(No Model.) 2 Sheets—Sheet 1.

J. D. & A. C. TOWER.

CULTIVATOR.

No. 489,346. Patented Jan. 3, 1893.

Fig. 1.

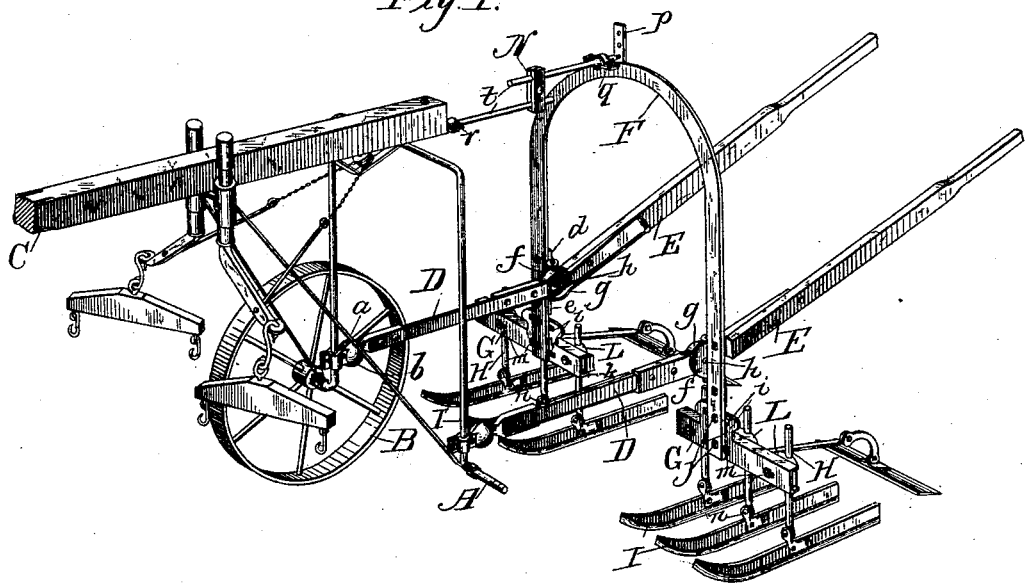
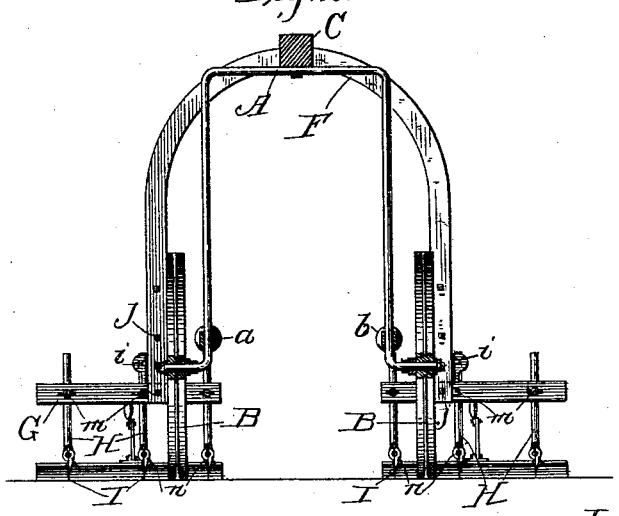


Fig. 2.



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(No Model.) 2 Sheets—Sheet 2.

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Fig. 3.

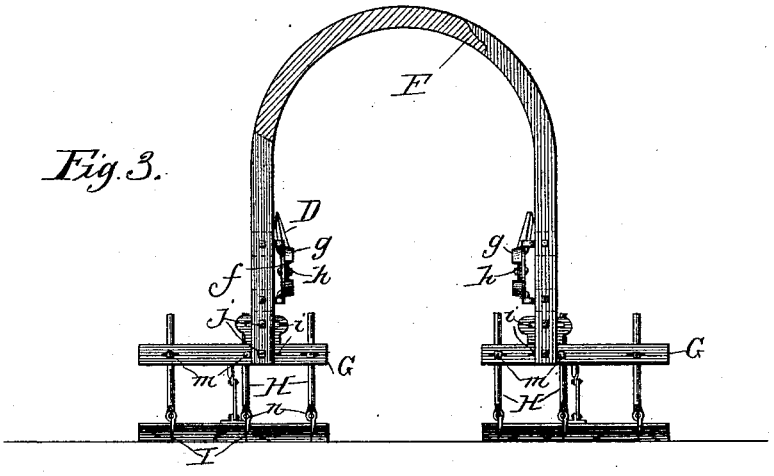


Fig. 4.

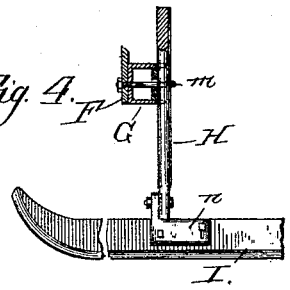
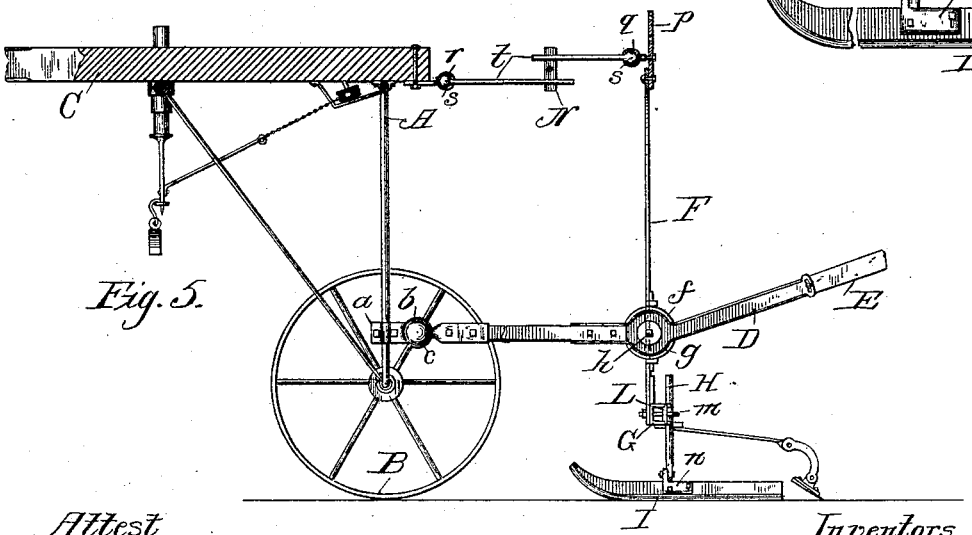


Fig. 5.



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UNITED STATES PATENT OFFICE.

JUSTUS D. TOWER AND AUGUSTUS C. TOWER, OF MENDOTA, ILLINOIS.

CULTIVATOR.

SPECIFICATION forming part of Letters Patent No. 489,346, dated January 3, 1893.

Application filed July 26, 1892. Serial No. 441,247. (No model.)

To all whom it may concern:

Be it known that we, JUSTUS D. TOWER and AUGUSTUS C. TOWER, citizens of the United States, residing at Mendota, in the county of La Salle and State of Illinois, have invented certain new and useful Improvements in Walking Corn-Cultivators; and we do hereby declare the following to be a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same.

Our present invention relates to various new and useful improvements in those walking corn cultivators, wherein two sets or gangs of knives are used, which are adapted to travel on each side of the corn, for the purpose of cultivating the same in the usual way.

The principal object of our invention is to provide and produce a device, having this end in view, which will be simple in construction, easy of operation, and effective in use.

Another object of the invention is to produce a walking corn cultivator, wherein the knives are so mounted that they may be readily moved from side to side, and up and down to accommodate the said knives to the unevenness of the corn hills, and whereby the said knives will always bear the same relative position to each other.

Another object of our invention is to provide simple means in such a cultivator, whereby the depth of cut of the knives may be effectively and simply regulated, and a still further object is the provision of novel means whereby the said knives may be mounted on the machine, and by which the inclination of the said knives from side to side, and from end to end can be varied at pleasure.

For a better comprehension of our invention attention is directed to the accompanying drawings, forming a part of this specification, and in which:—

Figure 1, represents a perspective view of our improved walking corn cultivator; Fig. 2, a sectional view through the axle; Fig. 3, a sectional view through the arch; Fig. 4, a sectional view of one of the knives, its shank and the support therefor, and Fig. 5, a sectional view mid-way through the machine.

In all of the above views corresponding parts are designated by the same letters of reference.

A, is the axle of the machine, constructed preferably of cylindrical wrought iron in the usual way, and arched at its center to enable it to pass unimpeded over the corn.

B, are ordinary metal or wooden wheels mounted on this axle.

C, is the tongue which is supported on the top of the said axle in any suitable way, and which is provided with the usual whiffletrees to which the horses are attached.

Secured to each vertical portion of the axle A, is an ordinary split collar *a*, adapted to be moved up or down on the axle and held in any desired place by means of bolts. By moving the said collar up and down as we have just mentioned, the depth of cut of the cultivator knives will be varied at pleasure, which will be presently explained. Each of said split collars *a*, is formed with a socket *b*, cast integrally therewith. Within each socket *b*, is mounted an ordinary ball *c*, to which is secured a flat arm D, extending backwardly, and to which the handles E, are secured.

F, is the arch of the machine, which is preferably made of flat metal, and of a height corresponding to the arched portion of the axle A. Near the lower part of each vertical portion of the arch F, are bolted two lugs *d*, and *e*, and swiveled therein is a circular plate *f*, so arranged that it can be moved pivotally in a horizontal direction. Each arm D, before referred to, is provided with a circular portion *g*, corresponding in size and location to the plate *f*, and extending through said circular portion and said plate *f*, is an ordinary bolt *h*, by means of which arrangement the said arm D, will be pivotally secured to the arch F, as will be readily understood.

It will be seen that from the description which we have just given, that is to say, by attaching the arms D to the arch F, by universal joints, and by attaching the ends of the said arms D, to the axle A, by ball and socket joints, the arch F, is capable of universal movement with relation to the axle A, since it can be moved up and down and from one side to the other, and owing to the

fact that the gangs or sets of cultivator knives, are carried on the lower ends of said arch, as we shall presently point out; it follows that the said knives may be moved in any desired direction, to accommodate themselves to any unevenness of the hills, whereby the proper cultivation of the corn will be effected. It will also be noticed, that since the said cultivator knives are mounted on the lower ends of said arch F, they will always remain the same distance apart, in which manner, therefore, the relative position of one gang or set of knives with respect to the other gang, or set of knives, will remain unchanged irrespective of any movements which may be partaken of by said knives.

To the lower portion of each end of the arch F, is a supporting bracket G, provided with two parallel slots *i*, near its end, one above the other. *j*, *j*, are bolts within these slots engaging with the lower ends of each vertical portion of the arch F, by which means the angle of inclination of the said bracket G, with respect to the arch can be varied at pleasure. Cast integrally with the said bracket G, are two parallel ridges *k*, which extend backward.

L, L, L, are small metallic blocks, hollowed out on their outer faces for the reception of the shanks of the cultivator knives and held in place against the ridges by means of eye-bolts *m*, which extend through the bracket G, and provided with a nut on the end thereof.

H, are the shanks of the cultivator knives, which are placed within each eye-bolt *m*, and by which means they are adapted to be held thereby firmly against the blocks L. Each shank H, is provided with a flat portion thereon, in order that there can be no possibility of the shanks becoming twisted in the eye-bolts. The lower portion of each shank H, is flattened and serrated as shown, and adapted to be held against this serrated portion by means of a bolt, is a casting *n*, which is also provided with a similar flattened portion, having one or more teeth therein, whereby an ordinary rose-plate joint is obtained, so that when it is in place against said serrated portion of the shank, it will be held firmly in place. By loosening the said bolt, the casting *n*, may be turned with relation to the shank H, and since each of the said castings carries one of the cultivator knives, as we shall proceed to explain, the inclination thereof from side to side can be conveniently adjusted. The lower portion of each casting *n*, is bolted to the side of each cultivator knife I, and one of said bolts engages in a slot on the said casting *n*, by which means the inclination of the knife from end to end, with relation thereto, may be varied at pleasure.

We consider it extremely advantageous to attach the knife as we have just described to the shank, at or near its central part, since by doing so, we over-come the resistance of the ground which heretofore has tended to force the knife upwardly against the pressure on the handles. Another advantage in attaching the shank to the knife at its central part is that the knife is strengthened to a greater extent, there is much less twist on the shank, and the draft is applied directly to the knives and not to the handles, as is now the case.

Secured to the upper part of the arch F, is a vertical plate *p*, provided with suitable bolt-holes therein. Engaging with any one of these bolt-holes is an ordinary socket *q*, made of cast iron in the usual way, and *r*, is another socket which is bolted or otherwise secured to the extreme rear end of the tongue. Mounted within each of these sockets *q* and *r*, is a ball *s*, to each of which is secured a rod *t*. These rods over-lap each other as shown and are adjustably connected together by means of two plates *n*, *n*, one above and the other below said rods, and clamped securely thereon by means of a central bolt. By loosening this bolt, the rods *t*, *t*, may be moved with relation to each other so as to carry the arch F, backward or forward, and in this way the angle of the arch F, with regard to the axle A, can be varied at pleasure. It will be observed that as the top portion of the arch is advanced to a greater extent toward the axle A, the line of draft will be changed, so that there will be a correspondingly greater tendency to force the knives into the ground, and the cut thereof can be made to suit varying conditions.

By moving the collars *a*, upwardly on the vertical portion of the axle A, as we have mentioned before, the line of draft will be reversed, and the tendency will be to lift the knives to a greater extent out of the ground, as the said collars are advanced in their movement. In this way, we provide simple and effective means whereby the line of draft can be regulated to a great degree of nicety, in which manner the proper and desired effect of the draft or the cultivator knives can be adjusted as may be desired.

Having now described our invention what we claim as new therein, and desire to secure by Letters Patent, is as follows:—

1. In a walking corn cultivator, the combination with the axle and wheels, of the arch F, carrying a gang of cultivator knives at its lower ends, and connected near its lower ends with said axle by a universal joint, and connected at its upper end to the upper portion of said axle by an adjustable connection, substantially as described.

2. In a walking corn cultivator, the combination of the axle A, carrying supporting wheels and arched at its center; the split collars *a*, on said axle, and carrying sockets *b*; a ball *c*, in each socket; an arm D, connected

with said ball, and carrying handles at their outer ends; an arch F, carrying a gang of cultivator knives at its lower ends; a universal joint between said arms D, and the said arch F, and an adjustable connection between the upper part of said arch and the upper part of said axle, substantially as described.

3. In a walking corn cultivator, the combination of the arch F; connected to said axle by a universal joint the shanks H; adjustably connected thereto, and the cultivator knives I, secured at their central portion to said shanks.

4. In a cultivator; a cultivator knife secured to the shank at its central portion for the purpose mentioned, and adjustable both in the line of draft and at an angle thereto substantially as described.

JUSTUS D. TOWER.
AUGUSTUS C. TOWER.

Witnesses as to signature of Justus D. Tower:

L. B. CROOKER,
G. D. TOWER.

Witnesses as to signature of Augustus C. Tower:

JOHN W. ORCUTT,
C. O. CARLSON.