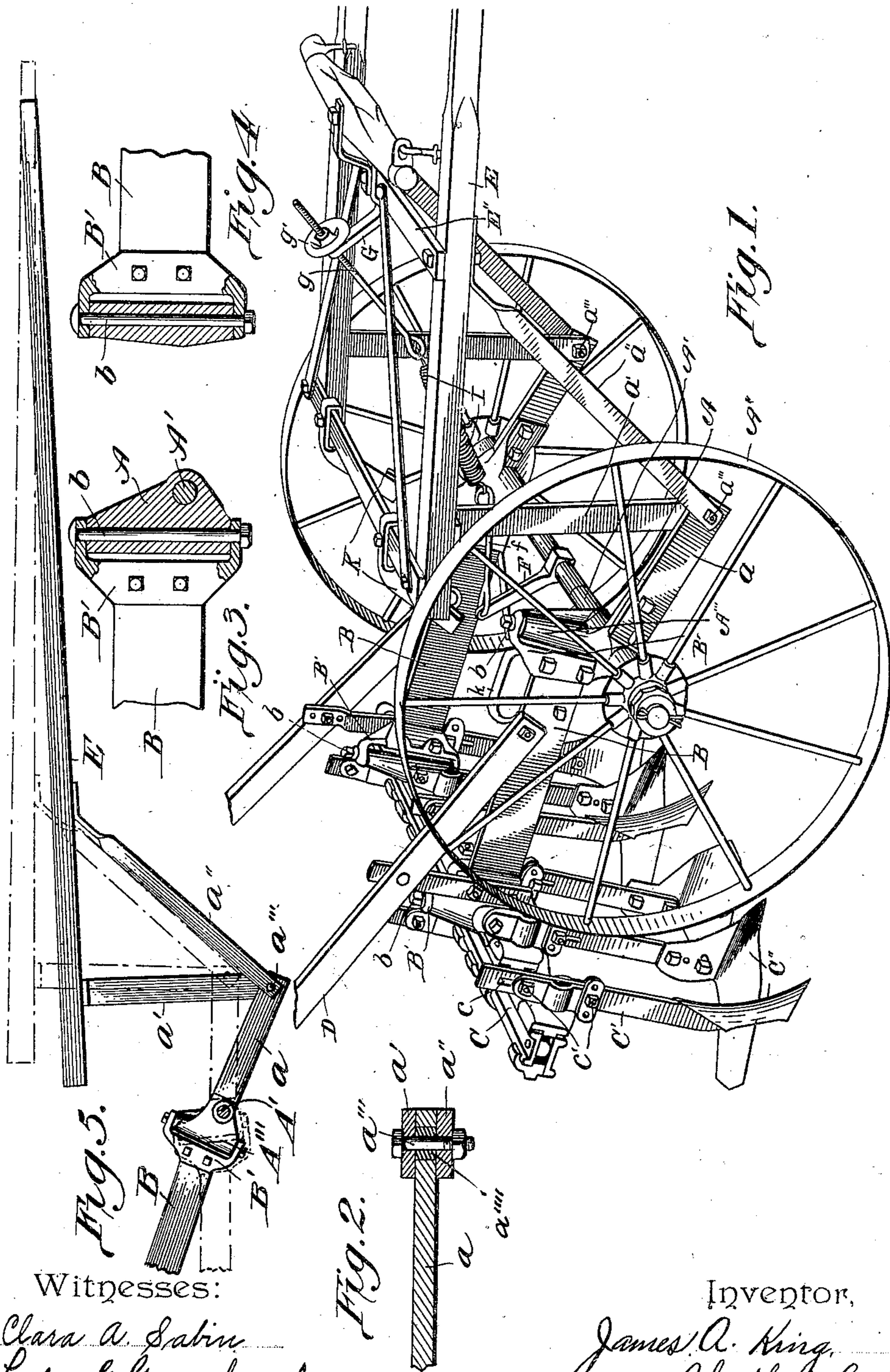


J. A. KING.
CULTIVATOR.

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922,000.

Patented May 18, 1909.



Witnesses:

Clara A. Sabin
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UNITED STATES PATENT OFFICE.

JAMES A. KING, OF THREE RIVERS, MICHIGAN, ASSIGNOR OF TWO-THIRDS TO ISAAC SPAULDING AND ARTILLUS H. BANKER, OF THREE RIVERS, MICHIGAN.

CULTIVATOR.

No. 922,000.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, JAMES A. KING, a citizen of the United States, residing at Three Rivers, county of St. Joseph, State of Michigan, have invented certain new and useful Improvements in Cultivators, of which the following is a specification.

This invention relates to improvements in cultivators. I have illustrated the same herein adapted as a cultivator for beets and like roots, although it is evident that it is adapted for use in various relations.

The objects of this invention are, first, to provide an improved cultivator which is adapted to work various soils, and soils in varying conditions, to substantially the same depth without adjusting the cultivator for soil or condition. Second, to provide an improved cultivator in which the draft of the cultivator tends to force the teeth into the ground—that is, when the ground is hard, more power is required to draw the cultivator, and this increased power adds increased pressure to the teeth or shovels to force them into the ground. Third, to provide an improved cultivator embodying the above advantages which is simple and economical in structure and strong and durable.

Further objects, and objects relating to structural details, will definitely appear from the detailed description to follow.

I accomplish the objects of my invention by the devices and means described in the following specification.

The invention is clearly defined and pointed out in the claims.

A structure embodying the features of my invention is clearly illustrated in the accompanying drawing forming a part of this specification, in which—

Figure 1 is a perspective view of a structure embodying the features of my invention. Fig. 2 is an enlarged detail showing the coupling or connection for the thills or shafts to the brace arms a' a'' of the shafts to the bars a . Fig. 3 is a detail vertical section showing the hinge or pivoted coupling for the forward ends of the bars B to the axle. Fig. 4 is a detail vertical section showing the hinge or pivoted connection from the rear ends of the bars B to the tooth carrying frame. Fig. 5 is a detail side elevation showing the relation of the shaft bars a with the tooth-carrying bars or links B and the thills, the movement of the parts being indicated by dotted lines.

Referring to the drawing, A' is the axle and A'' the carrying wheels. On the axle A' are mounted brackets A . To these brackets are rigidly secured downwardly and forwardly projecting draft bars a . On the brackets A are upwardly projecting hinge members A''' . The bars or links B are secured to the brackets A by the vertical pivots b , which are arranged through suitable ears on the hinged members B' to which the bars B are rigidly bolted. This permits the lateral swinging of the bars B , but prevents the vertical swing thereof relative to the brackets A .

On the rear end of the bars B is secured the beam or frame C . The teeth or shovel standards C' are adjustably secured to the frame C by means of bolts c' which are arranged through suitable longitudinal slots c in the standards. By this means the vertical position of the teeth may be adjusted.

On the lower ends of the standards are suitable shovels or teeth C'' , which may of course be of any form desired, those I have illustrated being especially designed for the cultivation of beets or like roots.

The frame C is pivotally connected to the rear ends of the bars B by hinge members B' and the vertically arranged hinge pivots b . The operating handles D are secured to the bars or links B . By this arrangement the teeth carrying frame C may be swung laterally. By pivoting the frame C to the bars B the cultivator teeth or shovels maintain their proper position—that is, their position relative to the draft is not affected by the swinging of the frame.

The thills or shafts E are connected by the downwardly projecting brace arms a' a'' to the forward ends of the bars a by the bolts a''' . The arms a' , a'' are pivotally connected to the draft bars a , the lower ends of a pair of arms being arranged on each side of the draft bars and properly spaced to permit pivotal movement by means of the sleeves a'''' on the bolts a''' of the draft bars.

To assist in securing any depth of cultivation I provide a spring counterbalance for the teeth. This consists preferably of an arm F projecting upwardly and rearwardly from the axle. As the brackets A are secured to the axle, when the axle is rocked it acts upon the brackets.

The arm F is connected to an arm G on the cross-bar E'' of the shafts by means of the links g and f and the spring I . The link

f is connected to the arm *F* and to one end of the spring *I*, and the link *g* is connected to the arm *G* and to the other end of the spring *I*. The link *g* is threaded, and the
 5 hand-nut *g'* is provided therefor, whereby the tension of the spring *I* may be regulated.

With the parts thus arranged, the draft or pull upon the thill lifts upwardly on the draft bars *a*, thereby throwing the bars *b*
 10 downwardly, forcing the teeth carried thereby into the ground. It is evident that as more power is required in hard ground than in soft, a greater force is applied to the teeth to force them into the ground on account of
 15 the upward pull on the draft bars *a*. As soon as the teeth strike soft ground the force required to draw the cultivator is of course reduced, thereby allowing more of the weight of the cultivator to be carried by the
 20 wheels, so that the ground is cultivated to an even depth without any adjustment of the cultivator. That is, of course, a very great advantage.

By hinging the teeth carrying frame *C* to
 25 the rear ends of the bars *B* the same may be easily swung from side to side to follow the row, and no matter in what position the teeth always maintain their proper relation to the line of draft.

30 In transporting the cultivator from field to field the bars *B* are elevated until the loops *k* may be engaged on the hooks *K* which are carried by the rear cross-piece *E'* of the thills or shafts.

35 The counterbalance spring *I* prevents the teeth running deeper than is desired. By means of the adjustment of the spring the same can be set as conditions may require. In the drawing the structure is illustrated
 40 with the teeth entirely out of the ground, so that there is no pull upon the spring.

My improved cultivator is very easy to manipulate and the teeth are very easily
 45 guided. I have illustrated and described the same in detail in the form preferred by me on account of convenience in operation and manufacture; I am, however, aware that it is capable of very great variation in structural details without departing from my
 50 invention.

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

1. In a cultivator, the combination with
 55 the carrying wheels and axle, of brackets mounted on said axle; forwardly and downwardly projecting draft bars rigidly secured to said brackets; a tooth carrying frame; carrying arms therefor pivotally secured
 60 thereto and to said bracket by vertically arranged pivots whereby said tooth carrying frame is lowered by the upward movement of said draft bars and raised by the downward movement thereof; shafts having down-

wardly projecting arms pivotally secured to
 the forward ends of said draft bars; an upwardly and rearwardly projecting arm on said axle; a spring connected thereto and to said shafts; and means for adjusting the tension of said spring, for the purpose specified. 65 70

2. In a cultivator, the combination with the carrying wheels and axle, of brackets mounted on said axle; forwardly and downwardly projecting draft bars rigidly secured to said brackets; a tooth carrying frame; carrying arms therefor pivotally secured thereto and to said bracket by vertically arranged pivots whereby said tooth carrying frame is lowered by the upward movement of said draft bars and raised by the downward movement thereof; and shafts having downwardly projecting arms pivotally secured to the forward ends of said draft bars, for the purpose specified. 75 80

3. In a cultivator the combination with
 85 the carrying wheels and axle, of brackets mounted on said axle; forwardly and downwardly projecting draft bars rigidly secured to said brackets; a tooth carrying frame; and carrying arms therefor pivotally secured
 90 thereto and to said bracket by vertically arranged pivots whereby said tooth carrying frame is lowered by the upward movement of said draft bars and raised by the downward movement thereof. 95

4. In a cultivator, the combination with the carrying wheels and axle, of brackets mounted on said axle; forwardly and downwardly projecting draft bars rigidly secured to said brackets; a tooth carrying frame pivotally connected to said bracket by vertically arranged pivots whereby said tooth carrying frame is lowered by the upward movement of said draft bars and raised by the downward movement thereof; shafts
 105 having downwardly projecting arms pivotally secured to the forward ends of said draft bars; an upwardly and rearwardly projecting arm on said axle; a spring connected thereto and to said shafts; and means for adjusting
 110 the tension of said spring, for the purpose specified.

5. In a cultivator, the combination with the carrying wheels and axle, of brackets mounted on said axle; forwardly and downwardly projecting draft bars rigidly secured to said brackets; a tooth carrying frame pivotally connected to said bracket by vertically arranged pivots whereby said tooth carrying frame is lowered by the upward
 120 movement of said draft bars and raised by the downward movement thereof; and shafts having downwardly projecting arms pivotally secured to the forward ends of said draft bars, for the purpose specified. 125

6. In a cultivator, the combination with the carrying wheels and axle, of brackets mounted on said axle; forwardly and down-

wardly projecting draft bars rigidly secured to said brackets; and a tooth carrying frame pivotally connected to said bracket by vertically arranged pivots whereby said tooth carrying frame is lowered by the upward movement of said draft bars and raised by the downward movement thereof, for the purpose specified.

In witness whereof, I have hereunto set my hand and seal in the presence of two witnesses. 16

JAMES A. KING. [L. S.]

Witnesses:

E. I. LINSLEY,
A. H. BANKER.