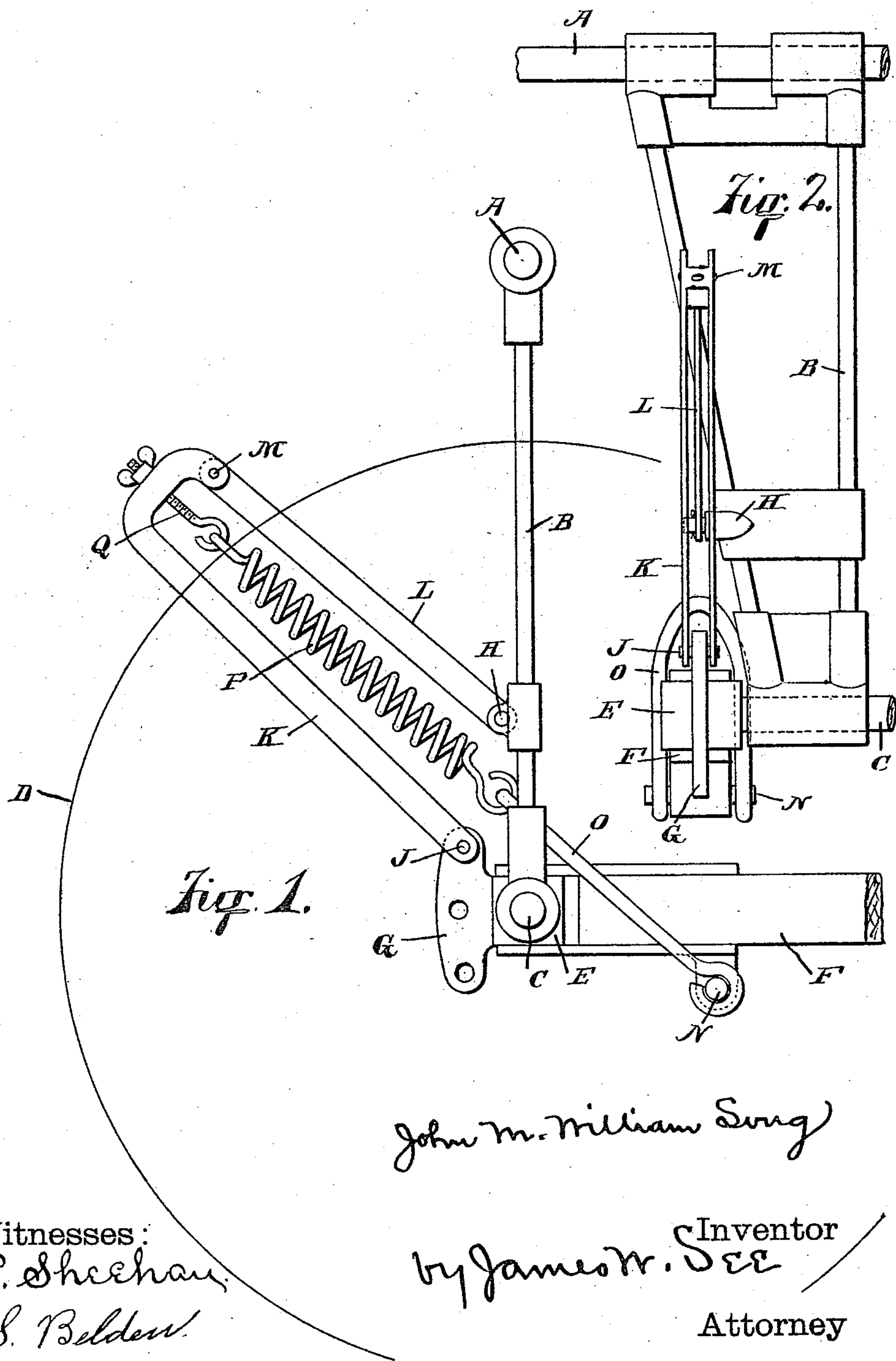


J. M. W. LONG.  
CULTIVATOR SPRING.

Patented Nov. 11, 1890.



# UNITED STATES PATENT OFFICE.

JOHN M. WILLIAM LONG, OF HAMILTON, OHIO, ASSIGNOR TO THE LONG  
& ALLSTATTER COMPANY, OF SAME PLACE.

## CULTIVATOR-SPRING.

SPECIFICATION forming part of Letters Patent No. 440,316, dated November 11, 1890.

Application filed September 10, 1890. Serial No. 364,588. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN M. WILLIAM LONG, of Hamilton, Butler county, Ohio, have invented certain new and useful Improvements in Cultivator-Springs, of which the following is a specification.

This invention pertains to improvements in springs arranged upon cultivators to assist the plowman in raising the cultivators; and the improvements will be readily understood from the following description, taken in connection with the accompanying drawings, in which—

Figure 1 is a side elevation of an ordinary cultivator-arch with the beam coupled to it, as usual, and provided with my improved spring; and Fig. 2, a front elevation of the same cultivator parts, the spring being omitted.

Attention is directed to Patent No. 256,012, granted April 4, 1882, to John M. Long (not the present patentee) for an improved cultivator-spring.

Referring to the accompanying drawings, A indicates the usual arch-bar of the cultivator; B, the usual standard journaled at its top to the arch-bar; C, the usual axle journaled in the lower end of the standard; D, the usual wheel mounted on this axle; E, the usual pivot-block of the plow-coupling, formed with or attached to the axle; F, the usual cultivator-beam coupled to the pivot-block; G, the clevis by which the draft is applied to the beam, (all the parts thus far referred to being as usual and as illustrated in the earlier Long patent;) H, a pivot supported by the standard and having its axis parallel with the axle C; J, a pivot parallel with pivot H and carried by the clevis; K, a toggle-bar having its inner end pivoted to pivot J; L, a toggle-bar having its inner end pivoted to pivot H and its outer end pivoted to the outer end of the other toggle-bar; M, the pivot uniting the outer ends of the two toggle-bars; N, a pivot carried by the cultivator-beam at a point in line with the toggle-bars, but inwardly beyond the axle

C; O, a bail pivoted to the pivot N and extending toward the pivot M; P, a spiral spring engaging the free end of the bail and the outer end of the toggle; Q, a screw mounted in the outer end of the toggle and engaging the spring and serving as a means for adjusting the tension of the spring.

The cultivator-beam rises and lowers, as usual, on the axle C, as its pivot of oscillation, and it swings sidewise, as usual, on the coupling-block. When the beam is horizontal, as shown in Fig. 1, it is in working position, and the spring while under tension will have practically no effect upon the beam; but when the beam is elevated a trifle from its working position, then the pivots J and N become less in line with the axle C, and the tension of the spring serves to pull up on pivot N and push down on pivot J, thus serving to aid in elevating the beam, and the spring, while becoming weaker in itself, will have an increased leverage as the beam rises by reason of the increased departure of the pivots J and N from the strain-line of the spring.

I claim as my invention—

In a cultivator, the combination, substantially as set forth, of an arch-standard, an axle at the base thereof, a cultivator-beam coupled to said axle, a pair of pivots connected with the beam and oscillating with it and disposed upon opposite sides of said axle, a pivot supported by said arch-standard, a pair of toggle-bars pivoted together at their outer ends and pivoted at their inner ends one to said arch standard pivot and one to one of the pivots which oscillates with the beam, and a spring connected at one end with the other of said pivots which oscillates with the beam and at the other end with the toggle-bars near their uniting-pivot.

JOHN M. WILLIAM LONG.

Witnesses:

J. W. SEE,  
M. S. BELDEN.