2 Sheets—Sheet 1.

W. G. BARNES.

SEEDING-MACHINE.

No. 179,149. Patented June 27, 1876.

Fig. 1.

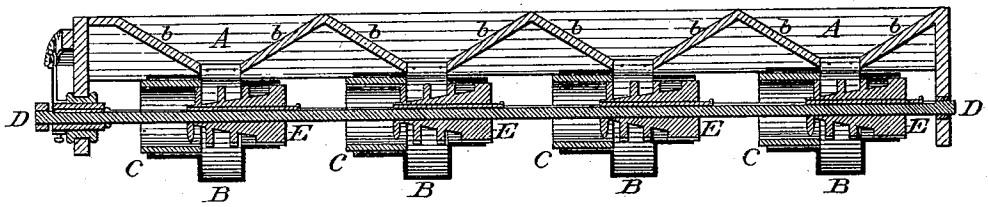


Fig. 2.

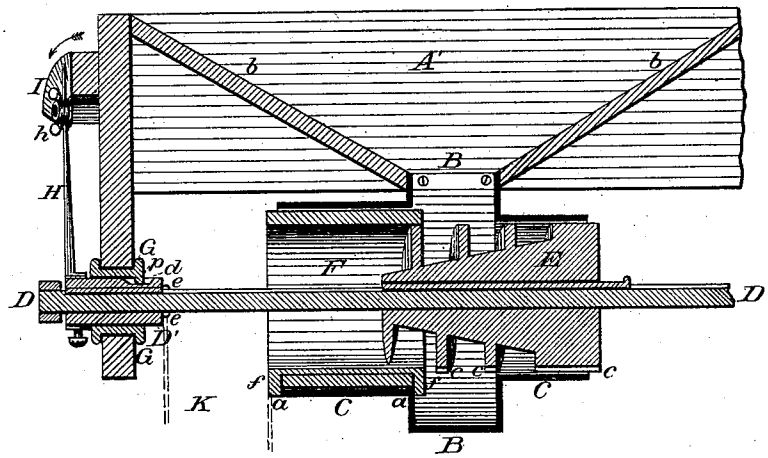
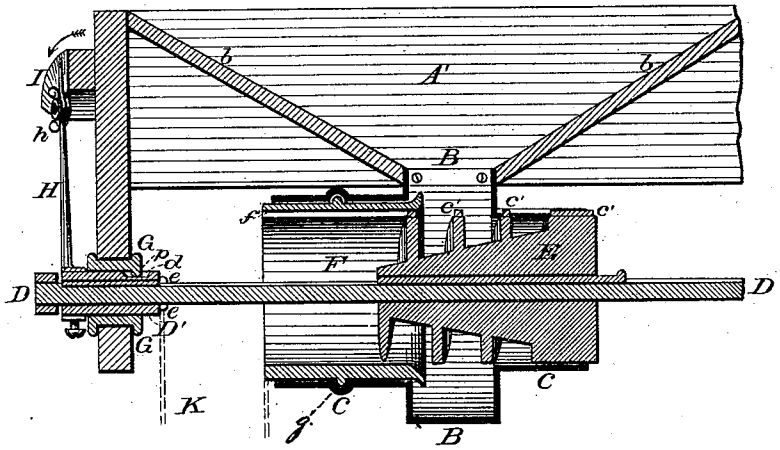


Fig. 3.



Attest:

Wm. Bagger.

M. F. Boyle

Inventor:

Walter G. Barnes,

by Louis Bagger

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2 Sheets—Sheet 2.

W. G. BARNES.

SEEDING-MACHINE.

No. 179,149. Patented June 27, 1876.

Fig. 4.

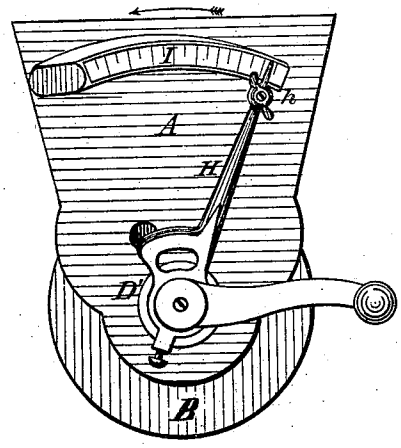


Fig. 5.

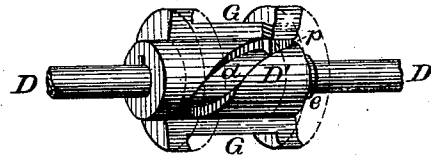


Fig. 6.

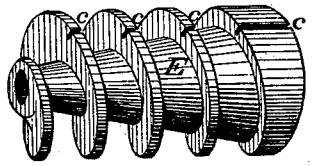


Fig. 7.

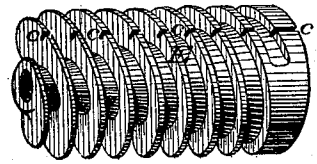
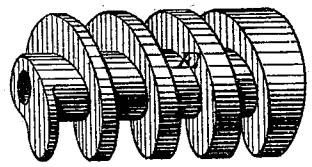


Fig. 8.



Attest:

Wm. Bagger.

M. F. Boyle

Inventor:

Walter G. Barnes,

by Louis Bagger

Att'y.

UNITED STATES PATENT OFFICE.

WALTER G. BARNES, OF FREEPORT, ILLINOIS.

IMPROVEMENT IN SEEDING-MACHINES.

Specification forming part of Letters Patent No. **179,149**, dated June 27, 1876; application filed March 31, 1876.

To all whom it may concern:

Be it known that I, WALTER G. BARNES, of Freeport, in the county of Stephenson and State of Illinois, have invented certain new and useful Improvements in Seeding-Machines; and I do hereby declare that the following is a full, clear, and exact description thereof, which 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 the letters of reference marked thereon, which form a part of this specification, and in which—

Figure 1 is a longitudinal section of the seed-box of a seeding-machine having my improvement. Fig. 2 is a section of Fig. 1 on an enlarged scale. Fig. 3 is a similar view, showing certain modifications in the details of construction. Fig. 4 is an end view of the seed-box. Fig. 5 is an enlarged perspective view of the device for adjusting the operating shaft detached; and Figs. 6, 7, and 8 represent various forms of the screw feeding device, to be hereinafter more fully described.

Similar letters of reference indicate corresponding parts in all the figures.

This invention relates to that class of seeding-machines in which the seed is forced into the drills or scatterers by a screw-cylinder rotating within a feed cup or case; and it consists in the construction and combination of parts whereby this form of feed may be used without cutting, crushing, or otherwise injuring the grain, while, at the same time, it may be readily gaged so as to control the quantity of grain to be delivered, substantially as hereinafter more fully set forth, and pointed out in the claims.

In the drawing, A is the seed-box, and A′, Figs. 2 and 3, represents an enlarged section of the same. This box is provided with hoppers B, slanting boards or conductors *b* being arranged inside of the box for the purpose of conducting the seed into the hoppers, in the usual manner. C is a cylindrical case, open at both ends, which intersects the hopper B at right angles, parallel to the bottom of the seed-box A above. D is a shaft, having its bearings at each end of the seed-box, and passing longitudinally through the centers of the cylindrical cases C and hoppers B. E is the feeding device, which consists of a screw of an exterior diameter equal to the interior diameter of the cylindrical cap F, which is keyed onto and revolves with the propeller-feed E, in the manner hereinafter described. The exterior diameter of the cap F is equal to the interior diameter of the cylindrical case C, within which it, with the propeller E, revolves when the shaft D, to which E is keyed, rotates.

The propeller-feed E is a screw of double or single thread, so constructed that the space between the threads gradually decreases from one end to the other. This may be accomplished in various ways — for instance, by making the body of the screw taper, as represented in Fig. 6, so as to gradually reduce the depth of the spaces between the threads from the point of the taper to its base; by gradually increasing the thickness of the screw-threads on a cylindrical body, and thereby, in the same proportion, reduce the width of the spaces between them, as in the screw represented in Fig. 8; or by a combination of these two principles, as shown in Fig. 7.

That end of the propeller E where the open space between its threads is greatest is introduced into the cylindrical cap F, to which it may be secured by a key, *f*, of the construction shown in Fig. 2. This key consists of a pin, of equal thickness throughout its length, having two upward projections, which fit into slots *a*, made in each end of the hollow cylindrical cap F, opposite to each other. These projections abut against both the edges of that part of the cylindrical case C within which the cap F is inserted and revolves, thereby, it will be observed, preventing lateral motion of said cap.

The threads of the propeller E are slotted longitudinally at *c*, and these slots, which are all on a line, are so arranged that they, when the propeller is keyed onto the shaft D, shall be just opposite to and on a line with the longitudinal pin *f*. One or more of the slots *c* will therefore always, when the end of the propeller E is inserted within cap F, fit over and slide upon pin *f*, which projects from the under side of cylindrical cap F into said slots *c*, so that the propeller E and cap F will rotate together.

It will further be observed that by this con-

struction the propeller E is enabled to slide within the cap F, while the latter is prevented from moving laterally within the case C by the projections at each end of pin *f*, in the manner stated. Instead of preventing the cap F from moving laterally by means of a pin, *f*, as shown in Fig. 2, this may be accomplished in various other ways. In Fig. 3, the case C has a circumferential raised flange or shoulder, denoted by *g*, and the cap F is provided with a circumferential raised ridge or rib on the outside, that fits into the circular flange *g*, and prevents lateral motion of the cap.

Instead of slotting the threads of the screw-feed E, as represented in Figs. 6 and 7, these may be provided with projections *c'* that fit into a longitudinal groove, *f'*, on the interior of cap F, as shown in Fig. 3, this being merely to reverse the construction shown in Fig 2. Sometimes it is desirable to provide the cap F with a lip-orifice or flaring mouth, as represented in Fig. 3, so as to allow the grain to pass more freely in under the cap when propelled by the screw E, and prevent it from striking against the edge thereof.

Affixed upon one end of shaft D is a solid cylinder, D', grooved spirally at *d*. (See Fig. 5.) This cylinder forms the journal or bearing for that end of shaft D upon which it is affixed, the shaft D having circumferential flanges or shoulders *e* abutting against its ends, so that when the cylindrical bearing D' is moved in the line of its axis the shaft D and propeller E will move with it and in the same proportion. The cylinder D' slides within a tubular case or bearing, G, which is provided within an inward-projecting pin, *p*, that fits into the groove *d*, thus causing the cylinder D' with the shaft D to slide in their bearings at each end of the seed-box when cylinder D' is rotated.

H is a lever, secured upon the end of cylinder D'. The top or point of this lever forms an index, pointing to ciphers on a scale, I, which is affixed upon the end piece of the seed-box, as represented in the end elevation, Fig. 4. H is a thumb-screw operating a clamp or catch, which fits in under the metallic plate upon which the scale is marked, so that the index or lever H may be secured upon scale I in any given position or opposite to any given number.

By this arrangement it will be observed that by moving lever H forward or backward on the scale the cylinder D', shaft D, and propeller E will slide in the direction of their axes, and their position may be fixed at any one point by simply securing the lever to the scale. The shaft D, passing through cylinder D', will rotate without regard to the position of said cylinder, propelled by pinions and gear-wheels affixed to its end in the usual manner.

It is obvious, however, that, instead of the device for adjusting the driving-shaft D with the feed-propellers E, laterally, which I have just described, any other suitable mechanism, that will effect a similar result, may be substituted, this being only one of several methods by which the same object may be accomplished.

The feeding-propeller E is keyed onto its shaft D in such a manner that when the index-lever H is in the position represented in Fig. 4, the most open part of the propeller—or that part where the open spaces between the threads are largest—will rest within the hopper B. As the indicator is moved along the scale in the direction of the arrow the propeller is gradually moved or slid forward into the case C, bringing its more solid portions into the hopper, until, when lever H has reached the opposite end of the scale, the most compact or solid part of the propeller, or that part where the open spaces between its threads are smallest and of least capacity, occupies the hopper. The quantity of grain which the hopper will hold is, of course, gaged by the position of the propeller, which will admit a greater or smaller quantity, according to the position it is in, and the propeller may be readily adjusted in any given position within the hopper by the index-lever H, in the manner described.

Each section of the machine being provided with a hopper, B, feed-case C, propeller-feed E, and protecting-cap F, all operated by a common shaft, D, and index H, the operation of my improved screw-force feed will be readily understood. The respective propellers having been adjusted simultaneously to admit a certain quantity of grain (which is indicated on the scale I) from the hoppers, the grain will be screwed out through the cap F into the spouts or scatterers K on the same principle as an auger in revolving throws out its chips. The cap F, which covers the delivery end of, and revolves with, the propeller, prevents the screw from cutting or injuring the grain in its passage through it.

The advantages of my invention are: great simplicity and durability of construction; the grain cannot become cut or bruised in its passage from the seed-box, through the feed, into the delivery-spout; the quantity of grain in the hopper is gaged readily and with absolute certainty; the feed can never become choked or clogged up, as the revolutions of the screw forces the grain through; and my improved screw-force feed will deliver the grain more evenly, as to quantity, into the spouts; consequently, when it drops onto the scatterers, it makes a more even distribution of grain onto the ground, thereby enabling parties using the machine to raise a better crop. In the machine using this form of feed, as heretofore constructed, the grain, in passing out, is apt to become cut or bruised by passing between the revolving screw and stationary seed-cup, thereby not only causing great waste by rendering a portion of the seed unfit for use, but choking up the narrow space between the projecting screw-threads

and surrounding case or seed-cup, so as to greatly impede or entirely stop the operation of the machine; but by my invention these serious drawbacks are entirely overcome, because the machine feeds from the side through the rotating delivery-cap F, which delivers the seed uninjured directly into the spouts or scatterers.

Having thus described my invention, I claim and desire to secure by Letters Patent of the United States—

1. A screw-feed for grain-drills or seeding-machines, consisting essentially of the revolving screw-propeller E, laterally adjustable upon the driving-shaft D, and provided with a cylindrical rotating delivery-cap, F, mounted within the cup or case B C, so that the screw may be adjusted laterally within said case and cap F for the purpose of regulating the feed, the whole being constructed and combined to operate substantially as herein shown and specified.

2. The combination of the laterally adjustable and revolving screw-propeller E, with the rotating cylindrical delivery-cap F, through which the grain is fed into the spouts or scatterers, substantially as and for the purpose hereinbefore set forth.

3. The combination of the laterally adjustable and revolving screw-propeller E, and rotating cylindrical delivery-cap F, with the hopper B and case C, so as to feed the grain from the hopper through the cap F, and discharge from the side of the cup or case C, substantially as and for the purpose herein shown and specified.

4. In combination with the cup or case C, the rotating hollow delivery-cylinder F, fitting tightly within said cup or case, so as to prevent the seed from being forced in between it and the inside of its surrounding stationary case, substantially as and for the purpose hereinbefore set forth.

5. In a force-feed for grain-drills or seeding-machines, a seed cup or hopper, B, in combination with a vertically-rotating and laterally-adjustable feed wheel or propeller, E, fitting tightly within a cylindrical lateral elongation, C, of said seed cup or hopper, and projecting into the cylindrical rotating delivery-cap F, mounted within a similar lateral cylindrical elongation of the hopper B opposite to that in which the force-feed E is mounted, substantially as and for the purpose hereinbefore set forth.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in presence of two witnesses.

WALTER G. BARNES.

Witnesses:

L. W. GUITEAU,

JNO. B. TAYLOR.