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Apparatus for use in harvesting wool

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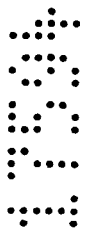
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(56) Related Art
AU 87478/75
SU 594936
AU 39890/97

ABSTRACT

Apparatus 10 for use in harvesting wool includes a main harvesting stage 12 having an endless loop conveyor belt 14 provided with an upper run 16 on which a sheep is supported and a lower return run 18. A plurality of hind leg clamps 20 are provided in the main stage 12 for clamping one or both hind legs of the sheep. The hind leg clamps 20 can be supported below the upper 16 or by an overhead rail 58. The hind leg clamps 20 can be displaced to lay the sheep on its opposite sides to allow harvesting of wool from the sides of the sheep. Front leg clamps 62 are also supported by the overhead rail 58 and travel with the sheep along the upper run 16 to control movement of the sheep.



AUSTRALIA

PATENTS ACT 1990

COMPLETE SPECIFICATION FOR A

STANDARD PATENT

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Standard Complete Specification for the invention entitled:

APPARATUS FOR USE IN HARVESTING WOOL

Details of Associated Provisional Applications:

Australian Provisional Patent Application No PP 8763 filed 18 February 1999

The following is a full description of this invention, including the best method of performing it known to me:-

APPARATUS FOR USE IN HARVESTING WOOL

The present invention relates to an apparatus for use in harvesting wool and in particular, an apparatus for use in harvesting wool in a production line manner by multiple harvesters.

5

The Applicant has been actively involved in research and development of apparatus and methods for increasing the efficiency of wool harvesting by reducing the physical burden on wool harvesters. The Applicant has previously devised various apparatus and methods for harvesting wool in a production line like manner using a number of different wool harvesters to harvest wool from different parts of the sheep. Such apparatus and methods are described in prior Australian Application Nos AU 28426/95 and 18914/97.

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The present invention was developed with a view to further improving the efficiency and practicality of known apparatus and methods for harvesting wool.

15

According to the present invention there is provided an apparatus for use in the harvesting of wool from a wool bearing quadruped said apparatus including:

a main harvesting stage having an endless loop main conveyer belt provided with an upper run on which said quadruped is supported and a lower return run;

20

hind leg clamping means for clamping one or both hind legs of the quadruped; and

a travelling mounting mechanism for mounting the hind leg clamping means to travel with said quadruped on the main harvesting stage, the mounting mechanism allowing the hind leg clamping means to be moved from a first position that holds the quadruped on its back on the main conveyor belt to one or more displaced positions to lay the quadruped on its first side or opposite second side to allow wool to be harvested from the second side or the first side of the quadruped respectively.

25

An embodiment of the present invention will now be described with reference to the accompanying drawings in which:

30

Figure 1 is a schematic representation from the side of a first embodiment of the

apparatus for use in harvesting wool with a first pre-harvesting stage shown in a side-on position;

5 Figure 2 is a schematic representation of the apparatus shown in Figure 1 but with the first pre-harvesting stage in an aligned position;

Figure 3 is a an end view of the apparatus in a transport configuration;

10 Figure 4 is an end view of the apparatus shown in Figure 3 in a first stage of opening to an operating position;

Figure 5 is the end view of the apparatus shown in Figure 3 in a second stage of opening;

15 Figure 6 is an end view of the apparatus in an operating position;

Figures 7a, 7b and 7c show an elevation, end elevation and plan view respectively of the first pre-harvesting stage of the apparatus;

20 Figures 8a, 8b and 8c depict an elevation, end elevation and plan view respectively of the second pre-stage of the apparatus;

Figure 9 is an enlarged view of an upper portion of the apparatus;

25 Figure 10 is an enlarged perspective view of a portion of an upper run of a main conveyor belt of the apparatus;

Figure 11 is a plan view of a portion of a second embodiment of the apparatus in which hind leg clamps are supported by an overhead rail; and

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Figure 12 is a plan view of a trailer frame of the apparatus.

Referring to the accompany drawings and in particular Figures 1 and 2, an apparatus 10 for use in harvesting wool includes a main harvesting stage 12 having an endless loop conveyer belt 14 provided with an upper run 16 on which a wool bearing quadruped such as a sheep (not shown) can be supported and a lower return run 18. A plurality of hind leg clamping means in the form of clamps 20 are provided in the main stage 12 for the clamping one or both of the hind legs of a sheep. A travelling mounting mechanism is provided for mounting the clamps 20 in a manner to facilitate, cause or allow the sheep to be rolled from side to side on the upper run 16, to allow wool housing from the sides of the sheep. In Figures 1-10 the mounting mechanism includes a beam 22 that extends through a corresponding hole or slot 24 (see Figure 10) formed in the main belt 14. The opposite end of each beam is retained in a track (not shown) located between the upper and lower runs 16,18 of the belt 14. The track and beams 22 are relatively configured so that as the beams 22 travel along the upper run 16 they are automatically tilted at a first location from the vertical in one direction to lay the sheep on one side to allow a harvester to shear wool from the opposite side of the sheep and subsequently automatically tilt it in the opposite direction at a second location along the upper run 16 to lay the sheep on its opposite side so that a second harvester can shear wool from said one side of the sheep. The tilting of the beams 22 is most clearly illustrated in Figure 10 where the two rear most beams designated 22A and 22B are shown as been tilted from the vertical in opposite directions.

This tilting motion is achieved by providing the ends of the beams 22 adjacent the track with a ball that rides in the track and then twisting the track along its longitudinal axis from side to side at locations corresponding with the first and second locations. Typically the track is in the form of an elongated rectangular section tube with a slot extending along on face thereof for its entire length.

The main stage 12 is notionally divided into four stations S1-S4 (see Figure 12) at which location different parts of a sheep may be shorn by at least two different wool harvesters. Stations S3 and S4 correspond with the first and second locations at which the beams 22A and 22B are titled in opposite directions.

The clamps 20 are in a form similar to that described in the applicant's earlier Australian Patent Application No 23597/97 the contents of which is incorporated herein by way of reference. The main difference between the present leg clamps 20 and those described in the aforementioned patent application is that the hind leg clamps 20 include a ratchet mechanism for progressively tightening the clamping action.

The beams 22 are effectively pulled along the track by the main belt 14. This is achieved by lining the slots 24 with a metal boarder or ring 26 (refer Figure 10) which bears on the beams 22 as the belt 14 moves. The track in which the beams 22 ride is twisted along its longitudinal axis for the entire length of the return run so that the beams 22 are tilted to one side as best illustrated in Figures 3-6. This reduces the ground clearance required and moves the beams 22 to location where they do not catch or foul on other parts of the apparatus 10.

Referring particularly to Figures 1, 2, and 7a-7c, the apparatus 10 also includes a first preharvesting stage 30 where various shearing operations can be carried out. The first stage 30 is mounted on a table 32 that can be selectively turned 90° between a first position (shown in Figures 1 and 7a) at which a sheep can be placed on its back and a side-on orientation to the direction of travel of an upper run 16 of the main belt 14 and a second position (shown in Figure 2) at which it holds the sheep in tail to head alignment with the direction of travel of the upper run 16. The first stage 30 includes a first conveyor 34 (or series of rollers) and a body clamp 36 having a first pair of elongate arms 38 on opposite sides of the first conveyor 34. A vertically and horizontally adjustable head rest 40 is also provided at one end of the first conveyor 34 for supporting the head of the sheep. To further assist in preventing the sheep from slipping off the first stage 30, a pair of second arms 42 is also provided on each side of the first conveyor 34 below respective arms 38. The arms 38 are bent to assist in cradling the sheep. A body clamp 36 and head rest 40 are ideally pneumatically or hydraulically operated. It is also envisaged that the body clamp 36 will be arranged to apply a predetermined clamping pressure to the sheep.

A holding pen 44 is located on the front end of the apparatus 10 adjacent the first prestage 30. A sheep to be shorn is typically walked into the pen 44 via a ramp (not shown). The

pen 44 is a conventional side tipping pen. When a sheep is held in the pen 44, the table 32 is orientated so that it is in its first position, as shown in Figure 1, so that one or more harvesters can pull a sheep from the pen 44 onto the first prestage 30 in an inverted position, ie with the sheep's back on the first conveyor 34. The body clamp 36 can then be operated to hold the sheep on the first prestage 30 and the head rest 40 adjusted vertically and horizontally to suit the sheep.

Referring to Figures 1, 2 and 8a-8c, the apparatus 10 includes a second preharvesting stage 46 at which the shearing of different parts of the sheep occurs. The second prestage 46 includes a fixed table 48 that supports a second conveyor 50 (or series of rollers). A second body clamp 52 is provided for clamping on opposite sides of the sheep when on the second conveyor 50. Body clamp 52 includes a set of arms 54 located on each side of the second conveyor 50 that, similar to arms 38, can be moved toward each other to effect clamping or away from each other to release the sheep. The arms 54 may be selectively shortened or lengthened and may be shaped along their length inwardly and/or outwardly.

The second stage 46 is located between the first stage 30 and the main stage 12 with the second conveyor 50 in alignment with and movable in the same direction as the main belt 14. The first, second and main conveyors 34, 50 and 14 are arranged so as to be driven simultaneously and through the same distance.

A plurality of overhead front leg carriers 56 (refer Figures 1-6 and 9) are included in the apparatus 10 for clamping one or both of the front legs of the sheep at predetermined locations along the second preharvesting stage 46 and the main stage 12. Each front leg carrier 56 is supported by an overhead rail 58 formed in a continuous loop disposed above and extending in part along and above the main harvesting stage 12. More particularly rail 58 extends from the first preharvesting stage 30 to the main stage 12 and back again. The rail 58 is supported by a frame work 60 of the apparatus 10. Each front leg carrier 56 has a pair of front legs clamps 62 supported on an arm 64 that is suspended from a respective carriage 66 that engage in the rail 58. The front leg clamps 62 are in a form similar to hind leg clamps 20. Braking means in the form of friction plates (not shown) are provided along the rail 58 at selected locations for pressing on the carriages 66

to prevent their motion along the rail 58. The friction plates are operated pneumatically or hydraulically by foot pedals (not shown). A carousel 67 (see Figure 12) is provided at the end of the rail 58 above the first preharvesting stage 30 to allow the front leg clamps 62/arms 64 to be turned through 180° so as to be correctly orientated to receive the front
5 legs of the next sheep.

A plurality of selectively lockable front leg clamp attitude adjusting means 68 (refer Figures 1, 2 and 9) are also supported by the rail 58 at selected locations to swing the front leg clamps 62/arms 64 backwards or forwards in the direction of the rail 58 and
10 subsequently lock them in place to facilitate a stretching of the skin of the sheep or otherwise assist in positioning the sheep. Each attitude adjusting means 68 is in the form of a number of parallel fingers 70 each being pivotally mounted to both parallel support bars 72 and 74. Separate pneumatic or hydraulic rams 75 are used to move the bars 72,74 relative to each other to thereby change the angle of inclination of the fingers 70.

15 As best seen in Figures 3-6, the arm 64 from which each front leg clamp 62 is suspended is provided with a transversely extending pin 76. This pin can engage between adjacent pairs of fingers 70 so that adjusting the angle of inclination of the finger 70 results in a swinging of the arm 72 either backwards or forwards.

20 Rail 58 is slidably mounted on the frame 60. When the apparatus 10 is in use, the rail 58 is slid laterally so that one run extends above the main harvesting stage 12, and stages 30 and 46 as shown in Figure 6. However, when the apparatus 10 is being transported from place to place, rail 58 is slid to a centrally located position as seen most clearly by
25 comparison of Figures 3-5.

The apparatus 10 is most conveniently formed on a trailer 82 to allow it to be towed behind a vehicle such as a prime mover. The first and second preharvesting stages 30,46 and the main stage 12 are located along the longitudinal centre line of the trailer 82. On
30 opposite sides, the trailer supports platforms 84 on which wool harvesters can stand and walk along when using the apparatus 10. In order to improve the transportability of the apparatus 10, the platforms 84 can be folded inwardly toward the centre of the trailer and

the sides of the trailer drawn inwardly so as to reduce its overall width as shown by the comparison between Figure 3-6. This ensures that the trailer 82 is not considered to be an overwidth vehicle.

5 Figure 11 depicts an alternate embodiment of apparatus 10 in which the mounting mechanism for the hind leg clamps 20 mounts or suspends the rear leg clamps 20 from the overhead rail 58. This is to be contrast with the embodiments shown in Figures 1-10 where the mounting mechanism is a beam 22 that is mounted or supported in a track located between the upper and lower runs 16, 18 of the main conveyor belt 14. Figure 11
10 depicts an end of the rail 58 with one set of leg clamps 20 in a head-on orientation prior to turning a corner of the rail 58 and the remaining two clamps 20 shown in a side-on orientation extending above the main conveyor 14. The mounting mechanism for the leg clamps 20 also includes a pair of arms 90 each of which is pivotably coupled at one end to the beam 22. Respective rear leg clamp 20 is attached to the opposite end of each arm 90.
15 The arms 90 are pivotally coupled to the beam 22 in a manner that enables them to be moved, displaced or tilted independently of each other. In the embodiment shown in Figures 1-10, the beams 22 are tilted automatically at various positions along the upper run 16 to lay the sheet on its opposites sides. However in the embodiment shown in Figure 11, the arms 90 are moved manually by the wool harvesters in order to roll or lay
20 the sheep from side to side on the upper run 16. The beams 22 are coupled by brackets 92 to depending arms 94 of carriages 96. The brackets 92 allow height adjustment of the clamps 20 above the upper run 16. In this embodiment the length of the rail 58 may be extended to ensure that the hind leg clamps 20 can be disposed over the end of main conveyor 12 distant the second stage 46. As with the front leg clamps, the hind leg clamps
25 20/carriages 96 free wheel in the path of rail corresponding to the direction of travel of upper run 16 but are driven along the return path of the rail.

The method of operation and use of the apparatus 10 depicted in Figures 1-10 will now be described.

30

Initially, a sheep is lead up a ramp (not shown) to the pen 44 waiting for shearing. First and second wool harvesters at the first preharvesting stage 30 will then assist each other to

invert the sheep onto first preharvesting stage 30 when the stage is turned to the side on orientation. The arms 38 of the body clamp 36 are then adjusted to clamp on the opposite sides of the sheep and the vertical and/or horizontal positions of the headrest 40 adjusted to suit the sheep. The wool harvesters can then clean the head below the ears, horns and clean the jowls to the dew flap. Cleaning of the front hocks will also be carried out if appropriate. At the same time, the second wool harvester will remove all stain from the pizzle area and the tail area. In addition, if necessary, wool from the back hocks will also be removed. The first or second harvester will then turn the first preharvesting stage 30 so that the sheep is in tail to head alignment with main belt 14 (shown in Figure 8) and each will engage one of the front legs of the sheep in an overhead front leg clamp 62 in readiness to proceed to preharvesting stage 2. The body clamp 36 is then released and the conveyors 34, 50 and 14 advanced simultaneously to move the sheep to the second preharvesting stage 46. A fourth harvester at station S1 of the main stage 12 will jog the sheep into position on the second conveyor 50 at the second preharvesting stage 46 and engage the right back leg into an adjacent hind leg clamp 20. A third harvester at second preharvesting stage 46 will engage the left back leg into the same hind leg clamp 20 on main stage 12 and then adjust the front leg clamp 62 using the attitude adjusting means 68 to expose the frib and belly wool. The third harvester will then remove skirtings under the front legs, clean the belly, remove the skirtings from the top of the back, legs, and reset the front leg holders. The sheep is now ready to proceed to the main harvesting stage 12. The conveyor 14 is then advanced to pull the sheep onto the upper run 16. The fourth harvester may adjust the attitude of the front leg clamps 62 as desired using the attitude adjusting means 68. At stations S1, the fourth harvester will remove the skirtings from the top of the front legs and brisket, clean the left side of the neck and the front neck, going up the neck almost to the spine (shearing style - top side of the neck).

Once this has been completed, the conveyor 14 is advanced again to move the sheep to the second stage S2. At this stage, a fifth harvester again adjusts the front leg holders 62 as desired using the attitude adjusting means 68 and cleans the right side of the sheep's neck almost to the spine, going from head to front shoulder. Once complete, they will release the front legs from the front leg clamps 62. The front leg clamp 62 will then be driven back around the rail 58 to a location near the first prestage 30. Conveyor 14 is advanced

again to move the sheep to the third harvesting station S3. As this occurs, the arm 22 supporting the hind leg clamp 20 is automatically tilted to one side laying the sheep on its right hand side on the belt 14. The sixth harvester at station S3 then cleans the left back leg of the animal and performs several long blows over the spine from the rump to the head. When this is completed, the conveyor 14 is again advanced to pull the sheep to shearing station S4. As this occurs, the arm 22 and leg holder are automatically tilted to lie the sheep on its left hand side. A seventh harvester at station S4 then cleans the right back leg of the sheep and forms several long blows until all the fibre is removed. The hind legs of the sheep are then released from the hind leg holders 20 and the sheep rolled from the conveyor to an off chute (not shown). Various switches and safety mechanisms can be incorporated in the apparatus 10 to ensure that a sheep is only advanced from one stage and/or station to another when all harvesters have completed their required actions. For example a first switch can be provided at the first preharvesting stage 30 to disable the advancement of conveyors 34, 50 and 12 until the table 32 is turned to be in alignment with the direction of travel of belt 14. Also "magic eye" switches (eg infrared sensors) or pressure switches can be used at various stations S1-S4 and the second preharvesting stage to ensure advancement of the conveyors 34, 50 and 12 only when every harvester has completed their allotted task.

20 All modifications and variations that would be obvious to a person of ordinary skill in the art are deemed to be within the scope of the present invention the nature of which is to be determined from the above description.

The claims defining the invention are as follows:

1. An apparatus for use in the harvesting of wool from a wool bearing quadruped said apparatus including:

5 a main harvesting stage having an endless loop main conveyer belt provided with an upper run on which said quadruped is supported and a lower return run;

hind leg clamping means for clamping one or both hind legs of the quadruped; and

10 a travelling mounting mechanism for mounting the hind leg clamping means to travel with said quadruped on the main harvesting stage, the mounting mechanism allowing the hind leg clamping means to be moved from a first position that holds the quadruped on its back on the main conveyor belt to one or more displaced positions to lay the quadruped on its first side or opposite second side to allow wool to be harvested from the second side or the first side of the quadruped respectively.

15

2. An apparatus according to claim 1 further including over-head rail formed in a loop disposed above and extending in part along the main harvesting stage, and at least one front leg carrier that travels along the rail for clamping the front legs of the quadruped.

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3. An apparatus according to claim 2 wherein each over-head front leg carrier includes a carriage suspended from the rail and from which depends a front leg clamping means, said carriage arranged to free-wheel in a direction of travel of the upper run of the conveyor belt and to be driven in a return path of the rail.

25

4. An apparatus according to claim 3 further including braking means disposed along said rail for braking the carriage at selectable locations along the rail.

5. An apparatus according to any one of claims 2-4 further including a selectively lockable front leg clamp attitude adjusting means for swinging the front leg clamping means backward or forwards along the direction of the rail and subsequently locking the clamping means in a swung position to facilitate stretching of the skin of the quadruped or

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otherwise positioning of the quadruped.

5 6. An apparatus according to any one of claims 1-5 further including a first preharvesting stage on which said quadruped is supported prior to reaching the main harvesting stage, the first preharvesting stage moveable between a first position on which it can hold the quadruped in a side-on orientation relative to a direction of travel of the upper run of main conveyor belt and a second position on which it holds the quadruped in alignment with said direction of travel; whereby, in use, a quadruped held in a tipping pen adjacent the first preharvesting stage can be tipped onto the first preharvesting stage when
10 in the first position and subsequently turned into alignment with said direction of travel by moving the first pre-stage to the second position.

15 7. An apparatus according to claim 6 wherein the first preharvesting stage includes adjustable body clamps for clamping on opposite sides of the quadruped held in an inverted position.

8. An apparatus according to claim 7 wherein the body clamps include a first pair of elongate arms located on opposite sides of the first preharvesting stage.

20 9. An apparatus according to any one of claims 6-8 wherein the first preharvesting stage also includes a vertically adjustable head rest on which the head of the quadruped can be supported.

25 10. An apparatus according to any one of claims 6-9 wherein the first preharvesting stage includes a first conveyor belt for advancing the quadruped toward the main conveyor belt.

30 11. An apparatus according to any one of claims 6-10 further including a second preharvesting stage located between the first preharvesting stage and the main stage, the second preharvesting stage having a second belt on which the quadruped is supported on its back and a second body clamp for clamping on opposite sides of the body of the quadruped.

12. An apparatus according to any one of claims 1-11 wherein the main stage is notionally divided into a plurality of shearing stations at which different parts of the quadruped are shorn.

5

13. An apparatus according to any one of claims 11 or 12 further including a trailer frame on which said first and second preharvesting stages, said main stage, and said overhead front leg carrier are mounted whereby said apparatus can be towed from place to place by a motorised vehicle.

10

14. An apparatus according to claim 13 wherein said trailer includes foldable walk ways extending on opposite sides of the first and second preharvesting stages and said main stage along which wool harvesters can stand and walk while performing wool harvesting operations but, when said apparatus is being towed from point to point said walkways can be folded to reduce the width of the trailer.

15

15. An apparatus according to any one of claims 1-15 wherein the mounting mechanism comprising a beam extending through a hole formed in said main conveyor belt with said hind leg clamping means coupled to a first end of the beam extending above the upper run of the belt and with an opposite end of the beam retained in a track located between the upper and lower runs of the main conveyor belt, the track and each beam relatively configured so that as said beam travels along the upper run the beam is automatically moved by being tilted at a first location along the upper run from the vertical in one direction to lay the quadruped on said first side and subsequently, upon advancement of the main conveyor belt in the direction of travel, automatically tilted in the opposite direction to lay the quadruped on said second side.

20

25

1.7 An apparatus according to claim 16 wherein said beam is driven by the main conveyor belt.

30

18. An apparatus according to any one of claims 2-15 wherein the mounting means is coupled at one end to the overhead rail and at an opposite end to said hind leg clamping

means.

19. An apparatus according to claim 18 wherein said mounting mechanism comprises a beam coupled at an upper end to the overhead rail and a pair of arms each pivotally
5 coupled at respective first ends to a lower end of beam, the arms pivotally coupled so as to be pivotally moveable independently of each other and wherein the hind leg clamping means comprises a respective hind leg clamps, one of each is coupled to a second end of each arm.

10 20. An apparatus for use in the harvesting of wool substantially as hereinbefore described with reference to and as illustrated in the accompanying drawings.

Dated this 18th day of February 2000

15

By Its Patent Attorneys

GRIFFITH HACK

20 Fellows Institute of Patent and Trade Mark
Attorneys of Australia.

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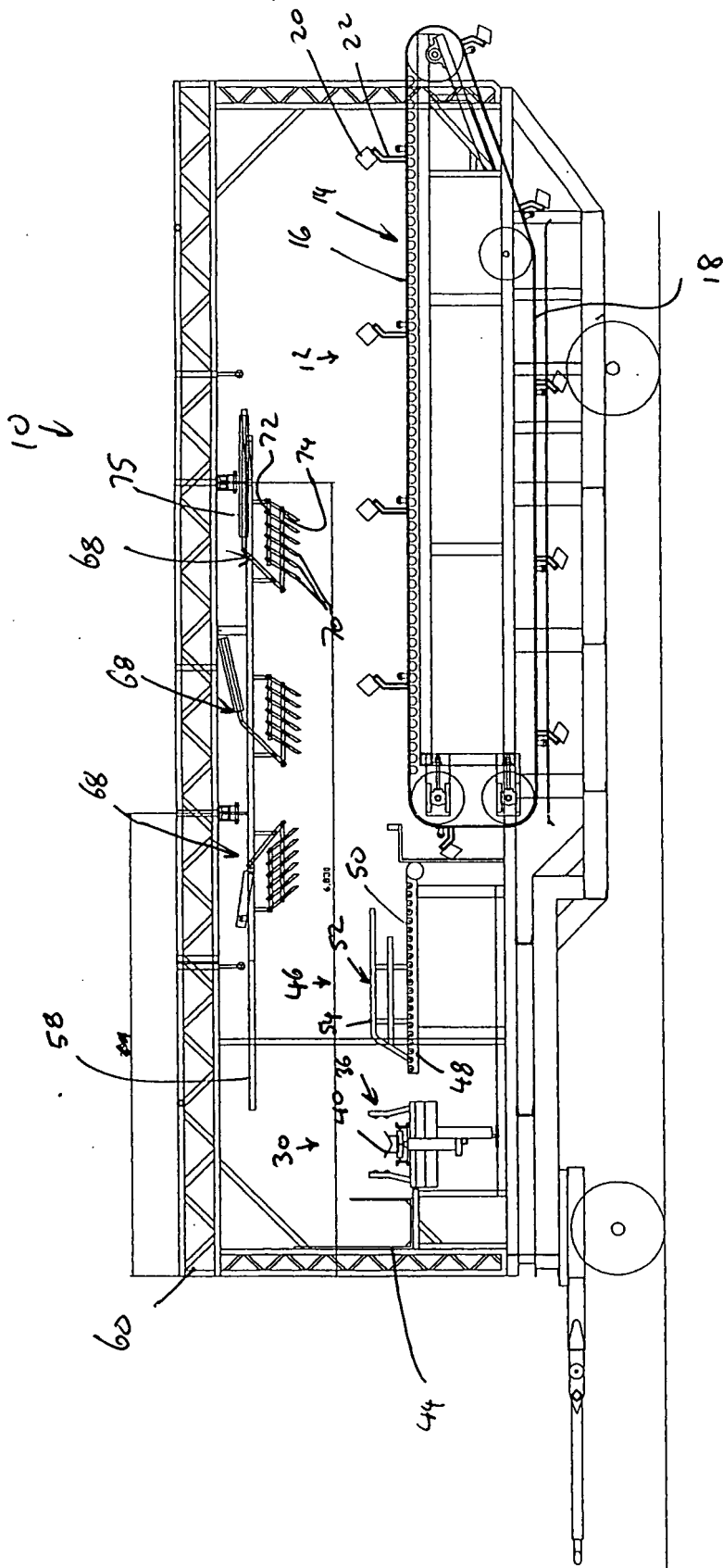


FIG 1

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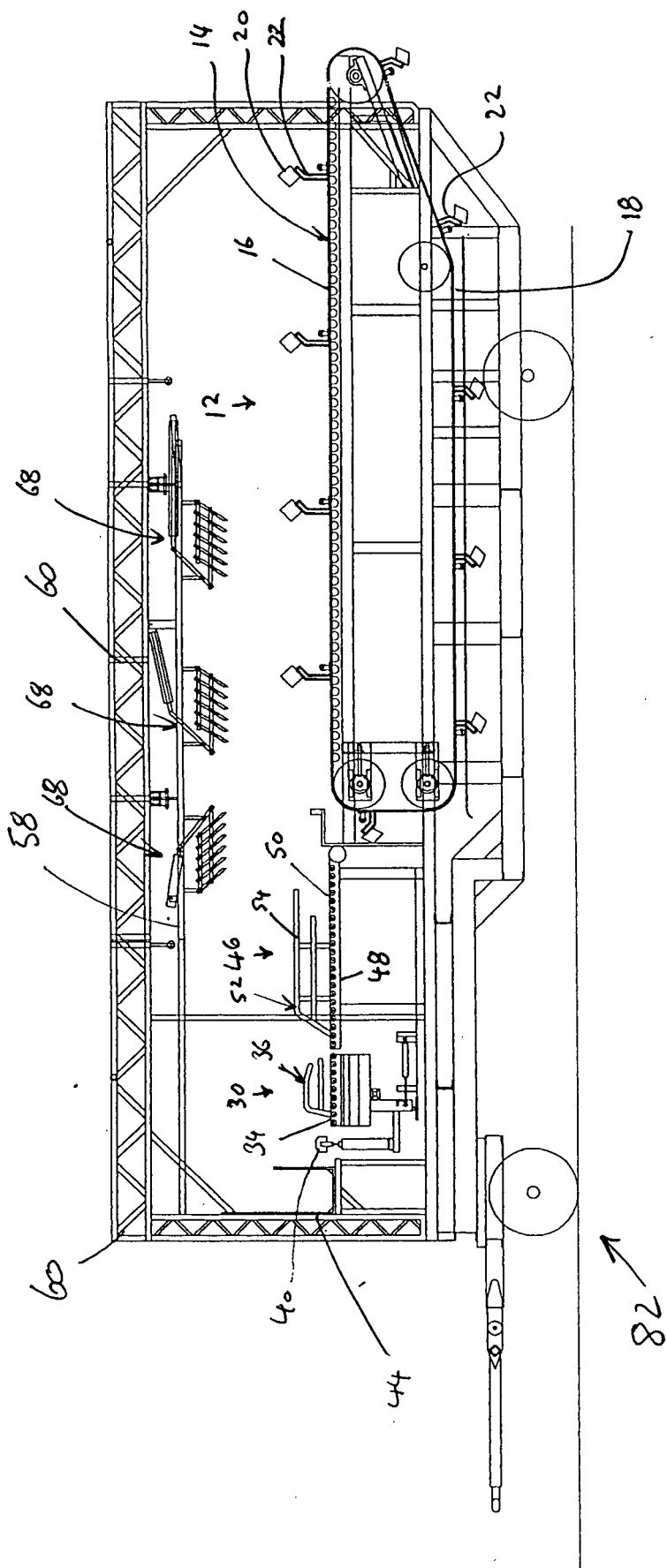
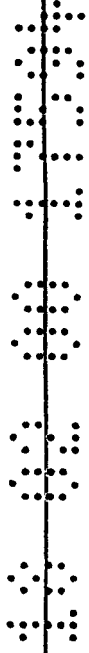


FIG 2

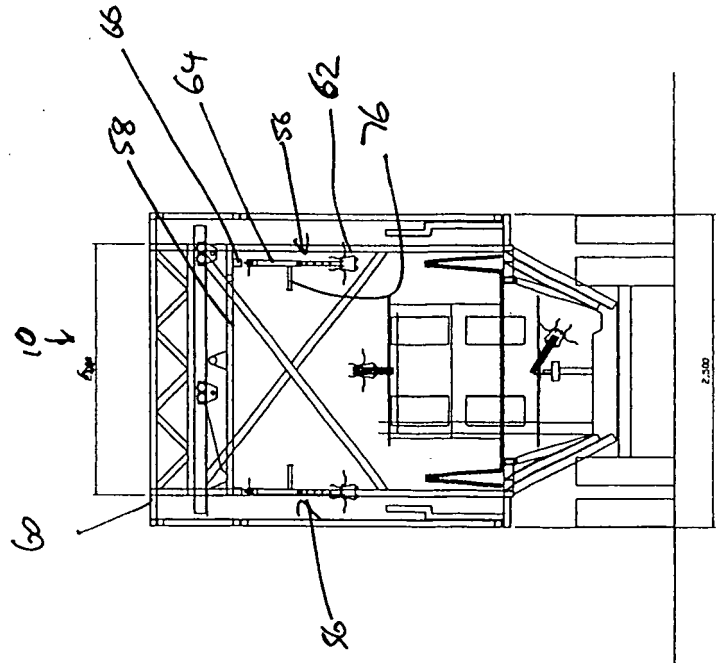
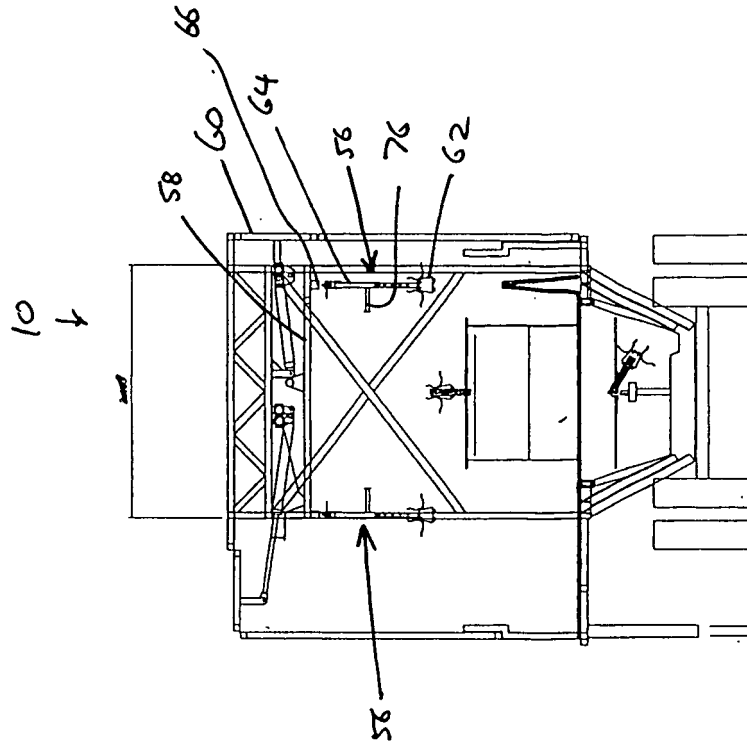
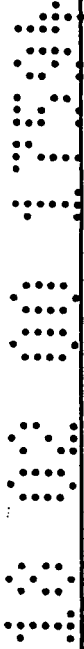
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SECTION SHOWING ROOF & WALLS
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SECTION SHOWING ROOF & WALLS IN
TRAVELLING POSITION

FIG 3

FIG 4

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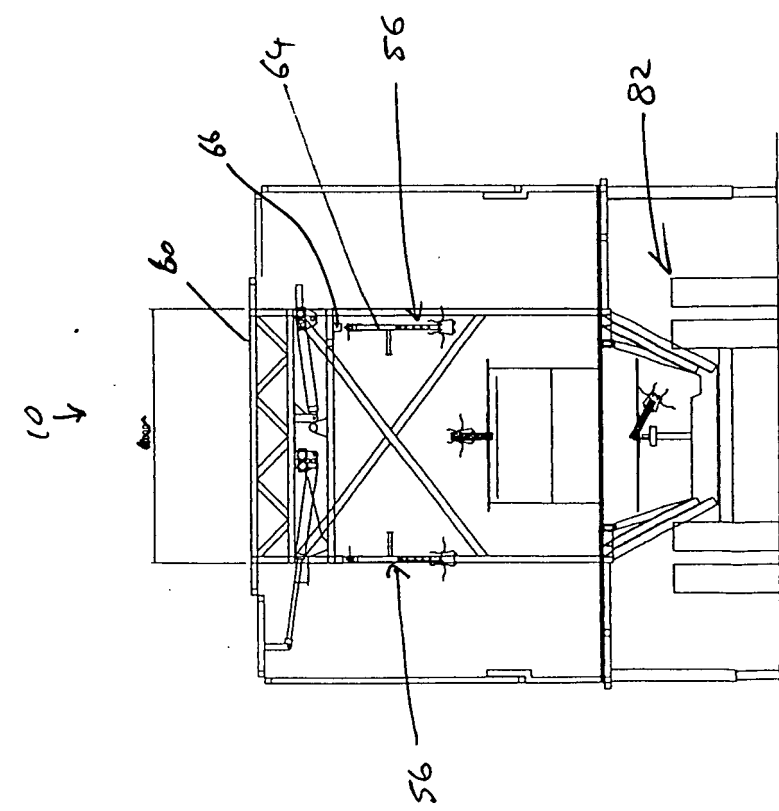
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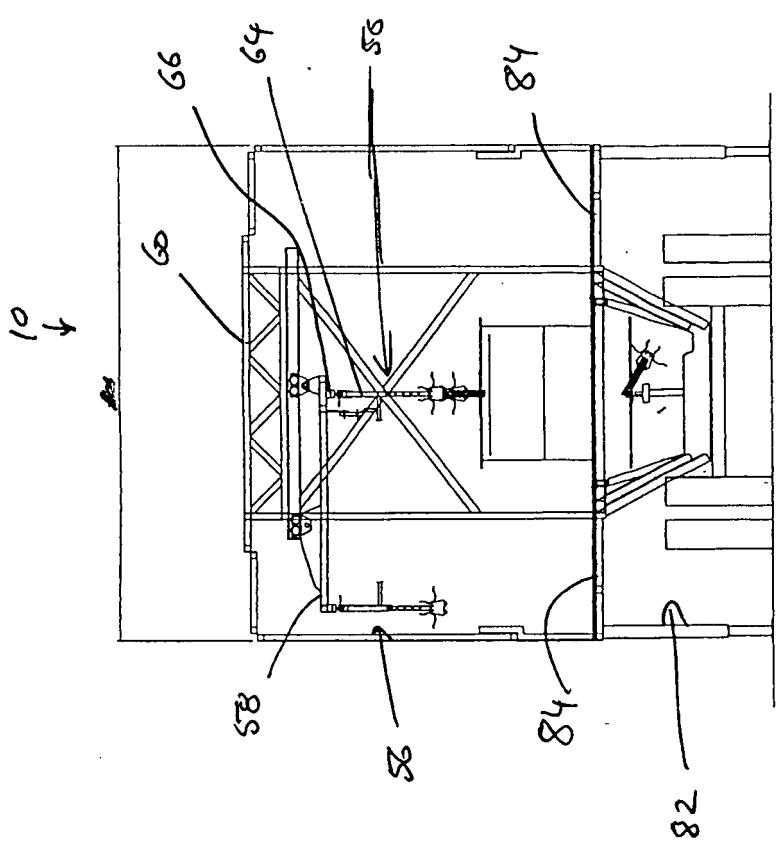
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SECTION SHOWING ROOF & WALLS IN OPERATING POSITION

FIG 5



SECTION SHOWING ROOF, WALLS AND OVERHEAD CONVEYOR IN OPERATING POSITION

FIG 6

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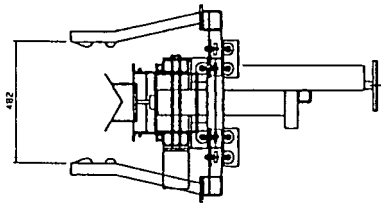
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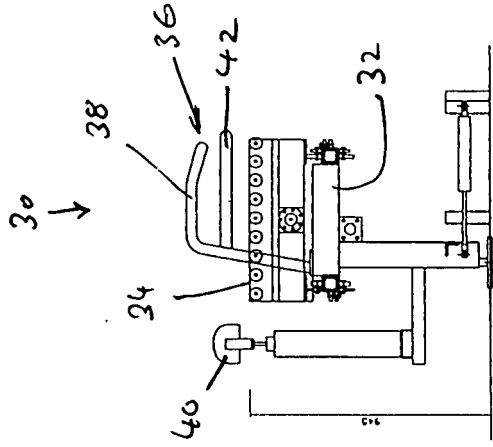
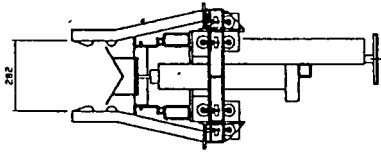
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SECTION THROUGH GUIDES

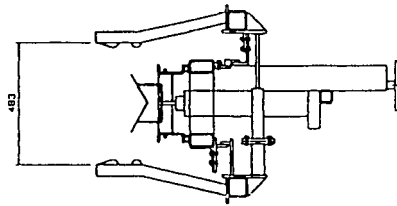


ELEVATION

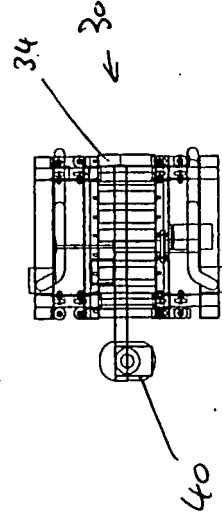
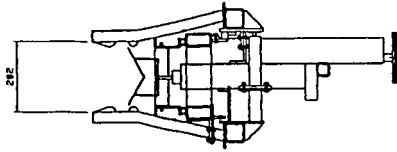
FIG 7a

END ELEVATION

FIG 7b



SECTION THROUGH RAM



PLAN FIG 7c

GENERAL ARRANGEMENT

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MOBILE 041 78 21659

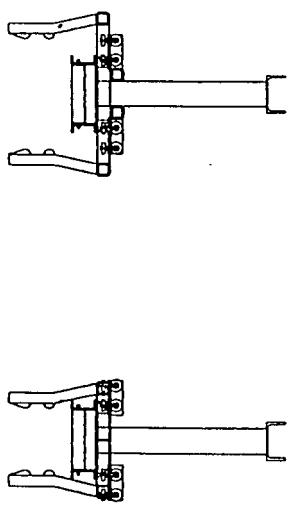
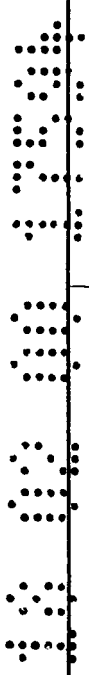
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DATE:

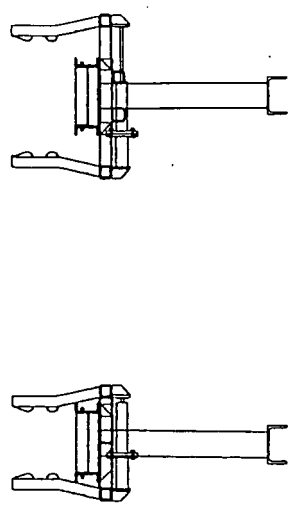
PROJECT:
SITE LOCATION:

GENERAL ARRANGEMENT OF STATION 1

DRAWING NO.

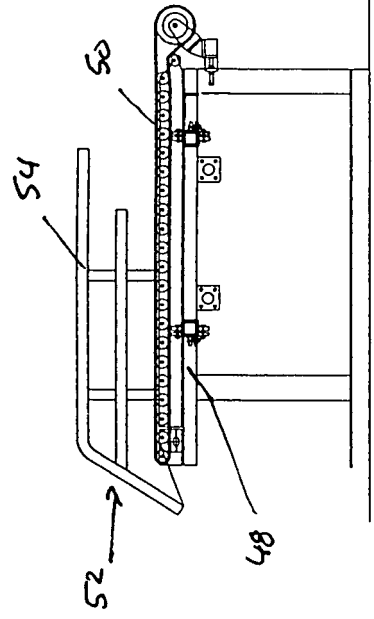


SECTION THROUGH GUIDES

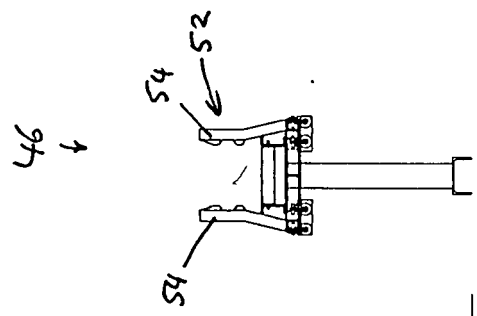


SECTION THROUGH RAM

46 ↑



ELEVATION

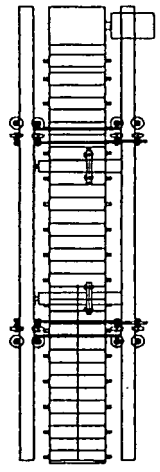


END ELEVATION

fig 8a

FIG 8B

46 →



PLAN
GENERAL ARRANGEMENT

FIG 8C

AMENDMENTS

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PROJECT:
SITE LOCATION:

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GENERAL ARRANGEMENT OF STATION 2

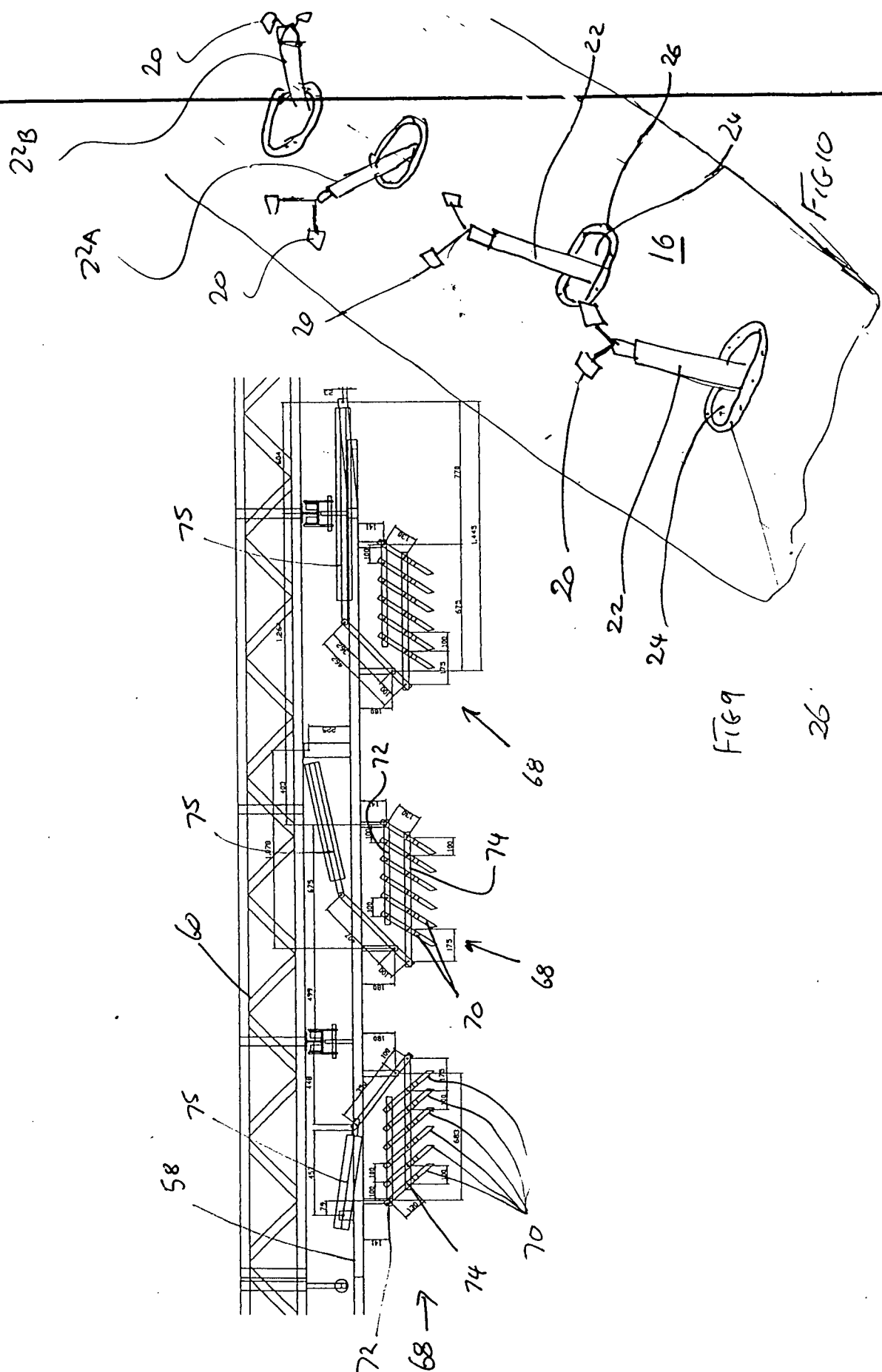
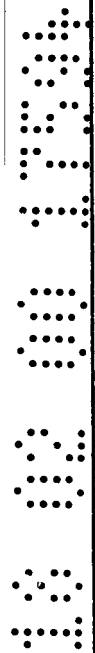


FIG 9

FIG 10

AMENDMENTS	DRAWING NO.	PROJECT:	G.A. OF OVERHEAD LEG RESTRAINTS
		SITE LOCATION:	
SMDraft 5 DANWE STREET, AUSTRLAND	DRAWN: DLP.	PROJECT:	G.A. OF OVERHEAD LEG RESTRAINTS
	PH. 97 25 9882 MOBILE 041 78 21659	SITE LOCATION:	
	DATE:		

10 02 00 11504

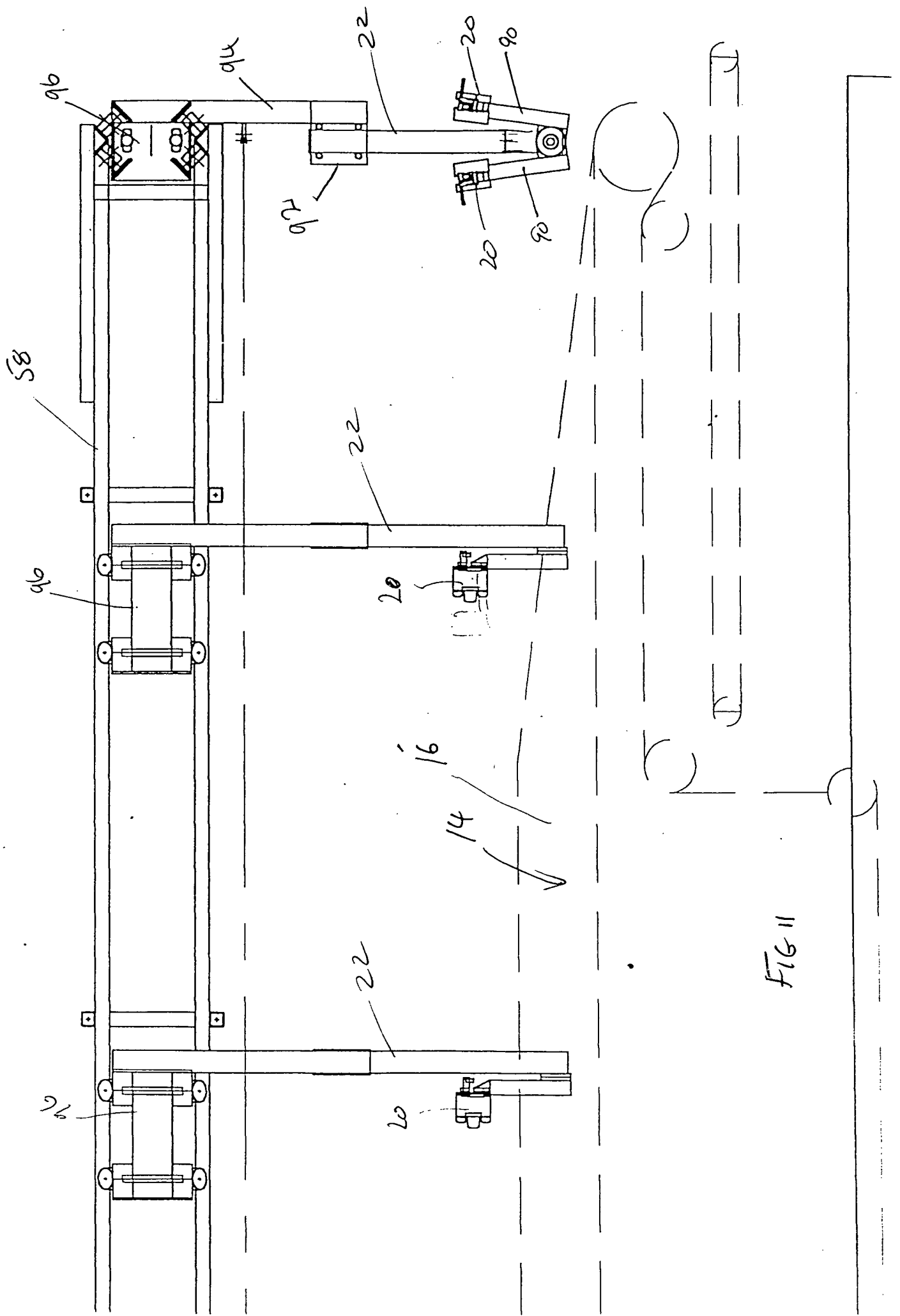


FIG 11

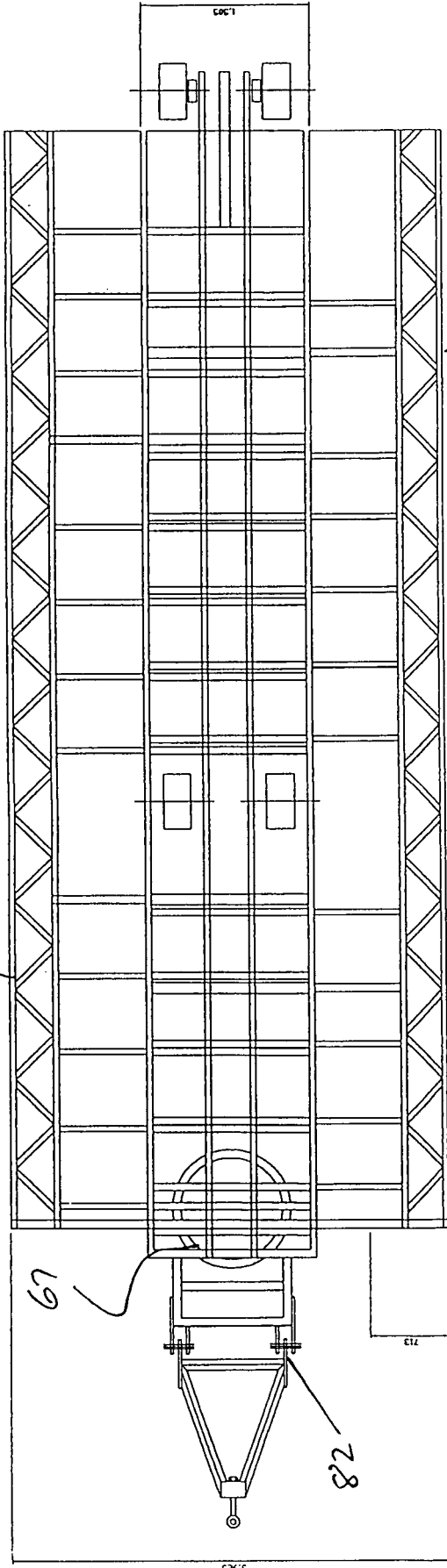
10 60 69 28

10 ↓

60

69

28



front

FIG 12

AMENDMENTS

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PH: 97 25 9882
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DRAWN: DLF

DATE:

PROJECT:
SITE LOCATION:

DECK GENERAL ARRANGEMENT

DRAWING NO.