed-wheel having a scalloped or fluted and smooth portions of the same diameter and a rose-washer or annular ring having upon its inner face a series of obliqued or inclined ribs, of a single cut-off with a collar operating between the inner face and bottom of the seed-cup and the smooth portion of the feed-wheel.

My invention also consists in combination, with the obliqued or inclined discharge-orifice of the seed-cup, of a rose-washer or annular ring having upon its inner or grain face a series of obliqued or inclined ribs in connection with a horizontal feed for discharging the seed from the seed-cup at the lower end of the inclined discharge-orifice.

My invention also consists of a feed-wheel having its scalloped or fluted and the smooth portions of the same diameter, the said scalloped and smooth portions being united by an inclined plane or planes extending from the base of the scallops to the face of the smooth portion of the feed-wheel, in combination with the scalloped rose-washer, having at its inner or grain face inclined or obliqued ribs, whereby a very small or divided feed can be obtained.

My invention also consists in a feed-wheel having a bearing formed by a swell angular or circular formation, so that it shall journal at the smallest diameter on the drive-shaft, in combination with a fastening-pin having its bearing in an aperture in the drive-shaft, whereby an oscillating or tilting movement is permitted to the feed-wheel to obviate binding.

My invention also consists in the combination of parts and the details of construction, as will be hereinafter more fully described and specifically claimed.

Figure 1 is a perspective view of my improved force-feed for seed-machines. Fig. 2 is a rear view of the same. Fig. 3 is a side view of my improved feed-wheel. Fig. 4 is a perspective view of one of the sections of the seed-cup.

Fig. 5 is a plan view of the rose-washer, showing the arrangement and inclination of the ribs more fully. Fig. 6 is a longitudinal sectional view of the feed-wheel, showing a swelled bearing in the hub portions of the feed-wheel and the same fitted on a drive-shaft over a hole in the same. Figs. 7 and 8 are modification views of the same.

In the annexed drawings, forming a part of this specification, the letter A represents the casing or seed-cup of the force-feed, cast in two sections, *a a'*. The section *a* is formed with an annular recess, *b*, of sufficient depth on the inner surface of the section surrounding an opening for the passage of the fluted portion of the feed-wheel. Within this annular recess *b* is arranged the annular ring or rose-washer B, of a thickness corresponding with the depth of the said recess, so that the vertical wall of its inner face shall be flush or even with the inner wall of the seed-chamber. This annular ring or rose-washer, through which the feed-wheel slides, and which regulates the size of the seed-space, is provided with a series of notches, *c*, corresponding in number, size, and form with the scallops or flutes on the feed-wheel. The feed wheel, hereinafter to be described, extends through the central opening in this ring, fitting within the notches in the ring in such a manner as to prevent the escape of any seed at this point, and that the feed-wheel is caused to rotate the annular ring or rose-washer, and also to have an endwise movement or adjustment within said rose-washer. This rose-washer is also provided on its inner or grain face with a series of obliqued or inclined ribs, c^2, in contradistinction to the vertical ribs, which discharge the seed in lumps, extending in the directions substantially as shown in Figs. 1 and 5 of the drawings. By this arrangement of the obliqued or inclined ribs I am enabled to center and run them to the bottom or deepest portion of the scallops, so as to subdivide the quantities of seed in the respective seed-cavities or flutes at the vertical feed and to lift the seed gradually on the incline surfaces and discharge the same in a continuous stream from the seed-chamber of the seed-cup. The other section, *a'*, of the seed-cup (see Fig. 4) is formed with the floor B' terminating at its discharge end in an inclined or obliqued face, *d*, and near its upper end with a horizontal gate, *e*, cast therewith. The object of this gate is to prevent the escape of any seed from the seed-cup or casing between the top of the feed and the bottom of the hopper, to which the seed-cups are secured. One end of this gate is notched or cut away at *f* for the free passage of the inclined ribs or projections on the revolving rose-washer. These sections are also provided with the usual attaching-lugs, by which the lower portions of the sections are secured by rivets, and they are also formed with openings or apertures to receive the feed-wheel and its cut-off, substantially as seen in the drawings.

The feed-wheel C is composed of the scalloped or fluted portion *c'*, forming seed-cavities, and the smooth portion c^3, both being of the same diameter. These two portions of the feed-wheel are formed with inclined portions, *h*, at the junction, extending from the base of the scallops or flutes to the periphery or face of the smooth portion of the feed-wheel, substantially as shown in Fig. 3.

By this construction of a feed-wheel I am enabled to get a complete adjustment of the scalloped portion of the feed-wheel, and a very small feed of seed—for example, flax-seed, which may be sown in small quantities, a half-bushel to the acre.

This fine feed is accomplished when the feed-wheel has received an adjustment to its smallest capacity, by means of the seed riding upon the smooth portion of the feed-wheel and then descending the inclined or curved portions *h*, between the two main portions of the feed-wheel, and coming in contact with the obliqued or inclined ribs of the rose-washer, where the seed is lifted from the seed-chamber of the seed-cup upon the obliqued or inclined ribs and gently forced out over the lower end of the inclined discharge-orifice. I am also enabled by this construction of the feed-wheel with a hub, D, at the smooth end, to use only one cut-off bearing, E, of the same length as the smooth portion of the feed-wheel, operated between the inner face and the base or bottom of the casing near the discharge-orifice, substantially as shown in Figs. 1 and 2 of the drawings. This cut-off E is attached to a collar or sleeve, F, which fits or works over the hub at the end of the feed-wheel in such a manner that the hub is permitted to revolve freely within the same without disturbing the cut-off.

The feed-wheel, with its hub, collar, and cut-off, are secured by a single pin or screw, *k*, passed through the perforation *i* in the hub portion of the feed-wheel, substantially as shown in several of the figures.

It will be observed, by reference to Figs. 6, 7, and 8 of the drawings, that the hub portion of the feed-wheel is formed with swelled angular or circular bearings, so that it shall journal at the smallest diameter on the drive-shaft H, in connection with the pin securing the same. This pin may fit snugly in the bearings in the hub, and play in the bearing *m* in the drive-shaft, or the pin may fit snugly in the drive-shaft and play in the bearings in the hub or collar, or the pin may play in the drive-shaft and hub or collar, so that the smooth portion of the feed-wheel will not bind in its bearing in the seed-cup. Should the seed-cups be not in a straight or direct line, and the apertures in the drive-shaft for the reception of the fastening-pin, with its bearing at or near the middle of the drive-shaft, an oscillating or tilting motion will be permitted to the feed-wheel to adjust its seed-cups, or the bearings in the drive-shaft may be beveled or flared, as shown

in Fig. 6, or straight, as shown in Fig. 8, and the bearing in the hub of the feed-wheel may be made, as shown in Figs. 6, 7, and 8, to accomplish substantially the same result.

It is evident that the feed-wheel, secured to the drive-shaft by the pin, will revolve with the drive-shaft, even if the face of the drive-shaft does not bear against the inner face of the bearings of the hub of the feed-wheel.

By this method of attaching the parts, as hereinbefore described, by a single pin, it can be readily removed for repairs should any obstruction get into the seed-cup and damage the feed.

By this arrangement of obliqued or inclined ribs or projections on the inner or grain face of the ring or rose-washer and the scalloped or fluted surface of the feed-wheel I am enabled to secure a combined vertical and horizontal feed, which will subdivide the lumps or banking of the seed within the scallops and cause a continuous discharge of seed in front of the cut-off over the inclined or obliqued discharge-orifice of the seed-cup. The ribs on the inner face of the rose-washer may be inclined in an opposite direction, as seen in Fig. 5, to produce substantially the same result.

I claim the right to change the details of construction of some of the parts without materially departing from the spirit of my invention.

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

1. In combination with a feed-wheel, a collar or rose-washer having upon its inner or grain face a series of obliqued or inclined ribs, for the purpose hereinbefore described.

2. A rose-washer having upon its inner or grain face a series of obliqued ribs, in combination with a feed-wheel having the scalloped and smooth portions of the same diameter, substantially as described.

3. A rose-washer having upon its inner or grain face a series of obliqued ribs, in combination with a feed-wheel having its scalloped and smooth portions of the same diameter, and a cut-off operating between the inner face of the bottom of the seed-cup and the smooth portion of the feed-wheel, said cut-off being attached to a washer that operates upon a hub at the end of the feed-wheel, substantially as described.

4. A rose-washer having upon its inner or grain face a series of obliqued ribs, in combination with the obliqued or inclined discharge spout or orifice of the feed-cup, substantially as described.

5. A feed-wheel having its scalloped and smooth portions united by inclined planes, and a rose-washer having on its inner face obliqued or inclined ribs, in combination with an inclined or obliqued discharge spout or orifice in the seed-cup, substantially as described.

6. A swelled or curved bearing in the hub of the feed-wheel, in combination with a square drive-shaft having a bearing for a pin that secures the feed-wheel, cut-off, and shaft together, substantially as described.

7. The section *a'* of the seed-cup, having cast therewith, at its upper end, a horizontal gate, notched at one end for the free passage of the ribs on the rose-washer, in combination with the feed-wheel, substantially as set forth.

8. The combination of the square drive-shaft H, feed-wheel C, with hub D, cut-off E, with collar F, and fastening-pin *k*, substantially as and for the purposes set forth.

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

JOHN L. RITER.

Witnesses:
J. M. YZNAGA,
JAS. H. CLARK.