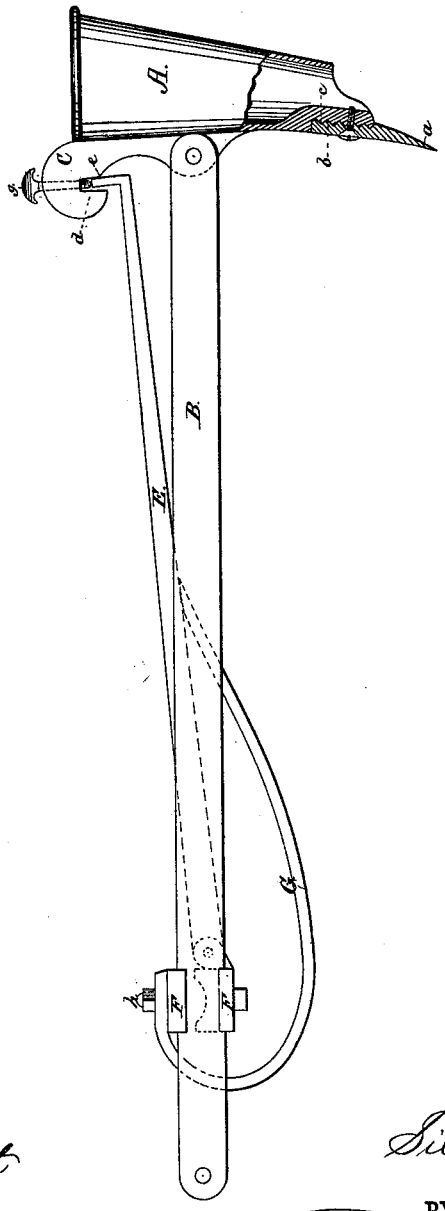
S. FRANK.

Drill-Tooth Attachment.

No. 208,583. Patented Oct. 1, 1878.



WITNESSES:

W. W. Hollingsworth

Solon C. Kemon

INVENTOR:

Silas Frank

BY Munn & Co

ATTORNEYS.

UNITED STATES PATENT OFFICE.

SILAS FRANK, OF HAGERSTOWN, MARYLAND, ASSIGNOR TO WILLIAM M. McDOWELL AND CHAS. E. BAECHTEL, ONE-THIRD TO EACH.

IMPROVEMENT IN DRILL-TOOTH ATTACHMENTS.

Specification forming part of Letters Patent No. **208,583,** dated October 1, 1878; application filed July 27, 1878.

To all whom it may concern:

Be it known that I, SILAS FRANK, of Hagerstown, in the county of Washington and State of Maryland, have invented a new and valuable Improvement in Drill-Tooth Attachments; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawing, making part of this specification, and which exhibits a side elevation of a "boot" or drill-tooth having my improvements attached.

My invention is an improvement in the class of seeding-machines whose boots or drill-teeth are pivoted to the drag-bars and have a spring attachment, which allows them to yield or assume an oblique position whenever the point of the tooth encounters an unyielding obstacle.

The common characteristic of such prior inventions is that the connection between the spring and boots is such that the point of the boot will yield or give back slightly, even when the pressure against it is comparatively slight, so that the boot constantly vibrates or rocks on its pivot as the machine advances, and the point of the same maintains no fixed angle to the drag-bars and the ground-surface while in the normal or working position.

My invention is designed to remedy this defect, thereby making the boot rigid in position while at work, yet enabling it to yield very suddenly when the resistance to its advance is too great for safety to its pivotal connection with the drag-bars. To this end I employ a straight or rigid bar for locking and holding the boot in the normal working position, the boot exerting pressure against it lengthwise, and said bar being bent upward at its free end to engage a shoulder formed on the head of the boot, and the bar being likewise so constructed and attached to the drag-bars as that its outer end is free to move vertically within certain limits. The bar holds the boot firm or rigid in the normal working position, so that the boot for the time works as effectively as if rigidly attached to the drag-bars in the old way; but yet, if the point encounters any immovable obstacle, the lock is broken by the parts becoming suddenly disengaged, and the free end of the bar is instantly thrown down as the point of the boot recedes, and the latter assumes an inclined position, so as to pass safely over the obstacle in its path.

In other words, my improvement is such that while a drill-tooth is performing its function it is practically unyielding, and hence operates with the desired effect; but if the point comes in contact with an unyielding obstacle, then it will instantly yield, so as to avoid and pass over the obstacle.

In accompanying drawing, A indicates the boot or drill-tooth, which is pivoted to the drag-bars B near the middle of its length. The shovel *a* is held firmly in position on the end of the boot by the serrations *b c*.

A head or projection, C, is formed on or attached to the upper end of the tooth, which has an angular recess or notch, *d*, against the rear side, *e*, of which the upward-projecting end of the stiff bar E abuts when the tooth is in its normal working position, as shown.

The front end of bar C is pivoted to clamp-blocks F, secured to the drag-bars B, and is supported by a spring, G, which is also attached to the clamps F by the same bolt that fastens the bar E. In place of employing such spring, I may make the bar itself act as a spring.

The function of the bar E is to hold the boot A rigid when in its normal working position, but to allow it to yield when it encounters an unyielding obstacle, so that the tooth will maintain a fixed angle to the drag-bars under the regular resistance due to passing through the earth, and yet instantly assume a forward inclination when it meets an obstruction. The performance of such function depends on the stiffness of the bar E and its adaptation to yield when the pressure against its rear end exceeds a certain limit.

The strain on the bar while the tooth A is working is a thrust in the direction of its length; but the spring G will allow its free end to slip off the shoulder *e* when the tooth meets an obstruction. In such case the tooth will assume a forward inclination, and the horn or front portion, *f*, of the head C will rest for an instant on the spring-bar; but the resiliency of the spring G causes it to react on

the head, and thus throw the boot back to its normal working position as soon as the obstruction has been passed.

A set-screw, *g*, is located in the head C, to regulate the amount of surface contact between the shoulder *e* and the end of the bar E—in other words, to gage the depth to which the end of the bar shall project into the angular notch *d*, since this determines the pressure the point or shovel *a* will bear before the lock will be broken by the end of the bar E slipping off from the shoulder *e*, and thus allowing the boot to pass over the obstruction in its path.

In operating upon different soils it becomes desirable to change the pitch or inclination of the boot. This is done by loosening the bolt *h*, used for clamping the slide-blocks F to the drag-bars, and moving the same backward or forward, as required. The blocks have lengthwise grooves to receive the edges of the drag-bars.

What I claim as new is—

1. The combination, substantially as shown and described, of the pivoted boot or cultivating-tooth, having a head provided with the angular notch or recess and the set-screw, as described, and the spring-supported bar E, attached to the drag-bars, and its free end projecting upward, to adapt it for engagement with said recessed head, so as to hold the boot or tooth rigid while in its normal working position, and to suddenly disengage from the same when sufficient resistance is offered to the advance of the tooth, as specified.

2. The combination, with the drag-bars and the spring locking-bar E, of the upper and lower clamps, F F′, having grooves to receive the edges of the drag-bars, and the screw-bolt *h*, all as shown and described, for the purpose of receiving the drag-bars and the spring together, as specified.

In testimony that I claim the above I have hereunto subscribed my name in the presence of two witnesses.

SILAS FRANK.

Witnesses:
THOS. TAGGART,
ALEX. ARMSTRONG.