

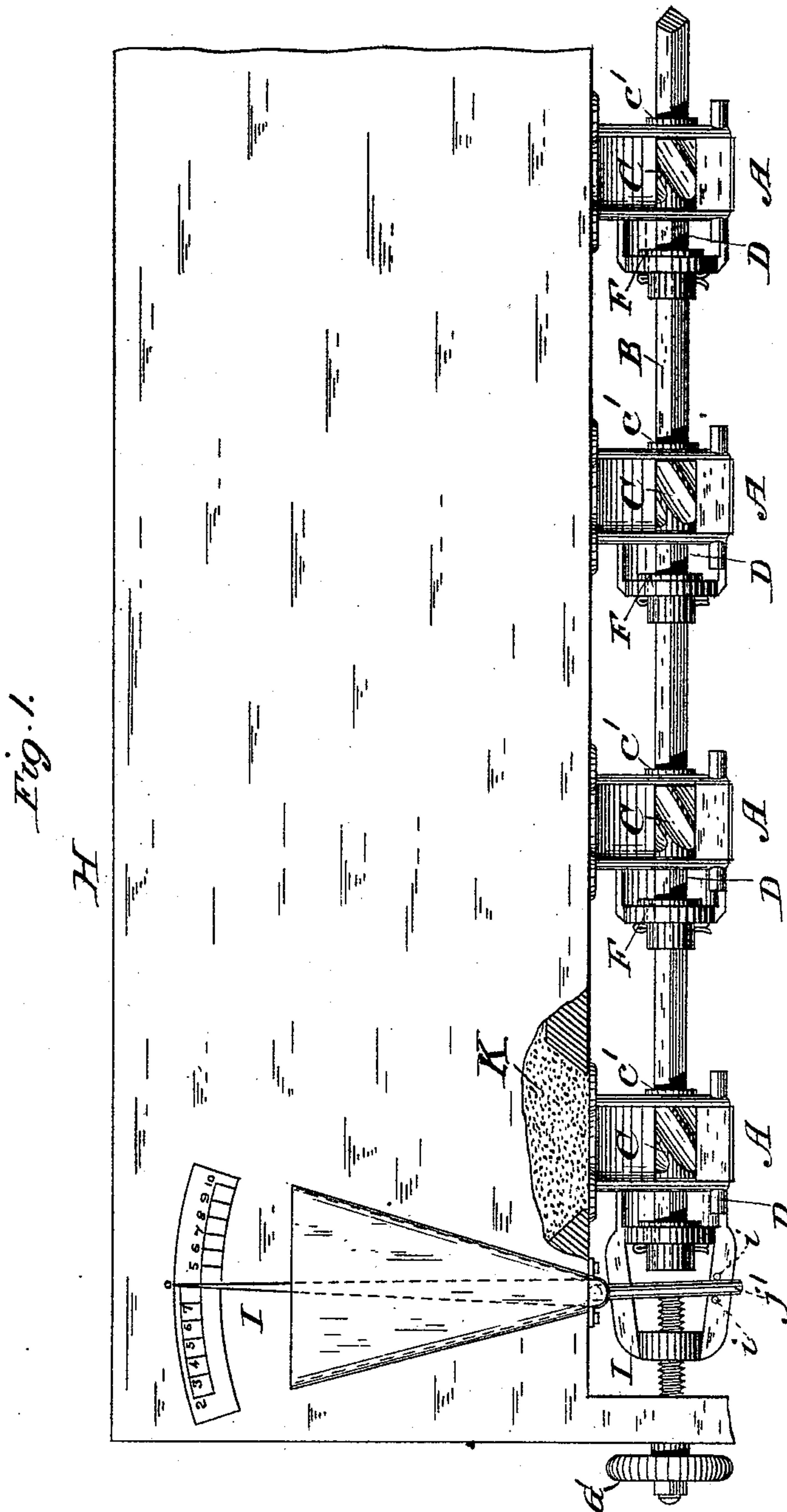
(No Model.)

2 Sheets—Sheet 1.

J. J. ESLER.
GRAIN DRILL FEED DEVICE.

No. 500,323.

Patented June 27, 1893.



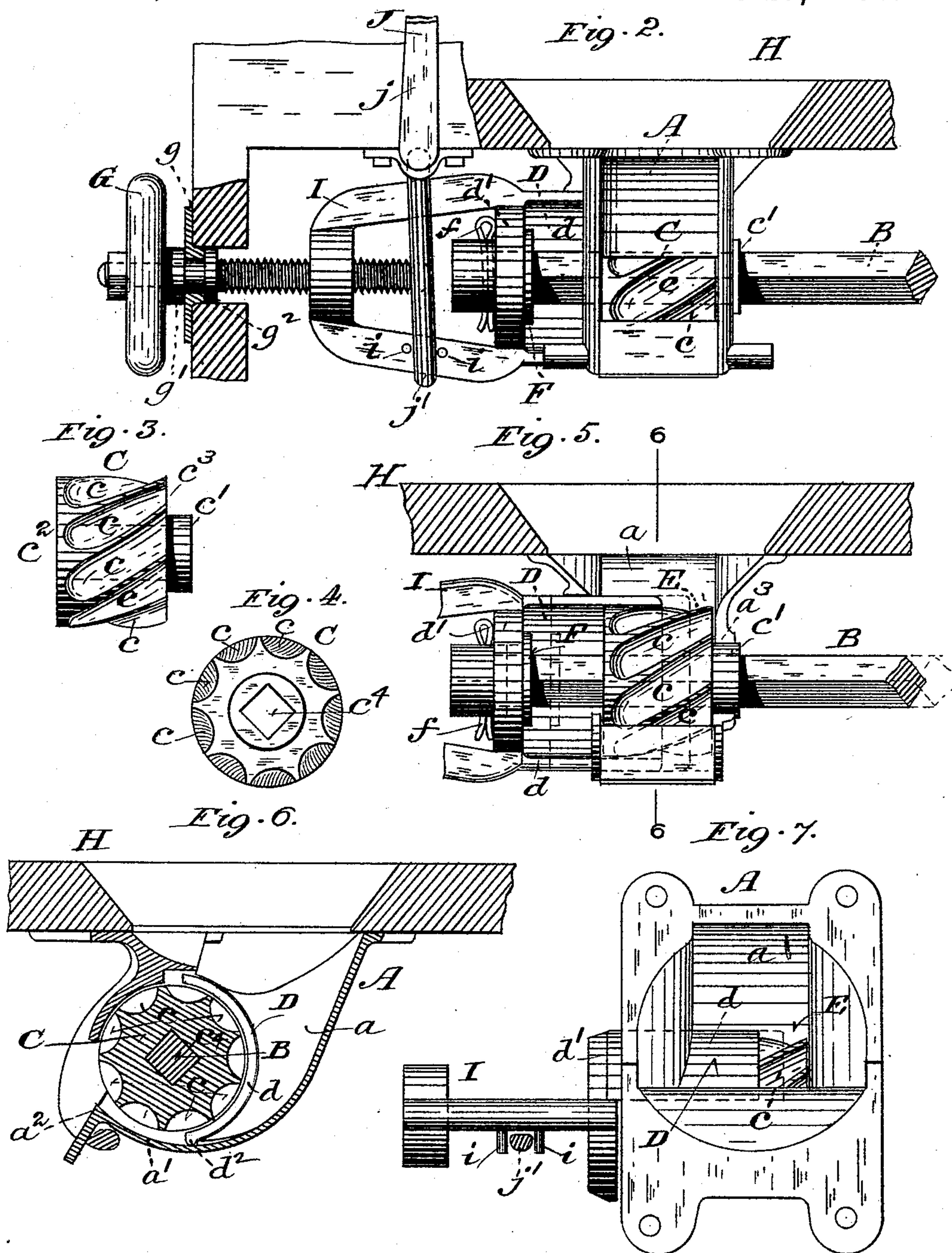
WITNESSES
Edward L. Furrell
A. Bowville

INVENTOR
Jacob J. Esler
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WITNESSES
Edward W. Farnell
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UNITED STATES PATENT OFFICE.

JACOB J. ESLER, OF BELLEVILLE, ILLINOIS.

GRAIN-DRILL FEED DEVICE.

SPECIFICATION forming part of Letters Patent No. 500,323, dated June 27, 1893.

Application filed February 17, 1892. Serial No. 421,801. (No model.)

To all whom it may concern:

Be it known that I, JACOB J. ESLER, of Belleville, Illinois, have made a new and useful Improvement in Grain-Drill Feed Devices, of which the following is a full, clear, and exact description.

The novelty consists in the construction of the several parts and in their combination as a whole substantially as is hereinafter set forth and claimed, aided by the annexed drawings, making part of this specification, and exhibiting the most desirable mode of carrying out the improvement, in which—

Figure 1 is a rear elevation exhibiting a portion of the hopper and the feed devices thereto belonging, a portion of the hopper being broken away; Fig. 2 an elevation from the same point of view as that of Fig. 1, but upon an enlarged scale, and showing an additional portion in section; Fig. 3 a side elevation of the feed-screw used in each of the feed devices; Fig. 4 an end elevation of the same; Fig. 5 a longitudinal sectional view of one of the feed devices, the cut off being partly closed; Fig. 6 a vertical cross-section on the line 6—6 of Fig. 5; Fig. 7 a plan of one of the feed devices.

The same letters of reference denote the same parts.

The present construction is somewhat analogous to one described in the United States Letters Patent granted to me March 30, 1869, No. 88,465, for an improvement in seeding machines. The construction referred to had, for its leading feature, a fluted feed-cylinder adapted to be revolved in a cup and, in its rotation, to receive the grain in the recesses, formed in it by reason of its flutings, and carry it to the outlet from the cup, and there discharge it, and also adapted to be adjusted endwise in the cup whereby its recesses are enlarged or diminished according as it is desired to sow more or less grain. The construction referred to is not wholly satisfactory in that the grain cannot well be fed uniformly from the cup, and to obviate this difficulty is one of the principal aims of the present construction, which, generally speaking, comprises a cup A, a shaft B extending transversely through the cup and carrying a

feed-screw, C, which takes the place of the feed cylinder of the former construction, and an adjustable gate or cut-off, D, whose function it is to graduate the opening through which the grain passes from the interior of the cup into the recesses, *c*, of the feed-screw. To this end the cut-off, D, is substantially of the shape shown in Figs. 2, 5, 6, and 7, namely, a semi-circular shell, *d*, in length equal to the width of the cup, or thereabout and adapted, when closed, to entirely separate the interior, *a*, of the cup from the feed-screw, or when drawn outward from the cup, more or less, and as shown in the figures named, to provide a passage, E, for the grain to pass to the feed screw. The shell, *d*, is attached to, or made part of, a head, *d'*, perforated centrally to fit onto a bushing, F, which, in turn, is fast, say by means of the pin, *f*, upon the shaft B. In this manner the cut-off head, *d'*, becomes a bearing, at one side of the cup, for the shaft and bushing to rotate in. At the opposite side of the cup the feed screw is extended to form a journal, *c'*, for the shaft B—that is, when the shaft is rotated, by any suitable means, not shown, its journals are the bushings F, and the extensions *c'*. The shaft, carrying the cut off, which is adapted to follow the shaft when that part is shifted endwise through the feed screw, can be adjusted in the direction of its length to move the cut off transversely in the cup in the manner, and for the purpose, described, and, in all its positions the shaft journals are the ones named. Any suitable means such as the hand screw, G, can be employed to shift the shaft longitudinally. The particular means exhibited are preferred, partly for the reason that the shaft in any of its positions does not need to project laterally beyond the end of the hopper, H, to interfere with any of the working parts of the drill in that portion of the construction, and partly in that it, in connection with the swivel, I, coacting with it, provides for the operation of the indicator, J, without interfering with the operation of the feed screw shaft and parts therewith connected. There are the usual number, more or less according to the size and style of the drill, of the improved

feed devices, and all operated by means of the single shaft B, substantially as is indicated in Fig. 1. The cups, A, saving as they may be modified by the present improvement, are of the customary construction, and the grain, K, is delivered from the hopper thereinto in the usual manner. The flutings, which constitute the recesses, *c*, in the feed screw for the reception of the grain, are as seen of a spiral or analogous shape, starting near the end, *c*², of the feed screw and extending thence slantingly more or less around the feed wheel, and in the direction in which the feed wheel rotates in its operation, and toward or to the opposite end, *c*³, of the feed screw, substantially as shown.

The operation of the improved device is as follows: The grain to be sown being delivered into the cup in the ordinary manner, and the cut-off being adjusted, as described, to form a passage E of the desired width according to the amount of grain that it is desired to sow, and the shaft and feed screw being rotated (while the shaft can be slipped endwise through the feed screw these two parts are so connected as to rotate as one part. This is preferably accomplished by having the shaft squared or shouldered to work through a corresponding opening, *c*⁴, in the feed screw), the grain passes through the passage E to the feed screw and enters the recesses *c* at the end *c*² thereof. Now, in the original construction referred to, the recesses in its feed cylinder extended parallel with the feed-cylinder shaft, and after any grain had entered one of the recesses it was not moved laterally in the recess before being discharged from the cup but remained in that part of the recess into which it was originally delivered until, in the rotation of the feed-cylinder, ejected from the cylinder and cup. By reason of this the grain was unevenly fed to the drill-shoe. In the present construction the grain does not remain in that part of the feed screw-recess into which it is originally delivered, but, in the rotation of the feed-screw, the grain works along the winding or slanting recess, *c*, until it is distributed throughout the length thereof. It will be seen that the lip, *d*², which constitutes the lower edge of the shell *d*, is rather toward the front of the feed screw, and that a considerable portion, *a*', of the bottom of the cup extends to the rear of the lip, and that the portion, *a*', inclines upward. While I desire not to be restricted to these precise shapes I consider them preferable, for they serve to effect the placing of the grain so along the bottom of the cup in advance of the point *a*², at which the grain is discharged from the cup, that when the grain comes to the portion, *a*', its movement is gradual and its quantity is uniform, and the practical result is the very even delivery of the grain from the cup. Unlike the construction referred to, more than one of the recesses, *c*, is

delivering the grain into the portion, *a*', of the bottom of the cup—that is, by reason of the described spiral or oblique direction in which said recesses extend, two or more of them, in every position of the feed screw, are discharging grain, and, however wide or narrow the passage E, to the feed screw may be, the grain, on the discharge side of the feed screw, is spread out substantially the entire length of the feed screw, and owing to the fact that the cut off does not extend all around the feed screw the lower rear portion of the feed screw is always opened throughout its length. In this manner an ample discharge or vent is provided, and if any foreign matter finds its way through the passage E, into the feed screw it is always discharged therefrom by reason of the described construction.

The mode of graduating the feed is indicated in Figs. 5 and 7, the cut-off movement in enlarging and narrowing the passage E being illustrated by the two positions of the cut-off shown respectively in the full and in the broken lines; that is, to enlarge the passage E, the cut-off is drawn to the left as shown, and, to contract said passage, to the right. The shaft, B, it will be noted is supported by each of the feed devices, and it is thus well sustained throughout its entire length. Each feed screw immediately supports the shaft and each feed screw extension, *c*', is a journal which rotates within a bearing, *a*³, in the cup A. The shaft, B, is adjustable longitudinally in said journals, but in all of its positions it serves, when rotated, to carry the feed screws around with it. All of the cut-offs of the respective feed devices, while unaffected by the rotation of the shaft B, follow the shaft in its endwise adjustment. Such endwise adjustment is accomplished by means of the screw G, which engages in the swivel, I, which, in turn, is attached to, or made part of, the cut-off, D, of the end one of the series of feed devices. Said screw G, substantially as shown in Fig. 2, is adapted to rotate in a bearing *g*, but by means of the shoulders, *g*¹, *g*², is confined longitudinally, and thus by rotating the screw the shaft B, and the cut-offs D, D, are adjusted accordingly.

The indicator, J, is of the customary form, but it is, in the present case, conveniently operated by means of the swivel I, the indicator finger, *j*, being extended, at *j*', to engage with the pins, *i*, *i*, upon the swivel, and moving according to the direction and extent of the adjustment of the swivel and parts therewith connected as described.

I claim—

1. In a grain drill feed, substantially as described, the combination of the feed screw and adjustable cut off perforated centrally to fit upon the bushing, which is placed on the shaft of the feed screw, with the swivel

operated by the hand screw, which in turn operates the cut off, substantially in the manner set forth.

5 2. In a grain drill feed, substantially as described, the combination of the hand wheel G, and its feed screw, with the swivel I, having attached thereto the indicator J, and the shaft B, carrying the feed screws C, and the adjustable cut offs D, placed respectively on

bushings F, along said shaft and operated by said hand wheel, all substantially as set forth.

Witness my hand this 11th day of February, 1892.

JACOB J. ESLER.

Witnesses:

L. W. MOORE,
R. B. ESLER.