No. 771,485. PATENTED OCT. 4, 1904.

W. D. MYERS.

GRAIN DRILL.

APPLICATION FILED APR. 15, 1904.

NO MODEL. 3 SHEETS—SHEET 1.

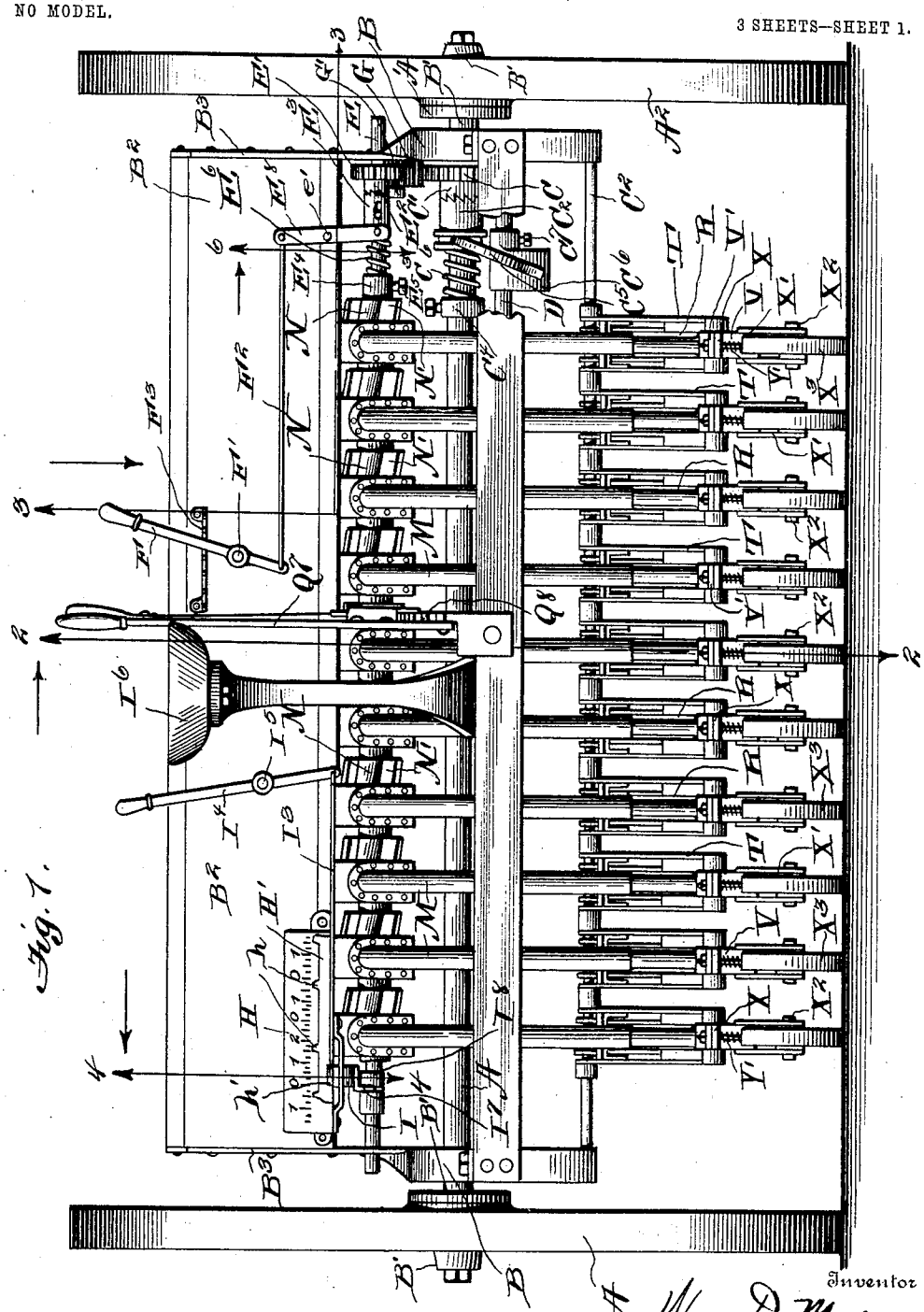


Fig. 1.

Witnesses

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NO MODEL. 3 SHEETS—SHEET 2.

Fig. 2.

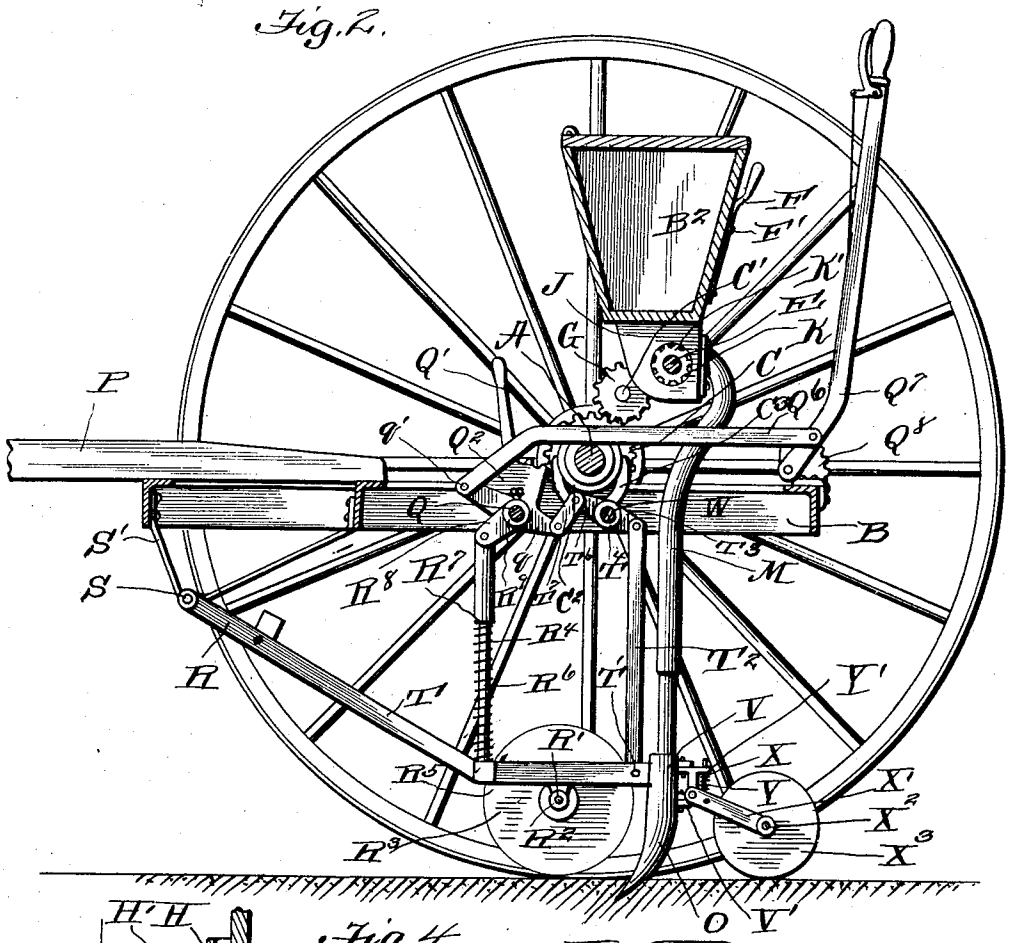


Fig. 4.

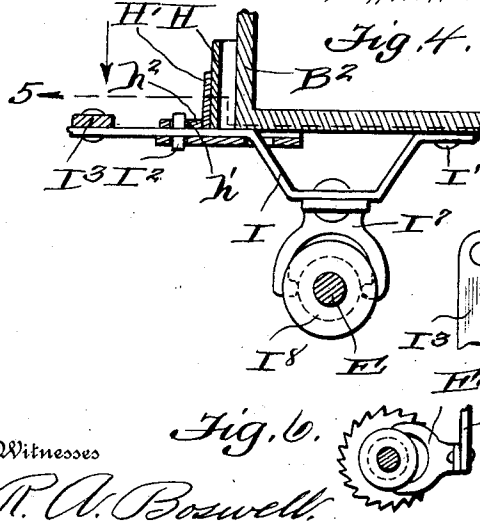


Fig 5

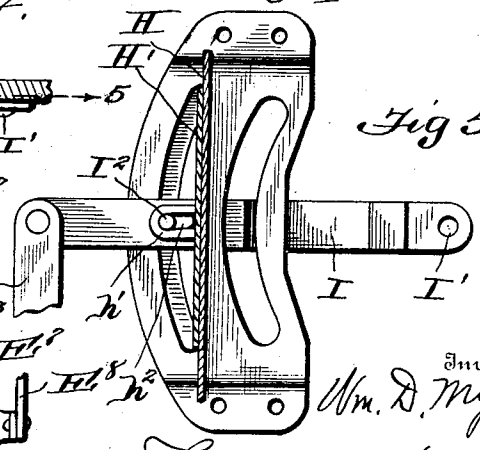


Fig. 6.

Witnesses

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NO MODEL. 3 SHEETS—SHEET 3.

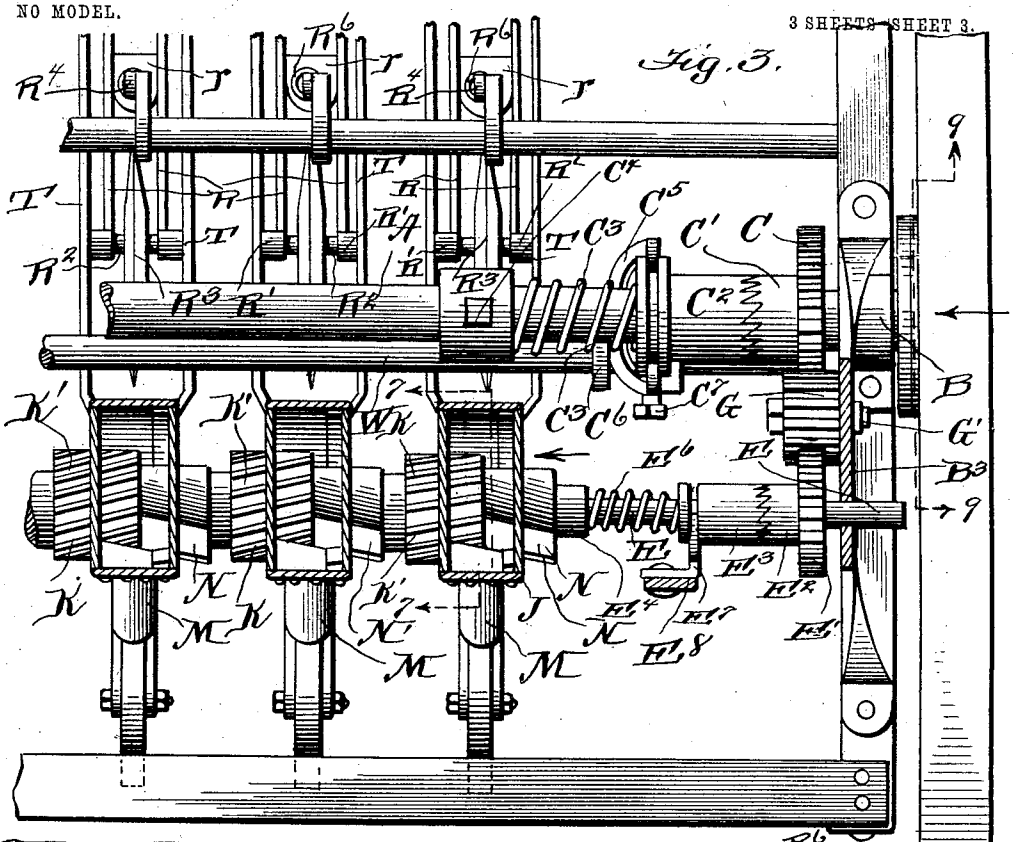


Fig. 3.

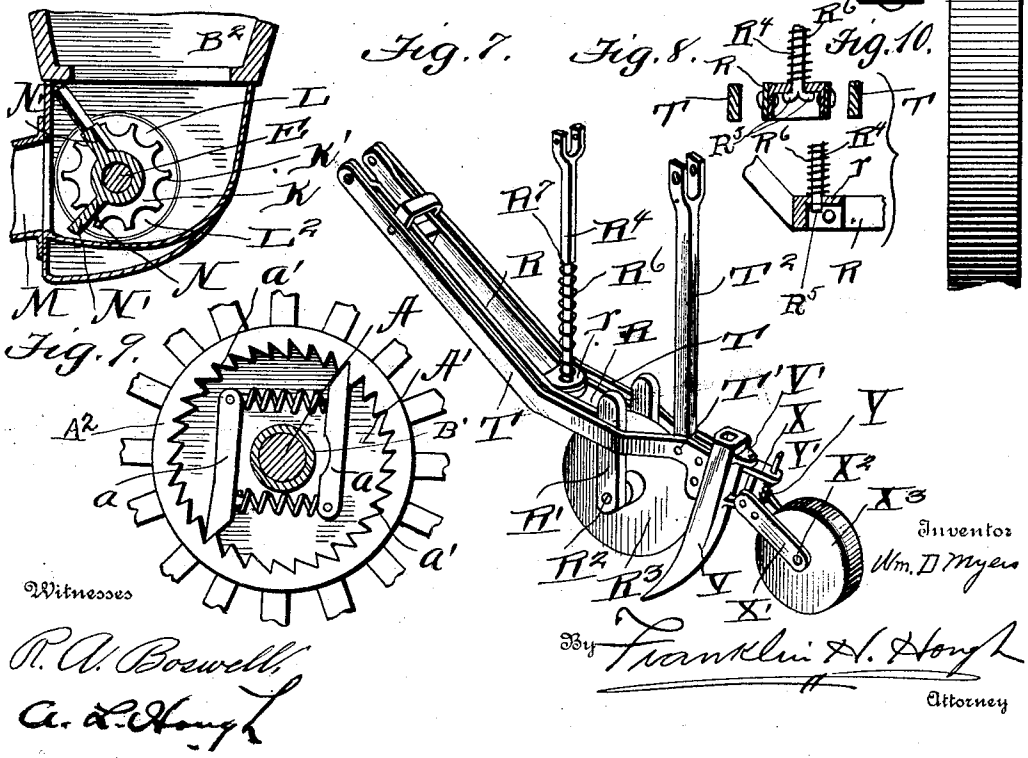


Fig. 7. Fig. 8. Fig. 10.

Fig. 9.

Witnesses

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PHOTO-LITHOGRAPHED BY SACKETT & WILHELMS LITHO. & PTG. CO. NEW YORK.

No. 771,485. Patented October 4, 1904.

UNITED STATES PATENT OFFICE.

WILLIAM DAVID MYERS, OF WAYNOKA, OKLAHOMA TERRITORY.

GRAIN-DRILL.

SPECIFICATION forming part of Letters Patent No. 771,485, dated October 4, 1904.

Application filed April 15, 1904. Serial No. 203,361. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM DAVID MYERS, a citizen of the United States, residing at Waynoka, in the county of Woods, Oklahoma Territory, have invented certain new and useful Improvements in Grain-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 of reference marked thereon, which form a part of this specification.

This invention relates to new and useful improvements in grain-drills; and the object of the invention is to produce a device of this character which will be simple in construction and convenient in operation and so arranged that the apparatus may be set for sowing various kinds of seed and providing means for throwing the feeding mechanism into and out of operation.

The invention consists, further, in various details of construction and combinations and arrangements of parts, which will be hereinafter fully described and then specifically defined in the appended claims.

My invention is illustrated in the accompanying drawings, which, with the letters of reference marked thereon, form a part of this application, and in which drawings similar letters of reference indicate like parts in the views, in which—

Figure 1 is a rear elevation of my improved grain-drill, parts being shown in elevation. Fig. 2 is a sectional view taken on line 2 2 of Fig. 1. Fig. 3 is a sectional view on line 3 3 of Fig. 2, parts being in elevation. Fig. 4 is a sectional view on line 4 4 of Fig. 1 looking in the direction of the arrow. Fig. 5 is a sectional view on the line 5 5 of Fig. 4 looking in the direction of the arrow. Fig. 6 is a cross-sectional view on line 6 6 of Fig. 1 looking in the direction of the arrow. Fig. 7 is a sectional view on line 7 7 of Fig. 3. Fig. 8 is a perspective view of a portion of the rotary cutter and hoe mechanism. Fig. 9 is a sectional view through the driving-shaft, showing the ratchet mechanism carried by the hub of the wheel. Fig. 10 is a detail view.

Reference now being had to the details of the drawings by letter, A designates the driving-axle, which is provided with a collar A′, keyed to the shaft A and carrying spring-actuated dogs *a*, which are adapted to engage teeth *a′* upon an annular shoulder in the hub of the wheel A^2. Each wheel mounted upon the ends of the shaft is similarly equipped with ratchet mechanism, whereby whether the truck is turned in one direction or the other, causing one wheel to be idle while the other is in motion, rotary movement may be imparted to the feed mechanism of the drill. B designates a frame of the drill, which is supported upon said shaft or axle A, suitable bearings B′ being provided for engagement with the axle or shaft, and a seedbox B^2 is supported upon said frame by standards B^3.

Loosely mounted upon the driving shaft or axle is a pinion-wheel C, having a hub-section C′ either integral with or secured thereto, the edge of said hub being provided with teeth adapted to intermesh with the teeth of the clutch member C^2, which is keyed to the shaft A and has a longitudinal movement upon said shaft. A spring C^3 bears between an adjustable collar C^4, fixed to the shaft A, and the adjacent end of the clutch member C^2, and the office of said spring is to normally hold the teeth of the clutch member in mesh with the teeth of the hub portion of said pinion-wheel C, whereby as the shaft is rotated the pinion-wheel is rotated therewith for the purpose of imparting motion to the seed-feeding apparatus about to be described. A yoke C^5 has arms engaging the annular groove in said clutch member and is carried by the adjustable collar C^6, which may be adjustably held upon the shaft D at different locations, accordingly as it might be desired to adjust the apparatus, so that the feeding mechanism will not operate while the driving-shaft is rotating. A set-screw C^7 is provided which passes through the collar C^6 and is adapted to frictionally engage the shaft D to hold the collar in an adjusted position.

Journaled in the standards B^3 of the feed-box is a shaft E, and loosely mounted upon said shaft E is a pinion-wheel E′, which is similar in construction to the pinion-wheel C

referred to and is provided with a hub E^2, having a serrated edge designed to engage similar teeth or serrations upon the clutch member E^3. (Shown clearly in Fig. 3 of the drawings.) The clutch member E^3 is keyed to rotate with the shaft E, but has a slight longitudinal movement independent of the shaft sufficient to allow the serrations or teeth thereon to engage or disengage the teeth upon the hub E^2. A collar E^4 is adjustably mounted upon the shaft E, being held in an adjusted position by a set-screw E^5, (shown in Fig. 1 of the drawings,) and a spring E^6 bears between said collar E^4 and the clutch member E^3 and serves to normally hold the teeth upon said clutch member and hub portion E^2 normally in mesh. A clutch-disengaging yoke E^7 is provided, the arms of which engage the annular groove of member E^3, and said yoke E^7 is pivotally connected to a lever E^8, Fig. 1 of the drawings, which lever in turn is pivoted at e' to the seedbox B^2. An operating-lever F is pivoted at F′ to the rear of the seedbox, and a rod F^2 is pivotally connected at one end to the lever F and at its other end to the lever E^8. (Illustrated in Fig. 1 of the drawings.) A serrated bar F^3 is fastened to the rear of the seedbox and is adapted to hold the lever F in one or the other of the serrations thereon for the purpose of throwing the clutch member E^3 into or out of engagement with the hub of the pinion-wheel E′. A pinion-wheel G is mounted upon a stub-shaft G′ (shown clearly in Fig. 3 of the drawings) and is adapted to form means for communicating motion from the pinion C on the main driving-shaft to the pinion-wheel E′. By referring to Fig. 3 of the drawings it will be seen that the pinion-wheel G′ is substantially twice the length of the pinion-wheels C^2 and E′ and the shaft E is adapted to have a slight longitudinal movement for the purpose of regulating the movement of seed to be sown in a manner which will be described and whatever position the shaft E may assume the pinion-wheel E′ will be rotated with the pinion-wheel G′.

Referring to Fig. 1 of the drawings will be seen a scale H, which is fastened to the rear of the seedbox, and moving adjacent to the face of said scale is a bar H′, having lugs h projecting from the upper edge thereof. Said bar has a laterally-projecting lug h', (shown clearly in Figs. 4 and 5 of the drawings,) which lug has an aperture h^2 therein, and I designates a lever pivotally mounted at I′, Fig. 4 of the drawings, on the bottom of the seedbox. A pin I^2 is carried by said lever I and passes through the slot h^2 in said lug h', and a rod I^3 is pivotally connected to the lever I at one end, and its other end is pivoted to the lever I^4, pivotally mounted at I^5 upon the rear of the seedbox within convenient reach of the operator's seat I^6, Fig. 1 of the drawings. Fixed to the downwardly-projecting portion of the lever I, as seen in Fig. 4 of the drawings, is a yoke I^7, the arms of said yoke engaging an annular groove in a collar I^8, which is fixed to the shaft E, whereby as the lever I is moved in one direction or the other a slight longitudinal movement may be imparted to said shaft E and feed-wheel, which will cause more or less grain to be fed from the seedbox, and the quantity of various kinds of seed which are to be sown to the acre being indicated by the scale.

The seed-feeding apparatus comprises a series of cups J. (Shown clearly in elevation in Fig. 2 and in section in Fig. 3.) There may be any number of cups employed, corresponding to the number of hoes and drills, and in the present invention I have shown ten feed-cups, each of which has communication through an exit-aperture in the bottom of the seedbox. Keyed to the shaft E is a series of feed-wheels, each designated in the drawings by letter K, said wheels being provided with spiral teeth or ribs K′, with concaved portions intermediate said teeth, and L designates a disk or rosette, which is mounted to have a rotary movement upon a shoulder about the marginal edge of an aperture in the side wall of one of said cups. The inner marginal edge of said disk or ring is scalloped, as at L^2, designed to conform to the circumference of said feed-wheel K, and is adapted to rotate with the feed-wheel and is so arranged as to allow the feed-wheel to have a longitudinal movement through said disk or ring while rotating therewith. Said feed-wheel passes through one wall of the seedbox and is adapted to regulate the movement of seed to be fed accordingly as the feed-wheel rotates entirely within the cup or partially, which movement is regulated by the longitudinal movement of the shaft E. A cut-off member or follower N is provided which comprises a hub portion having two wings N′, which have a slight spiral shape, and said member is journaled upon a shaft E and is movable longitudinally with the shaft. One wall of the feed cup or box has an aperture which is provided with laterally-projecting recesses conforming to the wings of said cut-off member, thus allowing the feed member to be drawn within the feed cup or box or to be pushed through the wall of said box, accordingly as it may be desired to wholly or partially cut off the feeding of the seed. It will be observed that the spiral arrangement of the teeth upon said feed-wheel and the cut-off member are reversely arranged, the spiral arrangement of the teeth upon the feed-wheel being so arranged as to feed the seed to the best advantage, while the wings of the cut-off member are so arranged that they will not interfere with the feeding of the seed, but will effectually cut off the feeding when the feed-wheel is withdrawn from the cup and when the cut-off member is drawn within the cup. By this

arrangement it will be observed that when the cut-off member is drawn within the cup the shaft and feeding-wheel may still be rotated without the feeding of any seed. A passage-way M leads from each feed cup or box and communicates with the hollow shank portion of the hoe or drill O. (Shown clearly in Fig. 2 of the drawings.)

Secured to the frame of the apparatus is a tongue P, and S designates a shaft which is mounted upon the angled irons S′, Fig. 2 of the drawings, which irons are secured to the frame of the apparatus in any suitable manner, and R designates bars which are angled, as shown in Fig. 2 of the drawings, and have lugs or journal-boxes R′ depending from the lower edges thereof, in which lugs is mounted an axle R^2, upon which the cutter-disks R^3 are journaled. Interposed between the two arms R is a block r, which is apertured to receive a rod R^4, passing through said block, and has hooks R^5 at its lower end which are adapted to engage said block for the purpose of elevating the arms R when it is desired to raise the cutter-disks from the ground. A spring R^6 is provided which bears against said block r and a shoulder R^7, the purpose of said spring being to normally hold the arms R and the cutter-disks at its lowest limit. The upper end of the bar R^4 is pivotally connected to an arm R^8, which is integral with a collar R^9, keyed to the shaft Q.

T T designate two arms or bars which are also pivotally mounted upon the shaft S and between which the arms R and the cutter-disks R^3 have a play. The ends of the arms T project beyond the disks, as shown in Fig. 2 of the drawings, and are fastened together by means of a pin T′, with which pin a bar T^2 has pivotal connection at its lower end, the upper end being pivotally connected to an arm T^3, projecting from a collar T^4, which is keyed to a shaft W, journaled in the ends of the frame of the apparatus. Secured to the ends of the bars T is a hoe or drill-point V, which is hollow and communicates with the tube M, leading to the seedbox. Pivotally mounted upon lugs V′, which project from the rear of said hoe or drill-point, is a bracket member X, to which a forked yoke X′ is pivoted, carrying in its arms a stub-axle X^2, upon which the press-wheel X^3 is journaled. A spring Y is interposed between said yoke X′ and a lug upon said bracket member X, whereby the press-wheel may be held at its lowest position. By mounting the press-wheel in the manner illustrated the same may be allowed a vertical as well as a lateral movement to adapt itself to obstructions or various conditions.

Keyed to the shaft W is an arm T^6, which has pivotal connection, by means of the links T^7, with an arm q, which is integral with the segment member Q^2, which is loosely mounted upon the shaft Q. A dog (not shown) upon the lever Q′ is adapted to engage the teeth of the segment Q^2, whereby when said dog is in engagement with one of the teeth of the segment both shafts Q and W may be caused to move in unison for the purpose of raising the two pairs of bars or arms R and T, and when the dog is disengaged from the teeth of said segment the cutting-colter may be operated independent of the drill-point by the manipulation of the lever Q′. A bar Q^6 is pivoted at q' to said segment Q^2, and its other end is pivotally connected to a lever Q^7, which has a hand-operated pawl designed to engage the teeth of a segment Q^8, (shown in Fig. 2 of the drawings,) whereby the drill-point may be raised or lowered, as may be desired.

While I have illustrated and described the mechanism of a single feed-cup and drill with mechanism for operating the same, it will be understood that each cup is provided with a similar mechanism, and corresponding to each cup is a drill-point or hoe and a press-wheel, and as said cutting-disks and drill-points are all connected with the shafts described one movement of an operating-lever will actuate all of the cutting-disks and drill-points, as will be understood.

The operation of my drill will be readily understood from the foregoing, and by the construction shown the quantity of seed to be sown may be regulated by the manipulation of the lever, which causes a longitudinal movement to be imparted to the shaft E, and if it is desired to cause the cutting-disks to be raised independent of the drill-points it may be conveniently done by the manipulation of the lever Q′, and if it is desired to raise the drill-points and the cutting-disks together this may be accomplished by the manipulation of the lever Q^7.

By the construction of a seed-drill embodying the features of my invention, it will be observed that means is provided for cutting any trash that the apparatus might come in contact with while passing over a field, thus preventing the clogging up of trash in advance of the drill-points.

While I have shown a particular construction of seed-drill illustrating the features of my invention, it will be understood that I may make various alterations in the detailed construction of the invention, if desired, without in any way departing from the spirit of the invention.

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

1. In a grain-drill, the combination with the frame, seedbox and cups communicating with said box, a longitudinally-movable shaft passing through said cups, spiral feed-wheels fixed to said shaft and having corrugated circumferences, disks swiveled in corresponding sides of said cups and each having an inner scal-

loped circumference adapted to engage the corrugated circumferences of said feed-wheels and rotate therewith, non-rotatable cut-offs mounted upon said shaft and having spiral wings which have a play through radial slots in the corresponding walls of said cups, the inner portions of said spiral wings in contact with the inner ends of said feed-wheels, and means for rotating said shaft and mechanism for imparting a longitudinal movement thereto, as set forth.

2. In a grain-drill, the combination with the frame, seedbox and cups communicating with said box, a longitudinally-movable shaft passing through said cups, spiral feed-wheels fixed to said shaft and having corrugated circumferences, disks swiveled in corresponding sides of said cups and each having an inner scalloped circumference adapted to engage the corrugated circumferences of said feed-wheels and rotate therewith, non-rotatable cut-offs mounted upon said shaft and having spiral wings which have a play through radial slots in the corresponding walls of said cups, the inner portions of said spiral wings in contact with the inner ends of said feed-wheels, a collar fixed to said shaft, a spring interposed between the same and one of said cut-offs adapted to normally hold the latter in contact with said feed-wheels, mechanism for rotating the shaft, and means for imparting a longitudinal movement thereto, as set forth.

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

WILLIAM DAVID MYERS.

Witnesses:

JAS. M. PATTERSON,

G. T. MYERS