

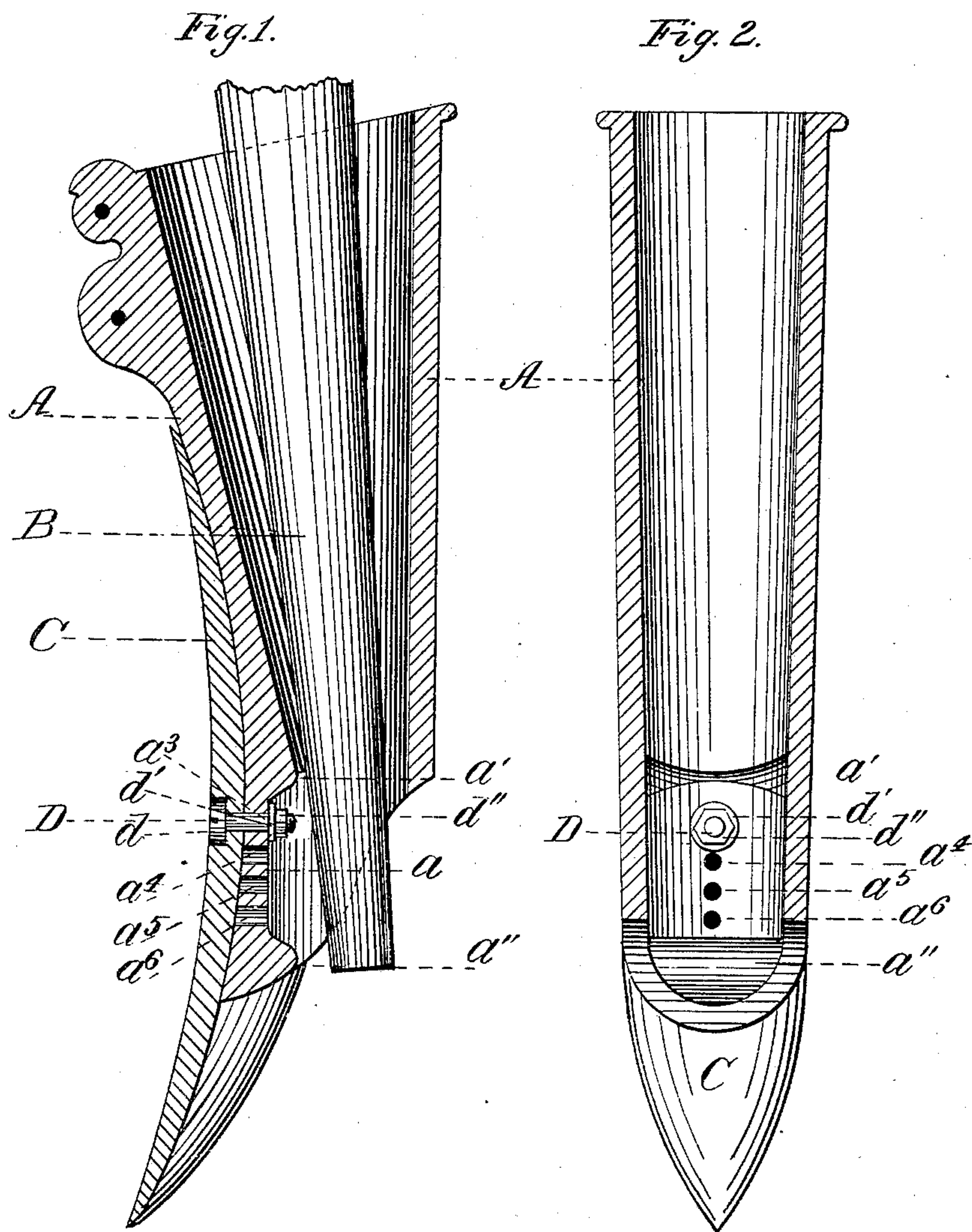
(No Model.)

J. F. KELLER.

GRAIN DRILL.

No. 339,302.

Patented Apr. 6, 1886.



Attest
W. D. Harrington.
J. F. Keller.

by .

Inventor.
J. F. Keller.
J. H. Hiley
Attorney.

UNITED STATES PATENT OFFICE.

JOHN F. KELLER, OF SHEPHERDSTOWN, WEST VIRGINIA.

GRAIN-DRILL.

SPECIFICATION forming part of Letters Patent No 339,302, dated April 6, 1886.

Application filed September 10, 1884. Serial No. 142,627. (No model.)

To all whom it may concern:

Be it known that I, JOHN F. KELLER, a citizen of the United States, residing in Shepherdstown, in the county of Jefferson and State of West Virginia, have invented certain new and useful Improvements in Grain-Drills, of which the following is a correct description.

The invention has relation particularly to that part of the drill which is known as the "boot," and to the seed-discharge tube which extends through the boot from top to bottom.

In United States Patent No. 269,944, which was issued to me on the 2d day of January, 1883, I described a boot in which a shoulder, on the inner surface of the same, projected over the inner end of the bolt by which the drill-tooth is secured to the main body of the boot, so as to prevent the discharge-tube, which is necessarily composed of flexible material, from coming in contact with such bolt and being injured thereby. I described, also, a flattened surface immediately below the shoulder, and a vertical slot in such surface for the reception of the securing-bolt, the bolt carrying a reversible double-ended tooth. These were valuable improvements, and in practical use all of them have under ordinary conditions given satisfactory results. It has been found, however, that under some circumstances the shoulder has had the effect to injure the seed-tube through its contact therewith, and that upon very rough ground the bolt which carries the drill tooth or point is sometimes forced upwardly in its slot. In my present construction I have therefore adopted an ordinary vertically-arranged series of securing-orifices instead of the single vertical slot. I have made the projecting shoulder rounded instead of angular, and I have provided a protecting-shoulder below the inner end of the securing-bolt, as well as above it.

In the drawings, Figure 1 represents a vertical central section from front to rear of the boot, the discharge-tube being shown in elevation. Fig. 2 is a vertical transverse section of a boot, the discharge-tube being removed.

A is the body of the boot; B, the discharge-tube; C, the drill-tooth; D, the securing-bolt; a , the flat securing-surface; a' , the upper deflecting-shoulder; a'' , the lower deflecting-shoulder; $a^3 a^4 a^5 a^6$, the series of perforations

in the securing-surface; d , the head; d' , a washer, and d'' a nut upon the securing-bolt D.

To a person skilled in the art to which the invention relates the operation and the advantages of a boot which is constructed in the manner indicated will be apparent without a detailed description thereof. It will be observed that the projecting shoulders will be of advantage, whether the depressed surface be flat or rounded, and whether the drill-tooth be reversible and double-pointed or non-reversible and single-pointed. It will also be observed that the duplication of the shoulders is to a certain extent advantageous, whether one or both or neither be rounded in the manner described.

I do not broadly claim herein either a vertically-adjustable drill-tooth, a drill-boot which is provided with a vertically-arranged series of orifices, or a drill-boot in which is a deflecting-shoulder; nor do I broadly claim herein the combination, with a drill-boot, of a deflecting-shoulder and a vertically-adjustable tooth, both of these constructions being shown in my former patent above referred to; but,

Having described my invention, I claim—

1. A drill-boot which upon its inner front surface above the inner end of the tooth-securing bolt is provided with a shoulder which is rounded or curved at its point of greatest projection.

2. The combination, in a drill-boot which is provided with a flexible seed-tube, of a securing-bolt, a shoulder above such securing-bolt, and a shoulder below such securing-bolt.

3. The combination, in a drill-boot, of a tooth-securing bolt, a flexible seed-tube, and a rounded deflecting-shoulder upon the boot.

4. The combination, in a drill-boot which has a series of securing-orifices, of a securing-bolt, a rounded deflecting-shoulder, and a flexible seed-tube.

5. The combination, in a drill-boot which has an inner front flat securing-surface, of a tooth-securing bolt which extends through the boot and projects beyond such surface, a deflecting-shoulder which is rounded or curved, and a flexible seed-tube.

6. A drill-boot which is provided with tooth-securing orifices, and with protecting-shoulders, one of the shoulders being above and the

other shoulder being below the tooth-securing orifices.

7. A drill-boot which is provided in its front portion with orifices or perforations 5 which are arranged one above another, with a tooth-securing bolt which is adapted to the orifices, with a nut which is adapted to the tooth-securing bolt, with an inner flat surface around the orifices to permit the nut to fit 10 closely, with a seed-tube, and with two rounded shoulders, one above and the other below the flat surface to protect the seed-tube from injury through contact with the end of the bolt or with the nut.

15 8. The combination, in a drill-boot which is provided with a flexible seed-tube, of a drill-tooth, a bolt, an upper rounded shoulder, and a lower shoulder.

9. The combination, in a drill-boot, of a

discharging-tube, an adjustable tooth, a se- 20 curing-bolt, a shoulder above the securing-bolt, and a shoulder below the securing-bolt.

10. A drill-boot which is provided with tooth-securing orifices and with protecting-shoulders, one of the shoulders being above 25 and the other shoulder being below the tooth-securing orifices, and which is provided also with an inner flat securing-surface between the two shoulders.

11. A drill-boot which is provided with a 30 flexible seed-tube, a drill-tooth, an adjustable bolt for the drill-tooth, an inner flat securing-surface for the bolt and its securing-nut, an upper rounded shoulder, and a lower shoulder.

JOHN F. KELLER.

Witnesses:

JOHN FRITZ,

W. D. HARRINGTON.