J. S. BOGLE.
Grain-Drill.

No. 197,320. Patented Nov. 20, 1877.

Fig. 1.

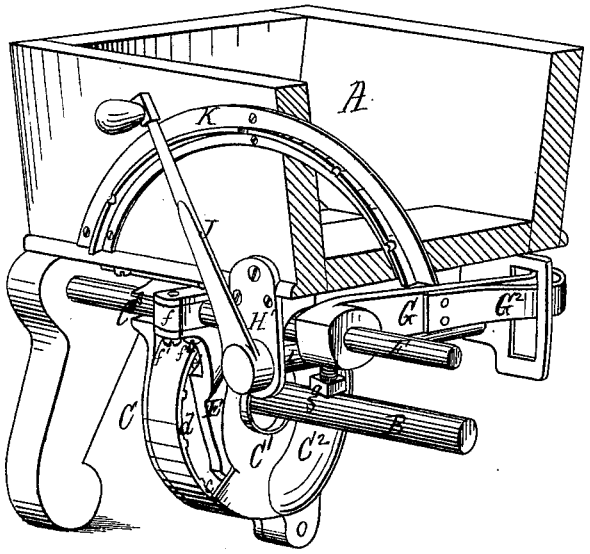


Fig. 4.

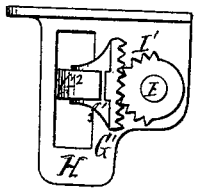


Fig. 5.

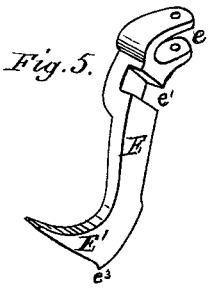


Fig. 2.

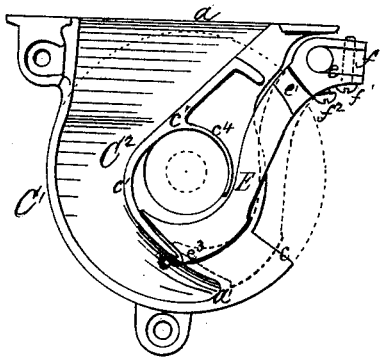


Fig. 6.

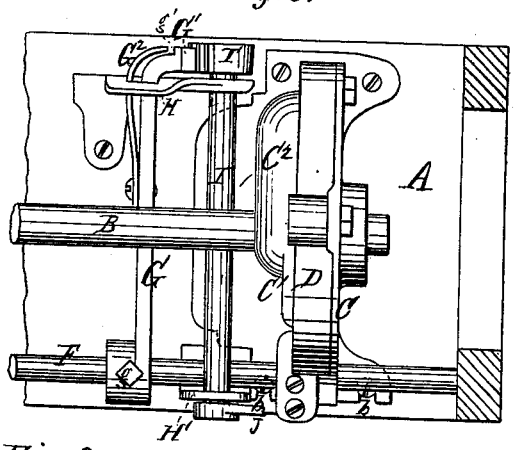
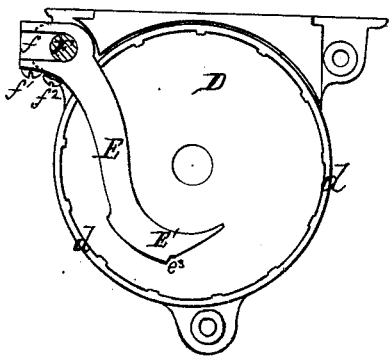


Fig. 3.



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IMPROVEMENT IN GRAIN-DRILLS.

Specification forming part of Letters Patent No. **197,320**, dated November 20, 1877; application filed May 3, 1875.

To all whom it may concern:

Be it known that I, JAMES S. BOGLE, of Springfield, county of Clarke 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 drawing, making part of this specification, in which—

Figure 1 represents a perspective view of a section of the grain box or hopper, showing one of the distributers, with the gage and its adjusting devices. Fig. 2 is an inside elevation of one of the distributer casing-plates with the gage applied, the relation of the distributer-wheel thereto being shown in dotted lines. Fig. 3 is a view from the reverse side, showing the relation of the gage to the wheel. Fig. 4 is a front view of the arm and pinion or segment for adjusting the gages, and the bearing and guiding bracket for the same. Fig. 5 is a perspective view of the gage detached; and Fig. 6 is a bottom view of a section of the hopper, showing one of the distributers, and the arrangement of devices for effecting the adjustment of the gage.

Similar letters of reference denote corresponding parts of the machine wherever used.

The invention relates to that class of grain-drills employing what is known as vertical distributing-wheels, in which a "force feed" is arranged at the vertical side or face of a wheel rotating on a horizontal axis.

In the class of grain-drills above referred to, the usual mode of effecting a change in the feed has been by a change of pinions on the distributer-shaft, a large pinion being used for a slow feed, and smaller ones for increasing the speed of said shaft, and the amount of seed discharged by the distributer-wheels, and this method, while proving very satisfactory in the hands of skilled operators, yet, owing to the difference in the sizes of kernels, and measure of smoothness or hardness of the same kinds of grains, but of different names or qualities, sometimes a variation in the feed is effected from that which would be indicated by the number of the pinion employed, and this, of course, can be remedied only by substituting a pinion of a larger or smaller size than that indicating the amount required to be sown per acre.

Among the advantages resulting from the employment of these vertical distributing-wheels, with their changeable pinions, may be mentioned the fact that the shape or contour of the measuring-channel remains always unchanged, and precisely that which experience has demonstrated to be best adapted to the work required of it; but it has sometimes been found that the channel, which was small enough to meet the requirements of the smaller and smoother grains, such as wheat and rye, in order to distribute only the proper quantity to the acre, was insufficient for the discharge of the requisite quantity of the larger and softer grains; hence it has been common to provide the distributer-wheels with measuring-channels upon its opposite sides, one for small and the other for larger grains, such channels having, however, substantially the same form, but of different sizes or capacities, this construction resulting from the difficulty experienced in the effort to change the size of the channel without at the same time changing the form of the same, and thereby impairing its action on the grain.

One of the principal objects of the present invention is to provide for changing the size or capacity of the measuring-channels in the class of distributing-wheels above described, by the employment therein of movable gages, by the adjustment of which the size of the channels may be varied, as desired, for increasing or diminishing the quantity to be sown per acre, and for adapting the same channel to different kinds of grain, without substantially changing the form of said channel between the gage and the carrying-flange of the wheel, and without interfering with the carrying capacity of the wheel, thereby obviating the necessity for the employment of the two channeled wheels and the changeable pinions referred to, while at the same time enabling the attendant, while the machine is at work, to readily vary the amount to be sown per acre, as also to vary the quantity to suit the varying qualities of the soil over which the machine is drawn.

The construction and arrangement of devices by which the above-named objects are attained will be best understood from the following description with reference to the drawings, in which—

A represents the grain box or hopper, under-

neath which, in suitable bearings in the hopper end plates, is mounted the distributer-wheel shaft B, upon which, at suitable intervals or distances apart, are a series of distributing-wheels, with their inclosing plates or casings, the latter being firmly secured to the bottom of the hopper, said parts, except in the particulars hereinafter specified, being similar to like parts in machines in common use.

The wheel-casing is divided vertically into two parts, C C^1, one of which affords a bearing for a hub upon one side of the wheel D. The casing-plate C^1 is made in hopper form at C^2, the hopper extending from the bottom of the grain-box at *a* down at the side of the wheel in front of the shaft B, and underneath the same tapering to a point, at *a'*, from which, to the point of exit at *c*, the measuring-channel is walled in by the side of the wheel and the parallel side of the casing-plate, and the flange *d* at the periphery of the wheel and an adjustable gage, E. The outer edge of this hopper part C^2 curves inward to and terminates at the flange *d* of the wheel, and the inner part or wall of said hopper part adjacent to the shaft is formed by a flange, c^1, beginning at the flange on the wheel directly under the grain-box, and near the highest point of the wheel, and extending thence in front of and around under the shaft, in contact or in close proximity to the vertical side of the wheel, to a point at c^x, where it is supplemented by the gage E. The gage E consists of a bent or angular arm, forked or recessed at its upper end, at *e*, for adapting it to be readily connected with or removed from a rock-shaft, F, arranged outside of the periphery of the wheel, as hereinafter described, and is notched at c^1, to accommodate the flange *d* of the wheel D, moving through said notch, and for bringing the face of the gage inside of said flanges *d* against the vertical face of the wheel. The flange c^1, at its lower end, on its inner face, adjacent to the shaft, is curved in the arc of a circle, of which the rock-shaft F is the center, and the lower swinging end of the arm or gage E, which is bent into an angular form of foot, E', for the purpose, is similarly curved, and rests at said end in contact with or in close proximity to the inner face of the flange c^1, as shown in Fig. 2.

At the heel e^3 of the gage E the channel through which the grain passes from the grain-box to the point of exit or discharge at *c* is most contracted in depth between the flange of the wheel and the opposing flange or gage, and forms the measuring-point, determining the capacity of the measuring-channel, and from this point to the point of exit the channel may either be continued of uniform depth, or the gage may be made to diverge from the flange of the wheel, for giving a free escape to the grain. This divergence should, however, be slight, as it is important to keep the grain in compact shape for delivery.

By rocking the shaft F this heel portion of the gage may be moved nearer to or farther from the flange of the wheel without substantially changing the form of said channel in the particulars named, but, of course, reducing or increasing its size and capacity as required.

The heel or shoulder e^3, when the channel is enlarged to its greatest capacity, rests against the end c^x of the flange c^1, and the adjacent side of the hopper part C^2, which extends underneath and in rear of said flange, is continued in the arc of a circle conforming to the movement of the heel e^3.

By this construction an ample feed is provided for the measuring-channel under any adjustment of the gage E, while the angular or shoulder form given to the heel e^3, as shown, causes it to act as a cut-off, and to "strike" the grain to the measuring capacity of the channel, and prevents said channel from being unduly packed or crowded, thereby preventing injury to the grain.

The flange c^1 may be continued, as at c^4, over the shaft and to the rear thereof; but from this point, the axle being closed in from the grain by the gage, the flange is discontinued, permitting any grain that may accidentally be carried through the notch e^1 by the movement of the wheel-flange to escape through the perforation in the side casing through which the distributer-wheel shaft passes.

The fork *e*, when the gage is in place on the shaft F, is closed by a block, *f*, matching against the shaft, and serving, in connection with a through-bolt, f^1, to secure the arm or gage upon the shaft. A set-screw, f^2, serves to hold the gage in the desired relation to the shaft, and to insure its vibration therewith. By loosening the set-screw and removing the bolt and block f^1 *f*, the gage E can be readily detached from the shaft.

This shaft F is located outside the periphery of the distributer-wheels, and, by preference, in rear of and above the same, and has bearings in one of each of the several pairs of casing-plates, said bearings being notched or left open at the rear, as shown at C^3, to permit the separate removal of the distributer-wheels and casings when desired; and to facilitate this operation the rear part of the flange, through which the casings are secured to the hopper, may be notched or cut away at the fastening-screws, as shown at *b*.

The shaft F, which extends from end to end of the grain-box, and has all the gages connected directly to it, as explained, has further bearings in the hopper end plates, or at other convenient points, for holding it firmly in place.

An arm, G, keyed or fastened, by a set-screw, *g*, to the shaft F, at any convenient point in its length, extends forward to the front of the grain-box underneath the same, and through a slotted guiding-bracket, H, and is provided at its forward end with a toothed rack at G^1, which engages with and is operated by a pinion or segment, I', on the forward end of a rock-shaft, I, mounted in bearings in pendent-brackets H H'.

The rear end of this rock-shaft has a spring-arm, J, rigidly connected with it, said arm extending up within convenient reach of the driver riding on the machine, and is held at any desired point of adjustment by a curved notched bar or rack, K, the tension of the spring-handle serving to hold it engaged with said rack. The rack K is graduated, and certain of the retaining-notches may be numbered to indicate the quantities sown to the acre when the handle is placed in such notches, and intermediate notches may be used to indicate fractional parts.

Loss of motion between the pinion or segment I′ and the lever-rack G^1 is prevented by a stiff plate-spring, G^2, secured to the arm G, and passing through the slotted bracket H, for holding the arm, with the rack G^1, closely in mesh with the pinion I′. The forward end of this spring is bent, as shown in Figs. 1, 4, and 6, and forms a stop, striking against a ledge or shoulder, g', in case the rack should by any means be crowded away from the pinion, and thus effectually prevents the rack and pinion from becoming disengaged.

By the above-described construction of the gages E, in connection with the arrangement of the devices for adjusting or controlling the same, the attendant is enabled readily to adapt a machine having vertical distributing-wheels to the kind of grain to be sown, and to regulate with precision the quantity of such grain to be distributed per acre while the machine is in operation, thereby obviating the necessity for the double distributing-wheels referred to, though such wheels can be used, if desired, with the gages applied to either or both sides thereof, as preferred.

Sometimes wheels are employed with laterally-projecting teeth or spurs at the periphery, which move the grain over a stationary flange on the casing-plate covering said teeth.

The measuring-channel being in this construction, as in that above described, at the vertical side of the distributing disk or wheel, the gages may be applied with equal advantage, the necessity for changeable pinions on the distributer-wheel shaft for changing the feed being in both cases dispensed with, as is also the necessity for the use of the sliding hopper-bottom, as heretofore used in machines employing the double distributing-wheels.

Having now described my invention, what I claim as new, and desire to secure by Letter Patent, is—

1. A cut-off gage arranged within the channel of the distributing-wheel, with its swinging end facing the moving grain, and adapted to intercept all except what passes through the discharge-outlet.

2. The gage with its swinging or adjustable end facing the moving grain, in combination with the rotating disk of the distributing-wheel.

3. The adjustable gage E, pivoted in rear of the driving-shaft, its forward end operating behind a stationary flange on the casing-plate, substantially as described.

4. The gage E, provided with slotted or open ends, whereby it may be attached to or removed from the rock-shaft F, at will, without removing the shaft or displacing any of the remaining gages.

5. The enlarged run or reservoir in the seed-cup, formed at its discharging end, adjacent to the measuring-channel, in the arc of a circle, of which the pivot of the adjustable gage is the center, whereby the heel of said gage, under its various adjustments, is kept flush with the curved edge of said seed-run, for preventing the grain from crowding in the measuring-channel and passing above the gage, substantially as described.

6. The distributer-casing provided with the opening in the flange c^4, to permit the displacement of dirt or other obstructing material that may accumulate on the top of the gage.

7. The distributer-casing provided with the open shaft-bearing c^3 for the rock-shaft F, permitting the removal or adjustment of the distributers without displacing said shaft.

8. The adjustable gages attached to and operated by a rock-shaft, in combination with an indicator arm or lever moving in a direction at right angles to the direction of movement of the gages.

9. In a seeding-machine, the spring G^2, in combination with the governing-arm G and pinion I′, substantially as and for the purpose described.

10. The indicator-plate K and spring J, in combination with the shaft I, pinion I′, governing-arm G, and spring G^2, for adjusting the gages, arranged and operating substantially as described.

11. In a seeding-machine, the pendent slotted bracket H, provided with a bearing for the rock-shaft I, in combination with the arm G, arranged and operating as described.

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