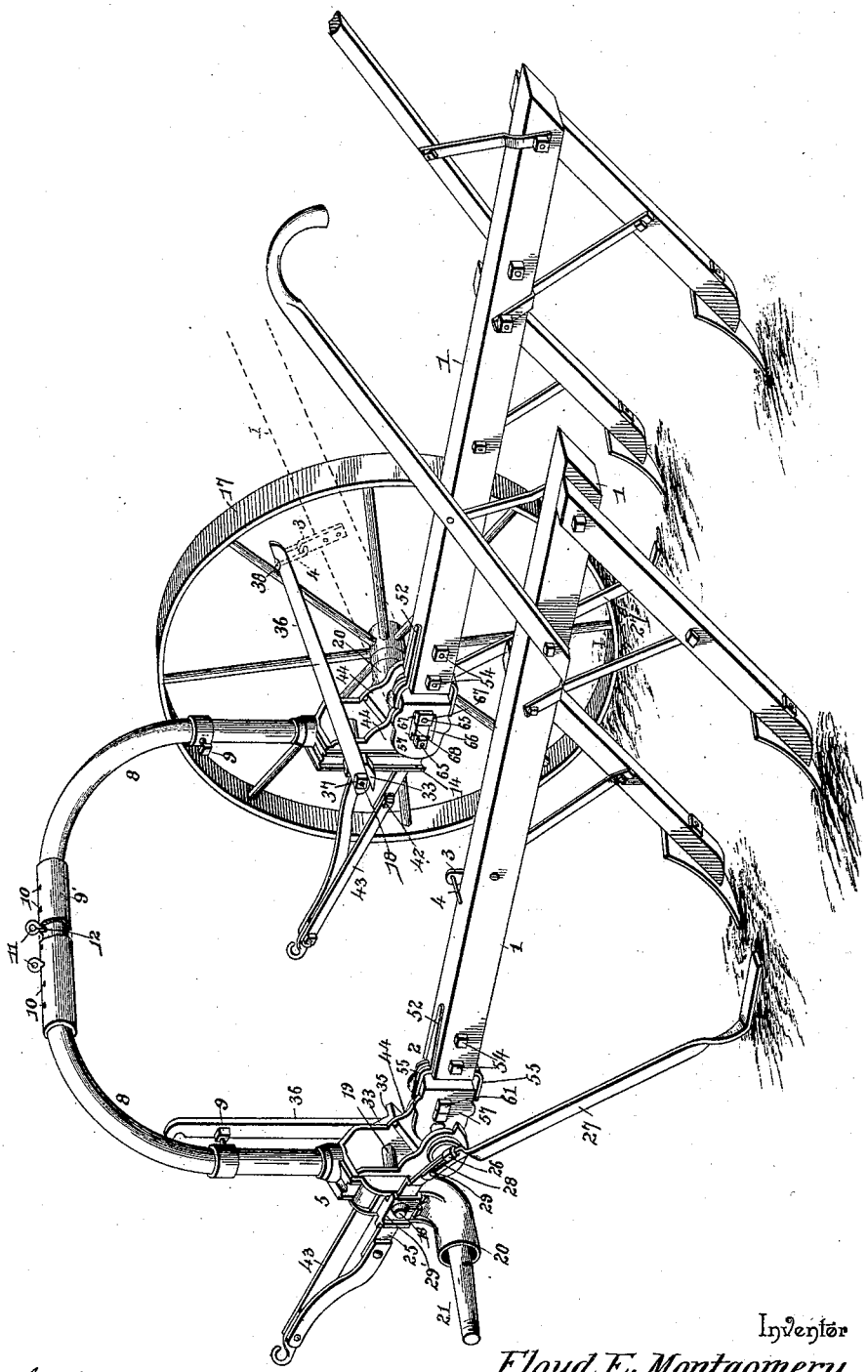
(No Model.) 2 Sheets—Sheet 1.

# F. E. MONTGOMERY.

## CULTIVATOR.

No. 494,341. Patented Mar. 28, 1893.

FIG. 1.



Witnesses

Jas. K. McCathran

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Inventor

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(No Model.) 2 Sheets—Sheet 2.

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## CULTIVATOR.

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FIG. 2.

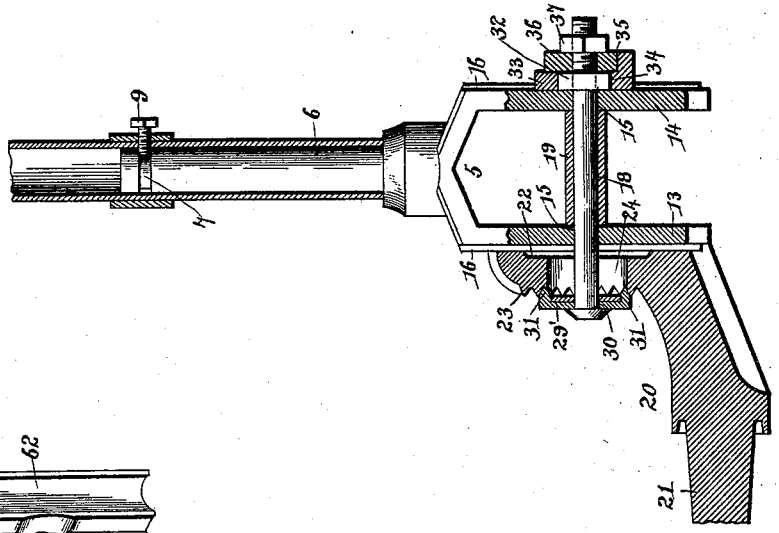


FIG. 4.

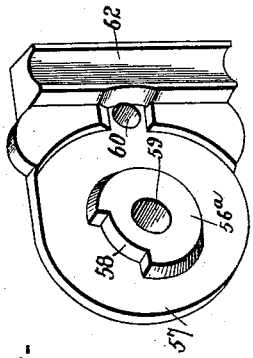


FIG. 3.

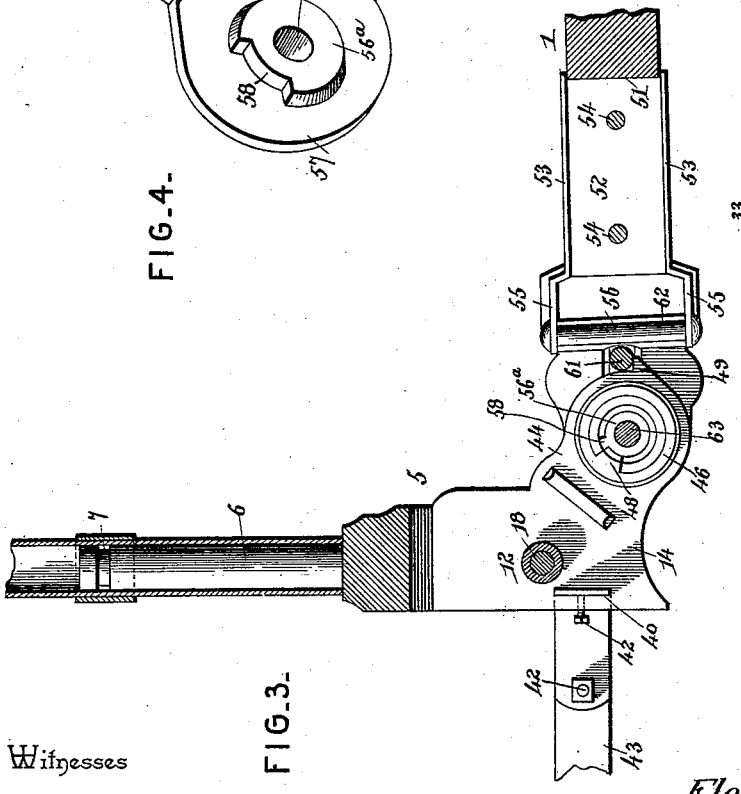
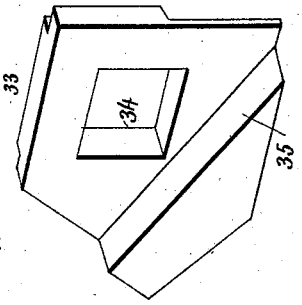


FIG. 5.



Witnesses

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# UNITED STATES PATENT OFFICE.

FLOYD E. MONTGOMERY, OF TARKIO, MISSOURI, ASSIGNOR OF ONE-HALF TO JOHN S. SMITH, OF CLARINDA, IOWA.

## CULTIVATOR.

SPECIFICATION forming part of Letters Patent No. 494,341, dated March 28, 1893.

Application filed January 21, 1893. Serial No. 459,207. (No model.)

*To all whom it may concern:*

Be it known that I, FLOYD E. MONTGOMERY, a citizen of the United States, residing at Tarkio, in the county of Atchison and State of Missouri, have invented a new and useful Cultivator, of which the following is a specification.

My invention relates to improvements in cultivators of that class known as "straddle-rows," and has particular reference to certain improvements upon the construction illustrated and described in United States Patent No. 433,018, granted me July 29, 1890.

Among the various objects of my present improvement are to strengthen or increase the durability and to simplify the construction of the movement or joint between the arch and the beams of the gangs, whereby the draft of the latter may be equally divided between the horses, so that each is compelled to pull its own gang; and furthermore, to provide for a rigid connection between the gangs when occasion requires.

Various other objects and advantages of the invention will appear in the following description and the novel features thereof will be particularly pointed out in the claims.

Referring to the drawings:—Figure 1 is a perspective view of a cultivator constructed in accordance with my invention. Fig. 2 is a transverse sectional view of one of the yokes of the universal connection. Fig. 3 is a longitudinal sectional view through one of the yokes. Fig. 4 is a detail in perspective of one of the beam-coupling plates. Fig. 5 is a detail in perspective of the combined nut-locking and hang-up plate.

Like numerals of reference indicate like parts in all the figures of the drawings.

The cultivator in the present instance like that in the patent above referred to comprises in its make-up two opposite movements or universal-joints, the same being similarly constructed and connected by an arch and having secured loosely at their rear sides the beams of the gangs. As these gangs are of the ordinary construction they will not be specifically described, the numeral 1 being employed to designate the beams, to the front ends of which clevis-plates 2 are secured. Each beam also carries a plate 3 in rear of its front end, which plate has loosely connected therewith a link 4 by which, as will hereinafter appear, the said gang may be hung up out of operative position, the said link engaging with a suitable hang-up device to be hereinafter described.

Proceeding to describe one of the movements which as before stated is identical in its construction with that of the other, the numeral 5 designates an inverted U-shaped yoke integrally cast, and the same has cast upon its upper end a steel pin or spindle 6, which near its extremity has an annular groove 7 formed therein. Upon each of these spindles or pins 6 there is loosely swiveled an inverted L-shaped tubular standard 8, the same having set-screws 9 inserted through perforations therein and at their inner ends engaging with the aforesaid annular grooves 7, so that as will be apparent, by loosely engaging the ends of the set-screws with said grooves the yokes may be revolved within the tubular-standards, and by tightening said set-screws the yokes and standards may be rigidly bound together. The upper or horizontal portions of the two standards are connected by a tubular sleeve 9′, and said sleeve is provided with a pin-hole or holes 10 in which split-pins 11 are inserted and designed at their inner ends to engage with a series of corresponding perforations 12 formed in the horizontal portions of the tubular standards. It will be obvious that the standards may be adjusted toward or away from each other so as to increase or decrease the distance between the gangs, and may be secured at any of their adjusted positions by a withdrawal and insertion of the aforesaid split-pins.

Reverting to the construction of the movements it will be seen that each of the yokes comprises depending terminals or vertical portions 13 and 14, and each is provided with a transverse opening or bolt-hole 15. The exteriors of the two terminals are provided with vertical ribs 16 which extend parallel to each other from the upper to the lower ends of said terminals. Through the bolt-openings in the terminals a transverse-bolt 18 is passed the ends of the bolt extending beyond the terminals some distance, and a spacing-sleeve or tube 19 is mounted upon the bolt between

the terminals serving to strengthen the same. An elbow-shaped stub-axle 20 is located upon the outside of the outer terminal 13, and is provided at its horizontal portion with a spindle 21 designed to receive and form a bearing for the ground-wheel 17 at that side of the machine.

The inner face of the vertical portion of the stub- or elbow-shaped axle is provided with a vertical recess 22 which receives the ribs upon the exterior of the aforesaid terminal, and hence is maintained against lateral movement independent of said yoke. The outer side of the vertical portion of the axle is provided with a series of transverse teeth 23, and is furthermore provided with a bolt-opening 24, which registers with the bolt-openings in the terminals of the yoke, and receives the aforesaid bolt that extends through said terminals.

25 designates arms or bars which are mounted upon the outer ends of the two transverse bolts of the movements against the vertical portions of the stub- or elbow-shaped axles and said arms or bars are slightly curved at their rear ends and extend opposite from a line with said axles and are provided upon their upper edges near their rear extremities with overhanging hooks or keepers 26.

27 designates extension-bars which are provided with slots 28 upon which they are pivotally and movably mounted upon bolts 29 passed through the bars above mentioned. The slots admit of a longitudinal adjustment of said extension or drive-bars, so that the latter when desired may be bolted upon the arms and up out of position. When in operation the said extension-bars serve in a manner to aid the machine in passing over obstructions.

29′ designates a locking-block or plate, the same having a central perforation 30, and provided upon its inner face at its upper and lower edges with superficial ribs 31 transversely-disposed, said ribs engaging with the transverse teeth before mentioned as being formed in the outer sides of the vertical portions of the elbow or stub-axles. By means of these locking-plates it will be seen that the axles may be raised and lowered and adjusted at any points upon the outer sides of the yokes of the movements and hence the cultivators adapted to run deep or shallow as the case may be.

A nut 32 is secured upon the inner threaded end of the transverse-bolt that passes through the yoke, and over said nut there is mounted a hang-up supporting plate 33 which is provided upon its inner face with a countersunk nut-receiving recess 34 conforming to the shape of the nut and adapted to prevent any turning of the same; and upon its outer face with an inclined shoulder or rest 35. An arm 36 is mounted on the bolt outside of the locking-plate, and a nut 37 occupies the outer end of the bolt and bears against the arm. This arm is provided at its outer or free end with a notch or hook 38, and is adapted to serve as a hang-up device for engaging the link of the beam of that gang that is immediately in rear thereof, whereby said gang is supported in an elevated inoperative position, at which time the aforesaid hang-up arm rests against the inclined shoulder of the locking-plate. It will thus be seen that upon a single bolt there is secured the yoke, the hang-up supporting-plate which also serves as a nut-lock, the hang-up arm, the axle, the extension supporting arm, and the locking-plate.

The inner terminal 14 of the yoke is provided near its front edge with a slot 40 in which engages a bolt 41 which extends forwardly to a point opposite the front end of the arm or bar that supports the extension, and to this plate and arm there are pivoted by bolts 42 draft-straps 43, whose front ends converge, are bolted together and terminate in draft-hooks. Thus it will be seen that the draft of the device is applied directly to the two movements, so that a horizontal draft results and the arch and movements being loosely coupled or swiveled together, each draft animal performs his own share of the work, and draws that gang in front of which he is hitched.

Each of the terminals of the yokes is provided with a rearwardly-extending bracket 44 having circular openings surrounded by annular bosses or flanges 46. The said perforations are provided near their front ends with lugs 48 and the brackets are provided on their rear sides with eccentric lugs or teeth 49. The cultivator-beams have vertical slots 51 at their front ends, in which are seated the coupling-plates 52, the upper and lower edges of which are provided with flanges 53 to bear against the upper and lower sides of the beams, and which are secured in position by means of the transverse-bolts 54. The front ends of the coupling-plates 52 have forwardly-extending arms 55 which are connected by the vertical pins or bolts 56 to form clevises. These clevises are connected with the draft brackets of the yokes by means of the beam coupling-plates, each of which is provided with a laterally-extending boss 56ª to engage the flanges 46 of the draft-brackets. The boss 56ª of the plates, which latter are designated as 57, are provided with notches 58 to engage the lugs 48 formed in the perforations 47 of said draft-brackets. The coupling-plates 57 are provided with transverse perforations 59 and 60, the former of which extends through the boss 56ª and the latter of which extends transversely in rear of said boss. Consequently the coupling-bolt 61, which passes through the perforation 60 will normally rest upon the eccentric lug or tooth 49 of the draft-bracket. The meeting faces of the coupling-plates are provided at their rear ends with vertical grooves 62 designed to receive the vertical pins or bolts 56 of the clevises at the front ends of the cultivator-beams. It will be seen that by tightening the coupling-

bolts 60 and 63 respectively the parts may be firmly connected in such a manner as to permit the cultivator-beams to swing or oscillate both laterally and vertically, thus connecting the said cultivator-beams with their respective movements by universal joints, which joints are greatly simplified and strengthened in their constructions over those illustrated, described, and claimed in my previous patent above referred to. At the same time it will be observed that the movement in a downward direction of the cultivator-beams will be limited by the said lugs 56 which engage with the bolts 61 and by the boss 56ª engaging the lugs 48, as hereinbefore described.

The bolts that connect the coupling-plates with the brackets at the rear sides of the yokes are provided with nuts 65 which are located in line with each other. A plate 66 is located between the bolts and provided at its upper and lower ends with cross-heads or lugs 67, which prevents a withdrawal of the plate without an entire removal of the bolts. The plate is provided upon its outer side with a central lug 68, and when the plate is lowered between the bolts the lug takes between the adjacent faces of the nuts and prevents any movement of the same. This plate serves as a rigid locking device for the nuts, which in the position it occupies is very important, in that it permits of a ready removal of the nuts for the purpose of readjusting the beams to the coupling-brackets.

From the foregoing description in connection with the accompanying drawings it will be seen that I have greatly simplified and improved the construction of the cultivator over that hereinbefore set forth in my previous patent and yet at the same time I preserve all the advantages existing in the aforesaid construction in that I secure an independent hitch or attachment, without losing direct control of the gangs; I provide for the attachment of the hitch to the point of a beam without the medium of a doubletree; the gangs in operation move not only independent of each other but back and forward in the line of progression and always at the same distance apart, which distance may be adjusted; there is no side draft and consequently no drifting of the gangs in a lateral direction; the machine may be turned in the shortest possible space; cannot fall down or become entangled in the operation; and finally, the gangs or beams are so constructed and arranged that they may be managed or manipulated very easily and conveniently. It is furthermore to be observed that by loosening the set-screws in the end of the arch and turning both wheels under the arch, the said wheels run side by side in the furrow at the sides of the corn, thus admitting of the independent use of each gang against the ridge on each side of the listed-corn row.

The employment of my cultivator in the operation of cultivating listed-corn is considerable of an advantage, as in working the side or ridge next the corn-row you hill up next the corn and form water courses on each side of the row and furthermore you may cover the weeds to a better advantage and with more success. In such work it will be understood that the gangs are made rigid with the arch.

Having described my invention, what I claim is—

1. In a cultivator of the class described, the combination with the opposite gangs and their movements, of vertical spindles rising from the movements, inverted L-shaped tubular standards mounted loosely on the spindles, securing devices for binding the spindles and standards together, and a horizontal sleeve connecting the horizontal portions of the standards and provided with adjusting-devices, substantially as specified.

2. In a cultivator of the class described, the combination with the opposite beams, and gangs, and their movements, provided with vertical spindles, having annular grooves formed near their upper ends, of inverted L-shaped tubular standards mounted on the spindles, set-bolts mounted in the standards and engaging the grooves of the spindles, perforations formed in the horizontal portions of the standards, a sleeve loosely connecting the horizontal portions of the standards and provided with perforations, and split-pins located in said perforations of the sleeve and engaging-devices for the standards, substantially as specified.

3. In a cultivator, the combination with the arch and beams, of the movements connecting the two, each consisting of an inverted U-shaped yoke, having transverse openings and provided upon its outer side with vertical ribs, a bolt passed through the yoke, an elbow-shaped axle secured to the outer end of the bolt, a nut mounted on the inner end of the bolt adjacent to the yoke, a plate countersunk upon its inner side to receive the bolt mounted upon the plate, and provided upon its outer side with an inclined shoulder, an arm mounted on the bolt at the side of the plate and adapted to be supported by the shoulder, a binding-nut upon the bolt at the outer side of the arm, and a link carried by the beam for engaging the end of the arm, substantially as specified.

4. In a cultivator of the class described, the combination with the beam and connecting-arch, of the movements connecting the same, each of said movements consisting of an inverted U-shaped yoke, having transversely opposite openings and provided upon its outer side with vertical ribs, an elbow-shaped axle recessed upon its inner side to receive the ribs and provided with slots, and upon its exterior with transverse teeth, a bolt passed through the slots and holes in the yoke, a nut for securing the bolt, an adjusting-block mounted on the bolt beyond the axle, said block having its inner face recessed whereby its opposite edges engage the teeth of the axle, an

arm located in the recess of the block and having an opening for the reception of the bolt, said arm being rearwardly-extended and having a keeper upon its upper edge, and an extension-arm having a slot engaging a stud on the arm and adapted to be engaged by the keeper, substantially as specified.

5. In a cultivator of the class described, the combination with the arch, the beams of the cultivator, and the movements engaging the same, each of said movements consisting of an inverted U-shaped yoke having opposite openings, a bolt passed through the openings, a stub-axle mounted upon the outer end of the bolt and having a vertical slot and its front face provided with teeth, a locking-block having its inner face recessed and mounted upon the bolt, and its opposite edges engaging the teeth of the axle, an arm mounted in the recess of the block and perforated to receive the bolt, and carrying an extension-arm, a slot formed in the inner terminal of the yoke, a plate engaging the same, and draft-straps pivoted to the front end of the plate and to the front end of the arm, said straps having their front ends converging and provided with draft-hooks, substantially as specified.

6. In a cultivator of the class described, the combination with the beams, the intermediate tubular-arch and the movements, each consisting of an inverted U-shaped cast-metal yoke, integrally formed, and having cast upon its upper side a vertical spindle for engaging the tubular-arch, the terminals of said yoke having opposite bolt-holes, bolts passed through the holes and extending beyond the yoke, elbow-shaped axles mounted upon the outer ends of the bolts provided with slots, and upon their outer sides with transverse teeth, locking-blocks mounted upon the outer ends of the bolts and having their inner faces recessed and their opposite edges engaging the teeth of the axles, a curved extension-bar carrying arms located in the recesses of the locking-blocks, ground-wheels carried by the shafts, nuts located at the inner ends of the bolts, plates having outer inclined shoulders, an inner recess, mounted on the inner ends of the bolts and receiving the nuts, hang-up arms mounted on the bolts adjacent to the plates terminating at their ends in hooks, inner nuts located upon the bolts and binding against the hang-up arms, links carried by the beams, and draft-straps connected to the movements, substantially as specified.

7. In a cultivator of the class described, the combination with the yoke, having the rearwardly-extending brackets, and the coupling-plates swiveled thereon, of the transverse bolts having nuts, the locking-plate interposed between the nuts and having upper and lower stop-lugs, and upon its outer side having a locking lug for taking between the nuts, substantially as specified.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

FLOYD E. MONTGOMERY.

Witnesses:
PERRY H. GRAY,
JOHN W. YATES.