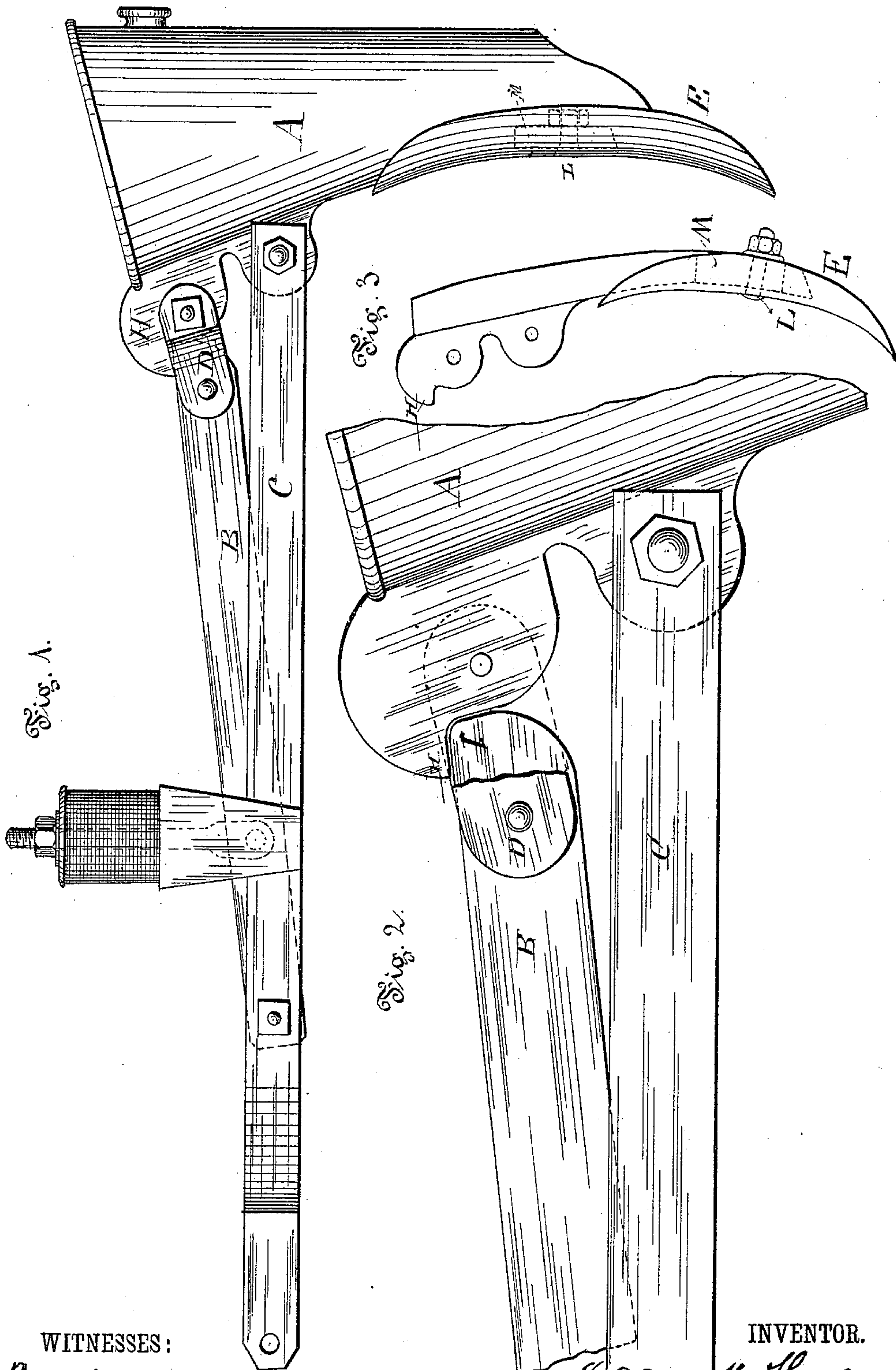


(No Model.)

J. F. KELLER.  
FLEXIBLE DRILL HOE.

No. 269,943.

Patented Jan. 2, 1883.



WITNESSES:

*Wm. L. Dieterich*  
*Isaac J. Gibson*

INVENTOR.

*John F. Keller*  
*By Daniel Breed* ATTORNEY.

# UNITED STATES PATENT OFFICE.

JOHN F. KELLER, OF MARTINSBURG, WEST VIRGINIA.

## FLEXIBLE DRILL-HOE.

SPECIFICATION forming part of Letters Patent No. 269,943, dated January 2, 1883.

Application filed June 6, 1882. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN F. KELLER, a citizen of the United States of America, residing at Martinsburg, in the county of Berkeley and State of West Virginia, have invented certain new and useful Improvements in Check-Springs, Brace-Bars, and Lugs for Flexible Hoes, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention relates to flexible hoes for grain-drills and cultivators; and it consists of a novel check-spring, brace-bar, and lug, which will be fully understood by the following description and claims.

In the accompanying drawings, Figure 1 is a side view of a boot or hoe-shank and hoe for a grain-drill, with the drag-bars and gum spring detached from the machine. Fig. 2 is an enlarged view, showing my improved brace-bar and lug in connection with the boot. Fig. 3 shows the same lug on the shank of a cultivator.

In the drawings, A represents a grain-drill boot, and B and C are the drag-bars attached thereto, and D is the coupling-link, upon which and its bolts there has usually come a great strain; and the chief object of my improvement is to prevent this strain and the consequent wear and breakage.

Instead of casting the boot with the usual ears and bolt-holes for the attachment of the drag-bars, I cast the boot or make the shank of a cultivator with a strong projection or lug, H, thereon. This strong lug has a broad bearing on the link D, and holds the link a little below a straight line with the drag-bar B, and in such a position as when the hoe meets with a fixed stone or other obstruction the usual excessive strain on the rivet and bolt is

relieved by knuckle-joints on the end of the spring brace-bar B, the rearend of which strikes the lug H, as seen at I, Fig. 2. This construction renders the machine cheaper, stronger, and more durable than the construction or arrangements heretofore used for holding the spring brace-bar in flexible hoes, as the whole strain is thrown on the boot or lug H and the end of the brace-bar I.

The point E is made double-pointed, and thus reversible, and is fastened to the boot or shank by means of a bolt, L, the head of which is placed in a countersink, so as to give a smooth surface to the front of the point; and the shank or boot has a slot, M, for the bolt L, so that the point, when worn off, may be let down, and thus be long enough to be used again, and thus last much longer. The point is easily removed, and may be ground or filed, and thus sharpened, without going to a blacksmith.

I do not broadly claim a reversible and adjustable point for cultivators and grain-drills.

Having described my invention, what I claim is—

1. As an improvement in flexible hoes, the spring brace-bar B, having the bearing I, in combination with the lug H on the flexible hoe-shank and the pivoted link D, substantially as and for the purposes set forth.

2. The spring brace-bar B, having the bearing I and pivoted link D, in combination with the flexible hoe-shank having lug H, and with the adjustable hoe-point, substantially as described, and for the purposes set forth.

In testimony whereof I affix my signature in presence of two witnesses.

Witnesses: JOHN F. KELLER.  
JOHN T. ARMS,  
DANIEL BREED.