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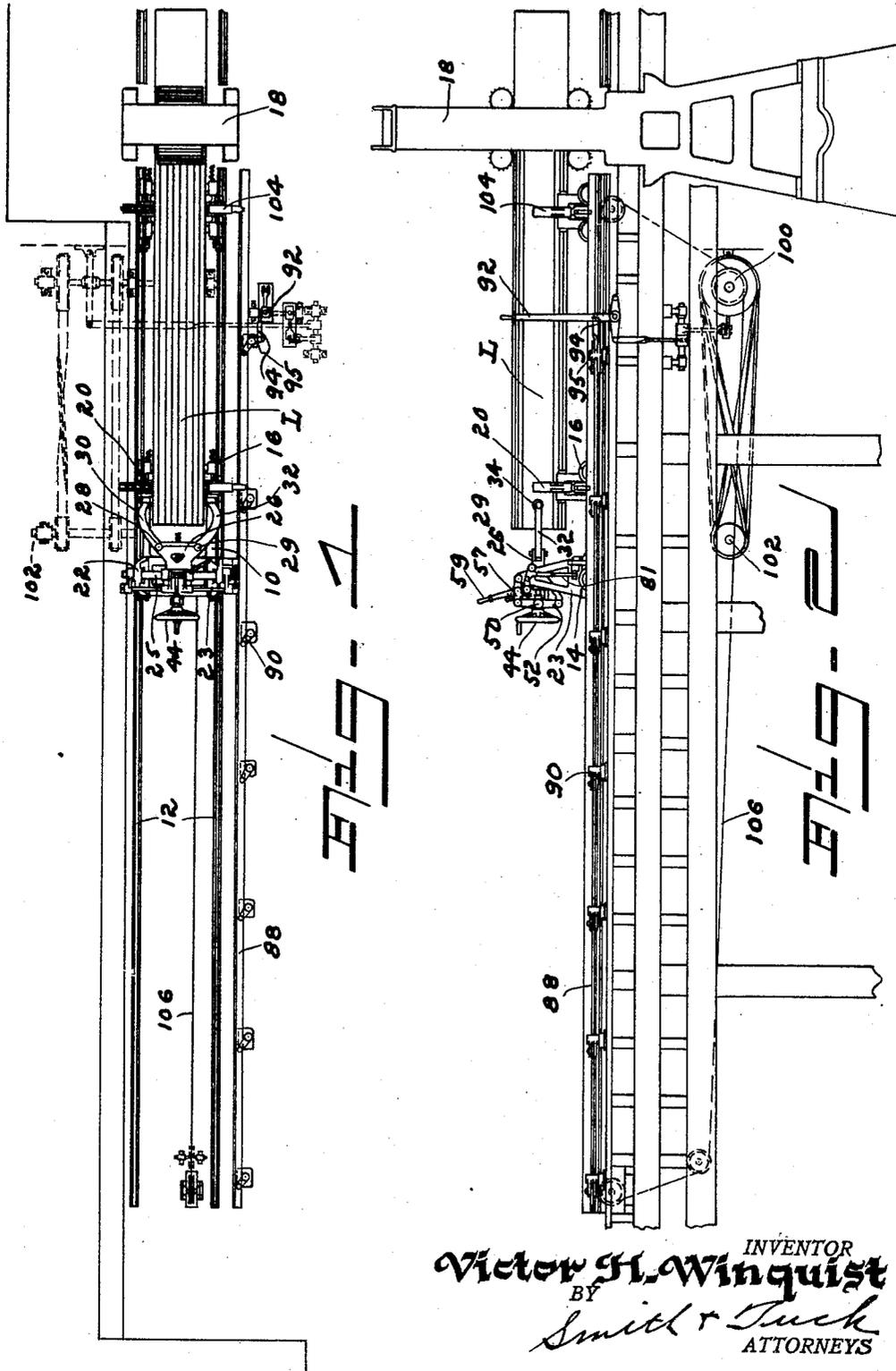
V. H. WINQUIST

1,892,497

OUTFEED CARRIAGE

Filed April 13, 1931

4 Sheets-Sheet 1



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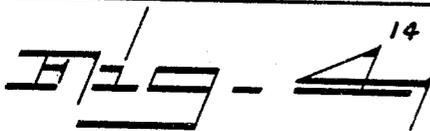
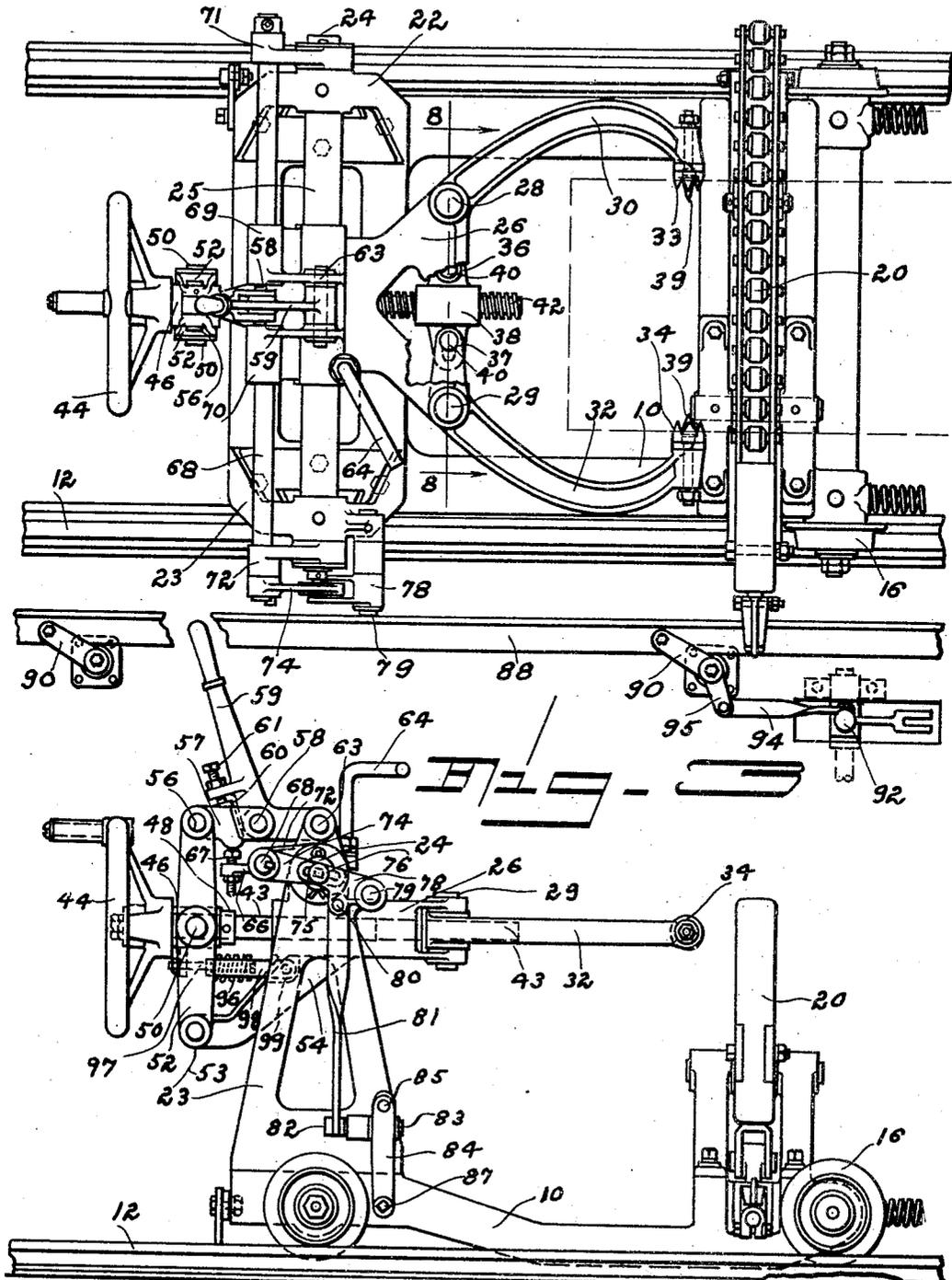
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OUTFEED CARRIAGE

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4 Sheets-Sheet 2



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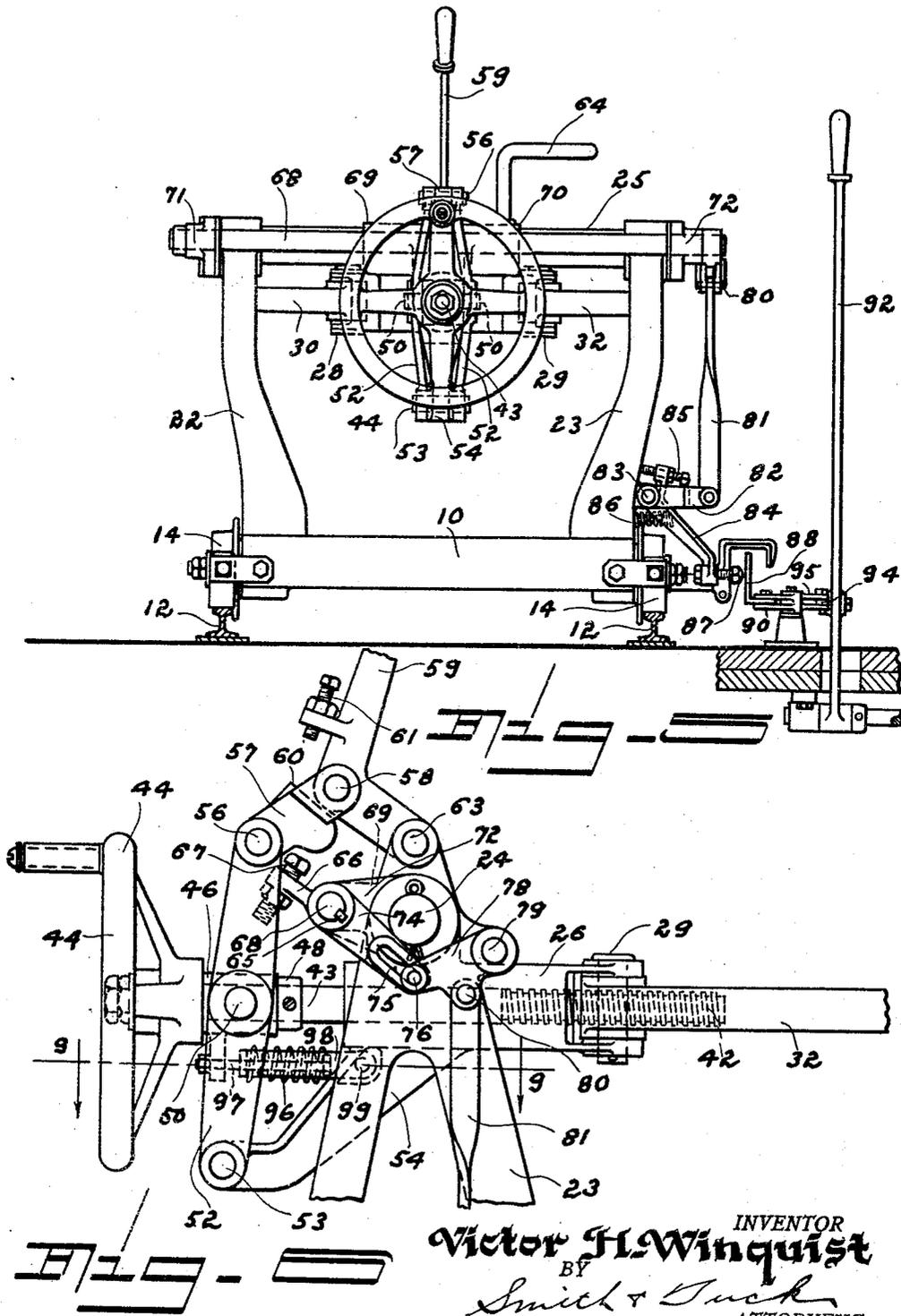
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OUTFEED CARRIAGE

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4 Sheets-Sheet 3



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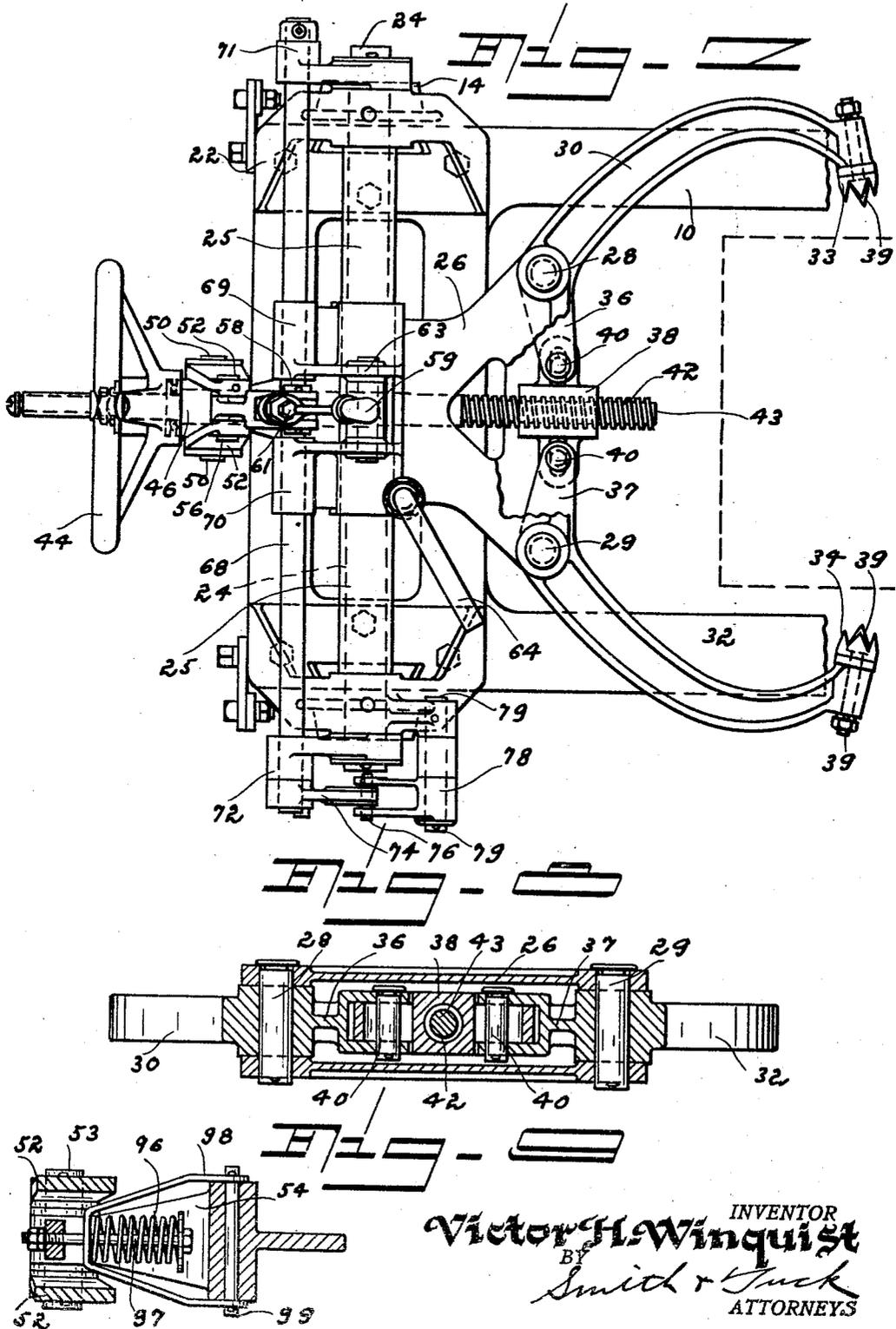
V. H. WINQUIST

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OUTFEED CARRIAGE

Filed April 13, 1931

4 Sheets-Sheet 4



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# UNITED STATES PATENT OFFICE

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## OUTFEED CARRIAGE

Application filed April 13, 1931. Serial No. 529,652.

My present invention relates to the art of sawmill machinery and more particularly to an outfeed carriage which is intended for the handling of a log as it emerges from a gang-

5 saw.

Present day operations in the lumber industry require that the mill operators employ every mechanical aid which will assist them in reducing the cost of producing lumber. The gangsaw, by which is meant a plurality of saws all of which engage the log at the same time, has been used for many years in sawmill operations. It has always had the objectionable waste motion in the handling of the sawed material as it emerges from the gangsaw. In the present carriage arrangement it has been possible to provide means which, with the minimum labor involved, will handle the sawed log as a unit. The present carriage illustrated can be easily operated by a single operator, therefore

The principal object of my present invention is to provide an outfeed carriage which will grip the sawed log and permits its economical handling as a unit.

A further object is to provide means which will quickly and completely release the sawed log when it has been carried as a unit to the desired position in the mill.

A still further object is to provide means whereby the releasing mechanism can be easily effected by the operator from his usual standing position without regard to the exact longitudinal disposition of the sawed log.

Other and more specific objects will be apparent from the following description taken in connection with the accompanying drawings, wherein

Figure 1 is a top plan view showing my carriage and its operating mechanism so as to illustrate the general functioning of the same.

Figure 2 is a side elevation of Figure 1.

Figure 3 is a fragmentary detailed view showing a top plan of my log engaging means.

Figure 4 is a side elevation of Figure 3.

Figure 5 is an end elevation of Figures 3 and 4.

Figure 6 is an enlarged fragmentary view

of the releasing mechanism in its tripped or releasing position.

Figure 7 is an enlarged plan view of portions of Figure 3, the same being shown in its released position.

Figure 8 is a cross sectional view along the line 8—8 of Figure 3.

Figure 9 is a fragmentary sectional view along the line 9—9 of Figure 6 and is intended to more clearly illustrate the functioning of the released spring.

Referring to the drawings, throughout which, like reference characters indicate like parts, numeral 10 designates the main frame of my outfeed carriage. This is adapted to be supported from suitable trackage 12 by means of the flanged wheels 14 and 16, which are suitably mounted on transversely disposed axles so as to properly engage both rails on which the carriage operates. It is necessary, of course, to have a reasonable distance between the track wheels 14 and 16 in order to assure sufficient rigidity in the carriage.

Disposed at the end of carriage 10 nearest the gangsaw 18 is a log supporting member 20

which is adapted to support the entire weight of one end of the log L. The opposite end of carriage 10 is provided with upstanding bearing support members 22 and 23, which provide a suitable support for the transverse shaft 24.

Disposed around shaft 24 is a tube 25 which is of such a length and size that it will revolve freely on shaft 24 and between support members 22 and 23. Pivotably disposed upon tube 25 and also capable of transverse movement thereon is a carriage head

26 to which are pivotably secured at 28 and 29 respectively the claw members 30 and 32.

The claw members 30 and 32 have secured at their outer ends the log engaging dogs 33 and 34 respectively. These members are provided with swiveling log tips which have a plurality of teeth, annularly arranged, and which are held in place by central bolt members 39

which have an inner pointed end adapted to form the center of the dog assemblies.

The inner ends of members 30 and 32 are formed as crank arms 36 and 37 and are preferably bifurcated as is best illustrated in Figure 8. Between the yoked ends of the

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claws are disposed outstanding lugs on the traveling nut 38. Now, as it is necessary to take care of the arc of swing of arms 36 and 37 it is necessary that a slotted arrangement be provided for the coupling pins 40. It has been found most convenient to have these slots in the lugs of the traveling nut 38. Traveling nut 38 is provided with an interior thread which is adapted to engage the external thread 42 which is formed at one end of the grip screw 43. Grip screw 43 is axially disposed with reference to the carriage head 26 and is provided at its outer end with the hand wheel 44 which is fixedly secured to it. Abutting the hub of hand wheel 44 is a center block 46 within which screw 43 is free to revolve. A set collar 48 is provided on the opposite side of center block 46 so as to prevent longitudinal movement of the same with respect to screw 43. Center block 46 is provided with outstanding trunnions, one on each side of the same, as indicated at 50. These trunnions are each engaged by the clamp levers 52. Levers 52 are pivoted at 53 to a bracket 54 which is formed as part of the carriage head. At their upper ends levers 52 are jointed together at 56 by the centrally disposed locking link 57 which in turn is pivotably connected at 58 to the locking lever 59. The locking link is bifurcated to form a yoke which extends around to engage both sides of lever 59 and the end face 60 is so shaped as to provide an engaging surface for lever 59 when the same is in the locked position. It has been found convenient to provide an adjusting screw 61 on the locking lever, which when in the locked position, provides a control of the amount the locking device toggles past its central position. The locking lever 59 is pivotably secured at 63 to an upstanding portion of the carriage head and its associated mechanism just described in the desired transverse position, I have provided the clamp member 64. This is adapted on partial rotation to pinch together a split journal which forms part of the carriage head 26 after a manner well known in machinery of this general character. It is necessary to provide a releasing mechanism for the gripping device just described and this is provided with the releasing lever 66, which, to compensate for any wear which might occur, is provided at its outer end with a lock screw 67 which is adapted to engage the under side of the locking link 57 and to raise the same when it is desired to unlock the mechanism. Releasing lever 63 is provided with a floating key 65 that is adapted to engage a keyway, running substantially the full length of the kick-off shaft 68. Lever 66 is included between the journals 69 and 70 which support the kick-off shaft and are themselves part of the carriage head 26. This provides means for moving lever 66

along the kick-off shaft and maintains it in its operating position directly below link 57. Further, due to its manner of support the kick-off shaft revolves about shaft 24 as the carriage head is rotated about the same. At each of its opposite ends the kick-off shaft is spaced from shaft 24 by the guide arms 71 and 72. These arms are free to rotate on shaft 24 and serve merely to prevent the end of the shaft springing.

At the operating side of the carriage the extreme end of the kick-off shaft has secured to it the kick-off lever 74. This is provided at its lower end with a slot 75 adapted to receive a pin 76 which is secured between the bifurcated end of the kick-off operating lever 78. The operating lever 78 is pivotably secured to a boss on frame member 23 by means of pin 79. Now, it is essential for the satisfactory operation of this device, that levers 74 and 78 be so proportioned that when the head is in its locked position, pin 76 will be co-axially disposed with shaft 24. The kick-off operating lever 78 has pivotably secured on its lower side, at 80 a substantially vertically disposed connecting rod 81. At its lower end connecting rod 81 is pivotably secured to the carriage lever 82. This is fixedly secured to a short shaft 83 which is journaled in a boss formed as part of frame member 23 and at its opposite end shaft 83 has secured to it the adjustable lever 84. I have provided, as a convenience, at its upper end a set screw which is threaded into lever 84 at 85. This, together with a compression spring 86, which is adapted to press against the under side of lever 84, provides a definite position of rest for lever 84. The lower end of lever 84 is provided with an adjustable set screw 87. This screw is normally adjusted until it just clears its operating bar 88.

Inasmuch as it is very necessary to be able to release the claw members while the carriage is in any position relative to its track, I have provided an operating bar 88 which extends the full length of the carriage travel. The means I have employed which must be understood as only one solution, is to mount bar 88 on a plurality of operating stand levers 90 so that linkage may be arranged to move bar 88 toward or away from the carriage. It is believed apparent to anyone skilled in this class of machinery that any form of operating mechanism might be employed at this point. For instance, bar 88 might be arranged for vertical movement and could be made to function equally as well as the arrangement shown. In my present showing a hand lever 92 is connected to the bar 88 by means of the connecting bar 94 and arm 95 which in turn is formed as part of one of the operating stand levers 90.

In order to facilitate a very quick release I provide a compression spring 96 which is disposed about a tension bolt 97 which in

turn is secured to a downwardly extending lug formed as part of center block 46. It will be understood that a suitable washer would need to be provided at the outermost end of the bolt 97 so as to keep the spring under compression. Disposed so as to take the opposite end of spring 96 under control I provide the spring stirrup 98 which in turn is pivotably secured to pin 99 which is secured in a boss which is formed as part of head 26.

While any means might be employed for moving my carriage along its tracks the cable drive shown in Figures 1 and 2 has proven very satisfactory. This consists of an endless cable which has sufficient turns about a driving drum 100 to drive the cable when under load. Any suitable source of power might be used; in the present instance I have indicated a driven shaft 102 which is provided with two drive pulleys which are connected by suitable belts to the shaft upon which drum 100 is mounted. I have indicated one straight belt and one cross belt with the usual selective engagement clutches so that either forward or rearward movement may be given to the carriage, it being understood that the cable at one point is secured to the carriage.

#### *Method of operation*

In operating my carriage the same is moved to within a few feet of the gang saw 18, in fact as close as the auxiliary rest carriage 104 will permit. Here dogs 33 and 34 are adjusted manually by means of the operator grasping hand wheel 44 and tilting the same about shaft 24 as a pivot until the dogs engage the log at or near its horizontal diameter. The claws are then moved together inwardly by means of hand wheel 44 which in turn moves traveling nut 38 towards the hand wheel. This operation is completed, however, only after locking lever 59 has been placed in the position indicated in Figure 4, which is its locked position.

If, however, the head end of the log is not centered it is necessary to move the entire head transversely on tube 25 until the axis of the head is in the vertical plane of the log's center. The carriage head should then be clamped by means of clamp 64 to prevent further transverse movement.

It should be understood that the head is clamped to tube 25 which, while being of a length to just fit between the frame members 22 and 23 permits free rotation in a vertical plane. This rotation is essential as protruding knots, unevenness on the log or crookedness tend to lift and lower the log end as it passes through the feed rolls. Further, due to this necessity the log engaging dogs are constructed so they can swivel and thus avoid being torn loose from the log.

The carriage and log L is then carried out

along its tracks, until the log has entirely passed through the gang saws, by the driving action of the gang saw feed rolls. By means of the cable drive in which the cable was indicated at 106, the log which now rests upon the log rest 20 of the carriage and the auxiliary log rest 104, is carried out to a position where it will be released, and made available for edging. When this point is reached the operator by manipulation of lever 92 forces bar 88 inwardly until it engages the lock screw of the adjustable lever 84. Thus, through medium of lever 82, the connecting bar 81 moves the kick-off operating lever 78 downwardly. This in turn, by means of the kick-off lever 74, which is operated thereby, revolves the kick-off shaft sufficiently so that member 66 will engage the under side of locking link 57 and raise it upwardly until the toggle arrangement, formed by the locking link and the locking lever 59, has been pressed past its locking line. At this point the compression spring 96 carries the movement forward. As the stirrup is secured directly to member 26 at its opposite end, the energy is transferred to screw 42, the action of the spring is to move screw 42 longitudinally toward the log. This motion is transferred to the claws 30 and 32, and thus provides for a limited travel, but one which is accomplished very quickly. As soon as the claws spread apart the rests upon which the log has been in repose are tilted and the lumber is free to slide downwardly to a point where it can be fed into the next operation. This action is a great convenience aside from the ease with which it releases the sawed log, because where the timber is more or less of the same size a rearward movement of the locking lever 59, to the position shown in Figure 4, quickly brings the claws inwardly again to the position they assumed when released and it is only necessary for the operator to make a slight adjustment with the hand wheel 44 and then set the dogs securely in the log. A skilled operator can quite accurately tell by inspection if the new log is larger or smaller than the other he has just discharged. If he feels that it is slightly larger it will be necessary for him to throw the dogs outwardly slightly by hand wheel 44 so that he can use his quick motion provided by the locking lever 59.

The foregoing description and the accompanying drawings are believed to clearly disclose a preferred embodiment of my invention but it will be understood that this disclosure is merely illustrative and that such changes in the invention may be made as are fairly within the scope and spirit of the following claims.

What I claim is:

1. An outfeed carriage consisting of a frame resting on trackage disposed coaxially with the feed line of a gang saw; a transverse

shaft journaled in said frame; a carriage head pivotably positioned upon said shaft and disposed for longitudinal movement thereon; clamping means formed as part of said head adapted to clamp said head to said shaft; oppositely positioned claw members pivotably secured to said carriage head and having inwardly extending crank arms; locking means adapted to position said arms; clamp levers pivotably supported by said carriage head and adapted to pivotably support said locking means; a locking link pivotably secured to the upper ends of said clamp levers; a locking lever pivotably secured to said carriage head and pivotably engaging said locking link in such a manner as to provide a toggle lock; operating means adapted to open the toggle lock; an adjustable lever pivotably secured to the frame; a connecting rod pivotably secured to the said operating means and operatively connected to the adjustable lever; an operating bar disposed in parallel relationship to the carriage track and adapted to engage the adjustable lever at any point of the carriage travel; and means for moving said bar to operate said adjustable lever.

2. An outfeed carriage consisting of a frame resting on trackage disposed coaxially with the feed line of a gangsaw; a transverse shaft journaled in said frame; a carriage head pivotably positioned upon said shaft and disposed for longitudinal movement thereon; clamping means formed as part of said head adapted to clamp said head to said shaft; oppositely positioned claw members pivotably secured to said carriage head and having inwardly extending crank arms; a traveling nut provided with means for engaging said arms; a grip screw coaxially disposed with said carriage head and adapted to engage said nut in a manner to move it longitudinally of said screw; a center block adapted to journal the opposite end of said grip screw; clamp levers pivotably supported by said carriage head and adapted to pivotably support said center block; a locking link pivotably secured to the upper ends of said clamp levers; a locking lever pivotably secured to said carriage head and pivotably engaging said locking link in such a manner as to provide a toggle lock; a kickoff shaft; an adjusting lever slidably secured to said kickoff shaft and adapted to operatively engage said locking link; journals for said kickoff shaft formed as part of the carriage head; a kickoff lever fixedly secured to the kickoff shaft; an operating bar disposed in parallel relationship to the carriage track; means for moving said operating bar; connecting means adapted to operatively connect said kickoff lever and said operating bar; and resilient means operatively connected to the center block and the carriage

head adapted to urge the two members together.

3. An outfeed carriage consisting of a frame resting on trackage disposed coaxially with the feed line of a gangsaw; a transverse shaft journaled in said frame; a carriage head pivotably positioned upon said shaft and disposed for longitudinal movement thereon; clamping means formed as part of said head adapted to clamp said head to said shaft; oppositely positioned claw members pivotably secured to said carriage head and having inwardly extending crank arms; a traveling nut provided with means for engaging said arms; a grip screw coaxially disposed with said carriage head and adapted to engage said nut in a manner to move it longitudinally of said screw; a center block adapted to journal the opposite end of said grip screw; clamp levers pivotably supported by said carriage head and adapted to pivotably support said center block; a locking link pivotably secured to the upper ends of said clamp levers; a locking lever pivotably secured to said carriage head and pivotably engaging said locking link in such a manner as to provide a toggle lock; means secured to said grip screw to prevent longitudinal movement of the center block with respect to said screw; a kickoff shaft; an adjusting lever slidably secured to said kickoff shaft and adapted to operatively engage said locking link; guide arms disposed one at either end of said kickoff shaft and adapted to space the same from the transverse shaft; journals for said kickoff shaft formed as part of the carriage head; a kickoff lever fixedly secured to the kickoff shaft; an operating link pivotably secured to the frame, adapted to engage said kickoff lever in such a manner that the point of engagement will be coaxially disposed with said transverse shaft when the toggle locking mechanism is in its locked position; an adjustable lever pivotably secured to the frame; a connecting rod pivotably secured to the operating link and operatively connected to the adjustable lever; a resilient means operatively connected to the center block and the carriage head adapted to urge the two members together; an operating bar disposed in parallel relationship to the carriage track and adapted to engage the adjustable lever at any point of the carriage travel; and means for moving said bar to operate said adjustable lever.

4. An outfeed carriage consisting of a frame resting on trackage disposed coaxially with the feed line of a gangsaw and having upwardly extending side members; a transverse shaft secured in said frame side members and adapted to space said members; a tube journaled upon said shaft and disposed to cover that portion of said shaft exposed between said members; a carriage head pivotably positioned upon said tube and dis-

posed for longitudinal movement thereon; clamping means formed as part of said head adapted to clamp said head to said shaft; oppositely positioned claw members pivotably secured to said carriage head and having inwardly extending crank arms; a traveling nut provided with means for engaging said arms; a grip screw coaxially disposed with said carriage head and adapted to engage said nut in a manner to move it longitudinally of said screw; a center block adapted to journal the opposite end of said grip screw; clamp levers pivotably supported by said carriage head and adapted to pivotably support said center block; a locking link pivotably secured to the upper ends of said clamp levers; a locking lever pivotably secured to said carriage head and pivotably engaging said locking link in such a manner as to provide a toggle lock; means secured to said grip screw to prevent longitudinal movement of the center block with respect to said screw; a kickoff shaft; an adjusting lever slidably secured to said kickoff shaft and adapted to operatively engage said locking link; guide arms disposed one at either end of said kickoff shaft and adapted to space the same from the transverse shaft; journals for said kickoff shaft formed as part of the carriage head; a kick-off lever fixedly secured to the kickoff shaft; an operating link pivotably secured to the frame, adapted to engage said kickoff lever in such a manner that the point of engagement will be coaxially disposed with said transverse shaft when the toggle locking mechanism is in its locked position; an adjustable lever pivotably secured to the frame; a connecting rod pivotably secured to the operating link and operatively connected to the adjustable lever; a spring operatively connected to the center block and the carriage head adapted to urge the two members together; an operating bar disposed in parallel relationship to the carriage track and adapted to engage the adjustable lever at any point of the carriage travel; and means for moving said bar to operate said adjustable lever.

5. An outfeed carriage consisting of a frame disposed for longitudinal movement; a transverse shaft supported by said frame; a carriage head pivotably supported by said shaft; log engaging claws pivotably supported by said head; clamping means formed as part of said head adapted to clamp said head to said shaft; locking means adapted to position said claws; clamp levers pivotably supported by said carriage head and adapted to pivotably support said locking means; a locking link pivotably secured to the upper ends of said clamp levers; a locking lever pivotably secured to said carriage head and pivotably engaging said lock link in such a manner as to provide a toggle lock; operating means adapted to open the toggle lock; an

adjustable lever pivotably secured to the frame; a connecting rod pivotably secured to the said operating means and operatively connected to the adjustable lever; an operating bar disposed in parallel relationship to the carriage track and means adapted for moving said bar to operate said adjustable lever.

6. An outfeed carriage consisting of a frame disposed for longitudinal movement; a transverse shaft supported by said frame; a carriage head pivotably supported by said shaft; log engaging claws pivotably supported by said head; clamping means formed as part of said head adapted to clamp said head to said shaft; locking means adapted to position said claws; clamp levers pivotably supported by said carriage head and adapted to pivotably support said locking means; a locking link pivotably secured to the upper ends of said clamp levers; a locking lever pivotably secured to said carriage head and pivotably engaging said locking means in such a manner as to provide a toggle lock; operating means adapted to open the toggle lock; an adjustable lever pivotably secured to the frame; a connecting rod pivotably secured to the said operating means and operatively connected to the adjustable lever and means for operating said connecting rod.

7. An outfeed carriage consisting of a frame disposed for longitudinal movement; a transverse shaft supported by said frame; a carriage head pivotably supported by said shaft; log engaging claws pivotably supported by said head; locking means adapted to position said claws; a kick-off shaft disposed transversely of the carriage; guide arms disposed, one at each end of the transverse shaft and engaging the kick-off shaft in a manner to maintain it in parallel relationship with respect to the transverse shaft; a kick-off lever secured to said kick-off shaft, a releasing lever slidably secured to said kick-off shaft and adapted to engage the locking means in a manner to release the same; an operating bar disposed parallel to the axis of movement of the carriage and means for operatively connecting the operating bar to the kick-off lever.

8. An outfeed carriage consisting of a frame disposed for longitudinal movement; a transverse shaft supported by said frame; a carriage head pivotably supported by said shaft; log engaging claws pivotably supported by said head; locking means adapted to position said claws; a kick-off shaft disposed transversely of the carriage, a releasing lever slidably secured to said kick-off shaft and adapted to engage the locking means in a manner to release the same; an operating bar disposed parallel to the axis of movement of the carriage and means for operatively connecting the operating bar to the kick-off

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9. An outfeed carriage consisting of a frame disposed for longitudinal movement; a transverse shaft supported by said frame; a carriage head pivotably supported by said shaft; log engaging claws pivotably supported by said head; locking means adapted to position said claws; a kick-off shaft disposed transversely of the carriage; guide arms disposed, one at each end of the transfer shaft and disposed to engage the kick-off shaft and hold it in parallel relationship with the transverse shaft; a releasing lever slidably secured to said kick-off shaft and adapted to engage the locking means in a manner to release the same; an operating bar disposed parallel to the axis of movement of the carriage and means for operatively connecting the operating bar to the kick-off lever.

10. An outfeed carriage consisting of a frame disposed for longitudinal movement; a transverse shaft supported by said frame; a carriage head pivotably supported by said shaft; log engaging claws pivotably supported by said head; locking means adapted to position said claws; a rockable kick-off shaft disposed in parallel relationship to said transverse shaft; a releasing lever slidably secured to said kick-off shaft and adapted to engage the locking means in a manner to release the same; an operating lever pivotably secured to said frame; a sliding pivot means operatively connecting the kick-off lever and the operating lever and so positioned that when the locking means is in its locked position, the axis of the pivot means will coincide substantially with the axis of the transverse shaft, an operating bar disposed parallel to the axis of movement of the carriage and means for operatively connecting the operating bar to the kick-off lever.

11. An outfeed carriage consisting of a frame disposed for longitudinal movement; a transverse shaft supported by said frame; a kick-off shaft disposed transversely of the carriage; a carriage head pivotably supported by said transverse shaft and having a bifurcated rearward extension, which is bored to accommodate the kick-off shaft; log engaging claws pivotably supported by said head; locking means adapted to position said claws; a releasing lever slidably disposed upon the kick-off shaft, within the bifurcation of the said carriage head extension and adapted to engage the locking means in a manner to release the same; an operating bar disposed parallel to the axis of movement of the carriage and means for operatively connecting the operating bar to the releasing lever.

In witness whereof, I hereunto subscribe my name this 31st day of March A. D. 1931.

VICTOR H. WINQUIST.