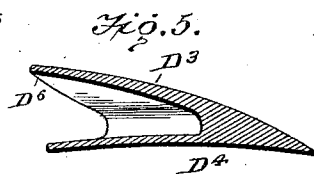
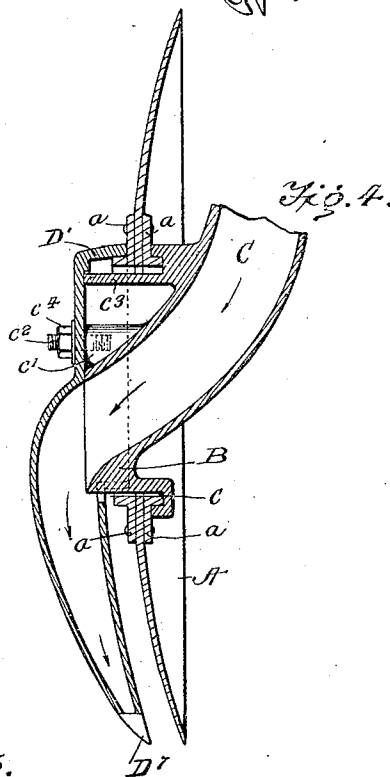
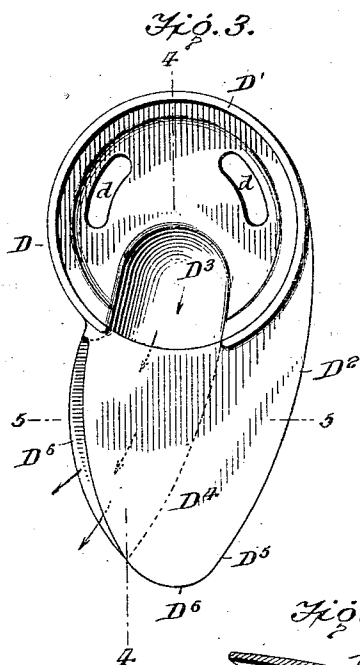
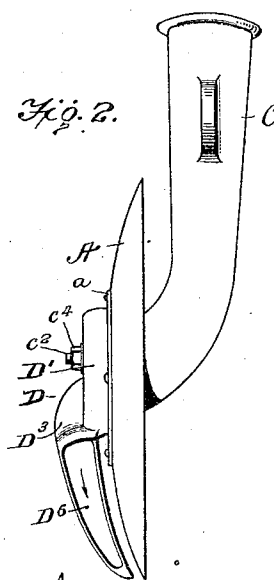
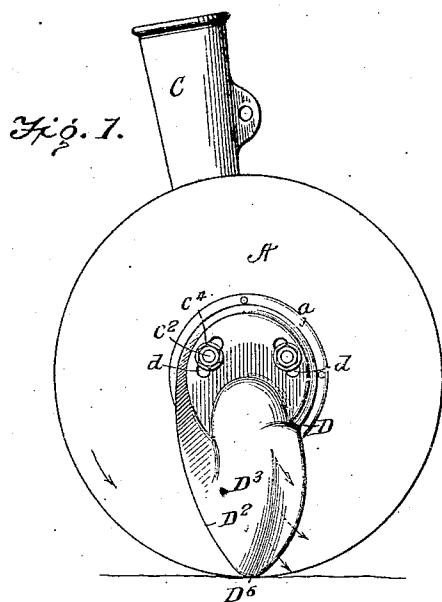


N. L. HECKMAN.
 COMBINED DISK AND SHOE SEEDING DEVICE.
 APPLICATION FILED SEPT. 3, 1908.

943,406.

Patented Dec. 14, 1909.



WITNESSES

L. H. Schmidt.
 J. S. Brock.

INVENTOR
 NOAH L. HECKMAN,
 BY *Wm. L. Co.*
 ATTORNEYS

UNITED STATES PATENT OFFICE.

NOAH L. HECKMAN, OF MARION, INDIANA.

COMBINED DISK AND SHOE SEEDING DEVICE.

943,406.

Specification of Letters Patent.

Patented Dec. 14, 1909.

Application filed September 3, 1908. Serial No. 451,475.

To all whom it may concern:

Be it known that I, NOAH L. HECKMAN, a citizen of the United States, and a resident of Marion, in the county of Grant and State of Indiana, have invented certain new and useful Improvements in Combined Disk and Shoe Seeding Devices, of which the following is a specification.

My invention relates to improvements in combined disk and shoe seeding devices, and has for its object to produce a device in which the lower seed conduit or shoe forms a part of the furrow opener and deposits the seed at the periphery of the disk.

This device is designed as an improvement on the seeding device for grain drills forming the subject-matter of United States Patent No. 716,774.

In the drawing Figure 1 is a side elevation of a disk and the shoe on the outside of the disk. Fig. 2 is a rear elevation of same. Fig. 3 is an inside face view of the shoe detached from the disk. Fig. 4 is a vertical section through the disk, upper and lower conduits. Fig. 5 is a horizontal section taken on line 5—5 of Fig. 3.

In carrying out my invention a concavo-convex disk A is preferably used having a central opening to each side of which are bolted the flanged rings *a, a*, as shown in Fig. 4, which form boxings; said boxings fit into the hub B. The upper conduit C passes through the hub and discharges into the shoe D at the convex side of the disk A; said upper conduit is provided around its lower end with an annular groove *c* into which the disk is seated and is also provided with two internally threaded posts *c'*, *c'* into which are screwed bolts *c''* by means of which the shoe D is adjustably held to place; said shoe is provided on its inner face at its upper end with a circular flange *D'* which fits over one of the flanged rings *a* said shoe being held off from the hub by a spacer flange *c''* projecting outwardly from the upper conduit said flange being integral with said conduit. By means of the slots *d, d*, through which the bolts *c''*, *c''* pass and by the nuts *c''*, *c''* which are screwed on said bolts, the shoe can be swung in an arc of a circle. Said shoe consists as shown in the upper portion or hub *D'* and the lower portion *D''* which forms the lower conduit of the seeding device; said lower conduit is formed by the bulged out portion *D''*, which forms the outer wall of the conduit and the slightly

curved portion *D''* which forms the inner wall of the conduit, said inner wall lying adjacent to the outer face of the concavo-convex disk. The forward edge *D''* of the shoe which is curved as shown in Fig. 1 is closed, while the rear edge *D''* is open for a portion of its extent, the opening communicating with the lower conduit and forming the outlet for the same.

The inner wall or face of the shoe forms a shield or deflector which keeps trash from accumulating between the disk and the lower seed conduit, distributes the grain evenly and does not allow the same to bunch. The shoe D also acts as a furrow opener and deposits the seed at the periphery of the disk. As stated by means of the slots *d, d*, the shoe which constitutes the lower seed conduit can be moved in an arc of a circle thereby permitting the seed to be dropped into the ground at a greater or less depth without additional pressure, and also permits the dropping of the seed in a wide or narrow seed bed as desired without moving or changing the position of the upper conduit, and without additional pressure or draft.

The shoe D by virtue of the slots *d d* has an adjustment of about three (3) inches forward and rearward at the extreme lower end; now by placing D forward as far as possible the seed will be deposited in bottom of seed bed at axle center before any soil falls on the seed; by moving D rearwardly as far as possible, which will be three (3) inches, thus allowing soil to fall in furrows while disk is revolving from axle center, three inches rearward, which makes a difference in deposit of seed of one inch in depth by practical test. The same adjustment applies to the narrow and wide seed bed by depositing the seed at axle center before any soil falls in the furrow, a narrow seed bed is made; by moving D rearward allowing the soil to fall in furrow while disk is revolving three inches makes a wider seed bed. The extreme lower point *D''* is preferably about five-eighths of an inch lower than the point where the grain is discharged, thus making the seed bed for the deposit of seed. The closed shoe or lower conduit it will be seen deposits the seed at axle center and bottom of the disk.

I claim—

1. In a seeding device a disk, a hub secured thereto and provided with a passage therethrough, an upper conduit located on one

side of the disk and communicating at its lower end with the passage through the hub, and an inclosed lower conduit or shoe having a rounded lower end and located at the opposite side of the disk, the upper end of said inclosed conduit communicating with the passage through said hub, said lower conduit closed at its lower end and having a rear discharge opening above the lower periphery of the disk.

2. In a seeding device, a disk, a hub secured thereto and provided with a passage therethrough, a lower seed conduit comprising a closed shoe having its lower end closed and rounded and having a discharge opening at its rear, said shoe communicating at its upper end with the passage through the hub, and means for adjustably securing said lower seed conduit to the hub whereby the lower conduit may be moved in an arc and held.

3. A combined seed dropping shoe and furrow-opener consisting of a disk and a hub, the shoe consisting of inner and outer walls connected at their front edges and at their lower ends and separated at their rear edges to form a discharge opening, said lower end being rounded, and said hub having a passage communicating with the interior open space of the shoe at its upper end.

4. A combined seed dropping shoe and furrow opener consisting of a disk and hub having a passage therethrough and a lower conduit comprising front and rear walls connected at their front and lower edges, the

said lower edge being curved, the rear edges of the front and rear walls being separated at a point above their lower edge to form a rear discharge opening for said lower conduit.

5. A combined seed dropping shoe and furrow-opener consisting of a disk having a hub having an opening therethrough forming the upper portion of a seed conduit, the shoe forming a lower seed conduit and comprising an inner wall curved to correspond to the curvature of the disk and a bulged outer wall, said lower conduit communicating with the hub portion and formed on a curve to discharge rearwardly.

6. A combined seed dropping shoe and furrow-opener consisting of a disk and a hub having an opening therethrough forming an upper seed conduit, the shoe forming a lower seed conduit and comprising an inner wall curved to correspond to the curvature of the disk and a rearwardly curved outwardly bulged outer wall forming a rearwardly curved seed conduit, the inner and outer walls being separated at their rear edge and the front edge of the shoe being curved and sharpened, said lower conduit communicating with the passage through the hub portion.

NOAH L. HECKMAN.

Witnesses:

Wm. H. TROOK,
D. M. ERVIN.