2 Sheets—Sheet 1.

A. CANFIELD.

Cultivator.

No. 210,993. **Patented Dec. 17, 1878.**

Fig. 1.

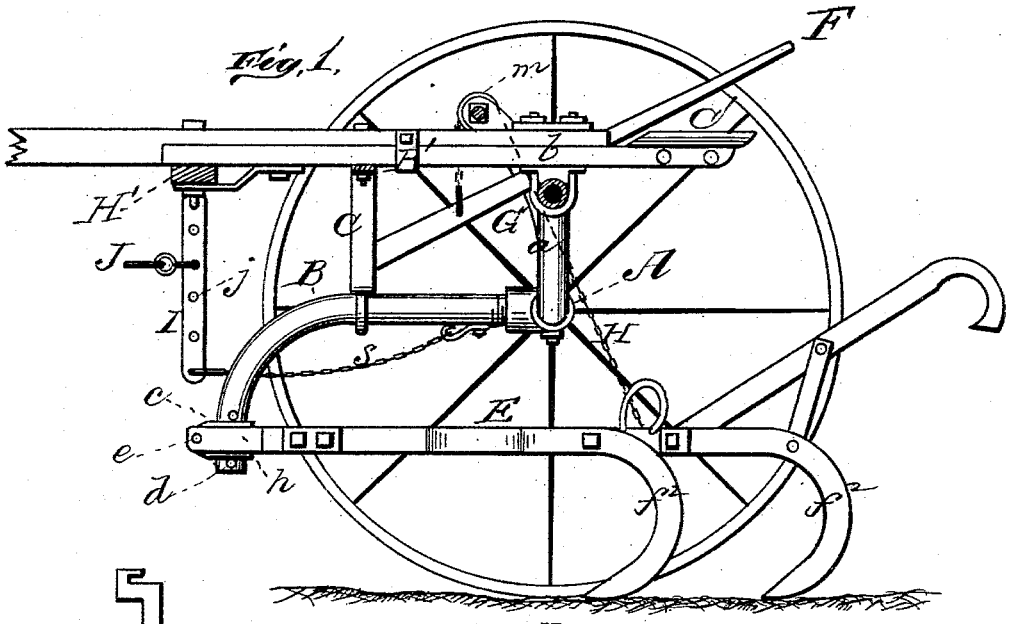
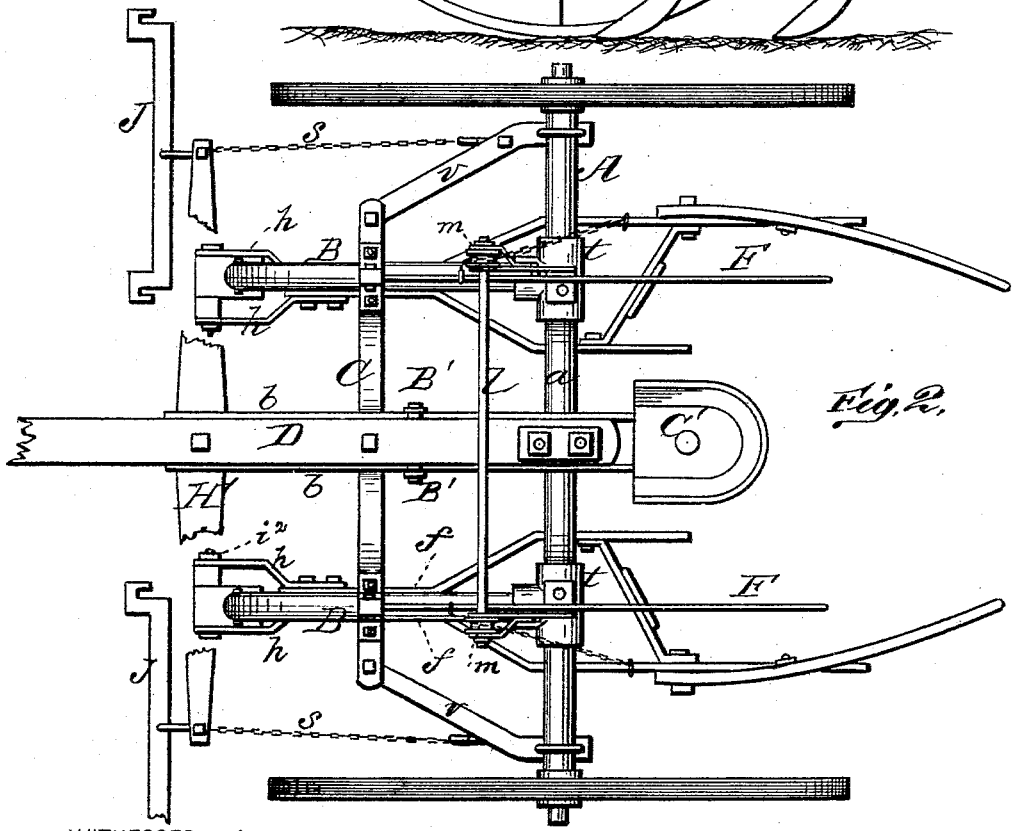


Fig. 2.



WITNESSES

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INVENTOR

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2 Sheets—Sheet 2.

A. CANFIELD.

Cultivator.

No. 210,993. Patented Dec. 17, 1878.

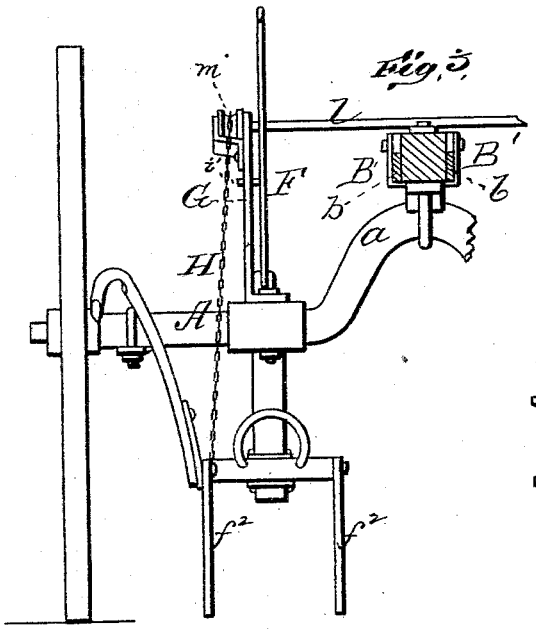

Fig. 3.

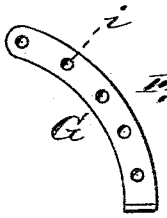

Fig. 4.

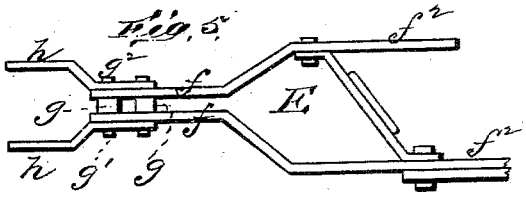

Fig. 5.

Fig. 6.

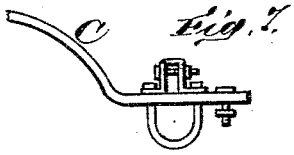

Fig. 7.

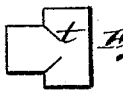

Fig. 8.

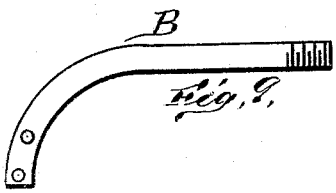

Fig. 9.

WITNESSES
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UNITED STATES PATENT OFFICE.

ANDREW CANFIELD, OF DAVENPORT, IOWA.

IMPROVEMENT IN CULTIVATORS.

Specification forming part of Letters Patent No. **210,993**, dated December 17, 1878; application filed October 26, 1878.

To all whom it may concern:

Be it known that I, ANDREW CANFIELD, of Davenport, in the county of Scott and State of Iowa, have invented a new and valuable Improvement in Combined Riding and Walking Cultivators; 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 drawings, making a part of this specification, and to the letters and figures of reference marked thereon.

Figure 1 of the drawings is a representation of a longitudinal central vertical section of my cultivator. Fig. 2 is a top view thereof; and Figs. 3, 4, 5, 6, 7, 8, and 9 are details.

This invention has relation to improvements in cultivators.

The object of the invention is mainly to lessen the weight of the machine without in any degree impairing its strength and durability or increasing its cost.

The nature of the invention consists, in a riding or walking cultivator, of a tubular metallic axle-tree, arched at its middle portion, and having at its ends spindles for the transporting-wheels.

It also consists in combining with a tubular axle-tree tubular T-couplings, passed over the ends of said axle, and adjusted in position by means of a set-screw or otherwise, and tubular arms extending to the front and screwed into the said coupling, and supporting the cultivator-beams, as will be hereinafter more fully set forth.

In the annexed drawings, the letter A designates the axle-tree of my improved riding and walking cultivator, the same being made of tubular iron, and provided at its middle portion with a raised arch or bridge, *a*. At the ends of this arch or raised portion *a* are rigidly applied the tubular couplings *t*, that are passed over the axle ends and secured by a set-screw, into which are screwed the curved tubular arms B, to which the cultivator-plows are attached. These arms are braced together by means of the arched plate C, to which and the arch *a* of the axle-tree the draft-tongue D is rigidly bolted at their apexes or crowns.

At a point between the arch of the axle and brace C, but nearest the latter, are rigidly secured, at each side of the tongue, the guides B′, in which are received the seat-supporting plates *b*. These pass through the guides B′, and rest upon the top or crown of the arched portion of the axle-tree, and, being of considerable length, allow the seat C′, that they carry on their rear ends, to be adjusted nearer to or farther from the axle-tree, according to the weight of the driver, and thus balance the frame of the cultivator.

The ends of the arms B are vertical, as shown in Fig. 1, and they are provided each with a horizontally-vibrating collar, *c*, confined thereto by means of a pin, *d*, extending through said arms below the said collar, as shown in Fig. 1. These collars have parallel sides, and are provided upon the same with journals or trunnions *e*, to which the bifurcated ends of the cultivator-beams E are pivoted. These beams are composed each of two independent metallic bars, *f*, each of which is passed over one of said trunnions, coupled together in rear of the trunnions by means of the spacing-blocks *g*, bolts g^1, extending through the bars *f*, and clamp-nuts g^2, applied upon said bolts; or the bars *f* may be separate and independent of the clevis portions *h*, and these parts coupled together by overlapping the bars *h* and clevis-plates *h*, interposing the spacing-blocks *g*, and passing the said bolts g^1 through the bars *f*, the clevis-plates *h*, and the spacing-blocks *g*, and clamping them together by means of the nuts g^2. In either case the clevis end of the beam E will be confined to the collars *c* by means of a bolt, *g*, extending horizontally through the ends of the clevis and the said collar, and a retaining-nut, i^2, applied upon the screw-threaded end of the said bolt, those portions of the latter projecting at each side of the collar forming the trunnions. The beams E are thus allowed universal motion relative to the arms B. The bars *f* gradually diverge rearwardly, and are provided with standards f^2 and suitable cultivator-shovels, secured in any suitable manner to the ends of the said standards.

F designates vertically-vibrating levers, having their fulcrums upon the arched plate C, and extending to the rear within convenient reach of the driver upon the seat. These le-

vers vibrate in contact with an arched segment, G, erected on the axle, connected at their upper ends by a brace-rod, *l*, and provided with regularly-spaced perforations *i*, with which a spur, *i'*, on the levers F are adapted to engage. These segment-racks G carry at their upper ends a pulley, *m*, over which a chain, H, secured at one end to the cultivator-beam in rear of the axle, passes, the said chain being then attached to the lever F directly under the pulley and in front of the axle. Thus by raising the levers F the beams are lowered, and lowering the same raised, the adjustments thus had being retained by engaging the spurs upon the said levers with the proper perforations in the racks.

H' indicates a double-tree, secured in the usual manner to the under side of the tongue, and having depending from each end a metallic plate, I. These plates are provided with a number of holes, *j*, in which the hook of the single-tree J are designed to be passed in a higher one to raise the line of draft, and in a lower one to depress the same, the said plates being connected to the axle-tree, in order to equalize the draft from the tongue and axle, by means of the chains S.

The ends of the arched plate C are connected to the tubular axle by the oblique braces *v*, bolted at one end to the ends of said plate, and secured to the axle at the other by means of clips *c'*.

I am aware that tubular axles and arms have heretofore been used, and I do not claim such devices broadly.

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

The combination of the tubular axle-tree A, the tubular T-couplings *t*, passed over the ends of said tree and secured thereto, and the horizontally and vertically bent tubular arms B, the horizontal end screwed into said T-couplings, and the vertical end having the vibrating collars *c*, adapted to receive the plow-beams E, substantially as specified.

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

ANDREW CANFIELD.

Witnesses:
J. H. CAMP,
G. W. HEYWOOD.