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HANDLE STRUCTURE FOR POWER-DRIVEN VEHICLES

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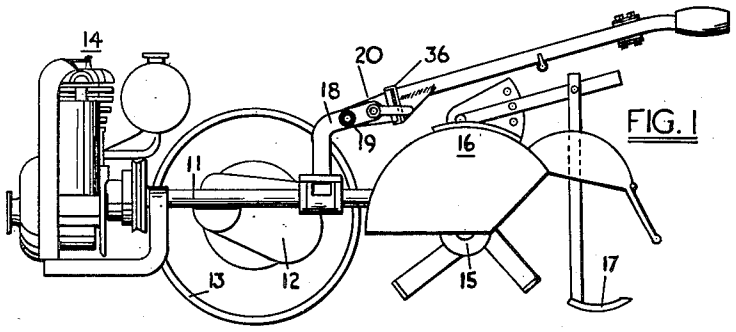



FIG. 1

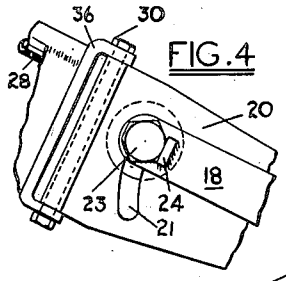



FIG. 4




FIG 3

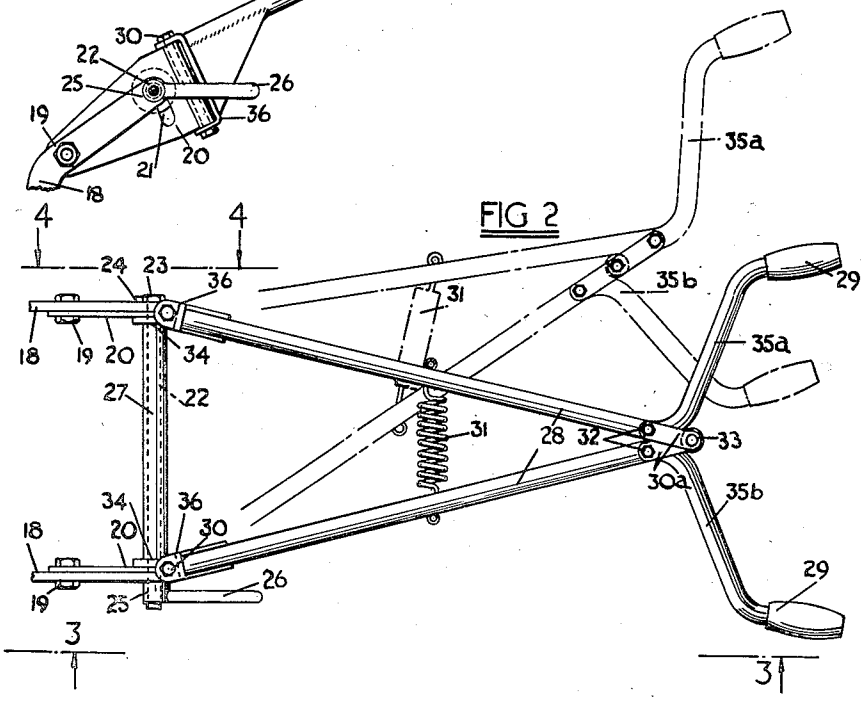



FIG 2

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## HANDLE STRUCTURE FOR POWER-DRIVEN VEHICLES

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7 Claims. (Cl. 16—110)

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This invention relates to a power-driven vehicle, such as a tractor-cultivator, of the kind which has a pair of handle-bars to be grasped by a walking operator. The main object of the invention is to arrange the handle-bars so that they are laterally-adjustable for enabling the operator to walk either centrally behind the vehicle or at either side thereof.

According to the invention, the handle-bars are independently pivoted at their forward ends upon the vehicle chassis for lateral movement, and they are also interconnected both by a spring and by a toggle, the toggle being so arranged and the bars being so shaped near the interconnecting points that either in the straight-behind position of the bars, or in either of the extreme lateral positions thereof, the spring will press both bars against the common pivot of the toggle in such manner as to provide a light lock against lateral movement of the bars.

According to a further feature, each toggle link comprises a pair of parallel links sandwiching the adjacent parts of the handle-bars in all three of their alternative positions.

In the accompanying drawings:

Figure 1 is a side elevation of one form of power-driven cultivator having handle-bars supported in the manner of the invention;

Figure 2 is a plan view, to a larger scale, of the handle-bars, and additionally showing, in chain lines, one of the extreme lateral positions into which they can be adjusted;

Figure 3 is a view in the direction of the arrows 3—3 of Figure 2, and drawn to the same scale; and

Figure 4 is a view, to a still larger scale, in the direction of the arrows 4—4 of Figure 2.

Referring to the drawings, the cultivator comprises a chassis including a tubular side frame member 11 which is fast with a gear casing 12 in which one end of a traction cylinder 13 is journalled, the other end of the traction cylinder being supported from an opposite side frame member (not shown). The chassis carries an internal combustion power plant, indicated generally at 14, which drives a shaft, within the side frame member 11, from which the traction cylinder and an earth-working rotor 15 are driven. The rotor is covered by a shield 16 from which is adjustably supported a depth-control skid 17.

Each side frame member has, fast therewith, an upwardly and rearwardly curving bracket 18 to which is pivoted, at 19 and on a horizontal axis, a plate 20. These plates have slots 21, arcuate

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about the pivots 19, through which is passed a rod 22 which interconnects the brackets 18.

The rod 22 has, at one end, an integral hexagon head 23 which is prevented from turning by an abutment 24 welded to the outer side of the adjacent bracket 18. The other end of the rod threadedly receives a clamping nut 25 which has an operating arm 26 so that when the nut 25 is tightened the adjacent faces of the plates 20 are clamped against end flanges 34 of a tube 27 through which the rod 22 passes.

The handle-bars 28 are cranked to be somewhat of Z-form in plan, as shown by Figure 2. Each has a hinge-jaw 36 at its forward end by which it is pivoted to the coacting plate 20, as by a pivot bolt 30, for movement about a vertical axis. The handle-bars 28 are shown as provided with hand grips 29 on the rear ends of the intermediate portions 35*a*, 36*a*. At the inner ends of the latter the handle-bars are interconnected by a toggle, and between the toggle and their pivoted ends they are interconnected by a tension spring 31.

The toggle is preferably a double one—i. e., each link comprises upper and lower links 30*a*, 30*b*, supported from the opposite ends of a bolt 32 passed through the associated handle-bar 28. The central pivot 33 of the toggle, connected to all four links, passes between the handle-bars 28, and has means (such as a distance sleeve—not shown) for maintaining the correct spacing of the adjacent ends of the links.

When the handle-bars are centralised with respect to the longitudinal axis of the machine (i. e., in the position shown in full lines in Figure 2) the toggle links are substantially closed. In this position their central pivot, whether directed rearwardly as shown or forwardly, is engaged on opposite sides by the adjacent parts of the handle-bars 28. When it is desired to adjust the handle-bars to be to one side of the longitudinal axis of the machine, the handle-bar which is nearer that side (e. g., the handle-bar 35*a*) is moved in the appropriate direction (i. e., upwards in Figure 2) and draws the other handle-bar towards it, due to the straightening of the toggle links and the action of the spring, into the chain line position shown. In this adjusted position the central pivot of the toggle links is again contacted, on opposite sides, by the members 28. Any attempt to move the handle-bar 35*a* towards the side from which it is the more remote is resisted owing to the locking action of the toggle, and the handle-bars, when equally

grasped, are found to provide a rigid control of the cultivator.

To return the handle-bar **35***a* to its central position, it is necessary to pull laterally on the handle-bar **35***b*.

By slackening the clamping nut **25**, both handle-bars can be adjusted for height and afterwards locked at the desired setting by re-tightening the clamping nut.

What I claim as my invention and desire to secure by Letters Patent of the United States is:

1. A handle structure for power-driven vehicles adapted to be guided by means of handle-bars to be grasped by a walking operator, said handle structure including two rearwardly directed coplanar bars, laterally spaced respective pivotal connections between the forward ends of said bars and the vehicle, the axes of said pivotal connections being parallel to each other and upwardly directed for enabling lateral swinging movement of said bars in their common plane, said bars having portions extending towards one another, a spring interconnecting said bars and biassing them towards each other about said pivotal connections, a pair of links pivoted together by a common pivot at their one ends and respectively pivoted at their other ends to said bars adjacent said extending portions whereby to form a toggle interconnecting said bars, said link pivots being parallel to said pivotal connections and said common pivot extending between said bars at rightangles to said plane, said toggle arranged to be in folded condition and with the common pivot of the toggle engaged at opposite sides by said extending portions when said bars are in their straight-behind position, and said toggle also arranged to be in straightened condition, again with its common pivot engaged at opposite sides by said extending portions when said bars are in either of their extreme lateral positions, which latter positions are determined by the straightening of the toggle, the interaction of the spring, toggle and bars biassing said bars against lateral movement from any of their three alternative positions.

2. The handle structure of claim 1, characterised in that each link of said toggle comprises a pair of parallel links sandwiching the adjacent parts of said bars in any of their three alternative positions.

3. A handle structure for power-driven vehicles adapted to be guided by means of handle-bars to be grasped by a walking operator, said handle structure including two rearwardly directed coplanar bars, laterally spaced respective pivotal connections between the forward ends of said bars and the vehicle, the axes of said pivotal connections being parallel to each other and upwardly directed for enabling lateral swinging movement of said bars in their common plane, said bars having portions between their ends extending towards one another, a spring interconnecting said bars and biassing them about said pivotal connections for said portions to be in contact with one another when said bars are in the straight-behind position, a pair of links pivoted together by a common pivot at their one ends and respectively pivoted at their other ends to said bars adjacent said extending portions whereby to form a toggle interconnecting said bars, said link pivots being parallel to said pivotal connections and said common pivot extending between said bars at rightangles to said plane, said toggle arranged to be in folded condition and with opposite sides of its said common pivot engaged by said extending portions adjacent the position in which the latter contact each other in the straight-behind position of said bars, and said toggle also arranged to be in straightened condition, again with its common pivot engaged at opposite sides by said extending portions, when said bars are in either of their extreme lateral positions, which latter positions are determined by the straightening of the toggle, the interaction of the spring, toggle and bars biassing said bars against lateral movement from any of their three alternative positions.

4. The handle structure of claim 3, characterised in that each link of said toggle comprises a pair of parallel links sandwiching the adjacent parts of said bars in any of their three alternative positions.

5. A handle structure for power-driven vehicles adapted to be guided by means of handle-bars to be grasped by a walking operator, said handle structure including two rearwardly directed coplanar bars, laterally spaced respective pivotal connections between the forward ends of the said bars and the vehicle, the axes of said pivotal connections being parallel to each other and upwardly directed for enabling lateral swinging movement of said bars in their common plane, said bars being cranked between their ends to contact one another in the straight-behind position of said bars, a spring interconnecting said bars and biassing them towards each other about said pivotal connections, a pair of links pivoted together by a common pivot at their one ends and pivoted at their other ends to said bars where they are cranked, whereby to form a toggle interconnecting said bars, said link pivots being parallel to said pivotal connections and said common pivot extending between said bars at rightangles to said plane, said toggle arranged to be in folded condition, with the common pivot of the toggle engaged at opposite sides by said bars, when said bars are in their straight-behind position, and said toggle also arranged to be in straightened condition, again with its common pivot engaged at opposite sides by said bars, when said bars are in either of their extreme lateral positions, which latter positions are determined by the straightening of the toggle, the interaction of the spring, toggle and bars biassing said bars against lateral movement from any of their three alternative positions.

6. The handle structure of claim 5, characterised in that each link of said toggle comprises a pair of parallel links sandwiching the adjacent parts of said bars in any of their three alternative positions.

7. A handle structure for power-driven vehicles adapted to be guided by means of handle-bars to be grasped by a walking operator, said handle structure including two rearwardly directed coplanar bars, laterally spaced respective pivotal connections between the forward ends of the said bars and the vehicle, the axes of said pivotal connections being parallel to each other and upwardly directed for enabling lateral swinging movement of said bars in a common plane, said bars having portions cranked towards one another between their ends, a tension spring interconnecting said bars and biassing them about said pivotal connections for said cranked portions to engage when said bars are in the straight-behind position, a pair of links pivoted together by a common pivot at their one ends and pivoted at their other ends to said cranked portions, said link pivots being parallel to said pivotal connections and said common pivot extending between

said bars at rightangles to said plane, said links being inclined to one another when said bars are in the straight-behind position with opposite sides of the common pivot of said links resting against the cranked portions, said links also serving to limit the extent of the lateral movement of the bars in either direction when the appropriate one of the bars is pulled in that direction by becoming aligned with one another and with the common pivot of said links engaged on opposite sides by said bars, the interaction of the spring, toggle and bars biassing said bars against lateral movement from any of their three alternative positions.

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