(No Model.) 2 Sheets—Sheet 1.

F. H. AUSTIN.

CULTIVATOR.

No. 336,884. Patented Mar. 2, 1886.

Fig. 1.

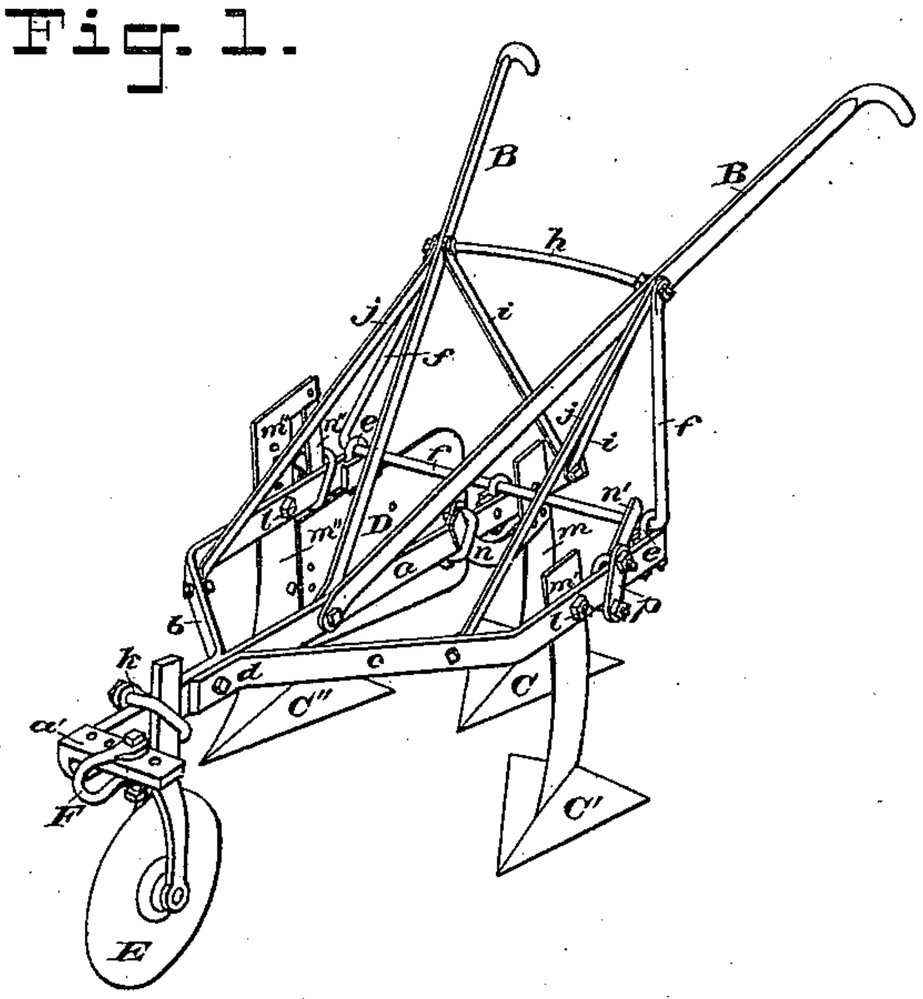
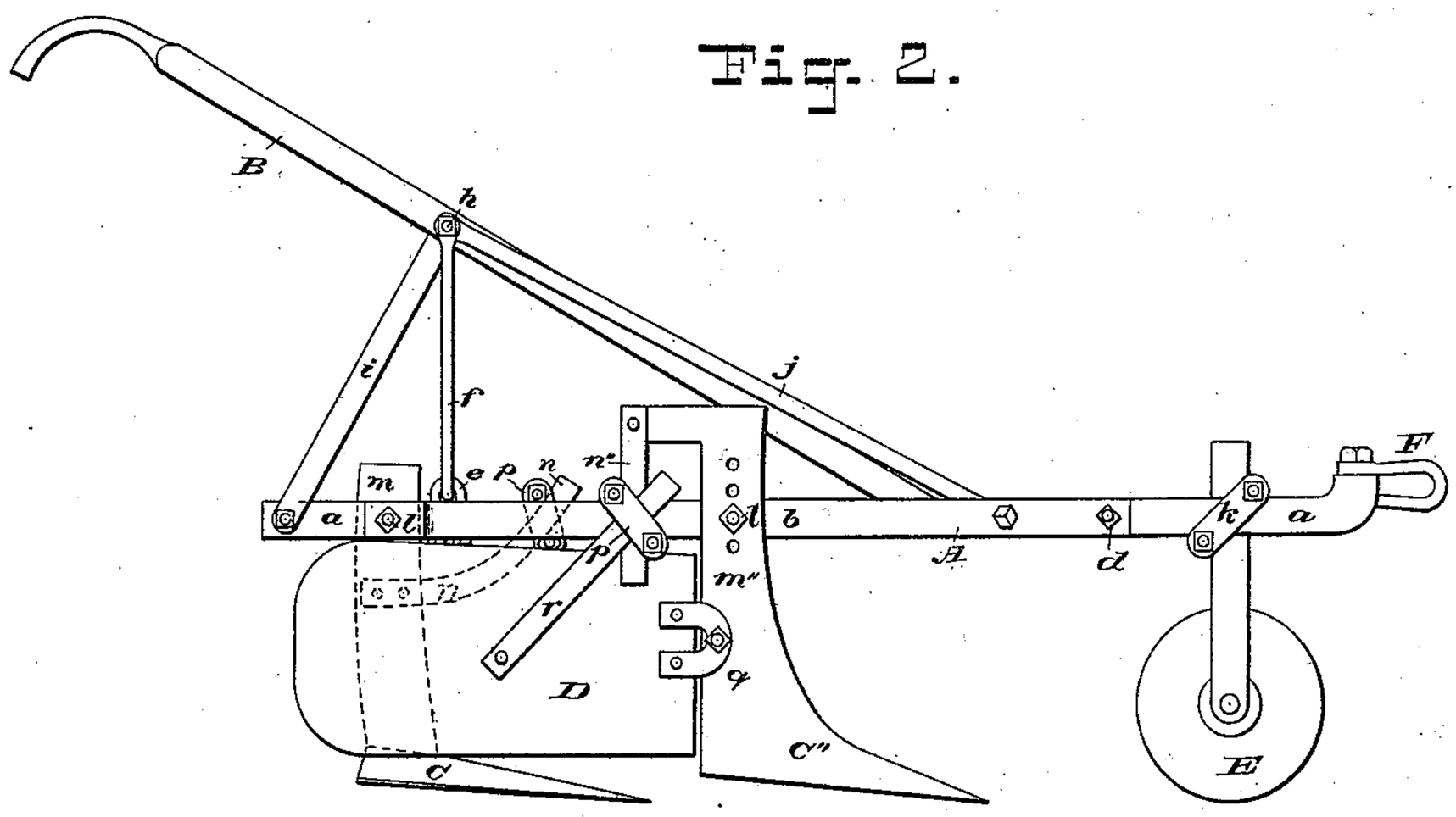


Fig. 2.



WITNESSES:

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E. B. Bolton

INVENTOR:

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(No Model.) 2 Sheets—Sheet 2.

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Fig. 3.

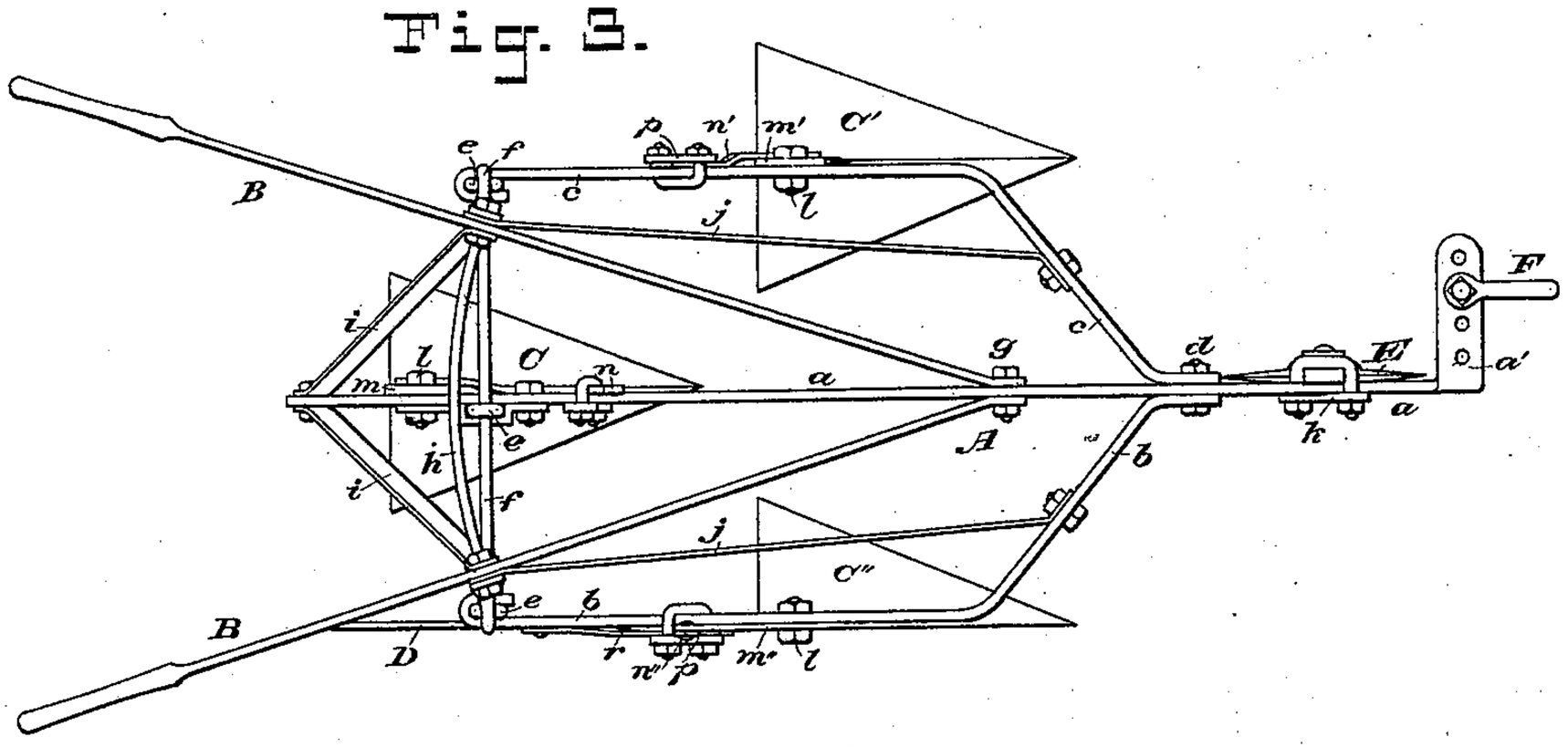


Fig. 4.

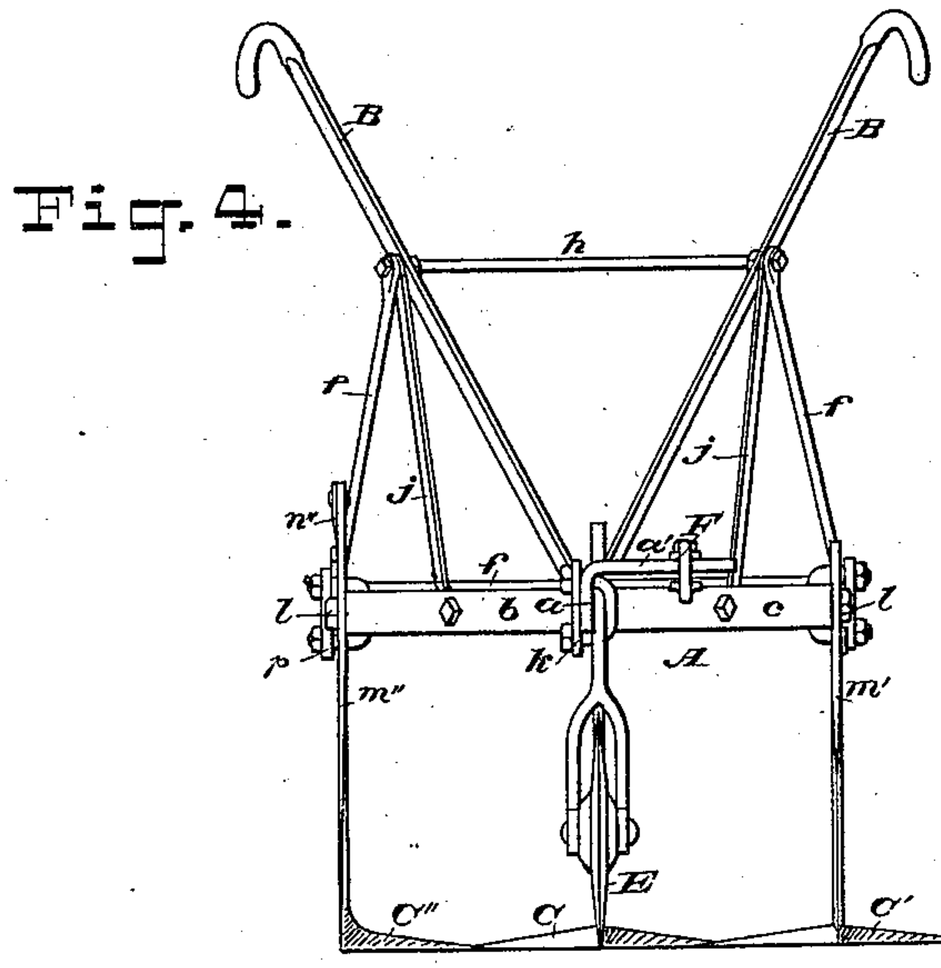


Fig. 5.

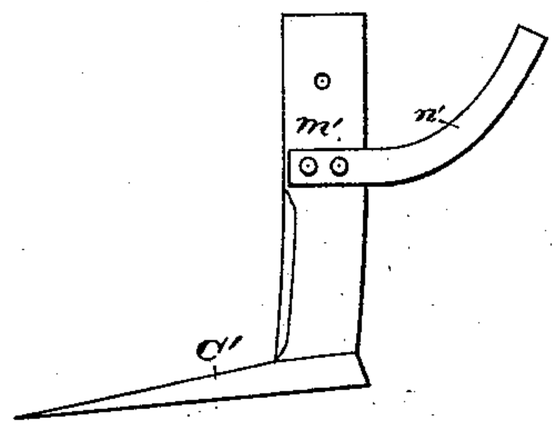


Fig. 7.

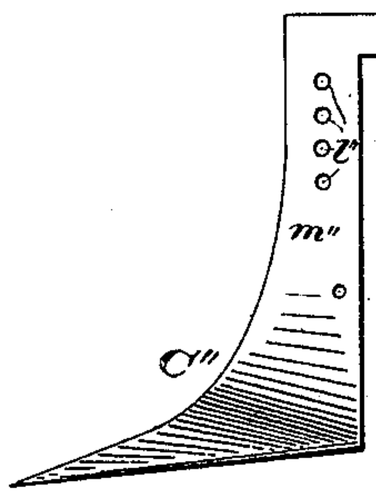


Fig. 8.

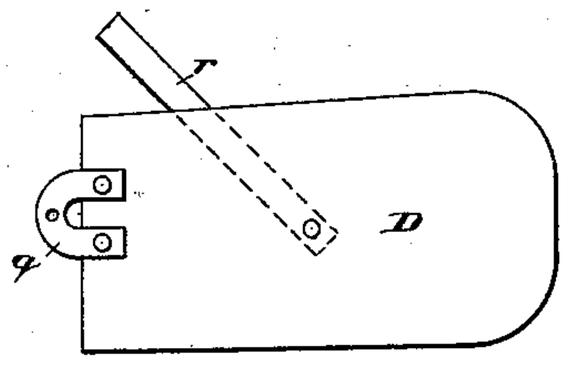
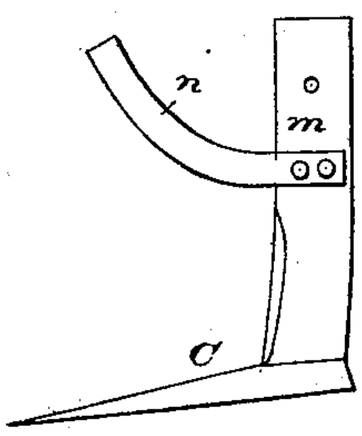


Fig. 6.



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INVENTOR:

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UNITED STATES PATENT OFFICE.

FRANKLIN HALE AUSTIN, OF ONOOMEA, HILO, HAWAII.

CULTIVATOR.

SPECIFICATION forming part of Letters Patent No. 336,884, dated March 2, 1886.

Application filed September 11, 1885. Serial No. 176,810. (No model.)

To all whom it may concern:

Be it known that I, FRANKLIN HALE AUSTIN, a subject of the King of Hawaii, and a resident of Onoomea, District of Hilo, Island of Hawaii, in the Kingdom of the Hawaiian Islands, have invented certain Improvements in Cultivators, of which the following is a specification.

My invention relates to that class of cultivators in which the hoes or shoes are very nearly flat, and are fixed to sharp cutting-legs. These legs are secured adjustably to the frame.

The principal objects of my invention are in part to provide flat shoes with means whereby they may be set to agitate and throw up the earth, like the mold-board or shovel of a shovel-plow, or be set to shear off the roots of weeds below the surface without disturbing the soil to any material extent. The outside shoe, which runs next to the growing plants, has one straight side, the plane of which is parallel with the line of draft, and the cutting-leg is secured flush with this side. Behind the leg of this shoe is mounted the guard-plate, which prevents the earth from falling into the plants. This guard-plate, as will be hereinafter described, moves in the path of the cutting-leg, and is loosely connected or hinged to the leg, so that the latter may be adjusted up and down.

All of the shoes of my cultivator are pivoted to the frame, so as to be swung forward and back; but the outside shoe, which runs next to the plants, also has an independent vertical adjustment, whereby it may be set deeper than the others. This is entirely independent of the depth-regulation effected through the medium of the clevis.

The novel features of my invention will be fully set forth hereinafter, and carefully defined in the claims.

In the drawings which serve to illustrate my invention, Figure 1 is a perspective view of my improved cultivator. Fig. 2 is a side elevation thereof. Fig. 3 is a plan. Fig. 4 is a front elevation, and Figs. 5, 6, 7, and 8 are side elevations of detached parts.

Let A designate the frame of the cultivator, and B B the handles.

C, C′, and C″ are three cultivator hoes or shoes formed on legs which extend upwardly, and are clamped or fastened adjustably to the frame.

D is a guard-plate, which is attached behind the leg of the shoe C″ and extends rearwardly, acting to prevent any soil disturbed by the shoes from falling outwardly onto or against the growing crop.

E is a guide-wheel or colter, and F is the clevis.

The frame A may be made of iron or wood, in any convenient or suitable manner. The construction shown consists of three iron bars—a straight center bar, *a*, and two side bars, *b* and *c*—with bracing-rods. The two bars *b* and *c* are bent toward each other at their forward portions, and their front ends are brought against the center bar, the three bars being there fastened by a bolt or rivet, *d*. The rear end of each side bar is bent double and connected to an eye, *e*, and a like eye, *e*, is also fastened to the center bar, *a*, and through the three eyes, which are all on the same line, is placed a bar, *f*, the end portions of which are turned up at an angle, as shown in Fig. 4, and its ends are fastened to the respective handles B B. These handles consist of straight iron bars, curved at their outer ends, and arranged at an inclination to each other and to the frame A, as shown in Figs. 2 and 3, with their inner or front ends extending down to the middle bar, *a*, to which they are fastened by a bolt or rivet, *g*.

From the rear end of the center bar, *a*, two diagonal brace-bars, *i i*, extend outwardly and join the handle-bars at the points where they are joined by the ends of the bar *f*. At the same points are connected two bars, *j j*, which extend forward and downward, and are bolted at their front ends to the diagonal front portions of the side bars, *b c*. A curved cross-bar, *h*, crosses between the two handle-bars, its ends, which are screw-threaded, passing through the handle-bars and through the ends of the bars *f*, *i*, and *j*, and nuts which are screwed onto the threaded ends of the bar *h* on opposite sides of these bars serve to bind all the parts together.

The frame and handles thus constructed are light, stiff, and well braced. Any other preferred construction may, however, be substituted for the one shown. The center bar, *a*,

extends forward to form a draft-beam, and its front end is turned horizontally to one side at *a'*, being pierced with a row of holes, to one or another of which the clevis F may be connected in order to apply the draft more or less to one side, as may be found desirable. The guide wheel or colter E is not essential, and may be omitted; but if used its forked bearing-bar is connected to the draft-beam by means of a clamp, *k*.

The hoes or shoes C, C', and C'' are made of metal plates attached in any convenient manner to their respective upright cutting-legs *m*, *m'*, and *m''*. The hoe and leg may be cast in one piece. The leg is of the form of a flat plate, with its front side knife-edged. The hoes are nearly flat, and extend horizontally in front of their legs to a point, and their front or advancing sides are knife-edged. The hoes C and C' spread outwardly on both sides of their legs, their front or cutting edges being inclined backward from the point, so that they are triangular in plan, as seen in Fig. 3. The outside hoe, C'', is extended on only one side of its leg—namely, on the inner side thereof—the outer face of the leg and shoe being plane and continuous, as shown in Figs. 2 and 4, the straight side being journaled to the line of draft. The hoes C' and C'' are preferably arranged abreast of each other, with the hoe C to the rear of them; but this particular arrangement is not essential.

The legs *m*, *m'*, and *m''* of the respective shoes C, C', and C'' are pivoted to the bars *a*, *c*, and *b*, respectively, by bolts *l l l*. The shoes will be swung forward or back from these bolts as centers, in order to adjust the inclination at which they shall enter the ground, it being sometimes desirable to have their point turned somewhat downward, as shown in Fig. 2, and at other times preferable to have them arranged level, so as to disturb the surface of the earth as little as possible. When properly adjusted, they are fastened firmly in position by clamps *p p p*, which engage brace bars or arms *n n' n''* on the legs of the respective shoes and clamp them fast against the bars of the frame. The hoe C has a curved brace-arm, *n*, fastened rigidly to its leg *m* and projecting forward, as shown in Fig. 6. The hoe C' has a similar arm, *n'*, projecting rearward, as shown in Fig. 5, and the hoe C'' has its leg *m''* extended upwardly and then rearwardly, where it has a brace-bar, *n''*, connected to it by a rivet, and extending downward, as shown in Fig. 7. The leg *m''* is perforated with several bolt-holes, *l''*—one above another—so that by placing the bolt *l* in one or another of these holes the hoe C'' may be set higher or lower, so that when desired it may be lowered more or less into the furrow. The brace-bar *n''* is arranged vertically, in order to allow for this vertical adjustment. The object in thus giving the outer hoe, C'', an independent vertical adjustment is that it may be set deep enough to loosen the earth about the roots of the plants, while the other shoes merely enter deep enough to destroy weeds. It will be seen from Fig. 4 that the middle hoe, C, is as wide as or wider than the space between the hoes C' and C''. This is in order that the three shoes, in passing through the soil, shall make a cut which is continuous throughout the whole width of the cultivator, as in other cultivators of this class.

The guard-plate D consists of a metal plate of suitable width arranged in a vertical plane and attached to the rear of the leg *m''* in any convenient manner, so that it drags after this leg in the furrow.

The fastening shown consists of a bracket, *q*, fixed on the front side of the plate D and having a bolt-hole, through which and through a hole, *q'*, Fig. 7, in the leg *m''* a bolt is passed. The plate D is held in position vertically by a brace-arm, *r*, riveted to it, extending diagonally upward and held by the same clamp, *p*, which binds the bar *n''*. This guard-plate D extends back as far as the heel of the middle hoe, C, and down to or below the depth cut by that hoe, so that any soil disturbed by the cut will be guarded against falling outside of the cultivator onto or against the row of sugar-cane, Indian corn, or other growing crop.

The advantage in placing the plate D behind the leg to which it is attached is, that this necessarily compels it to follow in the cut made by said leg, whereby the draft is lessened. This arrangement is also quite important where the cultivator-hoes are set level, so as not to disturb the soil, for, in this case, if the guard-plate were not behind the leg *m''* it would have to cut its own path in the solid ground. As constructed, it need not be removed when the cultivator is employed as above, for it will add nothing of consequence to the draft.

The clamps *k* and *p p* are all alike, consisting simply of a U-shaped bar with threaded ends, a yoke-bar, and two nuts.

Any other form of clamp or other equivalent or suitable fastening or adjusting device known in the arts to which my invention relates may be substituted for that shown.

I do not intend to confine myself to the precise mechanical constructions shown, as many other constructions well known in the arts will serve equally well to carry out the essential parts of my invention.

I am well aware that it is not new, broadly, to clamp the legs of cultivator-hoes adjustably or pivotally to the frame or beam, that flat hoes have been employed, and that guard-plates have also been used on cultivators. Therefore I do not broadly claim any of these features; but

What I do claim is—

1. In combination with the main frame of a cultivator, a flat vertical cutting leg or standard provided with a series of bolt-holes, whereby it may be pivoted at different heights to the main frame, so as to swing forward or back in the line of the draft of the machine, said standard being also provided with an arm

extending rearwardly from the upper part thereof, a brace-bar connected to said arm and adapted to be clamped to the main frame to hold the standard in any desired position, and a hoe carried by said standard, substantially as set forth.

2. The main frame of a cultivator, and a flat vertical cutting leg or standard carrying a hoe, said leg or standard being vertically and angularly adjustable on the main frame, and being arranged to cut the earth in the line of the draft of the machine, in combination with a guard-plate secured to the cultivator and arranged behind and in the same line with the said cutting leg or standard, substantially as set forth.

3. A cultivator-frame, flat cutting-hoe standards arranged at one side and at the center of the machine, and arranged to cut in the line of the draft of the machine, and substantially flat hoes carried thereby, said hoe-standards being pivotally secured to said frame, whereby the angle at which the hoes cut the earth may be varied, in combination with a flat cutting-hoe standard on the side of the cultivator which runs next the plants, said standard being provided with a series of bolt-holes, whereby it may be pivoted at different heights to the frame, and with an arm extending rearwardly from the upper part thereof, a brace-bar connected to said arm and adapted to be clamped to the main frame, whereby said standard may be secured at different angular positions, and a substantially flat hoe carried by said standard, substantially as set forth.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

FRANKLIN HALE AUSTIN.

Witnesses:
GEO. W. NAWAAKOA.
J. M. MONSARRAT.