2 Sheets--Sheet 1.

# A. C. TOWER.

## Cultivators.

No. 134,824. Patented Jan. 14, 1873.

Fig 1.

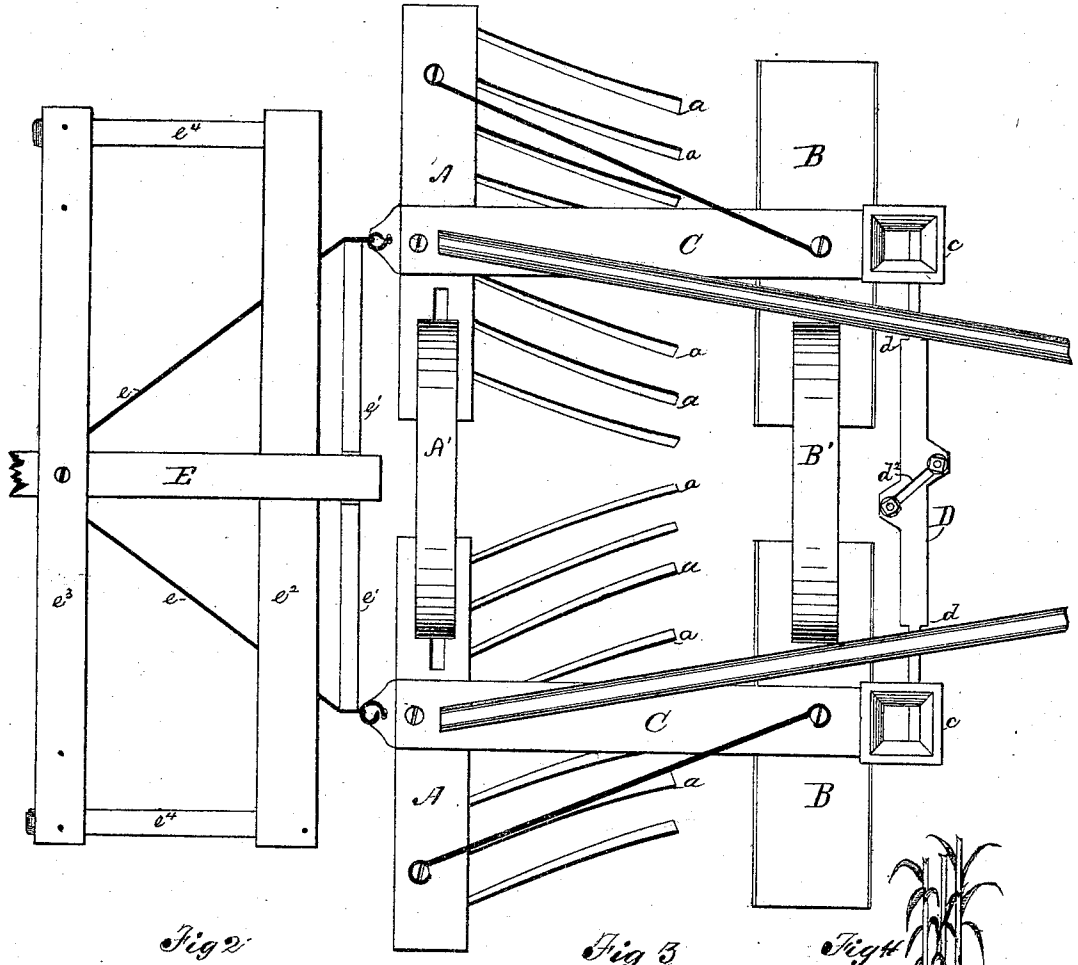


Fig 2.

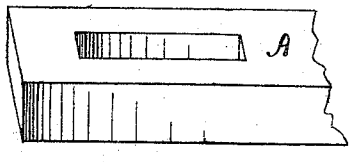


Fig 3.

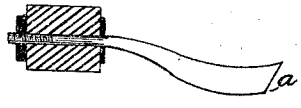


Fig 4.



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G. Dyer.

Inventor.
Augustus C. Tower by
Dyer, Beadle & Co.
atty

2 Sheets--Sheet 2.

# A. C. TOWER.

## Cultivators.

No. 134,824. Patented Jan. 14, 1873.

Fig 5.

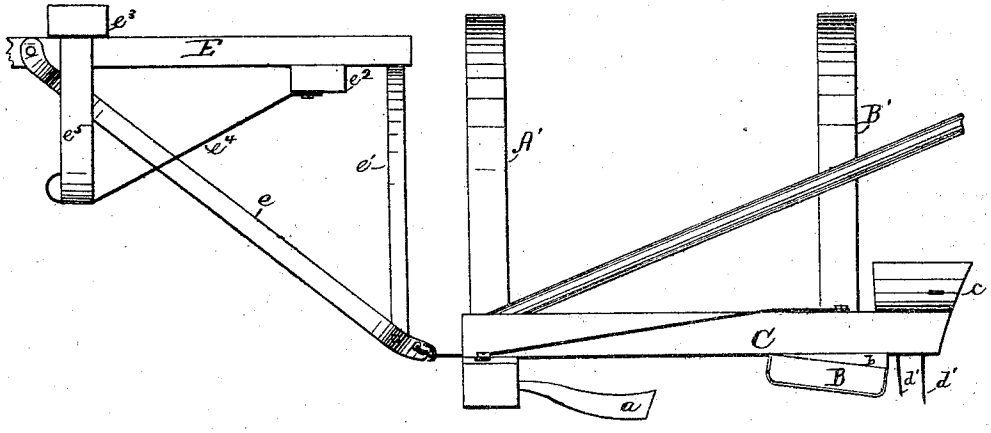
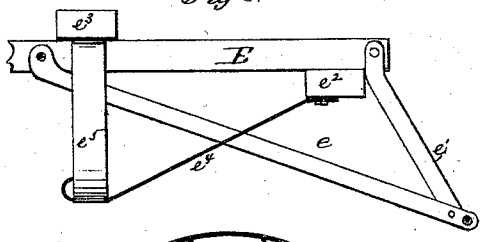



Fig 6.



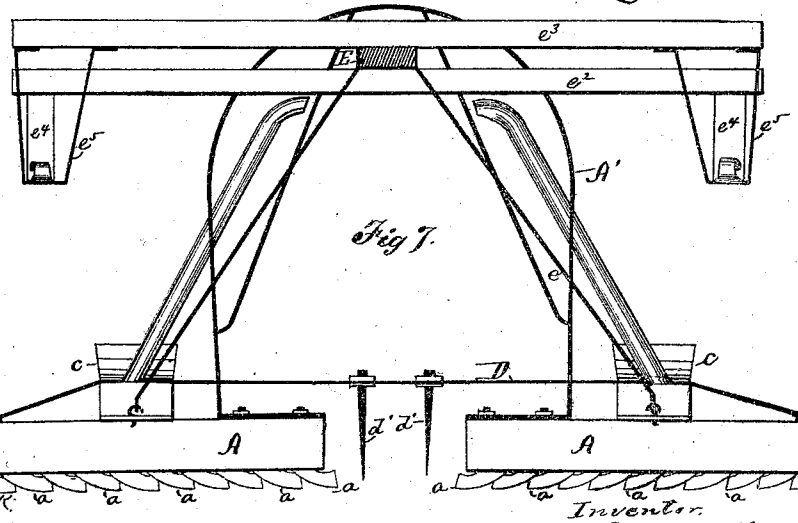




Fig 7.

Witnesses
H. Conklin Clark
G. K. Dyer.

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# UNITED STATES PATENT OFFICE.

AUGUSTUS C. TOWER, OF MENDOTA, ILLINOIS.

## IMPROVEMENT IN CULTIVATORS.

Specification forming part of Letters Patent No. 134,824, dated January 14, 1873.

*To all whom it may concern:*

Be it known that I, AUGUSTUS C. TOWER, of Mendota, in the county of La Salle and State of Illinois, have invented a new and useful Improvement in Corn-Cultivator; and I do hereby declare that the following is a full and exact description of the same, reference being had to the accompanying drawing and to the letters of reference marked thereon.

This invention, from its peculiar construction, is adapted to cultivate corn close up to the hill without disturbing its roots, and also to pulverize the ground and destroy the weeds. It consists, mainly, in the employment on a single machine of two series of peculiarly-arranged knives, adapted to operate upon each side of the hill, as will be fully described hereinafter.

In the drawing, Figure 1 represents a plan view of my improved machine; Fig. 2, a perspective view of one of the beams, showing its slot; Fig. 3, an elevation of one of the knives detached; Fig. 4, a view showing the difference in operation between my invention and the corn-cultivator usually employed; Fig. 5, a side elevation of my machine; Fig. 6, a modification of the draft device; and Fig. 7, a front elevation of the machine.

To enable others skilled in the art to make and use my invention, I will now proceed to describe fully its construction and manner of operation.

This machine consists, generally, of two front beams, carrying peculiarly-arranged knives, and two rear beams having inclined faces, the front beams being united together by a bow, as also are the rear beams in a similar manner. The front beams carrying the knives are adapted to pass upon each side of the hill, pulverizing the earth in their movement, and drawing it up to the hill. The rear beams are adapted to smooth down the earth close to the corn. Following the rear beams are two teeth, which are designed to pass the hill, one upon each side, and knock away any clods that may have been deposited there, and also lift the blades of corn which have been bent down. In connection with this machine I employ a peculiar draft device, which, in connection with the foregoing, will be hereinafter described.

A A represent the front beams of the machine, identical in their construction, which are made of any suitable size, and of any proper material. They are united together by means of the bow A′, the feet of which are made adjustable in slots in the beams A for the purpose of regulating the distance between the beams, as may be necessary. Each beam is provided with a series of curved teeth, *a a*, preferably made of spring steel, which are secured to the beam by nuts and washers, as shown in Fig. 3, and held at an angle, so that their rear ends are much nearer the central line of the machine than their front end, as shown. These teeth are also vertically inclined, their lower edges being nearer the central line than their upper edges, as shown in Fig. 1. B B represent the rear beams, which are united to each other by means of the bow B′, and are connected to the front beams by the cross-bars C C. These beams are held at an incline by means of triangular blocks *b b*, Fig. 5. The rear ends of the cross-bars C C are provided with boxes *c c*, in which may be placed suitable weights for loading the machine. D represents a cross-bar having shoulders *d d*, the ends of which are loosely held in slots in the boxes *c*, or otherwise, in such manner as to slide freely when the two parts of the machine are brought nearer together or separated more widely from each other. It has a central slot, $d^2$, in which is adjustably held, by means of threaded nuts, the curved harrow teeth *d′ d′*, the slot being arranged at an angle in order that one tooth may be held in advance of the other. The front and rear beams are each inclined slightly upward from their outer ends inward, so that the center of the machine is made higher than the sides, as shown.

The draft device will now be described.

E represents the tongue, which has attached to its rear end the bars *e e*, attached by means of suitable hooks to the eyes of the front beams A A. $e^1$ $e^1$ represent brace-bars, and $e^2$ $e^3$ pivoted cross-bars, answering the purposes of eveners, to the former of which are attached the draft-rods $e^4$ $e^4$ supported by the pendents $e^5$ upon the bar $e^3$, as shown.

If desired the form of this draft device may be modified for low corn, as shown in Fig. 6. If

desired, also, the cross-bars may be dispensed with, and a double-tree of the usual construction be attached directly to the pole.

The operation of my improved machine will now be described.

It is drawn over the field in any proper manner, the machine straddling the rows. The knives, as the machine moves over the ground, operate to cut up the earth and also to move it to the center about the hill. The rear beams assist in pulverizing the ground, and also make it smooth. The two rear teeth throw off any lumps that may be lodged on the hill. The action of the knives in cutting the earth and drawing to the hill is due mainly to their peculiar arrangement. By being set at an angle to the beam with the rear ends nearer the center than the front ends, as they move forward they necessarily carry the earth to the center. By being inclined vertically they have a cutting action instead of a scraping action; and by being curved they are adapted to ride up onto the hard clods instead of pushing them before them, and cut them down through from above. The peculiar arrangement of the knives also especially adapts them for destroying weeds, as they operate not only to cut them up, but also to move them bodily to one side, by which means their perfect separation from the earth is insured. By virtue of the arrangement described also, the machine is especially adapted to cultivate the ground close up to the hill without disturbing the roots—a result impossible with the cultivators ordinarily employed.

The difference of result is clearly illustrated in Fig. 4, by means of which it will be understood that my invention is adapted to thoroughly stir the entire surface of the soil without penetrating sufficiently deep to injure the roots, while the ordinary cultivator only acts upon a small area, and if used close to the hill must necessarily disturb the roots.

This machine may be made, of course, of any proper size and suitable proportions. The following dimensions have, in practice, been found to make a good working machine: Front beams made of three-by-four stuff, two feet eight inches long. Each beam has eight knives, which are located three inches apart. The knives are twenty-two inches long, two inches broad, and are arranged at such an angle that the rear end of each knife is six inches nearer the central line of the machine than the front end. The rear beams are two feet long and ten inches broad, the lower surfaces being covered with sheet-iron. The cross-beams are about three feet six inches long. The handles are made about five feet six inches long. The arch of each bow is about twenty-seven inches above the lower surface of the beams.

The draft device may be made of the following dimensions: Cross-beams, four feet long. The front ends of the draft-rods should be dipped, and the other parts be of suitable lengths to correspond properly with the lengths given above.

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

1. The series of knives *a a* set at an angle, as described, and adapted to work upon each side of the hill, substantially as described.

2. The combination, in a cultivating-machine, of the following elements—*i. e.*: A pair of beams adapted to operate upon each side of a row of corn, having a series of curved inclined knives set an angle, as described, a pair of following smoothing-beams and suitable means for connecting the two, substantially as described.

3. The combination, in a cultivating-machine, of the following elements—*i. e.*: A pair of beams having knives *a a*, substantially as described, a pair of following smoothing-beams, means for connecting said beams, and teeth adapted to pass the hill on each side and remove the clods, substantially as described.

4. In a machine of substantially the described construction, an adjustable rod, D, carrying adjustable harrow-teeth arranged one in advance of the other, substantially as described.

This specification signed and witnessed this 10th day of August, 1872.

AUGUSTUS C. TOWER.

Witnesses:

JOHN HUBBARD,

PHILO CASTLE,

JOSEPH HUNTER.