A stabilizer assembly is provided for a work vehicle that has at least two positions: a stowed position and a working position. The stabilizer assembly includes a telescoping stabilizer leg having a first end and a second end, the first end of the stabilizer leg being pivotally attached to the work vehicle, the stabilizer leg being generally vertically disposed when in the stowed position; and a hydraulic actuator having a first end and a second end, the first end of the hydraulic actuator being pivotally attached to the work vehicle, the second end of the hydraulic actuator being pivotally attached to the telescoping stabilizer leg, wherein the hydraulic actuator is disposed to pivot the telescoping stabilizer leg with respect to the work vehicle.
VARIABLE-POSITION STABILIZER LEG

FIELD OF THE INVENTION

[0001] The invention relates generally to work vehicles, and more particularly to rough terrain vehicles such as backhoes, and more particularly to stabilizers for rough terrain vehicles.

BACKGROUND OF THE INVENTION

[0002] Backhoes, excavators, drilling rigs and other work vehicles such as tractors must be operated in widely varying environmental and terrain. Typically, these vehicles are equipped with rugged large tires that permit them to engage the ground sufficiently well to provide traction for vehicle movement. However, when the vehicle is operated in a stationary position, depending on the forces acting on the vehicle it may be susceptible to toppling over. This is particularly the case for vehicles that have high overhanging loads such as mobile cranes or drilling rigs, or vehicles that have appendages such as backhoes that operate in a horizontal plane of motion while exerting significant sideward force against a work surface such as a pile of gravel.

[0003] It has been common practice to equip these vehicles with stabilizers attached to either the side or bottom of the chassis. The stabilizers extend either manually or under power to engage the ground and are locked into position. In order to perform a better stabilization function than the wheels, the stabilizers must be able to extend laterally away from the vehicle further than the wheels.

[0004] The prior art teaches stabilization methods and apparatus that hang beneath the vehicle, significantly reducing the ground clearance of the vehicle while it is moving. While this is suitable for work vehicles that move primarily on smooth surfaces such as paved roads, this is not preferred for rough terrain vehicles.

[0005] The prior art also teaches stabilization methods that require the operator to exit the vehicle, perform some manual locking, unlocking or movement function, and re-enter the cab. This reduces operator effectiveness, taking time out of the work day and exposing the operator unnecessarily to inclement weather.

[0006] The prior art teaches stabilization methods that move the stabilizer leg through a limited range of motion by pivoting a fixed length stabilizer leg about a single axis of rotation with respect to the vehicle until it engages the ground. This pivotal motion may be about a horizontal axis or a vertical axis. There are drawbacks to this method. Pivotal movement of a fixed length stabilizer limits the number of positions in which the operator places the stabilizer with respect to the vehicle. Indeed, the operator cannot vary the stabilizer position at all except by moving the vehicle itself. The more freedom of movement that the stabilizer gives, the more choices the operator has regarding where to make the stabilizer contact the ground. Without this range of motion the stabilizer may be underutilized.

[0007] Finally, the prior art teaches stabilization methods that employ a significant number of moving and fixed parts, increasing the manufacturing cost of the vehicle. This also increases the frequency of repairs and complexity thereof.

[0008] What is needed is a vehicle stabilizer that will provide suitable stabilization and yet not restrict the use of the vehicle over rough terrain. What is further needed is a stabilization device that has virtually unlimited range of motion. What is further needed is a stabilization apparatus that requires no manual intervention outside the operating cab. What is further needed is a stabilization device that requires minimal parts.

SUMMARY OF THE INVENTION

[0009] In accordance with a first aspect of the invention, a stabilizer assembly for a work vehicle is provided that has at least two positions, one of the two positions being a stowed position, and another of the two positions being a working position, the stabilizer assembly including a telescoping stabilizer leg having a first end and a second end, the first end of the stabilizer leg pivotally attached to the work vehicle, and the stabilizer leg generally vertically disposed when in the stowed position; and a hydraulic actuator having a first end and a second end, the first end of the hydraulic actuator pivotally attached to the work vehicle, the second end of the hydraulic actuator pivotally attached to the telescoping stabilizer leg, the hydraulic actuator disposed to pivot the telescoping stabilizer leg with respect to the work vehicle.

[0010] The second end of the hydraulic actuator may be pivotally attached to the stabilizer leg at the second end of the stabilizer leg. The second end of the hydraulic actuator may be pivotally attached to the stabilizer leg at a location on the stabilizer leg located between the first end of the stabilizer leg and the second end of the stabilizer leg. The stabilizer assembly may also include a stabilizer pad attached to the second end of the stabilizer leg.

[0011] In accordance with a second aspect of the invention, a stabilizing assembly for an off-road work vehicle is provided, the off-road work vehicle having a first side and a second side, the first and second sides located on opposite sides of a longitudinal center line of the off-road work vehicle, the stabilizer assembly having a working position and a stowed position, the stabilizer assembly including a telescoping stabilizer leg pivotally attached to the first side of the off-road work vehicle at a first pivot point, the stabilizer leg having an inner tube and an outer tube; and a first hydraulic actuator pivotally attached to the first side of the off-road work vehicle at a second pivot point, the hydraulic actuator pivotally attached to the stabilizer leg to pivot the stabilizer leg about the first pivot point, and the hydraulic actuator is configured to extend generally laterally away from the first side of the off-road work vehicle.

[0012] The first hydraulic actuator may be pivotally attached to the inner tube of the stabilizer leg. The first hydraulic actuator may be pivotally attached to the outer tube of the stabilizer leg. The stabilizing assembly may also include a second hydraulic actuator disposed within the stabilizer leg to extend and retract the stabilizer leg. The second hydraulic actuator may be a hydraulic cylinder. The first hydraulic actuator may be a hydraulic cylinder. The first pivot point may be located above the second pivot point. The inner tube may be pivotally coupled to the work vehicle at the first pivot point, and the inner tube may be slidably disposed inside the outer tube, and the stabilizing assembly may also include a stabilizing pad coupled to the outer tube. The stabilizing assembly may include a stabilizing pad coupled to the second end of the stabilizer leg. The stabil-
lizing pad may be pivotally coupled to the stabilizer leg. The stabilizing pad may be coupled to the outer tube of the stabilizer leg. The second hydraulic actuator may be disposed parallel to the stabilizer leg. The second hydraulic actuator may be disposed coaxially with the stabilizer leg. The stabilizer pad may be disposed below the first pivot point when the stabilizing assembly is in its stowed position.

[0013] In accordance with a third aspect of the invention, a loader/backhoe with a left side, a right side, and a bottom side is provided, the loader/backhoe including a left stabilizer disposed on the left side of the loader/backhoe, including a first support leg pivotally coupled to the loader/backhoe, the first support leg having an inner tube and an outer tube, and the first support leg configured to telescopically extend generally leftward and downward from the loader/backhoe; and a first hydraulic cylinder coupled to the loader/backhoe, the first hydraulic cylinder configured to telescopically extend generally leftward from the loader/backhoe, and the first hydraulic cylinder pivotally attached to the first support leg, and the first hydraulic cylinder disposed to pivot the first support leg laterally away from the left side of the loader/backhoe; and a right stabilizer disposed on the right side of the loader/backhoe, including a second support leg pivotally coupled to the loader/backhoe, the second support leg having an inner tube and an outer tube, and the second support leg configured to telescopically extend generally rightward and downward from the loader/backhoe; and a second hydraulic cylinder coupled to the loader/backhoe, the second hydraulic cylinder configured to telescopically extend generally rightward from the loader/backhoe, and the second hydraulic cylinder pivotally attached to the second support leg, and the second hydraulic cylinder disposed to pivot the second support leg laterally away from the right side of the loader/backhoe.

[0014] The loader/backhoe may also include a third hydraulic cylinder disposed within the first support leg to telescopically extend and retract the first support leg; and a fourth hydraulic cylinder disposed within the second support leg to telescopically extend and retract the second support leg. The inner tubes and the outer tubes of the left and right stabilizers may be generally rectangular in cross section.

**BRIEF DESCRIPTION OF THE DRAWINGS**

[0015] FIG. 1 is a right side view of a work vehicle having a stabilizer assembly in accordance with the present invention.

[0016] FIG. 2 is a view of the right stabilizer assembly taken generally along line 2-2 of FIG. 1 from the rear of the work vehicle, showing the entire stabilizer leg, hydraulic swing cylinder, and chassis, the stabilizer assembly being in the stowed position and the swing cylinder attached to the outer tube of the stabilizer leg.

[0017] FIG. 3 is a partial cross section view of the right stabilizer assembly taken at line 2-2 of FIG. 1 from the rear of the work vehicle, showing the same elements as FIG. 2, but showing the stabilizer leg, in cross-section.

[0018] FIG. 4 is a partial cross section view of an alternative right stabilizer assembly similar to that of FIG. 3, differing in that the swing cylinder is attached to the inner tube of the stabilizer leg instead of the outer tube of the stabilizer leg as shown in FIGS. 1-3, above.

[0019] FIG. 5 is a partial cross section view of the right stabilizer assembly of FIGS. 1-3 taken along line 2-2 of FIG. 1 from the rear of the work vehicle, showing the same elements as FIG. 3, the stabilizer assembly being in an laterally telescoped working position away from the chassis with the stabilizer pad engaging the ground, the swing cylinder shown attached to a midpoint of the outer tube of the stabilizer leg.

[0020] FIG. 6 is a partial cross section view similar to FIG. 5, with the stabilizer assembly in a working position close to the chassis (simulating confined lateral space conditions).

[0021] FIG. 7 is a partial cross section view similar to FIG. 6, showing an alternative embodiment of the right stabilizer assembly of the above FIGURES in which the swing cylinder is attached to the bottom end of the stabilizer leg and not to either of the inner or outer tubes.

**DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS**

[0022] FIG. 1 shows a loader/backhoe 98 that includes a tractor 100 having a chassis 102, a loader attachment 104, and a backhoe attachment 106. The loader 104 includes a bucket 108 and loader arms 110. The backhoe includes a swing tower 112, a boom 114, a dipper 116 and a bucket 118. Each side of the vehicle has a stabilizer assembly 120, including a stabilizer leg 122, a stabilizer cylinder (FIGS. 2-7) that swings the stabilizer leg away from and toward the vehicle, and a stabilizer pad 124. In the figure, the stabilizer pad 124 is shown pivoted outward away from the vehicle chassis 102. The figure shows a right side view, and the left side is identically disposed, including an identical left side stabilizer that extends from the chassis in the same manner.

[0023] On the loader attachment 104, the loader arms 110 are pivotally coupled to the front of the chassis 102 to pivot about the chassis in a substantially horizontal axis. The bucket 108 is pivotally coupled to the loader arms 110 to pivot about the loader arms in a substantially horizontal axis.

[0024] On the backhoe attachment 106, the swing tower 112 is pivotally coupled to the rear of the chassis 102 to pivot with respect to the chassis about a substantially vertical axis. The boom 114 is pivotally coupled at its lower end to the swing tower 112 to pivot with respect to the swing tower about a substantially horizontal axis. The dipper 116 is pivotally coupled at its upper end to the upper end of the boom 114 to pivot with respect to the boom about a substantially horizontal axis. The bucket 118 is pivotally coupled to the lower end of the dipper 116 to pivot with respect to the dipper about a substantially horizontal axis.

[0025] During normal operation, the stabilizers 120 (which include the left stabilizer not shown in FIG. 1) are only needed in the rear. This is because the bucket in the front of the vehicle uses a mainly forward-backward or up-and-down motion pivoting about a horizontal axis, therefore, there is no force being exerted by the material being engaged by the bucket that would tend to offset the vehicle out of its vertical plane. However, the backhoe in the rear of the vehicle moves in both the vertical and horizontal axes, resulting in significant forces being exerted by the engagement of materials being moved and the backhoe bucket. These forces will tend to offset the vehicle out of its vertical.
plane, unless sufficient stabilization is provided (in the rear of the vehicle). On other types of work vehicles that have centrally located multi-axis manipulating arms, such as cranes, will require stabilizers both in the front and the rear of the vehicle.

[0026] Referring now to FIGS. 2, 3 and 4, the right stabilizer assembly 120 is shown in the stowed position. The stowed position allows the vehicle to be moved without the stabilizer interfering with movement. The stabilizer is retracted such that the stabilizer pad 124 is as close to the chassis 102 as possible. In these FIGURES the stabilizer pad is pivoted toward the chassis. Other elements such as the wheels have been removed for clarity. The left stabilizer assembly (not shown) is a left side mirror image of the right side stabilizer assembly and is coupled to the left side of the loader/backhoe 98 in an identical position and manner. For that reason it has not been separately illustrated here.

[0027] The right stabilizer assembly 120 includes a stabilizer leg 122, a swing cylinder 200, and a stabilizer pad 124. The stabilizer leg 122 is composed of an outer tube 202, an inner tube 204 and a stabilizer cylinder 206. The stabilizer leg 122 is attached to the chassis 102 by means of a first bracket 208. The swing cylinder 200 is attached to the chassis 102 by means of a second bracket 210. In FIGS. 2 and 3 the swing cylinder 200 is attached to the stabilizer leg 122 by means of a third bracket 212. Brackets 208, 210 and 212 are not required, but serve as a simple means to attach/detach the stabilizer in the field and reduce manufacturing costs associated with chassis mounting point modifications. In further discussion, brackets 208, 210 can be considered part of the chassis 102.

[0028] Right stabilizer assembly 120 is shown in FIGS. 2-4 and 6-7 in a stowed position. In the preferred embodiment, when in the stowed position the stabilizer leg 122 is in a generally upright and vertical position. Thus the longitudinal axis of the stabilizer leg, seen as dashed line 300 in FIG. 3 is adjacent to the chassis 102 and vertically oriented.

[0029] The swing cylinder 200 serves the purpose of laterally positioning the stabilizer leg 122 toward or away from the side of the chassis 102. The stabilizer cylinder 206 serves to telescopically extend and retract the stabilizer leg 122, allowing the stabilizer pad 124 to engage the ground. The stabilizer pad will typically have an appropriate surface to provide the best static friction with the ground, i.e. if the ground is asphalt, the stabilizer pad surface may be rubber, and if the ground is rough (gravel, dirt) the stabilizer pad surface may be convoluted.

[0030] The stabilizer leg 122 is pivotally attached to the chassis 102 at a first pivot point 214. More specifically, the inner tube 204 is pivotally coupled to first bracket 208 by pin 216, and the first bracket is fixed to the chassis 102, such that the stabilizer leg 122 pivots about the first pivot point 214 about a generally horizontal and longitudinally extending axis. The bottom (stabilizer pad) end of the stabilizer leg can swing upward and away from the chassis.

[0031] The swing cylinder 200 is pivotally attached to the chassis 102 at a second pivot point 218. More specifically, one end of the swing cylinder is pivotally coupled to second bracket 210 by pin 220, and the second bracket is fixed to the chassis 102, such that the swing cylinder 200 pivots about the second pivot point 218 about a generally horizontal and longitudinally extending axis. The other end of the swing cylinder 200 is pivotally attached to the stabilizer leg 122.

[0032] A preferred point of attachment of the swing cylinder to the stabilizer leg is shown in FIGS. 2 and 3. In these figures, the swing cylinder 200 is pivotally attached to the stabilizer leg 122 at a third pivot point 222. Specifically, the swing cylinder 200 is pivotally coupled to a third bracket 212 by pin 224, and the third bracket is fixed to the outer tube 202, allowing the swing cylinder 200 and the stabilizer leg 122 to pivot with respect to each other at pivot point 222, the pin 224 defining a generally horizontal and longitudinally extending pivotal axis.

[0033] FIG. 4 shows an alternative embodiment of right stabilizer assembly 120 which is alike in all respects to the stabilizer assembly of FIGS. 2 and 3, but with one difference: bracket 212 is fixed not to the outer tube 202, but to the inner tube 204.

[0034] In this embodiment, the outer tube 202 has a channel 400 cut through it that is aligned with the third bracket 212, allowing the bracket 212 to penetrate the outer tube and further allowing the inner tube to move slidably within the outer tube. Similarly to embodiment shown in FIGS. 2 and 3, the swing cylinder 200 and the stabilizer leg 122 will pivot with respect to each other at pivot point 222 in a generally horizontal axis. This arrangement permits the operator (1) to pivot the stabilizer leg to a desired angle in one operation by using the swing cylinder 200, then (2) to extend the stabilizer leg in a second operation using stabilizer cylinder 206 while keeping the stabilizer leg at the preferred pivot angle.

[0035] In the preferred embodiment the inner tube 204 and the outer tube 202 are of a rectangular cross section. This will help to prevent twisting of the inner tube inside the outer tube. However, the tubes may be of various cross sections, including circular or hexagonal, as two examples, as long as the inner tube slides freely inside the outer tube.

[0036] FIGS. 2, 3 and 4 show the stabilizer cylinder 206 located coaxially within the stabilizer leg 122. Specifically, the stabilizer cylinder is nested within the inner tube 204, and both the stabilizer cylinder and the inner tube are nested within the outer tube 202 of the stabilizer leg 122. The top end of the stabilizer cylinder 206 is coupled at the first pivot point 214 to the first pin 216, which is also attached to the inner tube 204. The bottom end of the stabilizer cylinder 206 is coupled at the fourth pivot point 226 to the fourth pin 228, which is also attached to the outer tube 202. By extending and retracting the stabilizer cylinder 206, the outer tube 202 will telescopically slide downward and upward, respectively, with respect to the inner tube 204, while the inner tube is held in position by the first pin 216 pivotally attached to the first bracket 208. To facilitate this telescopic sliding movement, a heavy grease may be applied between the inner tube 204 and the outer tube 202. Alternatively, a low friction coating such as Teflon might be applied to the outside of the inner tube 204 and/or the inside of the outer tube 202. As yet another alternative, a low friction material such as polyethylene or polypropylene may be disposed between the inner tube and the outer tube to reduce wear.

[0037] In FIGS. 2, 3 and 4 the stabilizer pad 124 is pivotally attached to the stabilizer leg 122 at the fourth pivot point 226. More specifically, the stabilizer pad is pivotally
attached to a fourth pin 228, the fourth pin is coupled to the outer tube 202, and the fourth pin is coupled to the lower end of the stabilizer cylinder 206. The embodiments shown in FIGS. 2, 3 and 4 show the fourth pin disposed in an axis parallel to the longitudinal fore-and-aft axis of the vehicle. These are the preferred embodiments; however the fourth pin may be disposed in another axis in the same general horizontal plane, such as perpendicular to the longitudinal axis of the vehicle.

[0038] FIG. 5 shows the stabilizer 120 in a fully extended working position, a position that is preferred when there are no obstructions near the vehicle that would prevent full lateral extension of the stabilizer. Full extension of the stabilizers increases the stance of the vehicle significantly, thus resisting any forces that might try to overturn the vehicle, i.e. topple it out of its stationary vertical plane. In the fully extended working position, the stabilizer leg 122 has telescopically extended, the stabilizer cylinder 206 is extended, the swing cylinder 200 is extended, the stabilizer leg 122 has swung outward and downward from the chassis 102 and the swing cylinder has extended laterally to the right and away from the chassis. The outer tube 202 has also extended so that the stabilizer pad 124 is engaging the ground 500. Since the stabilizer leg is oriented in a substantially vertical position, a significant portion of the weight of the vehicle is now supported through the stabilizer leg 122 by the combination of the stabilizer pad 124, the fourth pin 228, the stabilizer cylinder 206, the first pin 216, and into the first bracket 208.

[0039] In the preferred working position shown in FIG. 5, the swing cylinder 200 is pivoted downward and outward. Alternatively, if the point of attachment of the second bracket 210 to the chassis 102 is moved upward and is fixed at a higher location with respect to chassis 102, therefore moving the second pivot point 218 upward, the swing cylinder 200 would pivot upward and outward to move from the stowed position to the working position. The second pivot point 218 may be above the first pivot point if so desired, and will yield the same swing-out positioning function of the swing cylinder. Changing the first 214 and second 218 pivot point locations and the lengths of the swing 200 and stabilizer 206 cylinders can greatly vary the range of motion of the stabilizer leg 122, including allowing the stabilizer leg to pivot outward laterally with no downward movement of the stabilizer leg. This might be advisable for a vehicle that operates in close proximity to foundation walls, cliffs or other immobile vertical obstructions.

[0040] FIG. 6 shows the stabilizer assembly 120 in an alternative working position that is different from the working position shown in FIG. 5. In the arrangement of FIG. 6 the stabilizer assembly 120, and the stabilizer leg 122, in particular, are vertically oriented. This position is particularly useful when there are obstructions near the vehicle that prevent full lateral extension of the stabilizer. Only the stabilizers that are obstructed need to use this position, while the other stabilizers can use the fully extended working position. The swing cylinder 200 has retracted from its stowed position orientation and the stabilizer cylinder has extended from its stowed position, thereby lowering the outer tube 202 until the stabilizer pad 124 contacts the ground and supports the vehicle. The stabilizer leg 122 is not swung outward from the chassis 102, and remains in the same longitudinal vertical axis 300 as it was in the stowed position (the longitudinal axis 300 initially shown in FIG. 3). However the stabilizer cylinder 206 is extended, causing the outer tube 202 to lower such that the stabilizer pad 124 engages the ground 500. Similarly to the fully extended working position, the vertical working position of FIG. 6, the majority of the weight of the vehicle is supported through the stabilizer leg 122 by the combination of the stabilizer pad 124, the fourth pin 228, the stabilizer cylinder 206, the first pin 216, and the first bracket 208. Since the point of contact of the stabilizer pad 124 with the ground 500 is not significantly extended laterally away from the chassis 102, the stabilizer of FIG. 6 provides a narrower base of support than if the stabilizer were in the fully extended working position of FIG. 5.

[0041] It should be clear from the arrangements of FIGS. 5 and 6 that once the vehicle is stopped in any position, the operator can choose any of several positions adjacent to the vehicle on which he can lower and position the stabilizer pad. The two cylinders, stabilizer and swing, together provide this capability. Typically, the operator pivots the stabilizers away from the vehicle using controls in the operator’s compartment that extend cylinders 200. It should be noted that extending cylinder 200 causes the lower, free end of the stabilizer to move laterally outward away from the vehicle and slightly upward as it pivots about its upper pivot point.

[0042] Once the stabilizers have been pivoted to their appropriate lateral position (i.e. their proper position away from the side of the vehicle), the stabilizer pads are then lowered into position to engage the ground by extending (telescoping) the stabilizer leg downward to increase its length until its free end (with attached stabilizer pad), contacts the ground. As the stabilizer leg extends and the stabilizer pad engages the ground, the weight of the vehicle is transferred from the wheels to the stabilizer pad.

[0043] The substantial portion of the weight on the stabilizer assembly is transmitted upward to pivot point at the top of the stabilizer leg. The more the stabilizer leg is extended, the greater the force on the stabilizer pad, and the stabilizer leg pushes upward (applies a vertically upward component of force) with greater force on the chassis of the vehicle at the point it is pivotally attached to the chassis.

[0044] In the preferred embodiment, the left hand stabilizer leg (not shown) is disposed in the identical position as the right hand stabilizer leg shown in FIGS. 5 and 6, but in mirror relation on the left hand side of backhoe 98. Thus the stabilizers on both sides have a stowed position as well as several working positions.

[0045] FIG. 7 shows an alternative embodiment of the right stabilizer assembly 120 in a vertical working position. The only difference between this embodiment and that of the foregoing FIGURES is that swing cylinder 200 is pivotally attached to the stabilizer leg 122 at the fourth pivot point 226. More specifically, the swing cylinder is pivotally attached to fourth pin 228, the fourth pin is attached to the outer tube 202, is pivotally attached to the stabilizer pad 124 and is coupled to the lower end of the stabilizer cylinder 206.

[0046] There are alternative approaches to the preferred embodiments such as not having a stabilizer cylinder located inside the stabilizer leg. Instead, in another embodiment the inner and outer tube might slide freely, and be lockable by means of a pin inserted through holes drilled in the outer and
inner tubes with the stabilizer cylinder removed. In another embodiment, the stabilizer cylinder may be located outside of and parallel to the inner and outer tubes. Further, the inner and outer tubes may be eliminated and the stabilizer cylinder itself used as a stabilizer leg, with no extra inner and outer tube surrounding the cylinder. The preferred embodiments illustrated herein show the inner tube attached to the first bracket, and the outer tube sliding telescopically and moving the stabilizer pad up and down. However this tube arrangement may be reversed such that the outer tube is attached to the first bracket and the inner tube is attached to the stabilizer pad, with the inner tube sliding telescopically up and down to position the stabilizer pad.

[0047] It will be understood that changes in the details, materials, steps, and arrangements of parts which have been described and illustrated to explain the nature of the invention will occur to and may be made by those skilled in the art upon a reading of this disclosure within the principles and scope of the invention. The foregoing description illustrates the preferred embodiment of the invention; however, concepts, as based upon the description, may be employed in other embodiments without departing from the scope of the invention. Accordingly, the following claims are intended to protect the invention broadly as well as in the specific form shown.

We claim:

1. A stabilizer assembly for a work vehicle, the stabilizer assembly having at least two positions, one of the two positions being a stowed position, and another of the two positions being a working position, the stabilizer assembly comprising:

   a telescoping stabilizer leg having a first end and a second end, the first end of the stabilizer leg being pivotally attached to the work vehicle, the stabilizer leg being generally vertically disposed when in the stowed position; and

   a hydraulic actuator having a first end and a second end, the first end of the hydraulic actuator being pivotally attached to the stabilizer leg, the second end of the hydraulic actuator being pivotally attached to the telescoping stabilizer leg, wherein the hydraulic actuator is disposed to pivot the telescoping stabilizer leg with respect to the work vehicle.

2. The stabilizer assembly of claim 1, wherein the second end of the hydraulic actuator is pivotally attached to the stabilizer leg at a location on the stabilizer leg located between the first end of the stabilizer leg and the second end of the stabilizer leg.

3. The stabilizer assembly of claim 1, wherein the second end of the hydraulic actuator is pivotally attached to the stabilizer leg at a location on the stabilizer leg located between the first end of the stabilizer leg and the second end of the stabilizer leg.

4. The stabilizer assembly of claim 1, further comprising:

   a stabilizer pad attached to the second end of the stabilizer leg.

5. A stabilizing assembly for an off-road work vehicle, the off-road work vehicle having a first side and a second side, the first and second sides being located on opposite sides of a longitudinal center line of the off-road work vehicle, the stabilizer assembly having a working position and a stowed position, the stabilizer assembly comprising:

   a telescoping stabilizer leg pivotally attached to the first side of the off-road work vehicle at a first pivot point, the stabilizer leg having an inner tube and an outer tube; and

   a first hydraulic actuator pivotally attached to the first side of the off-road work vehicle at a second pivot point, wherein the first hydraulic actuator is pivotally attached to the stabilizer leg to pivot the stabilizer leg about the first pivot point, and further wherein the first hydraulic actuator is configured to extend generally laterally away from the first side of the off-road work vehicle.

6. The stabilizing assembly of claim 5, wherein the first hydraulic actuator is pivotally attached to the inner tube of the stabilizer leg.

7. The stabilizing assembly of claim 5, wherein the first hydraulic actuator is pivotally attached to the outer tube of the stabilizer leg.

8. The stabilizing assembly of claim 5, further comprising:

   a second hydraulic actuator disposed within the stabilizer leg to extend and retract the stabilizer leg.

9. The stabilizing assembly of claim 8, wherein the second hydraulic actuator is a hydraulic cylinder.

10. The stabilizing assembly of claim 5, wherein the first hydraulic actuator is a hydraulic cylinder.

11. The stabilizing assembly of claim 5, wherein the first pivot point is located above the second pivot point.

12. The stabilizing assembly of claim 5, further comprising a stabilizing pad coupled to the outer tube, wherein the inner tube is pivotally coupled to the work vehicle at the first pivot point, and further wherein the inner tube is slidably disposed inside the outer tube.

13. The stabilizing assembly of claim 5, further comprising a stabilizing pad coupled to the second end of the stabilizer leg.

14. The stabilizing assembly of claim 13, wherein the stabilizing pad is pivotally coupled to the stabilizer leg.

15. The stabilizing assembly of claim 14, wherein the stabilizing pad is coupled to the outer tube of the stabilizer leg.

16. The stabilizing assembly of claim 9, wherein the second hydraulic actuator is disposed parallel to the stabilizer leg.

17. The stabilizing assembly of claim 16, wherein the second hydraulic actuator is disposed coaxially with the stabilizer leg.

18. The stabilizing assembly of claim 15, wherein the stabilizer pad is disposed below the first pivot point when the stabilizing assembly is in its stowed position.

19. A loader/backhoe with a left side, a right side, and a bottom side, the loader/backhoe comprising:

   a tractor;

   a loader coupled to the front of the tractor;

   a backhoe attachment coupled to the rear of the tractor;

   a left stabilizer disposed on the left side of the tractor, comprising:

   a first support leg pivotally coupled to the tractor, the first support leg having an inner tube and an outer tube, wherein the first support leg is configured to telescopically extend generally leftward and downward from the tractor; and
a first hydraulic cylinder coupled to the tractor, wherein the first hydraulic cylinder is configured to telescopically extend generally leftward from the tractor, further wherein the first hydraulic cylinder is pivotally attached to the first support leg, yet further wherein the first hydraulic cylinder is disposed to pivot the first support leg laterally away from the left side of the tractor; and

a right stabilizer disposed on the right side of the tractor, comprising:

a second support leg pivotally coupled to the tractor, the second support leg having an inner tube and an outer tube, wherein the second support leg is configured to telescopically extend generally rightward and downward from the tractor; and

a second hydraulic cylinder coupled to the tractor, wherein the second hydraulic cylinder is configured to telescopically extend generally rightward from the tractor, further wherein the second hydraulic cylinder is pivotally attached to the second support leg, yet further wherein the second hydraulic cylinder is disposed to pivot the second support leg laterally away from the right side of the tractor.

20. The loader/backhoe of claim 19, further comprising:

a third hydraulic cylinder disposed within the first support leg to telescopically extend and retract the first support leg; and

a fourth hydraulic cylinder disposed within the second support leg to telescopically extend and retract the second support leg.

21. The loader/backhoe of claim 20, wherein the inner tubes and the outer tubes of the left and right stabilizers are generally rectangular in cross section.