J. HOWLAND.

Seed-Planters.

No. 151,490. Patented June 2, 1874.

Fig. 1.

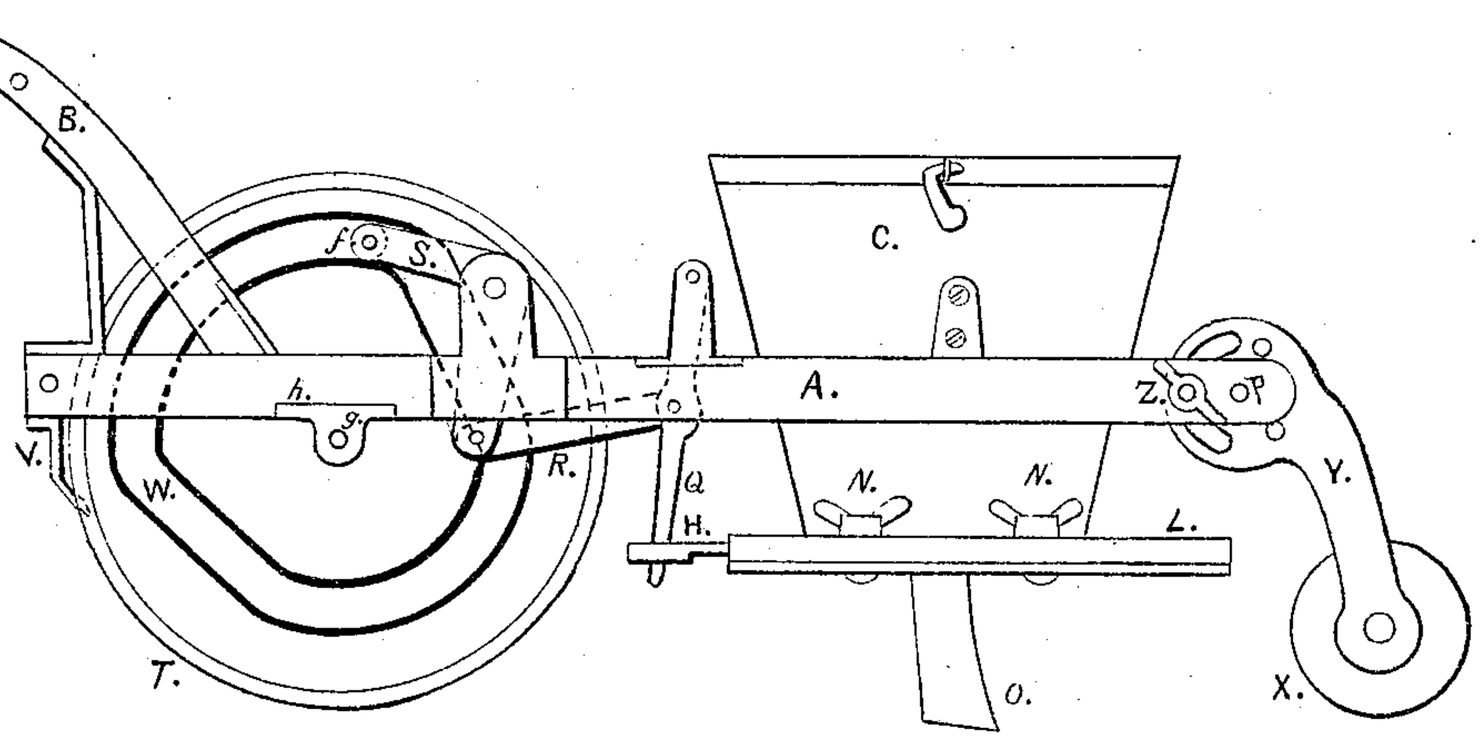


Fig. 4.

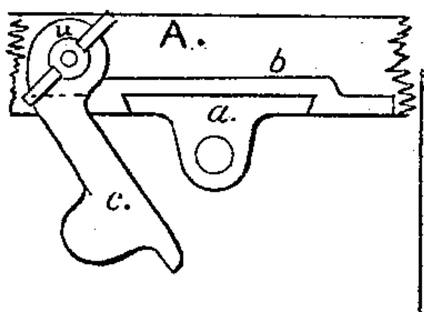


Fig. 5.

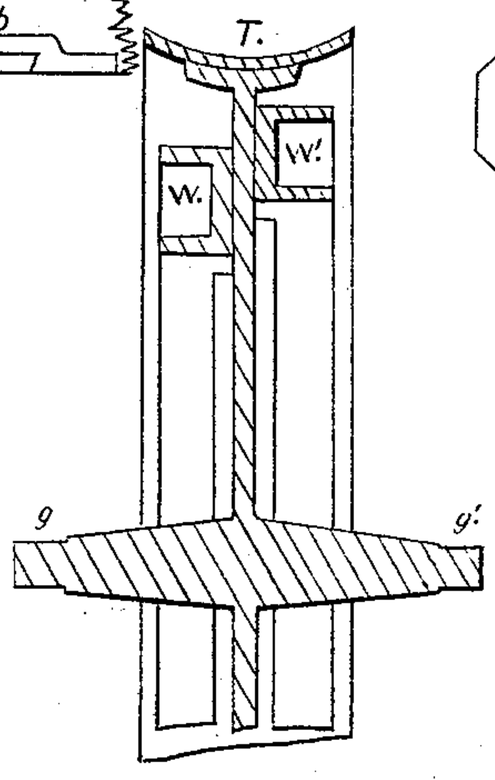


Fig. 2.

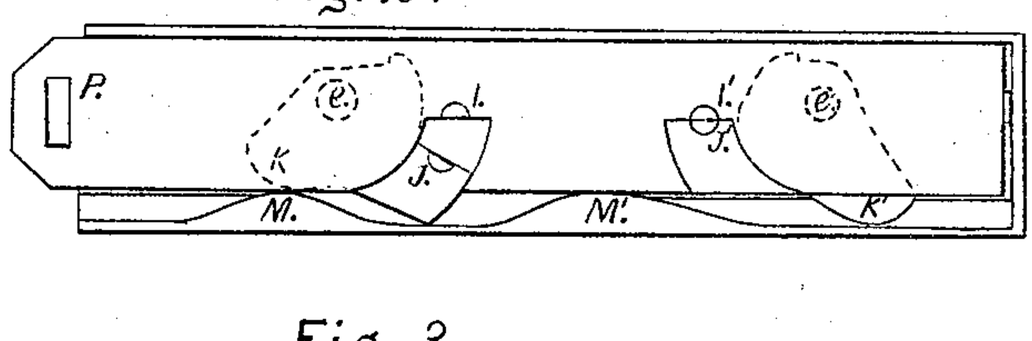


Fig. 3.

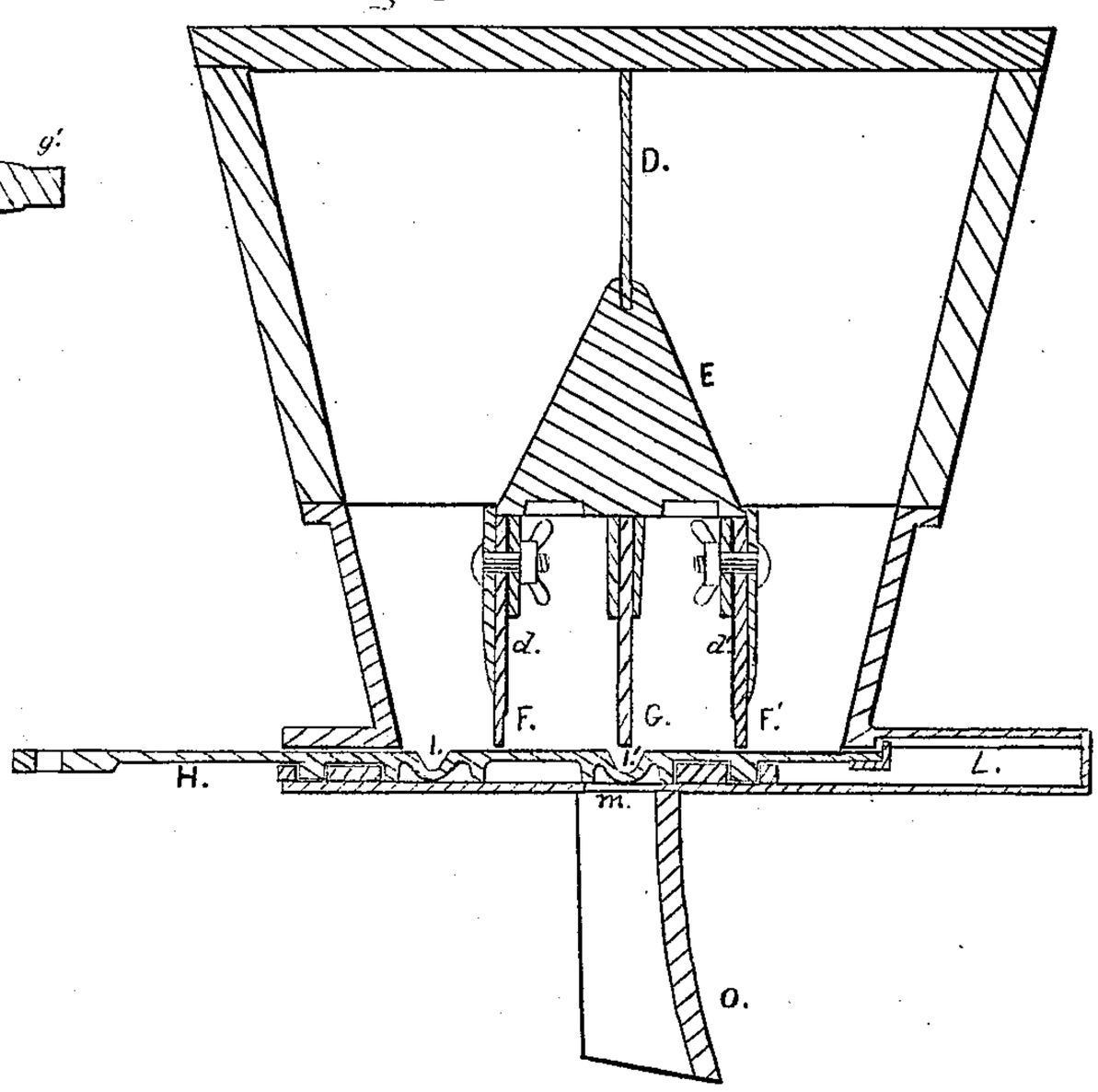
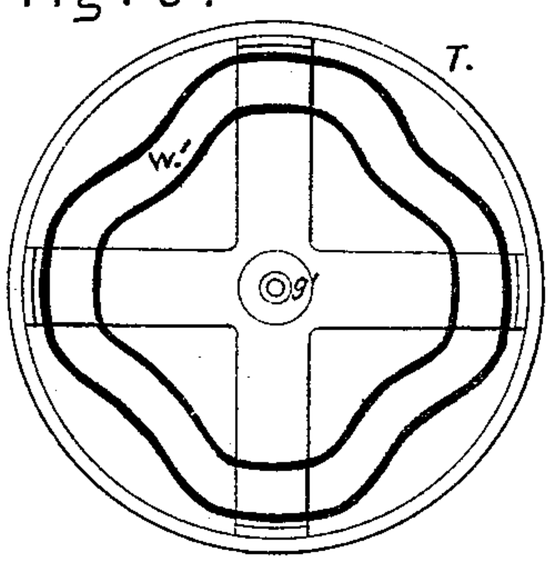


Fig. 6.



WITNESSES.

Albert M. Moore,

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IMPROVEMENT IN SEED-PLANTERS.

Specification forming part of Letters Patent No. **151,490**, dated June 2, 1874; application filed January 18, 1873.

To all whom it may concern:

Be it known that I, JOHN HOWLAND, of Hanson, in the county of Plymouth and Commonwealth of Massachusetts, have invented certain Improvements in Seed-Planters, of which the following is a specification:

My invention relates to a seed-cup formed in the seed-slide of a seed-planter, which cup is so divided that it may open and allow its contents to fall; also, to the combination, with a fixed cam, of the movable half of said cup, said movable half having a projecting part, which strikes against said cam as the seed-slide travels back and forth, thereby causing said cup to open; also, to a reversible wheel having two or more sets of cams, as hereinafter described, for planting at different distances apart.

The accompanying drawings represent my invention.

Figure 1 is a general view of my machine. Fig. 2 is a horizontal section of the slide-frame, showing the top of the slide, the movable halves of the cups, and the fixed cams which open and close said cups. Fig. 3 is a vertical longitudinal section through the seed-box, slide-frame, and share, showing the partition across the seed-box and the rubber and steel springs. Fig. 4 is a view of the detachable axle-bearing of the driving-wheel. Fig. 5 is a section of the driving-wheel, showing the concave tire of the same and the cams on each side of the same. Fig. 6 is a view of the driving-wheel with a cam differing in shape from the cam shown in Fig. 1.

A is the frame of my machine, consisting of two parallel pieces, (one of which is shown,) supporting the handles B, (one of which is shown,) by which the machine is directed. Near the forward end of the frame A is a seed-box, C, which is nearly of the usual shape on the outside, but longer from front to rear, and within is divided by a vertical partition, D, running across the middle of the same, and extending from the top of the seed-box to the wedge-shaped block E. The partition D, being required only when two kinds of seeds are to be planted in alternate hills, is fitted loosely into grooves in the sides of the box C and the top of the block E, and may be removed at pleasure. The block E runs across the seed-box and rests upon three bars which extend across said box, one of said bars being under the middle of said block E, and supporting a piece of leather, G, which extends to the top of the slide, and presses upon the seeds in the cups I I′, when said cups pass under said leather G. The other two bars are situated at the edges of the bottom of said block E, and are each provided with a set-screw and flat piece of metal, between which and the bar is clamped a strip of rubber, F F′, and a steel spring, *d d′*. The rubber F F′ is between the flat steel spring *d d′* and the end of the seed-box, and reaches to the top of the slide H, and serves to smooth off the top of the seed in the cups I I′, so that only a cupful may be taken from the box at once. The rubber, being soft, does not jam or injure the seed against the edges of the cup. The steel springs *d d′* are shorter than the rubber springs, and merely serve to stiffen the latter. Immediately below the seed-box is the slide-frame L, in which the seed-slide H has a reciprocating motion communicated from the driving-wheel, as hereinafter described. The seed-slide H has two cups, I I′, for the reception of seed from the seed-box, which are divided vertically, one-half of each cup turning on the pivot *e e′* on the under side of the slide. The movable part J J′ of each cup has a projection, K K′, which strikes against a fixed cam, M M′, on the side of the slide-frame as the slide travels to and fro, causing said cup to open in passing over the aperture *m*, (which aperture is in the bottom of the slide-frame,) and discharge the seed within the share O. Each cup is closed at its straight part, strikes the cam M M′ in moving away from said aperture *m*, and is kept closed by the straight inner edge of said slide-frame, which inner edge is cut deeper between the cams M M′, allowing the cups to open in this place, and the projections K K′ being so thin that they overlie said straight edge. The driving-wheel T has a concave tire, (seen at the top of Fig. 5,) for the purpose of closing the furrow made by the share and covering the seed. A scraper, V, attached to the frame A in the rear of the driving-wheel, removes any wet soil which may adhere to said wheel. On the side of the driving-wheel in Fig. 1 is a cam, W, into which projects the stud *f* (carrying a

roller) on the arm of the bell-crank lever S. The other end of said lever S is connected by a rod, R, to the straight lever Q, between the ends of the same, one end of which lever Q has a bearing on the frame A, and the other end of which works freely in a slot, P, in the slide H, so that the revolution of the driving-wheel (itself driven by friction on the ground) causes the slide to travel back and forth and the cups to receive and discharge the seed, as above described. On the other side of said driving-wheel T is a cam, W′, (see Fig. 6,) of a different shape from the one described above—that is, having a greater number of waves than said cam W—and therefore causing, when applied to the bell-crank lever S, a greater number of motions in the slide H for each revolution of the driving-wheel. In order to bring the cam W′ into play, the thumb-nut or set-screw *u* is loosened, and the swing-stop *c* is moved aside. and the bearing *a* is drawn out of the bed-piece *b*, into which it is dovetailed, and the axle *g* of the driving-wheel is turned end for end, and the bearing *a* returned to its place and secured. Said bearing *a*, when in place, is flush with the bed-piece *b*, and the dovetail is narrower at its inner end nearest the driving-wheel, so that the bearing *a* cannot move in either direction when the stop is over it.

It will be seen from the drawings that parts of the cams W and W′ are concentric with the driving-wheel, thereby allowing the seed-slide H to rest at the end of each forward and backward motion of the same—that is, while the cups are discharging their contents.

The gage-wheel X is supported by a frame consisting of two parallel pieces, Y, (one of which is seen in Fig. 1,) both alike. This frame Y swings on the rod *p* in the frame A; and a curved slot in the upper circular part of said frame Y, through which slot passes a set-screw, Z, in each side of the frame A, allows the gage-wheel to be set at any height above the ground, thus determining the depth of the furrow made by the share O. A draft-rod may be attached to the frame Y.

The advantages of my machine are, that all its motions are positive and do not depend on springs; that it is not liable to be clogged; that it will plant accurately in hills; that, by the use of slides with different-sized cups, seeds of any size and in any number may be planted at each opening of the cups, and, if the cups are large enough, may be planted in drills; and that the discharge of the seed is insured by the opening of the cup while the slide is at rest.

It is obvious that similar divided cups may be placed at the outer edge of a horizontal revolving or oscillating disk or wheel, and opened in substantially the manner above indicated.

I claim as my invention—

1. In the seed-slide of a seed-planter, the seed-cup I, divided, as and for the purpose set forth.

2. The divided seed-cup I, its movable half J provided with the projecting part K, in combination with the fixed cam M, for opening and closing said cup, as and for the purpose specified.

3. In a seed-planter, the reversible wheel T, having two or more sets of cams, as described, for planting at different distances apart.

JOHN HOWLAND.

Witnesses:

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NATHANIEL HILL.