March 29, 1932. P. E. GOODWIN 1,851,668

ADJUSTABLE ELEVATING TRESTLE

Filed July 26, 1929 2 Sheets-Sheet 1

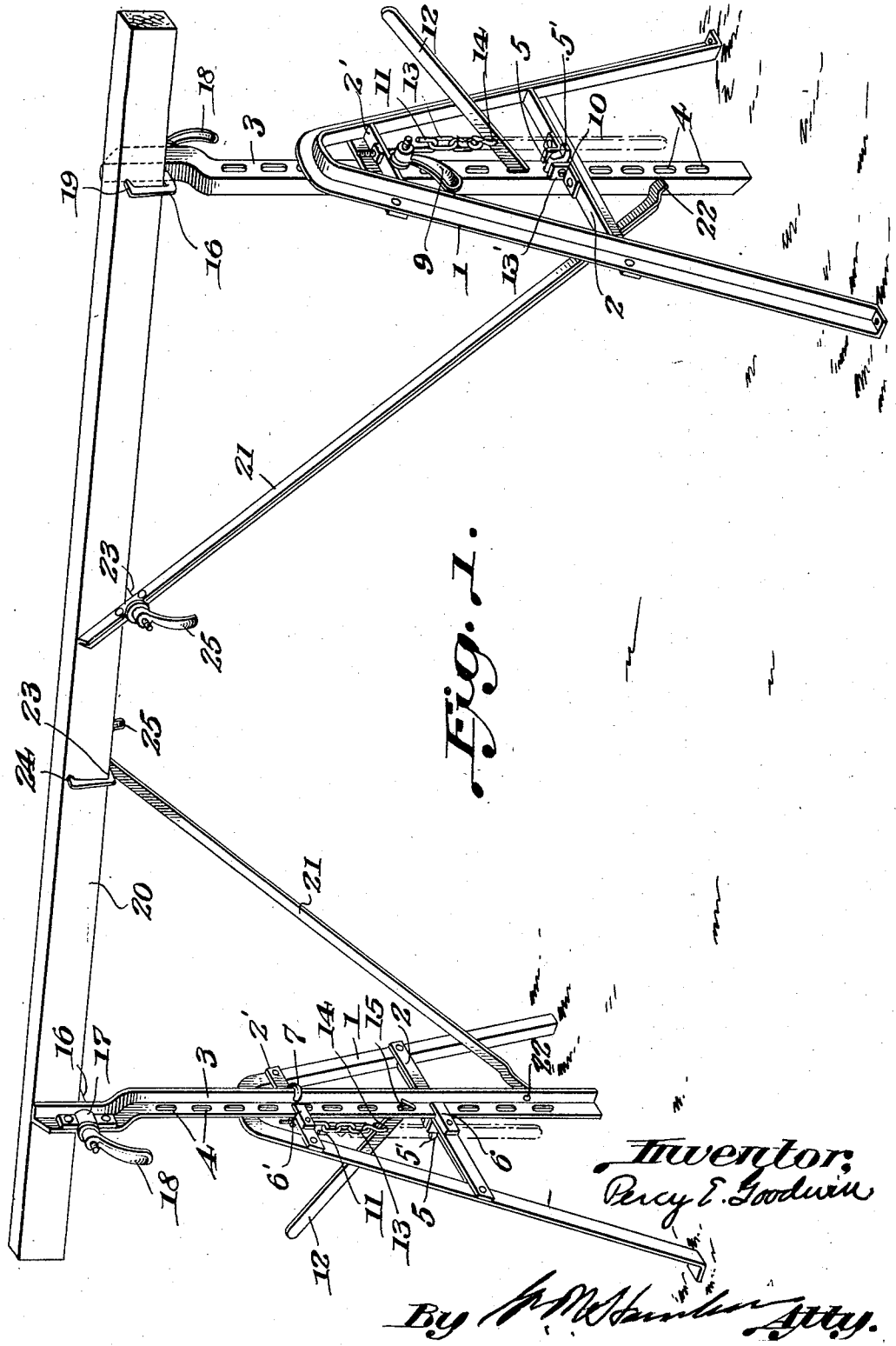

Fig. 1.

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Fig. 2.

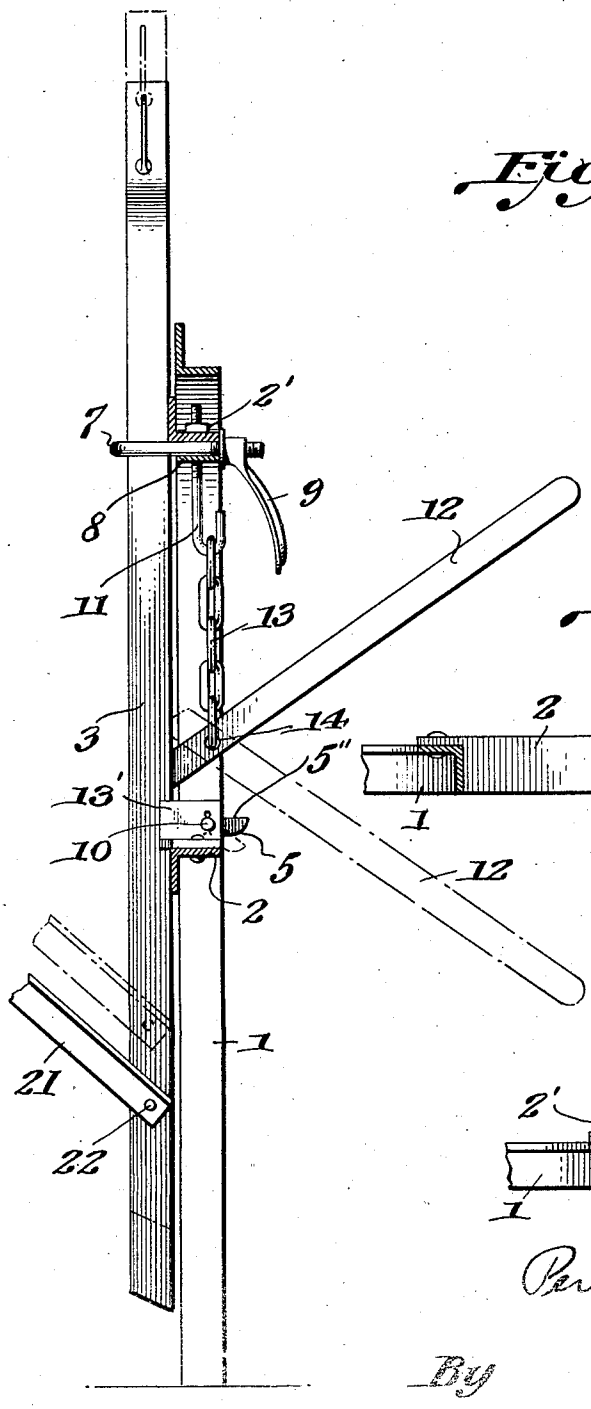


Fig. 3.

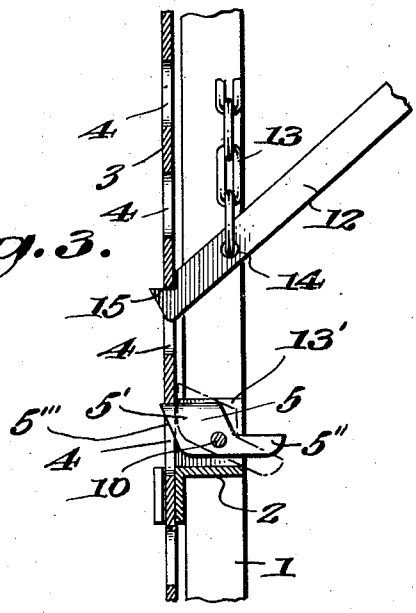


Fig. 4.

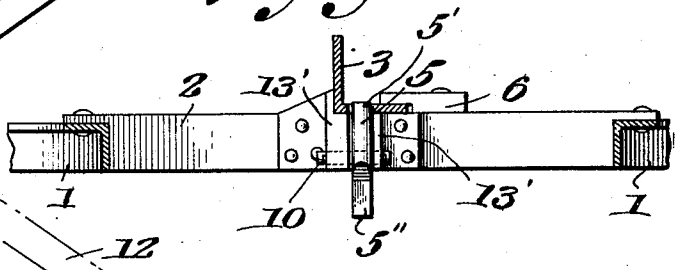
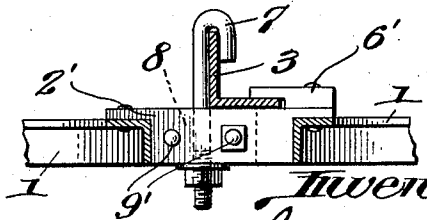


Fig. 5.



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UNITED STATES PATENT OFFICE

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ADJUSTABLE ELEVATING TRESTLE

Application filed July 26, 1929. Serial No. 381,298.

This invention relates to improvements on the adjustable trestle disclosed in my pending application Serial No. 198,846.

In an adjustable trestle such as disclosed and claimed in my aforesaid application, it is necessary for the workman or artisan who is setting up and adjusting the trestle, to manually lift the vertical angle steel adjustable uprights and when this is done with the piece of timber in position, considerable effort and strength are required.

The object of the present invention is to provide improvements on the adjustable trestle disclosed in the aforesaid application, whereby each upright may be easily and quickly elevated to the desired extent and, also, means for automatically locking the uprights in the position to which they are elevated, thus relieving the workman or artisan from the necessity of exerting strength to support these uprights until they are clamped to the standards or frames which carry them.

My improvements embody the openings or slots arranged in a vertical series in one web of each of the angle steel uprights; special, automatically-locking and releasing pawls carried by the standards and co-operating with the margins of the aforesaid slots, fulcruming means, preferably links or chains, carried by the standards, and a lever or levers of special construction suspended by said fulcruming means and having their effective ends adapted to enter the slots so that, when said levers are manually operated, the uprights may be elevated with small effort, or, may be readily released from the automatic pawls and lowered to any desired extent.

Each of the standards or frames may have its own lever, or, only one lever and fulcruming means may be used and arranged to be transferred from one standard to the other, in which event the lever is detachably suspended from the standard so that it may be used with either standard.

The automatically locking and releasing pawls hold the uprights in position to which they are elevated or lowered until the locking means for clamping the uprights to the standards are tightened to make the trestle ready for use, provided the angle steel braces have been clamped to the piece of timber which is supported by the uprights; thus, the workman or artisan adjusting the trestle need exert only a very slight manual effort to set up the trestle to the height desired.

In the accompanying drawings:

Figure 1 is a perspective view of the complete trestle, embodying my improvements, set up and ready for use, full lines representing the positions of the elevating levers when ready for use, and dotted lines showing the levers in their suspended positions;

Fig. 2 is a detail, vertical section through one of the trestles, full lines showing the positions of the upright, brace, and lever prior to elevation of the upright and brace, and dotted lines representing the elevated position of the upright and the depressed position of the lever;

Fig. 3 is a detail section showing parts of the upright and of the standard and illustrating the action of the lever and the pawl;

Fig. 4 is a horizontal detail section taken through the standard and the upright, the pawl being in full lines; and

Fig. 5 is a detail horizontal section taken just above one of the clamps.

The standards or frames 1, which are of angle steel construction, have cross braces 2, 2′ of angle steel construction riveted or welded thereto.

The angle steel vertically adjustable uprights 3 are provided with the vertically arranged series of elongated slots 4, as in the construction of my application Serial No. 198,846. These slots, instead of being utilized for the reception of hooks as in my aforesaid application, are adapted to receive improved automatically-acting pawls 5 which, by their engagement with the margins of the slots, are automatically released when the uprights 3 are elevated, only to engage the margin of a succeeding slot to again lock the upright in its elevated position.

The uprights 3 are slidably mounted in guides 6, 6′, such guides being preferably of malleable iron and of one-piece construction and they are riveted or welded to the cross-pieces 2, 2′, respectively.

To clamp the uprights in the position to

which they are elevated or lowered, there is provided a J-shaped hook clamp 7 whose shank is slidable laterally through the holder 8 carried by the upper crosspiece 2′, and there is a handled nut 9 which has screw threads engaging screw threads on the hook clamp 7. When the handled nut is tightened against its holder or bearing, the J-shaped hook clamp 7, which engages the outstanding web of the upright 3, clamps the upright against the crosspiece 2′. The holder 8 may be secured to the crosspiece 2′ by rivets or other fastenings 9′.

By utilizing the hook clamp 7, in addition to the pawl 5, on each standard 1, there is no possibility of accidental release of the pawl 5 although it will be understood that the pawl supports the upright 3 and the weight carried thereby.

The pawls 5 are provided with pivots 10 which are carried by the ears 13′, the latter being riveted to the crosspiece 2.

Each pawl is provided with an enlarged head 5′ and a tail 5″, the weight of the head causing the pawl normally to fall forwardly toward the upright 3 so that it will be adapted to enter the nearest slot 4 which is presented to it. The active face of the pawl is inclined or beveled, as shown at 5‴ to serve as a cam surface adapted to be engaged by the lower margin of the slot 4 when the upright 3 is elevated, whereby the pawl is pushed back to the dotted line position, Fig. 3, enabling the upright 3 to be elevated as far as desired inasmuch as the margins or successive slots presented to the pawl cause it to "ratchet" back until, finally, the elevating action exerted on the upright 3 ceases, whereupon the overweighted head 5 causes the pawl to drop into the nearest slot 4 and, thereupon, the upper margin of the slot rests upon the top of the pawl and the upright is supported by said pawl, as the head of the pawl then rests upon the crosspiece 2.

The tail 5″ enables the pawl to be held by hand in the dotted line position when it is desired to lower the upright.

One of the fastenings 9′ may be in the form of a suspended hook 11 having a screw threaded shank passing through the crosspiece 2′ and provided with a nut so that any desired vertical adjustment of the hook may be obtained. If preferred, the hook 11 may be entirely independent of the fastenings 9.

The hook 11 serves as a suspending means for the fulcrum for the improved operating lever 12.

A suspending or fulcruming chain or link 13, which is connected to the lever at 14, is engaged with the hook 11. Either a chain or a link may be provided, but I prefer to provide a detachable connection between the suspending fulcrum 13 and the hook 11 for, if this be done, it is only necessary to provide one lever 12, as it may be alternately engaged with the hooks 11 of the respective standards but I have illustrated two levers to show that two such elevating means may be provided, if desired.

It is within the spirit of my invention to provide a permanent suspending chain, link or fulcrum instead of one which is detachable, in which event, two levers may be used, which will hang freely after the uprights 3 have been suitably adjusted.

The levers 12 are provided with hooked or notched ends 15 which are adapted to enter the slots 4 and to engage the upper margin thereof.

The upper ends of the uprights are provided with handled hook clamps which may be of substantially the same construction and adapted to operate the same as shown and described in my application Serial No. 198,846. These hook clamps comprise clamps 16 which have screw threaded shanks slidable through lugs or loops 17 riveted or welded to the upper parts of the uprights 3 and the screw threaded shanks are provided with handled nuts 18 for drawing the hooked ends 19 into penetrating engagement with the wooden trestle, plank, timber or connecting piece 20.

Angle steel braces 21 which are pivoted to the uprights 3 at 22 and carry hook clamps 23 at their upper ends, are of the same construction and arranged and adapted to cooperate with the wooden plank or timber 20 as described in my application Serial No. 198,846. That is to say, one web of each of the angle steel braces 21 lies flatwise against a side of the plank or timber 20, one of the braces lying against one side of the plank or timber 20 and the other brace lying against the opposite side thereof. The penetrating hooks 24 of the respective hook clamps 23 engage opposite sides of the plank or timber 20 and are drawn into penetrating engagement therewith by tightening the handled nuts 25 which are carried by the screw threaded shanks of said hook clamps 23.

As with the construction set up in my aforesaid application, so in the present trestle, great strength and rigidity are obtained, due to the angle steel construction of the standards 1, crosspieces 2, 2′, uprights 3, and braces 21.

When it is desired to elevate the uprights 3 or to set up the trestle to any desired height, the clamps 7 are loosened by turning the handled nuts 9 backwardly. The lever or levers 12 are then operated in insert their hooked ends 15 in the slots 4, in succession, and the lever or levers are depressed at their outer ends to cause the uprights 3 to be elevated to the desired extent. During this operation, the pawl or pawls 5 are cammed to the dotted line position only to fall back into the next slot 4 to support the upright 3 until the operator can hook the lever 12 into an-

other slot and can depress the lever to elevate the upright again. Finally, when both uprights 3 have been raised to the desired height, the pawls 5 support the uprights and the timber 20 until the clamps 9 can be tightened. The pawls continue to remain in engagement with the slots 4 and to assist in supporting the uprights. After the trestle has been suitably adjusted, the lever or levers 12 are removed from the slots 4 and then hang down freely, or, they may be entirely removed from the trestle, if desired.

When it is desired to lower the uprights, the clamps 7 are released, the tails 5'' of the pawls are held by hand, the lever or levers 12 having been engaged with a slot 4, the upright or uprights may be gradually lowered until the trestle is at the proper height, whereupon the pawl or pawls may again be allowed to engage one of the slots to hold the trestle in its lowered position.

What I claim is:

1. In an adjustable elevating trestle, the combination with a supporting frame, of an angle steel vertically adjustable upright carried by said frame and provided with a vertically arranged series of slots, an automatically locking, manually releasable pawl carried by the frame which is adapted to enter the slots to sustain the upright in the position to which it is adjusted, said pawl being arranged to be automatically released by the action of the margins of said slots when the upright is being elevated, and a manually operable lever suspended from the frame and independent of said pawl, said lever being adapted for co-operation with the slots to raise and lower the upright.

2. In an adjustable elevating trestle, the combination with a supporting frame, of an angle steel vertically adjustable upright carried by said frame and provided with a vertically arranged series of slots, an automatically locking, manually releasable pawl carried by the frame which is adapted to enter the slots to sustain the upright in the position to which it is adjusted, said pawl being arranged to be automatically released by the action of the margins of said slots when the upright is being elevated, a manually operable lever, independent of said pawl, a suspending fulcrum member including a linkage and a hook by which said lever is suspended from said frame, said lever being adapted for detachable insertion in the aforesaid slots independently of the engagement of the slots by the pawl so that it may be used to shift the upright or to be disengaged from the upright and suspended from its fulcrum.

3. In an adjustable elevating trestle, the combination with a supporting frame, of an angle steel vertically adjustable upright carried by said frame and provided with a vertically arranged series of slots in one of its webs, an automatically locking manually releasable pawl carried by the frame which is adapted to enter the slots to sustain the upright in the position to which it is adjusted, said pawl being arranged to be automatically released by the action of the margins of said slots when the upright is being elevated, a manually operable lever suspended from the frame and which is independent of the pawl and which is adapted for co-operation with the slots to raise and lower the upright, and a hook-clamp carried by the supporting frame, said clamp being engageable with the other web of the angle steel upright and adapted to draw the upright against the frame after the upright has been raised or lowered, thereby to supplement the retaining action of the pawl on the upright.

4. In an adjustable trestle, the combination with a supporting frame, of an angle steel vertically adjustable upright carried thereby and provided with a vertically arranged series of slots, an automatically locking, manually releasable pawl carried by the frame which is adapted to engage the slots and sustain the upright in positions to which said upright may be elevated, said pawl being adapted to ratchet on the margins of the slots of the upright when the latter is being elevated, a clamp carried by the upright adapted for engaging a piece of timber to be supported, an angle steel brace pivoted to the upright and adapted to be raised and lowered therewith, a clamp carried by said brace adapted to engage the piece of timber aforesaid, a clamp carried by the frame independent of the pawl for fastening the upright to the frame, and an operating lever suspended from the frame and which is independent of the pawl and the clamp, said lever being adapted for engaging the upright for the purpose of elevating and lowering the upright and brace.

5. In an adjustable elevating trestle, the combination with a supporting frame or standard, of a vertically adjustable upright of angle steel having a web thereof provided with means at different points of its length adapted for use when elevating and locking said upright, an automatically locking and manually releasable pawl adapted for automatic engagement with the aforesaid means to sustain the upright, or for automatic release from said means when the upright is elevated, an elevating manually operable lever suspended from the frame for releasable engagement with the aforesaid means on the upright whereby the upright may be elevated or lowered by manipulating the lever when engaged with said upright, and a clamp for fastening the upright to the frame after said upright has been elevated or lowered, thereby to supplement the sustaining action of the pawl on the upright.

6. In an adjustable elevating trestle, the combination with a supporting frame having

an upper laterally-arranged part, and a lower laterally-arranged part, of an upright adapted for elevation and lowering on said frame, automatically-acting, manually releasable pawl-means on the lower laterally-arranged part of the frame, ratchet-means on the upright adapted for engagement with the pawl-means for holding the upright in the position to which it is adjusted, suspending means carried by the upper laterally-arranged part of the frame, an operating lever independent of the pawl-means which is adapted to be engaged with the aforesaid ratchet-means for raising and lowering the upright, and a fulcrum member for said lever depending from the suspending means, whereby the lever is suspended from the suspending means.

7. In an adjustable elevating trestle, the combination with a supporting frame having an upper laterally-arranged part, and a lower laterally-arranged part, of an upright adapted for elevation and lowering on said frame, automatically-acting, manually releasable pawl-means on the lower laterally-arranged part of the frame, ratchet-means on the upright adapted for engagement with the pawl-means for holding the upright in the position to which it is adjusted, suspending means carried by the upper laterally-arranged part of the frame, an operating lever independent of the pawl-means which is adapted to be engaged with the aforesaid ratchet-means for raising and lowering the upright, a fulcrum member for said lever depending from the suspending means, whereby the lever is suspended from the suspending means, and a clamp carried by the upper laterally-arranged part of the frame and independent of the pawl-means and ratchet-means and lever, said clamp being adapted to fasten the upright to the frame to supplement the sustaining action of the pawl-means on the upright.

In testimony whereof I affix my signature.

PERCY E. GOODWIN.