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RAILWAY ANCHOR CLIPPING MECHANISM

- (57)

Provided herein is a workhead assembly (48) for a railway anchor applicator (10) that can have an anchor clipping mechanism (54) can be configured to operably couple to an anchor receiving mechanism (50). The anchor clipping mechanism can have an apply lever (62) configured to be coupled to an actuator (66). The apply lever may include a fulcrum (78) configured couple to a moveable frame (22) of the workhead. The anchor clipping mechanism may include an applicator arm (60) having an elongated body with a first end, a second end at a distal location, and a middle portion between the first end and the second end. The middle portion may be configured to pivotably couple to the apply lever and a guide pin is located on the second end. An apply cam (64) can be configured to couple to the moveable frame. The apply cam can have a slot configured to receive the guide pin.

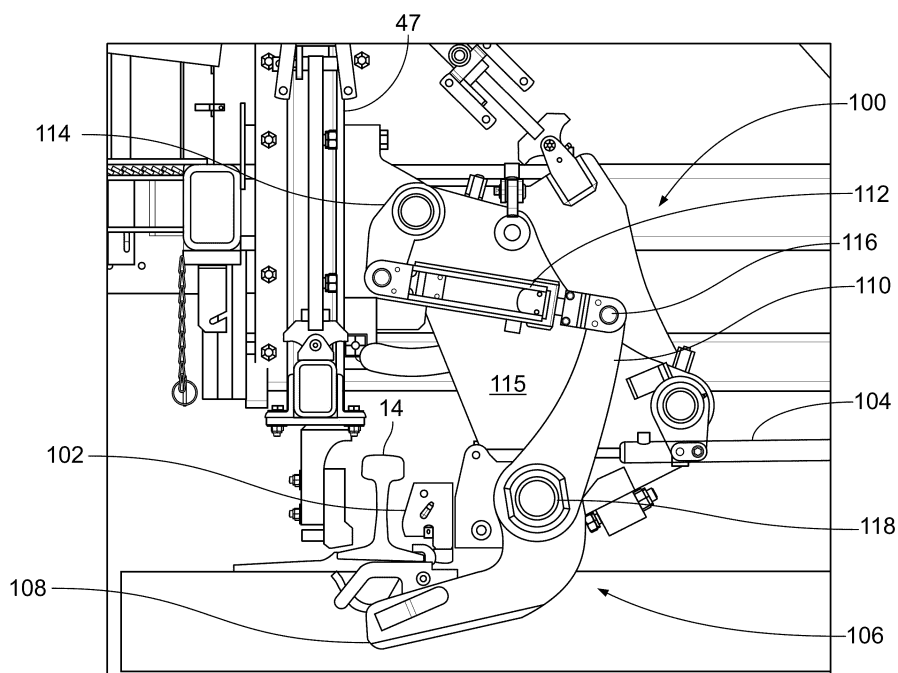


FIG. 7

Description

CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] This application is a non-provisional conversion of, and claims priority to U.S. Provisional Application No. 63/441,945, which was filed 30-January-2023 and U.S. Non-Provisional Application No. 18/394,106, which was filed on 22-December-2023, and the entire disclosures of which are incorporated herein by reference.

BACKGROUND

Technical Field.

[0002] The inventive subject matter relates generally to railroad right-of-way maintenance machinery, and specifically to machinery used for applying anchors to rail ties for securing rail tie plates and rails to the ties.

Discussion of Art.

[0003] A railway anchor may clamp onto a rail and be positioned to abut the tie and the tie plate, to resist the movement of the rail relative to the tie. Railway anchors may include different configurations and models of anchors, such as spring-type or drive-on anchors made by different manufacturers, or any other rail fasteners positioned adjacent tie plates and used for retaining tie plates upon the ties.

[0004] During the course of railroad maintenance work, existing rail anchors may be removed during the replacement of rail ties, tie plates, and rails, and for other maintenance operations. Once the maintenance is complete, the anchors may need to be reinstalled. Alternatively, the anchors can fail and new anchors need to be installed in their place.

[0005] Rail anchors may be installed by railroad maintenance machines that may include a frame or chassis which is either self-propelled or towable along the track, and a workhead that may include an anchor applicator device. Such devices may have a travel position, where the portion of the workhead can be held sufficiently above the track to avoid damage by obstacles including the track itself, and a work position. During operation in the work position, the workheads can move between a loading position for loading the repair part, and a track engaging position for applying the repair part. To avoid damage to the devices, such workheads may be designed for operation so that travel is prohibited when these devices are in the latter two positions, or the devices can automatically rise to the travel position when the railroad maintenance machine begins to move to the next location.

[0006] Railroad maintenance machines can be configured for installing certain types of anchors. As anchor geometry changes to improve performance and durability of the anchor, anchor application techniques may need to be changed to accommodate the type of anchor.

Thus, a need may exist for an improved rail anchor applicator which may more consistently install anchors to railway tracks.

BRIEF DESCRIPTION

[0007] Provided herein is a workhead assembly for a railway anchor applicator that may be provided with a movable frame configured to be disposed between a set of railway tracks; an anchor receiving mechanism can be configured to be coupled to the movable frame, the anchor receiving mechanism can be configured to rotate between a first position for receiving an anchor and a second position in proximity to one of the tracks; an anchor clipping mechanism can be configured to be coupled to the movable frame and the anchor receiving mechanism. In one example, the anchor clipping mechanism may be provided with an actuator configured to be coupled to the movable frame; an apply lever can be configured to be coupled to a second end of the actuator, the apply lever can have a fulcrum configured to be coupled to the moveable frame; an applicator arm can have an elongated body with a first end, a second end at a distal location, and a middle portion between the first end and the second end, wherein the middle portion can be configured to be pivotably coupled to the apply lever, and a guide pin can be located on the second end; and an apply cam can be configured to be coupled to the moveable frame, the apply cam can have a slot configured to receive the guide pin.

[0008] Provided herein is a method of applying a railway anchor to a railway track that can include the steps of supplying an anchor to an anchor receiving mechanism; rotating the anchor receiving mechanism from a first position located above the track to a second position below the track; applying a force to an anchor clipping mechanism coupled to the anchor receiving mechanism, the anchor clipping mechanism can have an applicator arm having an elongated body with a first end, a second end at a distal location, and a middle portion between the first end and the second end, wherein the middle portion is adapted to receive the applying force, and the second end comprises a guide pin; and an apply cam having a slot configured to receive the guide pin.

[0009] Provided herein is an anchor clipping mechanism coupled to a movable frame of a railway anchor applicator that can include an actuator configured to couple to the movable frame; an apply lever configured to couple to a second end of the actuator, the apply lever having a fulcrum configured to couple to the moveable frame; an applicator arm having an elongated body with a first end, a second end at a distal location, and a middle portion between the first end and the second end, wherein the middle portion is configured to pivotably couple to the apply lever, and a guide pin is located on the second end; and an apply cam configured to couple to the moveable frame, the apply cam having a slot configured to receive the guide pin.

BRIEF DESCRIPTION OF THE DRAWINGS

[0010] The subject matter may be understood from reading the following description of non-limiting embodiments, with reference to the attached drawings, wherein below:

Figure 1 is a perspective view of an anchor applicator machine;

Figure 2 is a side elevation of the anchor applicator machine loading an anchor;

Figure 3 is a partial perspective view of a workhead assembly of Figure 1 positioned over the track with the remainder of the anchor applicator machine omitted;

Figure 4 is a side view of the workhead assembly of Figure 3;

Figure 5 is a partial cross-sectional side-view of the workhead assembly of Figure 3; and

Figure 6 is another side-view of the workhead assembly of Figure 3 and a railway track.

Figure 7 is a side view of a workhead assembly that can be used in the anchor applicator machine of Figure 1.

DETAILED DESCRIPTION

[0011] Figure 1 is an illustrative view of one example of a railway anchor applicator 10. The railway anchor applicator may be designed for applying railway anchors 12 onto railroad rails 14 to secure rail tie plates 16 and ties 18 to the rails. The anchors, the rails, the tie plates and the ties may be collectively referred to as a railroad track 20.

[0012] A frame 22 may be included on the railway anchor applicator. The frame may be supported on a set of wheels 24 such that the frame can be movable along the railroad track, either by being self-propelled by a source of motive power such as an engine 26, or by being towable by another powered vehicle. At or near the rear of the railway anchor applicator, an operator's station 28 can be included for housing an operator 30 (Figure 2). A bulk storage compartment 32 may be located in front of the operator's station in the direction of travel of the railway anchor applicator along the railroad track. Other components of railway maintenance machines can also be incorporated.

[0013] For purposes of discussion, the forward direction "F" is towards the direction of travel, and the rearward direction "R" is away from the direction of travel. Also, the gage side or internal side "GG" of the track is between the rails, while the field side or outward side "FD" is out-

side of each rail. Upwards "U" is away from the ground and downwards "D" is towards the ground. The length of the vehicle is measured along the track, and the width of the vehicle is measured across the track.

[0014] Referring now to Figures 2 and 3, at least one operator's seat 34 may be disposed in the operator's station in operational relationship to an interior work area 36 having at least one operator input 37 such as a trigger, a switch, a joystick, a button, or any other input mechanism. Extending from the bulk storage compartment (Figure 1) into the station can be a bulk-loading conveyer 38 for receiving anchors in the operator's station. The anchors can travel from the bulk storage compartment, up the bulk-loading conveyer, and into the operator's station where the operator can remove the anchors from the conveyer.

[0015] In one example, an exterior work area 40 may be located between a work frame 42 and the operator's station in proximity to one of the two rails of the track. The work frame can include at least one piston rod or shaft 44 extending from a fluid power cylinder 46 used to selectively position a moving frame 47 vertically to the rails over portions of the track needing maintenance. The moving frame can be moved under hydraulic power from the fluid power cylinder within the work frame. Other arrangements are contemplated for controlling movement vertical to the rail. Further, arrangements configured for movement parallel to the rail (forward) "F" and rearward "R" and movement transverse to the rail (gage "GG" to field "FD") are contemplated.

[0016] In the railway anchor applicator, the exterior work area may be provided with at least one and/or two workhead assemblies 48. Only one such assembly will be described in detail, since the units can be substantially identical to each other. The workhead assembly can be movably mounted on the work frame for vertical movement toward and away from a tie (upward "U" and downward "D") to adjust the movement of the workhead to a particular height of the rail.

[0017] Figure 3 is a partial view of one example of the workhead assembly. As seen in Figures 2 and 3, the workhead assembly may include an anchor receiving mechanism 50, an anchor positioning mechanism 52 and an anchor clipping mechanism 54. In one example, the anchor receiving mechanism may be configured for movement between a first position for receiving at least one anchor from an anchor input 56 and a second position for placing the anchor at a location away from the anchor input. In one embodiment, the anchor receiving mechanism pivots the anchor downward "D" towards the rail. The anchor receiving mechanism is depicted in Figure 3 in the first position where the anchor can be received from the anchor input.

[0018] The anchor positioning mechanism can be configured for movement between a retracted receiving position and an extended position for positioning the anchor adjacent to the rail. The movement of the anchor positioning mechanism can be vertical movement downward

"D," as well as rotation about the work frame. In one example, the anchor positioning mechanism can be a hydraulic piston coupled to the anchor receiving mechanism and the frame of the workhead assembly. The retracted receiving position of the anchor positioning mechanism can correspond to the first position, or receiving position of the anchor receiving mechanism. The extended position of the anchor positioning mechanism can correspond to the second position of the anchor receiving mechanism. In the second position, the anchor receiving mechanism may deliver the anchor to the anchor clipping mechanism.

[0019] In one example, the anchor clipping mechanism can positively engage the anchor against the rail by imparting pressure on the anchor transversely across the rail. The anchor can be positioned from the gage side "GG" as the anchor clipping mechanism moves underneath the rail towards the field side "FD" of the rail. The anchor can be clipped, or installed, onto the rail by moving the anchor upwards and back towards the gage side "GG" to compress it against the flange of the rail. In one example, the anchor can be clipped onto the rail by moving the anchor in an alternative sequence of directions depending on the shape and construction of the anchor.

[0020] Before the workhead assembly installs an anchor to the rail, the anchor may be inserted into the workhead assembly from the anchor input. While the anchor input can be contemplated as any manner of feeding anchors to the workhead assembly, including manual feeding directly to the anchor receiving mechanism, an anchor magazine **58** can be provided for each workhead assembly.

[0021] Figure 4 is a side view of the workhead assembly depicting the anchor receiving mechanism in the second position where the anchor can be placed in proximity to the rail at a location away from the anchor input. The anchor receiving mechanism may be moved to the second position by extension of the anchor positioning mechanism. In the second position, the anchor receiving mechanism may be nested or supported in certain components of the anchor clipping mechanism. In the second position, the anchor may be in contact with the anchor clipping mechanism.

[0022] In one example, the anchor clipping mechanism may include an applicator arm **60** coupled to an apply lever **62** and an apply cam **64**. The apply lever may be operably coupled to an actuator **66**. The actuator may be a hydraulic piston or other force-producing actuator. The actuator may couple at one end to the apply lever and at another end to a support arm **68**. The support arm may be configured to pivotably couple to one end of the actuator. The support arm may be adapted to couple to a support member **49** of the moving frame. The support member may be used for reacting forces applied by the actuator. The support member may be a grounded or non-moving component of the moving frame. The support arm may be fixed to the support member to prevent relative motion between the support arm and the support

member. In one example, the support arm may be coupled to the apply lever in a way to provide degree of freedom in movement such as rotation about the support member.

[0023] In one example, the anchor clipping mechanism may include a rail coupler **70** attached to one end of the applicator arm. The rail coupler may be configured to contact the anchor and transmit forces from the anchor clipping mechanism to apply the anchor to the rail. The rail coupler may be integral to the anchor clipping mechanism. The rail coupler can be a separate component fastened to the anchor clipping mechanism and removed or replaced as it is worn or damaged during operation.

[0024] In one example, the applicator arm may include an elongated body having a first end prepared for coupling to the rail coupler, a second end adapted to couple to the apply cam, and a middle portion located between the first end and the second. The middle portion may be provided with a first pin **72**. The first pin can be pivotably coupled to the apply lever. The applicator arm can couple at the second end to the apply cam through a guide pin **74**. In one example, the guide pin can provide a pivoting and sliding interface between the applicator arm and the apply cam. In one example, a cap **75** may be coupled over the first pin and the apply lever. The cap may be configured to retain the first pin. In one example, the elongated body may have a clevis opening **77** (Figure 3) for receiving the apply lever and the apply cam. The clevis opening can be formed as a slot formed in the elongated body of the applicator arm. The clevis opening may be positioned from the middle portion through the second end. Once assembled, the apply lever and the apply cam can be flanked on each side by the clevis opening.

[0025] In one example, the apply lever may be an elongated body having a pivot pin **76** arranged on a first end of the elongated body. The apply lever may couple at an opposite end of the elongated body to the applicator arm at the first pin. The apply lever can have a fulcrum **78** located on the elongated body between the pivot pin and the first pin. During application of the anchor, the apply lever can transfer force from the actuator through the pivot pin to the first pin on the applicator arm while rotating about the fulcrum.

[0026] Figure 5 is a partial cross-sectional side-view of the workhead assembly. In one example, the anchor receiving mechanism may be provided with a clamp **80**. The clamp may be actuated by a hydraulic means to selectively contact one end of the anchor. When the clamp is clasped to the anchor, the anchor may be securely held within the anchor receiving mechanism. The anchor receiving mechanism may be provided with a plunger **82**. The plunger may be adapted to dampen the fall of the anchor from the anchor input into the anchor receiving mechanism. The plunger may also be configured to securely hold the anchor during rotation of the anchor receiving mechanism from the first position to the second position and can stabilize the anchor during application of the anchor to the rail.

[0027] In one example, the anchor positioning mechanism may be coupled to a bracket **84** extending from a support arm **86**. The support arm can be coupled to the support member. The support arm may be adapted to operably couple to the apply cam. In one example, the apply cam can couple to the support arm at a first cam fastening location **88**. The apply cam can couple to the support member at a second cam fastening location **90** (Figure 6). The first and second cam fastening locations can securely and accurately position the apply cam with respect to the applicator arm. In one example, the apply cam can be provided with a slot **92**. The slot can receive the guide pin provided on the applicator arm. In one example, the slot may be an opening formed in the body of the apply cam. The slot may have a length in the transverse direction of the rail and can have a length in the vertical direction. The slot may take the shape of two linear sections, a first section having a length in the vertical direction and a second section having a length in the transverse direction. In one example, the slot may have a curved shape within the vertical and transverse directions.

[0028] Figure 6 is an in-situ side-view of the workhead assembly and an exemplary railway. During application of a rail anchor, the applicator arm can be positioned underneath the rail through the rotation of the workhead assembly. The applicator arm can move when force is applied from the actuator through the apply lever. The motion of the applicator arm may have a rotation about the first pin followed by a translation of the applicator arm toward the gage side (GG) of the railway. The motion of the applicator arm can correspond to the translation of the guide pin in the slot of the apply cam. In one example, the guide pin can be positioned in the slot near the most vertical location when the anchor is ready for installation onto the rail. As force is applied by the actuator, the apply lever can transfer force to the applicator arm through the first pin. The guide pin can rotate and translate along the slot with the application of force to the applicator arm to thereby move the rail coupler upward and then backward to deposit the anchor onto the rail. Retraction of the applicator arm can then be performed through reversal of the actuator.

[0029] Figure 7 is a side view of a workhead assembly **100** depicting an anchor receiving mechanism **102** in a position where the anchor can be placed in proximity to the rail at a location away from the anchor input. In one example, the workhead assembly may be configured to apply a clip type or slip type anchor. The anchor receiving mechanism may be moved to the second position by extension of an anchor positioning mechanism **104**. In the second position, the anchor receiving mechanism may be nested or supported in certain components of an anchor clipping mechanism **106**. In the second position, the anchor may be in contact with the anchor clipping mechanism.

[0030] In one example, the anchor clipping mechanism may include an applicator arm **108** coupled to an apply

lever **110**. The apply lever can be operably coupled to an actuator **112**. The actuator may be a hydraulic piston or other force-producing actuator. The actuator can operably couple at one end to the apply lever and at another end to a support arm **114**. The support arm can be configured to pivotably couple to one end of the actuator. The support arm can be adapted to couple to a support member **115** of the moving frame. The support member may be used for reacting forces applied by the actuator. The support member may be a grounded or non-moving component of the moving frame. The support arm may be fixed to the support member to prevent relative motion between the support arm and the support member. In one example, the support arm may be coupled to the apply lever in a way to provide degree of freedom in movement such as rotation about the support member.

[0031] In one example, the applicator arm can be an elongated body having a first end prepared for coupling to the anchor, a second end adapted to couple to the apply lever, and a middle portion located between the first end and the second.

[0032] In one example, the apply lever can be an elongated body having a pivot pin **116** arranged on a first end of the elongated body. The apply lever may couple at an opposite end of the elongated body to the applicator arm. The apply lever can have a fulcrum **118** located on the elongated body between the pivot pin and the first pin. During application of the anchor, the apply lever can transfer force from the actuator through the pivot pin on the applicator arm while rotating about the fulcrum.

[0033] Provided herein is a workhead assembly for a railway anchor applicator that may be provided with a movable frame configured to be disposed between a set of railway tracks; an anchor receiving mechanism can be configured to be coupled to the movable frame, the anchor receiving mechanism can be configured to rotate between a first position for receiving an anchor and a second position in proximity to one of the tracks; an anchor clipping mechanism can be configured to be coupled to the movable frame and the anchor receiving mechanism. In one example, the anchor clipping mechanism may be provided with an actuator configured to be coupled to the movable frame; an apply lever can be configured to be coupled to a second end of the actuator, the apply lever can have a fulcrum configured to be coupled to the moveable frame; an applicator arm can have an elongated body with a first end, a second end at a distal location, and a middle portion between the first end and the second end, wherein the middle portion can be configured to be pivotably coupled to the apply lever, and a guide pin can be located on the second end; and an apply cam can be configured to be coupled to the moveable frame, the apply cam can have a slot configured to receive the guide pin.

[0034] In one example of the workhead assembly, the anchor receiving mechanism can be configured to be operably coupled to the apply lever. In one example of the workhead assembly, the applicator arm can be config-

ured to move in a path based at least in part on the shape of the slot. In one example, the workhead assembly may include an anchor magazine configured to operably coupled to the anchor receiving mechanism, the anchor magazine configured to supply the anchor to the anchor receiving mechanism. In one example of the workhead assembly, the slot can be configured to be aligned perpendicular to the track. In one example of the workhead assembly, the actuator can be a hydraulic piston. In one example of the workhead assembly, the anchor receiving mechanism can also include a clamp configured to hold the anchor. In one example, the workhead assembly can also include a rail coupler configured to be coupled to the first end of the applicator arm. In one example of the workhead assembly, the elongated body can have a clevis opening configured for receiving the apply lever and the apply cam, the clevis opening formed from the middle portion through the second end.

[0035] Provided herein is a method of applying a railway anchor to a railway track that can include the steps of supplying an anchor to an anchor receiving mechanism; rotating the anchor receiving mechanism from a first position located above the track to a second position below the track; applying a force to an anchor clipping mechanism coupled to the anchor receiving mechanism, the anchor clipping mechanism can have an applicator arm having an elongated body with a first end, a second end at a distal location, and a middle portion between the first end and the second end, wherein the middle portion can be adapted to receive the applying force, and the second end includes a guide pin; and an apply cam having a slot configured to receive the guide pin.

[0036] In one example of the method, applying a force may include moving the applicator arm in a path defined by the slot. In one example of the method, applying a force to the anchor clipping mechanism can include actuating a hydraulic actuator operably coupled to the applicator arm through an apply lever. In one example, the method can include applying a force to an anchor through the applicator arm, wherein the force applied to the anchor attaches the anchor to the railway track. In one example of the method, moving the applicator arm can include an upward rotation of the applicator arm from a position below the railway track and a transverse translation of the applicator arm with respect to the railway track.

[0037] Provided herein is an anchor clipping mechanism coupled to a moveable frame of a railway anchor applicator that can include an actuator configured to couple to the moveable frame; an apply lever configured to couple to a second end of the actuator, the apply lever having a fulcrum configured to couple to the moveable frame; an applicator arm having an elongated body with a first end, a second end at a distal location, and a middle portion between the first end and the second end, wherein the middle portion can be configured to pivotably couple to the apply lever, and a guide pin can be located on the second end; and an apply cam configured to couple

to the moveable frame, the apply cam having a slot configured to receive the guide pin.

[0038] In one example of the anchor clipping mechanism, the applicator arm can move in a path based at least in part on the shape of the slot. In one example of the anchor clipping mechanism, the slot can be configured to aligned perpendicular to a railway track. In one example of the anchor clipping mechanism, the actuator can be a hydraulic piston. In one example, the anchor clipping mechanism can have a rail coupler configured to couple to the first end of the applicator arm. In one example of the anchor clipping mechanism, the elongated body can include a clevis opening configured for receiving the apply lever and the apply cam, the clevis opening formed from the middle portion through the second end.

[0039] Use of phrases such as "one or more of ... and," "one or more of ... or," "at least one of ... and," and "at least one of ... or" are meant to encompass including only a single one of the items used in connection with the phrase, at least one of each one of the items used in connection with the phrase, or multiple ones of any or each of the items used in connection with the phrase. For example, "one or more of A, B, and C," "one or more of A, B, or C," "at least one of A, B, and C," and "at least one of A, B, or C" each can mean (1) at least one A, (2) at least one B, (3) at least one C, (4) at least one A and at least one B, (5) at least one A, at least one B, and at least one C, (6) at least one B and at least one C, or (7) at least one A and at least one C.

[0040] As used herein, an element or step recited in the singular and preceded with the word "a" or "an" do not exclude the plural of said elements or operations, unless such exclusion is explicitly stated. Furthermore, references to "one embodiment" of the invention do not exclude the existence of additional embodiments that incorporate the recited features. Moreover, unless explicitly stated to the contrary, embodiments "comprising," "comprises," "including," "includes," "having," or "has" an element or a plurality of elements having a particular property may include additional such elements not having that property. In the appended claims, the terms "including" and "in which" are used as the plain-English equivalents of the respective terms "comprising" and "wherein." Moreover, in the following claims, the terms "first," "second," and "third," etc. are used merely as labels, and do not impose numerical requirements on their objects. Further, the limitations of the following claims are not written in means-plus-function format and are not intended to be interpreted based on 35 U.S.C. § 112(f), unless and until such claim limitations expressly use the phrase "means for" followed by a statement of function devoid of further structure.

[0041] The above description is illustrative, and not restrictive. For example, the above-described embodiments (and/or aspects thereof) may be used in combination with each other. In addition, many modifications may be made to adapt a particular situation or material

to the teachings of the subject matter without departing from its scope. While the dimensions and types of materials described herein define the parameters of the subject matter, they are exemplary embodiments. The scope of the subject matter should, therefore, be determined with reference to the appended claims, along with the full scope of equivalents to which such claims are entitled.

[0042] This written description uses examples to disclose several embodiments of the subject matter, including the best mode, and to enable one of ordinary skill in the art to practice the embodiments of subject matter, including making and using any devices or systems and performing any incorporated methods. The patentable scope of the subject matter is defined by the claims, and may include other examples that occur to one of ordinary skill in the art. Such other examples are intended to be within the scope of the claims if they have structural elements that do not differ from the literal language of the claims, or if they include equivalent structural elements with insubstantial differences from the literal languages of the claims.

Claims

1. A workhead assembly for a railway anchor applicator comprising:

a movable frame configured to be disposed between a set of railway tracks;

an anchor receiving mechanism configured to be coupled to the movable frame, the anchor receiving mechanism configured to rotate between a first position for receiving an anchor and a second position in proximity to one of the tracks;

an anchor clipping mechanism configured to be coupled to the movable frame and the anchor receiving mechanism, the anchor clipping mechanism comprising:

an actuator configured to be coupled to the movable frame;

an apply lever configured to be coupled to a second end of the actuator, the apply lever having a fulcrum configured to be coupled to the moveable frame;

an applicator arm having an elongated body with a first end, a second end at a distal location, and a middle portion between the first end and the second end, wherein the middle portion is configured to be pivotably coupled to the apply lever, and a guide pin is located on the second end; and

an apply cam configured to be coupled to the moveable frame, the apply cam having a slot configured to receive the guide pin.

2. The workhead assembly of claim 1, wherein the anchor receiving mechanism is configured to be operably coupled to the apply lever.

3. The workhead assembly of claim 2, wherein the applicator arm is configured to move in a path based at least in part on the shape of the slot.

4. The workhead assembly of claim 2, further comprising an anchor magazine configured to operably coupled to the anchor receiving mechanism, the anchor magazine configured to supply the anchor to the anchor receiving mechanism.

5. The workhead assembly of claim 1, wherein the slot is configured to be aligned perpendicular to the track.

6. The workhead assembly of claim 1, wherein the actuator is a hydraulic piston.

7. The workhead assembly of claim 4, wherein the anchor receiving mechanism further comprises a clamp configured to hold the anchor.

8. The workhead assembly of claim 1, further comprising a rail coupler configured to be coupled to the first end of the applicator arm.

9. The workhead assembly of claim 1, wherein the elongated body comprises a clevis opening configured for receiving the apply lever and the apply cam, the clevis opening formed from the middle portion through the second end.

10. A method of applying a railway anchor to a railway track comprising:

supplying an anchor to an anchor receiving mechanism;

rotating the anchor receiving mechanism from a first position located above the track to a second position below the track;

applying a force to an anchor clipping mechanism coupled to the anchor receiving mechanism, the anchor clipping mechanism comprising:

an applicator arm having an elongated body with a first end, a second end at a distal location, and a middle portion between the first end and the second end, wherein the middle portion is adapted to receive the applying force, and the second end comprises a guide pin; and

an apply cam having a slot configured to receive the guide pin.

11. The method of claim 10, wherein applying a force

further comprises moving the applicator arm in a path defined by the slot.

12. The method of claim 10, wherein applying a force to the anchor clipping mechanism further comprises actuating a hydraulic actuator operably coupled to the applicator arm through an apply lever. 5
13. The method of claim 12, further comprising applying a force to an anchor through the applicator arm, wherein the force applied to the anchor attaches the anchor to the railway track. 10
14. The method of claim 11, wherein moving the applicator arm further comprises an upward rotation of the applicator arm from a position below the railway track and a transverse translation of the applicator arm with respect to the railway track. 15
15. An anchor clipping mechanism coupled to a movable frame of a railway anchor applicator, the anchor clipping mechanism comprising: 20
 - an actuator configured to couple to the movable frame; 25
 - an apply lever configured to couple to a second end of the actuator, the apply lever having a fulcrum configured to couple to the moveable frame;
 - an applicator arm having an elongated body with a first end, a second end at a distal location, and a middle portion between the first end and the second end, wherein the middle portion is configured to pivotably couple to the apply lever, and a guide pin is located on the second end; 30 35
 - and
 - an apply cam configured to couple to the moveable frame, the apply cam having a slot configured to receive the guide pin. 40

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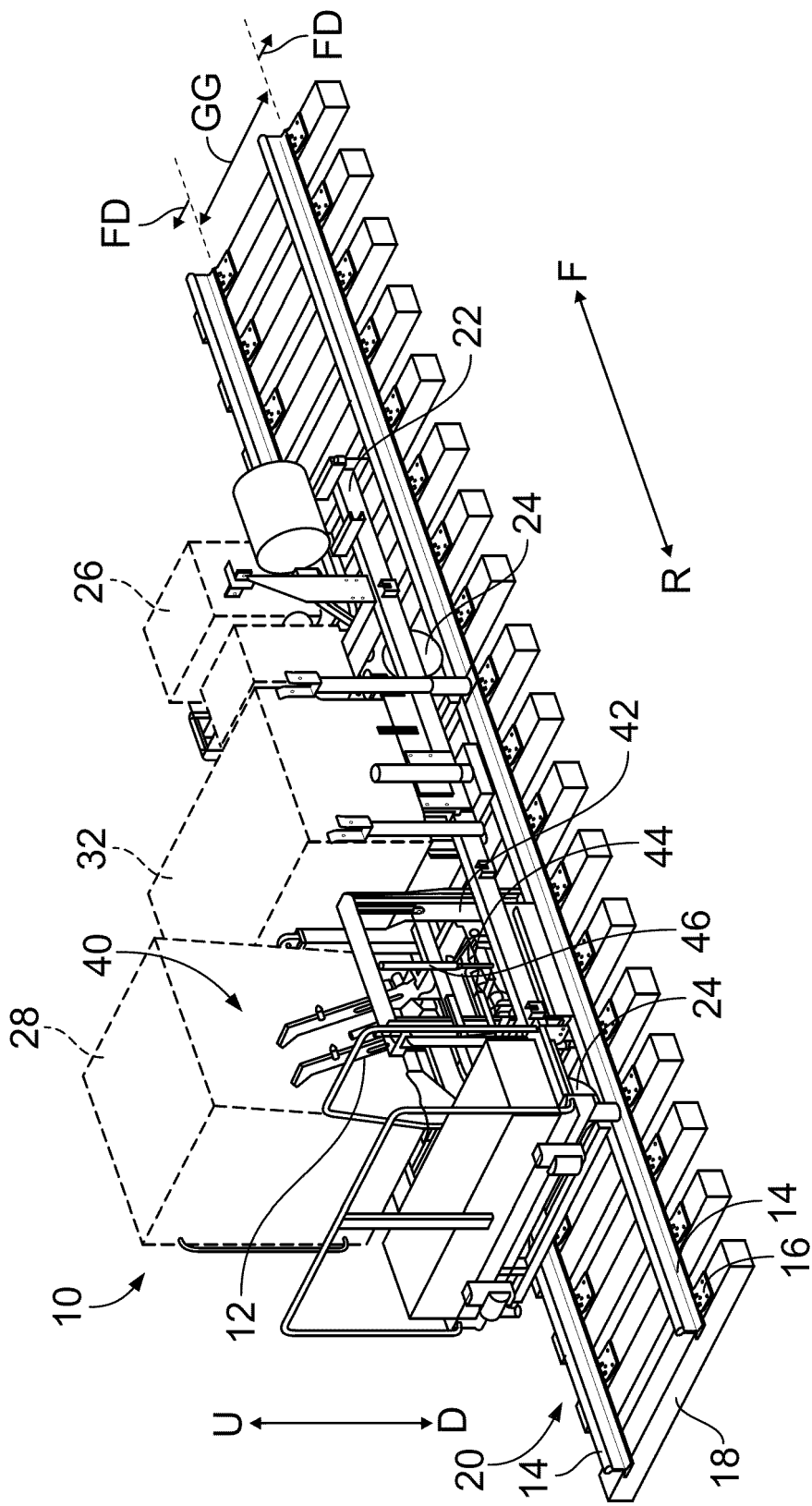


FIG. 1

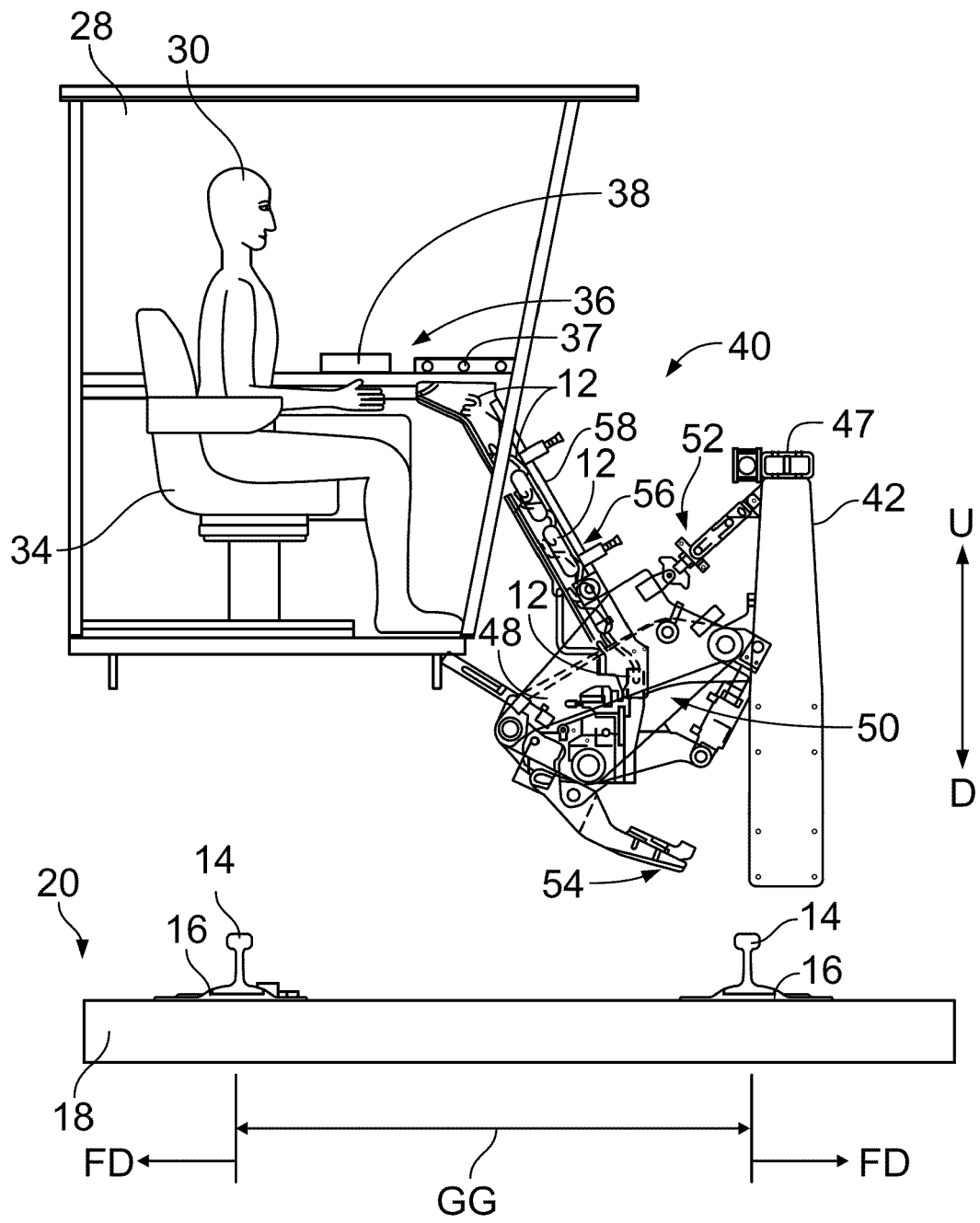
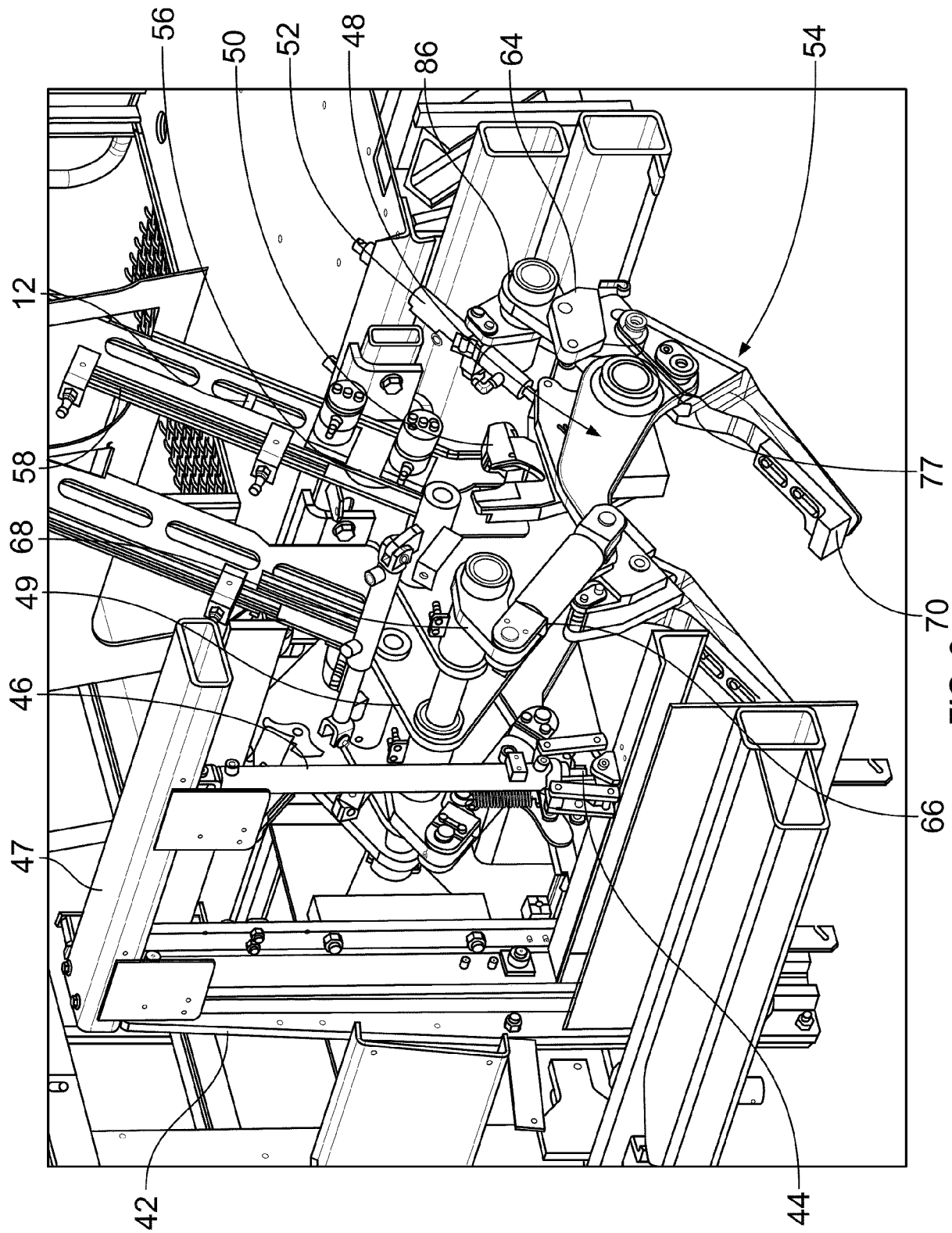


FIG. 2



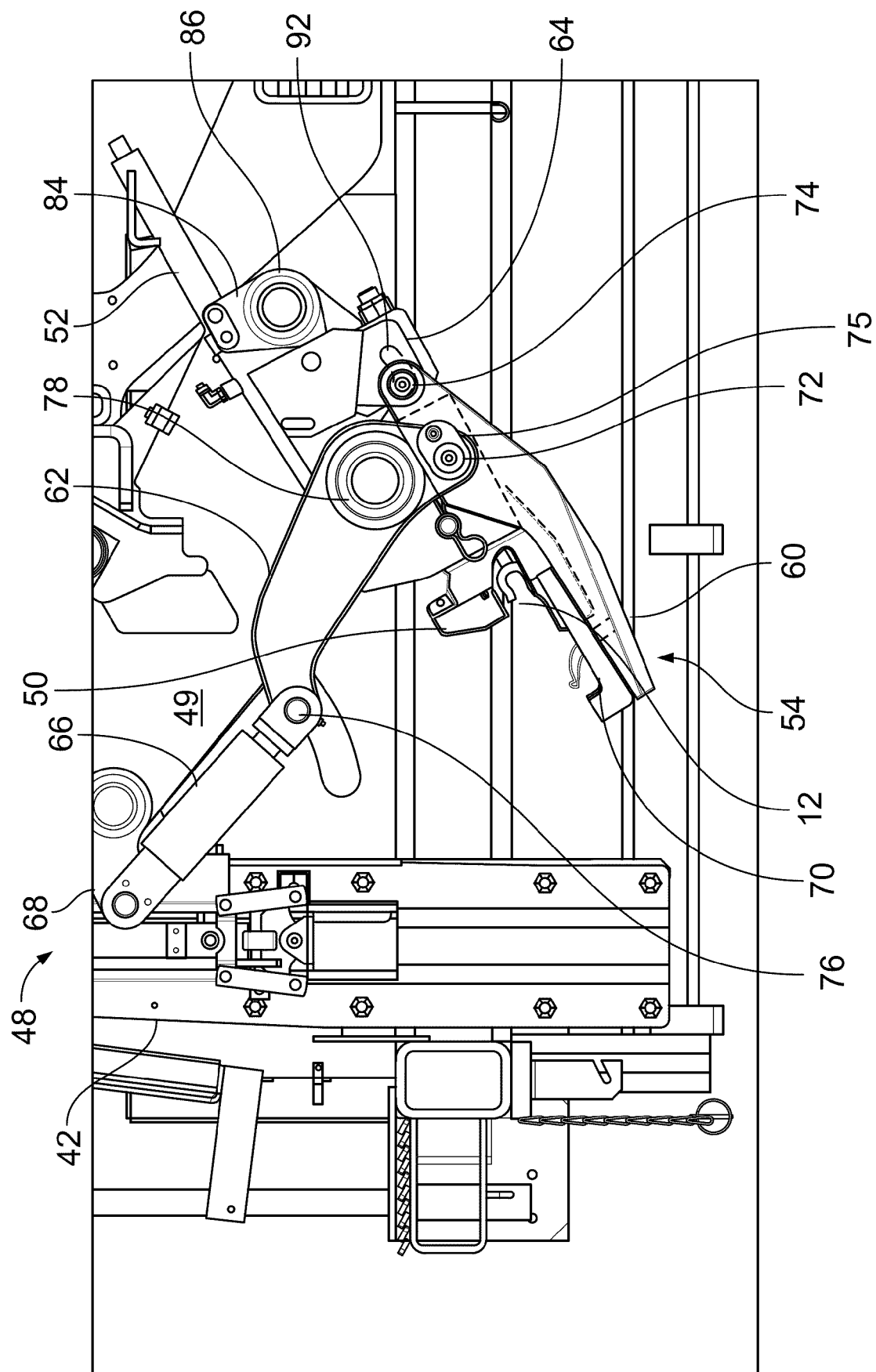


FIG. 4

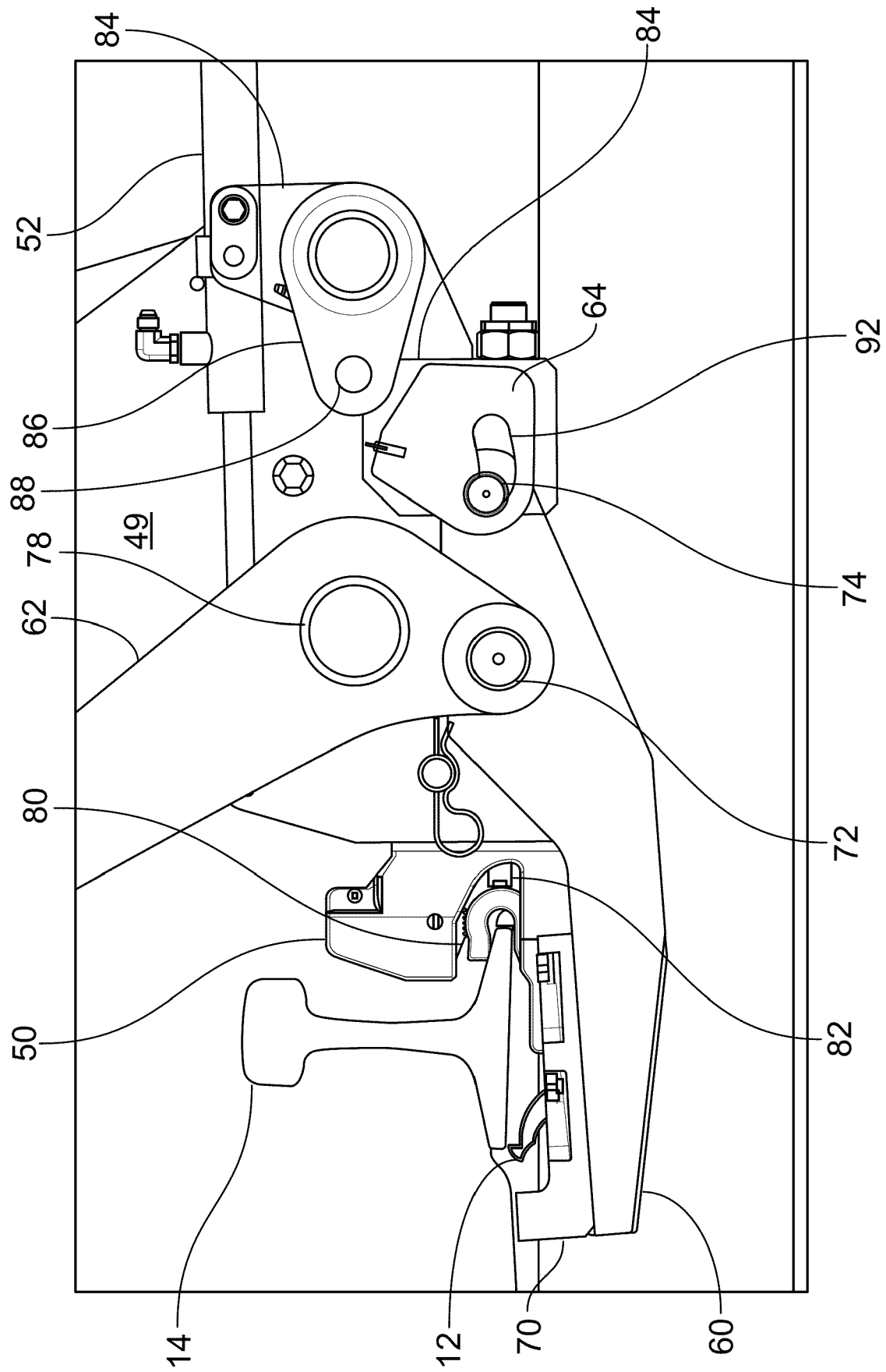


FIG. 5

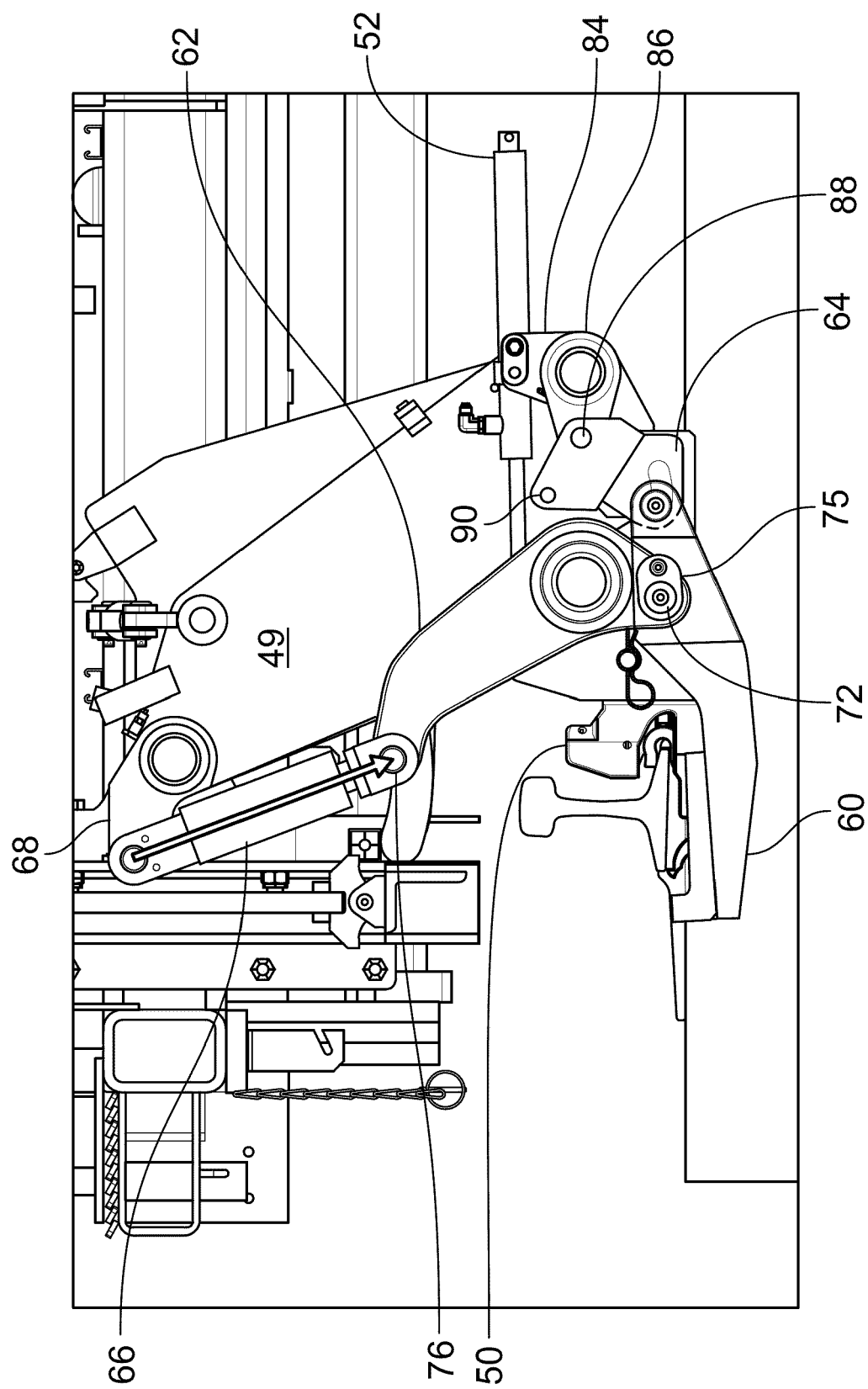


FIG. 6

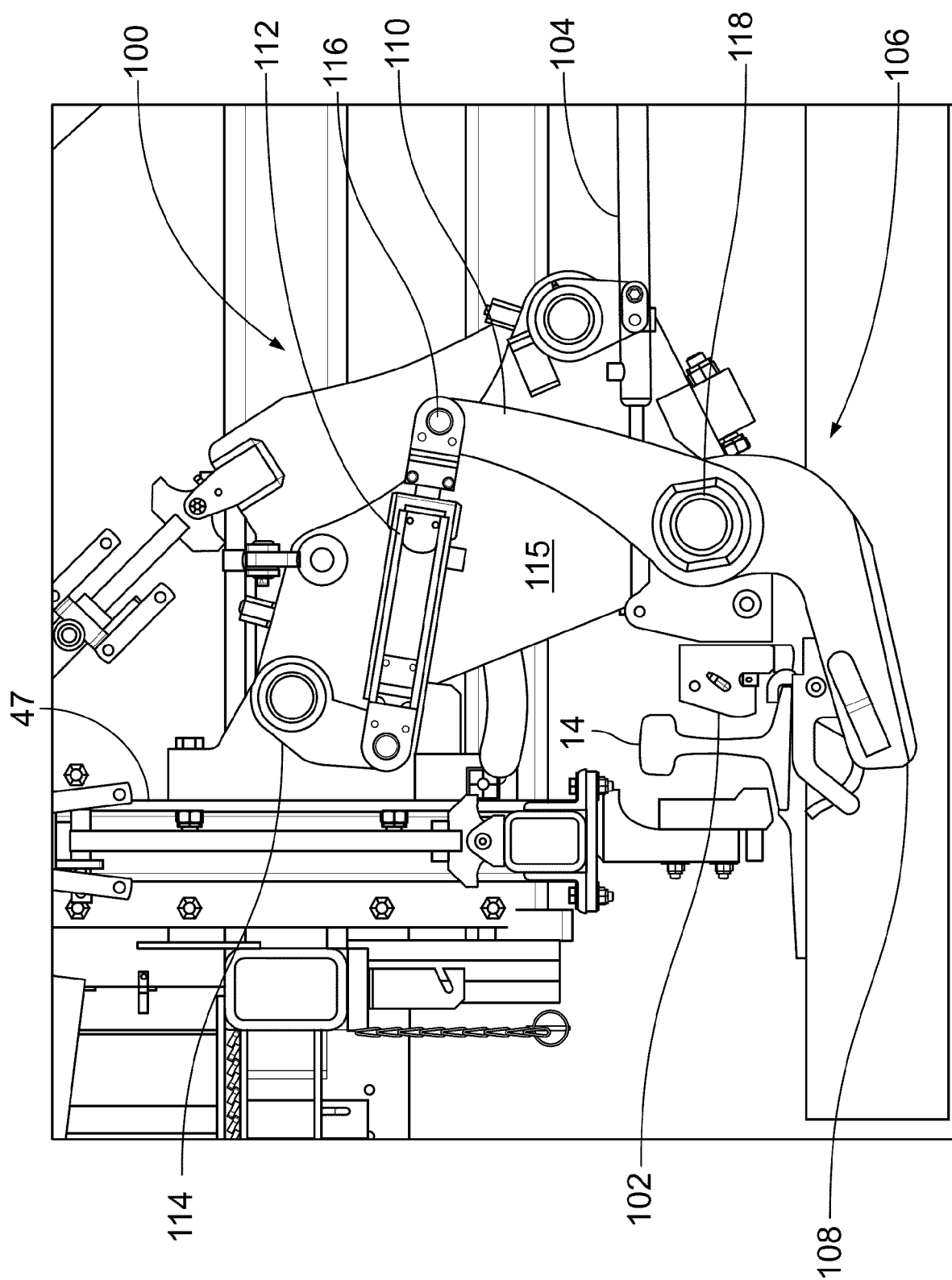


FIG. 7



EUROPEAN SEARCH REPORT

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			TECHNICAL FIELDS SEARCHED (IPC)
			E01B
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Place of search Munich		Date of completion of the search 4 June 2024	Examiner Klein, A
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