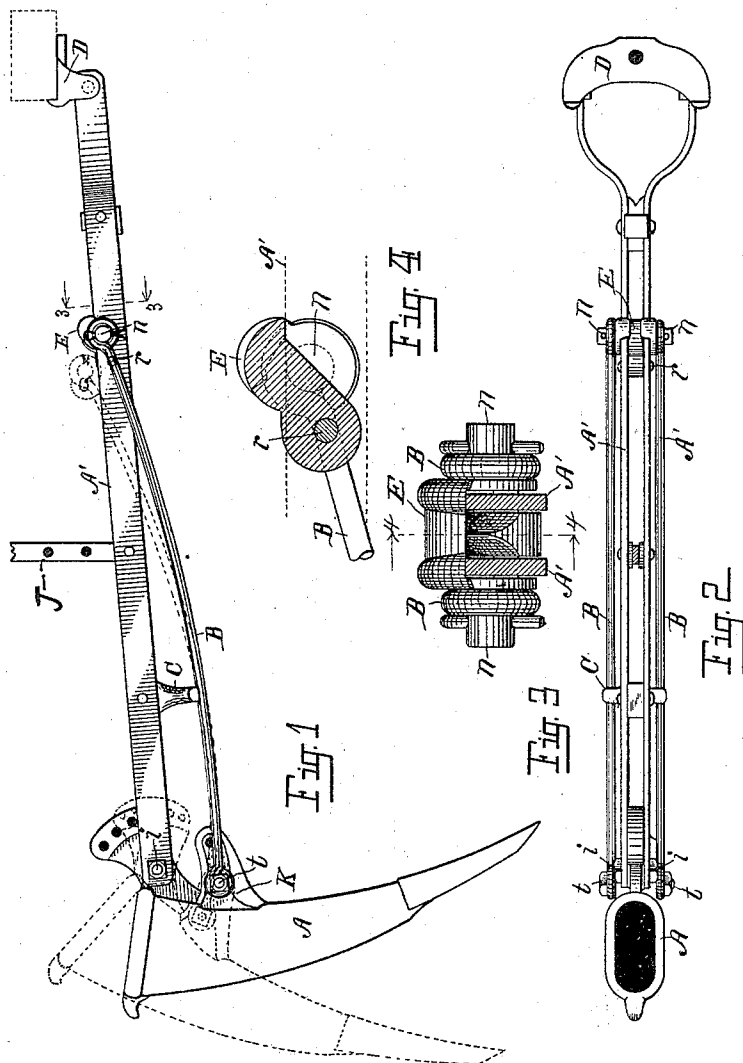


(No Model.)

W. F. HOYT.
SPRING BREAK FOR HOE DRILLS.

No. 537,419.

Patented Apr. 9, 1895.



Witnesses:

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UNITED STATES PATENT OFFICE.

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SPRING-BREAK FOR HOE-DRILLS.

SPECIFICATION forming part of Letters Patent No. 537,419, dated April 9, 1895.

Application filed December 22, 1894. Serial No. 532,664. (No model.)

To all whom it may concern:

Be it known that I, WILL F. HOYT, a citizen of the United States, residing at the city of Dowagiac, in the county of Cass and State of Michigan, have invented certain new and useful Improvements in Spring-Breaks for Hoe-Drills, of which the following is a specification.

My invention relates to improvements in grain drills and more particularly to what is known as the spring break attachment of the tooth to the main part of a hoe drill.

The so called spring break attachments are devices constructed to take the place of the wooden pegs that have heretofore been inserted which, when unnecessary strain has been brought to bear upon the hoe or tooth of the grain drill, would break and allow the tooth to swing back without breaking the machine or causing undue strain upon any part of it.

My invention relates to devices in which the wooden peg referred to is superseded by a metallic spring in connection with a lever; the lever being so positioned that the force of the spring, when the hoe or tooth of the drill is in the proper position for work, acts at great advantage upon the same and holds it in position by the lever being positioned near the dead center; but when great strain is brought to bear, the lever is moved off from the center causing stress to be put upon the spring and the movement of the lever off the dead center destroys the advantage of the spring over the lever so that the tooth swings readily back until the obstruction is passed, and then is brought back to position by the tension of the spring, when it is substantially locked as before and will act in the same manner until some other heavy obstruction, as a root or a stone, is encountered. This, it will be seen, saves the necessity of using any wooden pegs, which occasion a very considerable delay in renewing, the spring adjusting itself and acting in an automatic manner to secure the same result. My invention, as I stated above, relates particularly to improvements in this spring break apparatus.

The objects of my invention are, first, to cheapen the construction; second, to provide against breakage of the parts which has been common in these devices as heretofore constructed; third, to make it possible to have

such a construction with a pivotal connection of the spring to the tooth and draw-bar; fourth, to make such a construction which will act to secure the best results from the spring used; fifth, to make such a construction on which it will be possible to use ordinary round spring rods for the purpose without necessitating the construction of any special form of spring to accomplish the result; sixth, to provide such a construction which will make it unnecessary to use a very heavy spring to accomplish the result by securing the full benefit of the spring used. I accomplish these objects of my invention by the device shown in the accompanying drawings, in which—

Figure 1 is a side elevation of a drill tooth and draw-bar embodying my improvements. Fig. 2 is a top elevation of the same. Fig. 3 is a sectional view on line 3—3 of Fig. 1. Fig. 4 is a sectional view on line 4—4 of Fig. 3.

Similar letters of reference refer to similar parts throughout the several views.

Referring to the lettered parts of the drawings, D represents a small casting which is attached to the forward frame work of the drill on any suitable cross bar. The draw-bars, A', A', are pivoted to this casting and extend back to the hoe or tooth where they are pivoted to the tooth by the bolt, i, through the bracket, K. Any suitable means, as the bar, J, can be used for raising the draw-bar and tooth out of the ground. To the under side of the draw-bar, a bracket, C, is attached in any convenient manner. Toward the front of the draw-bars, is pivoted a small casting, E, which is pivoted at r, between the two draw-bars, A', A', a portion of the casting projecting down between the two halves, A', A', of the draw-bar for that purpose. The casting has two lateral projecting portions, n, n, which project out over the top of the draw-bars; and their connection with the interior portion forms a stop which allows the casting to rest upon the top of the draw-bars, A', and is held in position in that way. For convenience of description, the casting, E, will be referred to hereinafter as the lock.

The spring rods, B, are looped over the projecting parts, or bosses n of the lock, E, so that a pivotal connection is formed between the spring rods, B, and the lock, E. To the front side of the hoe or tooth, A, is a project-

ing bracket K, cast integral with said tooth which contains a series of holes to permit of the adjustment of the tooth, A, to the proper angle. A bolt, *t*, passes through one of the holes in this bracket and through the eyes at the rear ends of the rods, B, B. There are two of the rods, B, one to each side of the draw-bars, A', A'. These are connected by suitable eyes over the bosses, *n*, to the lock, E, and at their rear end to the brackets, K, as I have specified; and they pass under suitable depressions in the bracket, C, which serve as guideways, and the bracket, C, also serves as a fulcrum so that the rods, B, B, act as spring levers.

The center of the pivot, *r*, is a little distance below a line passing through the center of the bearing of the front end of the rod, B, and on the lock, E, when the lock is in position, indicated by full lines in the drawings, and through the center of the rod, B, on the bracket, C. In operation, my improved drill is adjusted so that the tooth is at the angle required. When passing through the ground, when it meets an obstruction (as a root or a heavy stone) it will act on the tooth as a lever. The fulcrum is at *i* with the load at *t*, and will tend to draw the rods, B, B, back. When the force becomes sufficient, the front of the lock, E, will pass up over and back into the position indicated by dotted lines turning on pivot, *r*. This is due to the fact that the line between the center of attachment of the rod, B, to the casting and through the center of the rod on the bracket, C, is higher than the center of the pivot, *r*, and, as soon as the casting rises, the advantage of the leverage of the tooth is very much increased and allows the tooth to swing back with comparative ease, the rods, B, B, being bent into the position indicated by dotted lines and the tooth swinging back, as is also indicated by dotted lines. When the obstruction is passed, the tension of the springs, B, B, returns the tooth to the original position, and the lock casting, E, swings over to its position against the draw-bars, A', owing to the action of the spring. It will thus be seen that very little strain is brought upon the springs, B, B, only sufficient to bend them the short distance indicated by dotted lines in the drawings, so that the wear and tear upon the spring is very slight, owing to the pivotal connection at both ends.

In spring breaks, as heretofore constructed, one end or the other of the spring has usually been made rigid which, of course, puts great strain upon the end so secured making it necessary to use a very heavy spring to accomplish the result; but, with my improved device, by pivoting the spring and introducing the bracket, C, I accomplish the result with a comparatively light spring. The spring rods used by me are only five sixteenths of an inch in diameter, made of spring metal. This accomplishes the same result with a reduction in weight of the apparatus and adds very little to the weight over the old style drill where

wooden pegs are used. My improved device affords free adjustment of the tooth in combination with the spring break. I have shown in the drawings a tooth with a provision made for both the spring break and also for the wooden peg break, but that relating to the wooden peg break is no part of this invention and can be dispensed with. I prefer both to insure ease in repairs.

Having thus described my improved spring break for hoe drills, I desire to say that it is capable of considerable variation without departing from my invention. I also call attention to the fact that it can be used in combination with ordinary cultivator teeth or whenever it is necessary to have a break on the teeth of agricultural implements to prevent injury.

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

1. In a grain drill, the combination of the draw-bars, A', A'; the drill tooth, A, pivoted by its upper front portion thereto; the lock casting, E, pivoted between said draw-bars, A', A', at *r*; and the bracket, C, between said lock casting and said tooth attached to the draw-bars, A'; the spring rods, B, pivoted to said lock casting at *n* and to the drill tooth, A, at K; all co-acting together, substantially as described for the purpose specified.

2. In a grain drill, the combination of the draw-bars, A', A'; the drill tooth, A, pivoted by its upper front portion thereto; the lock casting, E, pivoted between said draw-bars, A', A', at *r*; and the bracket, C, between said lock casting and said tooth attached to the draw-bars, A'; the bracket, K, on the front side of said tooth with a series of holes therein for adjustment; the spring rods, B, pivoted to said lock casting at *n* and to the bracket, K, on the drill tooth, A; all co-acting together, substantially as described for the purpose specified.

3. In a grain drill, the combination of the draw-bar; a tooth pivoted to said draw-bar; a lock pivoted toward the front part of said draw-bar with a stop thereon adapted to engage said draw-bar so as to hold the main part of said lock above its pivot; a bracket on the under side of said draw-bar; and a spring rod pivoted to said lock casting and to the tooth and passing under the bracket on the under side of the draw-bar and pressing normally against said bracket, the pivotal connection of the lock and draw-bar being slightly below a line passing through the pivotal connection of the rod to the lock and through the center of the rod on the bracket below the draw-bar, for the purpose specified.

4. In a grain drill, the combination of the draw-bars, A', A'; a tooth, A, pivoted to said draw-bars; and a lock, E, pivoted at *r*, toward the front part of said draw-bars with a stop thereon adapted to engage the upper side of said draw-bars so as to hold the main part of said lock above its pivot; a bracket, C, on the

under side of said draw-bars; spring rods, B, B, pivoted to said lock casting, E, and to the tooth, A, and passing under the bracket, C, on the under side of the draw-bars and pressing normally against said bracket; the pivotal connection of the lock and draw-bar being slightly below a line passing through the pivotal connection of the rods to the lock and through the center of the rods on the bracket, C, below the draw-bar, for the purpose specified.

5. In a grain drill, the combination of the draw-bar; a tooth pivoted to said draw-bar; a locking block pivoted to said draw-bar; a spring rod pivoted to said locking block and to said tooth below its connection with the draw-bar; and a bracket projecting down from said draw-bar against which said rod normally presses; and suitable means of holding said lock block so that the line of connection of the rod and the lower point of the bracket will be slightly above the point of pivoting of the lock block so that the locking block shall swing up and back when sufficient pressure is applied to the tooth below to permit the tooth to pass obstructions and so that the force of the spring shall swing the tooth back into position after the obstruction is passed, as specified.

6. In a grain drill, the combination of the draw-bar, of a tooth pivoted to said draw-bar; a locking block pivoted to said draw-bar; a spring rod pivoted to said locking block and connected to said tooth below its connection

with the draw-bar; a bracket projecting down from said draw-bar against which said rod normally presses; and suitable means of holding said lock block so that the lock block shall swing up and back when sufficient pressure is applied to the tooth below to permit the tooth to pass obstructions and to put stress upon the spring to swing the tooth back into position after the obstruction is passed, as specified.

7. In a grain drill, the combination of the draw-bar; a tooth pivoted to said draw-bar; a lock pivoted toward the front part of said draw-bar with a stop thereon adapted to engage said draw-bar so as to hold the main part of said lock above its pivot; a bracket on the under side of said draw-bar; a spring rod pivoted to said lock casting and connected to the tooth below its connection with the draw-bar and passing under the bracket on the under side of the draw-bar and pressing normally against it, the pivotal connection of the lock and draw-bar being slightly below a line passing through the pivotal connection of the rod to the lock and through the center of the rod on the bracket below the draw-bar, for the purpose specified.

In witness whereof I have hereunto set my hand and seal in the presence of two witnesses.

WILL F. HOYT. [L. S.]

Witnesses:

F. J. WILBUR,
H. G. JONES.