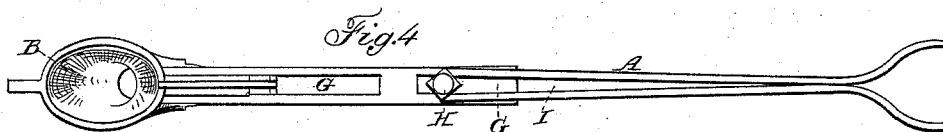
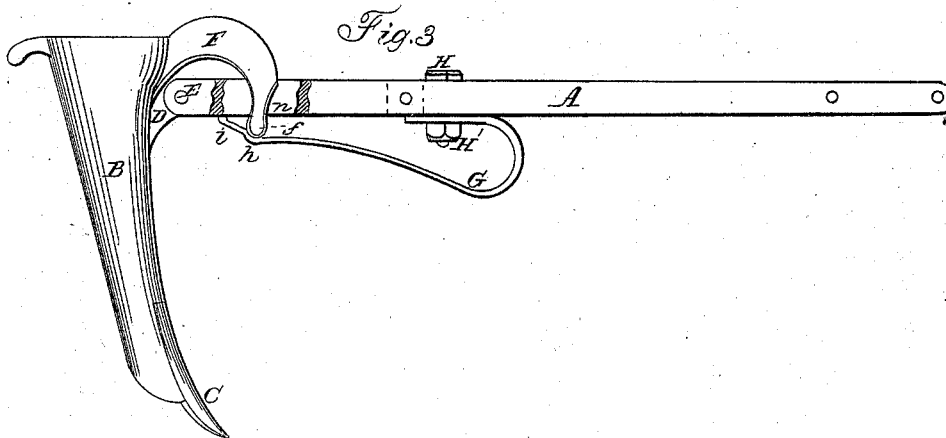
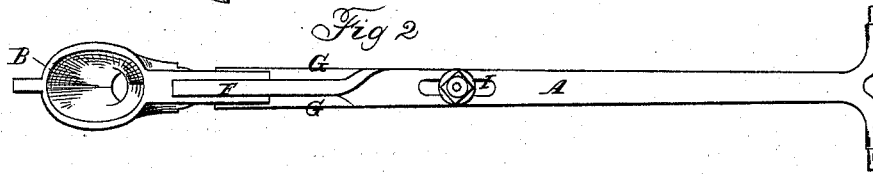
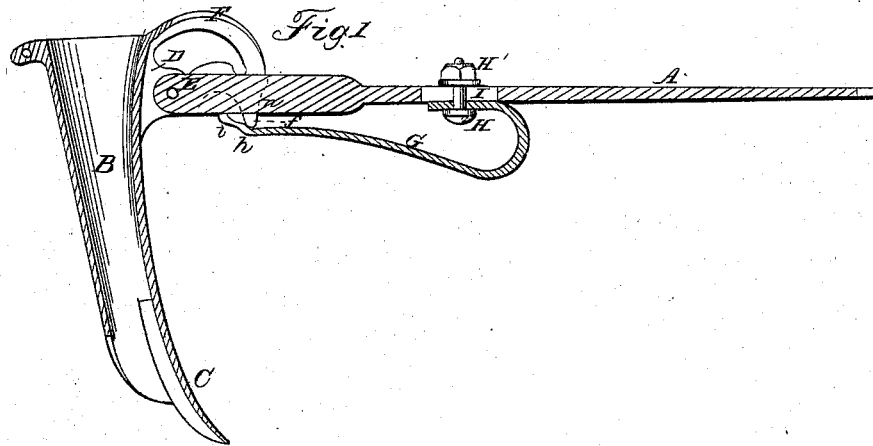


Seed-Drill Teeth.

Patented June '6, 1865.



Witnesses:

C. D. Smith
James H. Gridley

Inventor:

Joseph Ingels

UNITED STATES PATENT OFFICE.

JOSEPH INGELS, OF MILTON, INDIANA.

IMPROVEMENT IN GRAIN-DRILLS.

Specification forming part of Letters Patent No. 48,069, dated June 6, 1865.

To all whom it may concern:

Be it known that I, JOSEPH INGELS, of Milton, in the county of Wayne and State of Indiana, have made new and useful Improvements in Grain-Drills; and I do hereby declare the following to be a full, clear, and exact description of the nature, construction, and operation of the same, reference being had to the accompanying drawings, which are made part of this specification, and which exhibit two substantially analogous embodiments of the novel features of my invention, differing in unimportant particulars.

Figure 1 is a vertical section, and Fig. 2 a plan, of one of these forms. Fig. 3 is a view principally in elevation, and Fig. 4 is a plan of the other form.

Similar letters in the different figures indicate corresponding parts.

My invention essentially consists of a method of adjusting in position and of returning to the said position the hoe after it has been deflected to the rear by an obstacle.

To enable one skilled in the branch of manufacture to which my invention is allied to make and use the same, I will proceed to describe it.

I will speak first of the form shown in Figs. 3 and 4.

A is a drag-bar, attached at its forward end by a hanger to the frame of the drill-carriage.

B is a "hoe," as it is called in the trade, although it is otherwise called a "flute." This receives at its upper orifice the seed as it falls from the hopper, and allows it to fall into the furrow made by the point or shovel C. The hoe B is pivoted to the drag-bar by means of a lug, D, and pin E, and from the upper forward end of the said hoe protrudes a lug, F, which, curving downwardly, impinges upon the spring brace-bar G, which is secured by bolt and nut H H' to the drag-bar A. The shape of this spring will be readily seen in the drawings, and it consists of a flattened portion, which is attached to the drag-bar, from thence, passing forward and downward, it forms a loop, and, recurving backwardly, has at the point *h* a curved depression, in which the point of the lug rests during the ordinary working position of the hoe.

It will also be seen that the bolt passes through a slot in the drag-bar, Figs. 1, 2, or between the pieces, which, united, form a drag-bar, Figs. 3, 4, and is capable of adjustment forward or backward, the effect of which

is to govern and control the normal position of the hoe, for when the bolt H is set forward it has the effect of drawing forward and upward the point of the lug F and increasing the "rake" or inclination of the hoe. The contrary effect, I may say, though it is perhaps superfluous, is produced by setting the bolt back in the slot I. I need hardly state that several of these hoes, similarly adjusted and controlled, are used in a gang; but it will add to the perspicuity of this paper to continue to speak of one of them, premising that what is said of one applies to each under similarly-impelling circumstances. When a hoe comes in contact with an immovable obstacle the former is deflected to the rear to an extent proportionate to the height of said obstacle, and the point of the lug F traverses back on the spring-bar. If the backward course of the point *f* does not extend beyond the inclined portion *i* of the spring, the effect of the latter, as soon as the obstruction is passed, is to restore the hoe to its normal position with the point *f* resting in the depression *h*.

At the end of the incline *i* is a small curve, which acts as a temporary detainer to the hoe in its rearward motion, and prevents it from passing over unless the obstruction is of such a height as to compel it to do so. In this latter case the extreme point of the spring-bar G traverses the curved depression *n* in front of the lug F and above its point *f*.

It has been my aim so to proportion the parts that obstructions which do not protrude above the surface will not deflect the hoe so far backwardly as to be beyond the power of the spring-bar G to restore it; but when that occurs the hoe is restored to its normal position by backing the drill when the contact of the hoe with the ground, throwing the hoe forward again, places it within the control of the spring, which, in connection with the resumption of the forward motion of the machine, restores the parts to their working position.

In Figs. 1, 2, 3, and 4, respectively, may be seen substantially similar modes of attaining the result. The difference, when any exists, is to be found in the drag-bar and the form of the lug F, whose change is incident to the change in the drag-bar.

It will not be proper to dilate upon a comparatively immaterial modification; but it will be apparent in Figs. 1 and 2 the drag-bar is

made in one piece, and is provided with a slot for the adjustment of the bolt H, while in Figs. 3 and 4 the drag-bar is made of two pieces riveted together, and affording by a space between the bars of which it is composed a place for the adjusting-bolt H. Further, in Figs. 3 and 4 the lug F, as the hoe, is made in a single horn or prong, with a rib on its edge which forms a guide as it moves within the opening between the sides of the drag-bar, while in Figs. 1 and 2, the horn or prong is duplicate, and the respective portions pass on each side of the drag-bar. Their functions are exactly similar, and it is merely a question of manipulation and economy of construction, the balance being in favor of the mode shown in Figs. 3 and 4, as it saves blacksmithing.

After tedious and protracted experiments with different-shaped springs I have determined that the one shown and described acts in a more effective manner than any other with which I have become acquainted. When it is deflected downwardly to the lowest position it is then nearly parallel with the drag-bar, and the incline *i* presses forward and reinstates the

hoe in its normal position. Were this effected by a spring which proceeded immediately backward from its point of attachment it would be liable to rupture at the said point, whereas by its recurved form it so far divides the elastic deflection as to bring no appreciable definite strain upon any one point.

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

1. The spring brace-bar G, attached to the drag-bar, and impinging at the curve *h* upon the end of the flange F in the working position of the hoe, and having an incline upon which the point of the flange rises when the hoe is deflected backward, as described and represented.

2. The indentation *n* on the flange F, in which the end of the spring rests, detaining the hoe from further backward deflection.

JOSEPH INGELS.

Witnesses:

C. D. SMITH,

ALEX. A. C. KLAUCKE.