

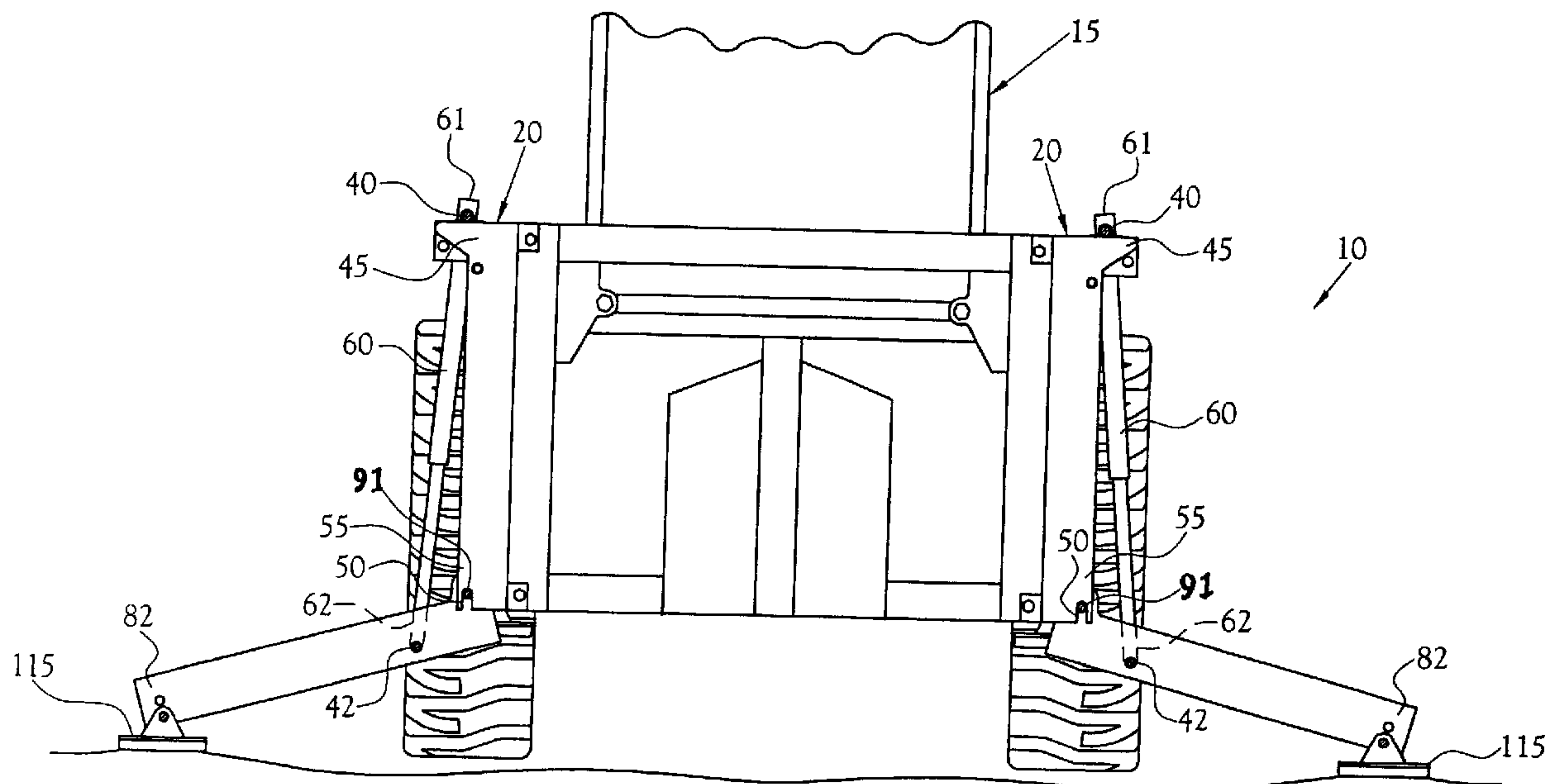


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(54) Title: DUAL MODE STABILIZER FOR LOADERS AND ATTACHMENTS



(57) Abrégé/Abstract:

A dual mode stabilizer (10) for use with a backhoe loader or a backhoe attachment. The stabilizer (10) includes a pair of base members (20) fixed on opposite sides of the tractor (15). A stabilizer arm assembly (30) engages the base member (20). The stabilizer arm assembly (30) is piston (60) actuated and includes an outrigger arm member (65) a sliding arm member (70) pivotally connected to the outrigger arm member (65), a first locking mechanism and a second locking mechanism. Actuation of the piston (60) with the first locking mechanism engaged, causes the stabilizer arm assembly (30) to travel downwardly within the base member providing operation in the vertical mode. Actuation of the piston (60) with the first locking mechanism released and the second locking mechanism engaged, causes the outrigger arm member (65) to rotate about a first pivot point (75) resulting in operation in the fold down mode.



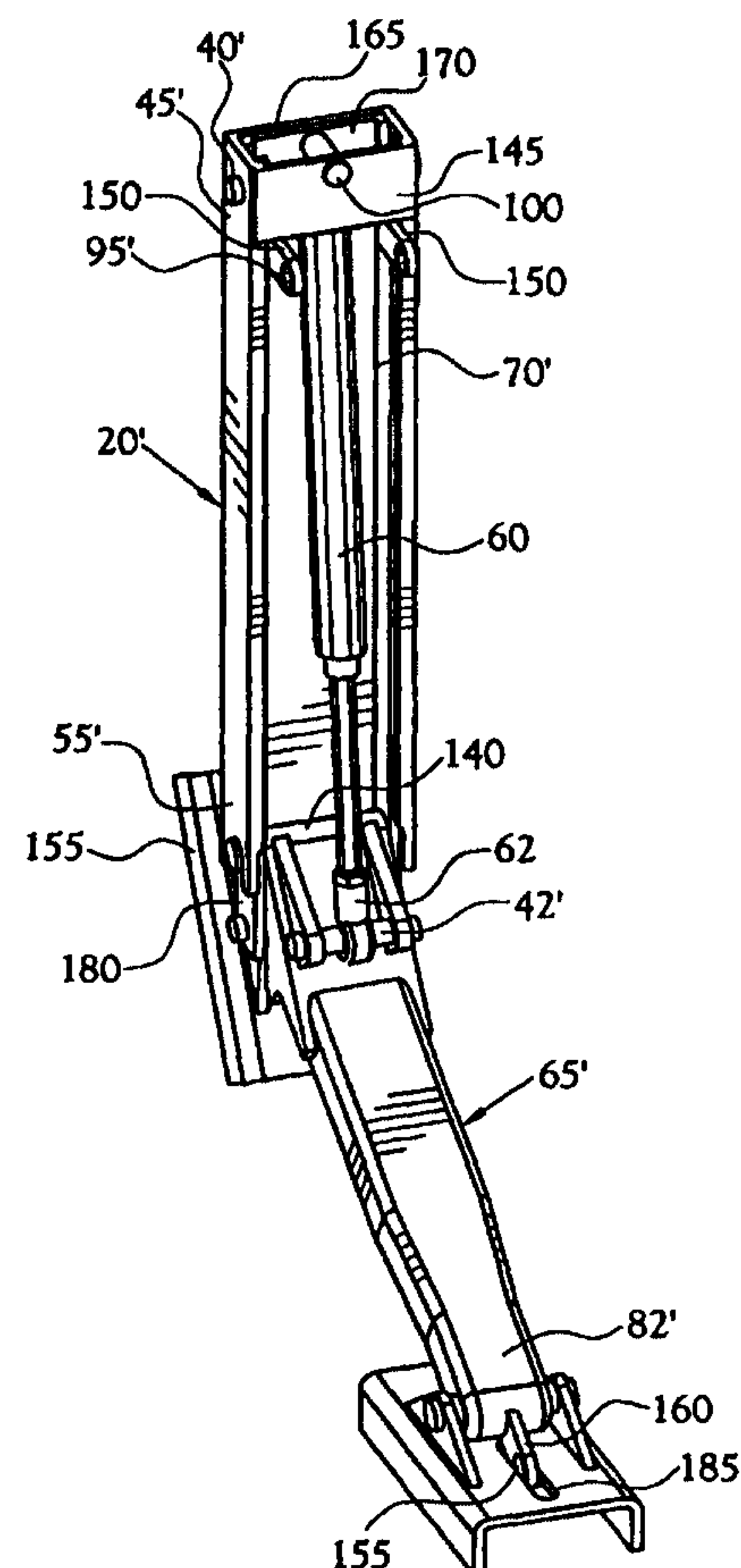
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(21) International Application Number: PCT/US99/13115 (22) International Filing Date: 10 June 1999 (10.06.99) (30) Priority Data: 09/096,549 12 June 1998 (12.06.98) US (71)(72) Applicant and Inventor: WEBB, Sterling, E. [US/US]; 6731 Ridge Rock Lane, Knoxville, TN 37909 (US). (74) Agents: PITTS, Robert, E. et al.; Pitts & Brittan, P.C., P.O. Box 51295, Knoxville, TN 37950-1295 (US).	(81) Designated States: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZA, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG). Published <i>With international search report.</i>	

(54) Title: DUAL MODE STABILIZER FOR LOADERS AND ATTACHMENTS**(57) Abstract**

A dual mode stabilizer (10) for use with a backhoe loader or a backhoe attachment. The stabilizer (10) includes a pair of base members (20) fixed on opposite sides of the tractor (15). A stabilizer arm assembly (30) engages the base member (20). The stabilizer arm assembly (30) is piston (60) actuated and includes an outrigger arm member (65), a sliding arm member (70) pivotally connected to the outrigger arm member (65), a first locking mechanism and a second locking mechanism. Actuation of the piston (60) with the first locking mechanism engaged, causes the stabilizer arm assembly (30) to travel downwardly within the base member providing operation in the vertical mode. Actuation of the piston (60) with the first locking mechanism released and the second locking mechanism engaged, causes the outrigger arm member (65) to rotate about a first pivot point (75) resulting in operation in the fold down mode.



- 1 -

Description**Dual Mode Stabilizer For Loaders and Attachments**Technical Field

This invention relates to the field of industrial equipment. More particularly, it relates to a stabilizer for use in conjunction with industrial equipment that requires a stabilizer such as a rubber tired
5 backhoe loader, a crane or a backhoe attachment mounted on, for instance, a skid steer loader.

Background Art

It is known in the art to use stabilizers with industrial equipment that has a narrow wheel base and a high, and often shifting,
10 center of gravity. For instance, rubber tired backhoe loaders typically utilize stabilizers. Generally, there are two main configurations for stabilizers; fold-down pivoting stabilizers, also known as outriggers, and vertical stabilizers which are useful for working in tight areas. In addition, skid steer loaders are frequently used for light industrial
15 applications, frequently involving the use of a backhoe attachment for trenching and for light duty excavation. It is known in the art that a backhoe attachment includes either a vertical stabilizer or a fold down stabilizer, but not both. Heretofore, an operator had to choose what type of attachment was needed. If, for instance, a tractor has a state of
20 the art fold-down stabilizer installed, but the work area is too narrow and demands a vertical stabilizer, or if a tractor has a vertical stabilizer,

- 2 -

but has to dig a trench on a sloped area, the operator must decide whether to use a different piece of equipment or attempt to use equipment ill-suited for the task. This results in increased costs of operation and lost time due to the change in equipment.

5 There are several known art references that teach either vertical type supports or stabilizers for various types of equipment or fold-down pivoting stabilizers.

	<u>Patent No.</u>	<u>Inventor(s)</u>	<u>Issue Date</u>
	5,622,235	Merritt	Apr. 22, 1997
10	5,171,124	Foster	Dec. 15, 1992
	5,575,492	Stone	Nov. 19, 1996
	5,401,046	Schwartz et al.	Mar. 28, 1995
	5,575,493	Schwartz et al.	Nov. 19, 1996
	5,451,080	Kneile	Sep. 19, 1995
15	4,635,412	Le Poittevin	Jan. 13, 1987

What has heretofore been missing from the art is a stabilizer that is readily operable in either a vertical stabilizer mode or in a fold-down stabilizer mode.

20 Accordingly, it is an object of the present invention to provide a dual mode stabilizer, operable in either a fold-down stabilizer mode or a vertical stabilizer mode.

A further object of the present invention is to provide a dual mode stabilizer that is operable with a standard hydraulic system without requiring an additional hydraulic ram for each mode.

25 Yet another object of the present invention is to provide a dual mode stabilizer which is readily switchable from one mode to another while the equipment is in use.

- 3 -

Other objects and advantages over the prior art will become apparent to those skilled in the art upon reading the detailed description together with the drawings as described as follows.

Disclosure of the Invention

5 In accordance with the various features of this invention, a dual mode stabilizer for a rubber tired backhoe loader and for a backhoe attachment for a skid steer loader, is provided. As used herein, tractor will refer to either a backhoe loader, including without limitation rubber tired backhoe loaders, or a skid steer loader. Those skilled in
10 the art will recognize that the dual mode stabilizer of the present invention has utility with any type of industrial equipment that requires a stabilizer. The dual mode stabilizer can either be mounted directly on the frame of the tractor or on the backhoe attachment itself. Accordingly, reference herein to mounting or positioning relative to
15 the backhoe attachment will be understood to be inclusive of mounting directly to the frame. Further, those skilled in the art will recognize that a dual-mode stabilizer can be mounted at each corner of the tractor. The dual mode stabilizer includes at least one base member rigidly fixed proximate at least one corner of the tractor proximate the
20 backhoe. Each base member defines a channel for receiving a stabilizer arm assembly and includes a first anchor point disposed proximate the top of the base member and a stop disposed proximate the lower end of the base member. A stabilizer arm assembly is nested within and received by the base member. The stabilizer arm assembly
25 includes a piston for actuating the stabilizer arm assembly, an outrigger

- 4 -

arm member, a sliding arm member pivotally connected to the
outrigger arm member so as to limit movement of the outrigger arm
member with respect to the sliding arm member to rotational
movement about a first pivot point proximate the lower end of the
5 outrigger arm member and a first locking mechanism for preventing
rotational movement of the outrigger arm member. A lynch pin
provided at the first pivot point engages the stop to limit the upward
range of axial movement of the stabilizer arm assembly within the base
member. The piston has a first end secured to the first anchor point
10 and a second end secured to a second anchor point provided on the
outrigger arm member.

The sliding arm member engages the base member and an
associated mechanism is provided to limit movement of the sliding
arm member within the base member to axial movement. A second
15 locking mechanism is provided between the base member and the
sliding arm member to prevent axial movement of the sliding arm
member within the base member.

Actuation of the piston with the first locking mechanism
engaged, preventing rotational movement of the outrigger arm, and the
20 second locking mechanism released causes the stabilizer arm assembly
to travel downwardly within base member thus providing operation in
the vertical stabilizer mode. Contrariwise, actuation of the piston with
the first locking mechanism released and the second locking
mechanism engaged, preventing axial movement of the sliding arm
25 member, causes the outrigger arm member to rotate about the first

- 5 -

pivot point thereby providing operation in the fold down stabilizer mode.

Brief Description of the Drawings

5 Fig. 1A illustrates a perspective view of the base member of the dual mode stabilizer of the present invention.

Fig. 1B illustrates a perspective view of the sliding arm member of the dual mode stabilizer of the present invention.

Fig. 1C illustrates a perspective view of the outrigger member of the dual mode stabilizer of the present invention.

10 Fig. 2 illustrates a perspective view of the base member, sliding arm member and outrigger member of the dual mode stabilizer of the present invention nested together.

Fig. 3 illustrates an end elevation view of the dual mode stabilizer mounted on a tractor and operating in the fold down
15 stabilizer mode.

Fig. 4 illustrates an end elevation view of the dual mode stabilizer mounted on a tractor and operating in the vertical stabilizer mode.

20 Fig. 5 illustrates an end elevation view of the dual mode stabilizer mounted on a tractor showing one stabilizer operating in the fold down stabilizer mode and the other stabilizer operating in the vertical stabilizer mode.

Fig. 6 illustrates an alternate arrangement of the key and keyway illustrated in Figure 2.

- 6 -

Fig. 7A illustrates a perspective view of the base member of an alternate embodiment dual mode stabilizer of the present invention.

Fig. 7B illustrates a perspective view of an alternate embodiment dual mode stabilizer of the present invention.

5 Fig. 7C illustrates a perspective view of the outrigger member of an alternate embodiment dual mode stabilizer of the present invention.

Fig. 8 illustrates a perspective view of an alternate embodiment dual mode stabilizer operating in the vertical stabilizer mode.

10 Fig. 9 illustrates a perspective view of the embodiment illustrated in Figure 8 operating in the fold down stabilizer mode.

Fig. 10 illustrates an end elevational view of the embodiment illustrated in Figure 8 operating in the fold down stabilizer mode.

15 Fig. 11 illustrates a partial perspective view of the embodiment illustrated in Figure 8 mounted on a tractor.

Best Mode for Carrying Out the Invention

A dual mode stabilizer, constructed in accordance with the present invention, is illustrated generally as 10 in the figures. Dual mode stabilizer 10 is primarily used in conjunction with a backhoe loader, including without limitation a rubber-tired backhoe loader, and can also be used in conjunction with a backhoe attachment for a skid steer loader. As used herein, tractor will refer to either a backhoe loader such as a rubber-tired backhoe loader or a skid steer loader. A tractor is illustrated generally as 15 in the figures. The dual mode stabilizer 10 includes a pair of base members 20 rigidly fixed on

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- 7 -

opposite sides of the tractor 15 proximate the backhoe attachment.

Those skilled in the art will recognize that the dual mode stabilizer 10 can either be mounted directly on the frame of the tractor 15 or on the backhoe attachment itself. Each base member 20 defines a channel 25
5 for receiving a stabilizer arm assembly 30 and includes a first anchor point 40 disposed proximate the top 45 of the base member 20 and a stop 50 disposed proximate the lower end 55 of the base member 20. In one embodiment, the stabilizer arm assembly 30 is nested within and received by the base member 20.

10 The stabilizer arm assembly 30 includes a piston 60 for actuating the stabilizer arm assembly 30, an outrigger arm member 65, a sliding arm member 70 nested within the outrigger arm member 65 so as to limit movement of the outrigger arm member 65 with respect to the sliding arm member 70 to rotational movement about a first
15 pivot point 75 proximate the lower end 80 of the outrigger arm member 65 and a first locking mechanism for preventing rotational movement of the outrigger arm member 65. The first pivot point 75 is defined by registering hole members 76 disposed in side walls 92 of the outrigger arm member 65 proximate lower end 80, and registering
20 hole members 77 disposed in the side walls 97 of the sliding arm member 70 proximate the lower end 78 of sliding arm member 70. Hole members 76 and hole members 77 being in register. A lynch pin 91 provided at the first pivot point 75 engages the stop 50 to limit the upward range of axial movement of the stabilizer arm assembly 30
25 within the base member 20. The piston 60 has a first end 61 secured to

- 8 -

the first anchor point 40 and a second end 62 secured to a second anchor point 42 provided on the outrigger arm member 65.

5 A mechanism is provided to limit movement of the sliding arm member 70 relative to the base member 20 to axial movement. In one embodiment, the mechanism is defined by a guide slot or keyway 35 provided in the base member 20 and a key 85 disposed on the sliding arm member 70 that is received by the keyway 35. The particular configuration of the mechanism is adaptable so long as it limits the relative motion of the sliding arm 70 with respect to the base member 10 20 to axial motion. While a particular embodiment of the key 85 and keyway 35 has been illustrated, those skilled in the art will appreciate that other configurations of keys and keyways could be utilized in order to limit movement of the sliding arm member 70 within the base member 20 to axial movement. For instance, as seen in Fig. 6, the key 15 85' could be disposed on the base member 20' with the keyway 35' disposed on the sliding arm member 70'. A second locking mechanism is provided between the base member 20 and the sliding arm member 70 to prevent axial movement of the sliding arm member 70 within the base member 20.

20 Actuation of the piston 60 with the first locking mechanism engaged, preventing rotational movement of the outrigger arm member 65, and the second locking mechanism released causes the stabilizer arm assembly 30 to travel downwardly within base member 20 thus providing operation in the vertical stabilizer mode. Contrariwise, 25 actuation of the piston 60 with the first locking mechanism released and the second locking mechanism engaged, preventing axial

- 9 -

movement of the sliding arm member 70, causes the outrigger arm member 65 to rotate about the first pivot point 75 thereby resulting in operation in the fold down stabilizer mode. Those skilled in the art will recognize that piston 60 is preferably a hydraulic ram. However,
5 it is recognized that other actuators could be utilized such as, a pneumatic ram or a mechanically driven actuator.

Referring to Figs. 1a-1c, the preferred embodiments of the first and second locking mechanisms will be described. The first locking mechanism is defined by a first pair of registering hole members 90
10 provided in side walls 92 of the outrigger arm member 65 and a second pair of registering hole members 95 provided in the side walls 97 of the sliding arm member 70, the second pair of hole members 95 being in register with the first pair of hole members 90. In order to engage the first locking mechanism and lock the outrigger arm member 65 and
15 the sliding arm member 70 together so as to prevent rotational movement of the outrigger arm member 65, a lynch pin 100 is inserted through the first and second pairs of registering hole members 90 and 95 respectively. Figure 2 illustrates engagement of the first locking mechanism.

20 The second locking mechanism works in similar fashion and prevents axial movement of the sliding arm member 70 within the base member 20. The second locking mechanism is defined by a first pair of registering hole members 105 provided in side walls 107 of the base member 20 and a second pair of registering hole members 110
25 provided in the side walls 97 of the sliding arm member 70, the second pair of hole members 110 being in register with the first pair of hole

- 10 -

members 105 disposed on the side walls 107 of the base member 20. In order to engage the second locking mechanism and lock the base member 20 and the sliding arm member 70 together so as to prevent axial movement of the sliding arm member 70 within the base member 20, the lynch pin 100 is inserted into the first and second pairs of registering hole members 105 and 110. It is anticipated that a single lynch pin 100 could be utilized in order to selectively switch between the fold-down stabilizer mode and the vertical stabilizer mode. Those skilled in the art will recognize that the first and second locking mechanisms could be engaged with a fastening mechanism other than a lynch pin. Further, foot pads, such as foot pads 115 are pivotally and removably mounted on the lower end 80 and upper end 82 of outrigger arm member 65. Those skilled in the art will recognize that, as seen in Figure 5, each side of the dual mode stabilizer 10 could be independently operated such that one side of dual mode stabilizer 10 could be operated in the vertical stabilizer mode and the other side of the dual mode stabilizer 10 could be operated in the fold-down stabilizer mode.

Referring to Figures 7A-11, an alternate embodiment is illustrated with common components bearing the same reference numerals. Comparable but distinctive parts bear the same reference numeral with the prime notation added, and parts not previously described bear their own reference numerals. In this regard, in the alternate embodiment of the dual mode stabilizer 10', each base member 20' defines a channel 25' for receiving a stabilizer arm assembly 30' and includes tabs 135, a first anchor point 40' disposed

- 11 -

proximate the top 45' of the base member 20' and a stop 50 disposed proximate the lower end 55' of the base member 20'. A portion of the top 45' of the base member 20' is enclosed by a wall member 145, which is illustrated as being integral with base member 20'. However, those skilled in the art will recognize that wall member 145 can be fixed to the upper end the top 45' of the base member 20' by means of fasteners (not shown).

The stabilizer arm assembly 30' includes an actuator, such as piston 60, for actuating the stabilizer arm assembly 30', an outrigger arm member 65', and a cooperating sliding arm member 70' pivotally connected to the outrigger arm member 65' so as to limit movement of the outrigger arm member 65' with respect to the sliding arm member 70' to rotational movement about a first pivot point 75' proximate the lower end 80' of the outrigger arm member 65' and a first locking mechanism for preventing rotational movement of the outrigger arm member 65'. The first pivot point 75' is defined by a pin receptor 140 disposed on the lower end 80' of the outrigger arm member 65', and registering hole members 77' disposed in the side walls 97' of the sliding arm member 70' proximate the lower end 180 of sliding arm member 70'. Pin receptor 140 registers with hole members 77'. A lynch pin 91 provided at the first pivot point 75' engages the stop 50 to limit the upward range of axial movement of the stabilizer arm assembly 30' within the base member 20'. The piston 60 has a first end 61 secured to the first anchor point 40' and a second end 62 secured to a second anchor point 42' provided on the outrigger arm member 65'.

- 12 -

The sliding arm member 70' engages tabs 135 so as to limit movement of the sliding arm member 70' within the base member 20' to axial movement. Those skilled in the art will recognize that while tabs 135 are described in conjunction with this embodiment, an arrangement as described above using cooperating keys and keyways could also be utilized. As stated above, the particular configuration is adaptable so long as movement of sliding arm 70' relative to base member 20' is limited to axial movement. A second locking mechanism is provided between the base member 20' and the sliding arm member 70' to prevent axial movement of the sliding arm member 70' within the base member 20'. Further, the side walls 97' of the sliding arm member 70' are provided with cutouts 172 to provide clearance for the first anchor point 40' of piston 60 when sliding arm 70' is at the upward limit of its range of axial motion.

As discussed above, actuation of the piston 60 with the first locking mechanism engaged and the second locking mechanism released causes the stabilizer arm assembly 30' to travel downwardly within base member 30' thus providing operation in the vertical stabilizer mode. Contrariwise, actuation of the piston 60 with the first locking mechanism released and the second locking mechanism engaged, causes the outrigger arm member 65' to rotate about the first pivot point 75' thereby resulting in operation in the fold down stabilizer mode.

Referring to Figs. 7A-7C, the preferred embodiments of the first and second locking mechanisms will be described. The first locking mechanism is defined by a first pair of registering hole

- 13 -

members 95' provided in tabs 150 disposed proximate the upper end 155 of the sliding arm member 70' and a registering hole member 155 provided on a tab 160 disposed at the upper end 82' the outrigger arm member 65'. In order to engage the first locking mechanism and lock the outrigger arm member 65' and the sliding arm member 70' together so as to prevent rotational movement of the outrigger arm member 65', a lynch pin 100 is inserted through registering hole members 95' and 155, respectively. Figure 8 illustrates engagement of the first locking mechanism.

The second locking mechanism works in similar fashion and prevents axial movement of the sliding arm member 70' within the base member 20'. The second locking mechanism is defined by a first pair of registering hole members 105' provided in wall member 145 and rear wall 165 of the base member 20' and a hole member 110' provided in the rear wall 170 of the sliding arm member 70', hole members 110' being in register with the first pair of hole members 105' disposed on the base member 20'. In order to engage the second locking mechanism and lock the base member 20' and the sliding arm member 70' together so as to prevent axial movement of the sliding arm member 70' within the base member 20', the lynch pin 100 is inserted through registering hole members 105' and 110'. Figs. 9 and 10 illustrate engagement of the second locking mechanism.

It is anticipated that a single lynch pin 100 could be utilized in order to selectively switch between the fold-down stabilizer mode and the vertical stabilizer mode. Further, a first foot pad 115' is pivotally and, preferably, removably mounted on the lower end 180 of sliding

- 14 -

arm member 70'. Those skilled in the art will recognize that the footpad mounted to the lower end 180 of sliding arm 70' could be fixed, i.e. welded or fastened with other fasteners. A second foot pad 115' is pivotally and, preferably, removably mounted on the upper end 82' of outrigger arm member 65'. In order to prevent tab 160 from impeding the pivotal movement of foot pad 115' when the dual mode stabilizer 10' is used in the fold-down stabilizer mode, a slot 185 is provided in foot pad 115'. Those skilled in the art will recognize that, as seen in Figure 5, each side of the dual mode stabilizer 10 could be independently operated such that one side of dual mode stabilizer 10 could be operated in the vertical stabilizer mode and the other side of the dual mode stabilizer 10 could be operated in the fold-down stabilizer mode.

From the foregoing description, it will be recognized by those skilled in the art that a dual mode stabilizer, operable in either a fold-down stabilizer mode or a vertical stabilizer mode, for a backhoe such as a backhoe attachment for a tractor offering advantages over the prior art has been provided. Specifically, the dual mode stabilizer provides operation in both a fold-down stabilizer mode or a vertical stabilizer mode utilizing a standard hydraulic system without requiring an additional hydraulic ram for each mode, and that is readily switchable from one mode to another simply by repositioning a lynch pin on each boom.

While a preferred embodiment has been shown and described, it will be understood that it is not intended to limit the disclosure, but rather it is intended to cover all modifications and alternate methods

WO 99/64685

PCT/US99/13115

- 15 -

falling within the spirit and the scope of the invention as defined in the appended claims.

- 16 -

Having thus described the aforementioned invention,

I Claim:

1. A dual mode stabilizer for a tractor, said
5 dual mode stabilizer comprising:
 - a base member rigidly fixable proximate a side of the tractor;
 - a stabilizer arm assembly engaged with said base member having an outrigger arm member and a
10 sliding arm member, said outrigger arm member and said sliding arm member being pivotally connected together at a pivot point so as to allow rotational movement of said outrigger arm member relative to said sliding arm member;
 - 15 a mechanism in association with said base member and said sliding arm member for limiting movement of said sliding arm member relative to said base member to axial movement;
 - a first locking mechanism interconnecting said
20 outrigger arm member and said sliding arm member for preventing rotational movement of said outrigger arm member around said pivot point;
 - a second locking mechanism interconnecting said base member and said sliding arm member for
25 preventing axial movement of said sliding member relative to said base member; and
 - a drive mechanism connected between said base member and said stabilizer arm assembly for
30 actuating said stabilizer arm assembly whereby said dual mode stabilizer is selectively operable in a vertical stabilizer mode and a fold down stabilizer mode.
2. The dual mode stabilizer of Claim 1
35 wherein said dual mode stabilizer is mountable on a frame of the tractor.

- 17 -

3. The dual mode stabilizer of Claim 1 wherein said dual mode stabilizer is mountable on a backhoe attachment carried by the tractor.

5 4. The dual mode stabilizer of Claim 1 wherein said first locking mechanism is defined by a first pair of hole members disposed in spaced relation and in register on opposite side walls of said outrigger arm member, a second pair of hole members disposed in spaced relation and in register on opposite side walls of said sliding arm member, and a lynch pin adapted to be received by said first and said second pair of hole members when said sliding member is positioned such that said second pair of hole members is in register with said first pair of hole members.

20 5. The dual mode stabilizer of Claim 1 wherein said first locking mechanism is defined by a pair of hole members disposed in spaced relation and in register on first and second tabs in spaced relation disposed proximate an upper end of said sliding arm member and a hole member provided in a tab disposed on an upper end of said outrigger arm member, and a lynch pin adapted to be received by said registering hole members when said sliding arm member is positioned such that said pair of hole members associated with said sliding arm member is in register with said hole member associated with said outrigger arm member.

35 6. The dual mode stabilizer of Claim 1 wherein said second locking mechanism is defined by a first pair of hole members disposed in spaced relation and in register on opposing walls of said base member, at least one hole member provided in a

- 18 -

wall of said sliding arm member, and a lynch pin adapted to be received by said first and said second pair of hole members when said sliding arm member is positioned such that said at least one hole member
5 is in register with said first pair of hole members.

7. The dual mode stabilizer of Claim 1 wherein said drive mechanism is defined by a piston.

10 8. The dual mode stabilizer of Claim 7 wherein said piston is hydraulically driven.

9. A dual mode stabilizer for a tractor having an attached backhoe, said dual mode
15 stabilizer comprising:

a pair of base members rigidly fixable on opposite sides of the tractor proximate the backhoe, each of said pair of base members defining an open channel, each of said pair of base members having an
20 upper end, a lower end, a keyway disposed within said channel, a first anchor point disposed proximate said upper end and a stop disposed proximate said lower end;

a stabilizer arm assembly nested within said
25 channel of each of said pair of base members, said stabilizer arm assembly including a key in engagement with said keyway so as to limit movement of said stabilizer arm assembly within said channel to axial movement, said stabilizer arm assembly
30 further including an outrigger arm member having a lower end and a second anchor point, a sliding arm member having a lower end, said outrigger arm member and said sliding arm member being pivotally connected together at a pivot point, said pivot
35 point engaging said stop so as to limit upward

- 19 -

travel of said stabilizer arm assembly within said channel;

5 a first locking mechanism interconnecting said outrigger arm member and said sliding arm member whereby said rotational movement of said outrigger arm member around said pivot point is prevented;

a second locking mechanism interconnecting said base member and said sliding arm member whereby said axial movement is prevented; and

10 a piston for actuating said stabilizer arm assembly, said piston having a first end secured to said first anchor point and a second end secured to said second anchor point whereby said dual mode stabilizer is selectively operable in a vertical
15 stabilizer mode and a fold down stabilizer mode.

20 10. The dual mode stabilizer of Claim 9 wherein said dual mode stabilizer is mountable on a frame of the tractor.

11. The dual mode stabilizer of Claim 9 wherein said dual mode stabilizer is mountable on a backhoe attachment carried by the tractor.

25 12. The dual mode stabilizer of Claim 9 wherein said first locking mechanism is defined by a first pair of hole members disposed in spaced relation and in register on opposite side walls of said outrigger arm member, a second pair of hole
30 members disposed in spaced relation and in register on opposite side walls of said sliding arm member, and a lynch pin adapted to be received by said first and said second pair of hole members when said sliding member is positioned such that said second
35 pair of hole members is in register with said first pair of hole members.

- 20 -

13. The dual mode stabilizer of Claim 9 wherein said second locking mechanism is defined by a first pair of hole members disposed in spaced relation and in register on side walls of each of
5 said pair of base members, a second pair of hole members disposed in spaced relation and in register on said side walls of said sliding arm member, and a lynch pin adapted to be received by said first and said second pair of hole members when said sliding
10 arm member is positioned such that said second pair of hole members is in register with said first pair of hole members disposed on said side walls of each of said pair of base members.

15 14. The dual mode stabilizer of Claim 9 wherein said piston is a hydraulic ram.

15. A dual mode stabilizer for a tractor having an attached backhoe, said dual mode
20 stabilizer comprising:

a pair of base members rigidly fixable on opposite sides of the tractor proximate the backhoe, each of said pair of base members defining an open channel, each of said pair of base members having an
25 upper end, a lower end, a key disposed within said channel, a first anchor point disposed proximate said upper end and a stop disposed proximate said lower end;

a stabilizer arm assembly nested within said
30 channel of each of said pair of base members, said stabilizer arm assembly including a keyway in engagement with said key so as to limit movement of said stabilizer arm assembly within said channel to axial movement, said stabilizer arm assembly further
35 including an outrigger arm member having a lower end and a second anchor point, a sliding arm member

- 21 -

having a lower end, said outrigger arm member and
said sliding arm member being pivotally connected
together at a pivot point, said pivot point engaging
said stop so as to limit upward travel of said
5 stabilizer arm assembly within said channel;

a first locking mechanism for preventing
rotational movement of said outrigger arm member
around said pivot point, said first locking
mechanism defined by a first pair of hole members
10 disposed in spaced relation and in register on
opposite side walls of said outrigger arm member, a
second pair of hole members disposed in spaced
relation and in register on opposite side walls of
said sliding arm member, and a lynch pin adapted to
15 be received by said first and said second pair of
hole members when said sliding member is positioned
such that said second pair of hole members is in
register with said first pair of hole members;

a second locking mechanism for preventing axial
20 movement of said stabilizer arm assembly within said
channel of said base member, said second locking
mechanism defined by a third pair of hole members
disposed in spaced relation and in register on side
walls of each of said pair of base members, a fourth
25 pair of hole members disposed in spaced relation and
in register on said side walls of said sliding arm
member, and a lynch pin adapted to be received by
said first and said second pair of hole members when
said sliding arm member is positioned such that said
30 fourth pair of hole members is in register with said
third pair of hole members disposed on said side
walls of each of said pair of base members; and

a piston for actuating said stabilizer arm
assembly, said piston having a first end secured to
35 said first anchor point and a second end secured to
said second anchor point.

- 22 -

16. The dual mode stabilizer of Claim 15 wherein said dual mode stabilizer is mountable on a frame of the tractor.

5 17. The dual mode stabilizer of Claim 15 wherein said dual mode stabilizer is mountable on a backhoe attachment carried by the tractor.

10 18. The dual mode stabilizer of Claim 15 wherein said outrigger arm further includes a first foot pad mounting point proximate an upper end and said pivot point provides a second foot pad mounting point, said dual mode stabilizer further comprising a foot pad readily attachable to each said outrigger
15 arm, said foot pad being readily interchangeable between said first foot pad mounting point and said second foot pad mounting point.

20 19. The dual mode stabilizer of Claim 15 wherein said piston is a hydraulic ram.

20. The dual mode stabilizer of Claim 15 wherein said piston is a pneumatically driven ram.

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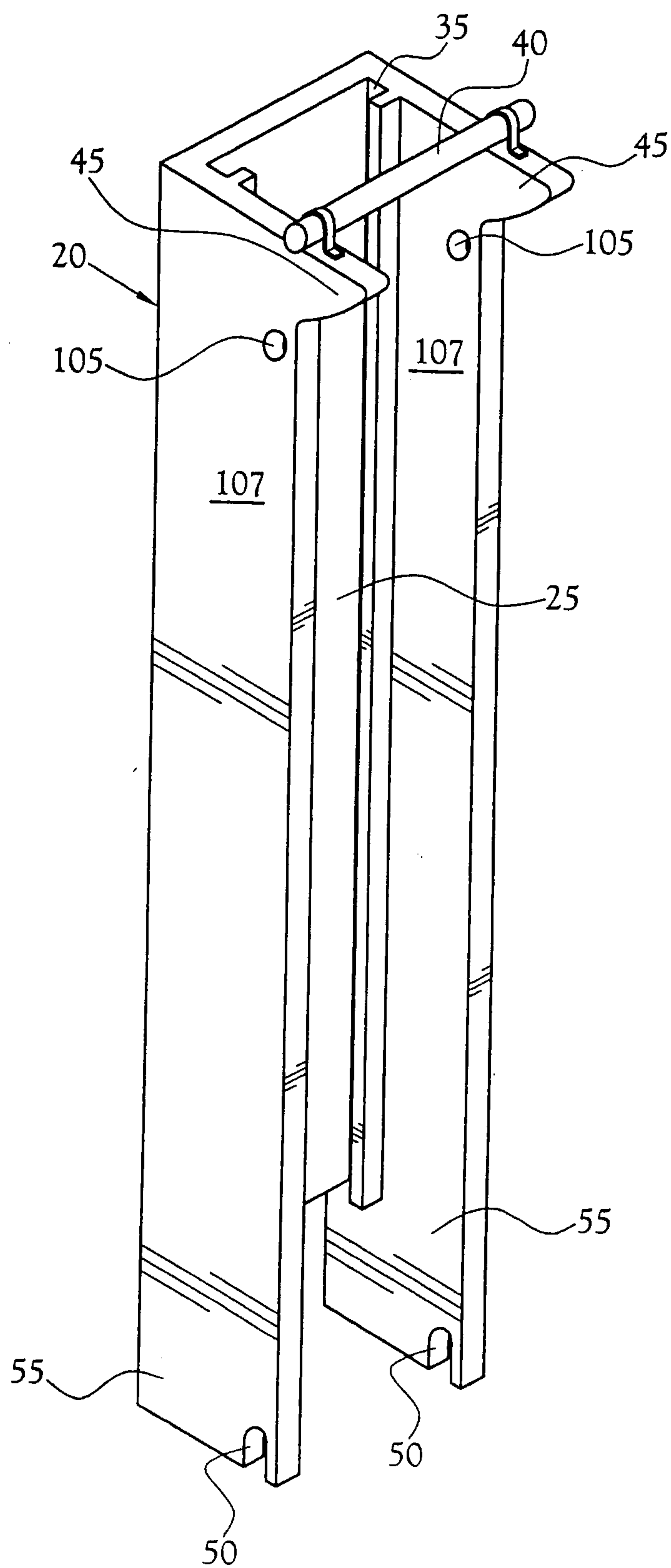


Fig.1a

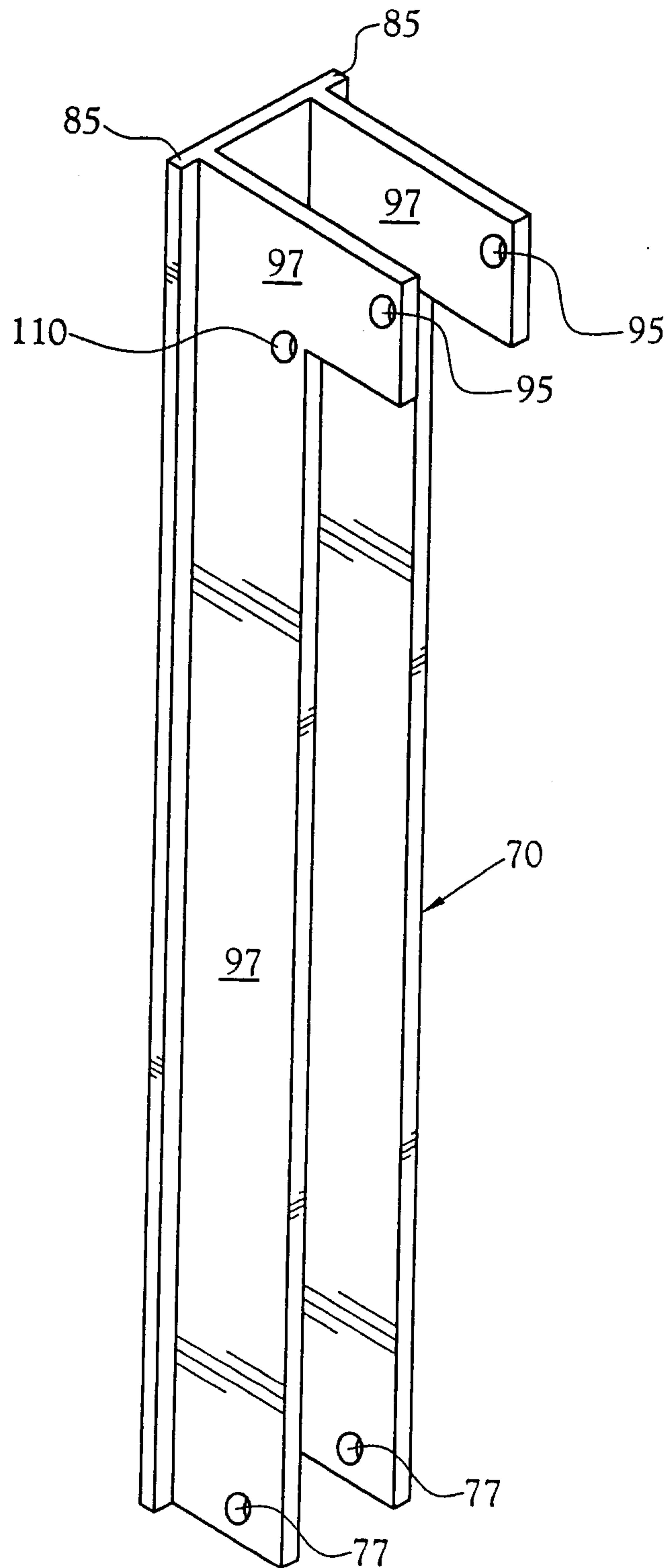


Fig.1b

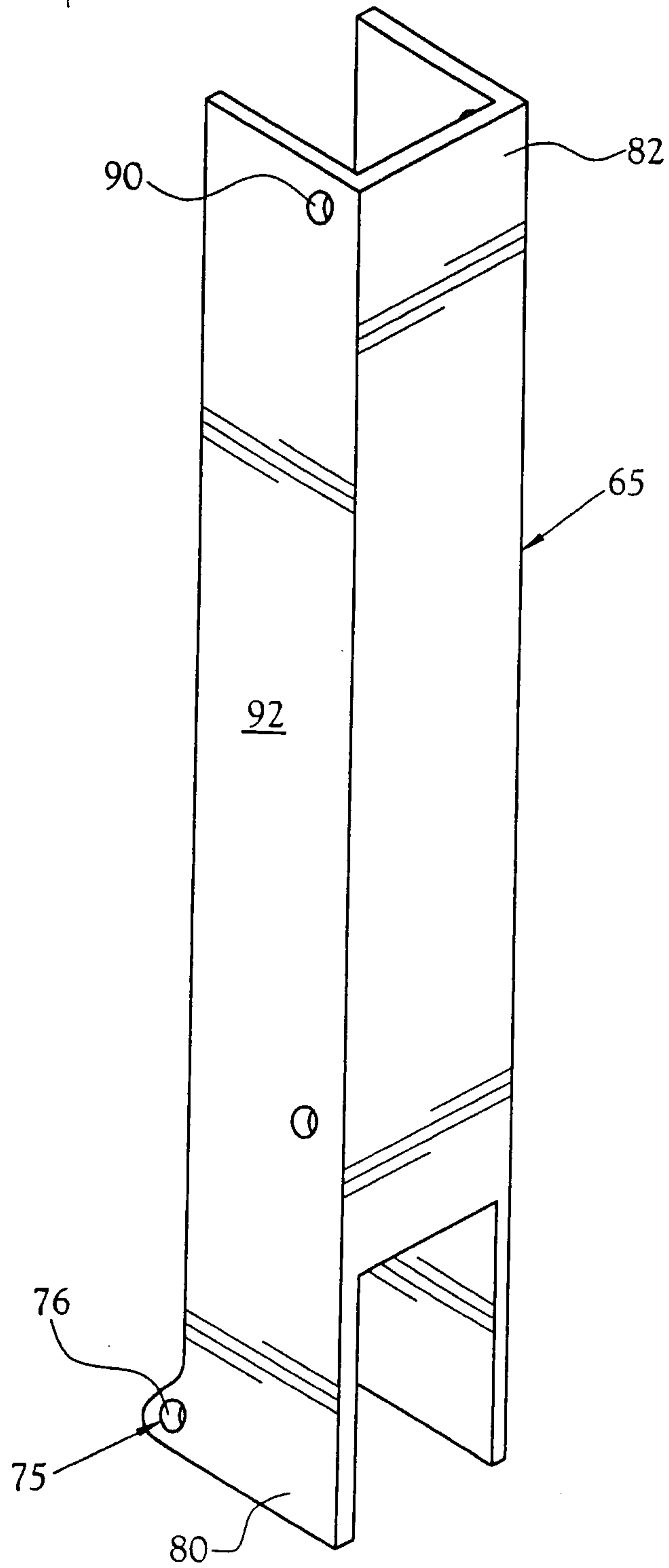


Fig.1c

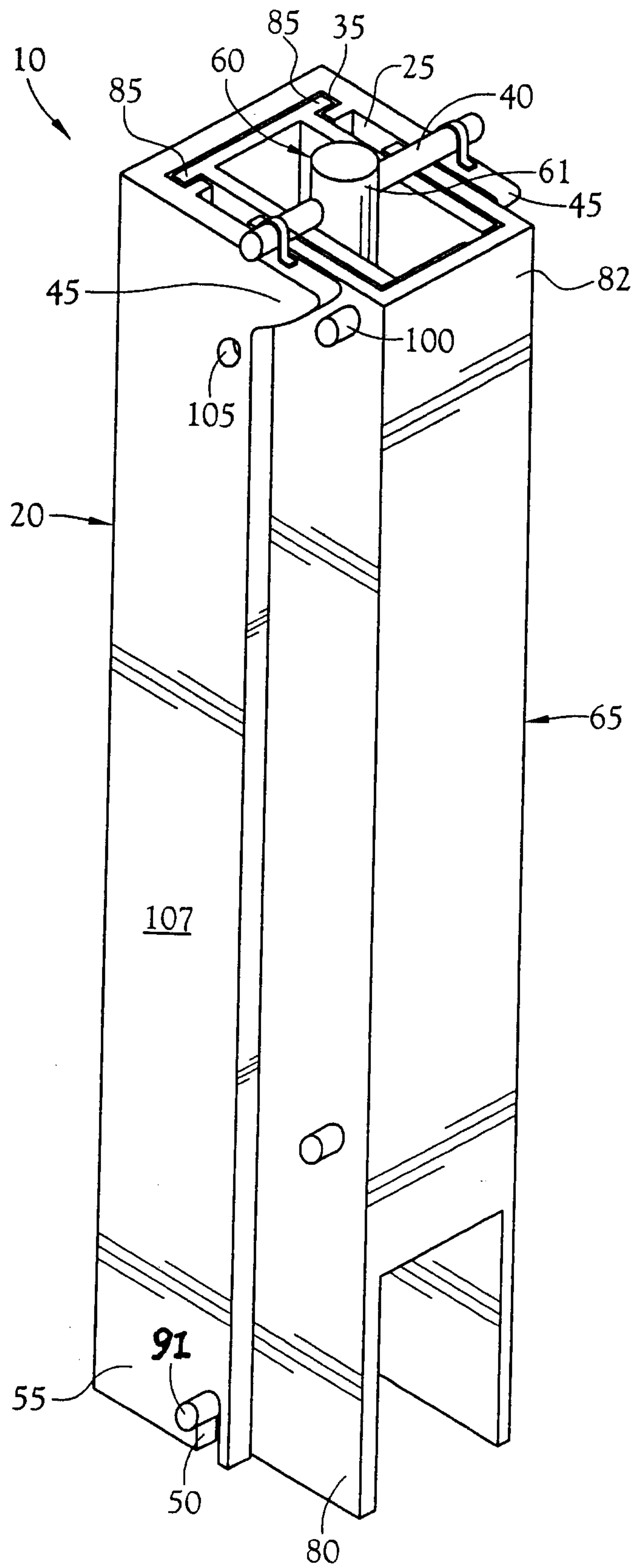


Fig.2

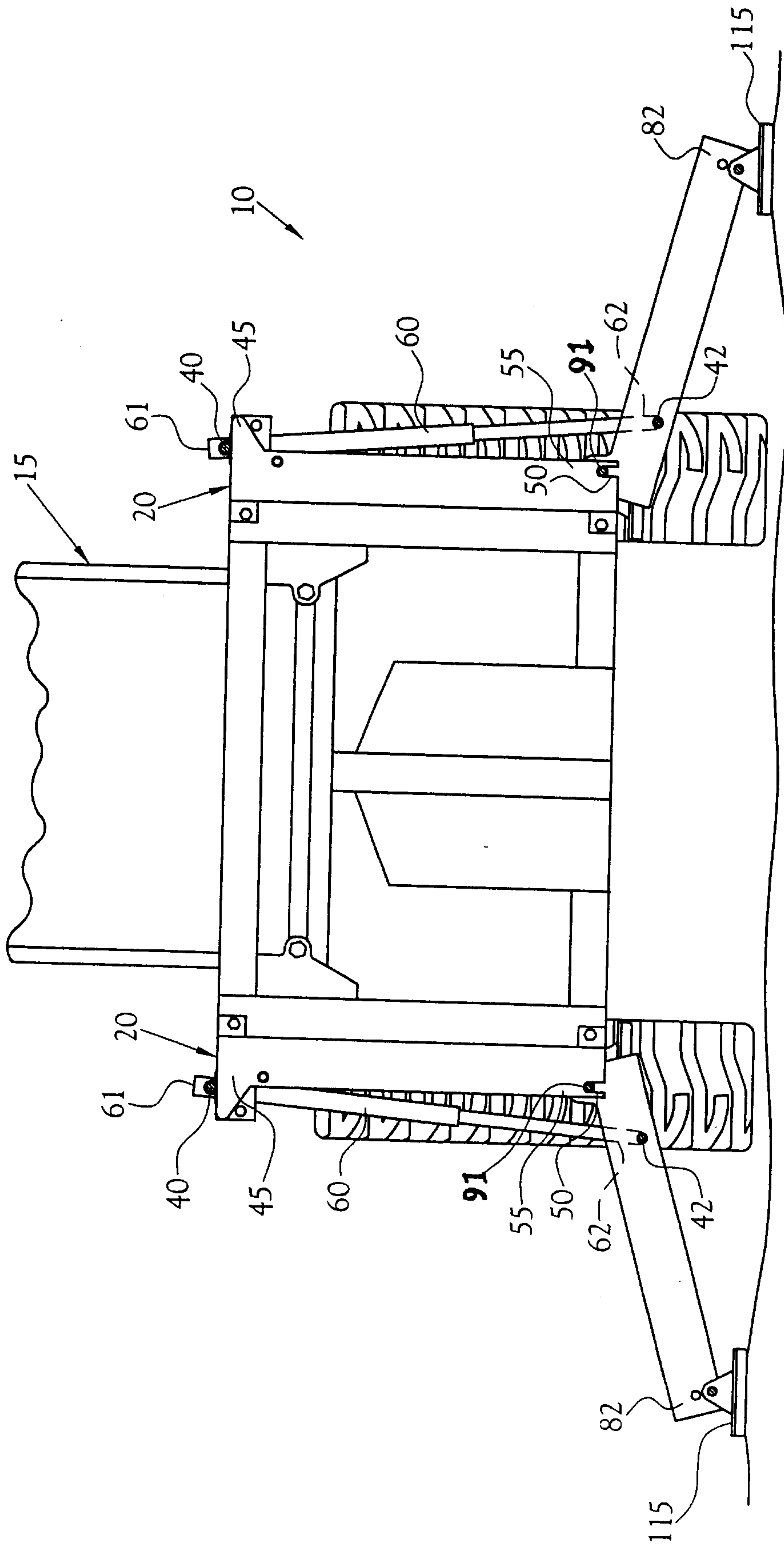


Fig. 3

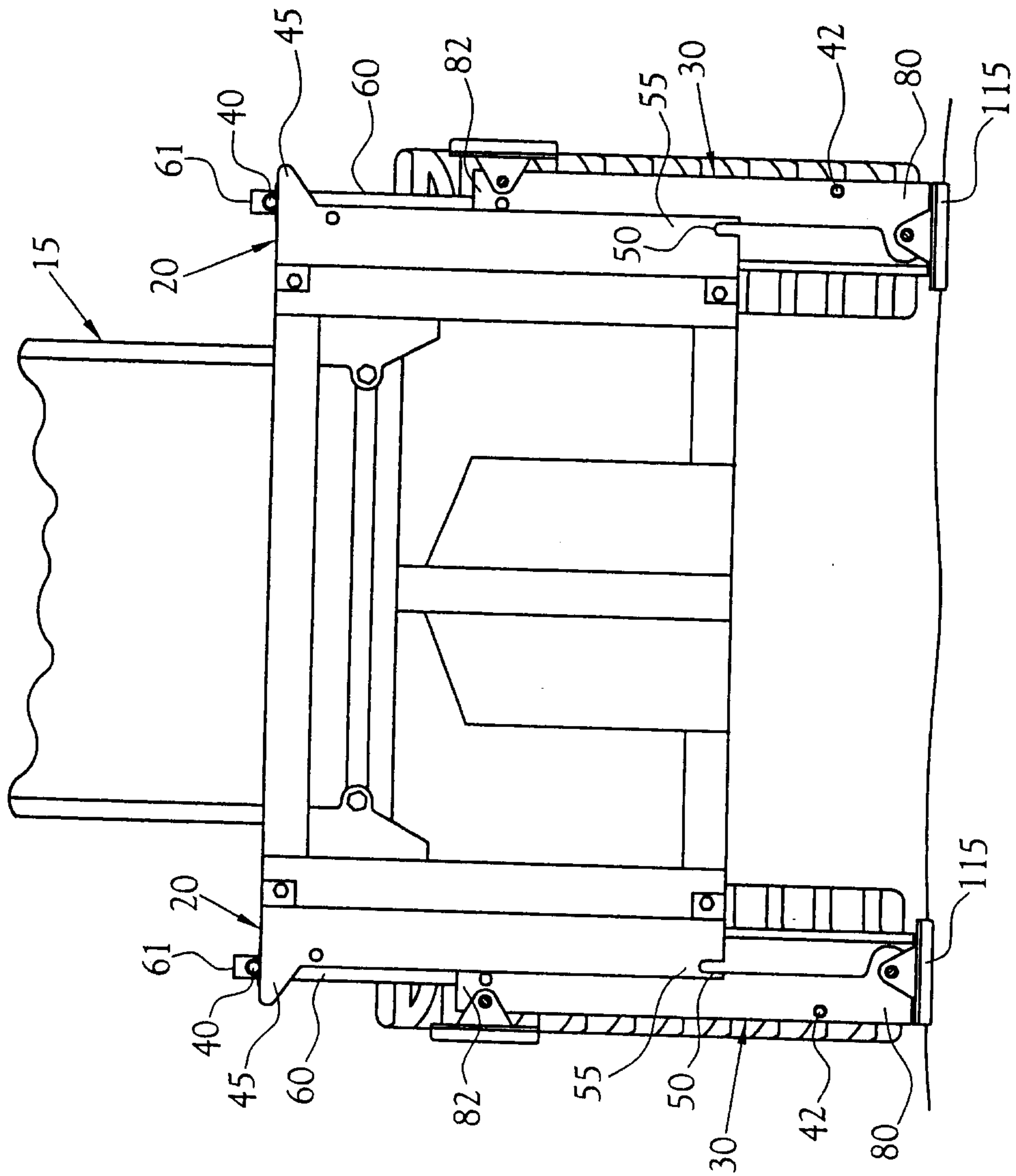


Fig. 4

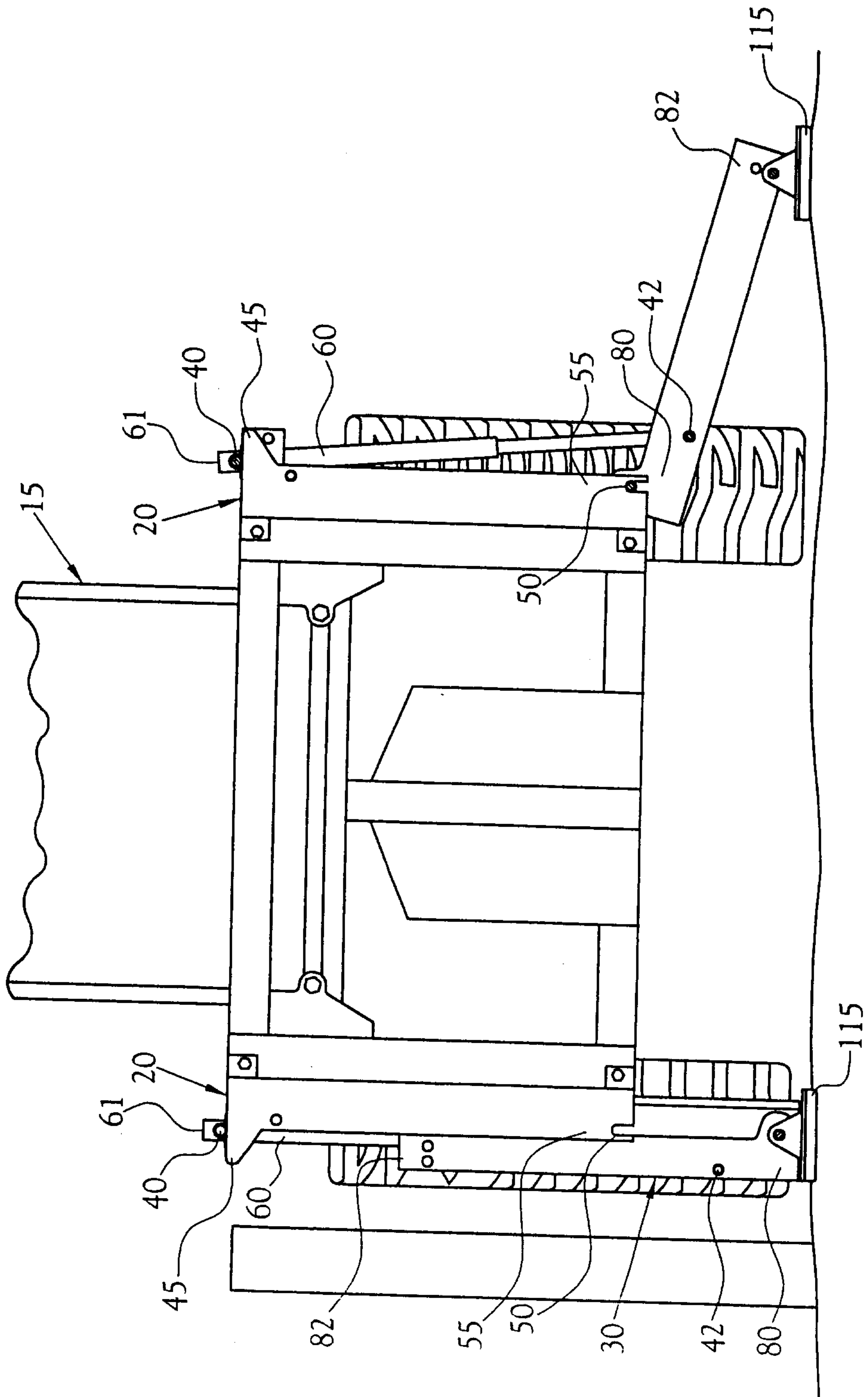


Fig. 5

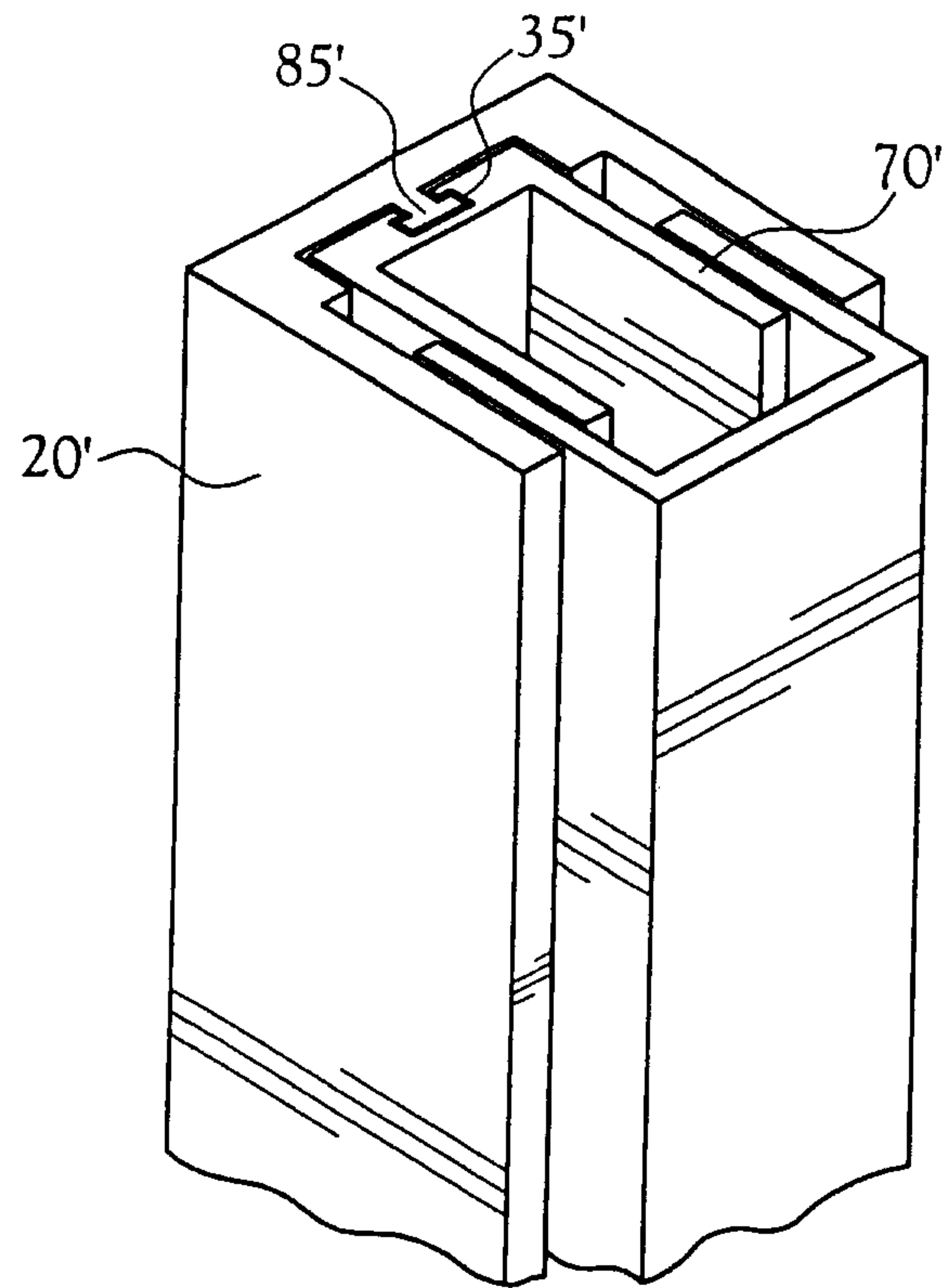


Fig.6

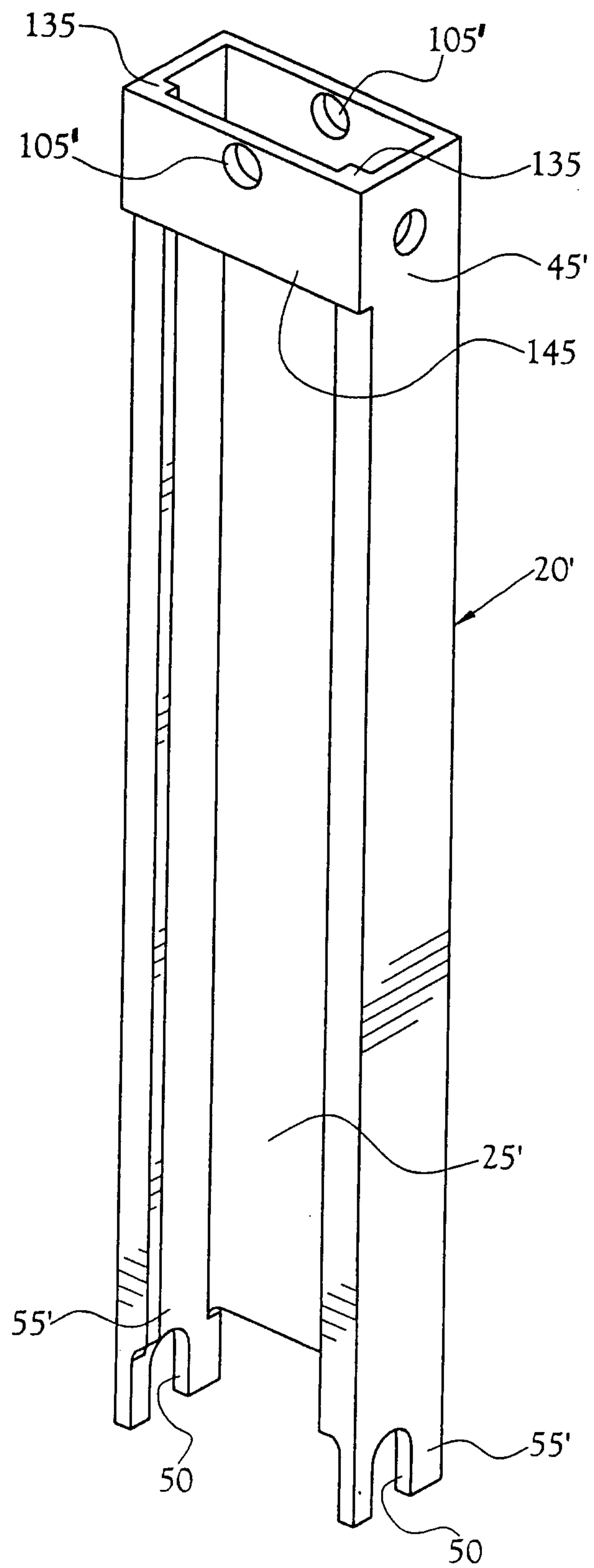


Fig.7a

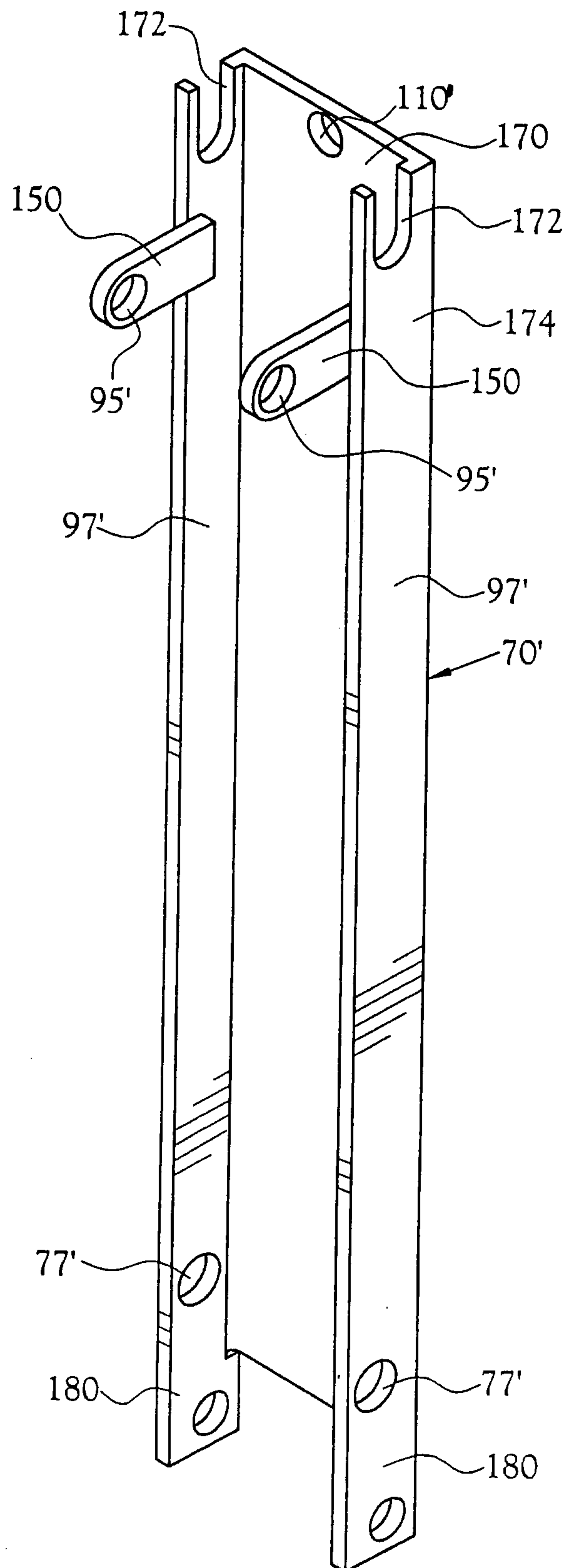


Fig.7b

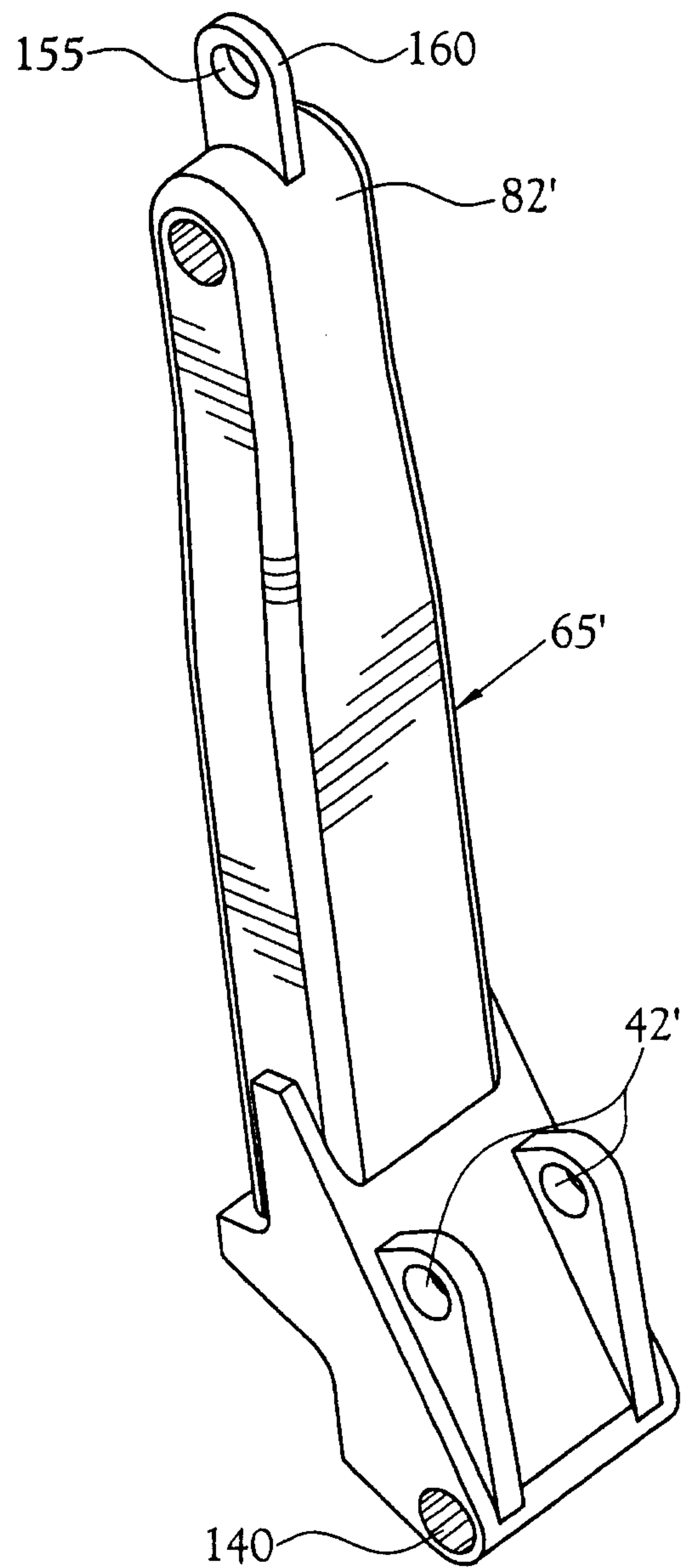


Fig.7c

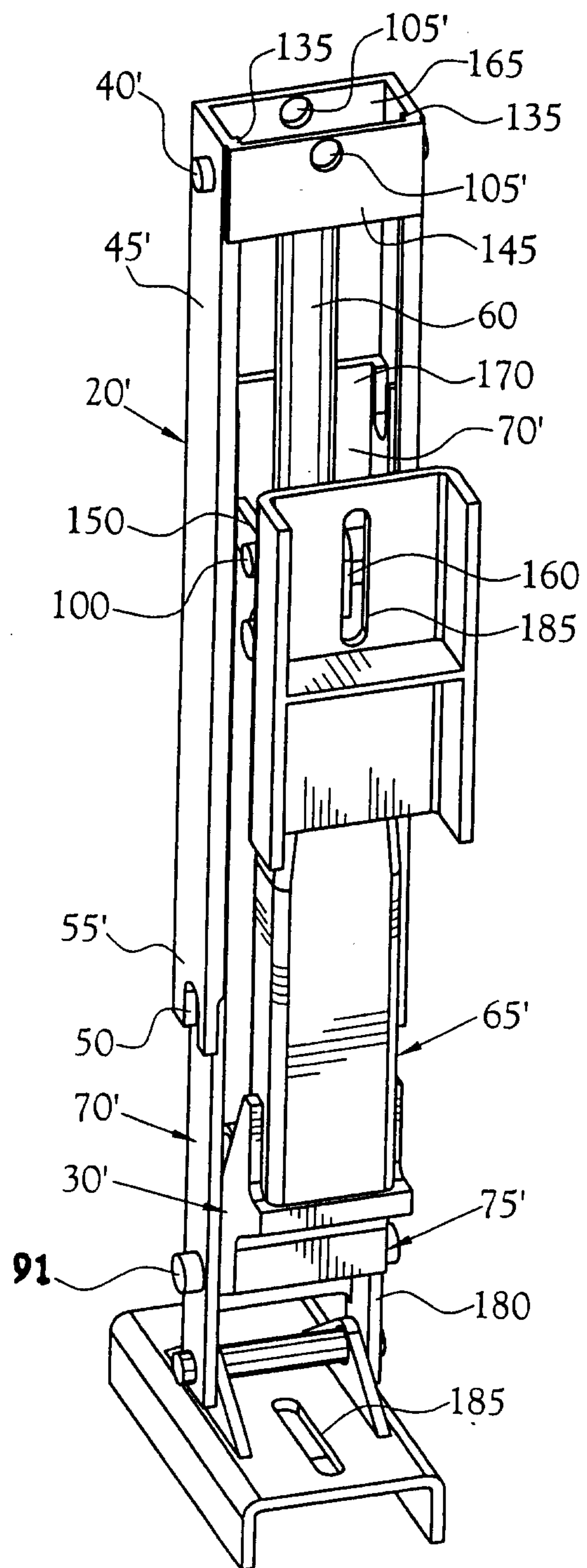


Fig.8

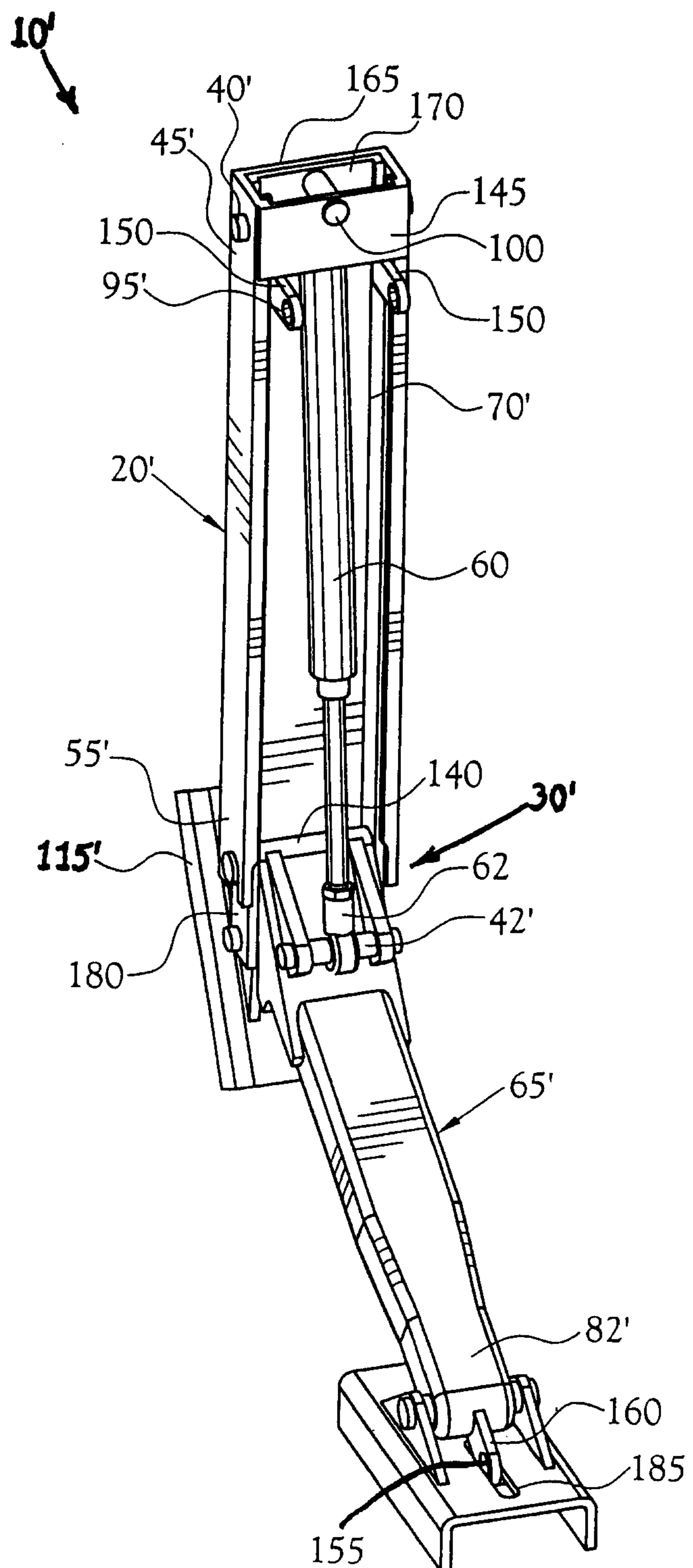


Fig.9

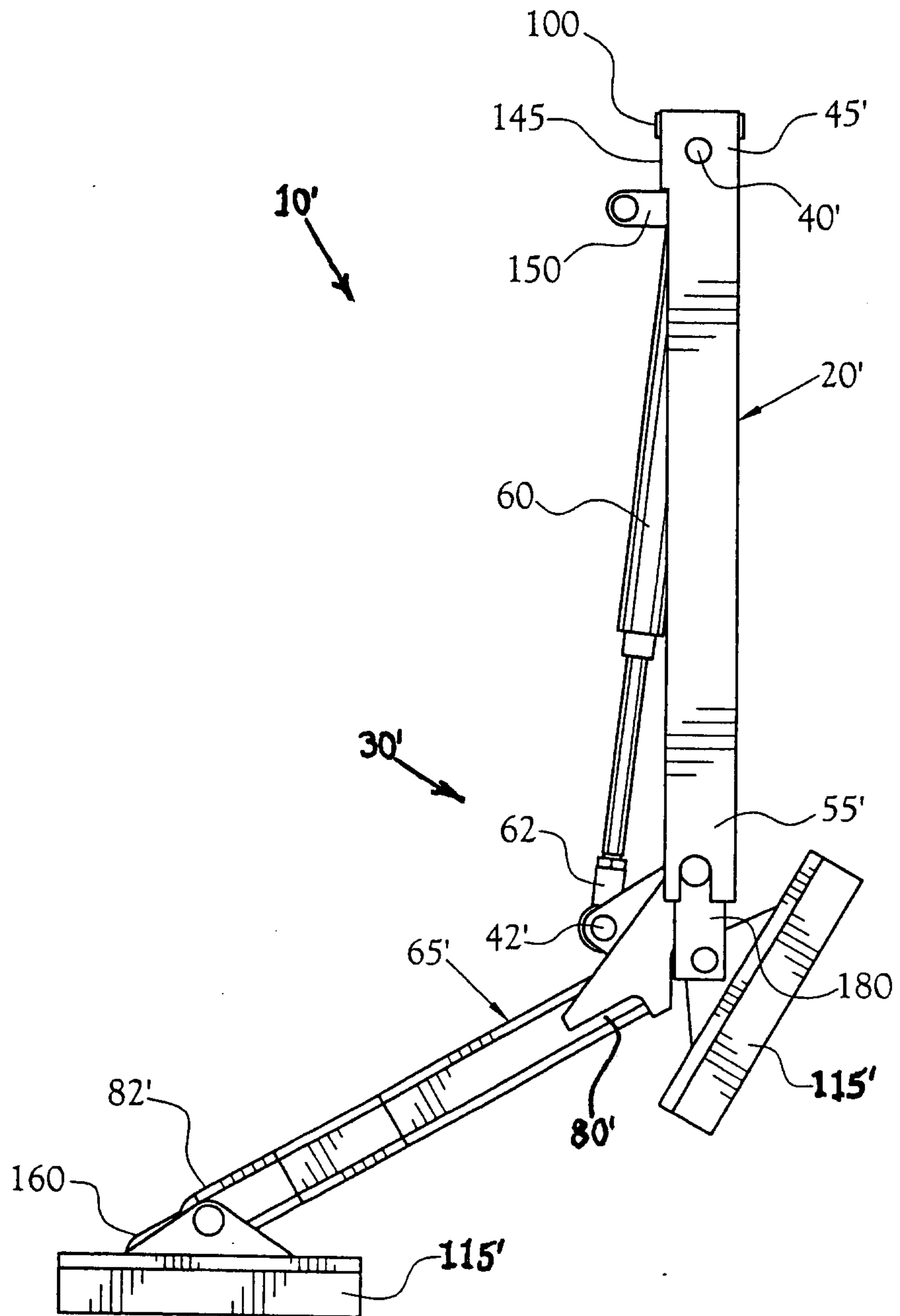


Fig.10

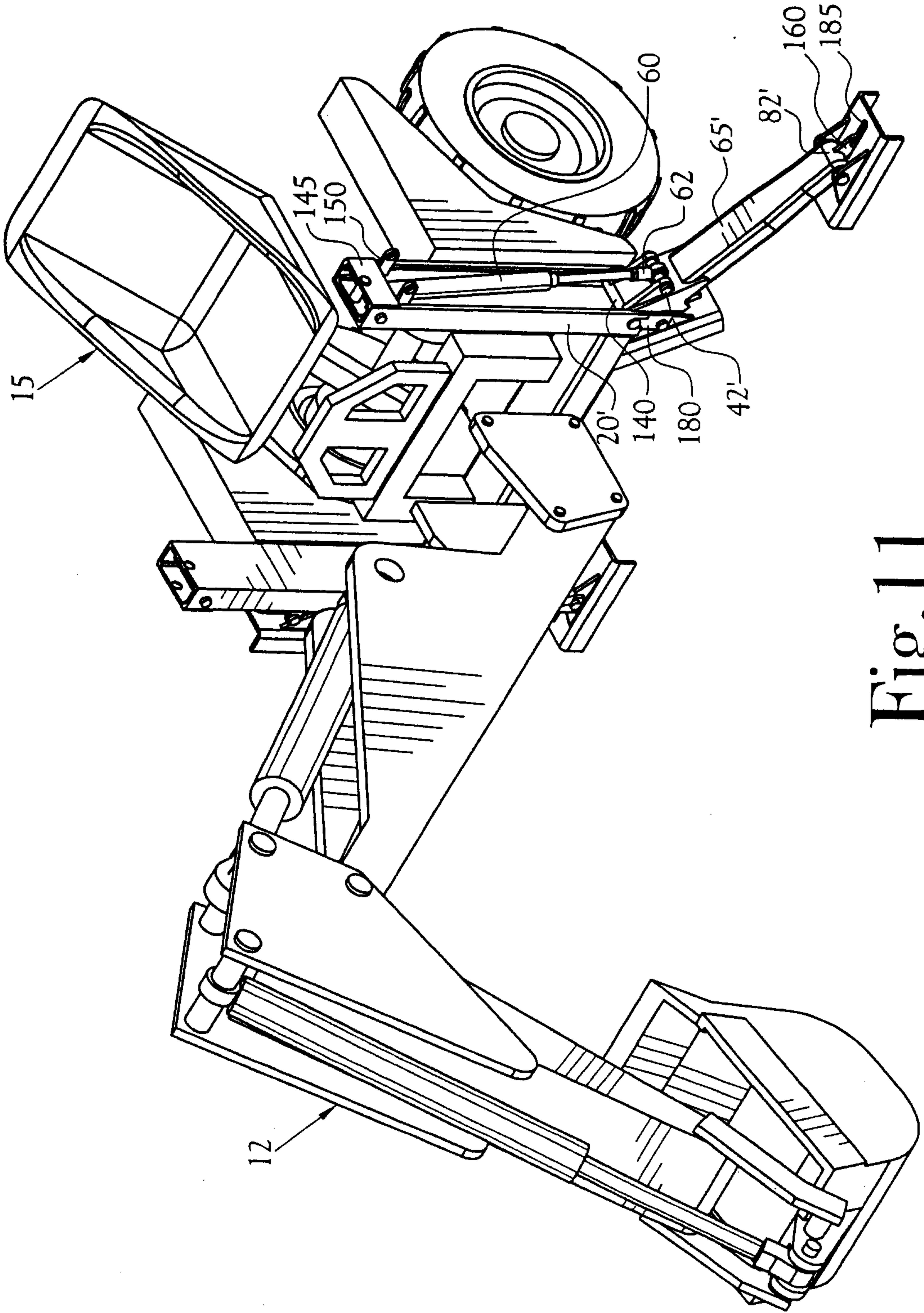


Fig. 11

