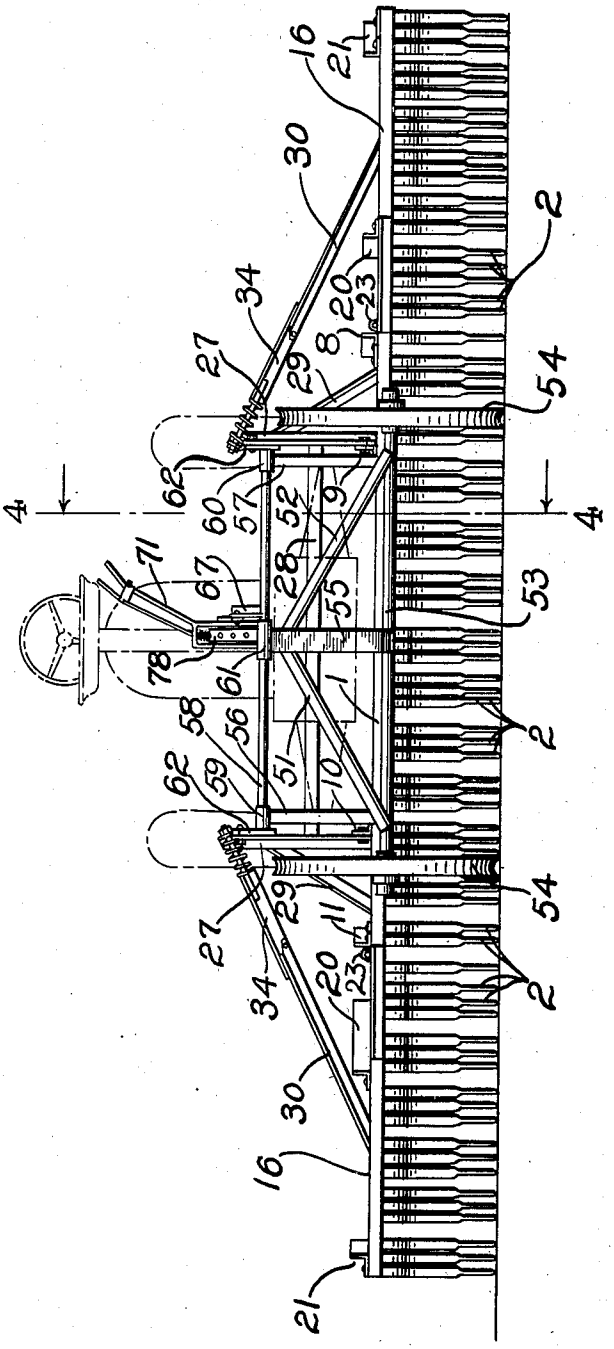
Oct. 6, 1942. S. S. ROBINSON, JR 2,298,161

CULTIVATOR

Filed Aug. 3, 1940 4 Sheets-Sheet 1

FIG. 1



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CULTIVATOR

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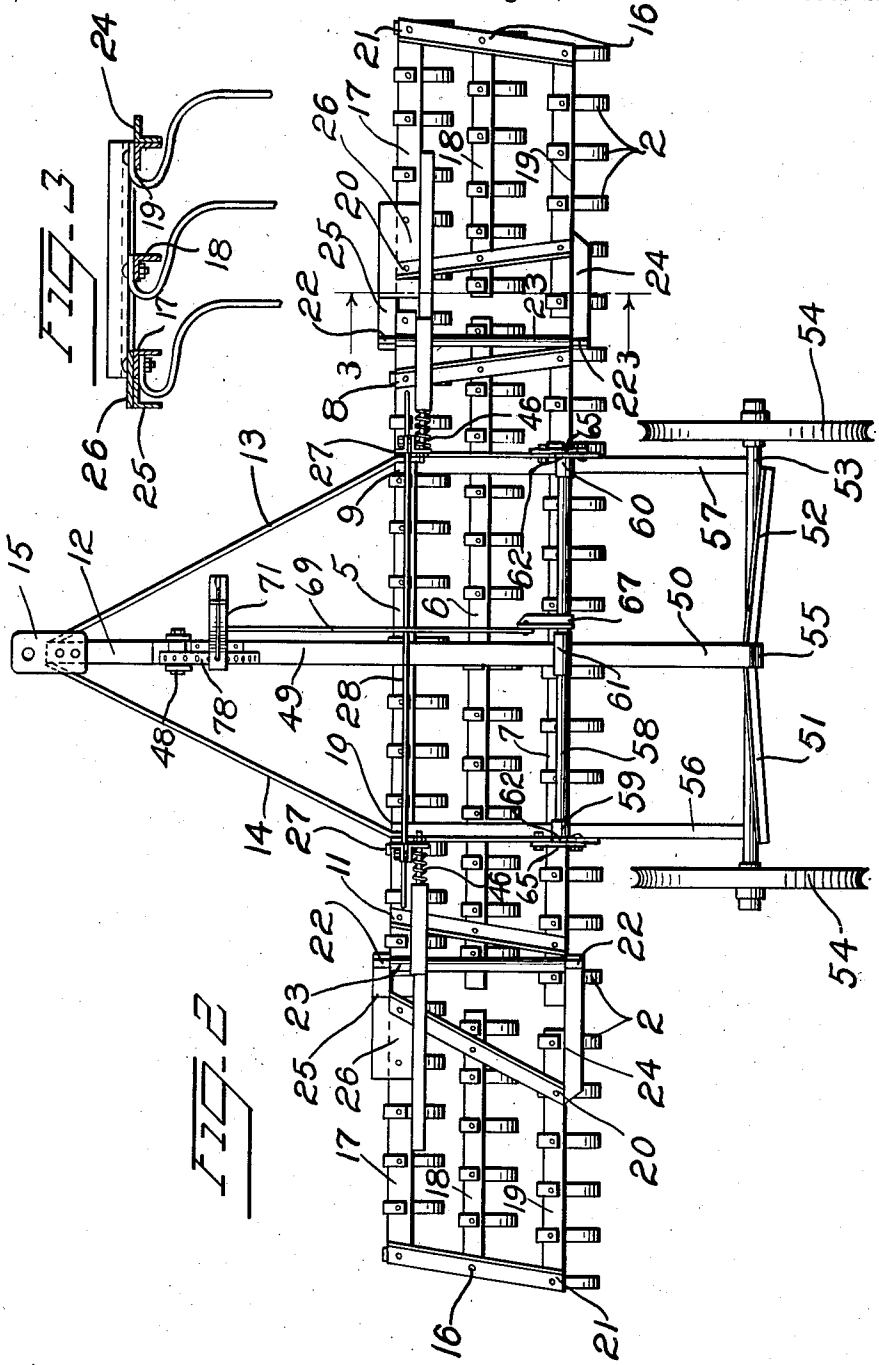


FIG. 3

FIG. 2

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FIG. 4

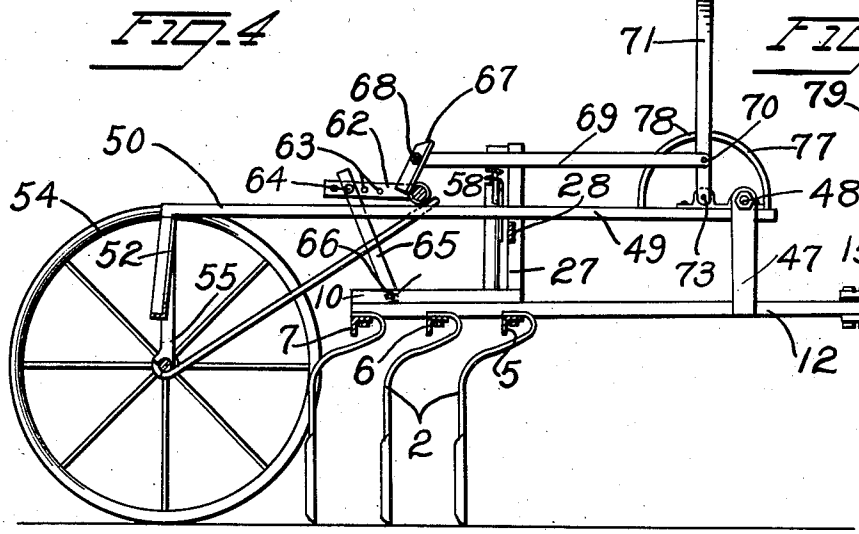


FIG. 5

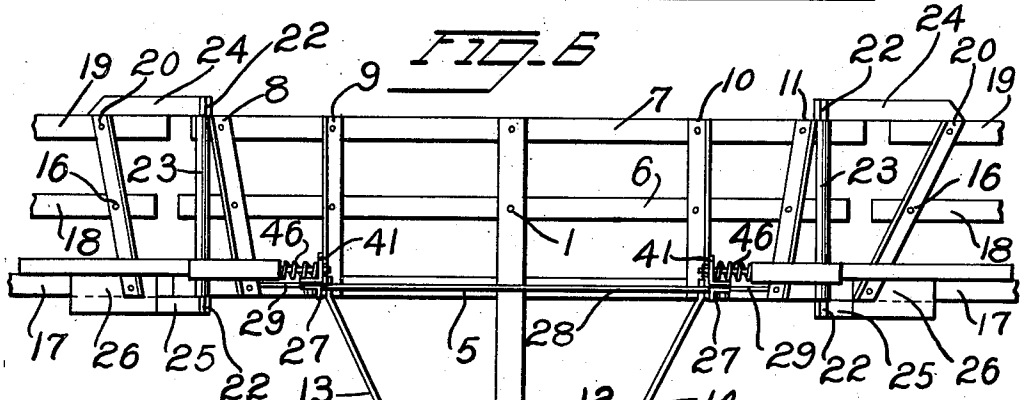


FIG. 6

FIG. 7

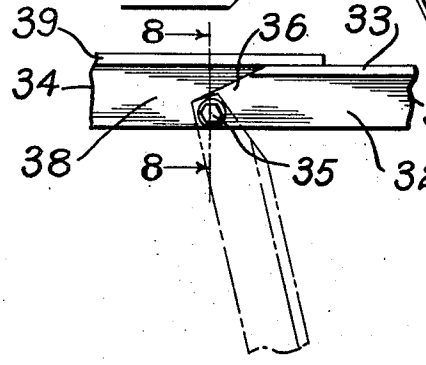
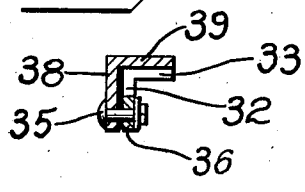


FIG. 8



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CULTIVATOR

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FIG. 9

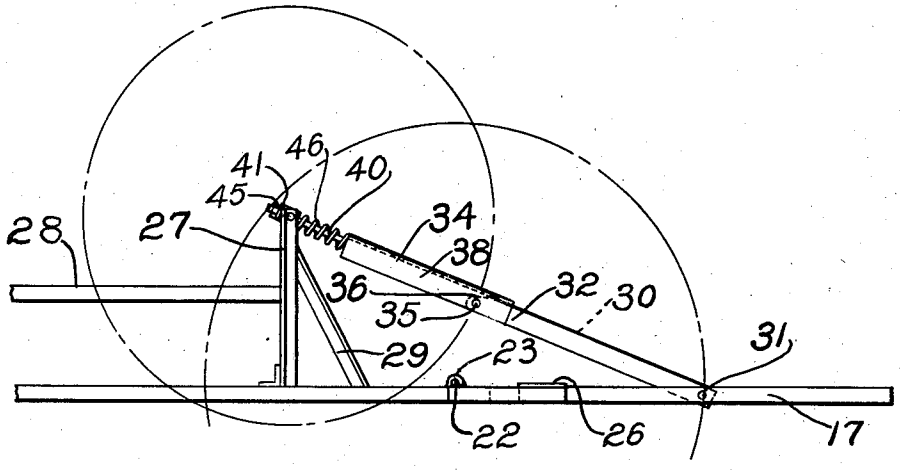


FIG. 11

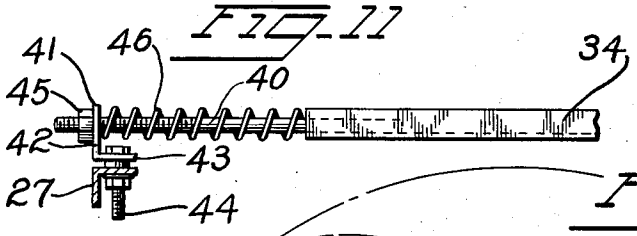
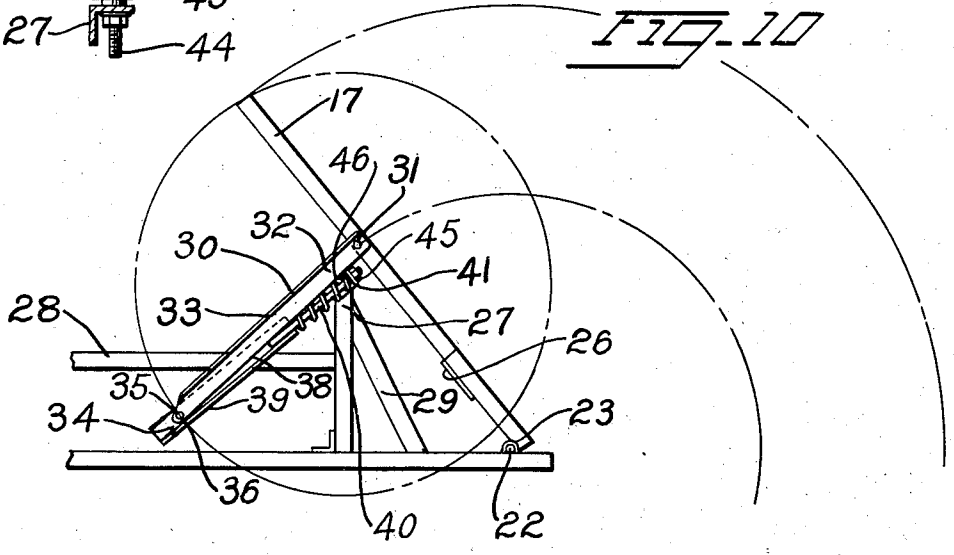


FIG. 10



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2,298,161

UNITED STATES PATENT OFFICE

2,298,161

CULTIVATOR

Samuel Straughan Robinson, Jr., Albany, Ga., assignor to Lilliston Implement Company, Albany, Ga., a corporation of Georgia

Application August 3, 1940, Serial No. 350,778

8 Claims. (Cl. 97—233)

This invention relates generally to cultivators and more particularly to a sectional weeder adapted for use with a tractor in the cultivation of peanuts, cotton and other row crops.

It is an object of my invention to provide a folding sectional cultivator of great efficiency and of such simplicity in construction as to adapt it for manufacture at low cost.

Another object of my invention is to provide a sectional cultivator having end sections which may be folded upward and out of the way when not in use, whereby the width of the said cultivator may be conveniently decreased so as to avoid obstacles; to enter storage sheds; or to pass through a gate or other restricted space.

Another object of my invention is to provide a simple linkage means having a minimum number of pivotal or wearing parts whereby the folding end sections of the said cultivator may be secured in an inoperative or traveling position and also whereby, the said folding ends may be fastened or locked in a lowered or operative position without removing any pins or using any tools.

Another object of my invention is to provide means for applying a spring tension to the said linkage means aforesaid, whereby the folding end sections are held in an operative position adjustable under the said tension to the surface of the ground independently of the main frame of the said cultivator thereby resulting in more efficient operation of the cultivator on level and uneven ground.

Another object of my invention is to provide novel structure whereby in adjusting the aforesaid linkage means so as to secure the folding ends in an operative or an inoperative position, the same may be accomplished independently of the spring tension applied to the said linkage means.

Another object of my invention is to provide a wheeled supporting device for the aforesaid cultivator which may be readily attached to or detached from the said cultivator, whereby the said cultivator may be adaptable with the said wheeled supporting device for use by attaching in the usual manner to the draw bar of a tractor or without which supporting device the said cultivator may be adaptable for use by attaching the same to a tractor power lift mechanism.

A further object of my invention is to provide the said wheeled supporting device with convenient leverage means whereby the driver while operating the tractor may manually raise or lower the teeth of the said cultivator with respect to the ground surface.

It is also an object of my invention to provide a wheeled supporting device adapted as a rear end support for a cultivator, with the front end of the said cultivator supported by the rear end of a tractor.

With the foregoing and other objects in view which will appear as the description proceeds, the invention resides in the combination and arrangement of parts and in the details of construction hereinafter described and claimed, it being understood that changes in the precise embodiment of the invention herein disclosed can be made within the scope of what is claimed without departing from the spirit of the invention.

In the accompanying drawings like characters of reference indicate like parts in the several views, wherein:

Figure 1 is a rear elevation of a cultivator and wheeled supporting device embodying the subject matter of my invention.

Figure 2 shows a top plan view of a cultivator and wheeled supporting device disclosing my invention.

Figure 3 is a cross section taken along the line 3—3 of Figure 2 showing the angle iron structure of the folding end section and the manner of fastening the hinge supports to the said section.

Figure 4 is an enlarged sectional view of my invention taken along the line 4—4 of Figure 1 and illustrating the manner of fastening the main frame to the wheeled supporting device and the means for adjustably regulating the main frame.

Figure 5 is a detailed front elevation of the adjustment lever for regulating the main frame.

Figure 6 is a top plan view of the main frame with the cultivator teeth removed and the ends of the folding end section broken away.

Figure 7 is an enlarged fragmental side view disclosing the manner of connecting the linkage arms for holding the folding end sections in an operative and in an inoperative position.

Figure 8 is a cross section of Figure 7 taken along the lines 8—8.

Figure 9 is a diagrammatic view illustrating the operation of the linkage arms and the folding end section embodied in my invention.

Figure 10 is a diagrammatic view illustrating the folding end section in a raised position and the linkage arms locked securing the said end section in the latter position.

Figure 11 is an enlarged fragmental top view of the tension spring mounted on the end section

linkage arm and the manner of connecting the said linkage arm to the vertically projecting arm mounted on the main frame of the cultivator.

My improved cultivator has provided a center or main frame, Figures 1, 2, and 4 indicated generally by the numeral 1. The said main frame 1 is comprised of the parallel angle bars 5, 6, and 7 having a series of cultivator teeth 2 fastened to the said angle bars. Further, conveniently bolted or welded to the angle bars 5, 6, and 7 are the braces 8, 9, 10 and 11 together with the tongue 12 which extends across the center of the main frame 1 from the rear to the front thereof and projects forward with respect to the said main frame 1. The braces 13 and 14 are provided in support of the forward part of the tongue 12. The said braces being welded at opposite sides to the forward end of the tongue 12 and the braces 13 and 14 have their other ends welded or secured in any convenient manner to the braces 9 and 10 respectively.

Bolted to the forward end of the tongue 12 is the connecting link 15 whereby my improved cultivator may be attached in the usual manner to the draw bar of a tractor or whereby the same may be attached to the power lift mechanism of a tractor, which is not shown in detail as the same may be of various forms which are in common use on tractors.

At the opposite ends of the center or main frame 1, just described are pivotally mounted the auxiliary or folding sectional frames 16 comprising the parallel angle bars 17, 18, and 19 to which may be welded or bolted the braces 20 and 21. Fastened to the angle bars, 17, 18 and 19 are a series of cultivator teeth 2 similar to the teeth fastened to the angle bars 5, 6 and 7 on the main frame 1.

The auxiliary frames 16 are pivoted to the main frame 1 by means of the pivot bolts 22 which are journaled in and project through the sleeves 23. The sleeves 23 are conveniently secured or welded to the parallel angle bars 5, 6 and 7 of the main frame 1 at the opposite ends thereof.

There is further provided an angle bar 24, shown in Figure 3, secured preferably by welding to the angle bar 19 and a further angle bar 25 preferably welded to the plate 26 which in turn is fastened in any convenient manner to the angle bar 17. The angle bars 24 and 25 extend parallel to the angle bars 17, 18 and 19 of the auxiliary frame 16 and project longitudinally past the inner ends thereof.

The projecting ends of the angle bars 24 and 25 are fastened or welded respectively at the opposite ends of the pivotal bolt 22 journaled in the sleeve 23 secured to the main frame 1. Thus the auxiliary frames 16 are pivotally connected to the main frame 1 at the opposite ends thereof.

Welded to the angle bar 5 and the supporting braces 9 and 10 respectively are the vertically projecting arms 27 oppositely positioned on the main frame 1. The arms 27 are connected by supporting brace 28 and the said arms 27 have further provided at the opposite sides thereof the braces 29. The aforesaid supporting braces are conveniently welded to the arms 27.

A linkage bar 30 formed preferably of angle iron construction, Figure 8, including a depending wing 32 and a wing 33 extending at a right angle, thereto, is provided having the depending wing 32 pivotally connected at one end by the pivotal bolt 31 to the angle bar 17 of the auxiliary frame 16. At the opposite end of the said depending wing 32, the end 36 projects longitudinally past the corresponding end of the wing 33.

A second linkage bar 34 is provided preferably of angle iron construction, Figure 8, having the depending wing 38 and a wing 39 extending at a right angle thereto. The said linkage bar 34 has the depending wing 38 pivotally connected at one end to the upper end of the arm 27 as will appear hereinafter. The opposite end of the depending wing 38 is pivotally connected by the pivotal bolt 35 to the longitudinally projecting end 36 of the depending wing 32.

The linkage bar 30 and the linkage bar 34 are so connected, Figures 7 and 8, that upon the depending wing 32 of the linkage bar 30 being pivoted substantially in longitudinal alignment with the depending wing 38 of the linkage bar 34 the lower end of the wing 39 of the linkage bar 34 will be positioned above, contiguous with and parallel to the upper end of the wing 33 of the linkage bar 30 and the said lower end of the wing 39 will engage the said upper end of the wing 33 thereby limiting the downward pivotal movement of the said linkage bars 34 and 30.

However the linkage bar 30 and the linkage bar 34 may be pivoted upward without being so limited, since the linkage bar 30 is pivotally connected to the linkage bar 34 at the end part 36 by the pivotal bolt 35 having its pivotal point so positioned with respect to the wing 33 that neither the wing 33 nor the wing 39 will limit such upward pivotal movement.

At the opposite end of the said linkage bar 34, welded integral therewith and projecting longitudinally therefrom is the thrust bolt 40, Figure 11. The vertically projecting arms 27 carry the angle iron brackets 41 having the members 42 and 43 set substantially at a right angle to each other. The member 43 is pivotally connected by the pivotal bolt 44 to the upper end of the said arm 27 while the member 42 projects at a right angle thereto and has provided an aperture through which is slidably inserted the thrust bolt 40 having a screw threaded end engaging an adjustment nut 45 adapted to hold the said thrust bolt in the said bracket aperture.

A compression spring 46 surrounds the thrust bolt 40 and one end of the spring engages the member 42 at the opposite side from that of the adjustment nut 45. The other end of the said spring engages an end of the linkage bar 34.

It will be readily seen that when it is desired to raise the end section 16 of the said cultivator this may be easily accomplished by merely applying an upward force at the break joint or point of pivotal connection 35 between the linkage or angle bars 30 and 34 causing the said linkage bars 30 and 34 to be pivoted upward on the respective pivotal bolts 31, 35 and 44. Then on manually lifting the auxiliary frame at the outer end thereof, the linkage or angle bar 30 will be pivoted upward at 31 and 35 and the linkage or angle bar 34 will be pivoted upward at 35 and 44.

It will further be apparent that the limit of the arcuate movement of the folding end section 16 will be that point where the linkage arm 30 and 34 will fold together so that the linkage arm 30 will rest on the bracket 41 as shown in Figure 10.

In the embodiment of my invention disclosed herein the arcuate movement of the end section 16 will be limited by the aforesaid engagement of the linkage arm 30 at a position past a point

perpendicular to the pivot bolt 22. Thus the folding end section 16 will be inclined under the force of gravity against the engaged arms 30 and 34 and thereby secured in such upward folded position.

To lower the said end sections 16 it is necessary only to reverse the procedure described. It will be seen that with the end sections in the lowered or operative position there will be exerted by the compression spring 46 a longitudinal tension on the linkage arms 30 and 34 locking the said arms at the point of pivotal connection 35 or break point, as previously described and holding the folding end sections 16 in an operative position adjustable under the said tension to the surface of the ground.

Moreover, the adjustment nut 45 provides a convenient means for regulating the tension of the spring 46 and the length of the linkage arm 34 and thereby the position of the end section 16.

While I have described the linkage means pivotally connecting the folding end sections 16 at one side of the said cultivator to the vertically projecting arm 27 it must be remembered that a pivotal linkage means of similar construction is provided for pivotally connecting the folding end section 16 provided at the opposite side of the said cultivator to the vertically projecting arm 27 likewise positioned at the opposite side of the main frame as previously described.

In operation it will be readily apparent that the cultivator as described may be conveniently fastened by the link 15 to a power lift mechanism which may be of various forms such as in common use on tractors.

In order that the aforesaid cultivator may be attached in the usual manner to the draw bar of a tractor, I have provided an attachable supporting device adapted to support the rear end of the said cultivator, the forward end thereof being supported by the rear end of the tractor.

Positioned near the forward end of the tongue 12 are the vertically extending forked arms 47 rigidly welded and formed substantially at a right angle to the said tongue 12, Figure 4. A pivotal bolt 48 is provided in the upper end of the said forked arms 47 adapted to pivotally secure the main frame 1 to the forward end of the center beam 49 of the wheeled supporting device indicated generally by the numeral 50.

Positioned to the rear of the main frame 1 is the supporting wheeled frame which comprises the downwardly and outwardly extending forked arms 51 and 52 welded at the upper end to the rear end of the center beam 49 and at the lower end to the laterally extending axle 53 upon which are journaled the wheels 54 at the opposite ends of the said axle.

A further supporting arm 55 extends vertically from the axle 53 to the rear end of the center beam 49 and is positioned substantially at a right angle to the said center beam. The said supporting arm 55 is welded to the axle 53 and the center beam 49.

The supporting side members 56 and 57 are welded respectively to the axle 53 at a point substantially beneath the point of connection of the fork arms 51 and 52 to the said axle. The said side members 56 and 57 extend parallel to the center beam 49 forward and upward to the shaft 58 journaled in the bearing sleeves 59 and 60 welded to the upper ends of the respective side members 56 and 57. The said shaft 58 is further journaled intermediate of the said side members in the bearing sleeve 61 welded to the center beam 49.

Welded at opposite ends of and at a right angle to the said shaft 58 are the arms 62 positioned substantially parallel to each other and having the perforated adjustment holes 63 adapted to receive the pivot bolts 64 engaging the links 65 pivotally fastened at the opposite ends by the bolts 66 to the braces 9 and 10 respectively of the main frame 1.

To adjustably regulate the said arms 62, there is provided a pivot arm 67 rigidly welded to the said shaft 58 substantially intermediate of the said arms 62 and extending substantially at a right angle to the said shaft 58. The said arm 67 is fastened at the end thereof by the pivotal bolt 68 to one end of the forwardly extending link 69. The said link 69 is connected at the opposite end by the pivotal bolt 70 to the operating lever 71 positioned at the forward end of the center beam 49.

The said operating lever 71, Figure 5 has provided the forked arms 72 which are pivotally connected at the lower ends thereof by the pivotal bolt 73 to the center beam 49.

The operating lever 71 carries a pawl 74 operated through a link 76 by the bell crank lever 75 pivoted to the lever 71 by the bolt 79. The said pawl 74 is adapted to engage the adjustment holes 77 provided in the sector 78.

As this provided the main frame 1 of my improved cultivator is adapted to be supported at its forward end by the rear end of the tractor and the main frame of the said cultivator is supported at its rear end by the wheeled supporting frame 50 through the linkage 62 and 65. The forward end of the wheeled supporting frame is held by the main frame 1 through the forked arms 47.

Further, it will be readily apparent that by adjusting the operating lever 71 the rear end of the cultivator may be raised and lowered by the linkage means previously described, while the center beam 49 and the tongue 12 are pivoted on the pivotal bolt 48 as shown in Figure 4. Moreover, it is readily apparent that the said wheeled supporting frame may be conveniently detached from the main frame and the cultivator by removing the bolts 48 and 66.

While I have shown various parts of the cultivator as welded integrally connected to each other, it must be understood that this is merely for convenience in illustrating the principles of the invention, and not by way of limitation. The making of such parts separately for convenience in assembling or repair or fastening by bolts or other convenient means involves nothing more than the skill of the mechanic.

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

1. In a cultivator including a main cultivator frame having an auxiliary cultivator frame pivotally connected at the end thereof; the combination of two pivotally connected linkage arms having one end thereof pivotally connected to the auxiliary cultivator frame and the opposite end connected pivotally to the aforesaid main frame, wing members affixed to the said linkage arms and the said wing members projecting substantially at a right angle to the said linkage arms in such a manner as to limit pivotal movement of the said linkage arms upon the said linkage arms being positioned substantially in longitudi-

nal alignment, the said linkage arms being adapted to releasably lock the said auxiliary cultivator frame in a lowered operative position.

2. In a cultivator including a main cultivator frame having auxiliary cultivator frames pivotally connected at the opposite ends thereof; the combination of two vertically projecting arms oppositely affixed to the main cultivator frame, two groups of linkage arms, each group including two linkage arms pivotally connected, one end of each group of linkage arms being pivotally connected to the upper end of one of the aforesaid vertically projecting arms affixed to the main cultivator frame, the opposite end of each group of linkage arms being pivotally connected to one of the aforesaid auxiliary cultivator frames, means limiting the downward pivotal movement of the said linkage arms in each group upon the said linkage arms being in longitudinal alignment, a spring mounted on each of the two groups of linkage arms whereby the auxiliary cultivator frames aforesaid may be held in an operative position under spring tension, the said groups of linkage arms being adapted to releasably lock the said auxiliary cultivator frames in a lowered operative position and to releasably hold the auxiliary frames in a raised inoperative position, forked arms fixedly fastened to the main cultivator frame, a center beam pivotally connected at its forward end to the said forked arms, supporting wheels positioned at the rear of the main cultivator frame and carried by the said center beam, adjustable linkage means carried by the said center beam and pivotally connected to the main cultivator frame whereby the main and auxiliary cultivator frames may be raised and lowered, and whereby the center beam and main and auxiliary cultivator frames may be pivoted at the pivotal connection between the forked arms aforesaid and the said center beam.

3. In a cultivator including a main cultivator frame having an auxiliary cultivator frame pivotally connected at the end thereof; the combination of a pair of pivotally connected linkage arms, one end of the said linkage arms pivotally connected to the said main frame and the opposite end of the said linkage arms being pivotally connected to the aforesaid auxiliary cultivator frame, means limiting pivotal movement of the said linkage arms upon the said linkage arms being in longitudinal alignment, a spring mounted on the said linkage arms whereby the auxiliary cultivator frame may be held in an operative position under spring tension, the said pair of linkage arms releasably locking the said auxiliary cultivator frame in a lowered operative position under spring tension upon the said linkage arms being pivoted to the aforesaid position of longitudinal alignment.

4. In a cultivator including a main cultivator frame having an auxiliary cultivator frame pivotally connected at the end thereof; the combination of an upwardly projecting arm fixedly mounted on the said main frame, two pivotally connected linkage arms having one end thereof pivotally connected to the auxiliary cultivator frame and the opposite end connected pivotally to the aforesaid upwardly projecting arm, a spring tension means mounted on the said linkage arms adapted to hold the said auxiliary cultivator frame in a lowered operative position under spring tension, engaging means mounted on the said linkage arms for locking the said linkage arms upon the said linkage arms being positioned substantially in longitudinal alignment in such a manner as to hold the said auxiliary cultivator frame in a lowered operative position under spring tension, and the said engaging means being adapted to release the said linkage arms from the said locking position upon upward pivotal movement of the said linkage arms in such a manner as to release the tension of the said spring tension means exerted upon the said auxiliary cultivator frame.

5. In a cultivator including a main cultivator frame having an auxiliary cultivator frame pivotally connected at the end thereof; the combination of an upwardly projecting arm affixed to the said main frame, two pivotally connected linkage bars having one end thereof pivotally connected to the auxiliary cultivator frame and the opposite end connected pivotally to the aforesaid upwardly projecting arm, each of the said pivotally connected linkage bars having a wing member affixed thereto substantially at a right angle to the said bars and the said wing members positioned in such a manner as to limit the downward pivotal movement of the said linkage bars upon the said linkage bars being positioned substantially in longitudinal alignment whereby the said linkage bars are adapted to releasably lock the said auxiliary frame in a lowered operative position.

6. In a cultivator including a main cultivator frame having an auxiliary cultivator frame pivotally connected at the end thereof; the combination of an upwardly projecting arm affixed to the said main frame, a bracket pivotally connected at the upper end of the said arm, two pivotally connected linkage bars having one end thereof pivotally connected to the auxiliary cultivator frame, a thrust bolt affixed to the opposite end of the said linkage bars and the said thrust bolt slidably mounted in the pivotal bracket aforesaid, wing members affixed to the said linkage bars substantially at a right angle thereto in such a manner as to limit the downward pivotal movement of the said linkage bars upon the said linkage bars being positioned substantially in longitudinal alignment, a spring member mounted on the said thrust bolt whereby the auxiliary cultivator frame aforesaid may be held in an operative position under spring tension, the said linkage bars being adapted to releasably lock the said auxiliary cultivator frame in a lowered operative position under spring tension.

7. In a cultivator including a main cultivator frame having an auxiliary cultivator frame pivotally connected at the end thereof; the combination of an upwardly projecting arm fixedly mounted on the said main frame, a bracket member pivotally connected at the upper end of the said arm, two pivotally connected linkage bars having one of the said linkage bars connected to the pivotal bracket member aforesaid and the other said linkage bar pivotally connected to the auxiliary cultivator frame aforesaid, the said bracket member adapted to engage the said other linkage bar in such a manner as to releasably hold the auxiliary cultivator frame in a raised inoperative position.

8. In a cultivator including a main cultivator frame having an auxiliary cultivator frame pivotally connected at the end thereof; the combbination of an upwardly projecting arm fixedly mounted on the said main frame, a bracket member pivotally connected at the upper end of the said arm, two pivotally connected linkage bars having one of the said linkage bars connected to the pivotal bracket member aforesaid and the other said linkage bar pivotally connected to the

auxiliary cultivator frame aforesaid; the said bracket member adapted to engage the said other linkage bar in such a manner as to releasably hold the auxiliary cultivator frame in a raised inoperative position, wing members affixed to the said linkage bars substantially at a right angle thereto in such a manner as to limit the downward pivotal movement of the said linkage bars upon the said linkage bars being positioned substantially in longitudinal alignment, whereby the auxiliary cultivator frame aforesaid may be releasably locked in a lowered operative position.

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