



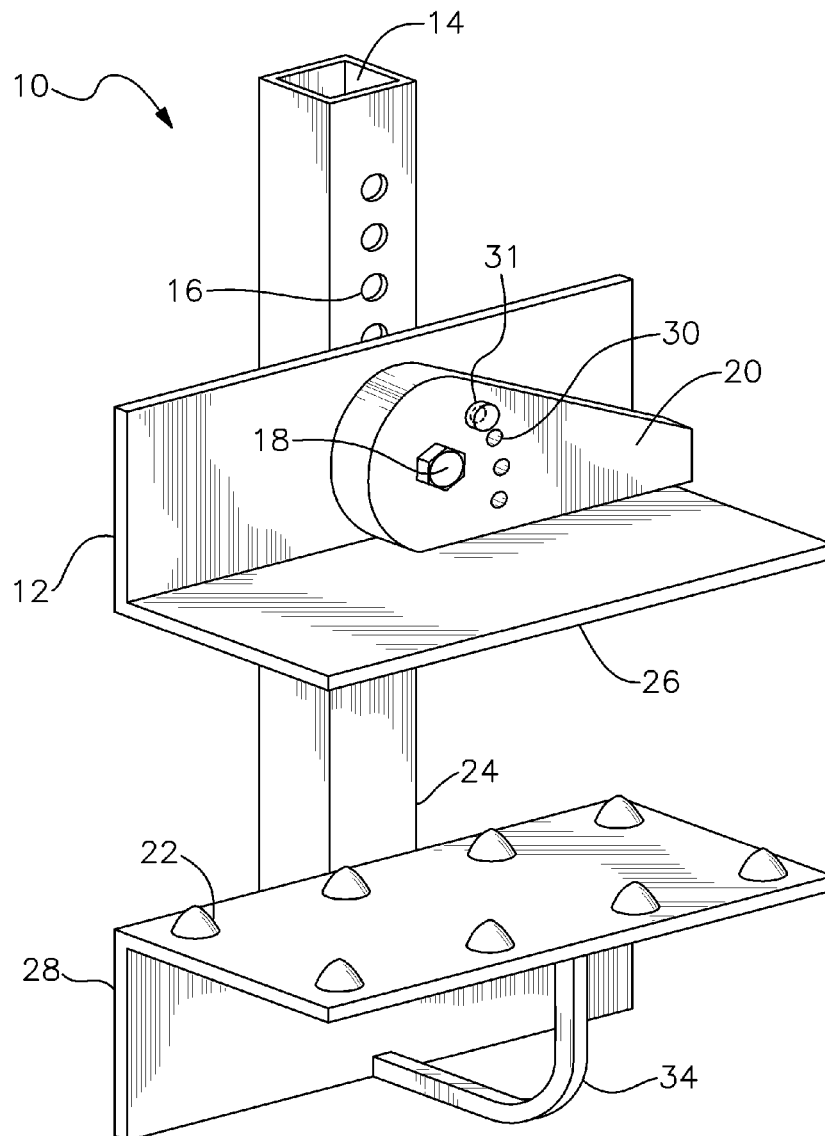
US 20220056715A1

(19) **United States**(12) **Patent Application Publication** (10) **Pub. No.: US 2022/0056715 A1**
O'Mara (43) **Pub. Date: Feb. 24, 2022**(54) **SYSTEM AND METHOD FOR AN EDGE CLAMP AND RAILING**(52) **U.S. Cl.**
CPC **E04G 21/3242** (2013.01)(71) Applicant: **Vic O'Mara**, Santa Ana, CA (US)(72) Inventor: **Vic O'Mara**, Santa Ana, CA (US)(21) Appl. No.: **17/402,689**(22) Filed: **Aug. 16, 2021****Related U.S. Application Data**

(60) Provisional application No. 63/066,872, filed on Aug. 18, 2020.

Publication Classification(51) **Int. Cl.**
E04G 21/32 (2006.01)(57) **ABSTRACT**

An apparatus for an edge clamp and railing on a construction floor having a vertical post with a fixed extended tab or an L-shaped mount with a vertical and horizontal surface, a moveable L-shaped mount with a vertical slot, a cam lever movably attached to the post with a rotation pin inserted through an aperture in the moveable L-shaped mount for engagement to a floor between moveable L-shaped mount and the fixed extended tab or L-shaped mount, and a locking pin affixed through the cam lever into a seat mounted on the moveable L-shaped mount. The moveable mount is selectively engaged in apertures in the post. The opposing mounts may have a plurality of convex stabilizer to engage the floor surfaces, and the cam has a set pin. The lower mount may have a loop for attachment of a safety cord and the post may have a railing mounted therein.



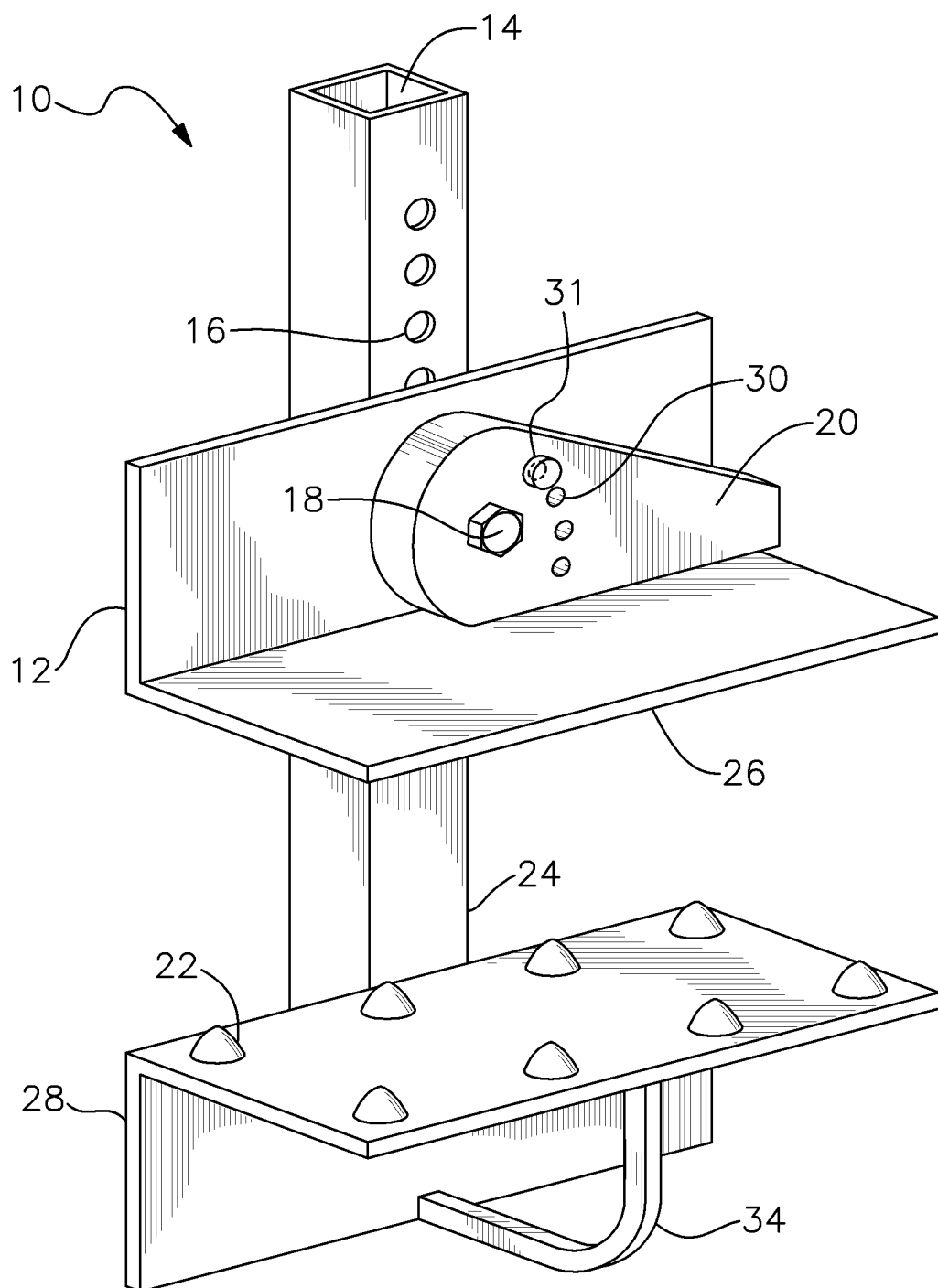


Fig. 1

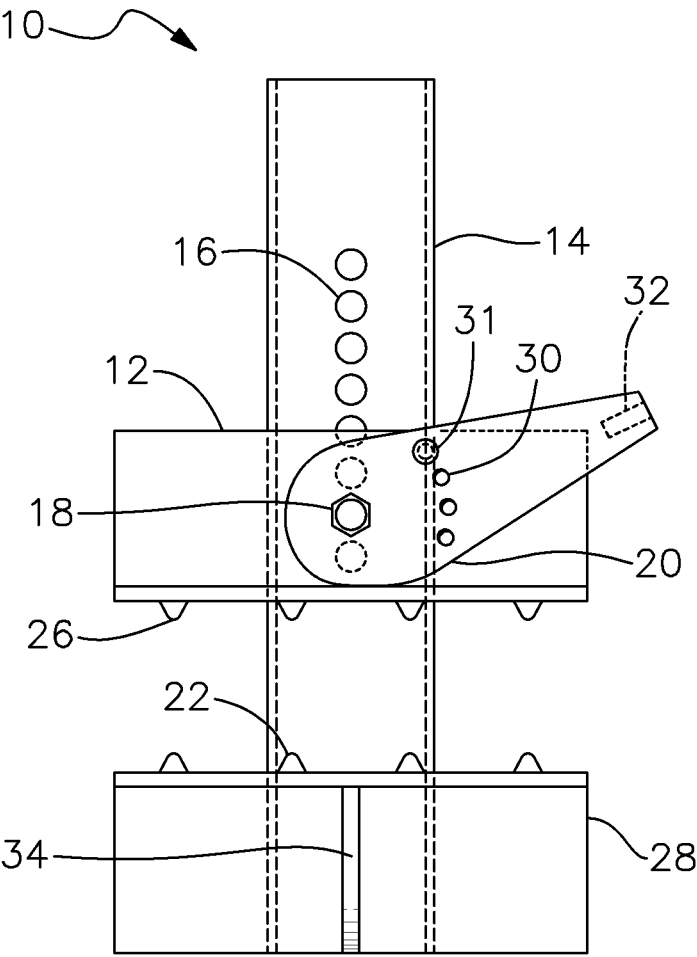


Fig. 2

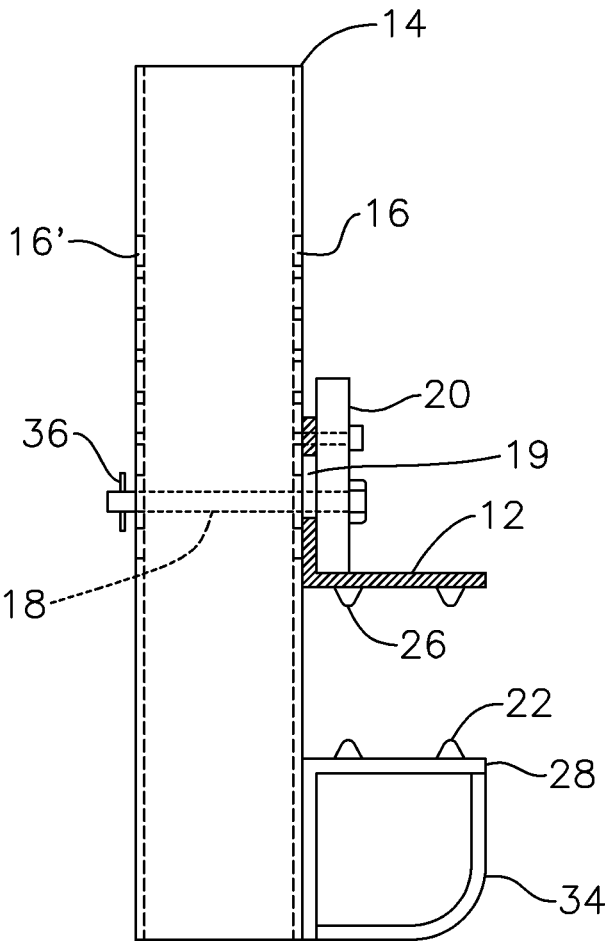


Fig. 3

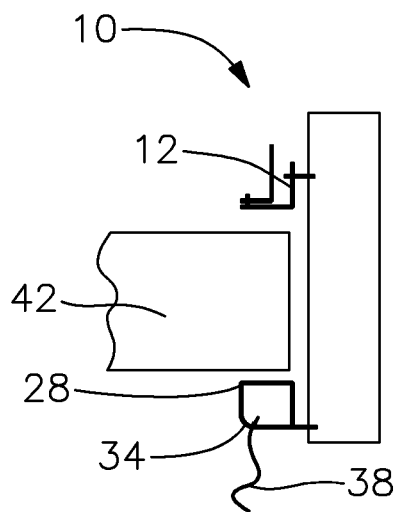


Fig. 4A

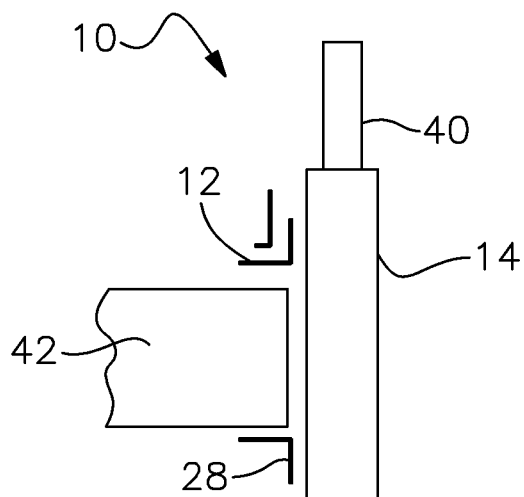


Fig. 4B

SYSTEM AND METHOD FOR AN EDGE CLAMP AND RAILING

CROSS REFERENCE TO RELATED APPLICATIONS

[0001] This application takes priority from a provisional application for patent entitled “System and Method for an Edge Clamp and Railing” having Ser. No. 63/066,872, filed Aug. 18, 2020 and is incorporated as if fully set forth herein.

STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT

[0002] Not Applicable

FIELD OF THE INVENTION

[0003] This invention relates to the field of construction equipment, and more specifically to a system and method for an edge clamp and railing.

BACKGROUND OF THE INVENTION

[0004] Various prior art solutions have attempted to teach adjustable, portable railing systems to prevent people from falling off of surfaces such as U.S. Pat. No. 5,263,550. Other systems have shown a safety device with an upright post and mating jaws to accommodate beams of differing thicknesses such as U.S. Pat. No. 5,607,029. None of the prior art teaches or shows a quick release engaging cam lever to secure the clamp to a floor, while permitting easy and rapid removal of the clamp as needed. Further, the prior art does not teach or suggest a mounting post for insertion of a railing as needed.

BRIEF SUMMARY OF THE INVENTION

[0005] The primary advantage of preferred embodiment of the invention is to provide an assembly for removable attachment to a construction fixture to temporarily close an open shaft, or maintain a railing to prevent someone from falling into an opening on a construction site.

[0006] Another advantage of a preferred embodiment of the invention is to provide a cam lever that provides stable engagement to a floor edge of different dimension.

[0007] Yet another advantage of a preferred embodiment of the invention is to provide a stable system for placing railings at the edge of construction flooring.

[0008] A preferred embodiment of the invention has a body with a fixed clamp opposite a moveable floating clamp for to accommodate a variable width of construction floor. The floating clamp is moveable along a slot in the body and fixed via a cam lock mounted on a shaft that in turn is positioned in one of a number of openings in the body to accommodate different widths of floor to which the clamp is affixed. The main post of the body accommodates an extension post or may be combined with a second clamp to permit a railing to be positioned between the two or mounted on a single clamp.

[0009] The locking mechanism may be of any of a number of configurations so long as the floating clamp may be moved up and down and then fixed against the floor which is between the floating clamp and the fixed clamp.

[0010] In accordance with a preferred embodiment of the invention, there is shown an apparatus for an edge clamp and railing having a vertical post having a fixed horizontal

extension mount, a moveable L-shaped mount having a vertical slot, and a cam lever movably attached to the post with a rotation pin inserted through an aperture in the post through the slot in the movable L-shaped mount for selective engagement with a surface of the movable L-shaped mount, a locking pin positioned through an opening on the cam lever into a seat mounted on the movable L-shaped mount.

[0011] In accordance with a preferred embodiment of the invention, there is shown an apparatus for an edge clamp and railing having a vertical post having a fixed extended L-shaped mount; with a vertical and horizontal surface, a moveable L-shaped mount having a vertical slot on the vertical surface of the L-shaped mount and an upper and lower horizontal surface, a cam lever movably attached to the post with a rotation pin inserted through an aperture in the movable L-shaped mount for engagement to a surface of the moveable L-shaped mount, and a locking pin affixed through the cam lever into a seat mounted on the movable L-shaped mount.

[0012] In accordance with a preferred embodiment of the invention, there is shown an apparatus for an edge clamp and railing having a vertical post having a fixed extended tab or an L-shaped mount, the L-shaped mount having a vertical and horizontal surface, a moveable L-shaped mount having a vertical slot on the vertical surface of the movable L-shaped mount, a cam lever movably attached to the post with a rotation pin inserted through an aperture in the movable L-shaped mount for engagement to a floor between moveable L-shaped mount and the fixed extended tab or L-shaped mount; and a locking pin affixed through the cam lever into a seat mounted on the movable L-shaped mount.

[0013] Other features include a safety lock spring loaded button to maintain the cam lock in position and teeth on the clamps to enhance stability against the floor. A tool may also be provided to mate with a cam lock to facilitate moving the cam. A safety hook may also be affixed to the fixed clamp to provide for a tie down so the clamp doesn't fall when being attached or removed.

BRIEF DESCRIPTION OF THE DRAWINGS

[0014] The drawings constitute a part of this specification and include exemplary embodiments to the invention, which may be embodied in various forms. It is to be understood that in some instances various aspects of the invention may be shown exaggerated or enlarged to facilitate an understanding of the invention.

[0015] FIG. 1 shows a perspective view of a preferred embodiment of the invention.

[0016] FIG. 2 shows an elevation view of a preferred embodiment of the invention.

[0017] FIG. 3 shows a side view of a preferred embodiment of the invention.

[0018] FIG. 4A shows a side schematic view of a preferred embodiment of the invention affixed to a floor and tie off apparatus.

[0019] FIG. 4B shows a schematic side view of a portion of a preferred embodiment of the invention affixed to a floor having an additional support post or railing.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0020] Detailed descriptions of the preferred embodiment are provided herein. It is to be understood, however, that the

present invention may be embodied in various forms. Therefore, specific details disclosed herein are not to be interpreted as limiting, but rather as a basis for later filed claims and as a representative basis for teaching one skilled in the art to employ the present invention in virtually any appropriately detailed system, structure or manner.

[0021] FIG. 1 shows a perspective view of edge clamp 10 for a construction floor in the presence of an open shaft to block the shaft. Edge clamp 10 is composed of a post 14 upon which are mounted floating clamp 12 and fixed clamp 28. Fixed clamp 28 may be welded to post 14, or alternatively be an extension tab fixedly attached to post 14 without a lower vertical portion. Post 14 preferably has a rectilinear cross section, may be hollow, and has a plurality of apertures 16 for selective mounting of floating clamp 12 with mounting rotation pin 18. Floating clamp 12 is generally L-shaped and configured of a stiff material such as metal or reinforced plastic. Depending on the width of the flooring or other object to be mounted, apertures 16 are selected to accommodate the desired width. Apertures 16 having mating apertures 16 on the opposite side of post 14 for insertion and affixing of mounting rotation pin 18 through a mating pair of apertures 16 as more fully shown in FIG. 3. Backstop 24 is a surface of post 14 against which a floor edge abuts post 14 for stable engagement when clamped.

[0022] Post 14 may be hollow to permit additional posts or railings to be affixed or inserted on a temporary basis at a construction site as shown in FIG. 4B, item 40. Mounted on mounting rotation pin 18 that is affixed to floating clamp 12 is cam lever 20 positioned so that upon rotation, cam lever 20 is pushed against an upper surface of floating clamp 12 for downward movement toward fixed clamp 28. As further described below, safety lock openings 30 are positioned in arched fashion on cam lever 20 that permit insertion of a pin through safety lock openings 30 into seat 31.

[0023] Positioned on the underside of floating clamp 12 are a plurality of convex stabilizers 26 (shown in FIG. 2) for improved attachment of edge clamp 10 to a floor. Similarly, convex stabilizers 22 are positioned on the top of the fixed clamp 28. Convex stabilizers may be smooth or pointed and of any of a variety of shapes, including semispherical, square, and tetrahedral, with or without points.

[0024] Edge clamp 10 removably attaches to a construction fixture to temporarily close an open shaft or maintain a railing to prevent someone from falling into an opening on a construction site. The design has a body with a fixed clamp opposite a moveable floating clamp as described above to accommodate a variable width of construction floor. (See FIGS. 2 and 3)

[0025] FIG. 2 shows an elevation view of edge clamp 10, with floating clamp 12 positioned on mounting rotation pin 18 fixedly attached to cam lever 20 having safety lock openings 30 that permit insertion of a pin through safety lock openings 30 into seat 31. As cam lever 20 is rotated to close down the space between floating clamp 12 and fixed clamp 28, one of the safety lock openings that is closest to seat 31 may have a pin placed to prevent cam lever 20 from inadvertently turning and removing the locking position. Cam lever 20 also may have a cam lock 32 used to provide leverage with a tool on cam lever 20. Convex stabilizers 26 and 22 are shown in FIG. 2 in a pointed configuration. Safety hook 34 is attached on the lower portion of fixed clamp 28 for mounting of lines or other straps. Safety hook 34 is shown in side view in FIG. 3 and provides an opening

through which a line or carabiner may be attached. Safety hook 34 may be a curved loop to facilitate attachment of a carabiner or other mechanism well known in the art.

[0026] As shown in FIG. 3, floating clamp 12 is moveable along a vertical slot 19 in the body of floating clamp 12 via a cam lever 20 mounted on mounting rotation pin 18 held in place by removable cotter pin 36, mounting rotation pin 18 is in turn positioned in one of a number of apertures 16 in the body to approximately accommodate different widths of floor to which the clamp is affixed.

[0027] FIG. 4A shows a side view of the edge clamp 10 positioned on floor 42 with fixed clamp 28 on the bottom surface of floor 42 and floating clamp 12 tightly affixed to the upper surface of floor 42. Safety hook 34 is shown with a tie off 38, to prevent edge clamp 10 from falling into an open shaft. FIG. 4B shows a side view of the edge clamp 10 affixed to floor 42 with floating clamp 12 and fixed clamp 28 with extension post 40 positioned within post 14 which also may be combined with a second edge clamp to permit a railing to be positioned between the two, or a wider fixture mounted on a single clamp to provide further safety.

[0028] The locking mechanism may be of any of a number of configurations so long as the floating clamp may be moved up and down and then fixed against the floor which is between the floating clamp and the fixed clamp.

[0029] Other features include a safety lock spring loaded button to maintain the cam lock in position and teeth into the clamps to enhance stability against the floor. A tool may also be provided to mate with a cam lock to facilitate moving the cam. A safety hook may also be affixed to the fixed clamp to provide for a tie down so the clamp does not fall when being attached or removed.

1. An apparatus for an edge clamp and railing comprising:
 - a. a vertical post having a fixed horizontal extension mount;
 - b. a moveable L-shaped mount having a vertical slot;
 - c. a cam lever movably attached to the post with a rotation pin inserted through an aperture in the post through the slot in the movable L-shaped mount for selective engagement with a surface of the movable L-shaped mount; and
 - d. a locking pin positioned through an opening on the cam lever into a seat mounted on the movable L-shaped mount.
2. The apparatus for an edge clamp and railing as claimed in claim 1 wherein the cam lever has a slot for insertion of a tool.
3. The apparatus for an edge clamp and railing as claimed in claim 1 wherein the post is generally hollow and has a rectangular cross section.
4. The apparatus for an edge clamp and railing as claimed in claim 1 further comprising a plurality of openings in the movable L-shaped mount to accommodate a locking pin.
5. The apparatus for an edge clamp and railing as claimed in claim 1 further comprising a loop affixed to the fixed L-shaped mount.
6. The apparatus for an edge clamp and railing as claimed in claim 1 further comprising an insertable railing in the post.

7. The apparatus for an edge clamp and railing as claimed in claim 1 wherein the movable L-shaped mount is moved by turning of the cam lever against a surface of the mount.

8. An apparatus for an edge clamp and railing comprising:

- a. a vertical post having a fixed extended L-shaped mount with a vertical and horizontal surface;
- b. a moveable L-shaped mount having a vertical slot on the vertical surface of the L-shaped mount and an upper and lower horizontal surface;
- c. a cam lever movably attached to the post with a rotation pin inserted through an aperture in the movable L-shaped mount for engagement to a surface of the moveable L-shaped mount; and
- d. a locking pin affixed through the cam lever into a seat mounted on the movable L-shaped mount.

9. The apparatus for an edge clamp and railing as claimed in claim 8 wherein the cam lever has a slot for insertion of a tool.

10. The apparatus for an edge clamp and railing as claimed in claim 8 further comprising a cotter pin on the pin for engagement to the post.

11. The apparatus for an edge clamp and railing as claimed in claim 8 further comprising a loop extended from the fixed extended L-shaped mount.

12. The apparatus for an edge clamp and railing as claimed in claim 11 further comprising a tie connected to the loop.

13. The apparatus for an edge clamp and railing as claimed in claim 8 further comprising an insertable railing in the post.

14. The apparatus for an edge clamp and railing as claimed in claim 8 wherein the valve movable L-shaped

mount is moved by turning of the cam lever against a upper horizontal surface of the mount.

15. An apparatus for an edge clamp and railing comprising:

- a. a vertical post having a fixed extended tab or an L-shaped mount, the L-shaped mount having a vertical and horizontal surface;
- b. a moveable L-shaped mount having a vertical slot on the vertical surface of the movable L-shaped mount;
- c. a cam lever movably attached to the post with a rotation pin inserted through an aperture in the movable L-shaped mount for engagement to a floor between moveable L-shaped mount and the fixed extended tab or L-shaped mount; and
- d. a locking pin affixed through the cam lever into a seat mounted on the movable L-shaped mount.

16. The apparatus for an edge clamp and railing as claimed in claim 15 wherein the cam lever has a slot for insertion of a tool.

17. The apparatus for an edge clamp and railing as claimed in claim 15 wherein the fixed extended tab further comprises convex stabilizers.

18. The apparatus for an edge clamp and railing as claimed in claim 15 further comprising a slot in the movable L-shaped mount to accommodate movement of the pin.

19. The apparatus for an edge clamp and railing as claimed in claim 15 further comprising a loop affixed to the fixed L-shaped mount.

20. The apparatus for an edge clamp and railing as claimed in claim 15 further comprising an insertable railing in the post.

* * * * *