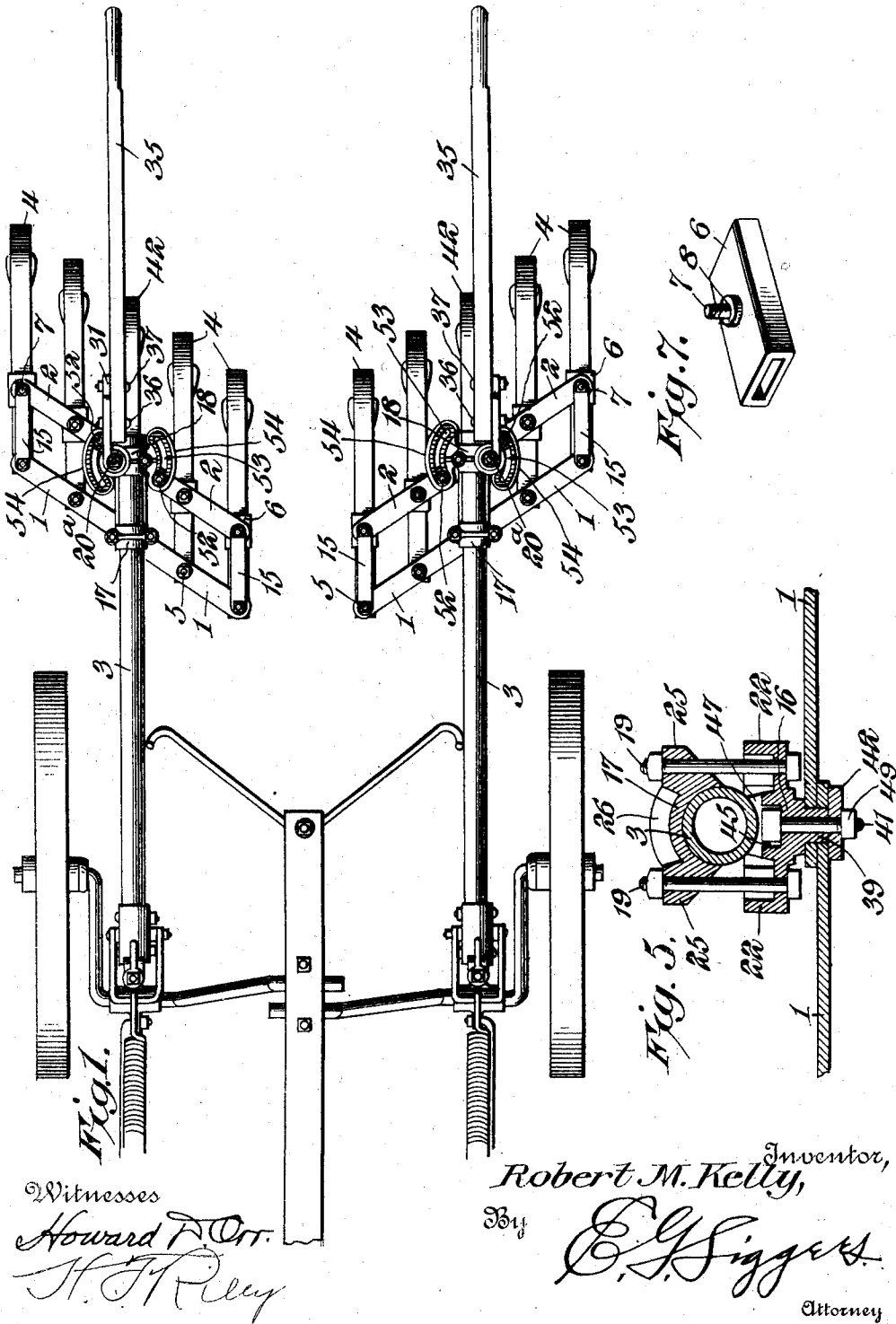


R. M. KELLY.
CULTIVATOR.
APPLICATION FILED FEB. 24, 1910.

983,450.

Patented Feb. 7, 1911.

2 SHEETS—SHEET 1.



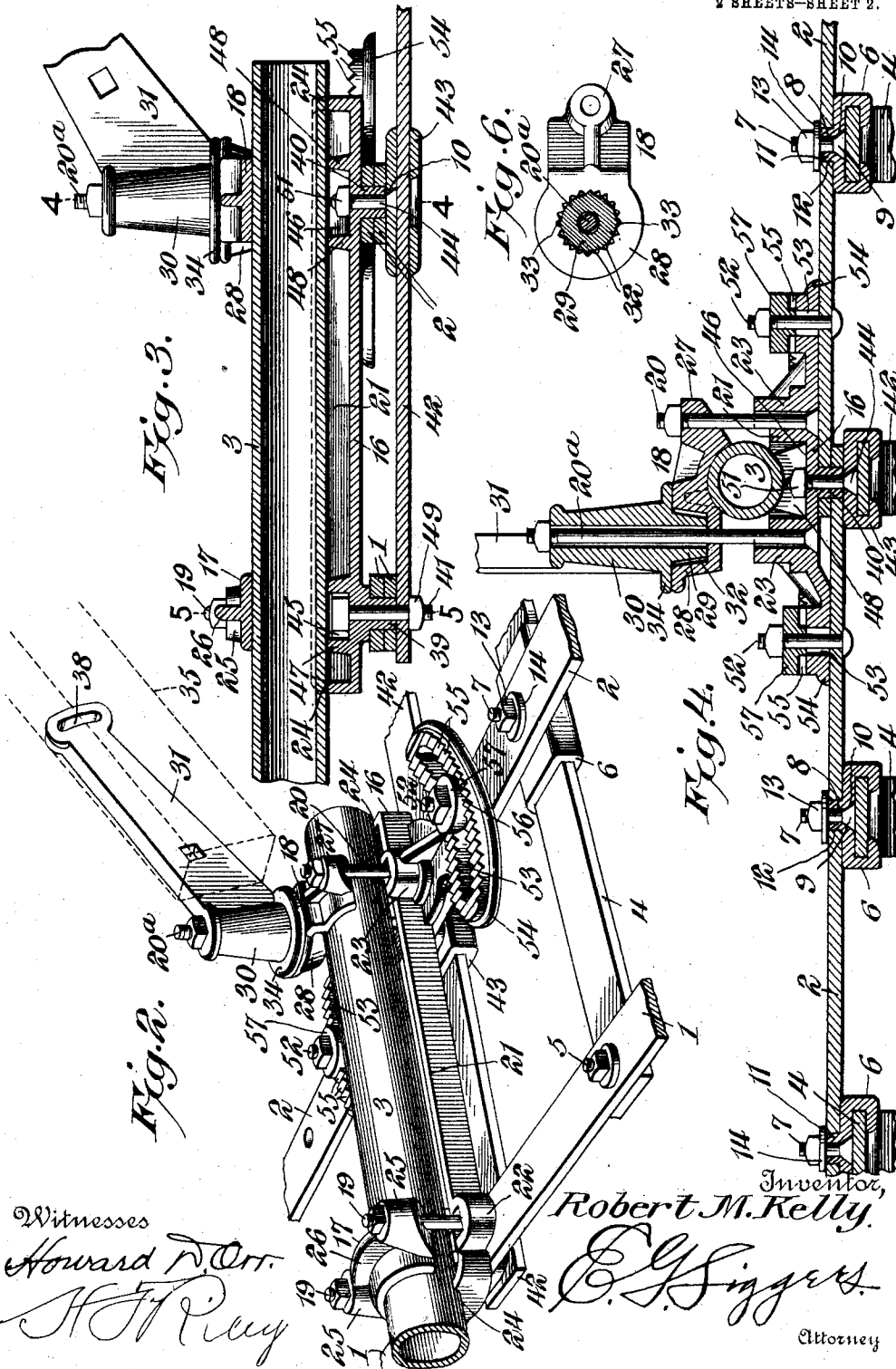
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Witnesses
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ROBERT MARVIN KELLY, OF LONGVIEW, TEXAS.

CULTIVATOR.

983,450.

Specification of Letters Patent.

Patented Feb. 7, 1911.

Application filed February 24, 1910. Serial No. 545,690.

To all whom it may concern.

Be it known that I, ROBERT M. KELLY, a citizen of the United States, residing at Longview, in the county of Gregg and State of Texas, have invented a new and useful Cultivator, of which the following is a specification.

The invention relates to improvements in cultivators.

10 The object of the present invention is to improve the construction of cultivators, more especially the means for mounting the spring teeth, and to provide a simple, inexpensive and efficient attachment of great strength and durability, adapted to enable spring teeth in the form of a harrow to be readily applied to the tubular bar or beam of a cultivator, and capable of enabling the teeth to be readily adjusted and arranged in various positions, and equipped also with means for securely fastening the spring teeth in any adjustment of the same.

20 Another object of the invention is to avoid making a second hole in a spring tooth and to support and reinforce the spring teeth at a point where they usually break.

25 With these and other objects in view, the invention consists in the construction and novel combination of parts hereinafter fully described, illustrated in the accompanying drawings, and pointed out in the claims hereto appended; it being understood that various changes in the form, proportion, size and minor details of construction, within the scope of the claims, may be resorted to without departing from the spirit or sacrificing any of the advantages of the invention.

30 In the drawings:—Figure 1 is a plan view of a portion of a harrow provided with spring teeth mounted and supported in accordance with the present invention. Fig. 2 is an enlarged detail perspective view of one of the attachments. Fig. 3 is a longitudinal sectional view of the same. Fig. 4 is a transverse sectional view, taken substantially on the line 4—4 of Fig. 3. Fig. 5 is a similar view, taken substantially on the line 5—5 of Fig. 3. Fig. 6 is a detail view, illustrating the construction of the rear clamping member. Fig. 7 is a detail view of one of the tooth-supporting sleeves.

35 Like numerals of reference designate corresponding parts in all the figures of the drawings.

1 and 2 designate front and rear pivotally

mounted tooth carrying bars, extending from opposite sides of tubular bars or beams 3 and arranged in parallelism and connected by spring teeth 4. The spring teeth 4 are connected at their front ends to the front tooth carrying bars 1 by bolts 5, which pierce the teeth and the bars. In order to avoid weakening the spring teeth by making a second or rear hole in the same, they are connected with the rear tooth carrying bars 2 by means of oblong sleeves or cuffs 6, rectangular in cross section and slidably and adjustably receiving the upper attaching portions of the spring teeth, and secured to the rear tooth carrying bars by bolts 7. The bolt 7, which passes through a perforation 8 in the top wall of the sleeve or cuff 6, is provided with a rectangular head 9, which is interlocked with the top wall of the sleeve or cuff. The top wall of the sleeve or cuff is provided at the lower face with a rectangular counter-sink or recess 10 to fit the tapered rectangular head of the bolt, and the sleeve is provided at the upper face of its top wall with an annular boss or flange 11, fitting in a circular opening 12 of the tooth carrying bars, as clearly illustrated in Fig. 4 of the drawings. The upper end of the bolt is threaded for the reception of a nut 13, and a washer 14 is interposed between the nut and the tooth carrying bars. The tooth carrying bars are also connected at their outer ends by short braces 15, secured to the bars 1 and 2 by the bolts of the adjacent teeth. The inner adjacent ends of the tooth carrying bars are connected with the tubular bars or beams 3 by means of approximately oblong brackets 16, consisting of castings and secured to the tubular bars or beams 3 by means of front and rear clamping plates or members 17 and 18, connected with the bracket or supporting member 16 by vertical front and rear bolts 19, 20 and 20^a. The bracket or supporting member is provided with an upwardly extending marginal flange 21, and it has front and rear laterally projecting bosses or enlargements 22 and 23, through which the front and rear bolts 19 and 20 pass. The marginal flange 21 is provided at the ends of the bracket or supporting member with recesses 24, which form seats for and conform to the configuration of the tubular bars or beams 3. The upper clamping plates or members 17 and 18 are also curved to conform to the configuration of the tubular bars or beams. Instead,

however, of mounting the supporting member or bracket on a round bar, it may be applied to a square or other shaped bar, and the seats and the engaging portions will conform to the configuration of the bar, as will be readily understood.

The front clamping plate or member 17 is provided with terminal enlargements 25, and is reinforced by a connecting rib 26. The terminal enlargements 25 are perforated for the reception of the front bolts 19 and are engaged by the nuts thereof, the heads of the bolts being interlocked with the front bosses or ears 22, which have rectangular openings to receive squared portions of the bolts. The rear bosses or ears 22 are also provided with rectangular openings to receive squared portions of the rear bolt 20, and the rear clamping member 18 is provided at one side with a terminal enlargement 27, and it has a cup-shaped socket 28 at the opposite side for the reception of a projecting portion 29 of a head 30 of a handle attaching bar or shank 31. The cup-shaped socket 28 is downwardly tapered and is provided with interior corrugations 32. The projecting portion 29 of the head 30 is downwardly tapered to fit in the socket 28, and it is provided with ribs 33, interlocked with the corrugations 32. The head of the handle attaching bar or shank 31 is also provided with a horizontal annular flange 34, located at the top of the depending downwardly tapered portion 29 and arranged upon the cup-shaped socket 28. The cup-shaped socket and the head are pierced by the rear bolt 20, which secures the head in its interlocked relation with the socket of the rear clamping plate, and enables the handle 35 to be adjusted laterally with respect to the cultivator. The handle 35 is secured to the shank or attaching bar 31, which is inclined, by means of bolts 36 and 37, arranged at the upper and lower portions of the shank or bar 31. The lower bolt 36 constitutes a pivot for the handle 35, and the upper bolt 37 passes through an arcuate slot 38 of the shank or bar, and is adapted to secure the handle in its adjustment on the pivot bolt 36. The upper end of the shank or bar is enlarged at the slot 38, and this adjustment of the handle 35 enables the same to be raised or lowered.

The supporting member or bracket is provided with depending front and rear studs 39 and 40, forming pivots for and passing through registering perforations of the inner ends of the front and rear tooth carrying bars 1 and 2, which have their inner pivoted ends overlapped and arranged on the said studs. The front tooth carrying bars are retained on the front depending stud 39 by means of a bolt 41, which secures the front end of a central spring tooth 42 to the supporting member or bracket. The central

tooth is also equipped with a sleeve or cuff 43 constructed in the same manner as those heretofore described, with the omission of the annular boss or flange 8, as it is preferred to extend the stud 40 through both of the rear tooth carrying bars, and the said sleeve or cuff 43 is secured to the supporting member or bracket by a rear bolt 44. The front and rear bolts 41 and 44 pierce the depending studs 39 and 40, and their upper ends are arranged in recesses 45 and 46 of the supporting member or bracket. The recesses 45 and 46 are formed by hollow bosses 47 and 48, which extend upward to and form seats for the tubular bars or beams 3. The head of the front bolt 41 is fitted in and interlocked with the front recess 45, and its nut 49 engages the lower face of the central spring tooth. The nut 51 of the rear bolt 44 is arranged within the rear recess 46, which is of sufficient size to permit the nut to rotate.

The central spring tooth is fixed with relation to the supporting member or bracket, and the pivoted tooth carrying bars are adapted to be adjusted backwardly or forwardly to arrange the spring teeth 4 in different positions to suit the character of the soil, the size of the plants, or other conditions of the land to be cultivated, and the teeth are secured in their adjustment by means of bolts 52, piercing the rear tooth carrying bars and extending through arcuate slots 53 of laterally extending arms 54 of the supporting member or bracket.

The laterally extending arms have curved outer portions, which are slotted for the reception of the said bolts 52, and the upper faces of the slotted portions of the supporting bar or member are provided at opposite sides of the slots with corrugations or teeth 55, which are engaged by corresponding corrugations or teeth 56 of plates or washers 57. The plates or washers 57, which are perforated for the reception of the bolts 52, are engaged by the nuts thereof and they are adapted to interlock with the teeth of the laterally extending arms at any point, whereby the tooth carrying bars and the spring teeth are securely held in their adjustment.

The spring teeth, which, as illustrated in Fig. 1 of the accompanying drawings, are arranged in the form of harrows, are also adapted to be adjusted through their connection with the tubular bars or beams 3, which are movable both vertically and laterally in the usual manner. As the particular construction for providing the movement of the bars or beams 3 does not constitute a portion of the present invention, and as the attaching means for mounting the spring teeth on a cultivator may be applied to various kinds and styles of cultivators, a detail description of the particular construction

for permitting the movement of the tubular bars or beams is deemed unnecessary.

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

1. In a cultivator, the combination with a tooth carrying bar having an opening, and a tooth, of a sleeve receiving the tooth and provided with an exterior annular integral boss fitting in the opening of the tooth carrying bar, and a fastening device located beyond the tooth and piercing one of the walls of the sleeve at the said boss and extending through the latter and through the tooth carrying bar.

2. In a cultivator, the combination with a tooth carrying bar having an opening, and a tooth, of a sleeve receiving the tooth and provided at its top wall with an exterior annular integral boss forming a bolt opening and fitting in the opening of the tooth carrying bar and arranged in flush relation with the upper face of the same, said sleeve being also provided in its bottom with an opening located opposite the boss and of greater diameter than the bolt opening thereof, a fastening bolt extending through the bolt opening of the boss and through the tooth carrying bar and having a head of a size to pass through the bottom opening and of greater diameter than the opening in the boss, and a nut arranged on the bolt at the top of the boss and retaining the latter in the opening of the tooth carrying bar.

3. In a cultivator, the combination of a beam, a bottom bracket arranged along the beam and having a separable upper clamping member, said member and said bracket engaging the top and bottom of the beam, tooth carrying bars arranged in pairs at each side of the beam and pivoted to the bottom bracket, teeth connected to and carried by the tooth carrying bars, extensions provided on the bottom bracket, and means connecting the rear tooth carrying bars to said extensions for adjusting the position of the same.

4. In a cultivator, the combination of a bracket having lateral extensions provided with arcuate slots, front and rear tooth carrying bars pivoted to and extending from opposite sides of the bracket, one set of the said bars being arranged at the lateral extensions of the bracket, teeth connecting and carried by the said bars, and fastening devices operating in the said arcuate slots and adjustably securing the adjacent tooth carrying bars to the lateral extensions of the bracket.

5. In a cultivator, the combination of a bracket provided with lateral extensions having arcuate slots, said lateral extensions being also provided at the slots with teeth, front and rear pivoted bars carried by the bracket, teeth connected with the bars,

toothed plates adjustably interlocked with the teeth of the extensions of the bracket, and fastening devices piercing the plates and operating in the slots and connected with the adjacent bar, whereby the teeth are secured in their adjustment.

6. In a cultivator, the combination of a bracket provided with means for securing it to a beam and having front and rear pivot studs, front and rear laterally extending tooth carrying bars arranged in pairs at each side of the beam, the front tooth carrying bars having their inner ends overlapped and mounted on the front pivot stud, and the rear tooth carrying bars being also overlapped and mounted on the rear pivot stud, and means carried by the bracket for securing the tooth carrying bars in their adjustment.

7. In a cultivator, the combination of a bracket having front and rear pivot studs, front and rear laterally extending tooth carrying bars arranged on the pivot studs, teeth mounted on and carried by the said bars, and a relatively fixed tooth attached to the bracket and extending beneath the studs and retaining the tooth carrying bars on the same.

8. In a cultivator, the combination of a bracket having depending pivot studs, tooth carrying bars having overlapped ends provided with openings and arranged on the said studs, teeth carried by the said bars, a relatively fixed tooth extending beneath the studs, and fastening devices piercing the studs and securing the relatively fixed tooth to the bracket and retaining the tooth carrying bars on the studs.

9. In a cultivator, the combination of a bracket having depending front and rear studs and provided at opposite sides with lateral extensions located adjacent to one of the studs, front and rear tooth carrying bars mounted on the said studs, teeth carried by the said bars, and means mounted on the lateral extensions of the bracket for adjustably securing the adjacent tooth carrying bars to the said extensions.

10. In a cultivator, the combination with a beam, of a supporting bracket arranged along the underside of the beam and provided at the front and rear with depending studs, tooth carrying bars pivotally connected to the studs, teeth carried by the bars, and spaced clamping members connected to the bracket at the front and rear for securing the same to the beam.

11. In a cultivator, the combination with a beam, of a supporting bracket arranged along the underside of the beam and having a portion spaced therefrom, spaced clamping members located at the front and rear and fitting against the top of the beam, bolts connecting the spaced clamping members to the bracket at each side of the beam, tooth

carrying bars pivotally connected to the bracket, bolts piercing the bracket and extending through the tooth carrying bars at the pivotal points thereof, and a fixed tooth
 5 secured on the lower ends of the said bolts and arranged longitudinally of the beam beneath the inner ends of the tooth carrying bars.

12. In a cultivator, the combination with
 10 a beam, of a supporting bracket arranged along the underside of the beam and having a portion spaced therefrom, spaced clamping members located at the front and rear and fitting over the top of the beam, bolts
 15 connecting the spaced clamping members to the bracket at each side of the beam, perforated studs depending from the bracket at the front and rear, tooth carrying bars pivotally mounted on said studs, bolts mounted
 20 in the bracket and passing through the perforations of the studs and depending therefrom, and a fixed tooth secured to the lower ends of the bolts and arranged longitudinally of the beam beneath the inner ends of
 25 the tooth carrying bars.

13. In a cultivator, the combination of a bracket having depending studs and provided with seats consisting of hollow bosses forming recesses, tooth carrying bars arranged
 30 on the studs, a relatively fixed tooth located beneath the studs, and fastening devices for securing the relatively fixed tooth to the bracket, said fastening devices piercing the studs and having their upper terminals located in the recesses of the said bosses.

14. In a cultivator, the combination of a bracket having depending studs, tooth carrying bars having overlapped ends provided with openings and arranged on the said
 40 studs, teeth carried by the said bars, and fastening devices piercing the studs and retaining the tooth carrying bars thereon.

15. In a cultivator, the combination of a bracket provided with a depending hollow
 45 stud, tooth carrying bars having overlapped ends provided with openings and arranged on the said stud, a tooth carrying sleeve located beneath the tooth carrying bars, a fastening device passing through the top wall
 50 of the sleeve and also through the stud and having its head interlocked with the said top wall, and a nut arranged on the upper end of the fastening device.

16. In a cultivator, the combination with
 55 a beam, of a bracket fitting against the beam, a clamping member engaging the beam and provided at one side thereof with a socket and having a terminal enlargement at the opposite side of the beam, an adjustable handle attaching bar having a head fitted in the socket, and fastening devices of
 60 unequal length located at opposite sides of the beam, the shorter fastening device piercing the bracket and the terminal enlargement
 65 of the clamping plate, and the longer

fastening device extending from the bracket through the socket of the clamping plate and the head of the handle attaching bar and securing the latter in its adjustment.

17. In a cultivator, the combination with
 70 a beam, of a supporting bracket arranged along the underside of the same and spaced therefrom for a portion of its length and bearing at other points against the beam, front and rear clamping members for the
 75 top of the beam, bolts connecting the clamping members to the bracket, said bolts being arranged at the sides of the beam, studs depending from the underside of the bracket, front and rear tooth carrying bars arranged
 80 in pairs at each side of the beam, the front bars of each pair being overlapped at their inner ends and mounted on the front stud and the rear bars of each pair being also overlapped and mounted on the rear stud,
 85 means for connecting the front and rear bars together so as to move in unison, and means for adjusting the movement of the said bars.

18. In a cultivator, the combination with
 90 a beam, of a supporting bracket arranged along the underside of the same and spaced therefrom for a portion of its length and bearing at other points against the beam, front and rear clamping members for the
 95 top of the beam, bolts connecting the said clamping members to the bracket, said bolts being arranged at the sides of the beam, studs depending from the underside of the bracket, lateral extensions provided at the
 100 rear portion of the bracket at opposite sides of the rear studs and having toothed upper faces, tooth carrying bars arranged in pairs at each side of the beam, the front bars of each pair being overlapped at their inner
 105 ends and mounted on the front stud, and the rear bars of each pair being also overlapped and mounted on the rear stud and bearing against the underside of the extensions, means for connecting the front and
 110 rear bars together so as to move in unison, and bolts passing through the rear tooth carrying bars and having toothed nuts to engage the said extensions for securing the bars in their pivotal adjustment.

19. In a cultivator, the combination with
 115 a beam, of a supporting bracket arranged along the underside of the beam and spaced therefrom for a portion of its length and bearing at other points against the beam, said bracket being provided at opposite sides
 120 of its rear portion with integral lateral extensions having toothed upper faces, front and rear clamping members for the top of the bracket, bolts located at opposite
 125 sides of the beam and connecting the clamping members with the bracket, front and rear toothed carrying bars arranged in pairs at opposite sides of the beam and having their inner ends overlapped and pivoted
 130

to the underside of the bracket, the rear tooth carrying bars fitting against the lower face of the lateral extensions, means for connecting the front and rear bars together so as to move in unison, and bolts piercing the rear tooth carrying bars and provided with toothed nuts engaging the toothed upper faces of the lateral extensions for securing the tooth carrying bars in their pivotal adjustment.

20. In a cultivator, the combination with a beam, of a supporting bracket extending along the underside of the beam and spaced for a portion of its length from the same and provided with seats fitting against the beam, said bracket being also provided at opposite sides with laterally extending front and rear bosses and having integral lateral extensions located beyond the rear bosses, front and rear clamping members located above the said bosses and engaging the top of the beam, bolts located at opposite sides of the beam and piercing the bosses and connecting the clamping members with the bracket, front and rear tooth carrying bars arranged in pairs and pivoted to the underside of the bracket, the rear tooth carrying bars being fitted against the underside of the lateral extensions, means for connecting the front and rear bars together so as to move in unison, and bolts adjustably connecting the rear tooth carrying bars with the lateral extensions.

21. In a cultivator, the combination with a beam, of a bracket extending along the underside of the beam and spaced for a portion of its length from the same and provided with seats fitting against the beam,

said bracket being also provided at opposite sides with laterally extending front and rear bosses, a front clamping member, a rear clamping member, bolts connecting the front clamping member with the front bosses of the bracket at opposite sides of the beam, other bolts connecting the rear bosses with the rear clamping member outside the beam, tooth carrying bars at each side of the beam, and means for pivoting the inner ends of the tooth carrying bars to the bracket at the underside thereof between the said bolts.

22. In a cultivator, the combination with a beam, of a bracket extending along the underside of the beam and spaced for a portion of its length from the same and provided with seats fitting against the beam, said bracket being also provided at opposite sides with laterally extending front and rear bosses, a front clamping member, a rear clamping member, bolts connecting the front clamping member with the front bosses of the bracket at opposite sides of the beam, other bolts connecting the rear bosses with the rear clamping member outside the beam, tooth carrying bars at each side of the beam, means for pivoting the inner ends of the tooth carrying bars to the bracket at the underside thereof between the said bolts, and a handle attaching member mounted on and carried by the rear clamping member.

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

ROBERT MARVIN KELLY.

Witnesses:

E. T. McCULLOUGH,
J. I. JOHNSTON.