March 3, 1953 B. F. ARPS 2,629,944

DIRT AND SNOW MOVING ATTACHMENT FOR TRACTORS

Filed July 21, 1948 4 Sheets-Sheet 1

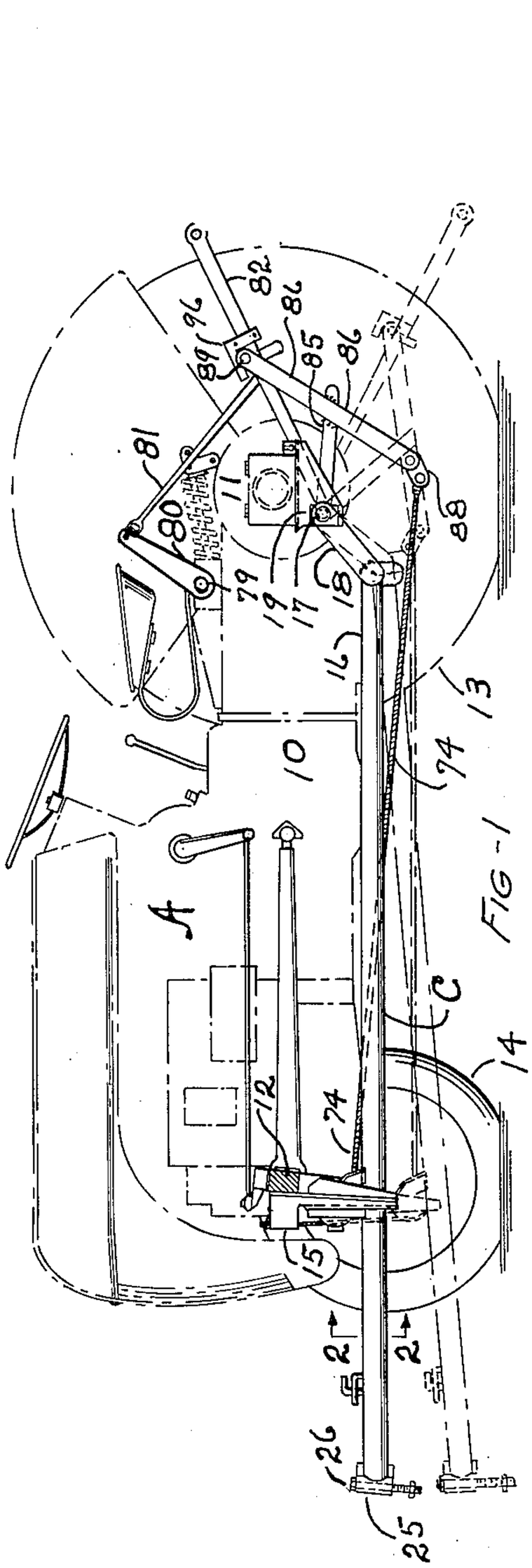

FIG-1

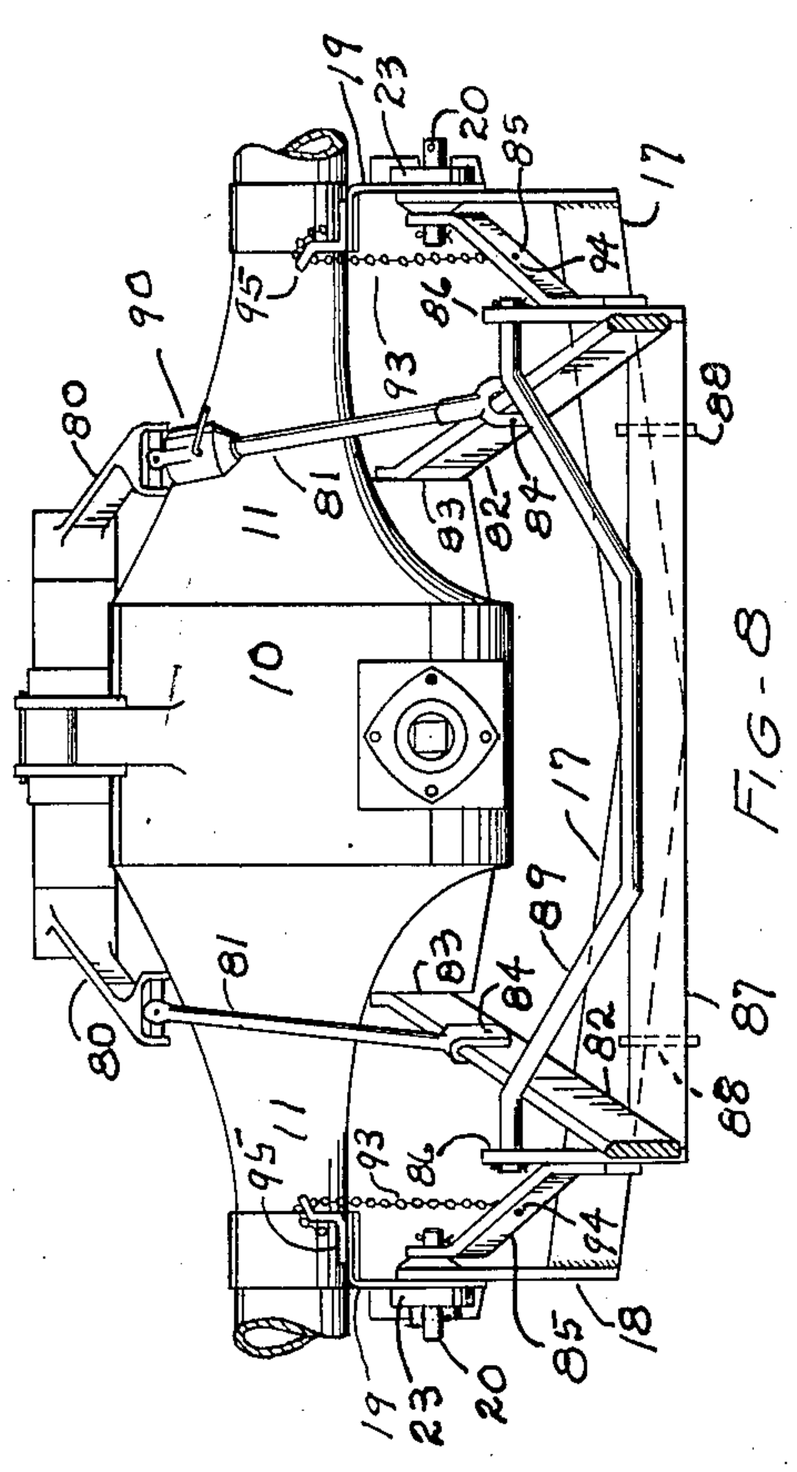

FIG-8

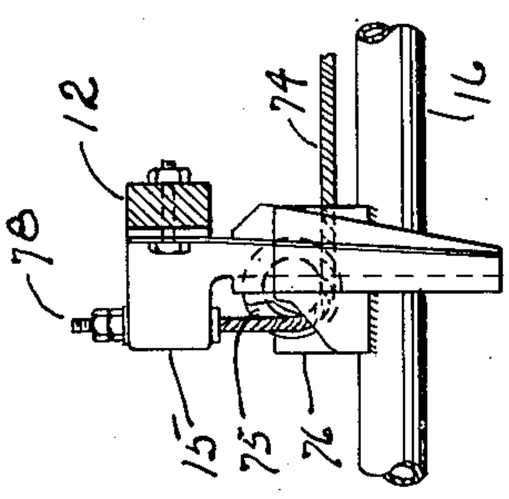

FIG-7

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DIRT AND SNOW MOVING ATTACHMENT FOR TRACTORS

Filed July 21, 1948 4 Sheets-Sheet 2

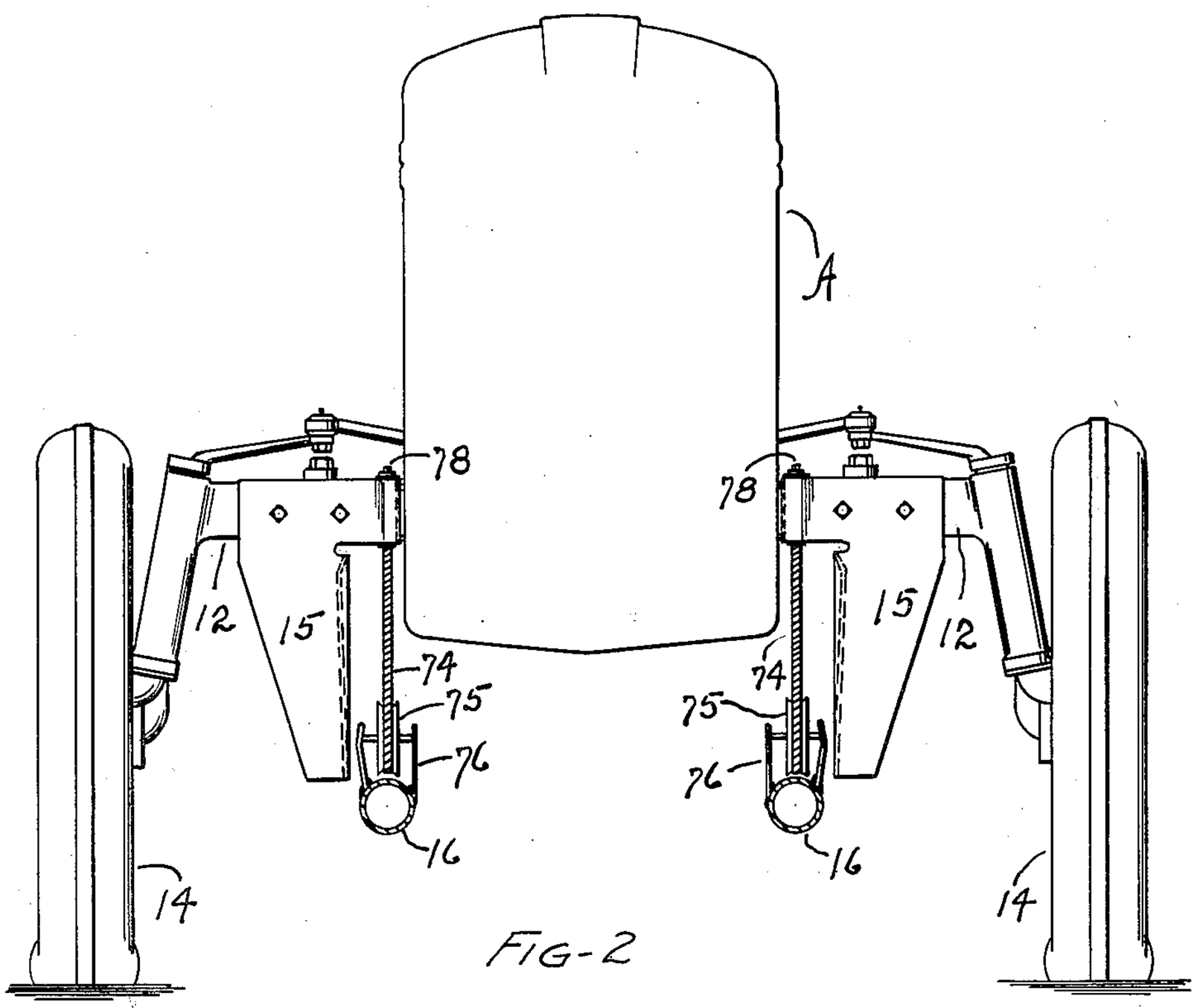

FIG-2

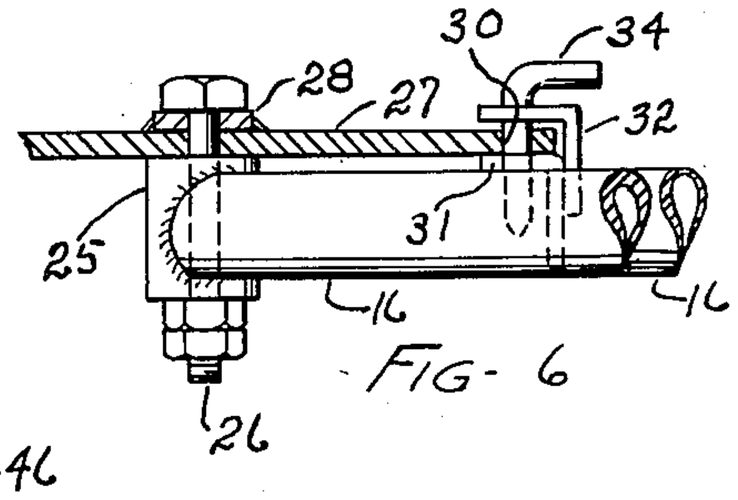

FIG-6

FIG-3

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DIRT AND SNOW MOVING ATTACHMENT FOR TRACTORS

Filed July 21, 1948 4 Sheets-Sheet 3

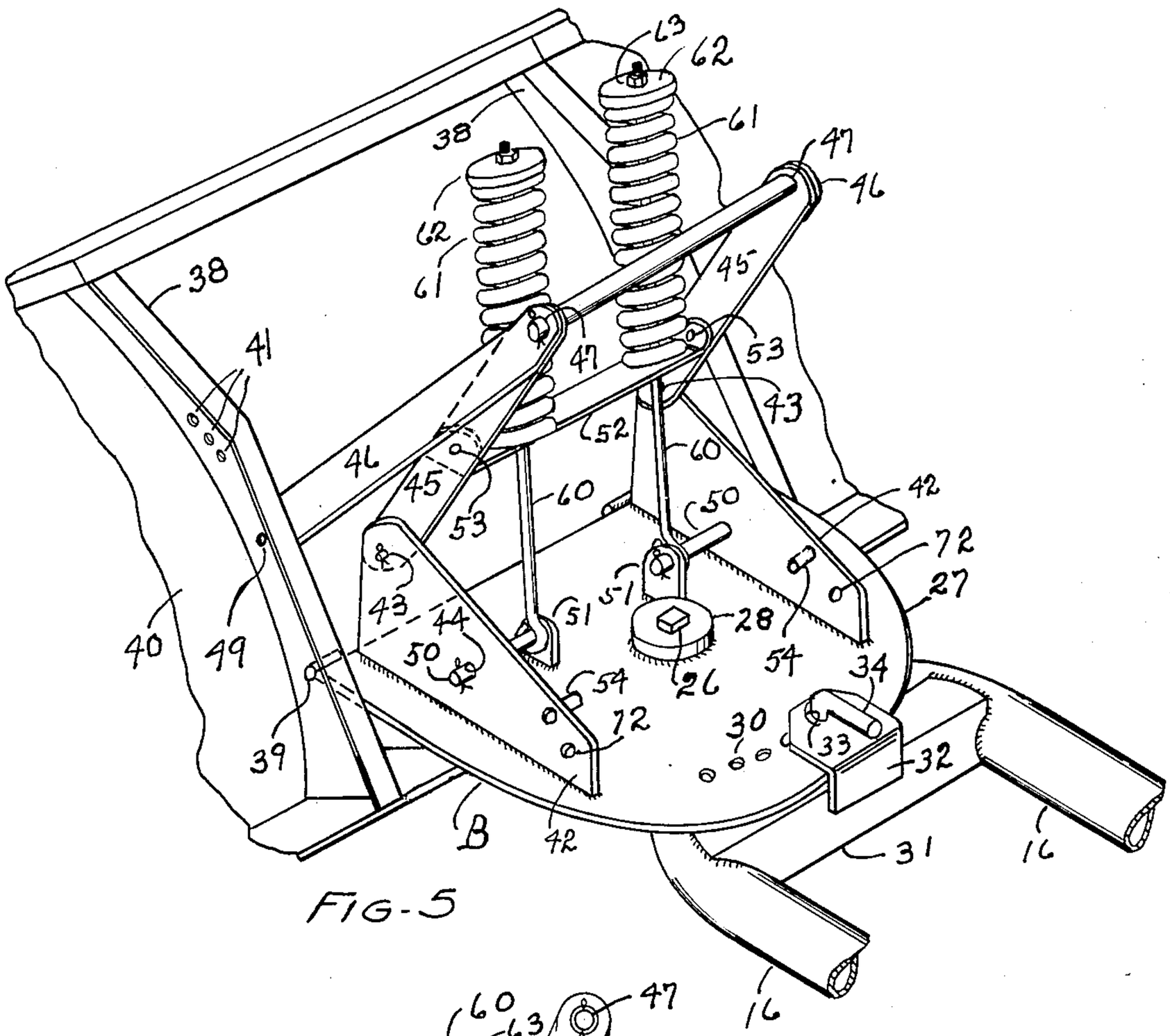

FIG-5

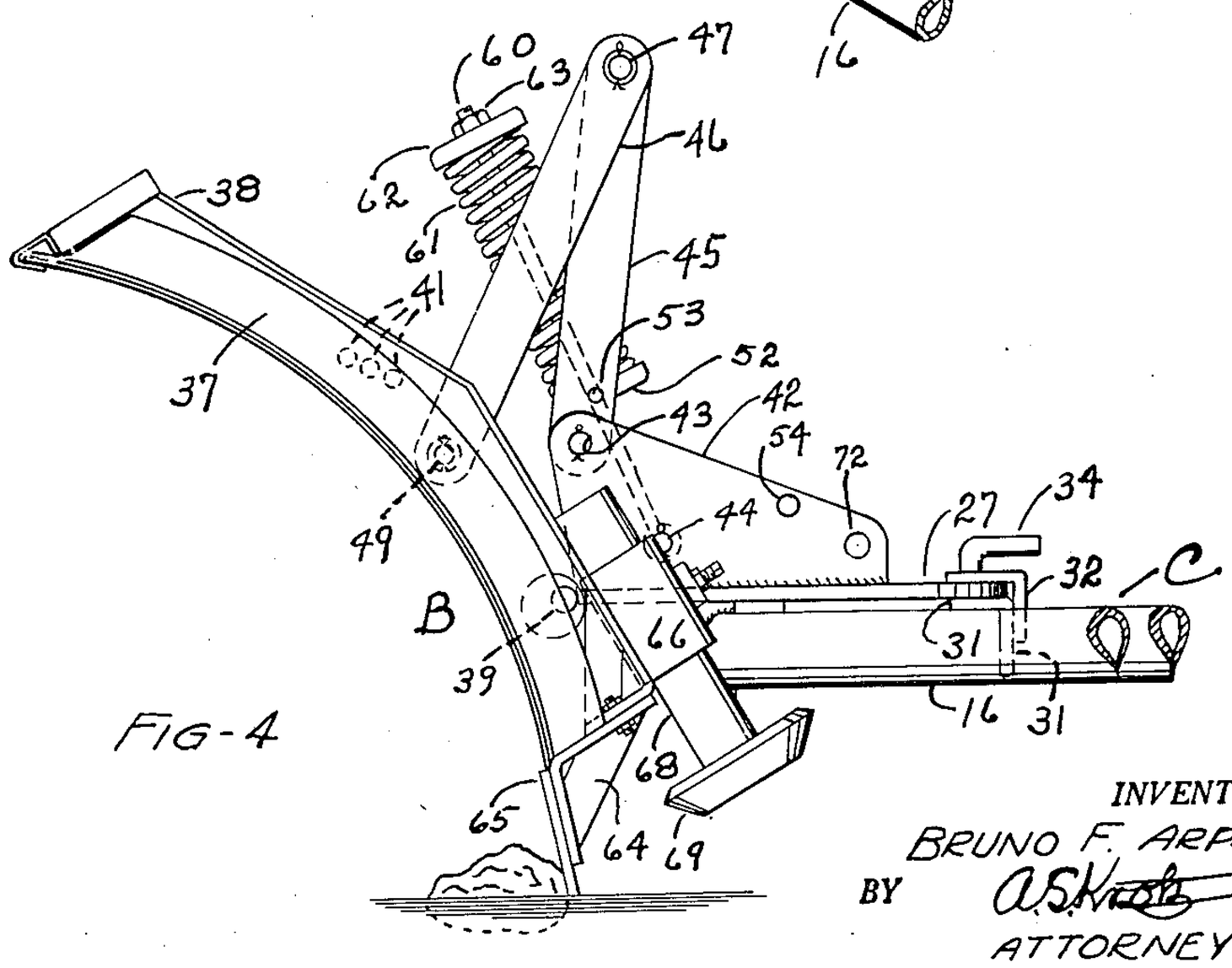

FIG-4

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DIRT AND SNOW MOVING ATTACHMENT FOR TRACTORS

Filed July 21, 1948 4 Sheets-Sheet 4

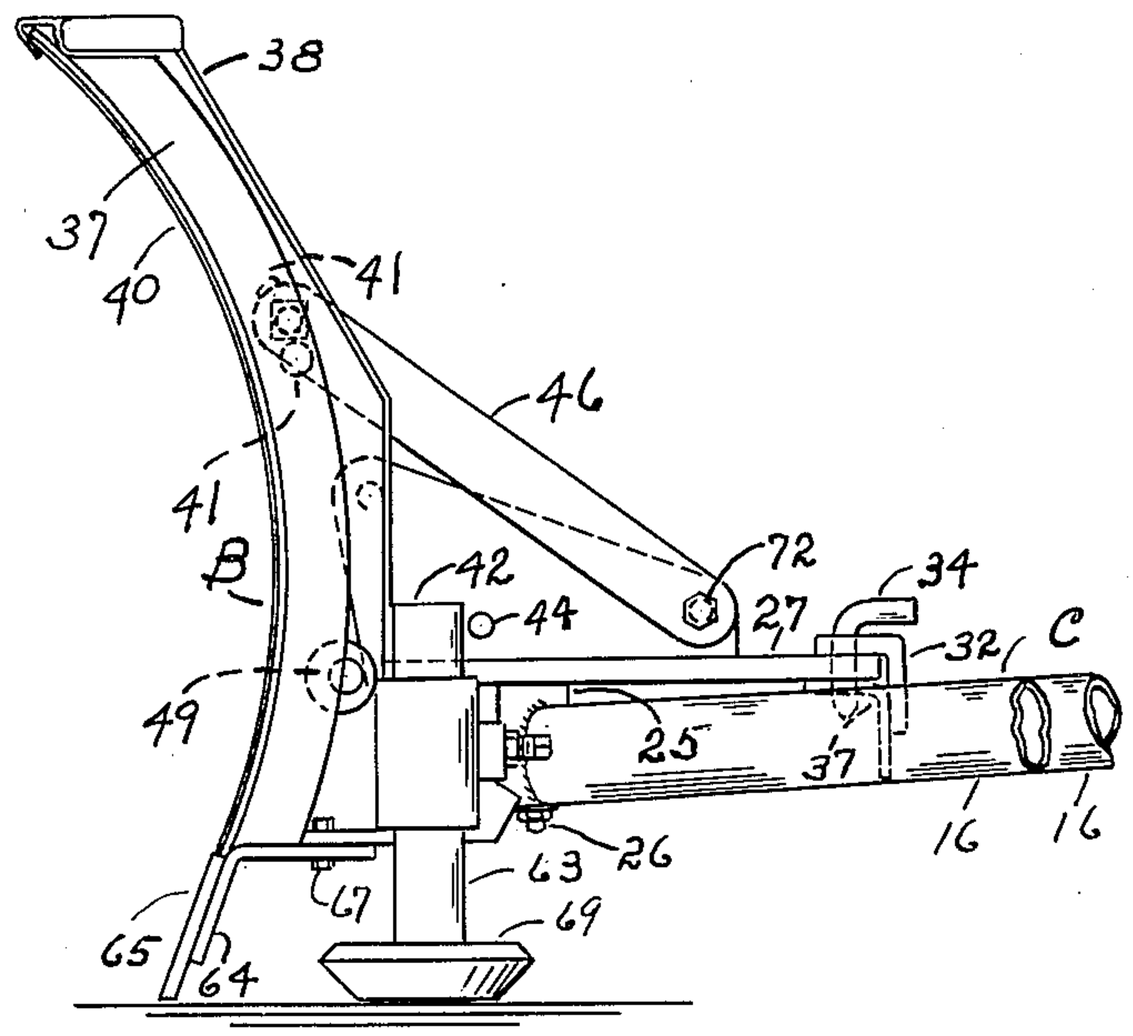

FIG. 9

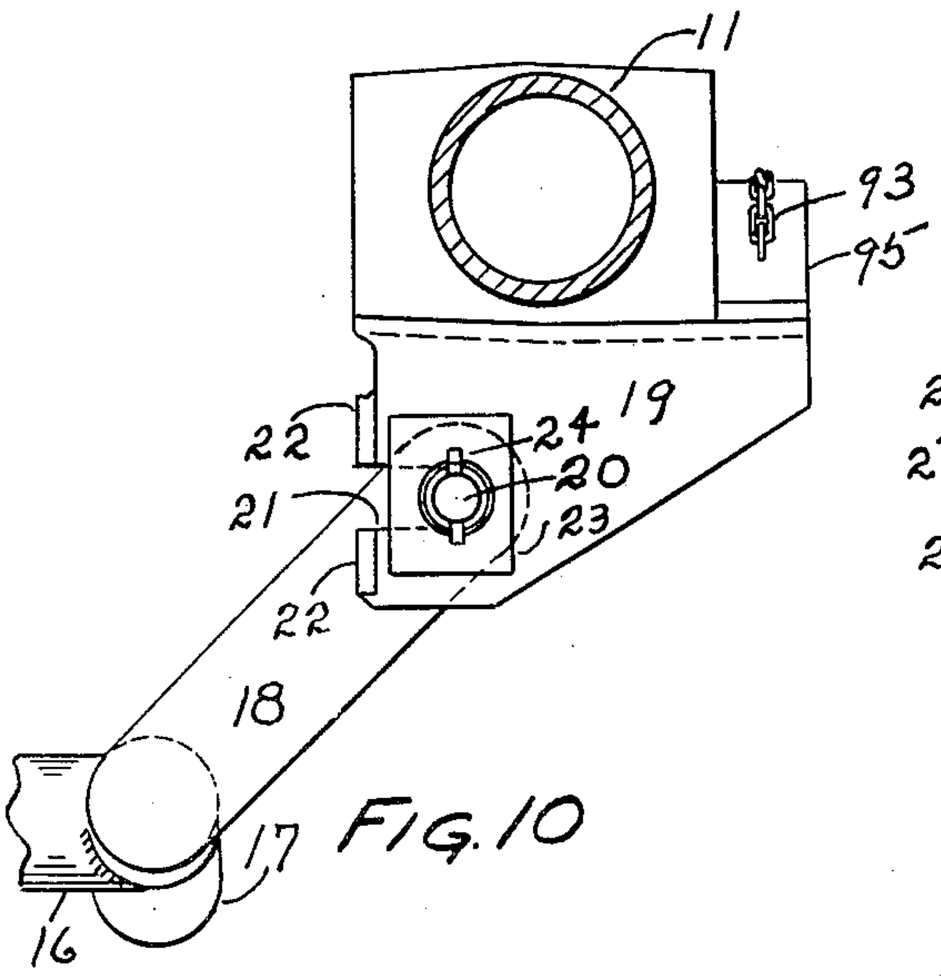

FIG. 10

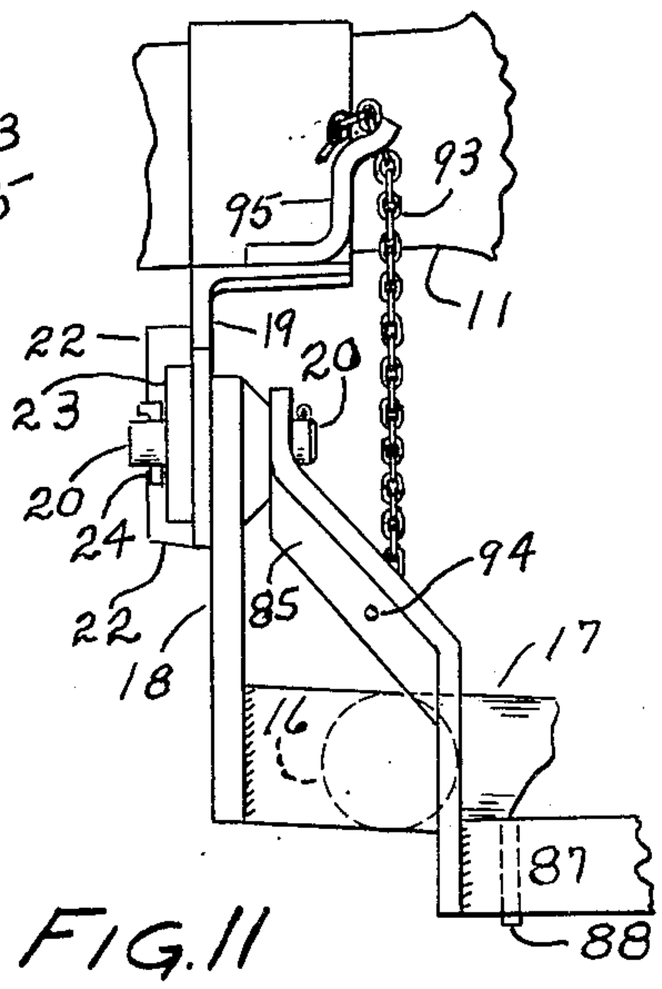

FIG. 11

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DIRT AND SNOW MOVING ATTACHMENT FOR TRACTORS

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Application July 21, 1948, Serial No. 39,830

4 Claims. (Cl. 37—42)

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The present invention relates to an attachment for tractors having blades suitable for bulldozing and the like and has for its principal objects generally stated, a device which is simple, easily manufactured at low cost and efficient.

Important objects of the present invention are to provide a suitable holding bracket for the blade having means, whereby the blade may be conveniently positioned at an angle transverse to the direction of travel or tilted transversely and also providing means whereby when the blade is used for bulldozing it may be spring held in operating position and spring released if the bottom of the blade contacts a serious obstruction.

Another object of the present invention is to provide means whereby the scraper element may be optionally rigidly held to its bracket and adjusted at different vertical angles without the addition of extra parts.

A novel feature of applicant's device is the skid shoes which are positioned a considerable distance apart and vertically adjustably secured to the scraper element, whereby the weight of the scraper element and front end of the frame may largely rest on the shoes and when desired the blade may be caused to travel slightly above the road surface.

A still further object of the present invention is to provide a frame which is detachably hingedly connected at its rear ends preferably to the rear axle housings of the tractor and having guide ways secured to the front axle of the tractor, in a manner whereby the attachment may be quickly and easily attached and detached from the tractor.

A further object of the present invention is to provide novel means for detachably connecting the device to the standard draw bars of the tractor having means whereby the connections may be quickly made or detached without change of any parts of the device or tractor and, whereby the standard means for raising or lowering the draw bars may be used for changing the transverse angle of the carrying frame and blade.

An important feature of the present invention is its connection to the draw bars of the tractor having means whereby the regular power lift supplied on the tractor is used for raising and lowering or adjusting the transverse angle of the scraper element.

To these and other useful ends not already recited, my invention consists of parts, combinations of parts or their equivalents and mode of operation as hereinafter described and claimed

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and shown in the accompanying drawings in which:

Fig. 1 is a side elevational view of a conventional tractor equipped with my invention with the scraper element and its bracket removed.

Fig. 2 is a front elevational view of a tractor and a fraction of the device, the frame members of the device being sectioned on line 2—2 of Figure 1.

Fig. 3 is a side elevational view of the scraper element and its bracket showing a fraction of the front end of the frame bars.

Fig. 4 is a view similar to Figure 3 except illustrating the spring releasing mechanism in action.

Fig. 5 is a perspective view of the scraper element and bracket showing a fraction of the scraper element and a fraction of the frame bars and illustrating the position of the scraper element similar to that shown in Figure 4.

Fig. 6 is a fractional view of the front end of the frame showing a fraction of the scraper element bracket in section.

Fig. 7 is a side elevational view illustrating a guide bracket, a fraction of the carrying frame and its cable mechanism for controlling the height of the scraper element.

Fig. 8 is a fractional rear end elevational view of the tractor illustrating the power lift connection to conventional draw bars and also illustrating the structure forming the connections between the draw bars and carrying frame.

Fig. 9 illustrates a modification.

Fig. 10 is an enlarged side elevational view illustrating the detachable connection of the frame to a bracket which may be permanently secured to the tractor axle housing.

Fig. 11 is a rear view illustrating the parts shown in Figure 10.

As thus illustrated the tractor in its entirety is designated by reference character A, the scraper element including its bracket is designated in its entirety by reference character B. The frame which forms an operating connection between the scraper element and bracket and tractor is in its entirety designated by reference character C.

The tractor frame is designated by reference numeral 10 having at its rear end axle housings 11—11 and at its forward end an axle 12 which is horizontally pivoted (not shown) at its center to the tractor frame. Rear carrying wheels 13—13 (one not shown) are mounted on axles which protrude from housing members 11 in the usual manner and wheels 14—14 are mounted

on axle 12 in the usual manner. Axle 12 has near its ends secured thereto brackets 15—15. The frame C of the attachment comprises preferably two tubes 16—16 positioned at their forward ends relative to brackets 15 about as shown in Figure 2 for a purpose which will hereinafter appear.

The rear ends of frame members 16 are secured to a transverse member 17 having secured to its overhanging ends, plates 18—18 which are removably and hingedly supported on brackets 19 by means of pins 20—20, the ends of which protrude through slots 21—21 in brackets 19. At the front ends of slots 21 I provide out turned flanges 22—22. When the pins 20 are moved into the slots as shown in Figure 10, plates 23—23 are placed on the pins and lock pins 24 are inserted into openings in the ends of the pins, the pins will then be held in position in the slots by plates 23. Thus clearly it is a simple matter to attach and detach frame C from the tractor.

Thus it will be seen that frame C may raise and lower at its front end on members 20 as axes, the forward end, however of frame C while free to raise and lower, is prevented from swinging sidewise by brackets 15.

I will now describe in detail my scraper blade element B and its bracket connection to member C. Members 16 at their forward ends converge and are secured to a block or bracket 25 preferably by electric welding, the block having an opening through which a bolt 26 extends. Bolt 26 extends through bracket 27 and through a reinforcing washer 28. Thus member 27 is rotatively supported by the front end of member C. The rear end of member 27 is curved as at 27 (see Figure 5) on a radius with bolt 26 and is provided with a number of holes 30 which are also on a radius with bolt 26. Members 16 (see Figure 5) are anchored together by means of a cross bracket 31, the cross bracket being preferably electric welded to these members.

I provide an L-shaped bracket 32 which is preferably electric welded to member 31, the upper flange of which extends over member 27 and past openings 30 and having an opening 33 which registers with openings 30 and an opening in member 31 (not shown), whereby a linch pin 34 may be used to lock the front end of bracket 27 in a transverse position for bulldozing or at an angle in either direction for moving dirt and snow sidewise. The rear end of member 27 slidably rests on member 31 and under the forwardly extending lip of member 32. Thus it will be seen that bracket 27 will be firmly held in its locked position by members 31, 32 and 34.

Referring now specifically to Figures 3, 4 and 5; scraper element B is curved about as shown having a blade 40, and spaced stiffening bars 37—37 and 38—38. Members 38 are pivoted to the forward corners of member 27 as at 39. Bracket 27 has attached thereto two spaced plates 42—42 preferably by electric welding, bars 38 being the proper distance apart to practically contact the sides of the front end of bracket 27. Plates 42 are shaped about as shown in Figure 4 having openings 43—43 in their upper front corners.

I provide two toggle joints comprising bars 45 and links 46. Each pair of links is pivotally connected together as at 47, the front ends of bars 45 are pivoted to plates 42 as at 43 and the front ends of links 46 are pivoted to their adjacent bars 38 as at 49—49. Two anchor bars 50—50 extend through openings 44 in plates 42 and are

anchored to bracket 27 a short distance from plates 42 as at 51—51. A transverse bar 52 is, at its ends pivoted to bars 45 as at 53—53. Bolts 60—60 are anchored to bars 50 (see Figure 5) and extend freely through openings in bar 52. Springs 61 rest on bar 52 and are held on bolt 60 by means of washers 62—62 and nuts 63—63 on the ends of the bolts.

It will be seen that when bars 45 are forced rearwardly and downwardly on their pivots 43, links 46 will at 47 travel rearwardly and downwardly on pivots 49 as axes, thus to move the scraper element to the position shown in Figure 3. Pins 54—54 extend inwardly through plates 42 and contact bars 45 when the scraper is in working position. Thus when bars 45 and links 46 are in the position shown in Figure 3 the plane of the pivot point of links 46 will be a very short distance above pivot point 43 so that it will take considerable pressure on the lower side of scraper element B to move the blade rearwardly at its bottom on pivot 39 and that because of the structure just described, as soon as the pressure on the bottom of the blade is released the blade will swing back to its working position as illustrated in Figure 3.

I secure an L iron 64 to members 37 and 38 for the length of blade 40. On the forward side of this L iron I secure a cutting and wearing blade 65 preferably by countersunk bolts (not shown). Near the ends of members 64 I mount brackets 66 preferably by means of bolts 67, these brackets have openings through which a stem 68 is slidably mounted and on the bottom end of which are secured skid shoes 69. Member 68 is preferably provided with closely spaced indentations (not shown), whereby this member can be locked in its vertical position by means of set screws 70 and suitable lock nuts. Thus the skid shoes can be located in a position when desired to support the weight of the scraper element and hold blade 65 slightly away from the road surface when such an adjustment is desirable.

If it is not desirable to provide means, whereby the scraper element can tip rearwardly at its lower side, then bars 45, cross bar 52, bolts 60 and springs 61 are dispensed with and the rear end of links 46 are secured to plates 42 at 72, and their front ends are secured to bars 38 in any one of closely spaced holes 41 as illustrated in Figure 9, whereby the vertical angle of the blade may be determined. Figure 9 clearly illustrates this modification.

I will now describe my novel means for raising and lowering the scraper element by means of the conventional tractor power lift by supplying two cables 74—74. Cable sheaves 75—75 (see Figure 7) are rotatably mounted on brackets 76 which are secured to tubes 16. The upper ends of the cables are suitably secured to screw threaded bolts 78—78, having nuts whereby the cable ends may be detachably and adjustably secured to brackets 15 (see Figures 1, 2 and 7).

The ends of the power lift shaft 79 are secured to arms 80—80. The rear ends of these arms are connected by links 81—81 to conventional draw bars 82—82. The raised position of these draw bars and power lift is shown by solid lines in Figure 1. The lowest position of the draw bars and resultant position of frame C is shown by dotted lines in this figure. The draw bars are pivotally mounted preferably to members 11 as at 83—83 and links 81 are secured to these bars at 84 (see Figure 8). Pivots 83 are preferably in alignment with pins 20.

It is frequently desirable to tilt the scraper blade for minor terracing operations and for adjusting the transverse position to the road surface. This is accomplished by means of an adjustable device 90 on one of the links 81. This is shown on the right hand link in Figure 8 and has suitable means for changing the length of this link so as to raise or lower the draw bar to which the link is connected and tilt the scraper blade to the right or left.

The operating connecticns of cables 74 to draw bars 82 are made as follows: rearwardly extending bars 85—85 are pivoted at their front ends on pins 20 (see Figure 11) and are rigidly secured at their rear ends to bars 86 as illustrated. The lower ends of bars 86 are connected together by means of a tube 87. Brackets 88—88 are secured to tube 87 preferably by electric welding and in the position shown in Figure 8, and at the forward ends of these brackets, cables 74 are hingedly secured.

The upper ends of bars 86 are connected together by means of a bar 89, this bar at its ends being positioned above draw bars 82. Thus when the power lift acts to raise the draw bars, cables 74 will be moved rearwardly. It will be seen from the next above description that the power lift may act to raise or lower the scraper element or for tilting it for minor terracing operations.

Generally when the scraper element B is removed from frame C as illustrated in Figure 1, the front end of the frame is raised to its highest position by the power lift after which it may be held in this position as follows: two chains 93—93 are secured to bars 85 at 94. Brackets 95—95 are mounted preferably on brackets 19 (see Figures 10 and 11). The upper ends of brackets 95 are provided with cut away slits in their centers whereby the chains may be hooked onto the bracket as illustrated in Figures 8 and 11 after which the power lift may be used for raising and lowering draw bars 82 independent of the present attachment. It will be understood, however, that frame C and its connections to the draw bar brackets 19, the cable connections to brackets 15 and the connections between frame C and draw bars 82 may be conveniently removed or replaced.

In some services under some circumstances I may elect to provide hook-over brackets 96 which are removably or slidably secured to draw bars 82 so the hook-over portion may be positioned over bar 89 thus to lock bar 89 to the draw bar for positive movement in either direction and force member 86 to follow the movement of the draw bars. When hook-over brackets 96 are not in use and it is desired to use the draw bar independent of the attachment, all that is necessary is for the operator to raise the front end of the attachment and then hold it in this position by attaching chain 93 to bracket 95, after which member 96 may be moved rearwardly on the draw bars and then the drawbars may be raised and lowered independent of the attachment.

Clearly many minor detail changes may be made in the design shown without departing from the spirit and scope of my invention as recited in the appended claims.

Having thus shown and described my invention, I claim:

1. A scraper attachment for a tractor having a rear power lift comprising in combination, a carrying frame with spaced apart side members, their front ends converging into a supporting block, their rear ends being transversely pivoted to the rear end of the tractor, said supporting block having mounted thereon a scraper blade holding frame, operating connections between the said frame side members rearwardly of said converging front ends and said power lift, the pivotal connection of said side members to the tractor comprising a pair of spaced depending L-shaped brackets, each bracket formed from flat stock and secured to the rear axle housing of the tractor, each bracket having a horizontal slot formed therein extending rearwardly from the forward edge of the bracket, outwardly turned flanges on the forward edges of said brackets, laterally extending pins on the rear ends of said side members adapted to be moved rearwardly into said slots, detachable means for locking the side members to the brackets comprising blocks having openings for the reception of said pins, the blocks being adapted to lie on the outside of the bracket and behind said flanges, detachable means for locking the blocks on the pins whereby by removing the blocks the side frame members may be moved forwardly and detached from the brackets, depending guideways secured to the front axle of the tractor and positioned on the outside of said spaced apart frame members for restraining side movement of the frame, said operating connection to the power lift comprising a pair of spaced apart cables, the rear ends of the cables being connected to the power lift, said cables being entrained over spaced apart sheaves rotatably mounted on said spaced apart side members adjacent the vertically arranged guide members, the forward ends of said cables being securely anchored to the front of the tractor, whereby upon longitudinal movement of the cables the front end of the carrying frame may be vertically pivoted about the axis of the lateral pins by said power lift without changing the transverse adjusted angle of said supporting block.

2. A scraper attachment for a tractor having a rear power lift comprising in combination, a carrying frame with spaced apart side members, their front ends converging into a supporting block, their rear ends being transversely pivoted to the rear end of the tractor, said supporting block having mounted thereon a scraper blade holding frame, operating connections between the said frame side members rearwardly of said converging front end and said power lift, depending guideways secured to the front axle of the tractor and positioned adjacent one side of said spaced apart frame members for restraining side movement of the frame, said operating connection to the power lift comprising a pair of spaced apart cables, the rear ends of the cables being connected to the power lift, said cables being entrained over spaced apart sheaves rotatably mounted on said spaced apart side members adadjcent the vertically arranged guide members, the forward ends of said cables being anchored to the front of the tractor, whereby upon longitudinal movement of the cables the front end of the carrying frame may be vertically pivoted about the axis of the said transverse pivots by said power lift without changing the adjusted transverse angle of said supporting block.

3. A device as recited in claim 2 including, an adjustable means associated with one of said power lifting connections whereby the connection may be adjusted for tilting said carrying frames when in a power lift supported position.

4. A scraper attachment for a tractor having a rear end power lift comprising, a carrying frame

with spaced apart side members, their front ends converging into a supporting block, their rear ends being transversely pivotally secured to the rear end of the tractor in transverse spaced apart relation, depending brackets secured to the front axle of the tractor and positioned to restrain side movement of said frame, but permit vertical movement thereof, an operating connection to the power lift comprising a pair of spaced apart cables, the rear ends of the cables being connected to the power lift, one of said cable connections being adjustable as to length for tilting said carrying frame, said cables being entrained over sheaves, rotatably mounted upon said first spaced apart members, the forward end of said cables being anchored to said depending brackets, whereby said power lift may be operated for raising or lowering said carrying frames about their pivotal connections to the tractor and without changing the adjusted transverse angle of said supporting block.

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