J. F. STEWARD.

GRAIN DRILL.

APPLICATION FILED JULY 12, 1909.

953,982.

Patented Apr. 5, 1910.

Fig. 5

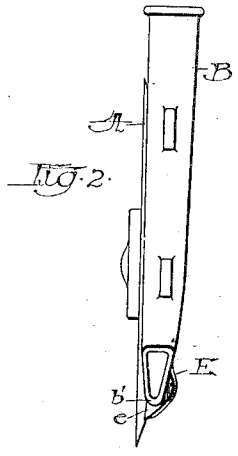

Fig. 2.

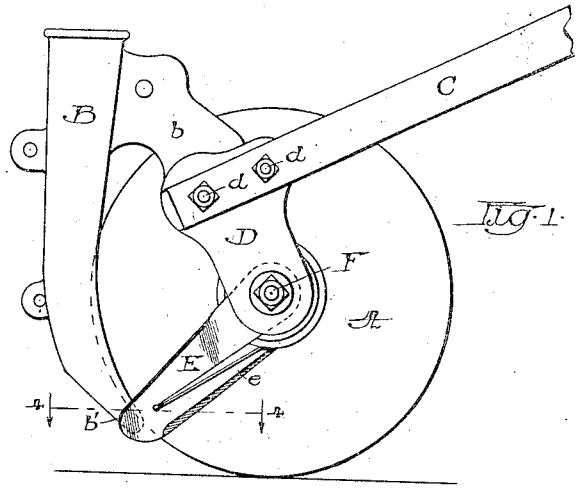

Fig. 1.

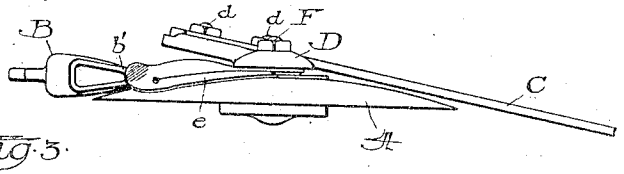

Fig. 3.

Fig. 4.

Witnesses.
F. W. Hoffmeister.
H. J. Farmer

Inventor.
John F. Steward.

UNITED STATES PATENT OFFICE.

JOHN F. STEWARD, OF CHICAGO, ILLINOIS, ASSIGNOR TO INTERNATIONAL HARVESTER COMPANY, A CORPORATION OF NEW JERSEY.

GRAIN-DRILL.

953,982. Specification of Letters Patent. Patented Apr. 5, 1910.

Application filed July 12, 1909. Serial No. 507,032.

To all whom it may concern:

Be it known that I, JOHN F. STEWARD, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Grain-Drills, of which the following is a full specification, reference being had to the accompanying drawing.

This invention relates particularly to scrapers for disks of seed drills, and its object is to so shape and associate the boot and scraper relative to the disk as to result in a thorough scraping effect and leave free space between it and the lower end of the boot. Preferably, I permit the lower end of the boot to be spaced a little distance apart from the disk.

Figure 1 is a side elevation of my invention as I have seen fit to embody it, showing the preferred position of the scraper and preferred form for the lower termination of the boot; Fig. 2 is a rear elevation of the same parts; Fig. 3 shows the parts of Fig. 1 as viewed from beneath; Fig. 4 is a section of the parts of Fig. 1 as shown on the line 4—4 of Fig. 1; Fig. 5 is a perspective view of the scraper alone.

A is the disk of an ordinary seed drill shown, in this instance, as of the concavo-convex form.

B is the boot and C the drag bar. As embodied, the drag bar is secured to the disk bearing bracket D and, by means of the bolts *d* that secure it to the drag bar, the forwardly extending arm *b* of the boot is also secured.

All parts of the device shown follow a common form of construction except the scraper E and, preferably, the lower end of the boot b^1. It is preferable that the lower end of the boot shall not form a point directed forwardly, but, on the contrary, be rounded downward and backward so that shreds of roots and grass shall be passed over by it rather than permitted to accumulate. I deem it better to place the lower end of the boot a little distance from the disk in order that there may be space for the passage of roots and shreds of grass that might otherwise accumulate, and extend the scraper from near the center of the disk downward and backward, throwing its lower edge practically in contact with the disk, but its upper edge some distance away from the disk. The general plane of the scraper is outward and downward from the disk, and its lower end is deflected away from the boot. Thus providing a space between the scraper blade and the toe of the boot, no pocket is left in which shreds of grass or roots may accumulate. I do not extend the scraper to the lower end or "toe" of the boot, as to do so would in part defeat the object of my invention, but extend it some distance backward of the toe of the boot and its extreme end portion somewhat lower than the toe of the boot.

Another object in providing space between the toe of the boot and the lower end of the scraper is to permit free elastic movement of the scraper, which could not result if the lower end of the scraper extended to and contacted with the boot.

Because of the difficulty in manufacturing the disks, they seldom rotate truly, but, on the contrary, wabble to some extent. This wabbling action occurs at center or circumference, or both, and hence I find it desirable to so make the scraper that its end nearest the axis of rotation of the disk, as well as that portion near the circumference of the disk, may have elastic contact during the entire rotation. In order to accomplish this result I gash it as shown in Fig. 1, leaving the lower portion *e* as one piece with the upper portion E, the two being left united at the rear end. I find it less expensive to make the scraper in this manner than to make it in two parts, securing E and *e* together by rivets or otherwise.

F is the axial bolt of the disk support. It is preferable to secure the upper end of the scraper between the part D and the disk, although it may be secured to D or any substitute therefor in any suitable manner.

Constructing my scraper as I do, the lower end is permitted freedom of movement laterally to conform to wabbling disks by the elastic yielding of the metal along the length of the portion E that is above the cleft, and lower portion *e* that is below the cleft is permitted to yield at its point nearest the center of the disk because of the elasticity within itself.

The scraper is made of metal sufficiently thick to maintain its position without any control other than at its point of attachment, whether actually coincident with the center of the disk or otherwise. Thus con-

structed of metal sufficiently strong to maintain its own position, and being thrown a little distance from the toe of the boot, the latter can in no way affect its action.

I wish to draw a distinction between my scraper and those which are secured to the toe of the boot or contact with the toe of the boot in order that their position may be maintained, or fit in notches in the toe of the boot, or lie between the toe of the boot and the disk; in short, my scraper may be distinguished from those mentioned by its absolute freedom from control of the boot.

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

1. In combination, a disk, a boot and a scraper, the latter extending from near the center of the disk to a point near its circumference, its lower end outside of the lower end of the boot and deflected outwardly therefrom and thus uncontrolled thereby.

2. In combination, a disk, a boot and a scraper, the latter so placed as to scrape from near the center of the disk to a point near its circumference, and consisting of plate metal of such thickness as to give suitable elasticity to all parts of its scraping edge and cleft from its end of attachment to its support to a point near its rear and lower end, whereby not only the lower and rear end of the scraper may be permitted to yield elastically, but by such partial cleft the part of the scraping edge nearest the center of the disk may be free by its elastic movement to conform to the surface of the disk.

3. In combination, a boot, the lower end of which is rounded downwardly and rearwardly, a scraper so placed as to scrape the disk from near its circumference to a point nearer its center and consisting of plate metal of such thickness as to give suitable elasticity to all parts of its scraping edge and cleft from its end of attachment to its support to a point near its rear and lower end, whereby not only the lower and rear end of the scraper may be permitted to yield elastically, but by such partial cleft the part of the scraping edge nearest the center of the disk may be free by its elastic movement to conform to the surface of the disk.

4. In combination, a disk, a boot and a scraper, the said scraper suitably secured and extending from near the center of the disk downwardly and rearwardly from its place of securement, its upper edge outside of the lower end of the boot and so separated therefrom as to leave a clearance space between itself and the boot and its lower edge so deflected as to contact with the disk.

5. In a seed drill, in combination with a boot, a disk support and a disk, a scraper consisting of a plate having a cleft beginning at its supported end and extending to a point near the unsupported end, the support adapted to sustain the active edge of the scraper in its operative position relative to the disk.

JOHN F. STEWARD.

Witnesses:
F. W. HOFFMEISTER,
D. E. LOCKERT.