Oct. 30, 1934. H. H. GLASIER 1,978,492

LEVER PLOW

Filed Oct. 7, 1932

Fig 1

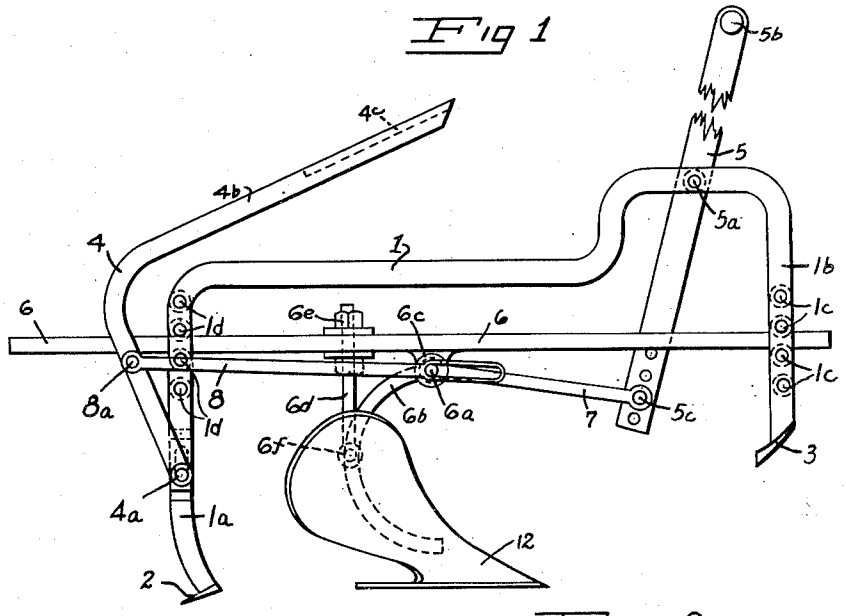


Fig 2

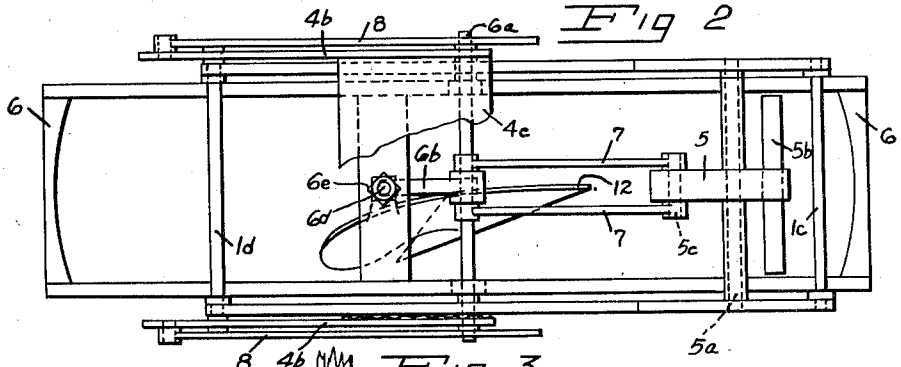
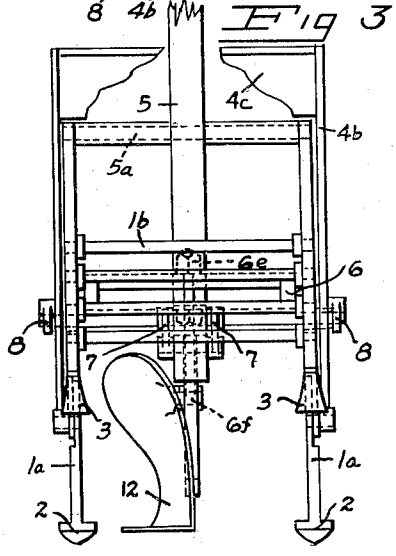


Fig 3



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LEVER PLOW

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8 Claims. (Cl. 97—58)

This invention relates to a ground breaking and turning tool wherein leverage is applied to propel the tool and more particularly to propel the tool along a plane which is parallel to the surface of the ground being worked. The device is especially adapted to manual operation but is not limited thereto and may be readily operated by a gasoline engine or any other suitable form of power. It is herein disclosed in its simplest form; namely, the manually propelled form. For certain tillage demands such as plowing and subsoil cultivation, great power is required to correctly perform the work and directly applied manual effort is incapable of meeting this demand. The present invention appertains to tillage mechanism in which leverage is taken advantage of to increase the efficiency of manual effort and thereby bring heavy tillage operations within the scope of hand propelled tools.

It is the primary object of this invention to provide a mechanical tillage device of the character described which is actuated by means of a system of levers and in such a manner as to cause the tillage tool proper to normally perform its function in a horizontal line adjustably parallel to the ground surface. Further objects of this device are to provide a tool which is capable of heavy work, yet is convenient to handle and is adaptable to employment in home gardens and small farms where more expensive and elaborate equipment would not be fitting.

These objects together with other objects and corresponding accomplishments are obtained by means of the embodiments of my invention, illustrated in the accompanying drawing which includes a side elevation Fig. 1, a sectional plan view Fig. 2, an end view Fig. 3 and a front view Fig. 4.

Referring to the drawing, the device is seen to consist of a framework 1 which is formed by a pair of parallel channels suitably formed to support the various members of the device. At the rear of this framework, a pair of legs 1A extend downwardly. At the base of these legs, the bracing feet 2 are attached. These bracing feet are pointed and are backwardly and downwardly inclined. At the forward end of frame 1, a pair of legs 1B extend downwardly and at their base the gauging feet 3 are attached. These gauging feet are flat with square ends and are inclined downwardly and backwardly also. Foot lever 4 is pivoted to a pin 4A which spans legs 1A. Foot lever 4 consists of a pair of bars 4B held in spaced relationship by the platform 4C upon which the operator presses his foot. Hand lever 5 is pivoted to pin 5A which spans frame 1 at the point where it forms a goose-neck. At the upper extremity of hand lever 5 is the handle 5B which the operator grips as he would the handle of a hand car. A tool carrier 6, consisting of a pair of parallel bars held in fixed relationship is supported by rollers 1C mounted across legs 1B. It is supported forwardly by rollers 1C mounted across legs 1B and is supported rearwardly by rollers 1D mounted across legs 1A. These rollers revolve on pins which are removable and as a plurality of holes are provided, the rollers may be set high or low which provides an adjustment for the height of the tool carrier in proportion to the supporting feet—thus making possible a control on the depth at which the tools will run.

The tool carrier is provided with suitable means for attaching ground working tools of any description altho the tool shown in the drawing is a mouldboard plow, 12 and it is attached by a fixture which consists of a cross pin 6A fitted laterally to the end of beam 6B and held to the carrier 6 thru blocks 6C. The beam is steadied by tie rod 6D which is coupled to the beam at joint 6F and coupled to the carrier 6 by means of locknuts 6E which tighten above and below a plate which spans the parallel members of the carrier. The hand lever 5 is coupled to the tool carrier 6 by links 7 which are attached to the base of the lever at pivot pin 5C which is provided with a plurality of coupling points for the purpose of making possible an adjustment on the amount of power desired to be delivered by the lever. Links 7 are attached to carrier 6 at cross pin 6A. Extending rearwardly from pin 6A are links 8 which couple the carrier 6 to the foot lever 4. Foot lever 4 is likewise provided with a plurality of coupling points 8A which permit an adjustment on the power expended by the foot lever.

The operation of the device may be followed by considering the parts initially as shown in the side elevation. The bracing feet 2 are forced into the ground so that they may serve as an anchorage to brace against. Hand lever 5 is then drawn backward or to the left in the drawing and foot lever 4 is depressed by a downward exertion of the operator's foot, which actions cause the tool carrier and tool to move toward the right or forward, whereupon the tool penetrates the ground. After the levers have moved to the extremities of their respective strokes, the hand lever is swung to the right or forward for its return stroke and the foot lever rises on its return stroke. As will be noted, upon these return strokes, the levers do not pivot at their joints to the frame but rather

at their juncture to the tool carrier. The tool being unimpelled by the return strokes of the levers, it remains stationary and, of course, the tool carrier does likewise, whereupon the tool carrier, thru pin 6A and links 7, becomes the fulcrum for the levers and their return stroke acts to draw the frame forward over the stationary tool and tool carrier. By thus moving the frame forward, it is placed ahead, notch by notch as it were, into the proper position behind the levers so that they may brace against it to accomplish their prying effect upon the tool carrier and tool. From this account it is seen that upon the first stroke of the levers the tillage operation is performed and upon the return stroke of the levers, the body of the tool is advanced along its course.

As the particular feature of this tillage device is the parallel motion of the leverage propelled tool in relationship to the ground surface being worked, I will elaborate on this phase of its operation. A few strokes of the levers will suffice to draw the tool well into the ground whereupon the depth gauging foot 3 is caused to contact the ground surface and thus restrain the tool from achieving further depth. The tool is now suspended on its carrier between the forward point made by the gauging foot and the rearward point made by the bracing foot. By means of these two influences, it is induced to move on a line which is established by them in their contact with the ground being traversed. Other forms of leverage propelled tools have the tillage tool attached directly to the lever with no provision made to guide or control the motion given the tool by the lever. A smoother running tool is obtained when guidance is provided to prevent it from "nosing" in and more accurate depth of working is likewise obtained when gauging means are provided. Also such tools as sub-soil cultivators and mouldboard plows must be held in a parallel course to the ground surface in order for them to run with the least possible effort and in a manner which produces good ground working results. To provide a leverage propelled tool with means included to properly guide and control its action is the principal object of this device.

What I claim is:

1. A tillage device comprising front and rear ground engaging feet adapted to range along the ground and brace thereon, a ground working tool disposed intermediate said front and rear ground engaging feet, said tool being adapted to move in a plane parallel with the surface of the ground, and leverage means to cause said tool to so move.

2. A tillage device comprising front and rear ground engaging feet adapted to range along the ground and brace thereon, a ground working tool adapted to move intermittently in a plane parallel with the ground surface, and leverage means to cause said tool to so move.

3. A tillage device comprising a frame, anchorage feet, depth gauging feet, a tool carrier held in spaced relationship with the ground being worked, ground working tools attached to said tool carrier, and leverage means for motivating said tools.

4. A tillage device comprising a frame with ground engaging feet, guides integral with said frame, a tool carrier disposed thru said guides, a ground working tool attached to said tool carrier, and a hand lever fulcrumed on said frame and coupled to said tool carrier for the purpose of imparting motion thereto.

5. A tillage device having a frame with bracing feet attached thereto, guide members secured to said frame, a tool carrier alined thru said guides, ground working tools adjustably secured to said tool carrier, a hand lever pivoted to said frame and adjustably connected to said tool carrier, and a foot lever pivotally mounted on said frame and connected to said tool carrier.

6. A tillage device comprising a frame with an anchorage foot placed at its rear and gauge feet placed at its front, guides arranged on said frame, a tool carrier deployed thru said guides, ground working tools adjustably attached to said tool carrier, a hand lever fulcrumed at a pivot point on said frame, and links connecting said hand lever and said tool carrier.

7. A tillage device comprising a frame, a bracing foot fixed to the rear of said frame, a depth gauging foot fixed to the front of said frame, an adjustable guide placed toward the rear of said frame, an adjustable guide placed toward the front of said frame, a tool carrier alined between these forward and rearward guides, a ground working tool adjustably mounted on or near the center of said tool carrier, and leverage means adjustably coupled to said tool carrier for the purpose of applying power thereto.

8. A tillage device having a frame with ground engaging feet and guide alinements integral therewith, a tool carrier disposed between said guide alinements, ground working tools adjustably arranged on said tool carrier, and hand and foot levers disposed in such manner as to intermittently advance said ground working tools and said frame, respectively, in successive steps and in a parallel course to the ground surface.

HAROLD H. GLASIER.