(No Model.)

J. P. BLACK.

CULTIVATOR.

No. 355,916. Patented Jan. 11, 1887.

Fig. 1.

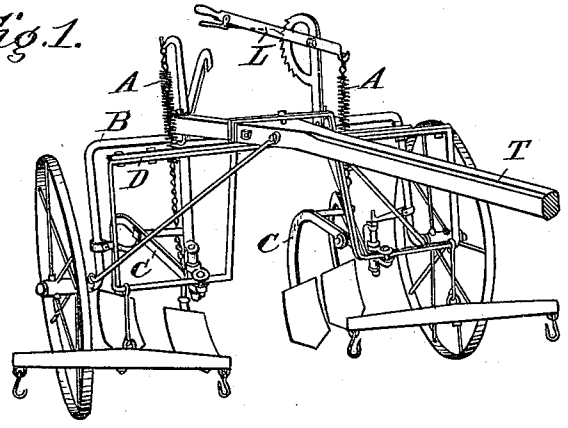


Fig. 2.

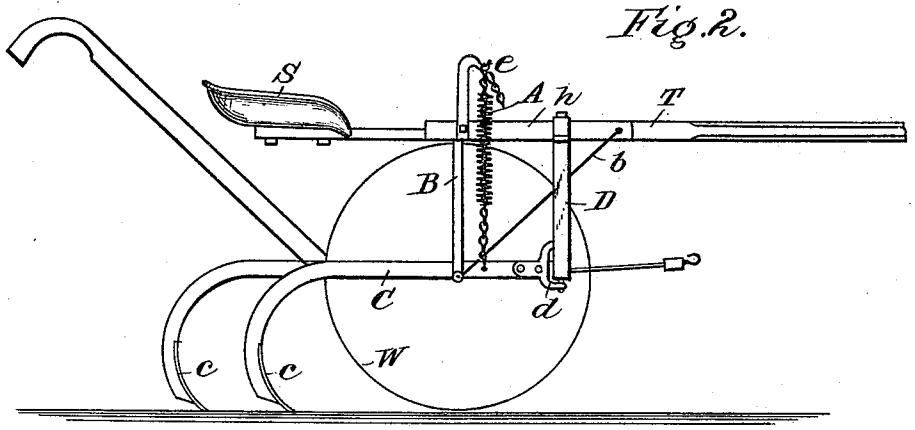
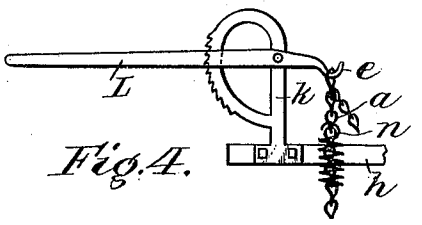


Fig. 3.



Fig. 4.



Witnesses:
Saml. B. Dover.
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UNITED STATES PATENT OFFICE.

JOSEPH P. BLACK, OF ALTON, ILLINOIS, ASSIGNOR TO THE HAPGOOD PLOW COMPANY, OF SAME PLACE.

CULTIVATOR.

SPECIFICATION forming part of Letters Patent No. 355,916, dated January 11, 1887.

Application filed September 22, 1886. Serial No. 214,226. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH P. BLACK, a citizen of the United States, residing at Alton, in the county of Madison and State of Illinois, have invented a new and useful Improvement in Cultivators, of which the following is a specification.

This invention relates to straddle-row cultivators, and has the object to improve the holding and carrying of the plows, whereby they will work more steadily and in a better manner than heretofore; and it consists in a chain and spring combined in such a manner that the chain limits the movement of the spring, and which I name and call "limited spring," constructed, arranged, and adapted to operate as hereinafter set forth.

Referring to the drawings, like letters refer to like parts in all the figures, in which Figure 1 is a perspective view of my improved cultivator; Fig. 2, a side elevation view of same. Fig. 3 is a perspective view, enlarged, of the limited spring, showing its construction. Fig. 4 is a view showing modification of construction of parts.

My improvements may be applied to any cultivator of ordinary construction of either riding or walking straddle-row species, having a frame on wheels provided with two gangs of plows, and the said frame may consist of the axle B, with wheels W, the tongue T, with hounds *h*, and braces *b*, all of ordinary construction, and with the double-tree or drop-evener D, for which I make claim in another patent filed of even date herewith and do not herein claim, and said gangs of plows consist of the drag-bars C, provided with the shovels *c*, and connected to the said frame by the coupling *d*, all of ordinary construction, as shown in the drawings.

A represents the limited spring, which may consist of the chain *a*, having its bottom end secured to the said drag-bars and its top end connected to the said frame by means of the bracket *k*, having the hook *e* upon its outer end to engage in one of the links of said chain, by which said chain may be adjusted and made either longer or shorter in gaging the depth of working of the plows, as will be understood by the drawings, and the coiled spring *m*, provided with the hooks *n* upon its either end to engage in links of said chain, as shown in Fig. 3. Preferably said spring is coiled about the chain, as shown; but it may be outside the chain with like results without departing from the purview of my invention. The said spring may be adjusted and made either strong or light, acting by moving the hooks *n* to other links in the chain, and it may be made sufficiently strong to lift and elevate and carry the plows, as will be understood by the drawings.

In Fig. 4 is shown a modification of the bracket *k* enlarged, which I sometimes use in riding-cultivators, in which a lever, L, is connected with said bracket and chain, by which the operator may adjust and elevate the plows while seated in the seat S on the cultivator, as will be understood by the drawings.

In operation the chain is connected to the drag-bars and adjusted by inserting the hook *e* in any link of the chain, so as to allow the plows to enter the ground a certain depth and no deeper. The spring is then adjusted by inserting the hooks *n* in any link of the chain to any power of strength required to lift the plows. The operator, when walking, has hold of the handles of the plows, and when riding has his feet resting on the drag-bars, to assist in steadying the plows and keep them to their working depth, and when it is desired to elevate the plows the spring lifts upon them and assists the operator, whereby the plows work more steadily, are more easily operated, and do their work in a better manner than heretofore.

It will be observed that when the plows are down in a working position the chain is taut and the spring extended, and that when the plows are elevated the spring draws, taking up the slack of the chain, as will readily be understood by inspecting the drawings.

Having thus set forth my invention, I claim—

1. The limited spring A, consisting of the

spring *m*, with hooks *n*, and the chain *a*, substantially as and for the purpose set forth.

2. In a cultivator, the chain *a*, having one end secured to the plow, the other end connected to the frame in such a manner as to limit and prevent the plows going below a certain depth, in combination with a spring operating to lift upon the plows when at its working position, substantially as and for the purpose set forth.

JOSEPH P. BLACK.

Witnesses:
CHAS. S. PHILIPS,
A. F. ROBERTS.