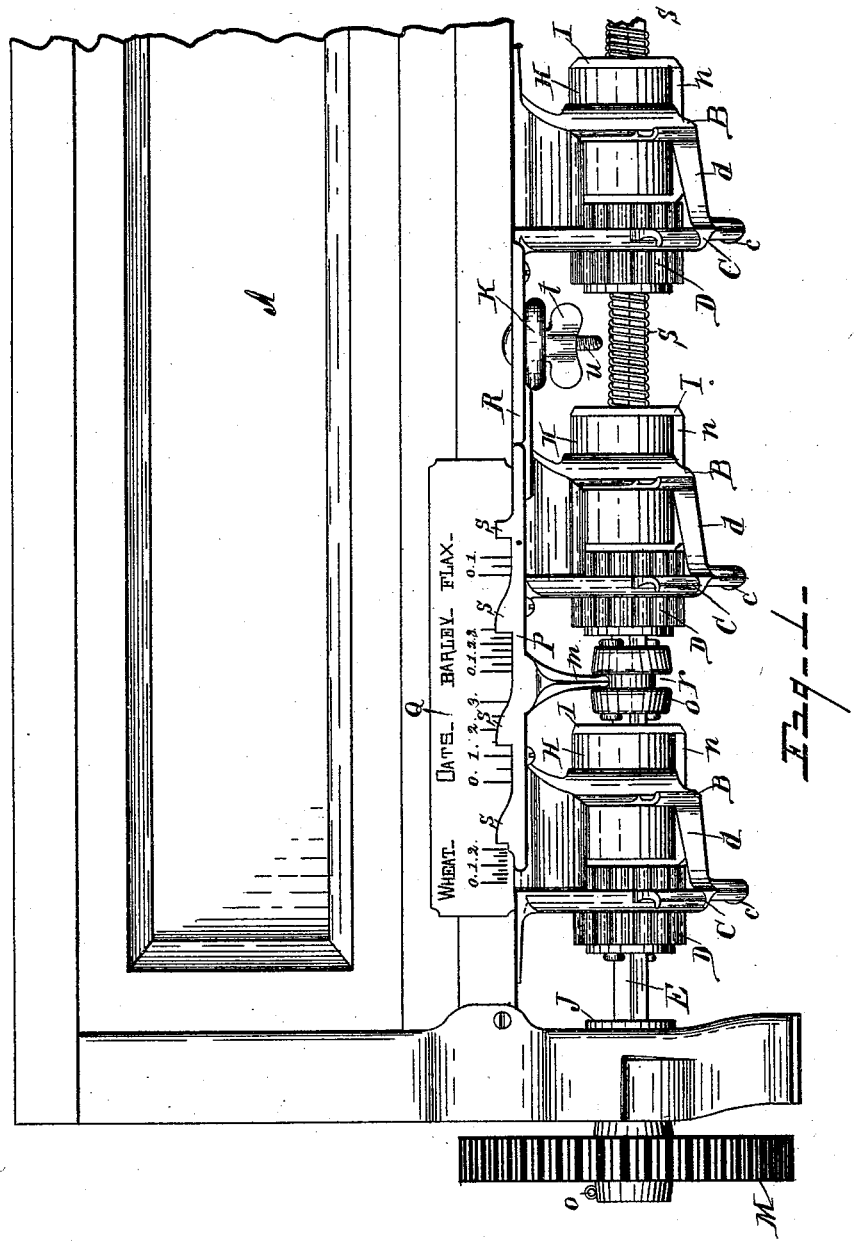
(Model.) 3 Sheets—Sheet 1.

W. F. HOYT.

SEEDING DRILL.

No. 492,802. Patented Mar. 7, 1893.



WITNESSES

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(Model.) 3 Sheets—Sheet 2.

W. F. HOYT.

SEEDING DRILL.

No. 492,802. Patented Mar. 7, 1893.

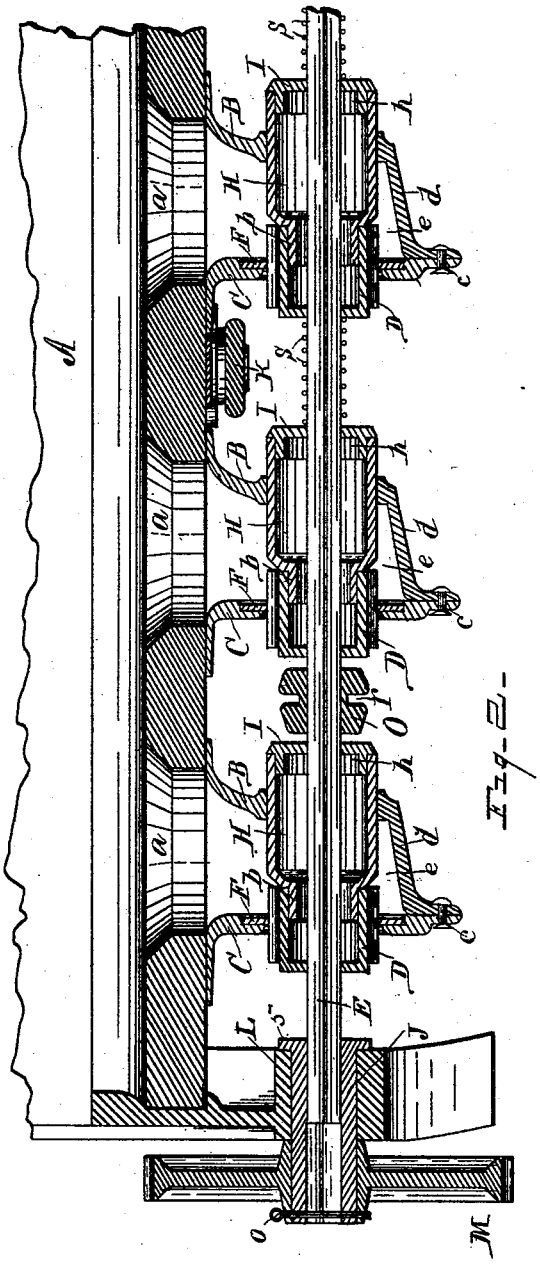

Fig-2-

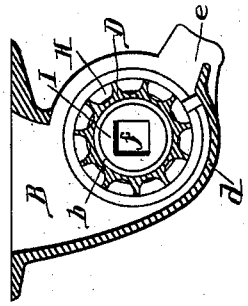

Fig-4-

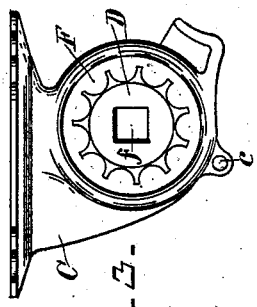

Fig-3-

WITNESSES.

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(Model.)

3 Sheets—Sheet 3.

W. F. HOYT.

SEEDING DRILL.

No. 492,802. Patented Mar. 7, 1893.

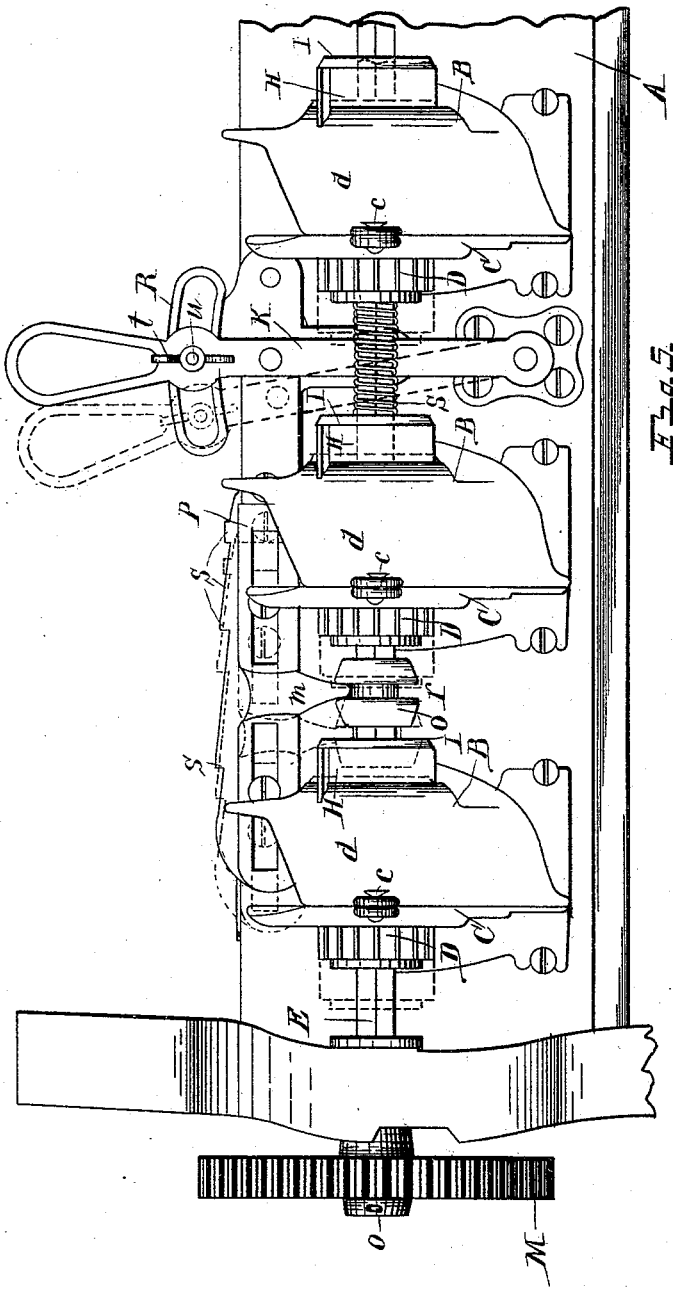

Fig. 5.

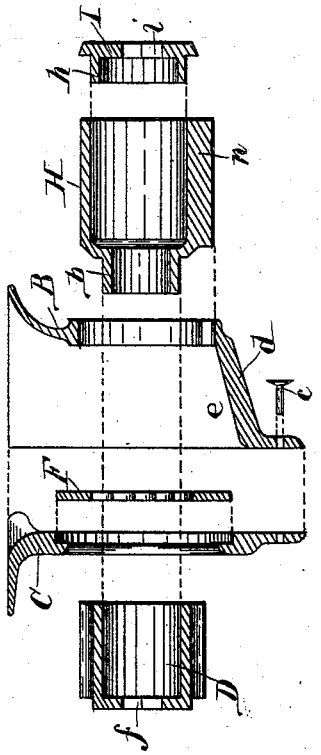

Fig. 6.

WITNESSES.

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UNITED STATES PATENT OFFICE.

WILL. F. HOYT, OF DOWAGIAC, MICHIGAN.

SEEDING-DRILL.

SPECIFICATION forming part of Letters Patent No. 492,802, dated March 7, 1893.

Application filed June 24, 1891. Serial No. 397,328. (Model.)

To all whom it may concern:

Be it known that I, WILL. F. HOYT, a citizen of the United States, residing at Dowagiac, in the county of Cass and State of Michigan, have invented certain new and useful Improvements in Seeding-Drills; and I do declare the following to be a full, clear, and exact description of the invention, such as 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 and figures of reference marked thereon, which form a part of this specification.

This invention relates to new and useful improvements in force-feed mechanism for grain drills; and consists in a certain construction and arrangement of parts, as hereinafter fully set forth, the essential features of which being pointed out particularly in the claims.

The object of the invention is to provide means for feeding the grain to the shoes of the drill in a continuous and uniform stream, and regulating the discharge of said grain according to the condition of the ground, and the nature of the grain being sown; and a further provision for cutting off the discharge of the grain entirely, when desired. The formation of the parts being such as to effect simplicity of construction, and economy in manufacture.

The above object is attained by the mechanism illustrated in the accompanying drawings, in which;

Figure 1 is a rear elevation of that portion of a grain drill embodying my improved features, parts being broken away. Fig. 2 is a vertical longitudinal section through Fig. 1. Fig. 3 is a side elevation of the seed-cup with the fluted seed-wheel therein. Fig. 4 is a central vertical section through Fig. 3. Fig. 5 is an inverted plan of Fig. 1. Fig. 6 is a central vertical section through the seed-cup, and the feeding mechanism located therein, taken at right-angles to Fig. 4, said parts being disconnected and drawn apart.

Referring to the letters and figures of reference, A designates the hopper that contains the grain, said hopper having in the bottom thereof a series of holes *a*, under which are attached the two-part seed-cups formed of the side plates B and C, which are firmly secured to the under face of the hopper A, and riveted together at their lower edges, as shown at *c*. The plate B having the laterally extending flange *d* forming the curved wall and bottom of the cup, and said plates converge to the mouth or seed discharge opening *e* therein. All of which is common.

Located in the seed-cup is the fluted seed-wheel D having longitudinal channels in its periphery to receive and convey the grain to the discharge opening of the cup. Said wheel is in the form of a hollow cylinder open at one end, the opposite end having a rectangular aperture *f*, clearly shown in Fig. 3, that receives the square shaft E upon which said wheel is mounted, and by means of which it is revolved within said cup, whereby the grain is continuously and uniformly discharged from the mouth *e* thereof.

The wheel D is adapted to slide longitudinally in and out of the side plate C of the seed-cup, passing through the disk F having a central opening therethrough that conforms to the fluted periphery of said wheel, said disk revolves on its own periphery in an annular channel or groove in the plate C, and prevents the escape of the grain from the cup through the channels in the periphery of the wheel D.

H designates a hollow cylinder or sleeve adapted to slide longitudinally through an annular opening in the side B of the seed-cup. Said cylinder being provided on its inner end with a reduced annular bearing *b*, that enters and closely fills the open end of the seed-wheel D, forming a journal on which said wheel revolves and supporting the inner end thereof. I designates a collar having a rectangular opening *i* therethrough, as shown in Figs. 4 and 6, that receives the square shaft E on which it is mounted and with which it is adapted to revolve. Projecting from the face of said collar at right-angles thereto is an annular flange *h*, that enters the outer end of the cylinder H and revolves therein, whereby said cylinder is supported free of the shaft E which passes therethrough. The cylinder H being held from revolution by means of the longitudinal rib *n* extending from its under face and which engages in a groove in the plate B, thereby locking said cylinder from turning, but permitting it to freely slide longitudinally. The diameter of the cylinder H is equal to that of

the seed-wheel D through the peripheral ribs thereof, and when the parts are adjusted so that the wheel D is carried entirely out of the seed-cup through the side C, said cylinder will extend across the interior of said cup and close the openings through the sides C, B, thereof. The under rib *n* of said cylinder, when in that position, serving as a gate to close the seed discharge opening *e*, whereby the flow of grain is entirely cut off.

The shaft E is common to all of the series of seed-cups, and passing therethrough supports the feeding and feed regulating mechanism therein which is mounted on said shaft and adapted to travel longitudinally therewith. To provide for the longitudinal adjustment of said shaft, its ends are mounted in annular sleeves J having the annular flange 5. and a square central opening that receives said shaft, and in which it is adapted to slide. Said sleeve being journaled in the bearing L in the end portion of the hopper supporting frame, as shown in Fig. 2. Said sleeve extends through the bearing L and receives on its outer end the gear-wheel M by means of which said shaft is driven, and which is secured to the sleeve J by means of the pin *o*. By the employment of said annular sleeve having a square central opening that loosely receives the shaft E, said shaft is provided with suitable journals on which to revolve, and is permitted to slide longitudinally therein. This longitudinal adjustment of the shaft E, is accomplished by means of the lever K, which is pivoted to the plate P slidingly secured to the under face of the hopper, clearly shown in Fig. 5. Said plate having a depending arm *m* adapted to engage in a circumferential groove *r* in the collar O securely mounted on the shaft E, as shown in Figs. 1 and 5, whereby, by operating said lever, said shaft may be slid longitudinally to adjust the seed-wheels D through the side C of the seed-cups, as shown by dotted lines in Fig. 5, to increase or decrease the feeding surface of the wheel within said cup, thereby regulating the quantity of grain discharged therefrom, and as said wheel is adjusted the gate *n* on the sliding cylinder H opens and closes the discharge opening of the cup according to the extent of feeding surface of the wheel D working in said cup.

To readily determine at what point the feeding mechanism shall be set to feed the requisite quantity of seed according to the condition of the ground and the kind of grain being sown; a plate Q is secured to the hopper A, having a series of graduations thereon arranged for the various kinds of grain, with which a series of pointers *s* on the sliding-plate P registers, to indicate at what point to set the mechanism to feed a given quantity of grain to the acre, as shown in Fig. 1. The parts being locked in any position by tightening the thumb-nut *t* of the bolt *u*, which passes through the lever K and the slotted semi-circle-bar R, as shown in Figs. 1 and 5, thereby securely retaining the feeding mechanism at any desired degree of adjustment.

The mechanism for each of the seed-cups is fixedly secured to the shaft E and moves with said shaft when it is adjusted longitudinally, so that by sliding said shaft the parts are uniformly adjusted throughout the entire series of cups, each set of the feeding mechanism being retained in its respective position upon the shaft E by the interposed coiled springs S, which environ said shaft and bear against the end of the seed-wheel D of one cup, and the collar I of the cylinder H in the adjacent cup, as clearly shown in Figs. 1 and 2. By which means said parts are yieldingly retained in place, overcoming the friction incident to a rigid contact, and obviating the labor and expense of drilling said shaft and keying said parts in place, or employing collars and set-screws for that purpose.

By employing a square shaft E, and constructing and mounting the parts thereon, as shown and described; economy is effected in the manufacture thereof, as said parts may be cast and mounted on said shaft without requiring machine work to fit them to place.

Having thus fully set forth my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a force feeding mechanism, the combination of the two-part seed-cup, the revoluble disk, the fluted seed-wheel having the rectangular opening, the hollow cylinder equal in diameter to the diameter of the fluted seed-wheel through its peripheral ribs and having the reduced annular bearing fitting within one end of the fluted wheel, the collar having the rectangular opening and the annular flange fitting into one end of the cylinder and supporting the same, the square, rotative and longitudinally movable shaft passing through the cylinder, and through the rectangular opening in the seed-wheel and collar, whereby the two latter are fixed upon said shaft and adapted to revolve therewith, substantially as specified.

2. In combination with the seed-cup, the revoluble disk, the fluted seed-wheel, having the rectangular opening, the hollow non-rotative cylinder equal in diameter to the diameter of the fluted wheel through its peripheral ribs, and having the reduced annular end fitting within the seed-wheel and the longitudinal rib on the enlarged periphery thereof, the collar having the rectangular opening and annular flange *h* that enters the bore of the cylinder and is journaled therein, the square, longitudinally movable and rotative shaft passing through said parts, and means for fixing said seed-wheel, cylinder and collar together on said shaft, so that said wheel and collar will revolve therewith and all of said parts travel in unison with the shaft as it is moved endwise, substantially as set forth.

3. In a seeding machine, the combination of a pair of seed-cups, the shaft passing through said cups and adapted to slide longitudinally,

the cylinder, and seed-wheel journaled thereon, mounted on said shaft within each of said cups, the coiled spring encircling said shaft, one end of said spring bearing against the seed-wheel of one cup and the opposite end against the cylinder of the adjacent cup, whereby the seeding mechanism in said cups is held in yielding contact, and maintained the proper distance apart upon said shaft.

4. In a grain drill, the combination of the hopper frame having the journal bearing L, the annular sleeve extending through said bearing and adapted to revolve therein, said sleeve having a rectangular opening therethrough and an annular flange on its inner end that bears against the inner vertical face of said bearing, the gear-wheel fixed on the outer end of said sleeve, the hub of which bears against the outer vertical face of said bearing, whereby said sleeve is held from longitudinal play, the square revoluble shaft entering the rectangular opening in said sleeve and adapted to have longitudinal movement therein.

In testimony whereof I affix my signature in presence of two witnesses.

WILL. F. HOYT.

Witnesses:
C. A. PATTERSON,
A. VANUXEM.