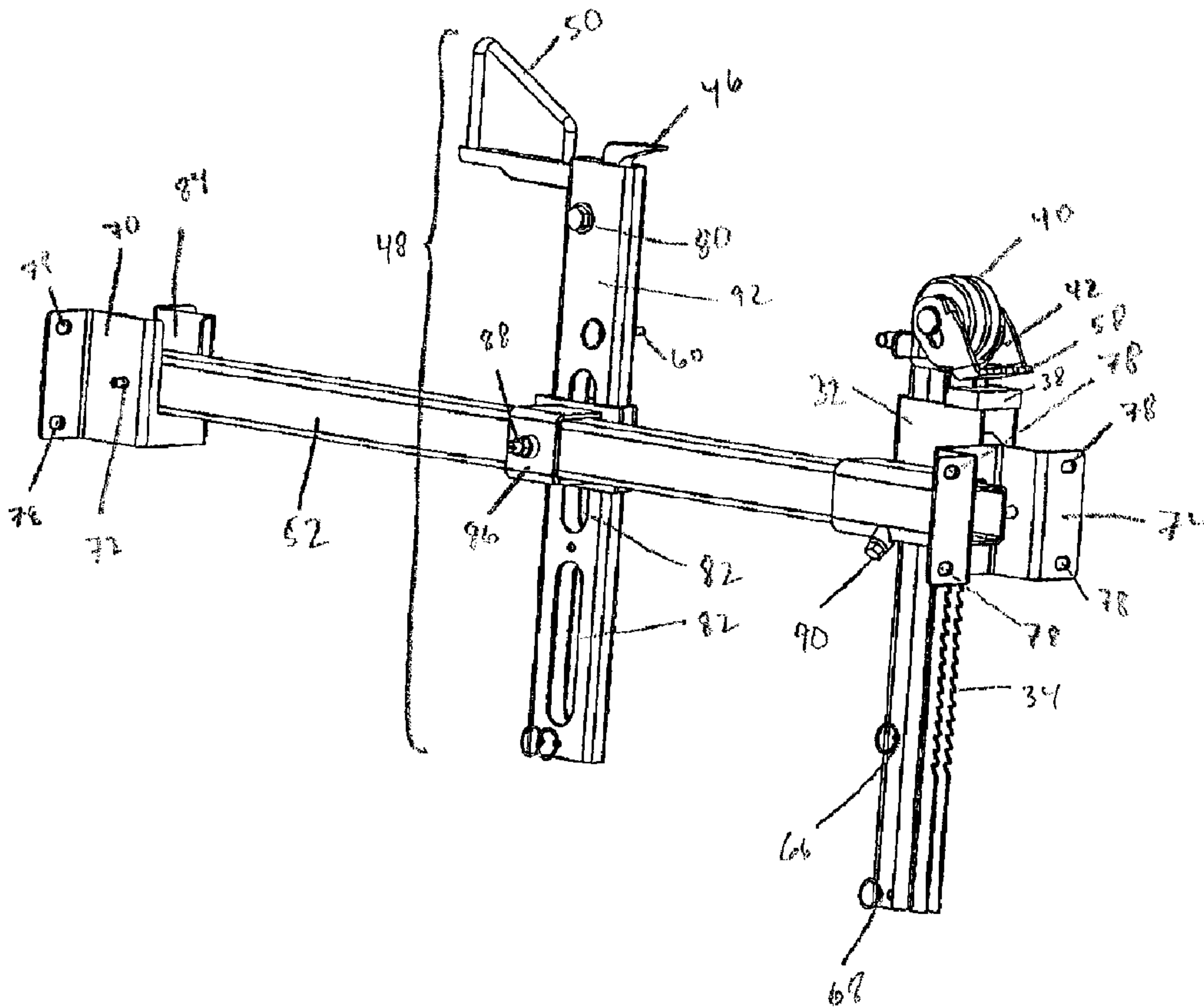




(22) Date de dépôt/Filing Date: 2009/12/08
(41) Mise à la disp. pub./Open to Public Insp.: 2010/07/02
(45) Date de délivrance/Issue Date: 2011/04/05

(51) Cl.Int./Int.Cl. *B27B 29/08* (2006.01),
B27B 29/00 (2006.01)
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(54) Titre : SUPPORT A RONDINS
(54) Title: LOG REST



(57) Abrégé/Abstract:

A new log support and clamp system (log rest) for a portable sawmill, having a log rest and a log dog. The log rest features a ratcheting, quick-adjustable, self-locking clamp which improves the ability of the user to affix the log in place for sawing. Also, a portable sawmill having such a log rest.

Abstract

A new log support and clamp system (log rest) for a portable sawmill, having a log rest and a log dog. The log rest features a ratcheting, quick-
5 adjustable, self-locking clamp which improves the ability of the user to affix the log in place for sawing. Also, a portable sawmill having such a log rest.

LOG REST

Field of the Invention

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The present invention relates to a new log support system (log rest) for a portable sawmill. The log rest features a ratcheting, adjustable clamp which improves the ability of the user to affix the log in place for sawing.

Background of the Invention

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There are several prior inventions for portable sawmills.

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US Patent No. 5,784,941 describes a portable sawmill in which the functions of adjusting a cut and making a cut are divided between two separate devices. The invention discloses a vertical chain saw, ideally operated in an upward direction. The patent also discloses a log restraint system comprising a setwork having a headstock and a lockable L-shaped log dog, joined by a clamp which is locked with a lever.

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US Patent No. 5,243,892 discloses a portable sawmill with a frame base and an inverted U-shaped frame, supported by a carriage rolling along side tracks defined by the frame base. In use, the log is placed on the U-shaped frame and clamped with a tubular clamp held within a sleeve and locked in place using threaded blocks.

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US Patent No. 4,640,170 discloses a portable saw mill with a frame that surrounds the log. The frame is dragged or slid along a frame supporting surface. The frame holds a chain saw at the two ends of its blade, in horizontal fashion, with chain saw support members. The invention uses sliding means for facilitating the movement of the frame over the log. The log is secured against rolling using a simple jig or similar means.

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US Patent No. 4,275,632 describes a portable sawmill comprising a U-shaped support or carriage, holding a band saw. When in use, a log is placed between the two guide rails and is supported in place by appropriately
5 distanced log supports.

US Patent 4,307,641 describes a portable sawmill comprising two skid rails, vertical support members, a pair of guide rails. The log is held in place by two externally threaded log screw pins with pointed ends.
10

US Patent No. 4,300,428 describes a portable sawmill having a frame, a guide member mounted above the frame, and a carriage. The chain saw is mounted above the log, and operates at about a 45 degree angle to the horizontal. The log is held in place with log dogs which are adapted for
15 hooking the log and holding it in position.

US Patent No. 4,235,140 describes a saw mill. The logs are held in place with a standard log dog attached to the cross members on which the log is placed.
20

US Patent No. 3,965,788 describes a saw guide for use with a vertically operated portable chain saw. The saw guide apparatus is attached directly to the log.

25 US Patent No. 3,926,086 describes a portable saw mill that uses a complex pulley system to move the chain saw and supporting platform. When in use, a log is placed, and clamped, between the guide rails, using a set of circular discs eccentrically oriented on a rod.

30 US Patent No. 3,695,316 describes a portable timber milling jig that uses a carriage, holding a chain saw, axially surrounding a square guide rail. The

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chain saw is held at an approximately 45 degree angle and only uses one guide rail, and utilizes ball bearings on the carriage to move the carriage with respect to the guide rail. When in use, a log is placed under the guide rail, and fixed using clamping points driven into the center of the log, to which support clamps are fastened.

Canadian Patent No. 1,200,180 describes a portable saw mill comprising a frame with a guide rail and a carriage moveable along the guide rail. A band saw is supported by the carriage. The carriage is moveable along the guide rail along two sets of wheels, one engaged with the upper side of the guide rail and the other with the lower side. The log is held in place by its own weight, or by stops and a traditional locking dog.

US Patent No. 4,245,535 describes a portable sawmill with an elaborate hydraulic apparatus for cutting a log. The chain saw cuts in a vertical motion. The log is held in place using a log holding assembly having a toothed prod which grips the outer end of the log, and a cylinder which impales the inner end of the log with a ram, forcing the outer end against the prod.

US Patent No. 4,210,049 describes an "x" frame for holding a log, with a chain saw affixed to the frame in cantilever position for cutting logs crosswise. The log is held in the nook of the "x" frame.

Canadian patent application 2,541,734 describes a portable sawmill that is easily displaceable, easily assembled and disassembled into portable components, and which can use generic components as its saw and/or guide rails. The log is held in place using traditional log dogs.

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Summary of the Invention

The present invention provides a log support and clamp assembly for use in a portable sawmill, comprising a horizontal support beam having two ends for affixing to a sawmill, the support beam capable of being affixed to said sawmill at both ends. A log dog having a vertical portion generally perpendicular to said horizontal support beam and extending upwards therefrom, and a top end having a pick protruding therefrom. A log rest assembly having a clamp housing affixed to said support beam and horizontally displaceable thereon, a post connected to or housed within said clamp housing, said post configured in a generally vertical direction and said clamp housing having a ratchet mechanism for raising the post relative to the horizontal support beam.

In one embodiment, the post has a wheel at a top end. In another embodiment the wheel has a rotatable, lockable cuff. The cuff may have a jagged edge.

In one embodiment, the log support and clamp assembly can be in an unlocked position, the log dog horizontally displaceable along the horizontal support beam, and in a locked position, the log dog horizontally non-displaceable along the horizontal support beam. In another embodiment, in an unlocked position, the log dog is vertically displaceable relative to the horizontal support beam, and in a locked position, the log dog is vertically non-displaceable relative to the horizontal support beam.

Optionally, the log dog has a log dog handle extending at an upwards angle from the top end.

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In an embodiment, the log support and clamp assembly has a lever attached to a pawl in said ratchet mechanism, wherein a movement of said lever releases said pawl and lowers said post.

- 5 The present invention also teaches a portable sawmill comprising the log support and clamp assembly, as well as a kit for retrofitting a log support and clamp assembly to a portable sawmill.

Brief Description of the Drawings

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Figure 1 is a side elevation illustration of the log support system in isolation from the sawmill.

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Figure 2 shows a front perspective view of the log support/clamping system of Figure 1.

Figure 3 shows a rear perspective view of the log support/clamping system of Figure 1.

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Figure 4 shows a side perspective view of the log support/clamping system of Figure 1.

Figure 5 shows a side perspective view of the log rest assembly portion of the log support/clamping system of Figure 1, in isolation.

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Figure 6 shows a rear perspective view of the log rest assembly of Figure 5.

Figure 7 shows a front perspective view of the log rest assembly of Figure 5.

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Figure 8 shows a front perspective view of a sawmill with the log rest in context.

Detailed Description of the Preferred Embodiments

The present invention provides a simple, versatile, cost-effective and portable log support system for a sawmill such as a portable sawmill. The system provides exemplary fixing of the log onto it, and allows for a user to clamp the log in place on the log support/clamp utilizing only one hand. This permits the user to use the other hand to stabilize the log until the log rest is racheted into the desired position, and the log clamped between the log rest and the log dog, a cam-operated clamp that squeezes the log. The log rest is thus the back-stop against which the log rests and against which the log dog exerts force, thereby clamping the log. The log rest thus allows the user to quickly raise and lower its height to suit the log being milled. The log rest can be raised or lowered with one hand, and, when being raised, the log rest automatically locks in place.

The log rest is particularly suitable for portable sawmills, and for use by hunters, "do-it-yourselfers", and people situated in remote areas, who need to saw boards, clapboards, shingles, etc., since it allows for a highly variable log size to be affixed to it, and it allows for a single operator to maneuver the log into place, then clamp the log in place using only one hand to operate the clamp mechanism. This allows the user to use their other hand to stabilize the log, greatly improving use and safety of a sawmill, for example, when a single person, in a remote area, is sawing logs. The log rest also allows great flexibility in the size of logs being clamped to it, thanks to its highly adjustable nature. Notably, the log rest can be adjusted to a rough log sizing, then fine adjusted for each individual log in an easy, one-handed manner. The operator, using only one hand, can raise the log rest to suit the log size, and it automatically locks in place. Additionally, the operator can lower it one-handed by flicking a lever.

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The log rest design enables it to be sold as part of a sawmill such as a portable saw mill, or as a separate item for retrofitting onto an existing sawmill, for example, as a kit or an accessory option. The log rest's design enables it to be manufactured from extremely sturdy, reasonably inexpensive materials, and permits a high level of configurability for different size logs.

An embodiment of the present invention will now be described as shown in Figures 1-8.

As seen in Figures 1 and 8, the log support/clamp system comprises a support beam 52 designed to be affixed to the sawmill 10 through sawmill supports 70, 74. Attached to support beam 52 are log dog 48 and log rest 54. The design is such that the sawmill supports 70, 74 can be affixed to opposing sides of the sawmill by screwing them thereto utilizing screw holes 78. Log dog 48 and log rest 54 can then be easily affixed to or removed from the sawmill through removal of sawmill support pin 72, lateral displacement of the support beam 52 through sawmill support opening 84, then displacement of the log dog 48 and log rest 54 beyond the end of support beam 52.

As seen in Figure 3, log dog 48 is removably affixed to the support beam 52, through housing front 56 and back 86 which together receive vertical portion 92. Vertical portion 92 comprises pick 46 and log support 50 at its top end, pin limiters 62, 64 at its bottom end, and adjustment apertures 82 extending vertically therebetween. Apertures 82 lighten the weight of the log dog 48. Housing 56 allows vertical displacement of vertical portion 92 in relation to housing 56, 86 and therefore support beam 52. Housing 86 allows horizontal displacement of log dog 48 in relation to support beam 52, when housing screw 88 is loosened. Vertical portion 92 can thus be displaced vertically within adjustment apertures 82, and can be displaced horizontally, along with housing 56, 86, along support beam 52. When housing screw 88 (Figure 3)

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is tightened, housing 86 forms a clamp which affixes the log dog 48 in a horizontal position relative to support beam 52, limiting horizontal displacement relative to support beam 52. A second housing screw, 89 secures log dog 48 in a desired vertical position relative to support beam 52.
5 Alternatively pin limiters (e.g. 60) can secure log dog 48 in a desired vertical position.

Log dog 48 can be removed from support beam 52, by removing pin limiters 62, 64, and lifting vertical portion 92 out of housing 56, 86. Log dog 48,
10 along with housing 56, 86, can also be removed from support beam 52 by removing support beam 52 from sawmill support 72 as described above and displacing vertical portion 92 horizontally beyond the end of support beam 52.

15 Typically, log dog 48 is adjusted horizontally and vertically in relation to support beam 52 each time a log is clamped. The horizontal and vertical positioning will depend on the size of the logs to be cut. For example, for larger logs, log dog 48 will typically have a horizontal location on support beam 52 that is closer to saw mill support 70, as compared to its positioning
20 for smaller logs. With large logs, both log dog and log rest will each be as far apart from each other and, as close to their respective rails. Vertical displacement will be such that pick 46 will be further away from support beam 52 for larger logs as compared to smaller logs. Once log dog 48 is adjusted for use, finer adjustments for each particular log, and clamping the
25 log can be performed using log rest 54. The log dog 60 freely slides vertically and horizontally. Each time a log is clamped, adjustments are made on both planes. The adjustment made to the log rest 54 as independent of those made with the log dog. As explained in more detail below, an operator first adjusts the log rest 54 and then adjusts the log dog
30 48 and clamp. The primary similarity in the adjustments made to both the

log dog and log rest is that their vertical displacement is a dependant on log size.

Log rest 54 comprises log rest housing 32 which is affixed to support beam 54. Log rest housing 32 comprises clamp housing lock 90 which enables the log rest housing 32 (and thus log rest 54) to be affixed to the support beam 54. Loosening clamp housing lock 90 allows the log rest housing 32 (and thus the entire log rest 54) to be horizontally displaced along support beam 52.

10

As seen in Figures 5 to 7, log rest housing 32 houses post 36 which can be vertically displaced relative to log rest housing 32 utilizing ratcheting means. Note that clamp housing lock 90 does not affect vertical displacement of post 36. Rather, log rest housing 32 has handle 30 which, when pivoted along its axis, displaces pawl 94, in turn displacing ratchet teeth 34 and thus post 36 vertically, relative to log rest housing 32. Ratchet teeth 34 aid in locking the ratcheting mechanism at any particular vertical position along post 36. Handle 30 and pawl 94 thus allow for upwards ratcheting motion of post 36, and the locking of post 36 in the selected position. Post 36 can then be displaced in a downwards direction by releasing the pawl 94 by lifting handle 30 from ratchet teeth 34 and allowing the post 36 to fall using gravity or by pushing down on the top of the post 36, for example, by pushing down on wheel 40.

Post 34 comprises horizontal adjustment screw 44, which allows for fine tuning of the horizontal location of post 34 relative to support beam 52, even while log rest housing 32 is secured and horizontally affixed to support beam 52. Post 34 also comprises wheel 40 at its top end, which has an axially rotatable, locking cuff 42 having a cuff tip 58. The lower end of post 34 also comprises pin limiters 66, 68 which prevent the post 34 from so much

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vertical displacement that it is inadvertently removed out of the top of log rest housing 32.

The log rest is used as follows. The horizontal and vertical location of log dog
5 48 relative to support beam 52, and the horizontal position of log rest 54
relative to support beam 52 are set to a desired position, based on the size
of the logs to be milled. The position is estimated by the user such that the
diameter of the log is slightly larger than the distance between the log dog
48 and the log rest 54. The post 36 is set at its lowest position by releasing
10 the ratcheting mechanism and allowing gravity to displace the post, pushing
down on wheel 40 if necessary. The log is placed, pushed, or rolled against
the log rest, using log support 50 if necessary. Log dog handle 50 is
configured such that a downward force on it causes a cam 92 inside to be
forced against the pick 46 which, in turn, is pressed into the log. The log is
15 rolled onto the log deck, and rests on the cross bunks (spans between the
rails). It is positioned into the area between the log rest 54 and the log dog
48. The log thus comes close to resting on the wheel 40. The user then
displaces the post 36 upwards, using the ratcheting mechanism of handle 30
such that the log rest 54 supports the log but is lower than the path along
20 which the blade will travel. Once post 36 is adjusted for correct height, the
operator pushes the log against 40, vertically and horizontally adjust 92, lifts
handle 50, pushes log dog 52 against the log, lowers handle 50, thereby
forcing pick 46 into the log. This allows for clamping of the log between the
log dog 48 and the log rest 54. As the clamping gets tighter, pick 46 digs
25 into the side of the log, providing more stability. In this manner, utilizing
handle 30, a user is able to clamp the log between the wheel 40 and the pick
46 utilizing one hand. Optionally, where even more stability is required, the
user can rotate and lock cuff 42 so that its end 58 (which optionally has teeth
(not shown) contacts the log. In this manner, as the clamping gets tighter,
30 both pick 46 and cuff end 58 dig into opposing sides of the log, further
stabilizing the log in place. Log rest housing 32 also comprises square block

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surface 38, which provides support for post 36 as log cuff 42 or wheel 40 digs into the log.

It is to be understood that the present invention is not limited to the
5 embodiments described above, but encompasses any and all embodiments within the scope of the following claims.

Table of elements

	10 Sawmill
	30 Handle
5	32 Log rest housing
	34 Ratchet teeth
	36 Post
	38 Square block surface
	40 wheel
10	42 rotatable cuff
	44 adjustment screw
	46 pick
	48 log dog
	50 log dog handle
15	52 support beam
	54 log rest
	56 housing front
	58 end
	60 pin limiter
20	62 pin limiter
	64 pin limiter
	66 pin limiter
	68 pin limiter
	70 sawmill support
25	72 sawmill support pin
	74 sawmill support
	76 sawmill support pin
	78 screw holes
	80 log support screw
30	82 apertures
	84 sawmill support opening

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- 86 housing back
- 88 housing screw
- 90 clamp housing lock
- 92 vertical portion of log dog
- 5 94 pawl

What is claimed is:

1. A log support and clamp assembly for use in a portable sawmill,
5 comprising:
- a horizontal support beam having two ends for affixing to a sawmill,
said support beam capable of being affixed to said sawmill at both
ends;
 - a log dog, having a vertical portion generally perpendicular to said
10 horizontal support beam and extending upwards therefrom, and a top
end having a pick protruding therefrom;
 - a log rest assembly having:
 - a clamp housing affixed to said support beam and horizontally
displaceable thereon;
 - 15 ○ a post connected to or housed within said clamp housing, said
post configured in a generally vertical direction and said clamp
housing having a ratchet mechanism for raising the post relative
to the horizontal support beam.
- 20 2. The log support and clamp assembly of claim 1 wherein the post has a
wheel at a top end.
3. The log support and clamp assembly of claim 2 wherein the wheel has a
rotatable, lockable cuff.
- 25 4. The log support and clamp assembly of any one of claims 1-3 wherein, in
an unlocked position, the log dog is horizontally displaceable along the
horizontal support beam, and in a locked position, the log dog is horizontally
non-displaceable along the horizontal support beam.

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5. The log support and clamp assembly of any one of claims 1-4 wherein, in an unlocked position, the log dog is vertically displaceable relative to the horizontal support beam, and in a locked position, the log dog is vertically non-displaceable relative to the horizontal support beam.
- 5
6. The log support and clamp assembly of any one of claims 1-5 wherein the log dog also comprises a log dog handle extending at an upwards angle from the top end.
- 10
7. The log support and clamp assembly of any one of claims 1-6 wherein the horizontal support beam is affixed at both ends to the sawmill through a set of sawmill support pieces, said sawmill support pieces permanently or semi-permanently affixed to said sawmill and attached to said horizontal support beam.
- 15
8. The log support and clamp assembly of any one of claims 1-7 further comprising a removable pin on said post, said pin when inserted having an interference fit with said clamp housing.
- 20
9. The log support and clamp assembly of any one of claims 1-7 further comprising a lever attached to a pawl in said ratchet mechanism, wherein a movement of said lever releases said pawl and lowers said post.
- 25
10. A portable sawmill comprising the log support and clamp assembly of any one of claims 1-9.
11. A kit for retrofitting a log support and clamp assembly to a portable sawmill, said kit comprising:
- a horizontal support beam having two ends;

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- a log dog, having a vertical portion generally perpendicular to said horizontal support beam and extending upwards therefrom, and a top end having a pick protruding therefrom;
- a log rest assembly having:
 - 5 ○ a log rest housing affixed to said support beam and horizontally displaceable thereon;
 - a post connected to or housed within said clamp housing, said post configured in a generally vertical direction and generally perpendicular to the horizontal support beam;
 - 10 ○ said log rest housing having a ratchet mechanism for raising the post relative to the horizontal support beam; and
- two sawmill support pieces, each of said sawmill support pieces capable of being permanently or semi-permanently affixed to a sawmill and attached to one of the two ends of the horizontal support
15 beam.

12. The kit of claim 11 wherein the log rest can be attached to portable sawmills of variable sizes, wherein the kit further comprises instructions which include attaching the sawmill support pieces to the sawmill, measuring
20 the distance between the two sawmill support pieces, and cutting the horizontal support beam to a size whereby it can be attached to the two sawmill support pieces.

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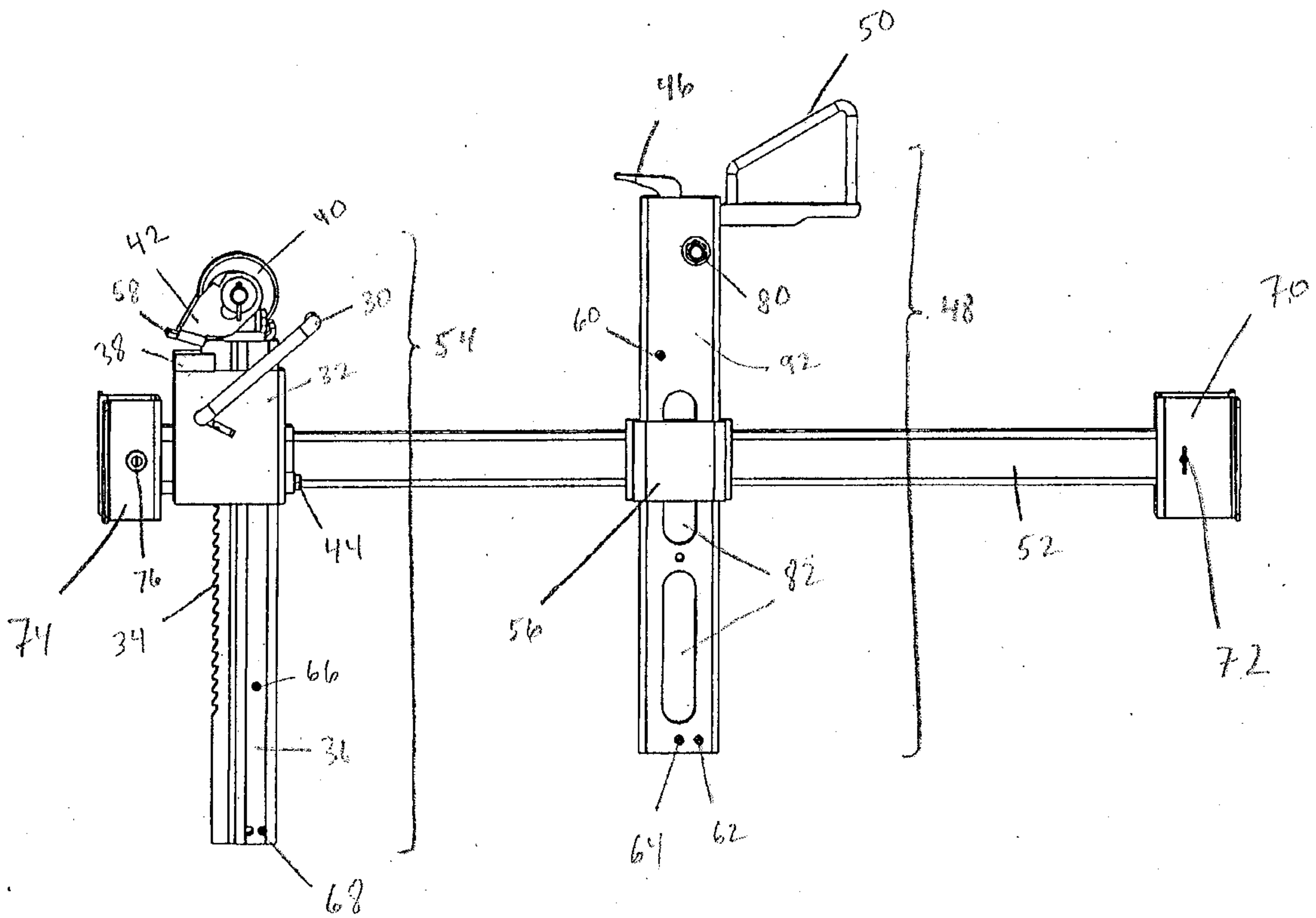


FIG. 1

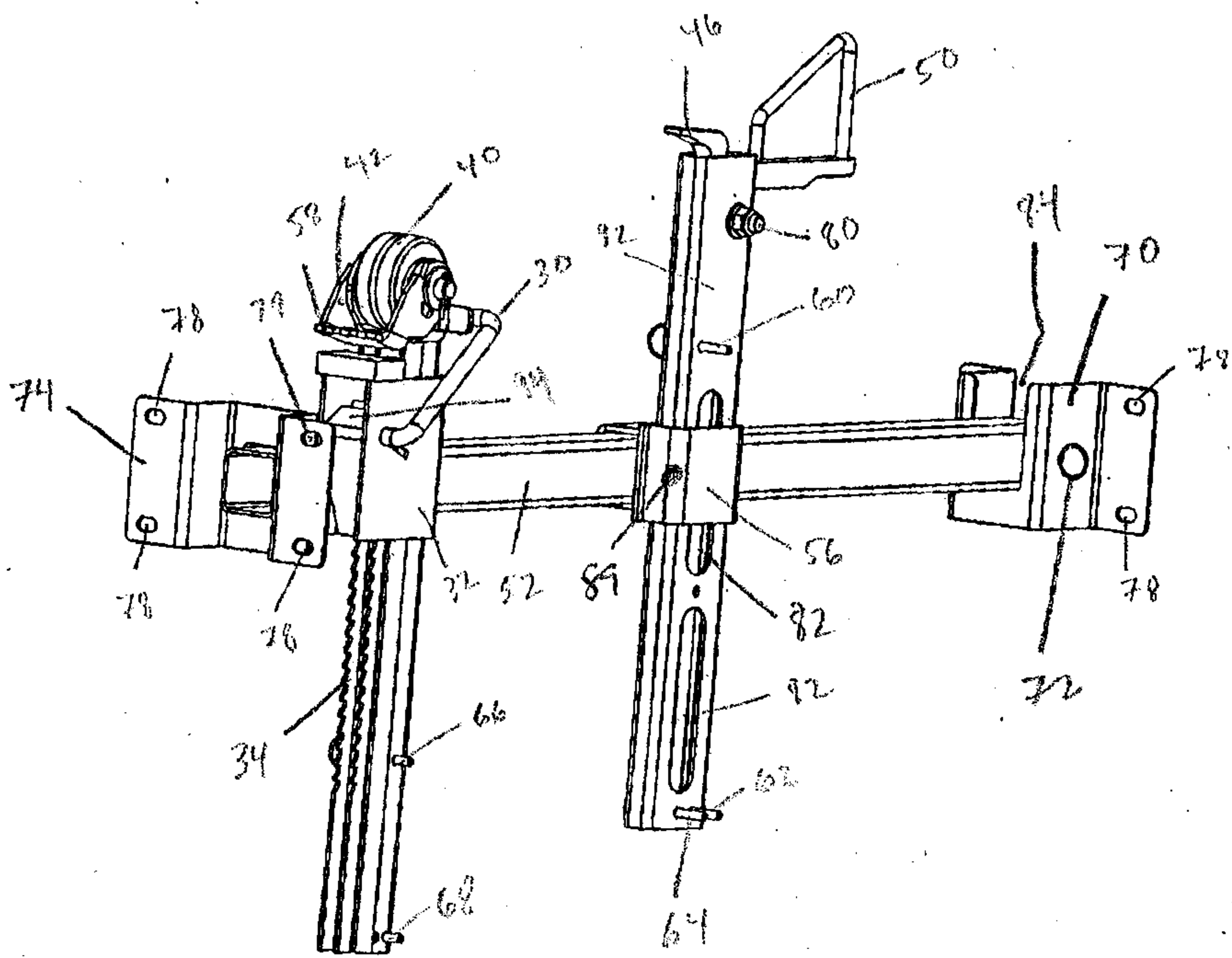


FIG. 2

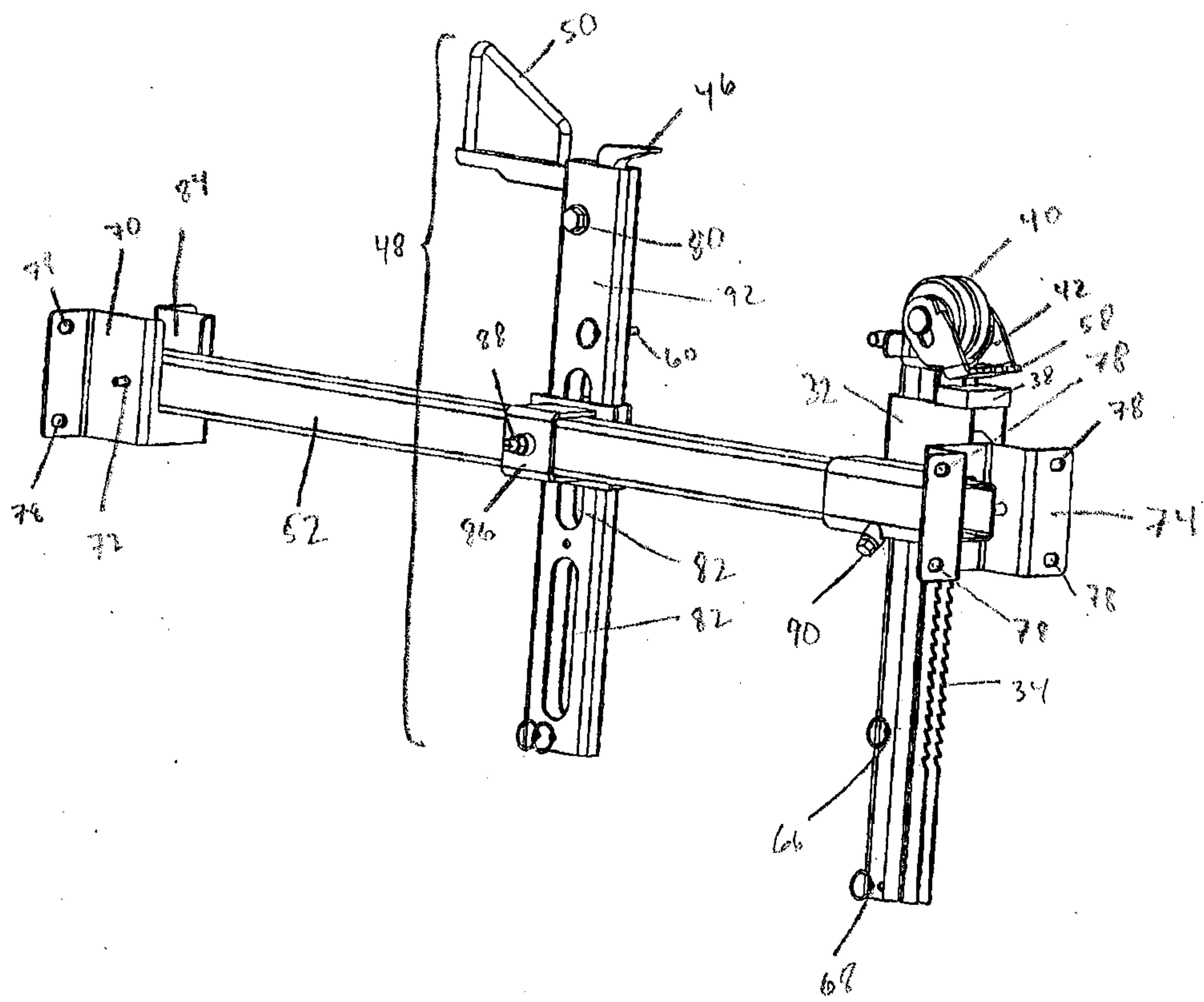


FIG. 3

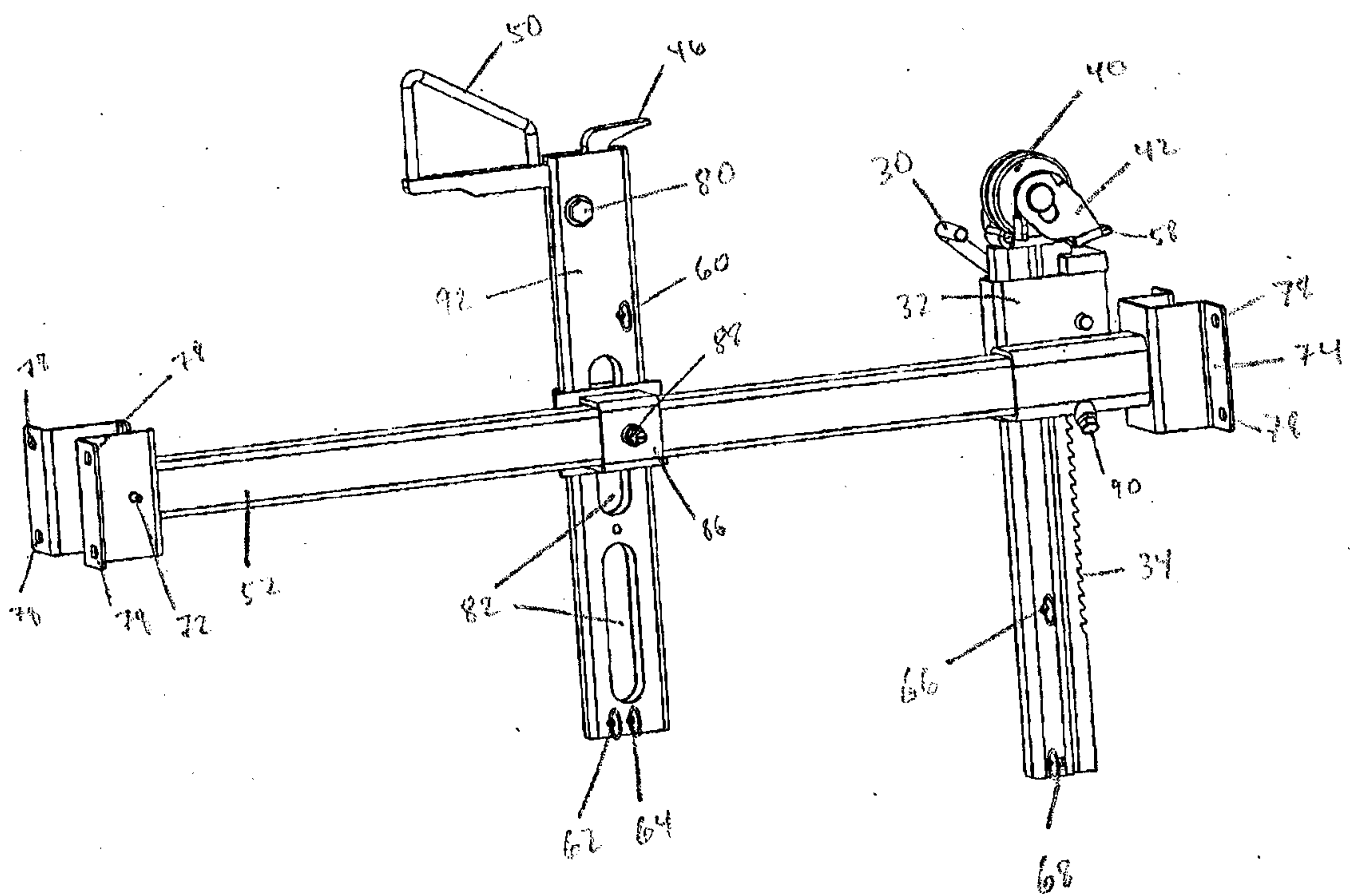


FIG. 4

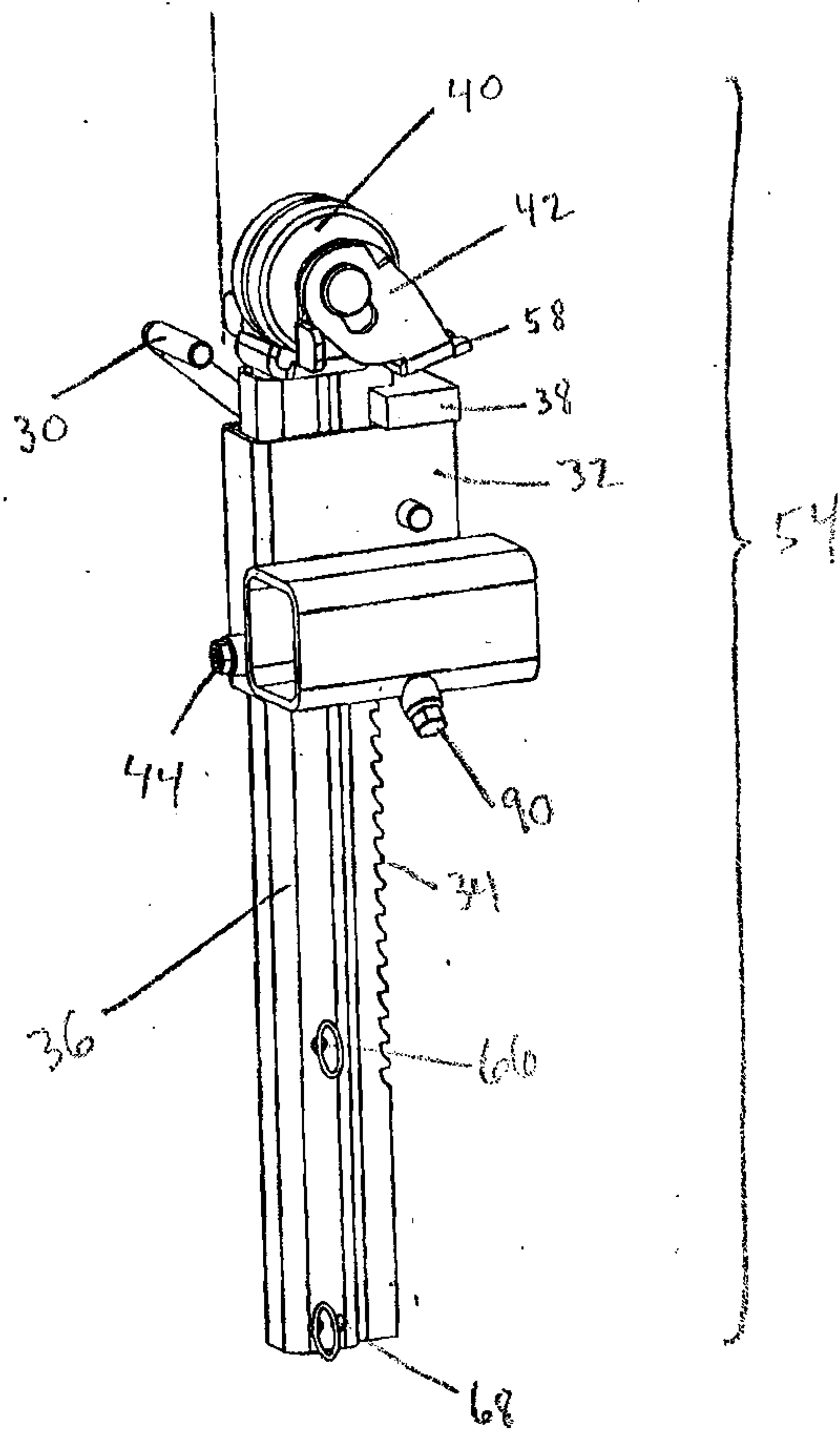


FIG. 5

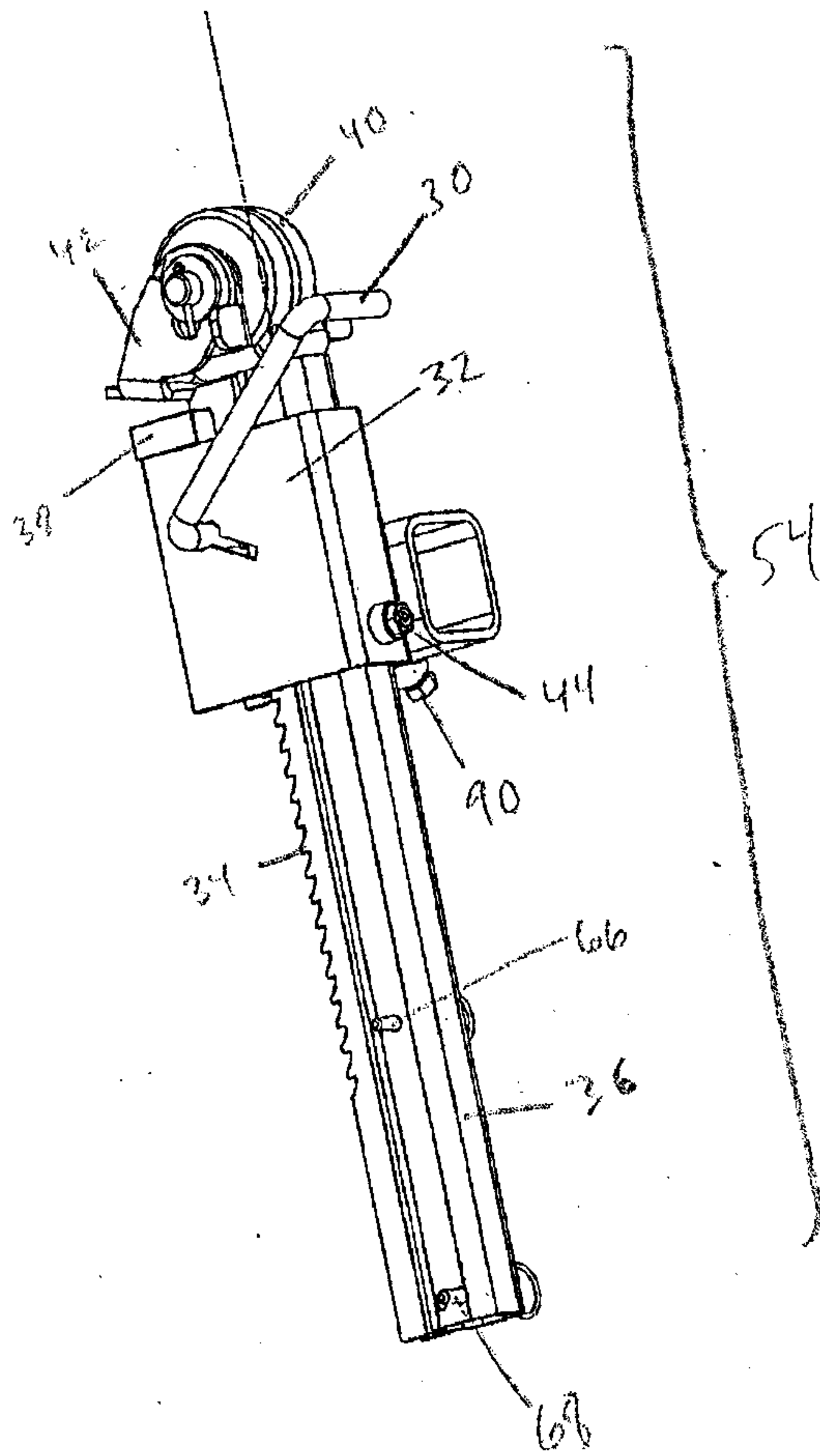


FIG. 6

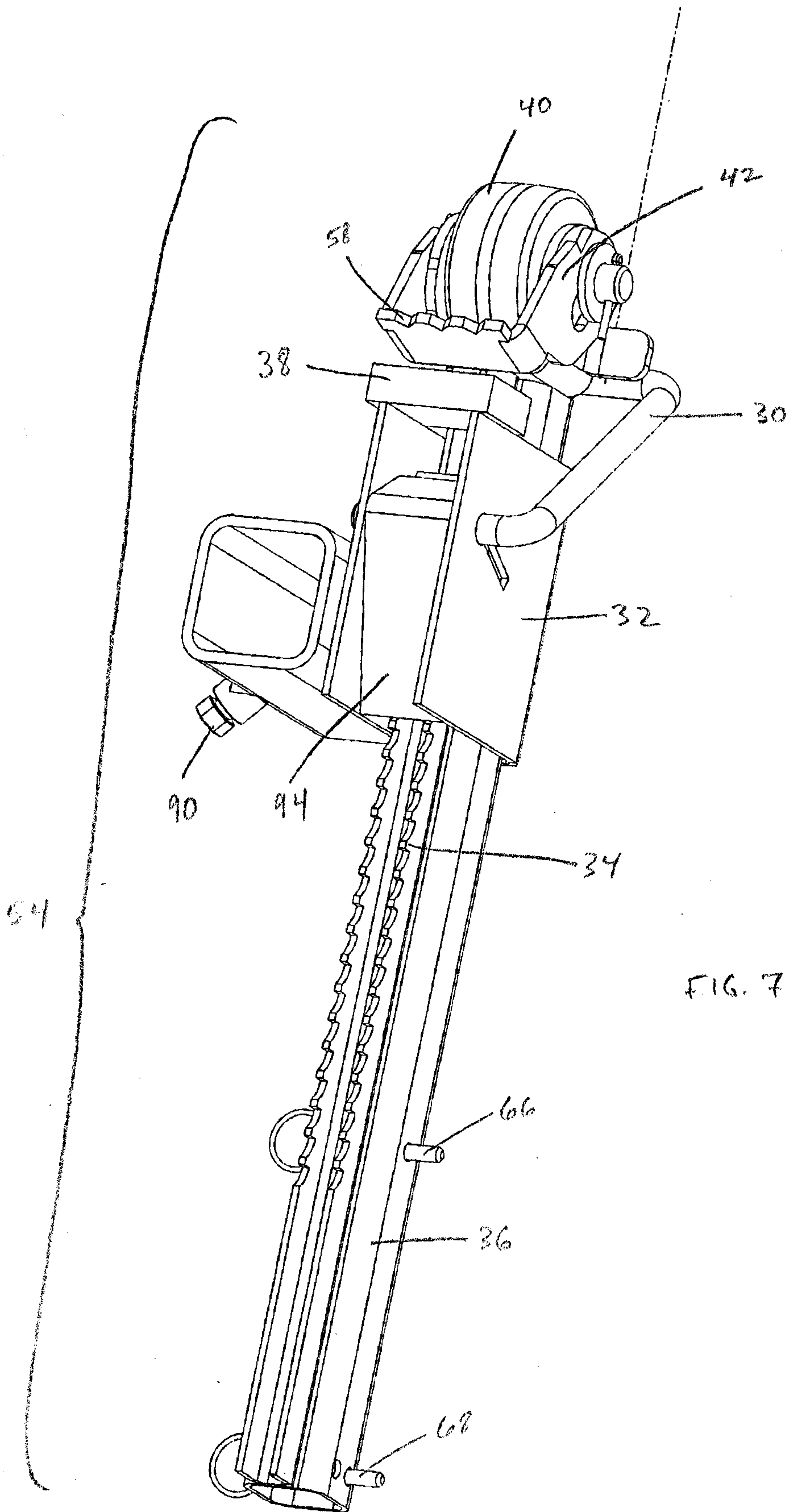


FIG. 7

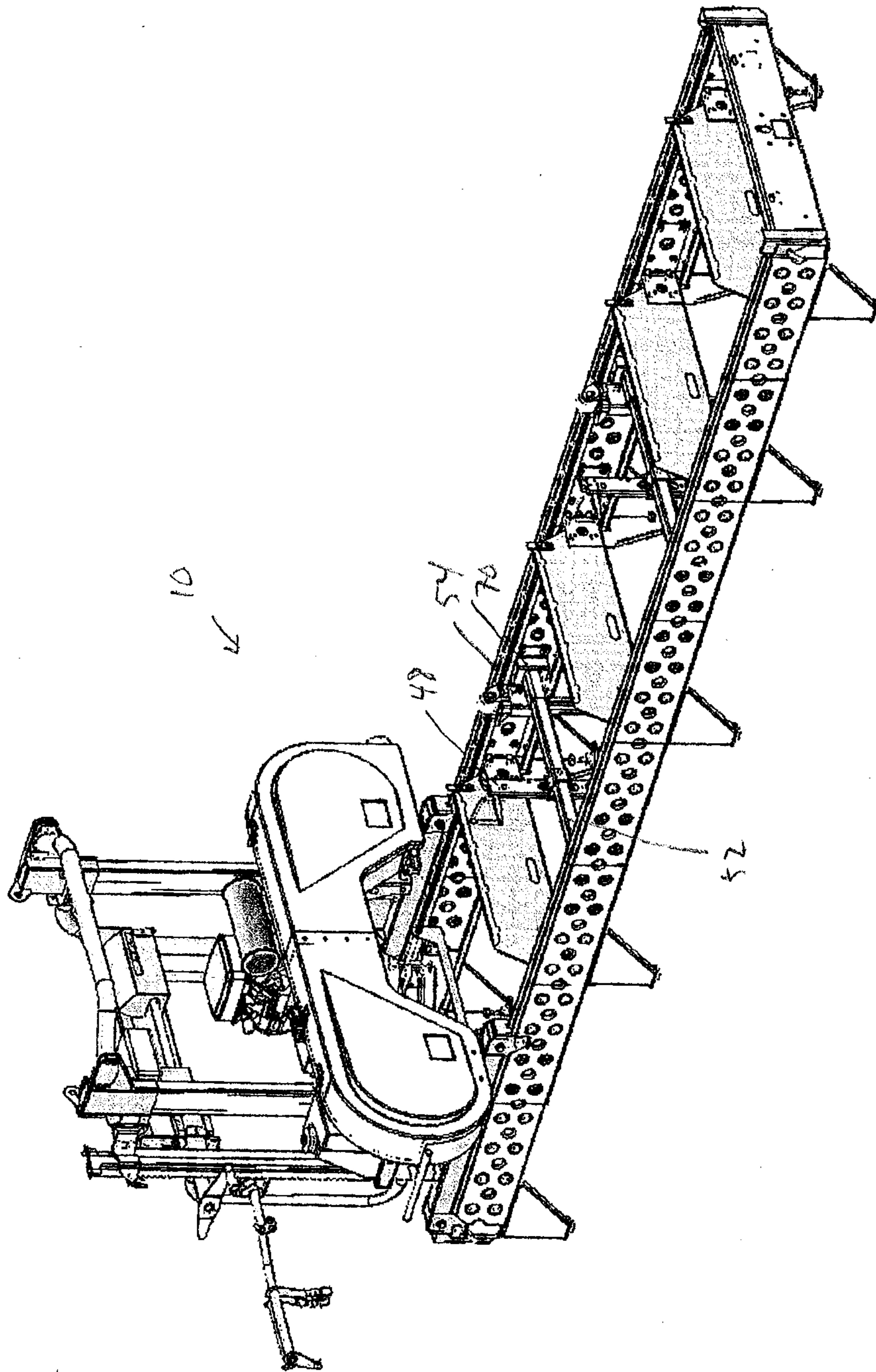


FIGURE 8

