2010/0303586 by eliminating rig personnel from the rig floor during racking operations, still requires rig personnel to build stands. Neither of the systems in the references identified above assists in the make-up of stands. Both systems do not assist in the manipulations of tubulars from the catwalk to well center or an offline mousehole thus requiring rig personnel to utilize winches for the manipulation of tubulars from the horizontal to vertical position.

The present disclosure is directed to systems and methods that overcome one or more of the shortcomings of the prior art.

SUMMARY

According to a first aspect of the present invention, there is provided an apparatus comprising: a first lower track portion extending along a pathway between a well center and a V-door on a drilling rig; a second lower track portion extending in a transverse direction relative to the first lower track portion, the second lower track portion extending to a position offline relative to the pathway between the well center and the V-door on the drilling rig; a curved lower track portion disposed between the first lower track portion and the second lower track portion; a lower trolley configured to carry a racker device, the lower trolley coupled to a lower portion of the racker device and configured to move along at least a portion of the first lower track portion, the second lower track portion, and the curved lower track portion between a position in the pathway between the well center and the V-door on the drilling rig and a position offline and out of the pathway between the well center and the V-door on the drilling rig; a first upper track portion extending along the pathway between the well center and the V-door on the drilling rig; a second upper track portion extending in a second direction transverse to the pathway, the second upper track portion extending to a position offline relative to the pathway; a curved upper track portion disposed between the first upper track portion and the second upper track portion; and an upper trolley disposed at an upper portion of the racker device, the upper trolley configured to move along at least a portion of the first upper track portion, the second upper track portion, and the curved upper track portion, wherein the racker device extends between the lower trolley and the upper trolley.

Disclosed herein is an apparatus comprising: a first track portion extending along a pathway between a well center and a V-door on a drilling rig; a second track portion extending in a transverse direction relative to the first track portion, the second track portion extending to a position offline relative to the pathway between the well center and the V-door on the drilling rig; a trolley parking portion aligned with one of the first track portion and the second track portion and translatable along the other of the first track portion and the second track portion; and a trolley moveable along said one of the first track portion and the

second track portion aligned with the trolley parking portion, the trolley being configured to be carried on the trolley parking portion when the trolley parking portion is moved along the other of the first track portion and the second track portion.

According to a second aspect of the present invention, there is provided a method of installing a parking system for a racker device on a mobile drilling rig, comprising: installing a first track portion extending along a pathway between a well center and a V-door on the drilling rig; installing a second track portion extending in a transverse direction relative to the first track portion, the second track portion extending to a position offline relative to the pathway between the well center and the V-door on the drilling rig; installing a curved track portion connecting the first track portion and the second track portion; attaching a trolley to an upper portion of the racker device; and attaching the trolley to the first track portion, the second track portion, and the curved track portion so that the trolley can move between a position in the pathway between the well center and the V-door on the drilling rig and a position offline and out of the pathway between the well center and the V-door on the drilling rig.

According to a third aspect of the present invention, there is provided an apparatus comprising: a first track portion extending along a pathway between a well center and a V-door on a drilling rig; a second track portion extending in a transverse direction relative to the first track portion, the second track portion extending to a position offline relative to the pathway between the well center and the V-door on the drilling rig; a curved track portion disposed between the first track portion and the second track portion; and an upper trolley configured to carry a racker device, the upper trolley coupled to an upper portion of the racker device and configured to move along at least a portion of the first track portion, the second track portion, and the curved track portion between a position in the pathway between the well center and the V-door on the drilling rig and a position offline and out of the pathway between the well center and the V-door on the drilling rig.

Disclosed herein is a method of installing a parking system for a racker device on a mobile drilling rig, comprising: installing a first track portion extending along a pathway between a well center and a V-door on a drilling rig; installing a second track portion extending in a transverse direction relative to the first track portion, the second track portion extending to a position offline relative to the pathway between the well center and the V-door on the drilling rig; aligning a trolley parking portion with one of the first track portion and the second track portion in a manner that the trolley parking portion is moveable along the other of the first track portion and the second track portion; and attaching a trolley to one of the first track portion and the second track portion, the trolley being configured to be carried on the trolley parking portion when the trolley parking portion is moved along said other of the first track portion and the second track portion.

Disclosed herein is an apparatus comprising: a first track portion extending along a pathway between a well center and a V-door on a drilling rig; a second track portion extending in a transverse direction relative to the first track portion, the second track portion extending to a position offline relative to the pathway between the well center and the V-door on the drilling rig; a trolley parking portion translatable along one of the first track portion and the second track portion; and a trolley moveable along the other of the first track portion and the second track portion, the trolley being selectively attachable to the trolley parking portion and configured to be carried by the trolley parking portion when the trolley parking portion is moved along said one of the first track portion and the second track portion.

BRIEF DESCRIPTION OF THE DRAWINGS

The present disclosure is best understood from the following detailed description when read with the accompanying figures. It is emphasized that, in accordance with the standard practice in the industry, various features are not drawn to scale. In fact, the dimensions of the various features may be arbitrarily increased or reduced for clarity of discussion.

FIG. 1 is a schematic of an exemplary apparatus according to one or more aspects of the present disclosure.

FIG. 2 is a schematic of a top view of the apparatus of FIG. 1 according to one or more aspects of the present disclosure.

FIG. 3 is a schematic of an exemplary apparatus according to one or more aspects of the present disclosure showing an upper track portion.

FIG. 4 is a schematic of a top view of the apparatus of FIG. 1 according to one or more aspects of the present disclosure showing a lower track portion.

FIG. 5 is a schematic of an exemplary apparatus according to one or more aspects of the present disclosure showing a portion of the lower track portion of FIG. 4.

FIG. 6-1 is a schematic of an exemplary apparatus according to one or more aspects of the present disclosure showing a portion of the lower track portion of FIG. 4.

FIG. 6-2 is a schematic of an exemplary apparatus according to one or more aspects of the present disclosure showing a portion of the lower track portion of FIG. 4.

FIG. 7 is a schematic of an exemplary apparatus according to one or more aspects of the present disclosure showing an addition lower track portion.

FIG. 8 is a schematic of a top view of an exemplary apparatus according to one or more aspects of the present disclosure.

FIG. 9-1 is a schematic of an exemplary apparatus according to one or more aspects of the present disclosure showing a portion of an upper track portion.

CLAIMS

1. An apparatus comprising:

a first lower track portion extending along a pathway between a well center and a V-door on a drilling rig;

a second lower track portion extending in a transverse direction relative to the first lower track portion, the second lower track portion extending to a position offline relative to the pathway between the well center and the V-door on the drilling rig;

a curved lower track portion disposed between the first lower track portion and the second lower track portion;

a lower trolley configured to carry a racker device, the lower trolley coupled to a lower portion of the racker device and configured to move along at least a portion of the first lower track portion, the second lower track portion, and the curved lower track portion between a position in the pathway between the well center and the V-door on the drilling rig and a position offline and out of the pathway between the well center and the V-door on the drilling rig;

a first upper track portion extending along the pathway between the well center and the V-door on the drilling rig;

a second upper track portion extending in a second direction transverse to the pathway, the second upper track portion extending to a position offline relative to the pathway;

a curved upper track portion disposed between the first upper track portion and the second upper track portion; and

an upper trolley disposed at an upper portion of the racker device, the upper trolley configured to move along at least a portion of the first upper track portion, the second upper track portion, and the curved upper track portion, wherein the racker device extends between the lower trolley and the upper trolley.

2. The apparatus of claim 1, wherein the lower trolley comprises wheels that roll along the first lower track portion, the second lower track portion, and the curved lower track portion, the wheels being configured to turn to follow the curved lower track portion.

3. The apparatus of claim 2, wherein the lower trolley comprises a set of wheels connected together in a manner that keeps them aligned as they turn to follow the curved lower track portion.

4. The apparatus of claim 1, wherein the first lower track portion, the second lower track portion, and the curved lower track portion include a slot disposed therein, the lower trolley having a portion extending through the slot to guide the lower trolley as it moves along the first lower track portion, the second lower track portion, and the curved lower track portion.

5. The apparatus of claim 1, further comprising a drive mechanism associated with the lower trolley to drive the lower trolley along at least a part of the first lower track portion, the second lower track portion, and the curved lower track portion.

6. The apparatus of claim 5, wherein the drive mechanism comprises:

a rack gear extending along the first lower track portion, the second lower track portion, and the curved lower track portion; and

a motor driving a pinion gear engaged with the rack gear, wherein turning the pinion gear advances the lower trolley along at least a portion of the first lower track portion, the second lower track portion, and the curved lower track portion.

7. The apparatus of claim 6, wherein the pinion gear is centrally disposed on the lower trolley and extends through a slot in the first lower track portion, the second lower track portion, and the curved lower track portion.

8. The apparatus of claim 1, wherein the second lower track portion is positioned to extend along a side of a racker fingerboard.

9. The apparatus of claim 1, wherein the first lower track portion, the second lower track portion, and the curved lower track portion are all flush with a rig floor.

10. The apparatus of claim 1, comprising a drive belt extending along at least a portion of the first lower track portion, the second lower track portion, and the curved lower track portion, the lower trolley being cooperatively connected to the drive belt in a manner that the drive belt moves the lower trolley along at least a portion of the first lower track portion, the second lower track portion, and the curved lower track portion.

11. A method of installing a parking system for a racker device on a mobile drilling rig, comprising:

installing a first track portion extending along a pathway between a well center and a V-door on the drilling rig;

installing a second track portion extending in a transverse direction relative to the first track portion, the second track portion extending to a position offline relative to the pathway between the well center and the V-door on the drilling rig;

installing a curved track portion connecting the first track portion and the second track portion;

attaching a trolley to an upper portion of the racker device; and

attaching the trolley to the first track portion, the second track portion, and the curved track portion so that the trolley can move between a position in the pathway between the well center and the V-door on the drilling rig and a position offline and out of the pathway between the well center and the V-door on the drilling rig.

12. The method of claim 11, wherein the first track portion, the second track portion, and the curved track portion include a slot disposed therein, and

wherein attaching the trolley to the first track portion, the second track portion, and the curved track portion comprises arranging the trolley so that a portion of the trolley extends through the slot.

13. The method of claim 11, wherein attaching the trolley to the first track portion, the second track portion, and the curved track portion comprises engaging a gear on the trolley to a gear adjacent one of the first track portion, the second track portion, and the curved track portion.

14. The apparatus of claim 1, wherein the first lower track portion is positioned under the first upper track portion, the second lower track portion is positioned under the second upper track portion, and the curved lower track portion is positioned under the curved upper track portion.

15. The apparatus of claim 14, wherein the first lower track portion has the same dimensions as the first upper track portion, the second lower track portion has the same dimensions as the second upper track portion, and the curved lower track portion has the same dimensions as the curved upper track portion.

16. The method of claim 11, further comprising:

installing a third track portion extending along between the well center and the V-door on the drilling rig;

attaching a lower trolley to a lower portion of the racker device; and

attaching the lower trolley to the third track portion.

17. The method of claim 16, further comprising:

installing a fourth track portion extending in a transverse direction relative to the third track portion, the fourth track portion extending to a position offline relative to the pathway between the well center and the V-door on the drilling rig;

installing a second curved track portion connecting the third track portion and the fourth track portion; and

attaching the lower trolley to the third track portion, the fourth track portion, and the second curved track portion so that the lower trolley can move between a position in the pathway between the well center and the V-door on the drilling rig and a position offline and out of the pathway between the well center and the V-door on the drilling rig.

18. The method of claim 17, further comprising:

installing the third track portion below the first track portion;

installing the fourth track portion below the second track portion; and

installing the second curved track portion below the curved track portion.

19. An apparatus comprising:

a first track portion extending along a pathway between a well center and a V-door on a drilling rig;

a second track portion extending in a transverse direction relative to the first track portion, the second track portion extending to a position offline relative to the pathway between the well center and the V-door on the drilling rig;

a curved track portion disposed between the first track portion and the second track portion; and

an upper trolley configured to carry a racker device, the upper trolley coupled to an upper portion of the racker device and configured to move along at least a portion of the first track portion, the second track portion, and the curved track portion between a position in the pathway between the well center and the V-door on the drilling rig and a position offline and out of the pathway between the well center and the V-door on the drilling rig.

20. The apparatus of claim 19, further comprising a third track portion, wherein a lower trolley coupled to a lower portion of the racker device is configured to move along at least a portion of the third track portion.

21. The apparatus of claim 20, wherein the racker device extends as a vertical column between the lower trolley and the upper trolley.

22. The apparatus of claim 21, wherein the third track portion extends along a rig floor.

23. The apparatus of claim 20, wherein the third track portion extends along a rig floor.

24. The apparatus of claim 1, wherein each of the first lower track portion, the second lower track portion, and the curved lower track portion extend along a rig floor.

25. The apparatus of claim 1, wherein the racker device is a column racker and the lower trolley bears the weight of the column racker.

26. The method of claim 16, wherein installing the third track portion includes installing along a rig floor between the well center and the V-door on the drilling rig.