(No Model.) 2 Sheets—Sheet 1.

W. STEPHENSON.

SEED DRILL DISK SHOE.

No. 588,027. Patented Aug. 10, 1897.

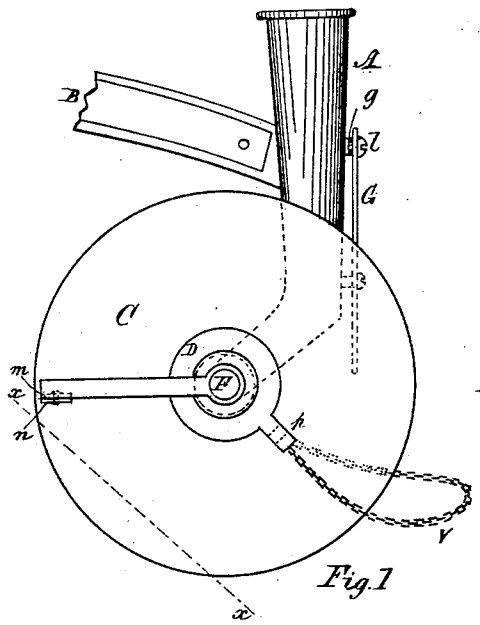


Fig. 1

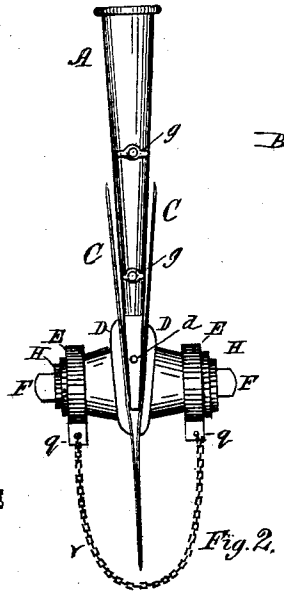


Fig. 2.

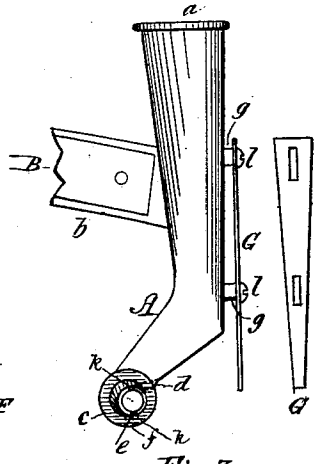


Fig. 3.

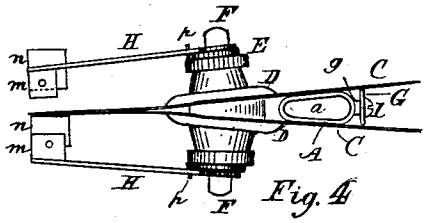


Fig. 4

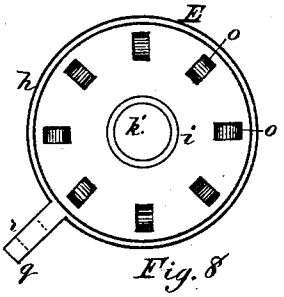


Fig. 8

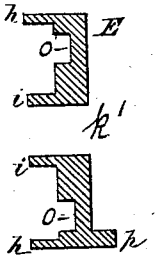


Fig. 9.

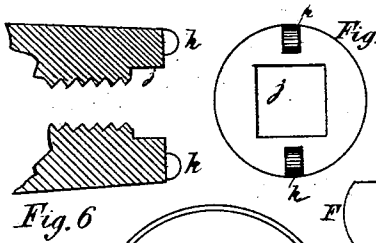


Fig. 6

Fig. 7.

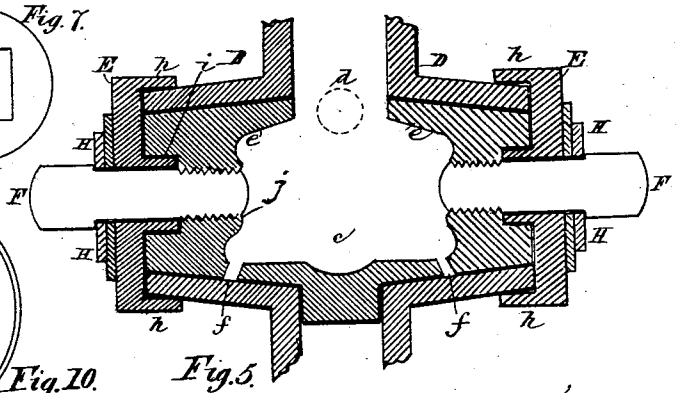


Fig. 5.

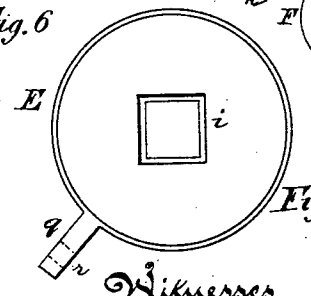


Fig. 10.

Witnesses
Ab. Turnbull
J. D. Turnbull

Inventor.
Wm. Stephenson
By W. Bruce
Atty

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

(No Model.) 2 Sheets—Sheet 2.

W. STEPHENSON.

SEED DRILL DISK SHOE.

No. 588,027. Patented Aug. 10, 1897.

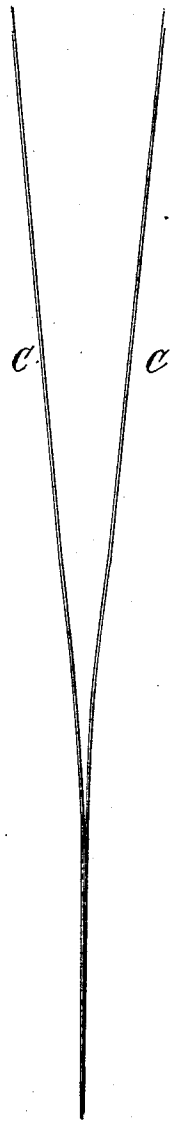


Fig. II.

Witnesses.
A. B. Turnbull
J. D. Turnbull

Inventor
Wm. Stephenson.
By W. Bruce
Atty

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

WILLIAM STEPHENSON, OF MORRIS, CANADA.

SEED-DRILL DISK-SHOE.

SPECIFICATION forming part of Letters Patent No. 588,027, dated August 10, 1897.

Application filed August 17, 1896. Serial No. 603,022. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM STEPHENSON, a citizen of the Dominion of Canada, residing at Morris, in the Province of Manitoba, Dominion of Canada, have invented certain new and useful Improvements in Seed-Drill Disk-Shoes; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same.

The objects of the invention are to provide a simpler, a more efficient mechanism, having reference to certainty of operation in all conditions of soil, and, further, to improve the several combinations of parts concerned in performing the functions of grain-drills.

To the accomplishment of these objects my invention consists in the parts and several combinations of parts hereinafter described and claimed.

In the accompanying drawings, Figure 1 represents a side view of a grain-drill shoe embodying my invention. Fig. 2 is a rear view of the same. Fig. 3 is a side view of the grain-spout detached. Fig. 4 is a top view. Fig. 5 is a vertical section of the axle caps and fastenings. Fig. 6 is a vertical sectional view of one end of the axle. Fig. 7 is an end view. Fig. 8 is an inside view of one of the caps which fits over the end of the axle, showing a round central projection. Fig. 9 is a vertical section of the same. Fig. 10 is another inside view of the cap, showing a square bur on the center. Fig. 11 is an end view of the disks enlarged or nearly full size.

The grain-spout.—The grain-spout is cast in the shape shown at A. Fig. 1 embraces a grain-chute, a draw-bar lug *b*, an oil-chamber *c*, an inlet *d* to it, and a tapering hollow axle *e* on each side of the oil-chamber *c* with an outlet-hole *f*, the latter being for the purpose of allowing the oil to run out of the axle and any dirt that might get into the axle and hub to be washed out. A draw-bar B is bolted to the lug *b* for attaching to the grain-drill and operates above the top of the disks out of the way. Two lugs *g g* are cast on the rear of the spout A, to which to secure a central scraper G, made to pass down between the disks. *k k* are small lugs cast on the ends of the axles to receive corresponding notches *o* in the cap E to prevent the latter from turning, as will be further explained hereinafter.

The disks.—The disks C C are about twelve inches in diameter and made of thin spring-steel plate from Nos. 17 to 19 gage, straight on the inside and thin enough to spring inward with pressure caused by the shape of the axles and the washers D coming against the hub. The cutting edge of the said disks come together at the desired place for about seven inches in length around the circumference, the center of the cutting edge being about forty-five degrees from the center of the axle, as shown from the intersection of the dotted lines *x x*, Fig. 1, with the disk. These disks C C as constructed are placed on the axles *e e* of the spout A, the latter being tapered downward to admit the disks coming together at the bottom, and the axles being set a little forward and the screws tightened on the caps on the ends of the axles the requisite pressure is brought to bear on the disks to make their inner straight face to bend inward until they touch or come together for seven inches to form a cutting edge, as hereinbefore described. The said disks C C are held onto the axles *e e* by means of caps E E, provided with an annular rim or flange *h* to fit over and cover the ends of the axle, as shown at Figs. 2, 4, and 5, and a central projection *i* to enter an enlargement of the opening *j* in the end of each axle *e*. The inner portion of the said opening *j* is threaded and a corresponding threaded cap-screw F is made to pass through the central hole *k'* of each cap E and screw into the threaded axle, as shown at Fig. 5.

Scrapers.—Three scrapers are attached to the drill-shoe as follows: A central one, G, is secured by set-screws *l l* to the lugs *g g* on the grain-spout A on the rear side. It is tapering in form and made to pass down between the disks and so remove any dirt that may cling to the inside of the disks, cleaning both disks at the same time. There are two adjustable reversible side scrapers H H, which are affixed to the caps E by the cap-screws F F passing through them and held in a horizontal position. The ends of the scrapers are bent over to form a small termination *m*, to which is pivotally riveted a toe-plate *n*, which is made to spring against the outer side of the disks to keep them free from soil during the operation of the machine, as

shown by the one on the under side of the disks in Fig. 4, while the upper one in the same figure shows the toe-plate reversed out of the way of the disks when not required to act on the disk, as in very dry ground, &c. Figs. 1 and 4 show the two said scrapers in a horizontal position, but means are employed to adjust them to other desired positions on the side of the disks. For this reason two lugs *k k* are cast on the ends of the axles (see Fig. 6) and corresponding recesses *o* made in the interior of the caps E, into which the said lugs *k k* of the axle ends fit and prevent the caps from turning. At the same time by loosening the cap-screws F the caps and side scrapers H H can be set at any angle different from the horizontal one shown.

It may be observed that I may make the projection *i* on the inside of the cap round, as shown at Fig. 8, or square without recesses, as shown at Fig. 10. In the latter case the mouth of the screw-openings *j* in the axle are made square to receive the corresponding caps.

p is a pin or projection cast on the outer side of the caps E for the purpose of allowing the scrapers to rest upon them and prevent them from turning around with the disk.

q is a projection cast on the lower side of the caps E, having a hole *r* through the same, so as to afford a simple and easy means of attaching a chain *v*, which will drag behind the disks to cover the seed as it is deposited from the seed-drill.

To sum up the advantages of my improvements, it will be seen that my construction of disks being made straight on the inside, of thin steel, and pressed close together at the cutting portion about seven inches gives a longer cutting edge, which makes easier draft, closer bottom, dirt less liable to get between the disks or stick so much on the outside, and capable of working in all conditions of soil. The oil-chamber being between the disks, and its inlet and outlets so arranged that the axles are always uniformly and continuously lubricated, enable the parts to perform their functions with ease, at the same time any dirt that may enter the journals is washed out at the end of the hubs. The side scrapers being made adjustable and reversible when not required is an important advantage not seen in other drill-shoes.

The means employed of oiling the axles is simple, but very effectual in enabling the machine to operate to the best advantage.

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

1. In a seed-drill, in combination with a supporting tapering grain-spout provided with tapering axles, of two thin spring-disks formed straight on their inner surface in their normal position, and sprung close together in front to form a long cutting edge of at least seven inches, instead of a point, when pressure is brought to bear on them for their operating position, substantially as described.

2. In a seed-drill the caps E formed with a central annular projection *i*, and recesses *o*, to engage with the lugs *k k*, to prevent the caps from turning with the side scrapers, substantially as specified.

3. In combination with the caps E, E, of the projection *q* on the lower part of each provided with a hole in which to fasten the ends of a covering-chain, and the projection or pin *p*, on the outer side to support the side scrapers respectively, substantially as specified.

4. In a seed-drill the combination of the grain-spout A having the oil-chamber *c*, and forward tapering axles, spring-disks C, C, secured to threaded axles by set-screws F, F recessed caps E, E, projections *k*, *k*, on the ends of the axles, side scrapers H, H, secured by the said cap-screws to the axles of the grain-spout, all constructed substantially as and for the purpose specified.

Dated at Hamilton, Ontario, this 24th day of March, A. D. 1896.

WILLIAM STEPHENSON.

In presence of—

WM. BRUCE,

WM. HALLIDAY.