

March 23, 1954

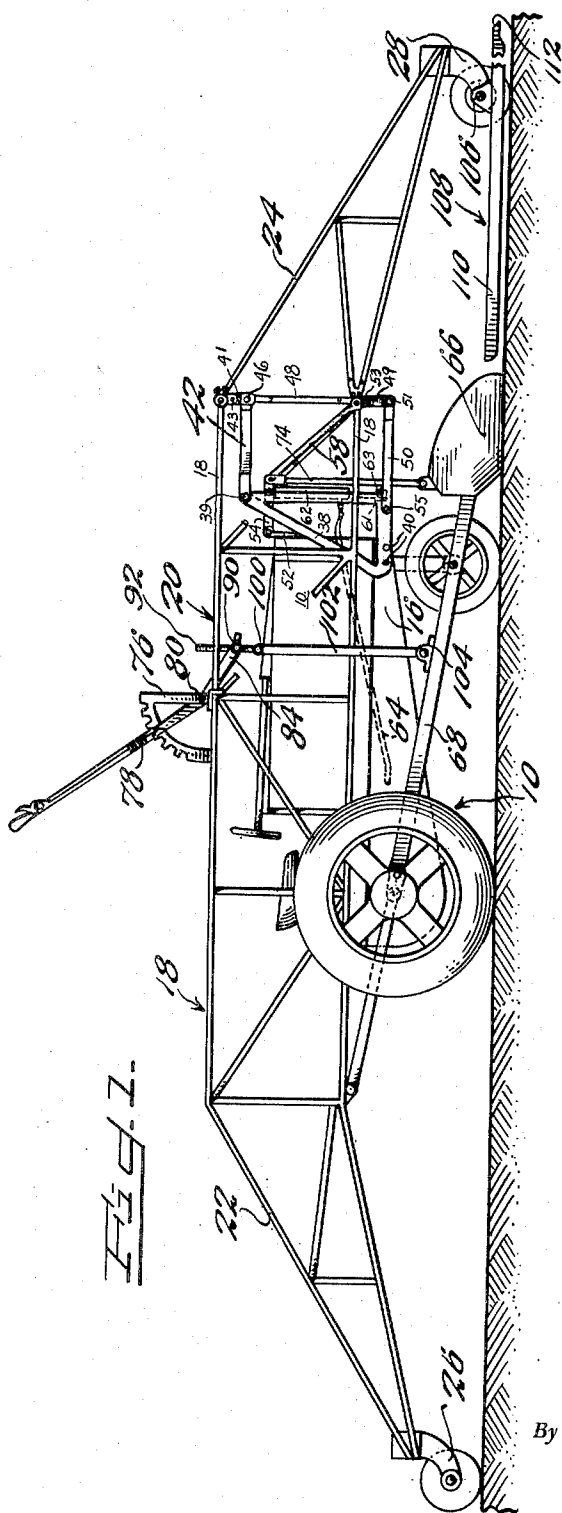
C. C. GODDARD

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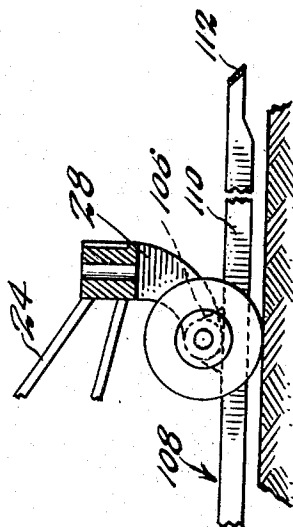
GROUND LEVELER

Filed Oct. 30, 1946

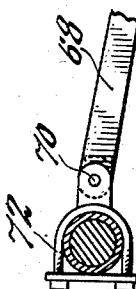
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Inventor

Inventor
Clarence C. Goddard.

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Alvance A. O'Brien
and Harvey B. Jacobson
Attorneys

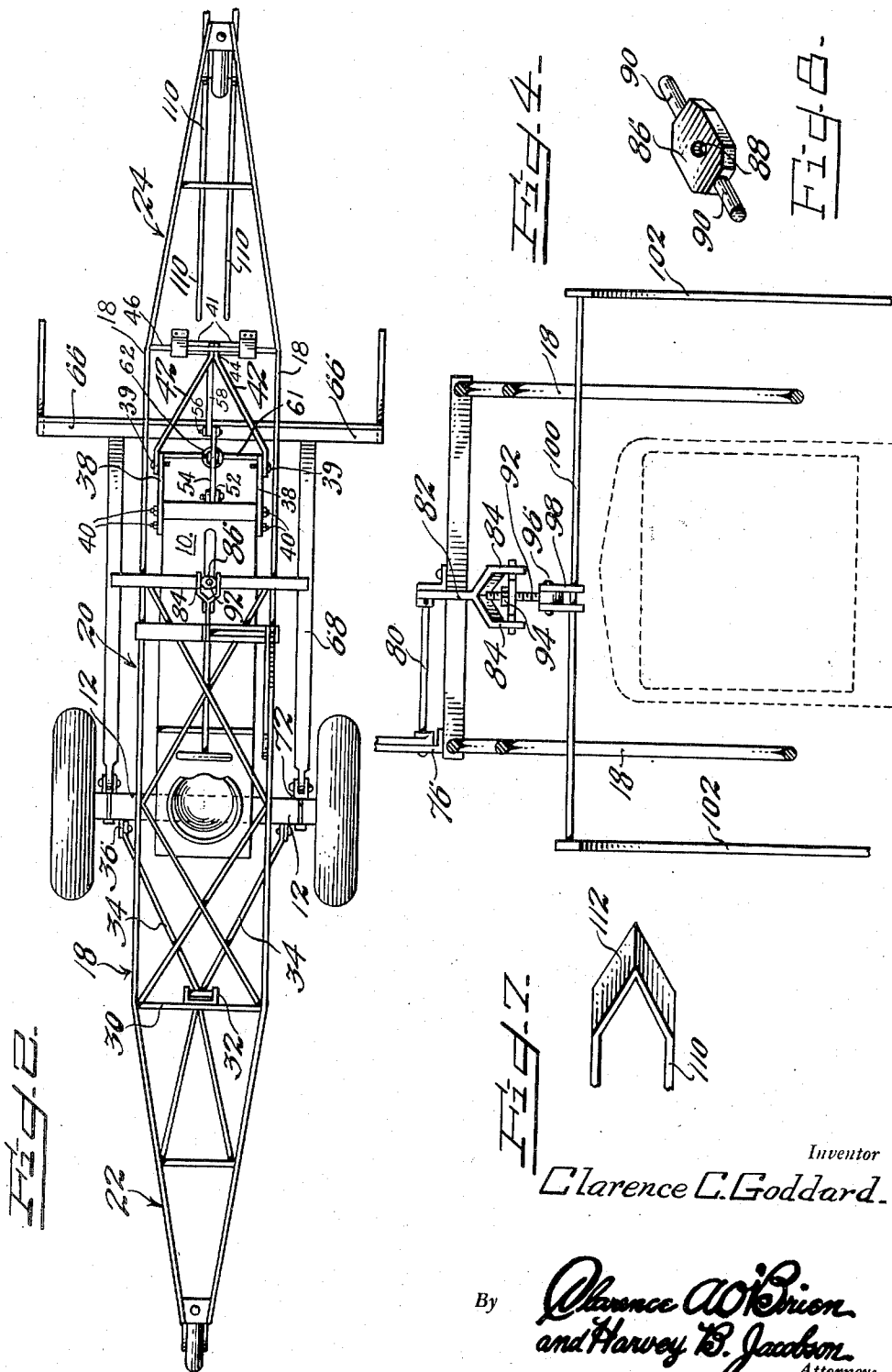
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C. C. GODDARD
GROUND LEVELER

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3 Sheets-Sheet 2



Inventor
Clarence C. Goddard.

By *Clarence A. Orin*
and *Harvey B. Jacobson*
Attorneys

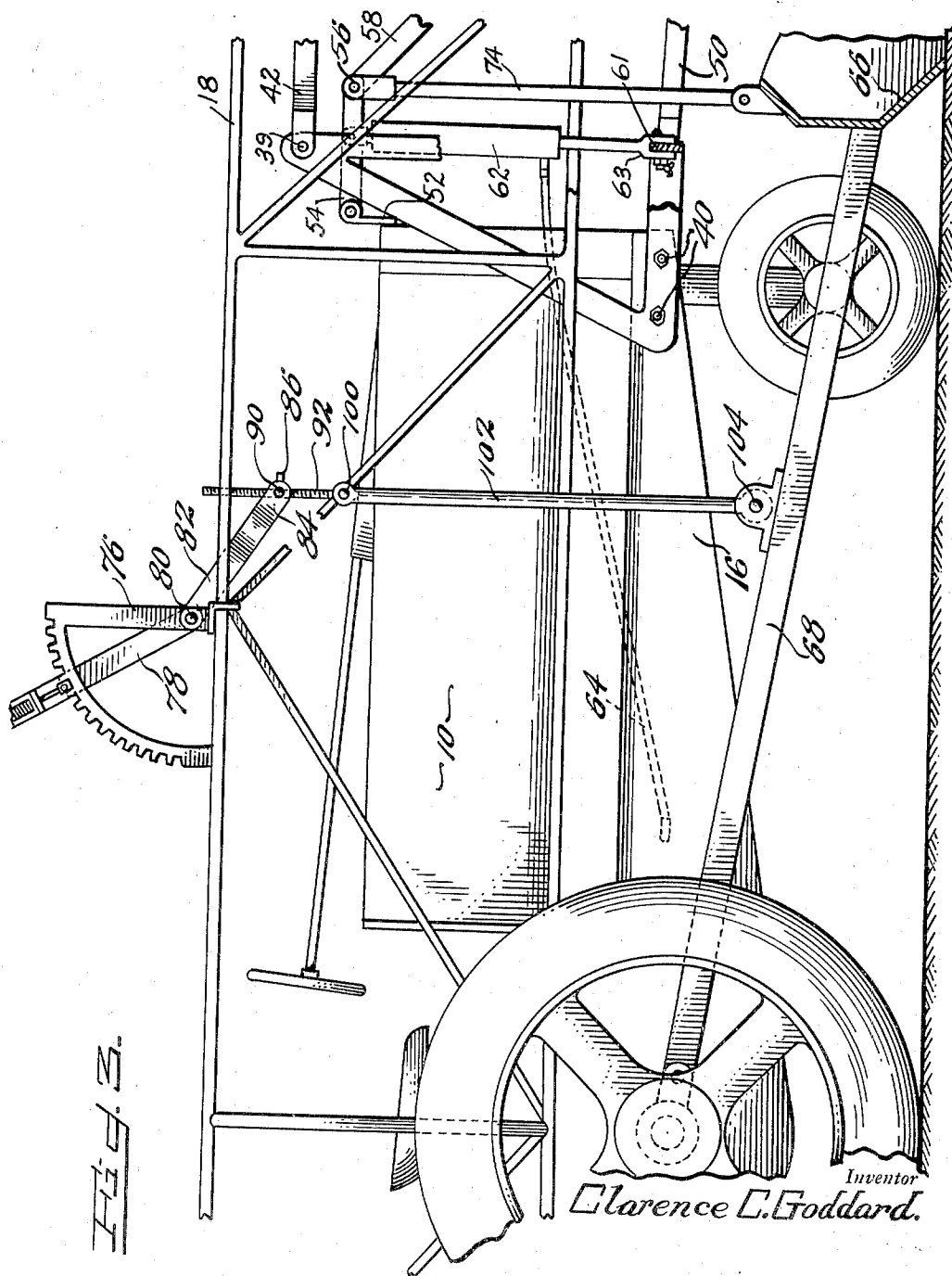
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C. C. GODDARD
GROUND LEVELER

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3 Sheets Sheet 3



Inventor
Clarence C. Goddard.

By *Clarence W. O'Brien*
and *Harvey B. Jacobson*
Attorneys

UNITED STATES PATENT OFFICE

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GROUND LEVELER

Clarence C. Goddard, Tucumcari, N. Mex.

Application October 30, 1946, Serial No. 706,721

2 Claims. (Cl. 37-180)

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The present invention relates to a novel and useful improvement in soil working machinery and more specifically pertains to a ground leveler or scraping device which may be attached to a conventional tractor.

The principal objects of my invention reside in providing an attachment which may be quickly attached to or removed from a conventional type of farm or other tractor; which has a novel and improved scraper or blade construction; wherein the blade is directly carried by and is adjustable with the attachment frame; wherein suitable manual adjusting means for controlling the elevation of the blade are provided; wherein power operating means are arranged for elevation of the attachment frame and blade as desired; and wherein an improved leveling or steadying front end support for the attachment frame is provided.

These, together with various auxiliary objects of the invention, which will later become apparent as the following description proceeds, are realized by my invention, one embodiment of which has been illustrated by way of example only in the attached drawings, wherein:

Figure 1 is a view in side elevation showing the attachment applied to a conventional type of tractor;

Figure 2 is a top plan view of Figure 1;

Figure 3 is an enlarged side elevational view of a portion of the construction shown in Figure 1;

Figure 4 is an elevational view of a portion of the mechanism shown in Figure 1;

Figure 5 is an elevational view of a detail of the fastening means for attaching the frame to the axle of the tractor;

Figure 6 is a side elevational view of the front castor and runner of the invention; and,

Figures 7 and 8 are perspective detail views of portions of the invention.

Reference is now made more specifically to the attached drawings, wherein similar reference numerals indicate similar parts throughout the various views and wherein the numeral 10 designates generally a conventional type of tractor to which my invention may be applied. As will be understood, this tractor can be a conventional type of road working tractor or may be comprised of a tractor adapted for use about a farm or the like. As shown, the tractor is provided with an axle assembly 12, a radiator grille or guard 14 which is suitably mounted upon a lower frame member 16. In accordance with the dictates of this invention, I provide a frame work indicated generally at 18 which may consist of conventional structural members united to form an open frame work and comprising an attachment adapted for ready engagement with or disengagement from the tractor

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10. As shown best in Figure 1, the frame 18 has a central body portion indicated generally at 20 and which is generally rectangular in both top plan and cross-section and from which extend rearward and forward end portions 22 and 24, these portions being angularly inclined downwardly from the body portion 20 and being of triangular shape upon both their top and sides with castor wheels 26 and 28 journaled upon their apex portions.

As shown more clearly in Figure 2, the frame 18 has a cross-bar 30 extending transversely thereof at the junction point of the portions 22 and 20, and hinged to the mid portion of said cross-bar as by means of lugs 32, are a pair of inclined divergent brace rods 34 whose opposite ends are detachably connected to lugs 36 carried by the axle member 12.

The forward end of the tractor is provided with a pair of triangular support brackets 38, one being attached on each side of the tractor frame members 16 as by means of suitable fastening bolts 40. At the upper end of the triangular support brackets 38 are pivotally mounted as at 39 a pair of connecting links 42 whose outward ends converge as at 44 for pivotal engagement upon a cross-bar 46. The latter has a pair of links 41 pivoted thereto and to a cross-bar 43 secured to a pair of uprights 48 forming a part of the frame 18. At the lower end of the brackets 38, a similar pair of connecting links 50 are pivoted at 55 and their forward ends likewise converge inwardly and are pivoted to a cross-rod 51 extending between the vertical frame members 48 and secured thereto by a short link 49 pivoted at each extremity. The pivotal connection of the links 49 to the members 48 is by a cross-bar 53. As will be understood, the lower connecting rods or links 50 are similar in construction and arrangement to the upper rods or links 42. By means of the foregoing, it will be readily understood that the attachment frame work 18 has a two-point contact with the ground by means of the castors 26 and 28, and is pivoted at the rear of the tractor by means of the brace rods 34, and at the front of the tractor by means of the parallel oscillating links or rods 42 and 50.

A power means is provided for relatively oscillating in a vertical manner the frame 18 upon the tractor 10. This means, as shown best in Figure 3, is constituted by a bracket 52 fixed in any suitable manner to the radiator grille or guard 14, and pivotally supporting at its upper end a horizontally disposed link 54. At its outer end, link 54 is pivotally connected as by a pin 56 with a bracing member 58 of the frame 18, whereby oscillating motion of the link 54 will elevate or

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lower the frame work 18 relative to the tractor 10. Intermediate its ends, link 54 is pivotally connected as at 60 with the actuating member of a hydraulic actuating unit indicated generally at 62 and which may be of conventional design, and which is supplied with pressure fluid either pneumatic or hydraulic, by means of a flexible conduit 64 connected to a hydraulic power take-off of the tractor 10 and controlled in any suitable manner not shown. A support bracket 61 is secured to the radiator grill or frame of the tractor and supports the cylinder 62 by a pivotal connection 63.

A ground working blade 66, which may be of any suitable type such as a scraper, scoop or the like, is disposed transversely of the tractor and its frame 18, and is pivotally mounted upon the tractor axles by means of a pair of arms 68 pivotally secured as at 70 to a detachable clamp 72 engaging the axle housing 12 of the tractor. A pair of connecting links 74 are pivotally connected to the scraper blade 66 and at their upper ends are pivoted upon the pin 56 carried by the link 54. It will thus be seen that when the hydraulic cylinder 62 is actuated, resulting in a raising of the front end of the frame 18, the connecting links 74 simultaneously elevate the blade 66, as desired.

Manual operating means is also provided for vertically adjusting the blade 66 relative to the carrying frame 18. For an explanation of this construction, attention is now directed chiefly to Figures 3 and 4, wherein a supporting bracket 76 is mounted in any suitable manner and location upon the portion of the frame 20 and has pivoted thereon a manually actuatable lever 78 which is retained in adjusted position by the well-known toothed quadrant and detent or latch mechanism of any conventional design. The lever 78 is rigidly attached to an operating shaft 80 which has a suitably positioned lifting arm 82 whose outer end portion 84 is bifurcated and has pivoted therebetween a collar 86 having a centrally disposed aperture 88 and laterally extending spindles 90 for engagement with the bifurcations 84. The construction of the collar 86 has been clearly shown in Figure 8. Extending through the aperture 88 is a screw threaded rod 92 adjustably retained therein as by a fastening nut 94, the adjusting rod being pivoted by an eye in the lower end thereof as at 96 to a pair of connecting links 98 which support a laterally extending rod 100 from whose outer extremities depend connecting rods 102 which are pivoted to the blade arm 68 as at 104. From the foregoing, it will be seen that proper manipulation of the lever 78 will cause the raising or lowering of the blade 66 relative to the frame work 18, and the amplitude of this adjustment may be varied by proper manipulation of the screw threaded rod 92, and fastening nut 94.

Attention is now directed more specifically to Figures 1, 2 and 6, wherein it will be seen that the front castor 28 has journaled upon the castor axle 106 a runner sled 108 which is spaced or positioned with its lower surface slightly above the under surface of the castor roller. This sled will preferably consist of an open frame work having parallel runners 110 whose forward ends converge as shown in Figure 7 to form a plow or cutting blade 112. By means of this runner sled the operation of the blade is greatly improved, since if the front castor 28 drops into a slight depression in the ground, the sled 108 supports the front end of the frame and hence prevents the

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digging in of the blade 66 and thereby renders the device non-susceptible to small variations in the contour of the ground. At the same time, the plow blade 112 at the forward end of the runner 108 serves to cut away a channel through any slight ridges encountered, and thereby tends to maintain the frame 18 and the scraper blade 66 at a substantially uniform elevation. By means of the front and rear castors, the supporting frame 18 becomes readily maneuverable with the tractor, as for turning, backing or the like.

The manual adjusting means serves to position the blade for any desired depth of cut as for levelling, irrigating, dirt moving or other purposes, while the hydraulic actuating means serves to lift the blade and the front end of the frame to clear the ground as when encountering unusual obstacles or when moving the machine from one place to another.

What I claim as my invention is:

1. A grading attachment for tractors comprising a frame extending forwardly and rearwardly of a tractor, castors supporting the front and rear ends of said frame, a pair of triangular support brackets secured to the front of said tractor and extending forwardly thereof, upper and lower pairs of horizontal links pivoted to the upper and lower ends of said support brackets for vertical movement and extending forwardly therefrom, means operatively connecting said links to said frame, a second bracket mounted upon the front of said tractor, a member pivoted to said bracket for vertical movement and extending horizontally and forwardly therefrom, brace elements on said frame pivoted to said member, a hydraulic actuating means pivoted to said member intermediate its ends, a support for said hydraulic means mounted on the front end of said tractor, said hydraulic means being adapted to cause vertical movement of said member and of the front end of the frame relative to the tractor, a blade extending transversely of the frame, a pair of propelling arms pivoted to the axle of said tractor for vertical movement and attached to said blade, a pair of vertical rods pivoted to said blade and pivoted at their upper ends to the pivotal connection of said member with said brace elements for vertical movement of said arms and blades with said members and frame, means adjustably connecting said blade to said frame comprising a pair of vertical elements each pivoted to one of said arms intermediate the ends of the latter, and having at their upper ends an adjustable fastening means upon said frame whereby the blade may be variably adjusted vertically of said frame.

2. The combination of claim 1 wherein said means operatively connecting said links to said frame comprises upper and lower cross-rods pivoted respectively to said upper and lower pairs of horizontal links, upper and lower pairs of vertical links having their inner ends pivoted respectively to the upper and lower cross-rods and having their outer ends pivoted to said frame.

CLARENCE C. GODDARD.

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