(No Model.) 3 Sheets—Sheet 1.

C. H. PELTON.

GRAIN DRILL.

No. 588,240. Patented Aug. 17, 1897.

Fig 1.

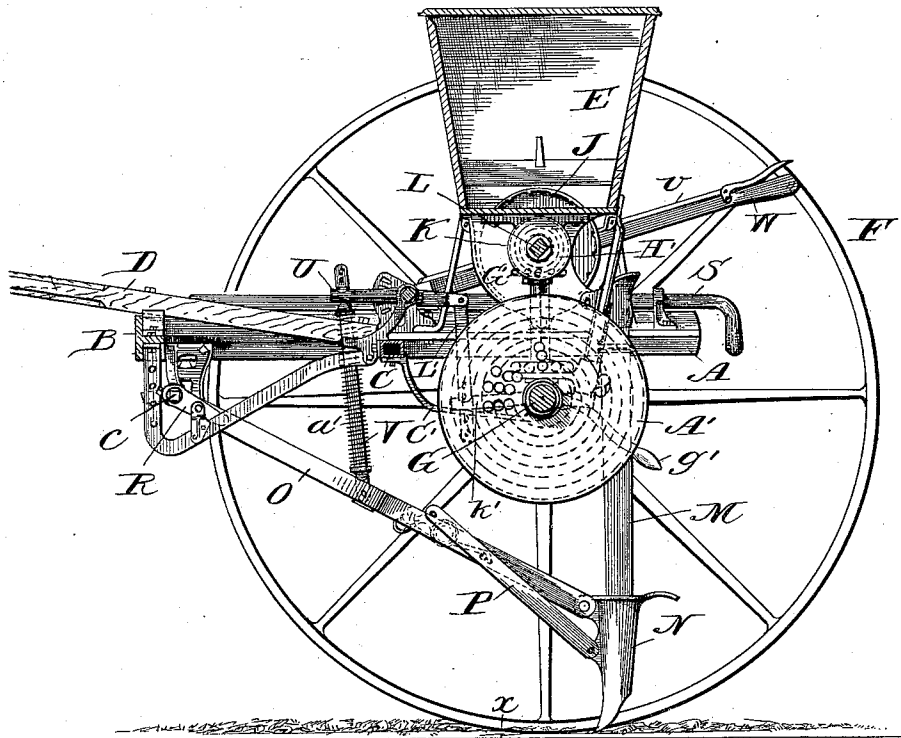
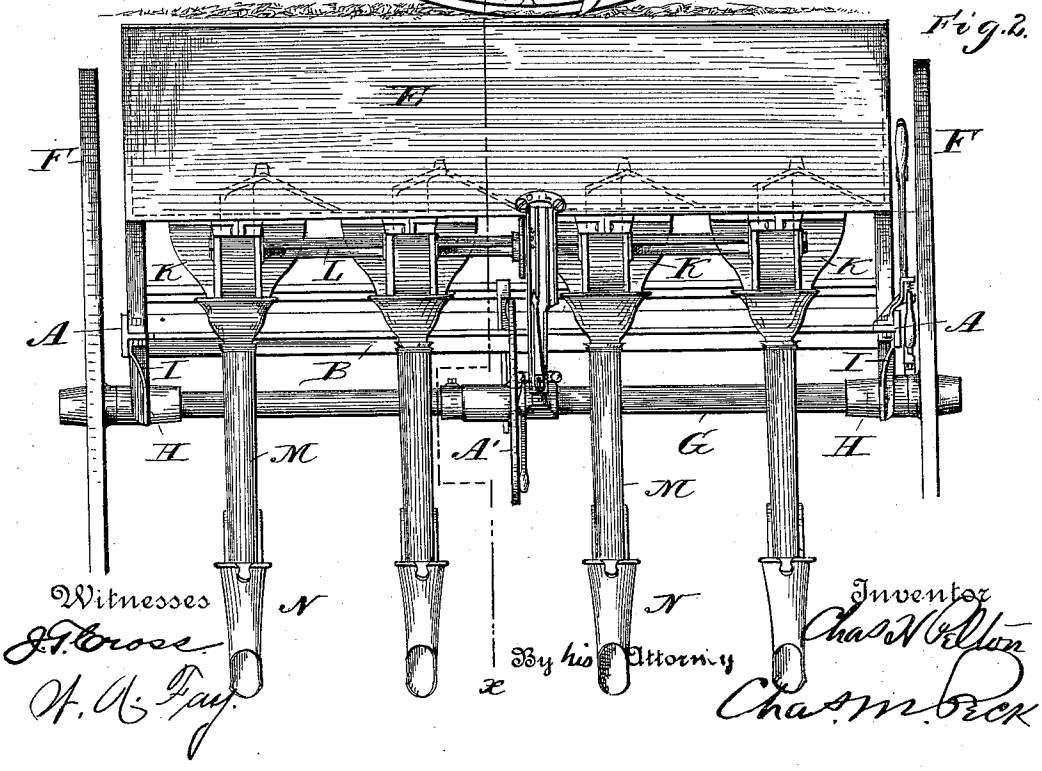


Fig 2.



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H. A. Fay

Inventor
Chas. H. Pelton
By his Attorney
Chas. M. Beck

(No Model.) 3 Sheets—Sheet 2.

C. H. PELTON.

GRAIN DRILL.

No. 588,240. Patented Aug. 17, 1897.

Fig. 3.

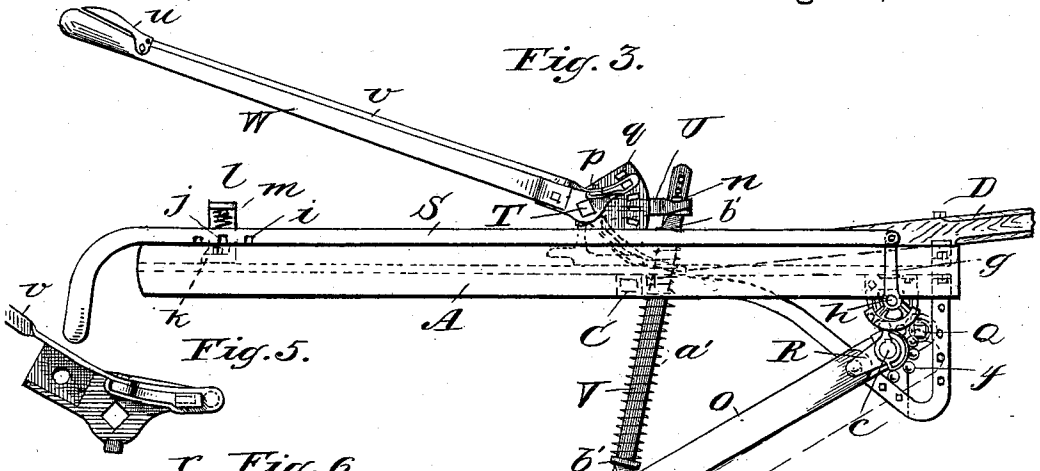


Fig. 5.

Fig. 6.

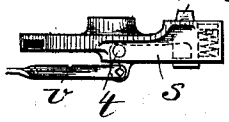


Fig. 4.

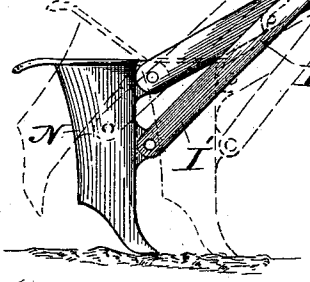


Fig. 7.

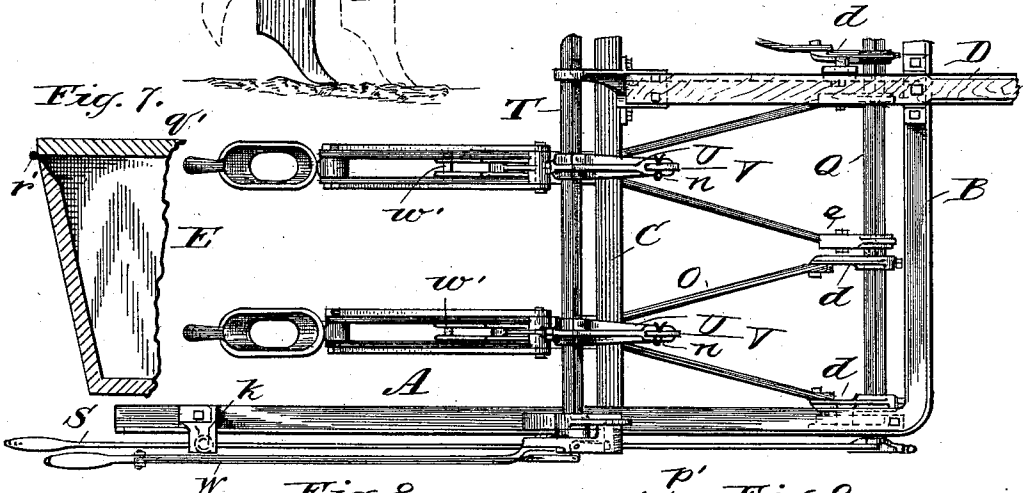


Fig. 8.

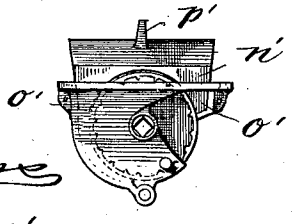
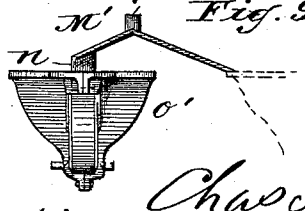


Fig. 9.



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(No Model.) 3 Sheets—Sheet 3.

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GRAIN DRILL.

No. 588,240. Patented Aug. 17, 1897.

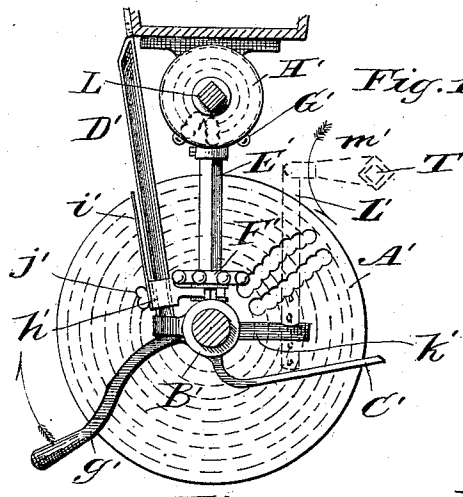


Fig. 10.

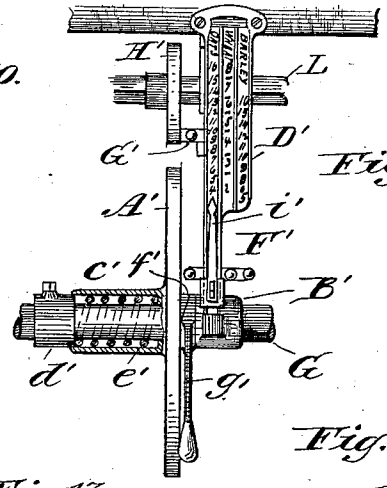


Fig. 11.

Fig. 12.

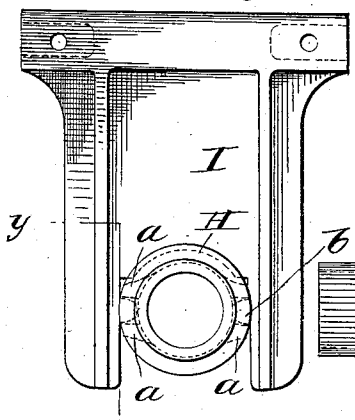


Fig. 13.

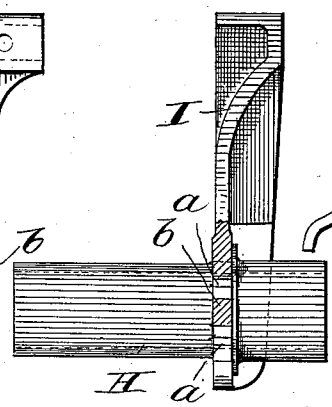


Fig. 14.

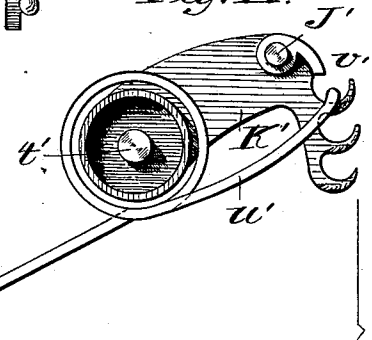
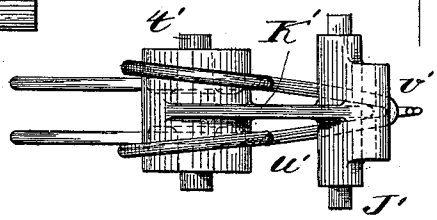


Fig. 15.



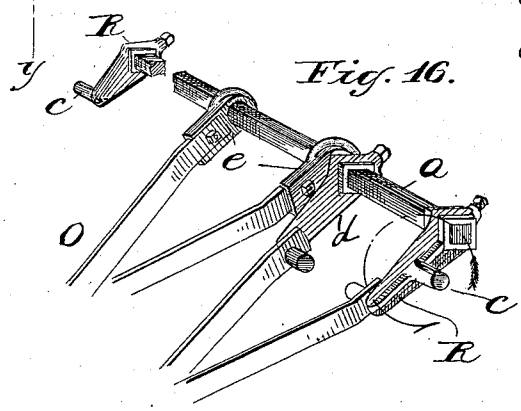
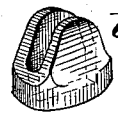


Fig. 16.

Fig. 17.



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UNITED STATES PATENT OFFICE.

CHARLES H. PELTON, OF SPRINGFIELD, OHIO, ASSIGNOR TO THE KITTS MANUFACTURING COMPANY, OF MILTON, INDIANA.

GRAIN-DRILL.

SPECIFICATION forming part of Letters Patent No. 588,240, dated August 17, 1897.

Application filed December 26, 1895. Serial No. 573,290. (No model.)

To all whom it may concern:

Be it known that I, CHARLES H. PELTON, a citizen of the United States, residing at Springfield, in the county of Clark and State of Ohio, have invented certain new and useful Improvements in Grain-Drills, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

My invention relates primarily to that class of grain-drills in which means for a variable feed are provided; and it has for its object the improved and simplified construction of such drills.

The first feature of my invention relates to novel means for shifting the hoes from a straight to a zigzag line, or vice versa.

The second feature of my invention relates to novel means for raising and lowering the drag-bars and hoes and exerting the required amount of pressure upon the same to suit the quality and condition of the soil.

The third feature of my invention relates to novel mechanism for varying the speed of the feed-shaft to suit the character of the seed being drilled.

The fourth feature of my invention relates to novel chute-plates within the hopper for directing the grain to either side of the double feed-wheels required.

The fifth feature of my invention relates to novel yielding locking devices for the hoes.

The remaining features of my invention relate to novel combinations and arrangements of the parts.

The novelty of my invention will be hereinafter set forth, and specifically pointed out in the claims.

In the accompanying drawings, Figure 1, Sheet 1, is a sectional side elevation of a grain-drill embodying my invention and taken on the dotted line *x x* of Fig. 2, looking to the right. Fig. 2, Sheet 1, is a rear elevation of the drill. Fig. 3, Sheet 2, is an enlarged detail side elevation of the hoe, zigzagging, pressure and raising, and yielding lock mechanisms. Fig. 4, Sheet 2, is a plan view of the mechanism of Fig. 3. Figs. 5 and 6, Sheet 2, are respectively side and plan views in detail of the lifting-lever lock mechanism. Fig. 7, Sheet 2, is a cross-section of a portion of the hopper. Figs. 8 and 9, Sheet 2, are respectively end and rear elevations of the feed-cups and chute-plates. Fig. 10, Sheet 3, is a sectional side elevation of the feed-varying mechanism. Fig. 11, Sheet 3, is a sectional rear elevation of Fig. 10. Fig. 12, Sheet 3, is an enlarged side elevation of one of the axle-boxes and hanger. Fig. 13, Sheet 3, is a sectional side elevation on the dotted line *y y* of Fig. 12. Fig. 14, Sheet 3, is an enlarged detail side elevation of the spring and spring-arm of the hoe-lock mechanism. Fig. 15, Sheet 3, is a plan view of Fig. 14. Fig. 16, Sheet 3, is a broken perspective of the zigzagging mechanism. Fig. 17, Sheet 3, is an enlarged perspective of one of the collars for the hoe-pressure mechanism.

The same letters of reference are used to indicate identical parts in all the figures.

The main frame of the drill is composed of continuous T-shaped metal side rails A and front rail B, braced by the square metal tubular bed-rail C, the tongue or pole D, and the hopper E, mounted by supporting-brackets on the side rails. (See Figs. 1, 3, and 4.)

F are the supporting-wheels, mounted by usual ratchet-and-pawl mechanism (not shown) upon the metal axle G, which is journaled in hangers H, engaging, by means of slotted lugs *a*, trunnions *b*, Figs. 12 and 13, in a slotted box I, pendent from and secured to each of the side rails A. This construction gives a limited swivel-bearing to the hangers, which prevents binding or wear of the axle G therein, as will be readily understood.

J are double interior feed-wheels, of the usual or any suitable construction, in cups K, secured to the under side of the hopper, and said wheels are mounted and revolve on a shaft L, driven from the axle G by means hereinafter described to convey the grain from the hopper to the receiving-spouts M, whose lower ends extend into the upper open ends of the usual hoes N, supported and carried by the usual drag-bars O and by the yielding lock-bars P.

I will now describe the forward connection of the drag-bars and the means for changing the position of the hoes from a straight to a zigzag line, or vice versa, reference being had to Figs. 1, 3, 4, and 16. A rocking bar

Q, preferably square in cross-section, has secured upon each end a side arm R, with a trunnion *c*, by which it is pivoted to pendent brackets secured to the side rails just in rear of the front rail. Extending rearwardly from the bar Q when the hoes are in a straight line for the forked end of each alternate drag-bar are a pair of crank-arms *d*, to which the forked ends of said drag-bars are pivoted. (See Fig. 4.) The intermediate forked ends of the other drag-bars are suitably journaled directly on the bar Q, in this instance by coupling-lugs *e*. One of the trunnions *c* extends through its bracket-journal and has secured upon it a pinion or segment of a pinion *f*, having ball-shaped teeth, Fig. 3, meshing with correspondingly-shaped depressions in a segment-lever *g*, pivoted, as at *h*. A push-and-pull bar S, pivoted at its forward end to the upper end of the lever *g*, extends back to the rear of the machine with a downturned end and is provided with notches or depressions *i*, Fig. 3, which engage a pin *j* upon a bracket *k*, secured to the side rails, Fig. 4. The bracket *k* carries a housing *l*, in which is confined a coiled spring *m*, bearing upon the bar S, to prevent its accidental disengagement from the pin *j*. From the above description it will be readily understood that to shift the hoes it is only necessary to slightly raise the bar S and push it forward or pull it back, as the case may be, whereupon the segment-lever *g* will be vibrated and the bar Q will be swung through the arc of half a circle, and if the hoes are in straight line the crank-arms *d* will be thrown forward of the bar Q and the bar Q will be thrown bodily back, thereby causing the hoes to assume a zigzag position. The reverse movement will restore the hoes to a straight line, as will be readily understood.

I will now describe the mechanism for raising and lowering and exerting the required pressure upon the hoes, reference being had to Figs. 1, 3, and 4. Suitably journaled in bracket-lugs upon the side rails and transversely of the same, above and slightly in rear of the bed-rail C, is a shaft T, preferably square in cross-section. This shaft carries fast thereon a series of forwardly-projecting arms U, one directly over each drag-bar and having vertical slots through their forward ends. A flat bar V has its lower end pivoted to each of the drag-bars, and its upper perforated end projects through the slot of the arm U directly above it. A pin *n*, passed through one of said perforations in the bars V and engaging the arms U, serves when the shaft T is rocked backward to raise all of the hoes and drag-bars simultaneously and to permit them to be lowered when said shaft is rocked forward. To thus actuate the shaft, I secure upon one end thereof a lever W, Figs. 3, 5, and 6, journaled to a bracket *p*, having therethrough a segmental row of perforations *q*, any one of which can be engaged by a dog *r*, normally held inward by a spring and actuated by a pivoted bell-crank *s*, pivoted, as at *t*, and controlled by a handle-piece *u* and connecting-rod *v* to hold the shaft T locked in any of its adjusted positions. This construction forms a positive lock which cannot be jarred loose and differs from any other hand lock-levers with which I am familiar. A coiled spring *a'* surrounds each of the bars V and is confined at its ends between collars *b'*, Figs. 3 and 17, loose upon the bars V, the upper ones bearing against the arms U and the lower ones against the drag-bars. When the shaft T is rocked forward, these springs are put under tension and, acting upon the drag-bars, force the hoes more or less into the ground.

I will now proceed to describe the mechanism for varying the speed of the feed-shaft L, reference being had to Figs. 1, 2, 10, and 11. Feathered, but free to slide upon the axle G, in this instance at or near its middle, is a driving-disk A', with concentric rows of depressions on its face, as in my prior patent, No. 450,758, of June 11, 1895, or in my pending application, Serial No. 536,959. This disk has on one side a recessed hub *c'*, which is guided upon a collar *d'*, fast upon the axle. A coiled spring *e'* within the hub tends to force the disk away from the collar *d'*. The opposite side of the disk carries a cam projection *f'*, with which a cam-hubbed lever *g'*, hinged on the axle, engages. The opposite side of the hub of said lever bears against a fixed sleeve B' on the axle and suitably braced to the frame of the machine in this instance by a forward arm C' and an index-post D', extending up and secured to the rear lower edge of the hopper. A squared vertical shaft E' has its lower end journaled in the sleeve B' and its upper end in a bracket on the under side of the hopper, through which the feed-shaft is journaled. Free to slide upon the shaft E' is a pinion F', with properly-shaped teeth to engage any one of the concentric rows of depressions in the disk A'. The upper end of said shaft carries any suitable pinion G', meshing with an engaging gear H', fast upon the shaft L. The post D' has adjustably secured upon its lower end a sleeve *h'*, with a forked extension embracing an annular groove in the hub of the pinion F', and said sleeve carries a pointer *i'*, free to be vibrated and clamped by a thumb-nut *j'*, so as to point to any one of a series of vertical index columns upon the post D', as seen in Fig. 11. The same thumb-nut that clamps the pointer *i'* to the sleeve also serves to clamp the latter to the post D' in adjusting the pinion F' up or down to vary the speed of the feed-shaft and the consequent rate of feed. The lever *g'* has a forward extension *k'*, with a vertical slot therethrough, through which passes the lower perforated end of a link-bar L', Figs. 1 and 10, whose upper end is pivoted to an arm *m'*, fast to and extending rearwardly from the rock-shaft T.

It will be seen from the above description that when the lever g' is raised by hand from the rear its cam-hub presses aside the disk A' and disengages it from the pinion F' to stop the feed. Under such operation the forward arm k' of the lever simply slips down upon the bar L'. A pin, however, is inserted through one of the perforations in the bar L' and bears upon the upper side of the arm k', so that whenever the shaft T is rocked backward to raise the hoes said pin presses upon the arm k' and actuates the cam-lever g' to disengage the disk A' from the pinion F', so that the feed is automatically stopped by the act of raising the hoes.

The next feature of my invention (illustrated in Figs. 1, 2, 8 and 9) relates to the shiftable chutes for the hopper for conveying the seed therein into either side of the seed-wheels desired. There is no bottom to the hopper except as afforded by the seed-cups and these chutes, which latter are cast-metal plates M', Figs. 8 and 9, of a width equal to that of the bottom of the hopper and inclined downward from an apex each way. On one side, as seen to the right in Fig. 9 and by dotted lines in Fig. 2, their straight lower edges rest upon the receiving end of one side of the cups. Their opposite sides have a vertical wall n' with a semicircular recess to fit over the feed-wheels, but are held from contact therewith by securing-lugs o', which enter sockets in the bridge-wall of the cups. A convenient lifting lug or projection p' is provided, by which they can be raised with the thumb and finger and reversed. For instance, in Fig. 2 these chutes are so adjusted that all of the openings to the left of the feed-wheels are uncovered to direct the grain to that side of the feed-wheel. By lifting them and turning them around all of the openings to the left would be covered and the openings to the right would be uncovered to permit access of the grain to the right side of the wheel. This change can be readily and quickly accomplished without loss of time, and the construction of the hopper is thereby materially cheapened and its efficiency in some respects increased.

A simple and efficient improvement in the construction of the hopper is also illustrated in Fig. 7, where the side of the hopper to which the lid q' is hinged, as at r', is beveled inward, thereby enabling the lid to act as a guide-chute in pouring the grain into the hopper and preventing the grain from lodging on the side of the hopper to which the lid is hinged, which would be the case if that side of the hopper were flat, as is usual in hopper constructions and which causes annoyance to farmers in clearing off the grain to properly close the lid.

The remaining feature of my invention, relating to the yielding lock mechanism for the hoes, is illustrated in Figs. 1, 3, 4, 14, and 15, where pivoted to the hoe below the pivotal point of the drag-bar are two forwardly and upwardly extending bars I', whose upper ends are pivoted to trunnions J' on a hook-piece K', pivoted, as at t', between the two arms of each drag-bar. Looped spring u' has its forward end hooked upon any one of a series of adjusting-hooks v', Figs. 14 and 15, and extending back is coiled around the hub of the piece K', and its rear ends are caught over and held upon a pin w', passed through each pair of drag-bars, as seen in Fig. 4. The pivotal points of the arms I' and of the piece K' are nearly but not quite in line, the latter being slightly below the former, so as to nearly but not quite effect a toggle-joint. The resistance of the spring u' under this adjustment is sufficient to hold the hoes upright in proper working position, but should a rock or other immovable obstruction be met with the hoe breaks its lock, and in being pressed back to the position shown by the dotted lines, Fig. 3, draws up the piece K' against the tension of the spring u' until the obstacle having been passed the spring draws down the piece K' and restores the hoes to working position.

Having thus fully described my invention, I claim—

1. In a grain-drill, the combination with the hoes and their drag-bars, of a rocking bar hung to swing through the arc of a circle, arms projecting therefrom for the alternate sets of drag-bars to which the latter are pivoted, connections for the intermediate drag-bars to the rocking bar direct, and means for rocking said bar to shift the hoes from a straight to a zigzag line, or vice versa, substantially as described.

2. The combination with the rocking bar, Q, to which the drag-bars are connected and arranged to be swung through the arc of a circle, of the pinion, f, for rocking said bar, the segment-lever g engaging the latter and the push-and-pull bar, S, for the lever with means for holding it locked in its adjusted positions, substantially as described.

3. In a grain-drill, the combination with the rock-shaft, T, coupled to the drag-bars, the lever, W, fast thereon, the slotted segment-plate, p, for said lever, and the bell-crank-operated locking-dog, engaging said slotted plate, substantially as and for the purpose described.

4. In the feed-changing gear of a grain-drill, the combination of the driving-disk, A', the shiftable pinion, F', therefor geared to the feed-shaft and carried by a sleeve on an indicator-post, and an adjustable pointer for said sleeve, substantially as described.

5. In a grain-drill, the combination with boxes on the side rails provided with trunnions, hanger-sleeves, swiveled to said trunnions and the main axle journaled through said hanger-sleeve, substantially as described.

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