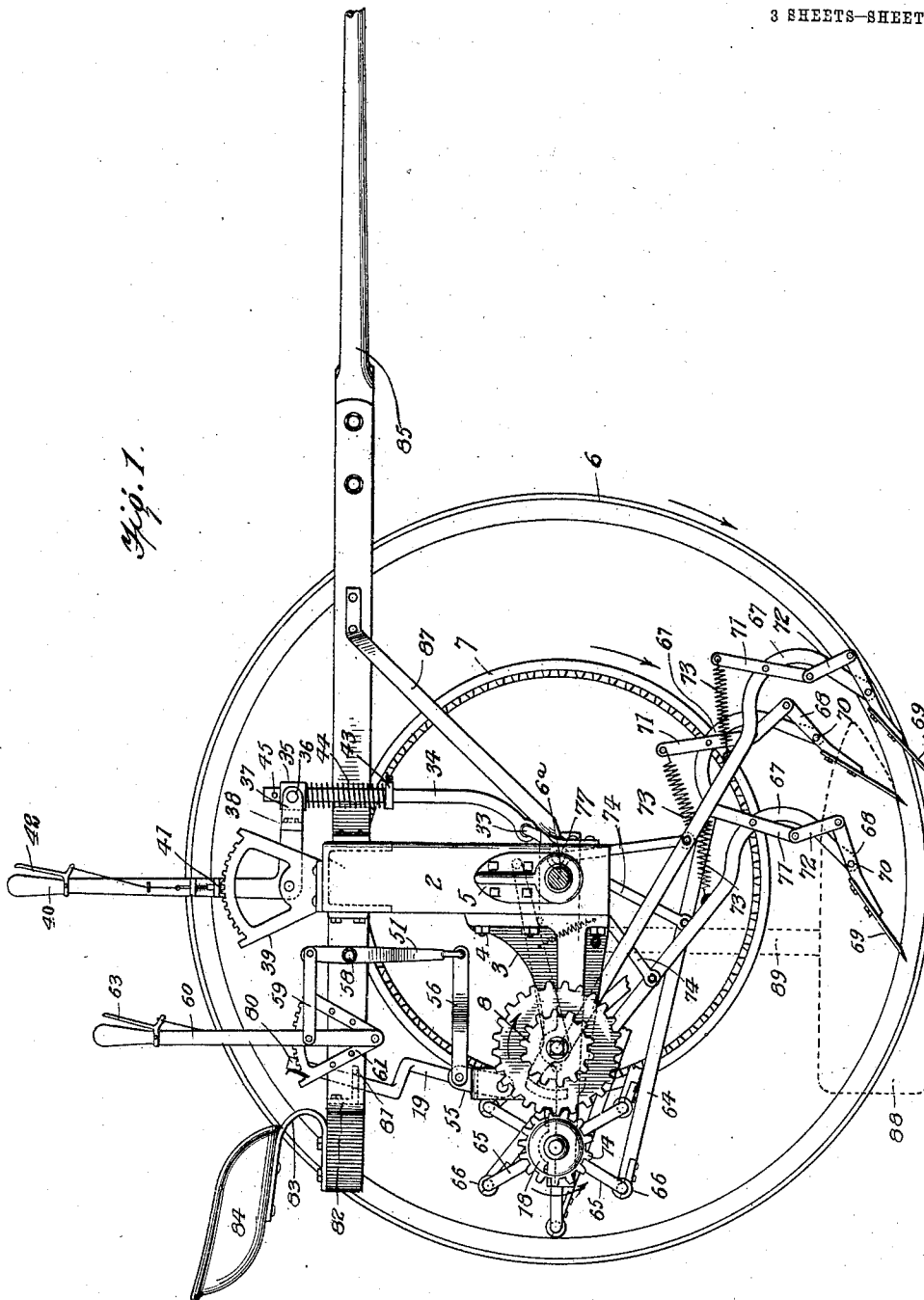


F. P. & P. F. ECKROAT.
CULTIVATOR.
APPLICATION FILED JUNE 8, 1909.

976,643.

Patented Nov. 22, 1910.

3 SHEETS—SHEET 1.



WITNESSES

L. H. Schmidt.
C. E. Brown

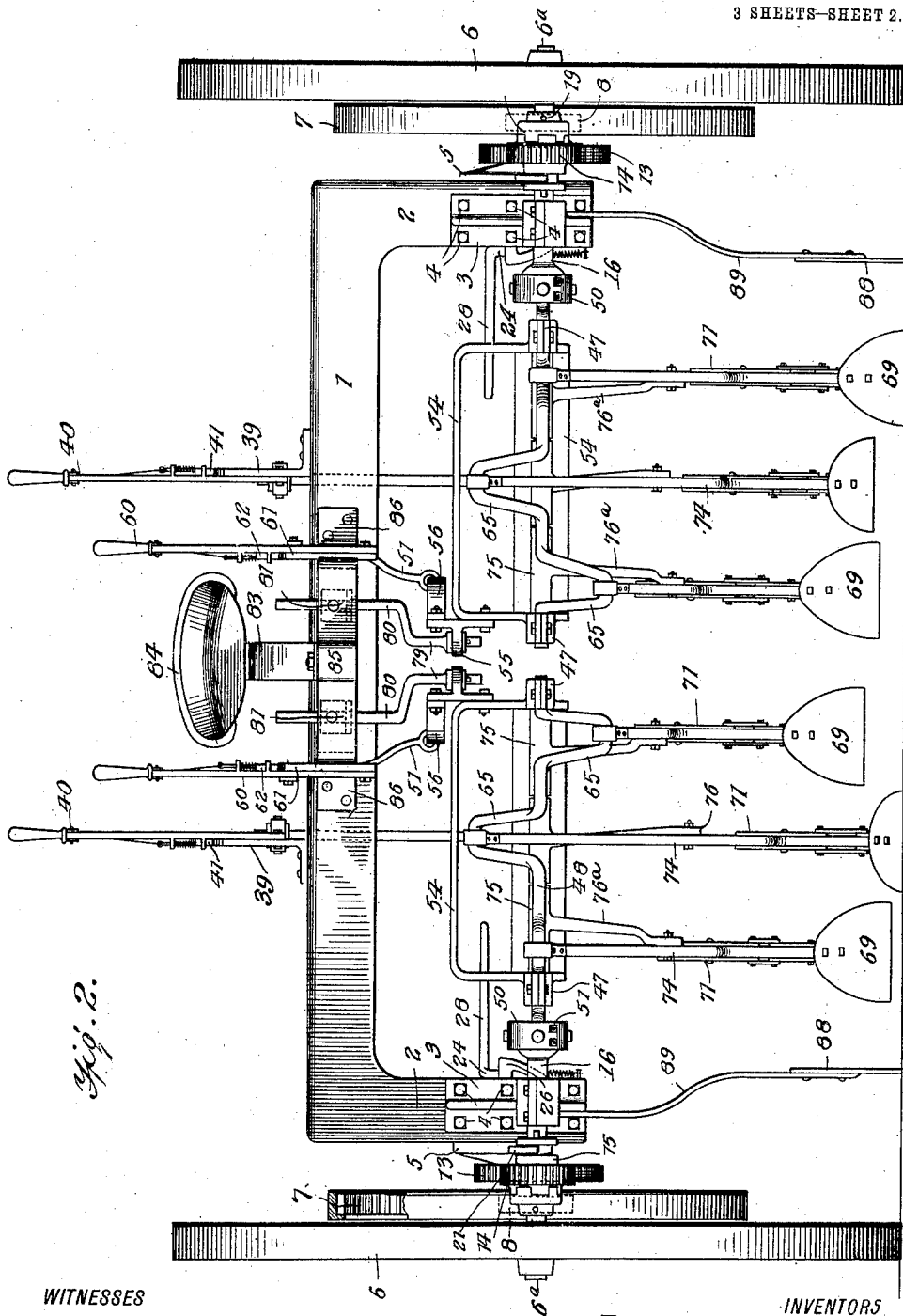
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3 SHEETS-SHEET 2.



WITNESSES

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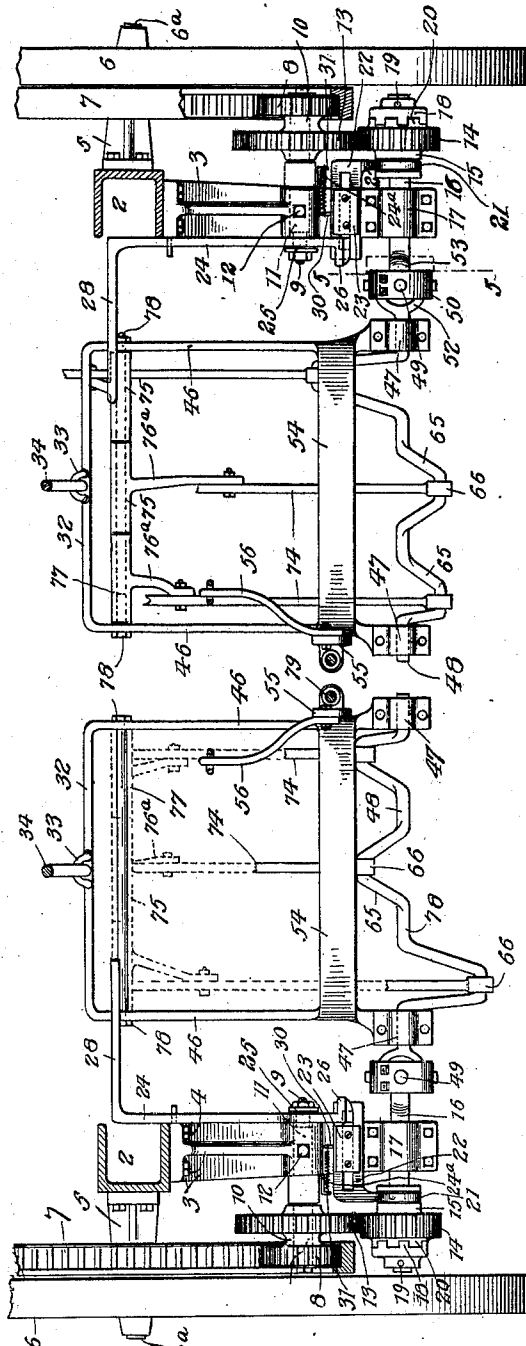
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3 SHEETS—SHEET 3.



WITNESSES
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Fig. 3.

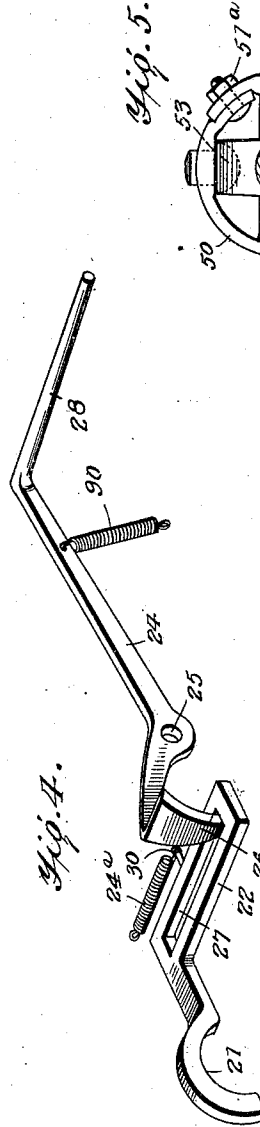


Fig. 4.

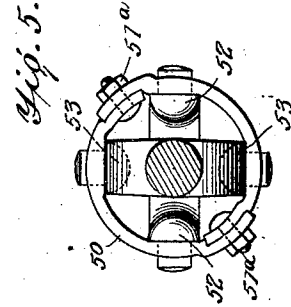


Fig. 5.

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UNITED STATES PATENT OFFICE.

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CULTIVATOR.

976,643.

Specification of Letters Patent.

Patented Nov. 22, 1910.

Application filed June 8, 1909. Serial No. 500,897.

To all whom it may concern:

Be it known that we, FRANKLIN P. ECKROAT and PETER F. ECKROAT, citizens of the United States, and residents of Shawnee, in the county of Pottawattamie and State of Oklahoma, have made certain new and useful Improvements in Cultivators, of which the following is a specification.

My invention is an improvement in cultivators and consists in certain novel constructions and combinations of parts hereinafter described and claimed.

The object of the invention is to provide a device of the character specified, wherein the cultivating mechanism consists of hoes, and means for operating the hoes in a manner resembling as closely as possible that of manual hoeing.

Referring to the drawings forming a part hereof, Figure 1 is a longitudinal section of the improvement, Fig. 2 is a rear view, Fig. 3 is an enlarged partial plan view partly in section, Fig. 4 is a perspective view of the clutch operating mechanism, and Fig. 5 is a section on the line 5-5 of Fig. 3.

The embodiment of the invention shown in the drawings consists of a substantially U-shaped frame comprising a body portion 1 and arms 2. The frame is also U-shaped in cross section as shown in Fig. 3, and each of the arms at its free end has secured thereto an angular bracket 3, which projects rearwardly from the arm being secured thereto by bolts 4. A second bracket 5 is secured to the outer face of each arm, and the outer end of the bracket is formed into a journal pin 6^a on which is journaled a supporting wheel 6, and a gear wheel 7 is secured to each wheel and rotates therewith, the gear wheel meshing with a pinion 8, secured to a sleeve 10, which is journaled on a pin 9, secured in a bearing 11 on the bracket 3, by a set screw 12. A gear wheel 13 is also secured to the sleeve 10, and meshes with a pinion 14 secured to a sleeve 15 rotatably mounted on a stub shaft 16, which is journaled in a bearing 17 on the lower end of the adjacent arm. A clutch section 18 is pinned to the stub shaft by a pin 19, and is adapted to be engaged by clutch teeth 20, on the adjacent end of the sleeve 15. The sleeve 15 is provided with an annular groove which is engaged by the fork 21 of an arm 22, slidable in a guideway 23 on the arm, and operated by means of a lever 24.

The lever 24 is pivoted to the frame as at

25, and one of the ends thereof is provided with a cam 26 which engages a longitudinal slot 27 in the arm, while the other end is provided with an angular handle 28. The guideway 23 before mentioned consists of a lug which is received in the slot, and a plate secured to the lug and overlapping the sides of the slot, and the arm is normally retained with the clutch sections in engagement by means of a spring 24^a, having one end connected with a pin 30 on the arm and the other end with a pin 31 on the frame. When the lever is rocked on its pivot 25, the cam moving through the slot will move the arm.

It will be understood that the construction above described is duplicated on the other side of the frame, and each of the stub shafts 16 when in gear with the adjacent supporting wheel 6, operates a cultivating mechanism to be described, each of said mechanisms being entirely independent of the other. The said mechanism comprises a U-shaped frame consisting of a body portion 32 and arms 46, and the body portion (Fig. 3) is provided with an eye 33 connected to one end of a link 34, upon whose other end is slidable a block 35, having trunnions 36, which are pivoted in the arms of a fork 37 on one of the arms 38 of an angle lever. The angle lever is pivoted to a toothed quadrant 39 on the body portion of the frame, and the other arm 40 is provided with a spring actuated tooth 41 for engaging the quadrant, the tooth being manipulated by a grip 42 pivoted on the lever.

A collar 43 is secured to the link 34, and a spring 44 encircles the link between the block and the collar, while the upward movement of the block is limited by a pin 45 arranged transversely of the arm. It will be evident from the description that the frame may be moved upward by the lever, and may be retained in downward position by the lever, the spring arrangement however permitting the frame to yield upwardly.

The lower ends of the arms 46 are provided with bearings 47, in which is journaled a crank shaft 48, having at one end a flexible or universal joint connection 49 with the adjacent stub shaft 16. The universal joint connection comprises a ring 50 composed of half sections connected by bolts 51^a, and the adjacent ends of the stub shaft and the crank shaft are each provided with a

fork whose arms 52 and 53 are pivoted to the ring at right angles to each other (Fig. 5.) Each frame is also provided with a cross bar 54 connecting the arms, and at one end of the cross bar a lug 55 extends upwardly, and one end of a link 56 is pivoted to the lug. The other end of the link is pivoted to the lower end of an arm 51 pivoted to the frame as at 58, and having its upper end connected by a link 59, with a lever 60, pivoted to a toothed quadrant 61 secured to the frame. The lever is provided with a spring actuated tooth 62, for engagement with the quadrant, and the tooth is operated by a grip 63 pivoted to the lever.

It will be evident that the inner end of the frame may be tilted horizontally by manipulating the lever, for varying the distance of the hoes from the ground and may be retained in adjusted position by the engagement of the tooth with the quadrant. The above combination also forms a support for the inner end of the frame.

A hoe handle 64 is journaled by one end on each of the cranks 65 of the crank arm 48, the said end having a split bearing 66 for this purpose, and the opposite end of the handle or shaft is curved as at 67 at right angles to the body portion and the shank 68 of the hoe, to which is secured the blade 69, is pivoted to the free end of the angular portion as at 70. Each shank consists of a plate arranged upon each side of the angular portion, to better balance the strain on the hoe.

Levers 71 are pivoted on each side of the curved portion of each of the handles by their centers, and corresponding ends of the levers are connected by links 72 with the free or upper ends of the shanks, the opposite ends being connected by springs 73 with the handle. A link 74 is pivoted by one end to each handle at approximately the center of the said handle and by the other end to a lug 76^a on an elongated bearing 75, which is journaled on a rod 77 arranged transversely of the frame, and the ends of the rod extend through openings in the arms and are secured in place by nuts 78.

Each frame for supporting the hoes, is provided at its inner corner with a rod 79, which extends upwardly and is provided with an offset portion 80 which is slidable through a bearing 81, on a bracket 82, secured to the rear face of the main frame, and a spring plate 83 is secured to the bracket, and carries at its upper end a seat 84. A tongue 85 is connected with the front face of the main frame, by laterally extending braces 86, and is also braced by braces 87 to the arms of the main frame.

A fender blade 88 is arranged at each side of the machine between the wheels and the hoes, the said blades being supported by arms 89 secured to the brackets 3 before

mentioned, and depending therefrom. The free ends 28 of the levers 24, extend forward and are operated by the feet of the driver, and a downward pressure on the ends 28 permits the spring 24^a to move the arm 22 to engage the clutch sections, and the movement is arrested by a spring 90, connecting the lever with the frame and normally acting to draw the said lever downwardly.

In operation the machine is driven through the field, and when in proper position the lever 24 is released, thus clutching the wheels to the operating mechanism. As the crank shafts rotate, the blades of the hoes are lifted, moved forwardly and then downwardly into contact with the ground, the hoes engaging the ground at an angle of approximately 45°. The continued rotation of the crank shafts, draws the blade upwardly, thus lifting the soil which is above and on the blade. The weight of the lifted soil swings the lever 71 against the resistance of the springs 73, which yield and permit the blade to assume a more nearly vertical position, thus permitting the load to slip off of the blade. The springs also permit the hoes to yield when meeting with an obstruction, to prevent breakage.

It will be evident that the action of the blades, is practically the same as a hand operated hoe, operated by a person walking forwardly in the usual manner of hoeing. The springs 44 retain the cultivating mechanism in proper position, but with a yielding pressure, and either mechanism may be lifted entirely out of contact with the ground, to avoid an obstruction without stopping the operation.

I claim—

1. A cultivator comprising a substantially U-shaped frame wheels journaled at the ends of the body portion of the frame, rearwardly extending brackets connected with each of the arms of the frame, a transverse stub shaft journaled at the rear end of each bracket, a releasable driving connection between each shaft and the adjacent wheel, a substantially U-shaped auxiliary frame supported by the main frame near each end thereof, means for independently adjusting said frames toward and from the ground, a crank shaft journaled in the arms of each auxiliary frame and transversely thereof, a universal joint connection between each of said crank shafts and the adjacent stub shaft, a plurality of hoes, each comprising a handle journaled by one end on a crank of the crank shaft, a link connecting the handle with the main frame, said handle having an angular position, a blade, a shank secured to the blade and pivoted intermediate its ends to the free end of the angular portion, a lever pivoted intermediate its ends to the angular portion, a link connecting one end of the lever to the shank, a spring connect-

ing the other end to the handle, and means for guiding the handle and constraining it to move vertically.

2. A cultivator comprising a wheel supported frame, an auxiliary frame supported near each end of the main frame, means for independently adjusting each of said frames with respect to the main frame, a crank shaft journaled transversely of each auxiliary frame, a releasable driving connection between each crank shaft and the adjacent wheel, a plurality of hoes, each comprising a handle journaled by one end on a crank of the crank shaft, a link connecting each handle with the main frame, said handle having an angular portion, a blade, a shank secured to the blade and pivoted intermediate its ends to the free end of the angular portion, a lever pivoted intermediate its ends to the angular portion, a link connecting one end of the lever to the shank, a spring connecting the other end to the handle, and means for guiding the handle and constraining it to move vertically.

3. A cultivator comprising a main frame, a plurality of independently adjustable auxiliary frames supported by the main frame, a crank shaft journaled transversely of each auxiliary frame, an independent means for rotating each shaft, a plurality of hoes, each comprising a handle journaled by one end on a crank of the crank shaft, said handle having an angular portion, a blade, a shank secured to the blade and pivoted intermediate its ends to the free end of the angular portion, a lever pivoted intermediate its ends to the angular portion, a link connecting one end of the lever to the shank, a spring connecting the other end to the handle, and means for guiding the handle and constraining it to move vertically.

4. A cultivator comprising a main frame, a plurality of independently adjustable auxiliary frames supported by the main frame, a crank shaft journaled transversely of each auxiliary frame, an independent means for rotating each shaft, a plurality of hoes, each comprising a shank, and a blade secured thereto, a handle pivoted by one end to a crank of the crank shaft and provided at the other with an angular portion to which the shank is pivoted intermediate its ends, a link connecting each handle with the main frame, a spring in connection with the free end of the shank, a guide rod in connection with the handle, and a bearing on the main frame through which the rod moves.

5. A cultivator comprising a main frame, a plurality of independent auxiliary frames adjustably supported by the main frame, a crank shaft journaled transversely of each auxiliary frame, an independent rotating means for each of said shafts, a plurality of hoe handles journaled on the cranks of the crank shafts, a blade for each handle and provided with a shank pivoted thereto, a spring in connection with each shank for yieldingly supporting the hoe in engaging position, a guide for constraining the handles to move vertically, and a swinging link connecting each handle with the main frame.

6. In a cultivator, a supporting frame, a pair of alined crank shafts supported thereby, independent means for operating each shaft, a plurality of hoe handles journaled on the cranks of the crank shafts, a blade for each handle and provided with a shank pivoted thereto, a spring in connection with each shank for yieldingly supporting the hoe in engaging position, a guide for constraining the handles to move vertically, and a swinging link connecting each handle with the main frame.

7. In a cultivator, a supporting frame, a pair of alined crank shafts supported thereby, independent means for operating each shaft, a hoe handle pivoted to each crank, a blade pivoted to each handle, a spring for supporting said blade in operative position, and a swinging link connecting each handle with the frame.

8. In a cultivator, a supporting frame, a pair of alined crank shafts supported thereby, means for independently operating said shafts, a hoe handle pivoted to each crank, a blade pivoted to each handle, yielding means for retaining said blades in operative position, and a plurality of links, each pivoted by one end to the frame and by the other to a handle.

9. In a cultivator, a supporting frame, a crank shaft thereon, a hoe handle pivoted to each crank, a blade pivoted to each handle, yielding means for retaining said blades in operative position, and a plurality of links each pivoted by one end to the frame and by the other to a handle, and yielding means for forcing said hoes downwardly.

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PETER F. ECKROAT.

Witnesses:

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ROLLA R. PACE.