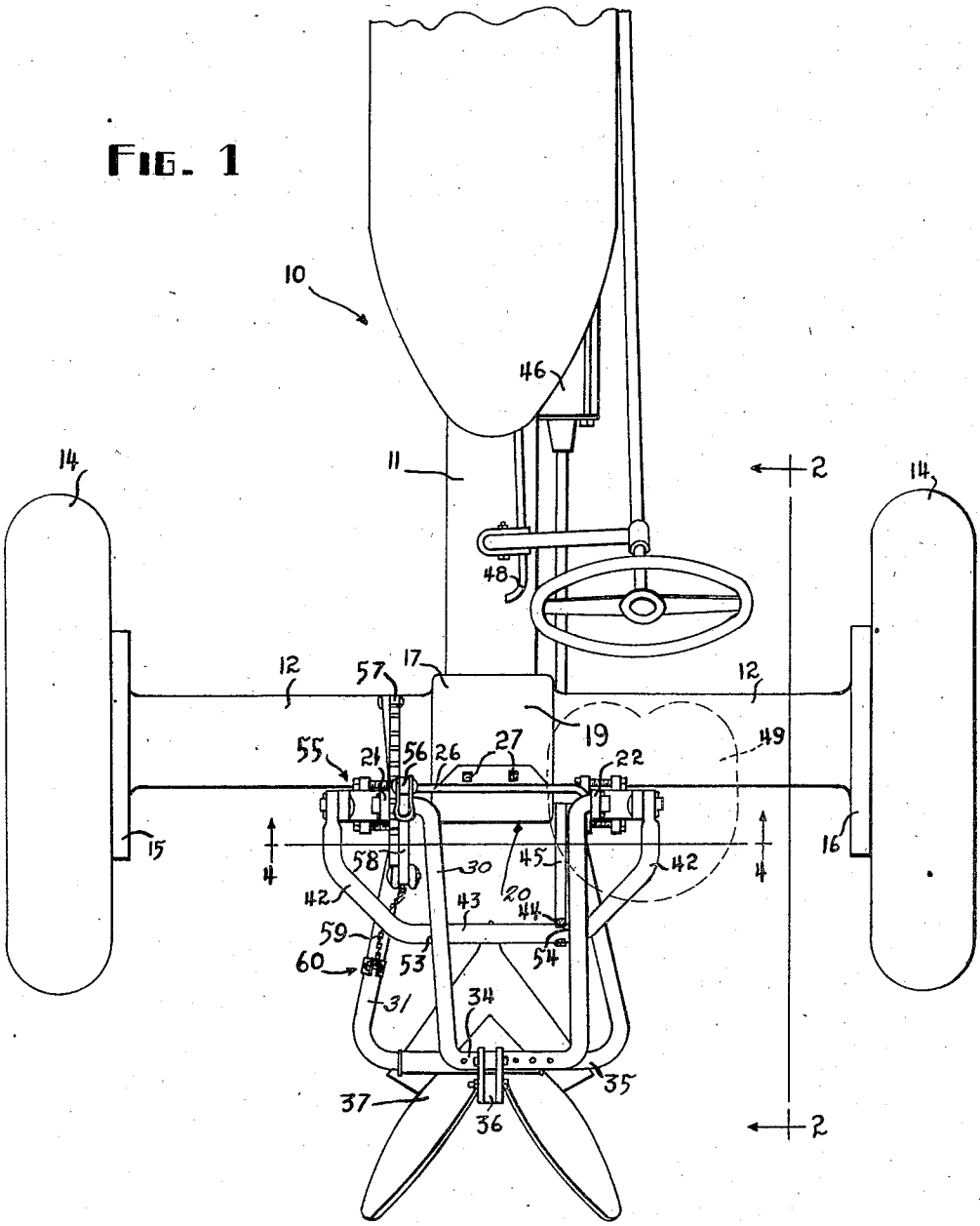
Sept. 29, 1942. J. L. HIPPLE 2,297,301

TRACTOR-ATTACHED IMPLEMENT

Filed May 10, 1941 4 Sheets-Sheet 1

FIG. 1



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TRACTOR-ATTACHED IMPLEMENT

Filed May 10, 1941 4 Sheets-Sheet 2

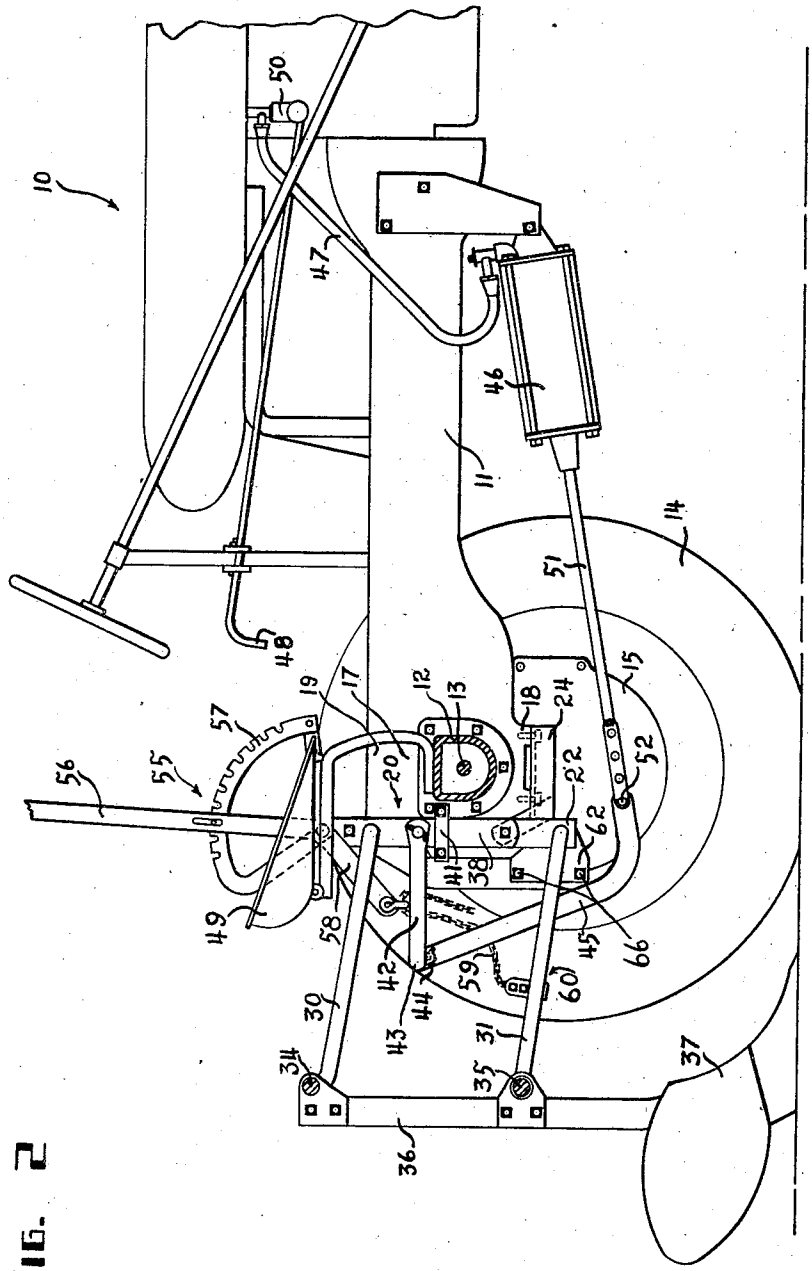


FIG. 2

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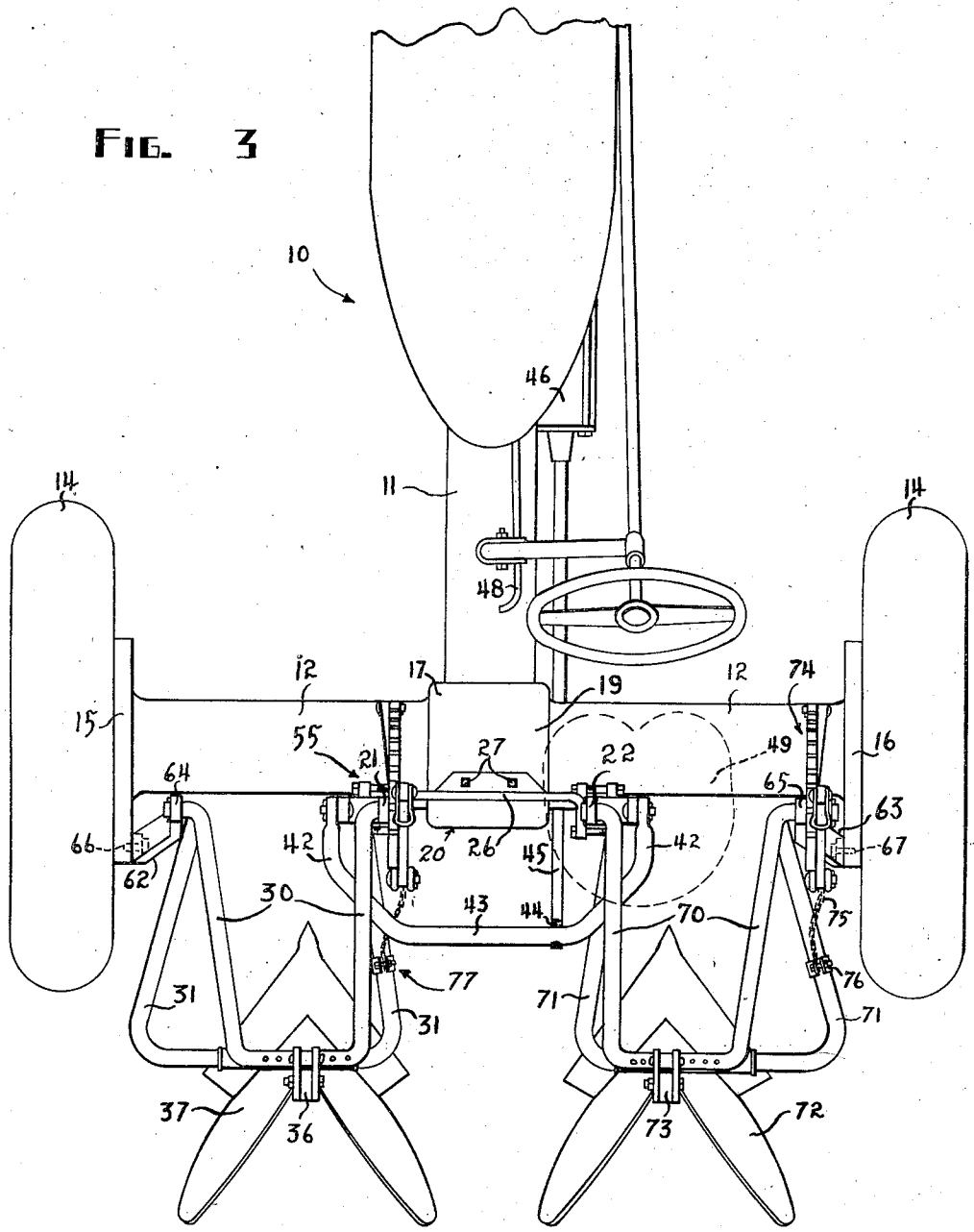
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TRACTOR-ATTACHED IMPLEMENT

Filed May 10, 1941 4 Sheets-Sheet 3

FIG. 3



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TRACTOR-ATTACHED IMPLEMENT

Filed May 10, 1941 4 Sheets-Sheet 4

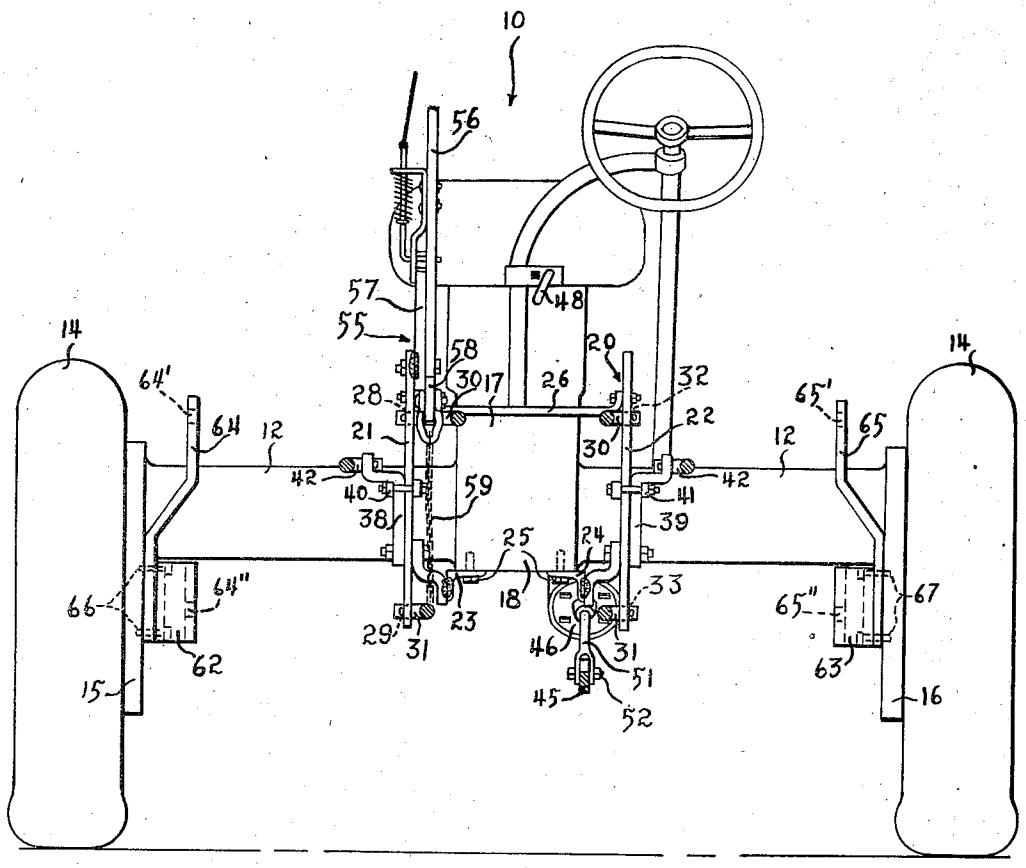


FIG. 4

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Patented Sept. 29, 1942 2,297,301

UNITED STATES PATENT OFFICE

2,297,301

TRACTOR-ATTACHED IMPLEMENT

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Application May 10, 1941, Serial No. 392,835

8 Claims. (Cl. 97—50)

This invention relates to tractor-attached implements and more particularly to means for converting tool attachments of a type adapted to carry a single tool into a tool attachment of a type adapted to have a pair of tools.

It is an object of the present invention to provide a tool attachment of a type adapted to have a single tool into a tool attachment of a type adapted to have two tools, and wherein parts of the single tool attachment may be utilized in the forming of the attachment having two working tools.

It is another object of the invention to provide a single tool attachment wherein the power lift parts thereof may remain unchanged in the adapting of the attachment into an attachment having two tools.

According to the present invention, the single tool attachment includes a bracket structure adapted for attachment to the tranverse rear axle structure of the tractor intermediate its length and which has two laterally disposed vertically extending portions. The laterally extending portions of the bracket structure serve for the connection of the spaced leg portions of a pair of vertically spaced bail members, the latter of which provides the means for the connection to the bracket structure of a single working tool. The bracket structure also has pivotally connected thereto for vertical movement a transversely extending lifting bail arranged to contact with the upper connecting bail to effect thereby lifting movement of the working tool as the same is moved vertically by power means on the tractor. When it is desired to convert this single tool attachment into a double tool attachment, the lifting bails are removed from the centrally disposed bracket structure and are moved to one side where one of the leg portions of each bail is connected to but one of the vertically extending portions of the central bracket, while the other leg portion is connected to another bracket structure laterally disposed and transversely alined with the centrally disposed bracket structure. On the opposite side of the tractor a similar auxiliary bracket structure is disposed in transverse alinement with the central bracket structure, and a new set of vertically spaced bails is connected therebetween in a similar manner. The lifting bail is carried on the centrally disposed bracket structure and extends sufficiently so that it will contact with the bail members of the respective working tools and through which lifting is effected. The single tool is gauged from the tractor by a manual adjusting means carried by one of the vertical portions of the bracket structure and is permitted to remain on that bracket structure for the adjustment of the working tool offset from the central bracket structure. An adjusting means is provided on one of the additional bracket structures for the control of the working depth of the second laterally disposed tool.

For other objects and for a better understanding of the invention, reference may be had to the following detailed description taken in connection with the accompanying drawings, in which:

Figure 1 is a plan view of the rear portion of the tractor having a single tool attachment connected thereto;

Figure 2 is a view in elevation of the tractor and of the attachment shown in Figure 1 and taken along the line 2—2 thereof;

Figure 3 is a plan view of a tractor and of a single implement attachment after it has been converted into a tool attachment having two tools; and,

Figure 4 is a rear view of the tractor and of the implement attachment taken along the line 4—4 of Figure 1.

Referring now more particularly to Figures 1 and 2, there is shown a tractor 10 having a longitudinally extending body portion 11 and a transversely extending rear axle structure 12 disposed at right angles with respect to the body portion. Through this axle structure 12 extends a rear drive axle 13 for connection with traction drive wheels 14 journaled on the stub axle housings 15 and 16 depending from the outer ends of the transverse rear axle structure intermediate the ends of the transverse axle structure 12, and at the connection of the body portion 11 therewith is provided an expanded portion 17 having on its bottom face attaching portions 18, and a flattened top surface 19. Connected to this expanded or enlarged portion 17 is a bracket structure 20 having laterally spaced, vertically extending portions 21 and 22. These portions are connected to the attaching portions 18 of the expanded structure 17 by attaching pieces 23 and 24 made fast with the tractor by means of bolts 25. The upper ends of the vertically extending portions 21 and 22 are retained in spaced relation and connected to the expanded portion 17 by means of a bracing means 26 adapted to be secured to the top face 19 of the expanded portion 17 by means of fastening bolts 27.

On the vertically extending portion 21 of the bracket structure is provided a pair of vertically spaced openings 28 and 29 adapted to receive, respectively, the leg portions of a pair of spaced bail members 30 and 31. The opposite leg portions of the bail members 30 and 31 are adapted to be retained by openings 32 and 33 within the laterally extending portion 22 at the right side of the tractor. The transversely extending closing portions 34 and 35 of the respective bail members 30 and 31 are free for vertical movement and are adapted for the attachment thereto of a vertically extending stub beam 36 which has a working tool or plow bottom 37 on its lower end. It should now be apparent that there has been provided by the bail members means for connecting a working tool 37 to the bracket structure, and such means is of the type to give substantially the usual effect of parallel links to the working tool while in operation. To each of the laterally disposed, vertically extending portions 21 and 22 of the bracket structure there are connected power lifting bail-attaching plates 38 and 39 adapted to be respectively secured thereto by clamping means 40 and 41. Extending transversely of the bracket structure and adapted for connection to these attaching pieces 38 and 39 is a lifting bail 42 having a transversely extending portion 43 of sufficient width and adapted to contact with both legs of the connecting bail 30. The lifting bail has its leg portions pivoted to the attaching pieces and can be rotated with respect thereto and in a vertical direction. Depending from the end of the portion 43 and rigidly secured thereto by welding, as indicated at 44, is an arm 45 which extends sufficiently downwardly to clear the under portion of the tractor and to which is connected a fluid operable device 46 adapted to be operated by fluid directed to the same through a fluid hose connection 47 from any source originating from the tractor motor and adapted to be controlled by a control rod 48 accessible to an operator's station 49 on the rear axle structure. The fluid source may be that of the exhaust gases taken from the engine of the tractor, as indicated at 50, in a manner shown and described in the patent application to Carl W. Mott, Serial No. 353,099, filed August 17, 1940. The fluid device 46 includes a piston rod 51 connected to the arm 45, as indicated at 52. As the rod is extended rearwardly, the lifting bail 42 is rotated upwardly in a clockwise direction for contact with the bail member 30, the same contacting with the leg portions of the lifting bail 30, as indicated at 53 and 54. As the movement is continued, the working tool 37 will be lifted to a transport position.

When the working tool is in its working position, it will be retained in that position by a depth-adjusting means 55 having a lever 56 accessible to the operator's station 49 and adapted to work about a toothed quadrant 57. This quadrant 57 is rigidly secured to the left-hand, vertically extending portion 21 of the central bracket structure. The lower end of the lever 56 is bent rearwardly to provide an arm 58 to which is connected a chain 59. This chain 59 is connected at its lower end to the lower bar 31, as indicated at 60. As the tool is lowered, the slack in the chain 59 is taken up to its extended limit, the tool there to be retained in its working position. There has now been described an attachment of the type having a single working tool which is connected to a centrally disposed bracket structure by means of vertically spaced bails and adapted to be operated by a fluid-operated device to lift the same to a transport position.

Description will now be made of the means for converting this single tool attachment into an attachment of the type having two tools, wherein use may be made of the parts already used for the single tool type attachment. When it is desired to make a tool attachment having two tools, the tool 37 and the bails 30 and 31 are detached from the bracket structure 20 at their points of connection with the respective vertically extending portions 21 and 22. On the stub axle housings 15 and 16, laterally spaced from the bracket structure 20, there is respectively disposed brackets 62 and 63 having respectively extending portions 64 and 65. The attachment of these brackets 62 and 63 is respectively made by clamping bolts 66 and 67. The spacing of these bracket structures 62 and 63 is of sufficient distance to permit the connection of the bail members 30 and 31. The bail member 30 may be removed from the bracket structure 20 and one of its leg portions seated in an opening 64' in the bracket structure 64. The other leg portion may be connected to the opening 28 in the vertically extending portion 21 of the bracket structure. The lower bail member 31 is removed and one of the leg portions thereof is connected to an opening 64'', while the other leg portion thereof will be seated in the opening 29 of the vertically extending portion 21 of the bracket structure 20. It should thus now be apparent that with the bracket structure 64, the working tool 37 and its connecting bail members 30 and 31 may be moved to the left and there connected for movement with respect to the tractor. Use is thereby made of the central bracket structure 20 to aid in supporting the working tool in its laterally removed position. The bail members 30 and 31 are thus the same bail members such as used on the attachment of the single tool type.

At the right of the tractor, as shown in Figures 3 and 4, a new set of upper and lower bail members 70 and 71 are provided. These bail members are of the same shape and size as the bail members 30 and 31, respectively, and have the same leg portions thereon. The outer ends of the bail members at their transverse portions serve to support a working tool 72, which is connected to the bail members by means of a stub beam 73, all of which is similar to the stub beam 36 and working tool 37. Use is made of the vertically extending portion 22 of the bracket structure 20 for the connection of the leg portion at the left of the bail members, while the bracket structure 63 serves for the connection of the leg portions at the right of the bail members. The right leg portion of the upper bail member 70 connects in an opening 65' in the bracket member 63, while the right leg portion of the lower bail member 71 connects in an opening 65'' thereof. It should thus now be apparent that, in the converting of the single tool attachment into an attachment having two tools, use is made of the central bracket structure 20 for the connection of the tools and that it is only necessary for the connection of the two tools that the bracket structures 62 and 63 be provided in laterally spaced relation with respect to the central bracket structure 20.

On the bracket structure 63 at the right-hand side of the tractor is provided a manual adjusting means 74 having the same parts as the man-

ual adjusting means 55, and it is connected by means of a chain 75 to the lower link 71, as indicated at 76. This manual adjusting means will thus serve to regulate the working depth of the second tool 72. The manual adjusting means 55 serves to regulate the working depth of the original tool 37, the connection of the manual adjusting means being made with the lower bail member 31 on its right leg portion instead of its left leg portion and as indicated at 77.

On referring to Figure 3, it will be noted that the lifting bail 42 is of sufficient width to extend considerably beyond the sides of the bracket structure 20. This width is sufficient so as to engage with the right-hand and left-hand leg portions, respectively, of the upper bail members 30 and 70. It is thus apparent that it is not necessary to change the lifting mechanism in any way to make the same adaptable for use when the attachment is converted into one having two working tools. The lifting bail 42 thus remains in the same position and is of the same shape as the bail used in the lifting of the single tool attachment, as shown in Figure 1. All of this simplifies conversion of the single tool attachment into a double tool attachment. It should now be apparent that there has been provided means, when taken with a single tool attachment, for converting the same into a two tool attachment.

While various changes may be made in the detail construction, it should be understood that such changes shall be within the spirit and scope of the present invention as defined by the appended claims.

What is claimed is:

1. In combination, a tool-supporting structure, a tool attachment of the single tool type including a bracket structure adapted for connection to the tool-supporting structure, a working tool, and means for connecting the working tool to the bracket structure, and means for converting the tool attachment into a tool attachment of the double tool type including other bracket structures adapted to be laterally disposed with respect to the first-mentioned bracket structure and respectively at opposite sides thereof, whereby the said connecting means for the said working tool may be connected between the first-mentioned bracket structure and one of the other bracket structures, and means adapted to be connected between the bracket at the opposite side and the first-mentioned bracket structure for the connection thereto of a second working tool.

2. In combination, a tractor having a transverse structure adapted for the attachment of working tools thereto, a bracket structure disposed centrally of the transverse structure, said bracket structure ordinarily serving by itself for the attachment of a single working tool, other bracket structures adapted for attachment to the tractor transverse structure respectively laterally spaced from and at opposite sides of the central bracket structure, whereby the plural bracket structure including the central bracket structure may serve for the attachment to the transverse structure of two spaced working tools.

3. In combination, a tractor having a transverse rear axle structure, a working tool attachment including a bracket structure disposed centrally of the rear axle structure and having laterally spaced portions, a working tool, means for connecting the working tool to the spaced portions including a bail member having its leg portions adapted respectively to be connected to the spaced portions, other bracket structures adapted for attachment to the transverse rear axle structure respectively laterally spaced from and at opposite sides of the central bracket structure, the spacing of the other bracket structures with respect to the central bracket structure being such that said bail member of the one tool may be connected therebetween, whereby by the use of plural bracket members provision is made for the attachment of a second working tool having a similar bail member for the connection of the same to the rear axle structure at one side of the central bracket structure.

4. In combination, a tractor having a transversely extending structure, a working tool attachment including a bracket structure connected to the transversely extending structure intermediate its length and having laterally spaced vertically extending portions, a working tool, means for connecting the working tool to the spaced portions including a pair of vertically spaced bail members each of which having leg portions respectively connected to vertically extending portions of the bracket structure, other bracket structures having a respectively vertically extending portion adapted for attachment to the transversely extending structure and respectively spaced at opposite sides of the intermediate structure an amount equal to the width of the bail members, whereby the bail members may be disposed between one of the other bracket structures and one of the vertically extending portions of the intermediate bracket structure, the other of the vertically extending portions of the intermediate bracket structure and the other bracket structure at the opposite side of the intermediate bracket structure serving for the connection thereto of another pair of vertically spaced bail members by which a second working tool may be connected to the tractor, whereby an attachment of the vertically spaced bail type having but a single working tool may be converted into an attachment of the same type having two working tools.

5. In combination, a tool-supporting structure, a working tool attachment including a bracket structure adapted for connection to the tool-supporting structure, a working tool, means for connecting the working tool to the bracket structure for vertical movement, means for lifting the working tool including means pivoted on the bracket structure, means for converting the working tool attachment into an attachment having two working tools including other bracket structures adapted to be laterally disposed with respect to the first-mentioned bracket structure and respectively at opposite sides thereof, whereby the said connecting means for the said working tool may be connected between the first-mentioned bracket structure and one of the other bracket structures, means adapted to be connected between the bracket structure at the opposite side and the first-mentioned bracket structure for the connection thereto of a second working tool, and the said same lifting means being adaptable for lifting both of said working tools.

6. In combination, a tractor having a transversely extending structure, a working tool attachment including a bracket structure adapted for connection to the tractor, a working tool, means for connecting the working tool to the bracket structure for vertical movement, means deriving power from the tractor for lifting the

working tool including means on the bracket structure, means for converting the working tool attachment into an attachment having two working tools including other bracket structures adapted to be laterally disposed with respect to the first-mentioned bracket structure and respectively at opposite sides thereof, whereby the said connecting means for the said working tool may be connected between the first-mentioned bracket structure and one of the other bracket structures, means adapted to be connected between the bracket structure at the opposite side and the first-mentioned bracket structure for the connection thereto of a second working tool, the said means on the bracket structure serving as a part of the lifting means being so constructed and arranged with respect to the two working tools as to be unnecessary of any change or rearrangement upon the conversion of the single tool attachment into a two tool attachment.

7. In combination, a tool-supporting structure, a working tool attachment including a bracket structure adapted for connection to the tool-supporting structure and having laterally spaced vertically extending portions, a working tool, means for connecting the working tool to the bracket structure for vertical movement including spaced portions respectively connected to the vertically spaced portions of the bracket structure, means for lifting the working tool including a laterally extending portion adapted for engagement with the spaced portions of the connecting means, means for converting the working tool attachment into an attachment having two working tools including other bracket structures adapted for connection to the tool-supporting structure laterally disposed from and at opposite sides of the first-mentioned bracket structure whereby the connecting means for the said working tool may be connected between the first-mentioned bracket structure and one of the other bracket structures, a second working tool, and means for connecting the second working tool between the bracket structure at the opposite side and the first-mentioned bracket structure having a portion adapted to be engaged by the laterally extending portion of the lifting means, the lifting means also being adapted to engage the connecting means of the first tool when in its converted position, whereby said lifting means is so arranged as to be unnecessary of a change upon conversion of the single tool attachment into a two tool attachment.

8. In combination, a tool-supporting structure, a ground-working tool attachment including a bracket structure adapted for connection to the tool-supporting structure, a working tool, means for connecting the working tool to the bracket structure for vertical movement, manually adjustable means on the bracket structure for adjusting the working depth of the working tool, means for converting the working tool attachment into an attachment having two working tools including other bracket structures adapted for connection to the tool-supporting structure laterally disposed from and at opposite sides of the first-mentioned bracket structure, whereby the connecting means for the said working tool may be connected between the first-mentioned bracket structure and one of the other bracket structures, a second working tool, and means for connecting the second working tool between the bracket structure at the opposite side and the first-mentioned bracket structure, said adjustable means being adaptable for adjusting the working depth of one of the two working tools, and manually adjustable means carried by one of the other brackets for adjusting the working depth of the other of said working tools.

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