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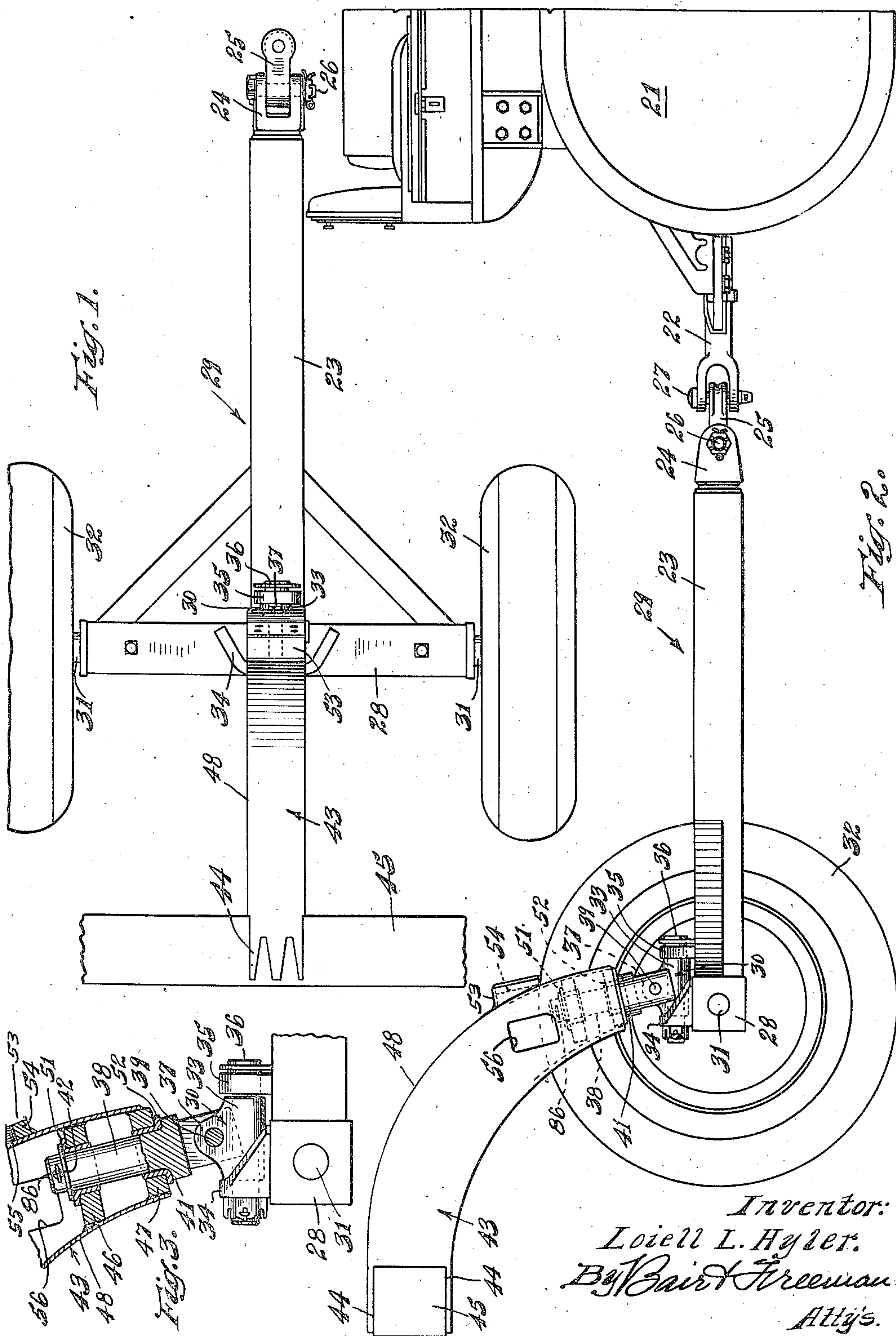
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2,430,770

ADAPTER FOR EARTH MOVING APPARATUS

Filed March 29, 1946

3 Sheets-Sheet 1



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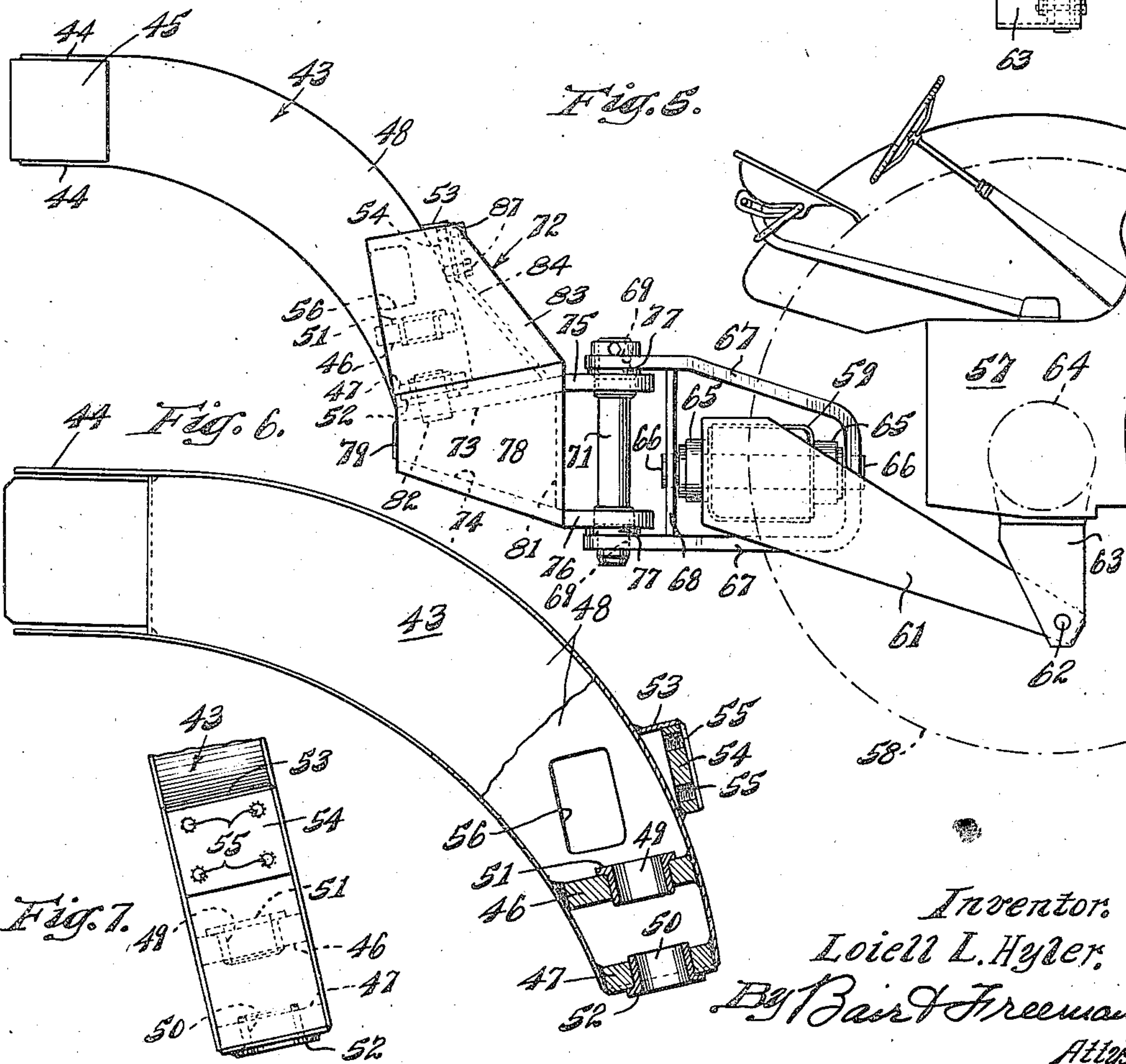
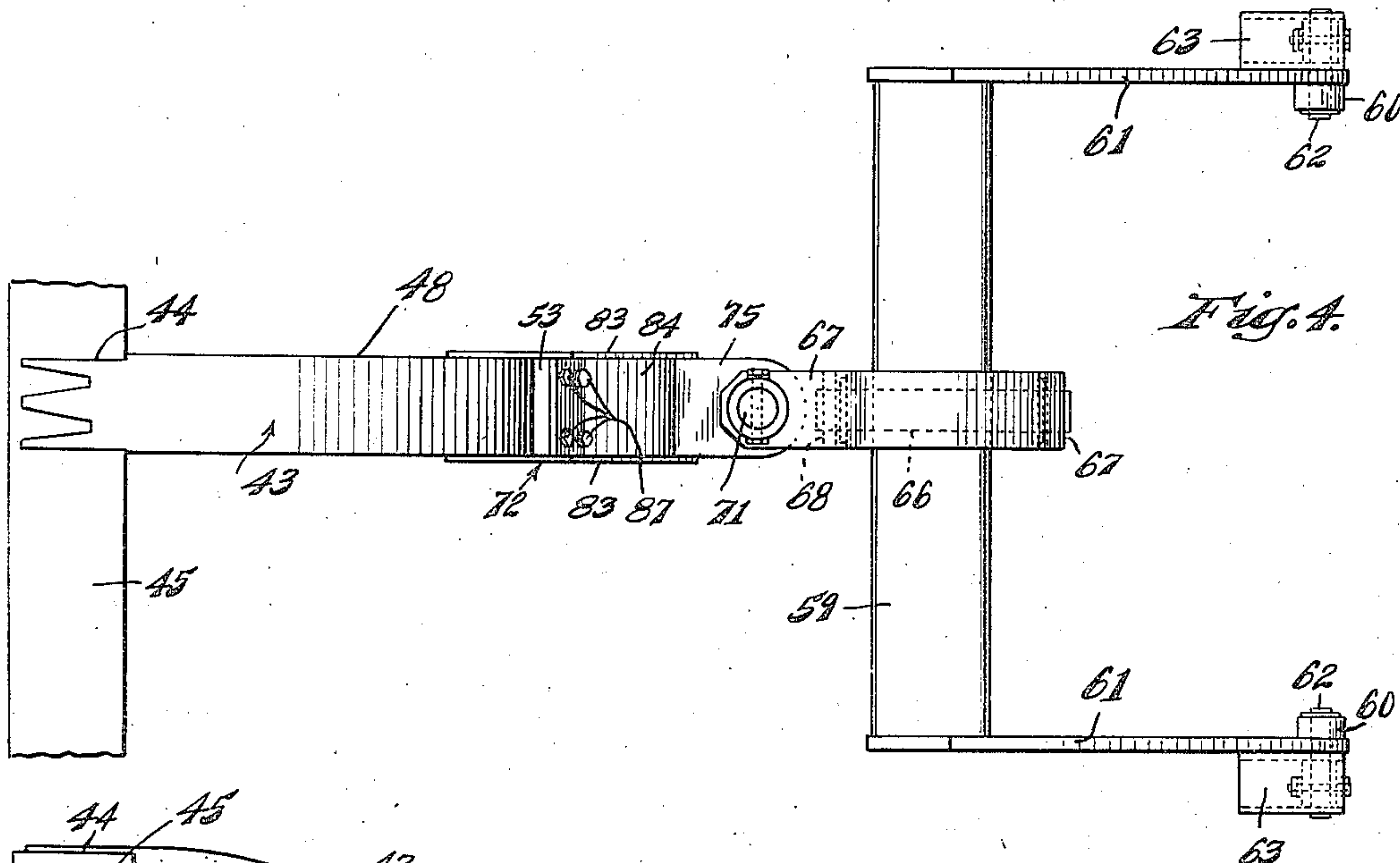
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# ADAPTER FOR EARTH MOVING APPARATUS

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3 Sheets-Sheet 2



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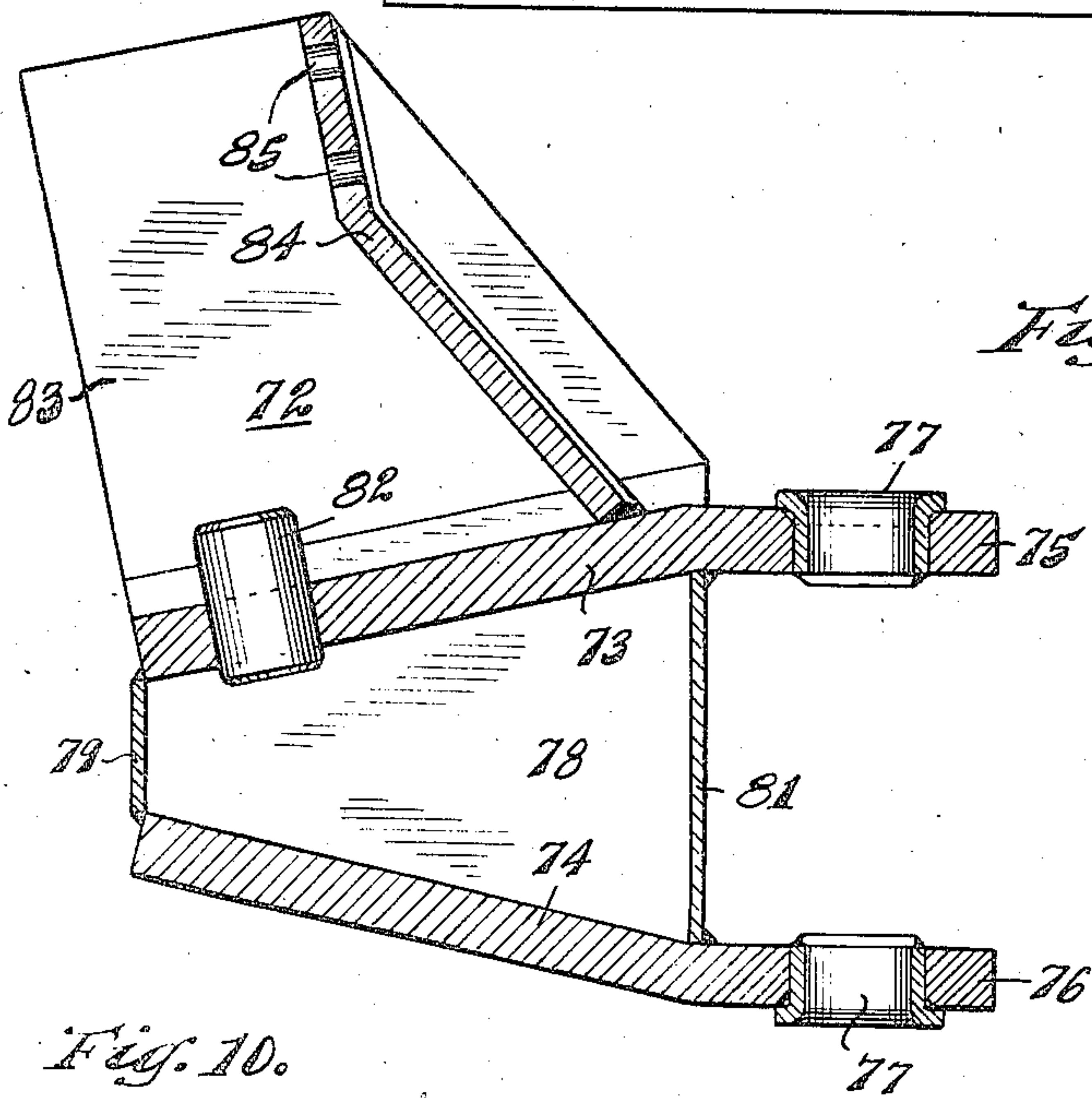
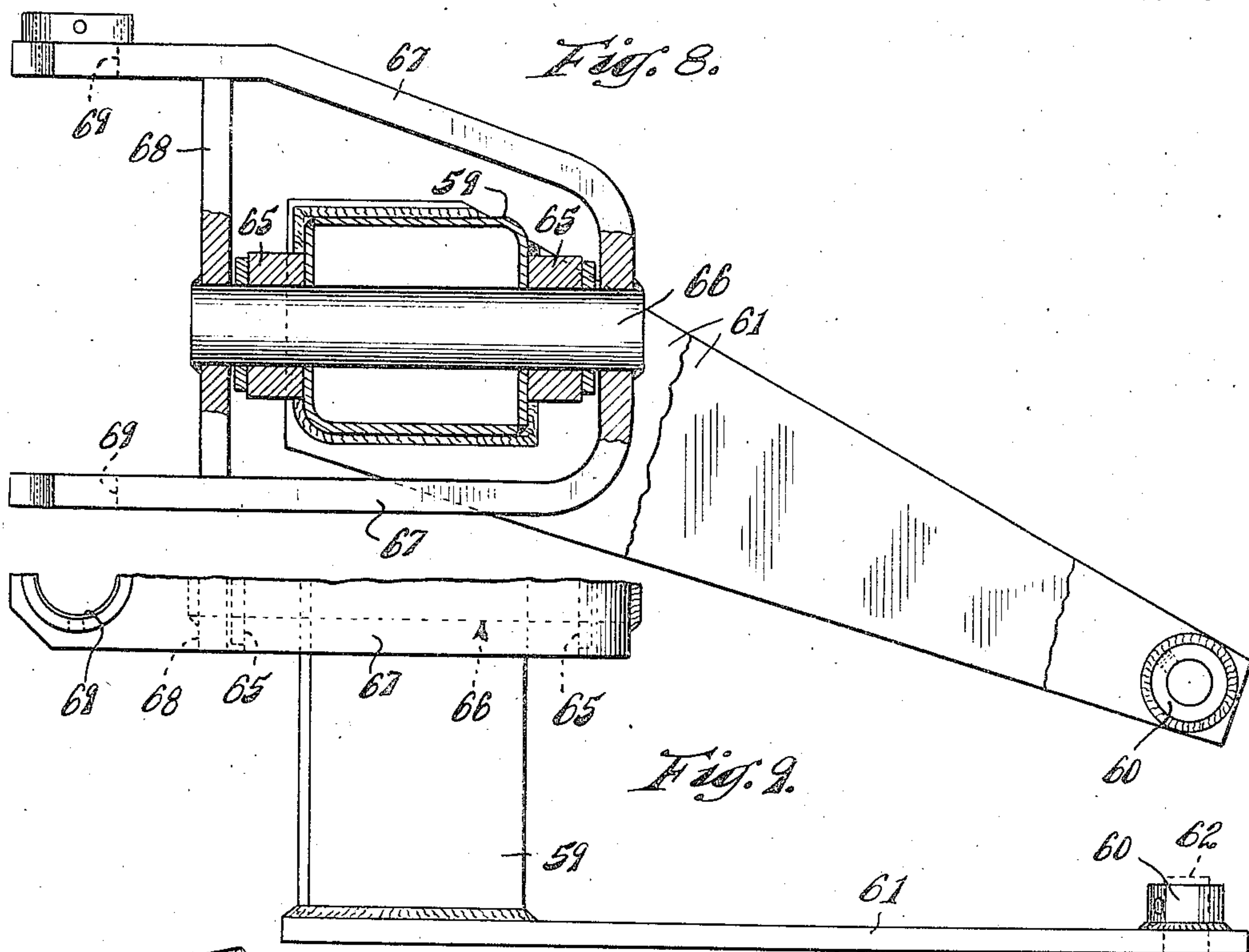
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ADAPTER FOR EARTH MOVING APPARATUS

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3 Sheets-Sheet 3



Inventor:  
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## UNITED STATES PATENT OFFICE

2,430,770

## ADAPTER FOR EARTH MOVING APPARATUS

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Application March 29, 1946, Serial No. 658,099

11 Claims. (Cl. 280—33.44)

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This invention relates to adapters for earth moving apparatus, and particularly to an adapter for attaching an earth scraper or the like to the draw bar of a large rubber-wheeled tractor or to a front running gear drawn by a track type tractor.

In the manufacture of earth moving equipment, the equipment has heretofore been designed so that it is either adapted to rubber-wheeled tractors or track-type tractors, since many users of such equipment have only one tractor of one or the other type. However, such design procedure is costly and raises a problem in supplying the correct type earth moving equipment to the dealer, and also requires the manufacture and stocking of an extra set of spare parts.

It is an object of the invention, therefore, to provide an inexpensive and readily interchangeable adapter so that the same piece of earth moving apparatus may be readily hitched to a large rubber-wheeled tractor, in which case no front running gear is used in the combination, or to a track-type tractor, in which case a front running gear is used in the combination.

It is another object of the invention to provide a fabricated adapter for the purpose described which is formed of a small number of readily fabricated parts.

It is a further object of the invention to provide a sturdy adapter for the purpose described which cannot become accidentally unhitched, but which is very easy to unhitch and change from a rubber-wheeled tractor to a track-type tractor, or vice versa.

It is also an object of the invention to provide an adapter for the purpose described in which one man may attach or detach the adapter and change the hitch to different type tractors, if necessary.

With these and other objects in view, my invention consists in the construction, arrangement and combination of the various parts of my device whereby the objects contemplated are attained, as hereinafter more fully set forth, pointed out in our claims and illustrated in the accompanying drawings, wherein:

Fig. 1 is a top plan view of a hitch for earth moving apparatus wherein a track-type tractor and a front running gear for the earth moving apparatus is utilized;

Fig. 2 is a side elevation of the apparatus shown in Fig. 1;

Fig. 3 is a view, partially in section, of the connection between the goose-neck of the earth mov-

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ing apparatus and the cross support of the front running gear in a hitch such as shown in Figs. 1 and 2;

Fig. 4 is a top plan view of the apparatus, including the adapter, when the earth moving apparatus is attached to the draw-bar of a rubber-wheeled tractor;

Fig. 5 is a side elevation of the earth moving apparatus attached to a rubber-tired tractor;

Fig. 6 is a view, partially in section, of the goose-neck for the earth moving apparatus;

Fig. 7 is a front view of a portion of the goose-neck, shown in Fig. 6;

Fig. 8 is a partial sectional view of a universal connection between the tractor draw-bar and the goose-neck;

Fig. 9 is a partial top-view of the universal connection;

Fig. 10 is a view, partially in section, of the adapter; and

Fig. 11 is a front elevational view of the adapter.

Referring specifically to the drawings for a detailed description of the invention, and particularly to Figs. 1 to 3 inclusive, numeral 21 designates generally a track-type tractor having a forked coupling member 22 secured at the rear thereof. A standard tractor draw rod 23 is secured to the coupling member 22 by a forked portion 24 which pivotally engages an eye-bolt 25 by a horizontal pivot pin 26. The eye-bolt 25, in turn, engages a vertical pivot pin 27 which extends through the forked coupling member 22. It is apparent, therefore, that the draw rod 23 may swing vertically or horizontally with respect to the tractor 21.

The opposite end of the draw rod 23 is rigidly secured to a cross-support 28 of a front running gear generally indicated at 29. The cross-support 28 has stub axles 31 secured at its outer extremities for rubber tired wheels 32. A coupler generally indicated at 33 is associated with the rear end of the draw rod 23 and comprises rigid members 34 and 35 with a horizontal bearing pin 36 extending therethrough. The pin 36 is encompassed by a rotatable member 30 having upwardly extending ears 37 thereon to which is secured a heavy king-pin 38 by a horizontal pivot shaft 39. The king-pin 38 is provided with an annular shoulder 41 at its lower portion, and a cotter pin opening 42 at its upper portion. The construction of the coupler 33 is fully described and claimed in the co-pending application of Loiell L. Hyler, S. N. 645,755, filed February 6, 1946, for Universal hitch.

As best shown in Figs. 2, 3, 6, and 7, a goose-neck



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43 is welded at 44 to an A-frame 45 of a two wheeled earth mover (not shown). The lower end of the goose-neck 43 is provided with heavy cross members 46 and 47 welded to a shell 48 forming the goose-neck shape. The cross members 46 and 47 are provided with openings 49 and 50 in which hardened bushings 51 and 52 are inserted. The lower front portion of the goose-neck 43 is provided with a fabricated boss 53 welded to the shell 48 and a heavy bolt plate 54 is welded to the boss 53 and preferably has four threaded bolt openings 55 provided therein. Relatively large rectangular opening 56 is also provided in the side of the shell 48 of the goose-neck 43, for a purpose hereinafter described.

Referring now to Figs. 4, 5, 8 and 9, a tractor generally indicated at 57 having large rubber tires 58 is illustrated. This type tractor is provided with a draw-bar 59 which is secured to side arms 61 pivotally connected at 62, by bushings 60, to plates 63 secured to a rear axle 64 of tractor 57.

The central portion of the draw-bar 59 is provided with bearing blocks 65 and a bearing shaft 66 extends through the bearing blocks and draw-bar so that it may rotate therein. The bearing shaft 66 is secured at one end to a vertical U-shaped member 67 and at the other end to a cross member 68. The outer portions of the U-shaped member 67 are provided with openings 69 for the reception of a king-pin, 71.

An adapter, generally indicated at 72, as shown in detail in Figs. 10 and 11, comprises an upper plate member 73 and a lower plate member 74. The plate members 73 and 74 have ears 75 and 76 extending respectively therefrom and hardened vertically aligned bushings 77 project through openings therein. Lower side members 78 and lower front and rear members 79 and 81 are welded to the plate members 73 and 74. A heavy stud 82 is welded to the upper plate member 73 and extends upwardly therefrom.

Upper side members 83 are welded to the upper plate member 73 and a slightly bent bolt plate 84 is welded between the side members 83. Four bolt holes 85 corresponding to the bolt holes 55 in plate 54 of the goose-neck 43 are provided in bolt plate 84.

Assuming that the earth moving apparatus is unhitched and it is desired to hitch it to a track-type tractor 21, the conventional front running gear including the wheels 32 and connecting pin 38 are first attached to tractor 21. The goose-neck 43 is then dropped over the pin 38 which extends through the bushings 51 and 52 of the goose-neck, the lower bushing 52 resting on the shoulder 41 of the pin 38. A cotter pin 86 is then inserted in the cotter pin hole 42 in pin 38, access being gained thereto through aperture 56 in the goose-neck 43.

If it is now desired to hitch the earth moving apparatus to a rubber-tired tractor, the cotter pin 86 is removed, the goose-neck 43 is lifted and the track-type tractor and front running gear are removed. The adapter 72 is then connected to the goose-neck 43 by inserting the stud 82 into the lower bushing 52 of the goose-neck and matching up the holes in plate 54 of the goose-neck with holes 85 in the bolt plate 84 of the adapter. Bolts 87 are then utilized to secure the plates 54 and 84 together. The king-pin 71 is then dropped into place.

If it is again desired to change tractors, it is obvious that only four bolts must be removed to remove the adapter from the goose-neck 43.

Most tractors and earth movers are provided

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with a cable system or a hydraulic system which may be manipulated by the operator to raise and lower the goose-neck into position, as is well understood in the art.

From the foregoing it will be apparent that with a slight modification of the goose-neck 43, i. e., the addition of the boss 53 and plate 54, and the use of a simple adapter 72 requiring only four bolts for attachment or detachment, that I have provided for hitching two wheeled type earth moving apparatus to either a track-type tractor or a rubber-wheeled tractor, without the necessity of providing a different goose-neck on the earth moving apparatus for the two types of tractors.

Some changes may be made in the arrangement and construction of the various parts of my earth moving apparatus without departing from the real spirit and purpose of my invention, and it is my intention to cover by my claims any modified forms of structure or use of mechanical equivalents, which may be reasonably included within their scope.

I claim as my invention:

1. Apparatus for connecting earth moving machinery to either a front running gear drawn by a track-type tractor or directly to a large wheeled tractor comprising a coupling member, one end of which is secured to the earth moving machinery, the other end of the coupling member having a substantially vertically extending passageway therein, an adapter element for said coupling member, means for securing said adapter element to the coupling member, said adapter element including a pair of vertically aligned coupling ears having vertically registering openings therein, said front running gear having an upstanding pivoted king-pin associated therewith, said passageway in said coupling member adapted to receive said king-pin, means for retaining said king-pin in position in said coupling member without the use of said adapter element, said large wheeled tractor including a draw-bar, a rotatable normally vertically positioned clevis secured to said draw-bar and also having vertically registering openings therein, said coupling, when it is to be hitched to said clevis, including said adapter, and a king-pin extending through the vertically aligned openings in said clevis and said coupling ears to secure the adapter and coupling to said clevis.

2. Apparatus for connecting earth moving machinery to either a front running gear drawn by a track-type tractor or directly to a large wheeled tractor comprising a coupling member, one end of which is secured to the earth moving machinery, the other end of the coupling member having a substantially vertically extending passageway therein, an adapter element for said coupling member, means for securing said adapter element to the coupling member, including a stud secured to said adapter for insertion in said passageway, said adapter element including a pair of vertically aligned coupling ears having vertically registering openings therein, said front running gear having an upstanding pivoted king-pin associated therewith, said passageway in said coupling member adapted to receive said king-pin, means for retaining said king-pin in position in said coupling member without the use of said adapter element, said large wheeled tractor including a draw-bar, a rotatable normally vertically positioned clevis secured to said draw-bar and also having vertically registering openings therein, said coupling, when it is to be hitched to said clevis, including said adapter, and a king-pin extending through



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the vertically alined openings in said clevis and said coupling ears to secure the adapter and coupling to said clevis.

3. Apparatus for connecting earth moving machinery to either a front running gear drawn by a track-type tractor or directly to a large wheeled tractor comprising a coupling member in the shape of a goose-neck secured to the earth moving machinery at one end thereof, the other end of the goose-neck being hollow and having a pair of spaced plates extending transversely across the hollow portion of the goose-neck, said transverse plates having substantially vertically registering openings therein, a bolt plate secured adjacent to the latter end of the goose-neck, an adapter element including a second bolt plate adapted to be secured to the goose-neck bolt plate, a plurality of bolts for securing the bolt plates together, an internal upstanding stud secured to the adapter and so positioned that it may be received by the aperture of said lower transverse plate in the goose-neck and a pair of vertically alined coupling ears having vertically registering openings therein, said front running gear having an upstanding pivoted king-pin associated therewith, said apertures in the transverse plates of said goose-neck being adapted to receive said king-pin, means for retaining said king-pin in position without the use of said adapter element, said large wheeled tractor including a draw-bar, a rotatable vertically positioned clevis secured to said draw-bar and having vertically registering apertures therein, said goose-neck, when it is to be hitched to said clevis, including said adapter with the bolt plates bolted together and said adapter stud in the aperture in said lower transverse plate, and a king-pin extending through the vertically alined openings in said clevis and said ears to secure the adapter to the clevis.

4. Apparatus for connecting earth moving machinery to either a front running gear drawn by a track-type tractor or directly to a large wheeled tractor comprising a coupling member in the shape of a goose-neck secured to the earth moving machinery at one end thereof, the other end of the goose-neck being hollow and having a pair of spaced plates extending transversely across the hollow portion of the goose-neck, said transverse plates having substantially vertically registering openings therein, a bolt plate secured adjacent to the latter end of the goose-neck, an adapter element including a second bolt plate adapted to be secured to the goose-neck bolt plate, a plurality of bolts for securing the bolt plates together, an internal upstanding stud secured to the adapter and so positioned that it may be received by the aperture of said lower transverse plate in the goose-neck and a pair of vertically alined coupling ears having vertically registering openings therein, said front running gear having an upstanding pivoted king-pin associated therewith, said apertures in the transverse plates of said goose-neck being adapted to receive said king-pin, means for retaining said king-pin in position without the use of said adapter element, said large wheeled tractor including a draw-bar, a rotatable vertically positioned clevis secured to said draw-bar and having vertically registering apertures therein, said goose-neck, when it is to be hitched to said clevis, including said adapter with the bolt plates bolted together and said adapter stud in the aperture in said lower transverse plate, and a king-pin extending through the vertically alined openings in said clevis and

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said ears to secure the adapter to the clevis, said adapter being readily removable or attachable by means of said bolts.

5. Apparatus for connecting earth moving machinery to a tractor, including a clevis secured to the rear thereof, said earth moving machinery including a coupling member secured at one end thereof to the earth moving machinery, and the other end thereof being provided with a passageway therein, said apparatus comprising an adapter element, means for rigidly securing the adapter element to said coupling member, said last means affording ready removal of the adapter element from said coupling, said adapter including a pair of spaced ears, alined apertures in said ears, and a king-pin adapted to pass through the apertures in said clevis to rotatably secure the clevis and adapter together.

6. Apparatus for connecting earth moving machinery to a tractor including a clevis secured to the rear thereof, said earth moving machinery including a coupling member secured at one end thereof to said earth moving machinery and the other end thereof being provided with a passageway therein, said apparatus comprising an adapter element, an internal stud secured to the adapter element and adapted to be snugly received in said passageway, means for rigidly securing the adapter to said coupling, said means also affording removal of the adapter from said coupling, said adapter including a pair of spaced ears, alined apertures in said ears, and a king-pin adapted to pass through the apertures in said ears and in said clevis to rotatably secure them together.

7. Apparatus for connecting earth moving machinery to a tractor including a clevis secured to the rear thereof, said earth moving machinery including a coupling member secured at one end thereof to said earth moving machinery and the other end thereof being provided with a passageway therein, said apparatus comprising an adapter element, an internal stud secured to the adapter element and adapted to be snugly received in said passageway, means for rigidly securing the adapter to said coupling, said means also affording removal of the adapter from said coupling, said adapter including a pair of spaced ears, alined apertures in said ears, a king-pin adapted to pass through the apertures in said ears and in said clevis to rotatably secure them together, and said coupling member adapted to be secured to a front running gear connected to a tractor when said adapter is removed.

8. An adapter for changing the hitch of earth moving apparatus from a front running gear drawn by a tractor to a direct connection with a tractor, said adapter comprising a pair of vertically spaced horizontal plate members having ears formed thereon, vertically registering openings in said ears, a pair of side plates secured to the upper of said plate members, a bolt plate having bolt apertures therein extending transversely between said side plates, and a stud secured to and extending upwardly from the upper of said vertically spaced plates and positioned between said side plates.

9. An adapter for changing the hitch of earth moving apparatus from a front running gear drawn by a tractor to a direct connection with a tractor, said adapter comprising a pair of vertically spaced horizontal plate members having ears formed thereon, vertically registering openings in said ears, a pair of side plates secured to the upper of said plate members, a bolt plate hav-



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ing bolt apertures therein extending transversely between said side plates, a stud secured to and extending upwardly from the upper of said vertically spaced plates and positioned between said side plates, and a set of lower side plates secured to said spaced horizontal plate members.

10. An adapter for changing the hitch of earth moving apparatus from a front running gear drawn by a tractor to a direct connection with a tractor, said adapter comprising a pair of vertically spaced horizontal plate members having ears formed thereon, vertically registering openings in said ears, a pair of side plates secured to the upper of said plate members, a bolt plate having bolt apertures therein extending transversely between said side plates, a stud secured to and extending upwardly from the upper of said vertically spaced plates and positioned between said side plates, a set of lower side plates secured to said spaced horizontal plate members, and front and rear plate members secured to the upper and lower horizontal plate members and to said lower side plates.

11. An adapter for changing the hitch of earth moving apparatus from a front running gear drawn by a tractor to a direct connection with a tractor, said adapter comprising a pair of ver-

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5 tically spaced horizontal plate members having ears formed thereon, vertically registering openings in said ears, a pair of side plates secured to the upper of said plate members, a bolt plate having bolt apertures therein extending transversely between said side plates, a stud secured to and extending upwardly from the upper of said vertically spaced plates and positioned between said side plates, a set of lower side plates secured to said spaced horizontal plate members, front and rear plate members secured to the upper and lower horizontal plate members and to said lower side plates, said bolt plate being adapted to co-operate with a bolt plate on said earth moving apparatus, and bolts for securing the two bolt plates together.

LOIELL L. HYLER.

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