

(No Model.)

2 Sheets—Sheet 1.

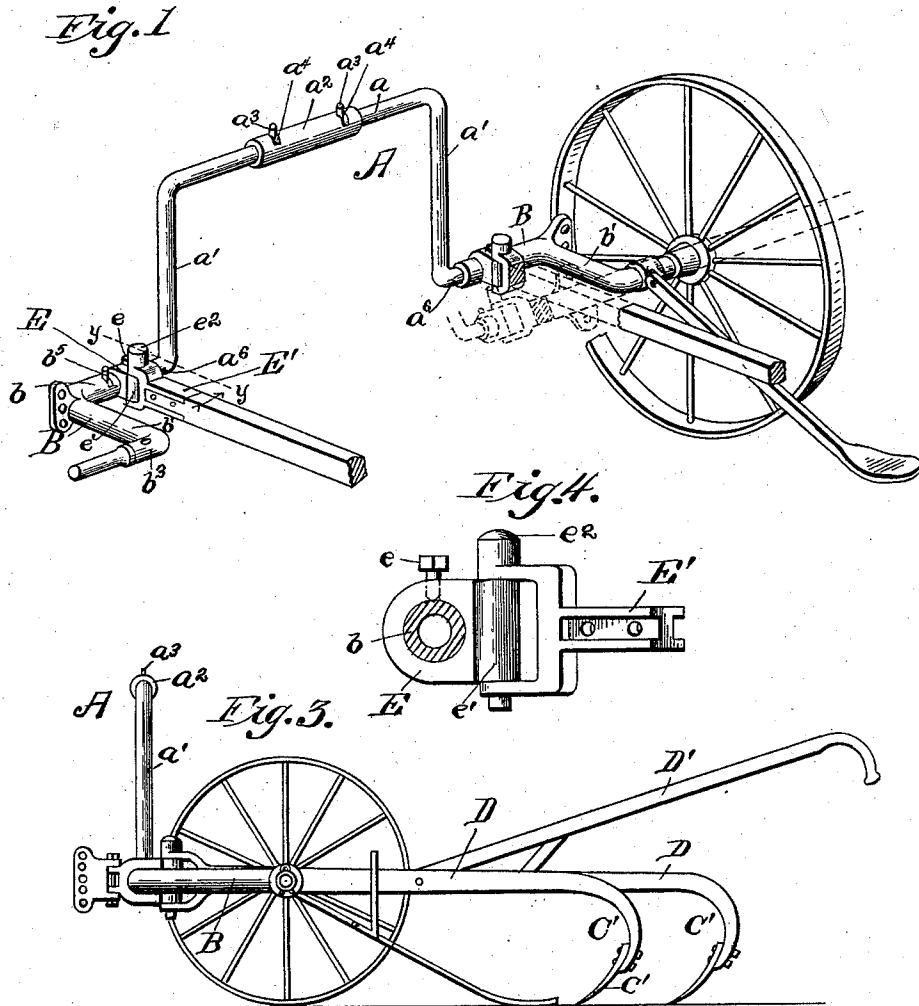
R. H. AVERY, Dec'd.

F. R. AVERY, Administrator.

TONGUELESS CULTIVATOR.

No. 580,676.

Patented Apr. 13, 1897.



Witnesses:

J. B. McGirr.

Wm H. Edwards



F. R. Avery.
Administrator
by H. H. Bliss
att'y.

(No Model.)

2 Sheets—Sheet 2.

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Fig. 2.

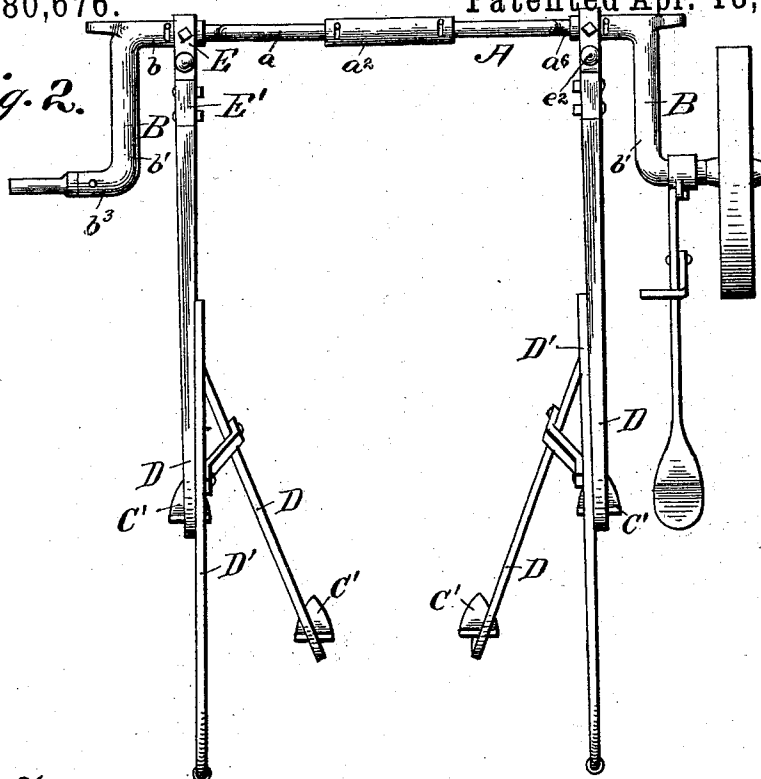


Fig. 7.

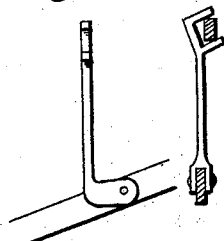
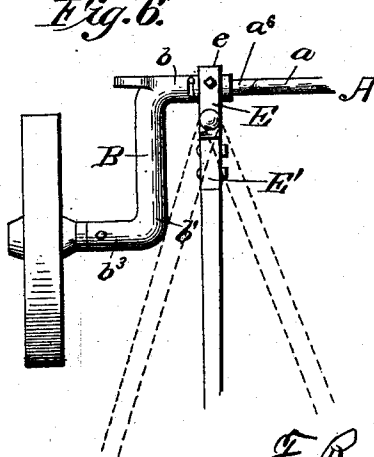


Fig. 6.



WITNESSES
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UNITED STATES PATENT OFFICE.

FREDERIC R. AVERY, OF PEORIA, ILLINOIS, ADMINISTRATOR OF ROBERT H. AVERY, DECEASED, ASSIGNOR TO THE AVERY PLANTER COMPANY, OF SAME PLACE.

TONGUELESS CULTIVATOR.

SPECIFICATION forming part of Letters Patent No. 580,676, dated April 13, 1897.

Original application filed July 23, 1890, Serial No. 349,136. Divided and this application filed July 5, 1895. Serial No. 555,196.
(No model.)

To all whom it may concern:

Be it known that ROBERT H. AVERY, deceased, late a citizen of the United States, residing at Peoria, county of Peoria, State of Illinois, and of whose estate FREDERIC R. AVERY, of Peoria aforesaid, is now the administrator, did invent new and useful Improvements in Tongueless Cultivators, of which the following is a specification, reference being had to the accompanying drawings.

This invention relates to improvements in straddle-row cultivators of the class generally designated as "tongueless" cultivators.

The object is to provide a form of machine which can be handled more easily when in use in the field than can those of the earlier forms in this class, particularly with respect to the lifting of the shovels or plows. The parts which constitute the implement are so arranged that but slight effort is necessary to elevate the shovel-beams either independently of each other or simultaneously.

Figure 1 is a perspective of a sufficient portion of a tongueless cultivator to illustrate the manner of embodying the improvements. Fig. 2 is a plan view. Fig. 3 is a side elevation. Fig. 4 is a section on the line *yy*. Fig. 5 is a section on the line *zz*. Fig. 6 is a plan view illustrating the various positions the drag-bar may assume. Fig. 7 is a detail view of the beam-support connected with the runner.

A represents an arched frame or row-straddling connecting device which joins the two wheel-supports and the two sets of parts which support the plow-gangs. It has a top cross part *a* and the vertical parts *a'*. For some purposes these parts *a a'* may be integral or rigidly secured together; but to provide flexibility for purposes described it is preferred to so construct them that one of the legs *a'* can have a limited oscillation forward and back in relation to the other. One way of accomplishing this is shown, there being a sleeve or tube *a²* pivotally connected to one or both of the side parts *a'* of the arch. There are one or more slots in the tube at *a⁴*, and a corresponding number of pins *a³*, secured to the arched bars and fitted in said slots.

At the bottoms of the vertical bars *a'* there

are outwardly-turned bars *a⁶*. To these are connected the wheel-carrying bars B. These extend back from the vertical plane of the arch, as shown at *b'*, and are then each secured to or formed with an outwardly-turning arm *b³*, adapted to provide a spindle for the ground-wheel.

The plows, shovels, teeth, or hoes may be of any preferred sort and secured to any suitable drag-bar or gang-beam. As shown, they are indicated by C', and the sets or gangs are respectively carried by the bars D, having handles D'.

The drag-bars or beams are connected with the frame by couplings united to the outwardly-extending arms *a⁶*, which also may be of any preferred form; but in order to advantageously attain the ends of the invention the three parts (the arched frame, the beam, and the coupling device of whatever nature, respectively) should be so constructed and arranged that the beams freely vibrate or oscillate laterally or horizontally independently of the arched frame, but will be stopped from movement vertically in relation thereto—that is to say, the beam should have a hinge-like support at the front end, and will be so attached that when it is lifted upward at the rear it causes the frame to descend correspondingly.

E is a sleeve fitted to the frame-bars B and adapted to be rigidly secured thereto by set-screw *e*. At *e'* it has a tubular bearing to which the yoke-piece E' of the beam or drag bar is hinged by a bolt *e²*.

It will be seen that as the axis of the wheels is in a vertical plane considerably behind that of the arched frame the weight of this frame (the parts A and B) will tend to move them downward around the wheel-axis, those portions of the gang-beams or drag-bars which are in front of the axis tending to assist the frames in this. Hence the rear ends of the beams or drag-bars and the shovels can be readily lifted simultaneously around the wheel-axis as a fulcrum, as their weight is counterbalanced by that of the parts in front of the axis; but it is necessary to go farther than this to produce a machine which can be readily manipulated and provide for lifting

the beams independently of each other under counterbalance. This is attained to some extent by having the pivotal connection at a^2 ; but to provide a greater flexibility of connection for either side-wheel frame in relation to the other an axial or hinge-like union is introduced between bars B and the arch, preferably by forming the part b tubular and fitting into it a bar a^6 , there being a pin and slot b^5 to limit their rocking. Now it will be seen that in addition to the counterbalancing of both the gangs when lifted together it is possible to lift either while the other remains in working position, because of the flexibility furnished through the joints at b^5 and at a^2 .

The necessity of caster-wheels, or wheels so mounted that they can vibrate horizontally independently of the arched frame, is obviated, and yet independence of draft on the two sides of the machine is permitted. The horses are hitched to clevis plates or projections carried by any suitable part of the frame, preferably by the front bars B and each horse can have more or less variation in position forward and backward without interfering with the proper action of the machine. Broadly considered, this feature is not by itself novel, but it is believed that no tongueless cultivator has been heretofore constructed in the way shown and described—that is to say, so as to have this independence of draft on the two sides, together with the backwardly-projected wheel-frame to which the wheels are directly secured, in such a way that those parts of the frame which lie in front of the wheel-axis can be utilized to counterbalance the two gangs independently of each other or counterbalance both simultaneously.

It is not intended to herein claim any of the matters presented in the claims in the earlier application of Robert H. Avery, Serial No. 349,136, filed July 23, 1890, of which application the present one is a division, or any of the matters in the claims in Patent No. 537,400, issued on application Serial No. 531,777, which was also filed as a division of the said original application, Serial No. 349,136. The construction herein is materially different from that in said Patent No. 537,400, inasmuch as in that case the plow-beams were coupled to the wheel-frames at the rear ends of the latter and in or nearly in the axial line of the wheels. The present

construction has advantages in comparison therewith, particularly in this that the plow-beams are coupled to the wheel-frames at points considerably in advance of the wheel-axes, and consequently the front part of said beams is available for assisting in counterbalancing the rear part thereof—that is, the part which is in rear of the wheel-axis. The plows are therefore made relatively lighter, and are therefore more easily manipulated.

What is claimed is—

1. In a tongueless cultivator, the combination of a row-straddling arch, the wheel-frames extending backwardly therefrom, the wheels mounted on said frames behind the arch and held against lateral vibration, and the laterally-vibratable plow-beams connected to the frames at points in advance of the wheel-axes and locked to said frames against vertical vibration, independently of the frames, substantially as set forth.

2. The combination of the arch, the backwardly-extending wheel-frames locked against lateral vibration the wheels mounted on the said frames, and the independently-counterbalanced plow-gangs hinged to the frames in or near the plane of the arch, substantially as set forth.

3. The combination of the arch, the backwardly-extending wheel-frames locked against lateral vibration, the wheels mounted on an axis behind the vertical plane of the arch, and the laterally-vibratable independently-counterbalanced plow-gangs secured to the frames in front of the axis of the wheels, substantially as set forth.

4. The combination, in a tongueless cultivator of the arch, the wheel-frames extending backward from the arch and locked against lateral vibration, the wheels mounted on said backwardly-extending frames, the counterbalanced shovel-gangs hinged to the frame in front of the wheel-spindles, and the horizontal hinge interposed between the two wheel-frames, substantially as set forth.

In testimony whereof I affix my signature in the presence of two witnesses.

FREDERIC R. AVERY.

Administrator of estate of Robert H. Avery, deceased.

Witnesses:

JOSEPH WEEKS,

FRANK T. HAMILTON.