

May 8, 1962

E. J. KAUFMAN ETAL

3,033,296

SPRING TOOTH HARROW

Filed Nov. 13, 1959

3 Sheets-Sheet 1

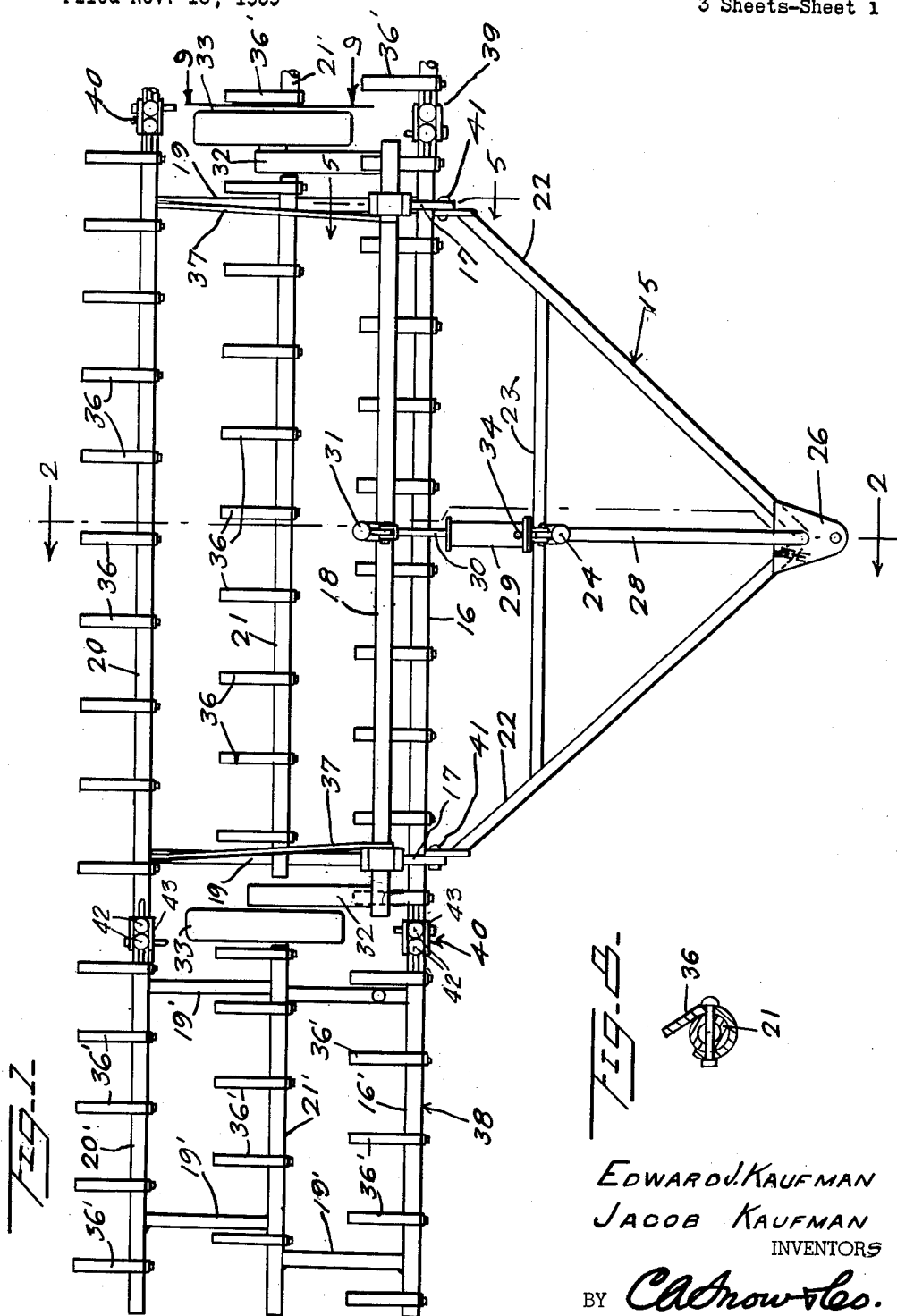


FIG. 1

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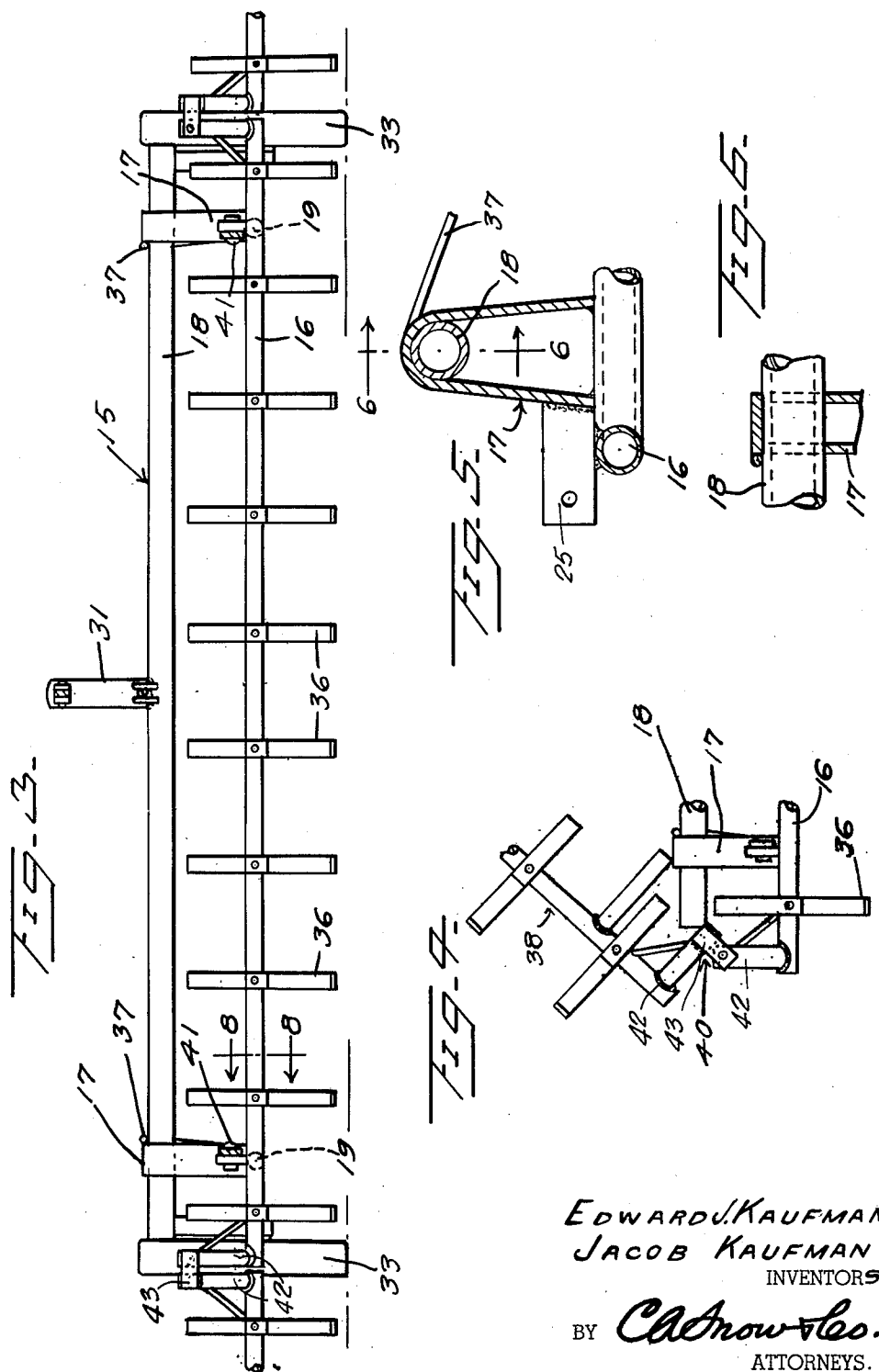
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3 Sheets-Sheet 2



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3,033,296

SPRING TOOTH HARROW

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Filed Nov. 13, 1959, Ser. No. 852,740

1 Claim. (Cl. 172-629)

This invention relates to farm implements, and more particularly to that implement known to those experienced in the art as a spring tooth harrow.

An important object of this invention is to provide a spring tooth harrow with foldable end extensions that can be let down to increase its width and thereby till a greater amount of soil at one time than is otherwise possible.

Another object of this invention is to provide a spring tooth harrow with a hydraulic depth control that will insure adequate tilling of the soil.

Still another object of this invention is to provide a spring tooth harrow with a minimum number of parts, thereby decreasing its maintenance cost.

With the foregoing and other objects in view which will appear as the description proceeds, the invention consists of certain novel details of construction and combinations of parts hereinafter more fully described and pointed out in the claim, it being understood that changes may be made in the construction and arrangement of parts without departing from the spirit and intent of the invention as claimed.

Referring to the drawings:

FIGURE 1 is a top plan view of this invention with one of the extensions let down ready for use, and the other being removed at its hinges.

FIG. 2 is a sectional view taken substantially along line 2-2 of FIG. 1 as viewed in the direction indicated by the arrows.

FIG. 3 is a sectional view taken substantially along line 3-3 of FIG. 2 as viewed in the direction indicated by the arrows.

FIG. 4 is a fragmentary detail of one of the hinge units and hinges, showing the unit raised when not in use.

FIG. 5 is a sectional view taken substantially along line 5-5 of FIG. 1 as viewed in the direction indicated by the arrows.

FIG. 6 is a sectional view taken substantially along line 6-6 of FIG. 5 as viewed in the direction indicated by the arrows.

FIG. 7 is a perspective view of one of the hinges.

FIG. 8 is a sectional view taken substantially along line 8-8 of FIG. 3 as viewed in the direction indicated by the arrows.

FIG. 9 is a sectional view taken substantially along line 9-9 of FIG. 1 as viewed in the direction indicated by the arrows.

Similar reference characters refer to similar parts throughout the several views of the drawings.

Having reference now to the drawings in detail, and in particular to FIGS. 1, 2 and 3, there is generally a main harrow section indicated by the reference character 15, to which a spring tooth harrow section constructed mainly of metal tubing, is pivotally connected. The spring tooth harrow section embodies a horizontally disposed tube 16 having an offset fitting 17 at each end thereof. The arms or fittings 17 are L-shaped in configuration and support a second horizontal tube 18 that is parallel to and above the first-mentioned tube 16, as clearly shown in FIGS. 2 and 3 of the drawings. An end tube 19 extends longitudinally and at right angles to each end of the horizontal tube 16 to which it is secured, as well as being directly under each of the fittings 17, which are also fastened to the end tubes 19. A third horizontal tube 20 is secured to the outermost end of tubes 19 which also provide a support for an intermediate horizontal tube 21 located approximately half

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way between tubes 16 and 20, all three tubes of course being parallel to one another as shown in FIG. 1. The tubes 16, 19, 20 and 21 form a framework which when secured together is the basic structure of this spring tooth harrow. A V-shaped frame 22 having a horizontal cross bar 23 and a vertically extending tubular member 24 protruding upwardly from the center of the horizontal cross bar 23 is hingedly secured to the horizontal legs 25 of the offset fittings 17 for towing of the harrow.

A pair of plates 26, each one having an opening therein for reception of a locking pin 27, is secured at the apex of the V-shaped frame to provide actual means of attaching the harrow to any desired tractor or the like for towing.

The harrow frame 15 is provided with horizontal pins 41 which extend outwardly from the divergent ends of members 22. The fittings 17 secured to the implement frame are provided with openings in alignment with and through which pins 41 extend, thus forming a pivotal connection between the frame 15 and the implement frame.

Horizontal tubular member 18 is rotatably supported in bearings in the upper portion of the fittings 17 and is of a length greater than the width of the implement frame. Secured at each end of the tubular member 18 and at right angles thereto are wheel supporting arms 32 having axles fixed to their free ends upon which wheels 33 are rotatably fixed.

An arm 31 is secured perpendicularly to tubular member 18 intermediate its ends. A lug having a centrally disposed opening therethrough is fixed to the upper end of arm 31 and a similar lug is fixed to tubular member 18 in vertical alignment therewith.

Vertically extending tubular member 24 has secured perpendicularly thereto near the top a pair of adjacent lug members. A fluid pressure cylinder 29 is pivotally secured to the uppermost lug fixed to tubular member 24 and its associated piston rod is pivotally secured to the lug fixed to tubular member 31. A link 35, shown as a turnbuckle, is pivotally secured to the lower lug on member 24 at one end and pivotally secured at its other end to the lug fixed to tubular member 18.

When it is desired to raise the implement frame, fluid under pressure is admitted to cylinder 29; piston rod 30 is extended moving the tubular member 31 secured to member 18 to cause rotation of the same in the bearings in fittings 17. The wheels on wheel supporting arms 32 engage the ground and upon continued rotation of member 18 cause the implement frame to be moved upwardly out of contact with the ground. As the piston rod 30 begins to reach its fully extended position, the link 35 pivotally connected between tubular member 24 and the lug fixed to tubular member 18 causes the implement frame to pivot about pins 41.

Turning again to the side view of the harrow, FIGS. 1 and 2, it will be seen that there is a plurality of resilient members 36 having a form approximately that of an involute of a circle. The resilient members 36 have one end secured to the tubes 16, 20 and 21 in a manner clearly show in the aforesaid FIGS. 1 and 2. The resilient members 36 are equally spaced in horizontal spaced relation to one another along the aforesaid tubes. A tie rod 37 is located beside each one of the offset fittings 17, and has one end secured to the second horizontal tube 18, while its outer end is secured to the third horizontal tube 20 in order to provide stability to this portion of the spring tooth harrow.

In order to provide greater coverage of the ground being worked on by this spring tooth harrow than is normally possible with conventional harrows, extension units 38 and 39 are secured by means of hinges 40 to the left and right ends of the harrow. Each hinge may be of the construction as shown in FIG. 7 of the drawings, and in-

cluding pairs of upstanding arms 42 disposed at the adjacent ends of said harrow sections with straps 43 permanently secured to one of the arms 42 and bolted to the adjacent arms 42 of the connected harrow section. These extension units are of course basically identical in construction, except that one is righthand, and one left-hand, the lefthand one being the only one shown in detail in the drawings, this being in FIG. 1, where members identical to those shown and described for the harrow proper, that is in the area between the two wheels 33, have reference characters for identical parts except that they are primed.

From the foregoing it will now be seen that there is herein provided a spring tooth harrow which accomplishes all of the objects of this invention, and others, including many advantages of great practical utility and commercial importance.

As many embodiments may be made of this inventive concept, and as many modifications may be made in the embodiment hereinbefore shown and described, it will be understood that all matter herein is to be interpreted merely as illustrative and not in a limiting sense.

We claim:

An implement support comprising first and second frame sections, said first section having longitudinally extending horizontally opposed side members, transversely extending rails connecting said side members and to which a plurality of implements are secured, substantially L-shaped fittings secured to each of said side members in horizontally opposed aligned relation and having first and

second openings therein, a transverse tubular member rotatably supported in said first openings and extending beyond said side members, wheel supporting arms secured to opposite ends of said rotatable member, a vertical arm secured to said rotatable transverse tubular member intermediate its ends and having a lug secured thereto adjacent its free end, a lug secured to said tubular member in alignment with the lug secured to said vertical arm, said second frame section including divergent side rail members terminating adjacent the second openings in said L-shaped fittings secured to said first frame section, horizontal pivot pins extending from said divergent side rail members through said second openings, a transverse member connecting said divergent side rails, an upwardly extending member secured to said transverse member, a pair of lugs secured thereto adjacent its free end, an extensible fluid pressure cylinder pivotally secured to one of said lugs at one end and to the lug on the vertical arm secured to said rotatable transverse member at its other end and a link pivotally secured at one end to the other of said pair of lugs and at its other end to the lug secured to said rotatable transverse member.

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