Aug. 25, 1970 F. A. HEBERT 3,525,503

NAILED BOARD REMOVING DEVICE

Filed May 12, 1969 6 Sheets-Sheet 1

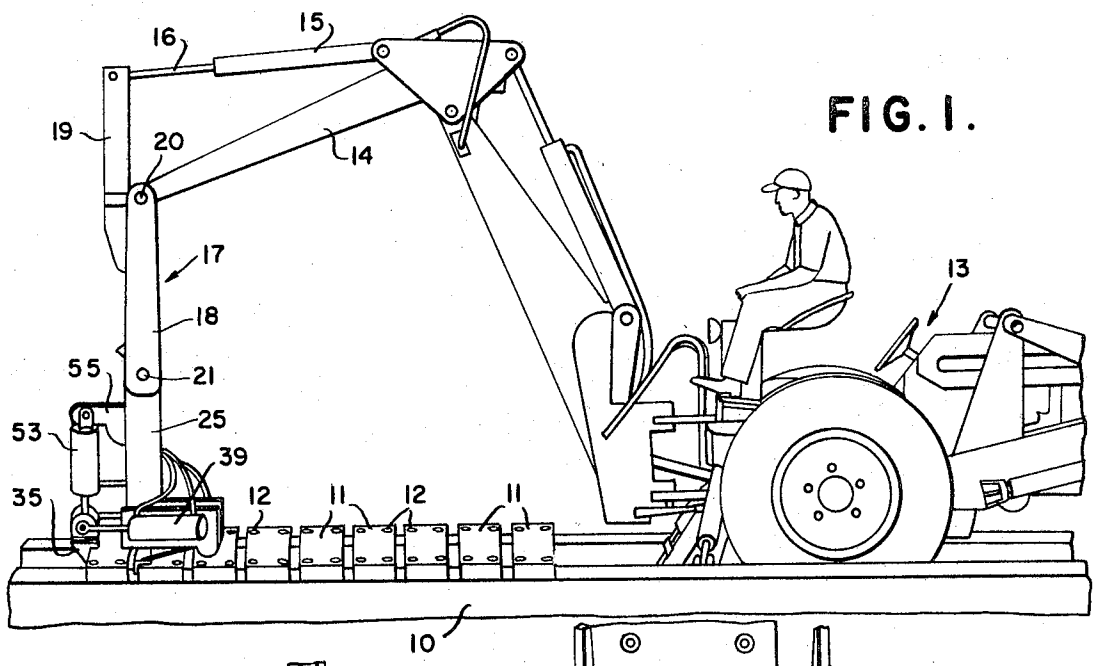


FIG. 1.

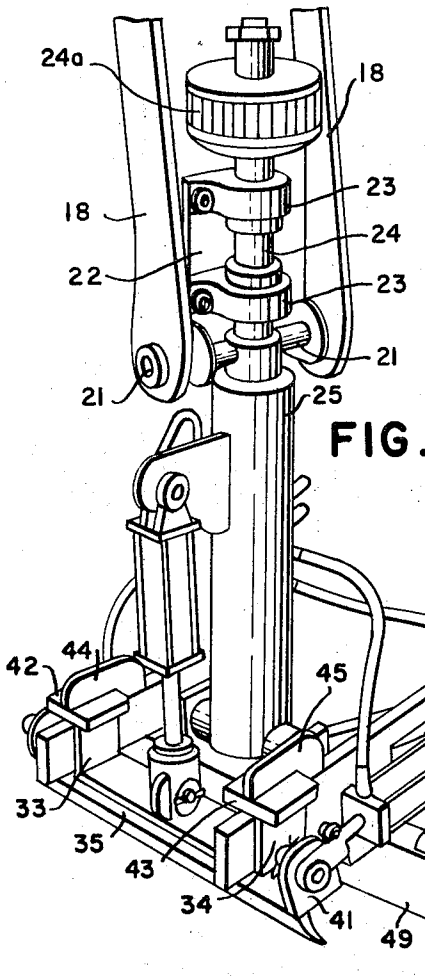


FIG. 2.

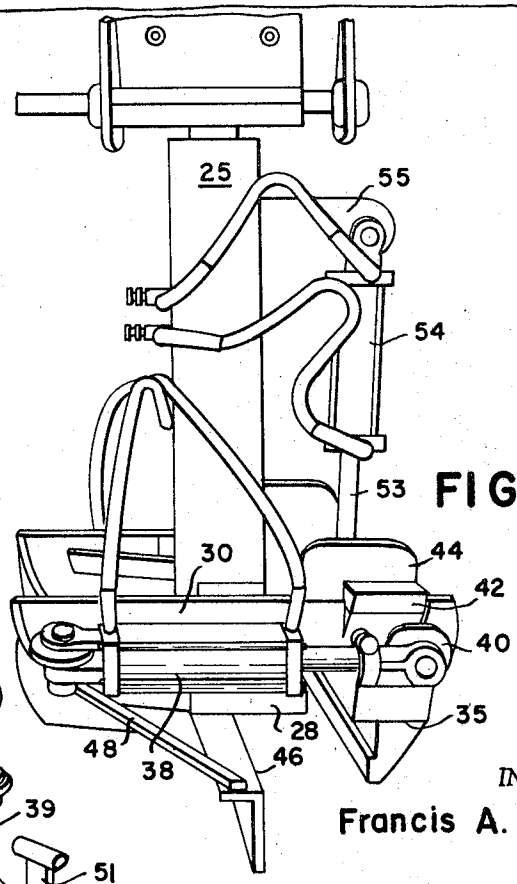


FIG. 4.

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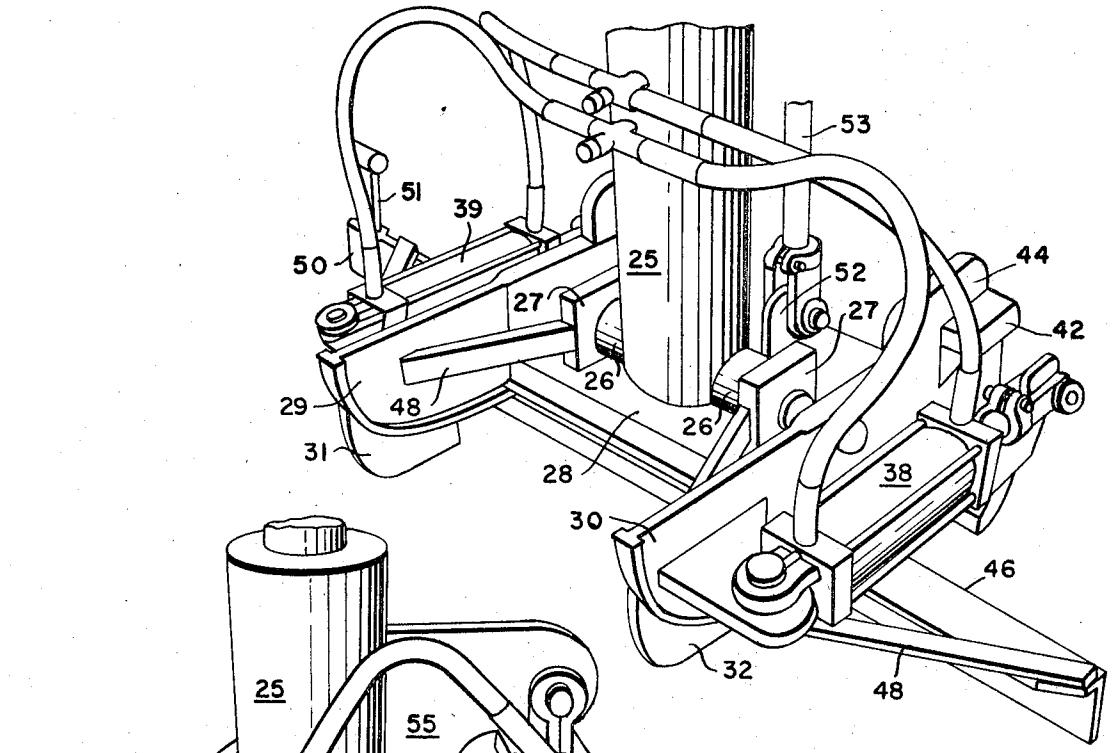


FIG. 5.

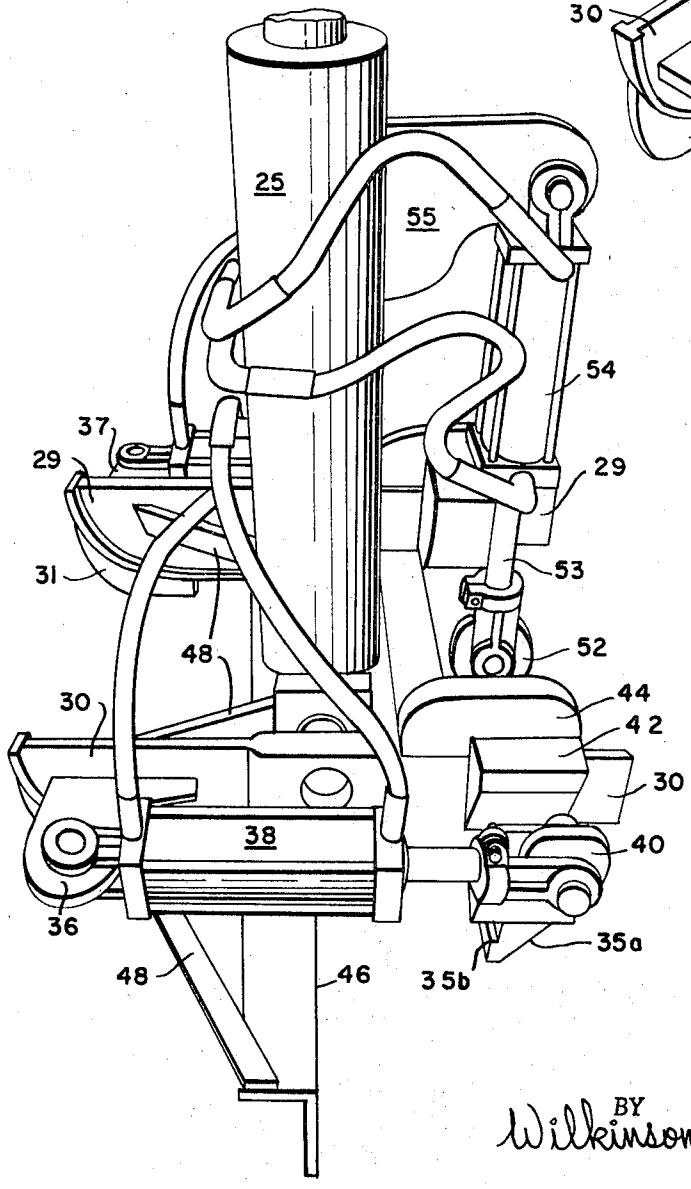


FIG. 3.

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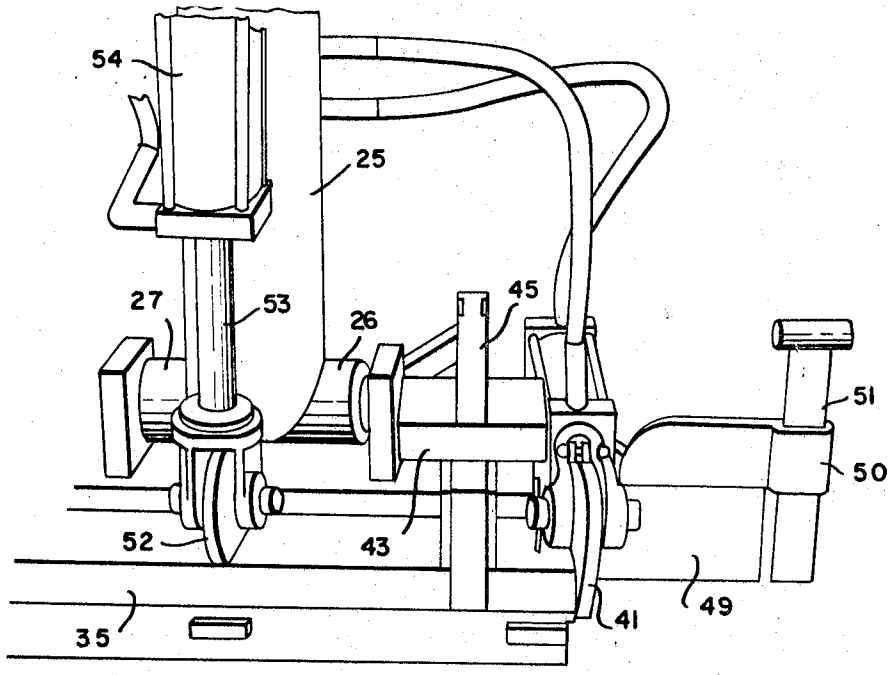


FIG. 6.

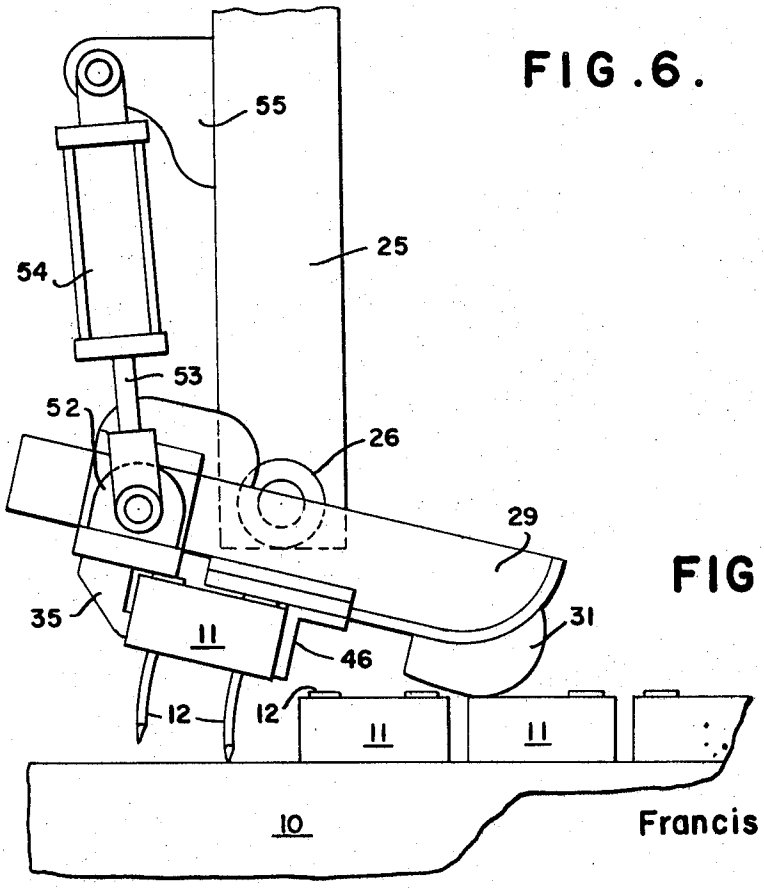


FIG. 7.

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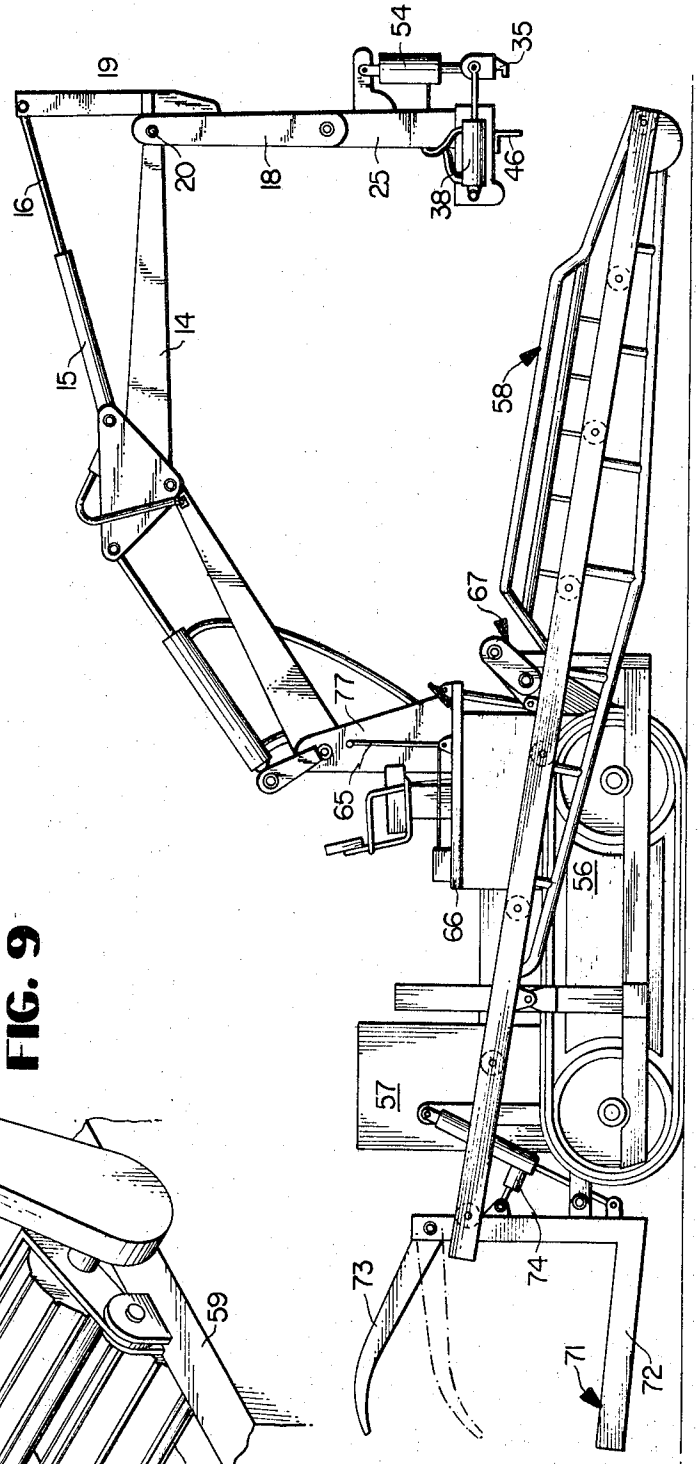


FIG. 8

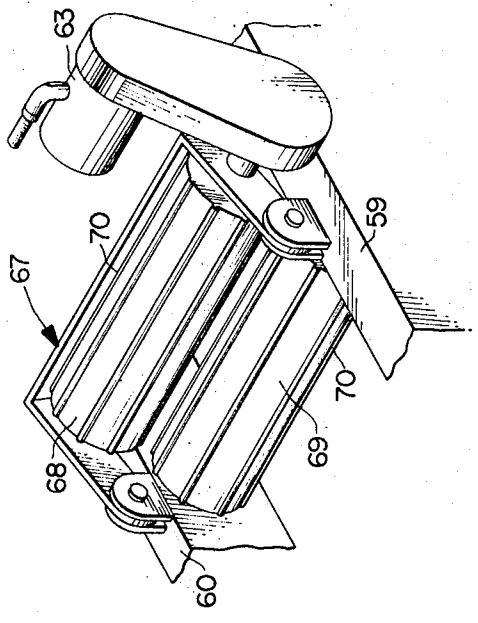


FIG. 9

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NAILED BOARD REMOVING DEVICE

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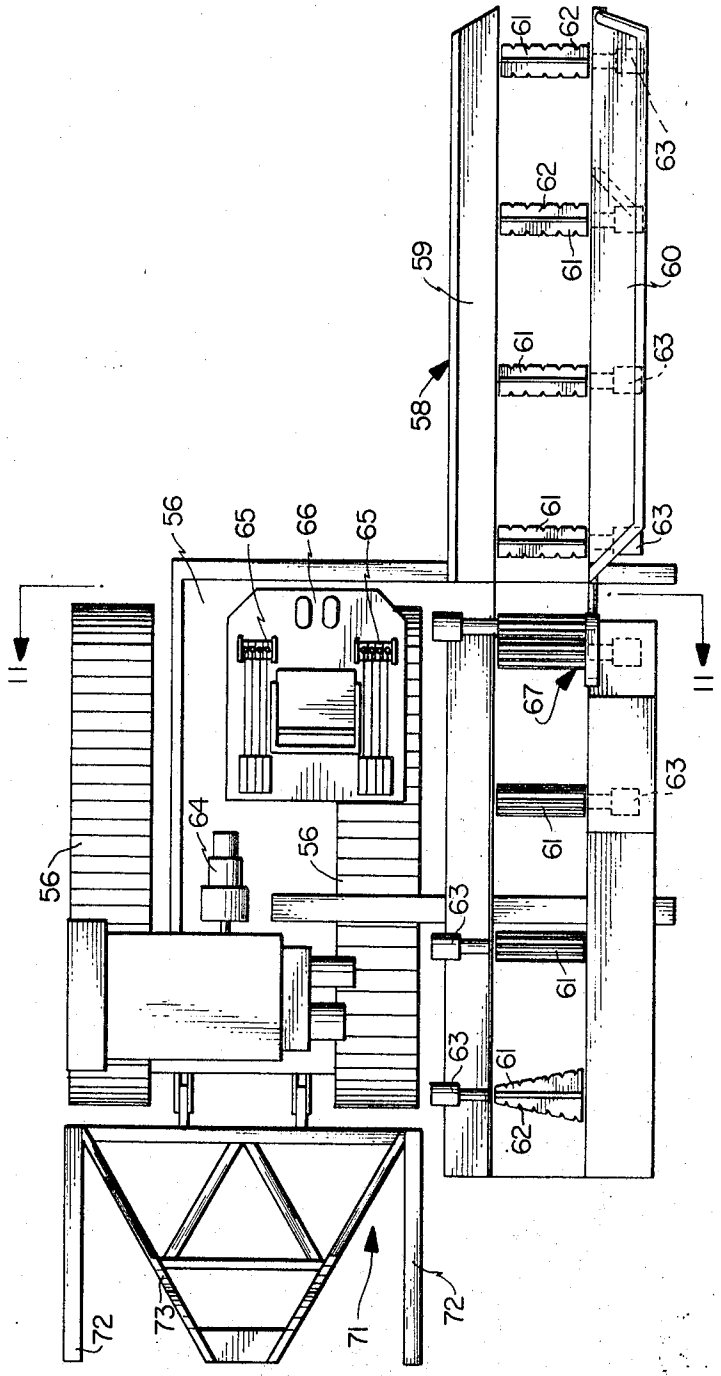


FIG. 10

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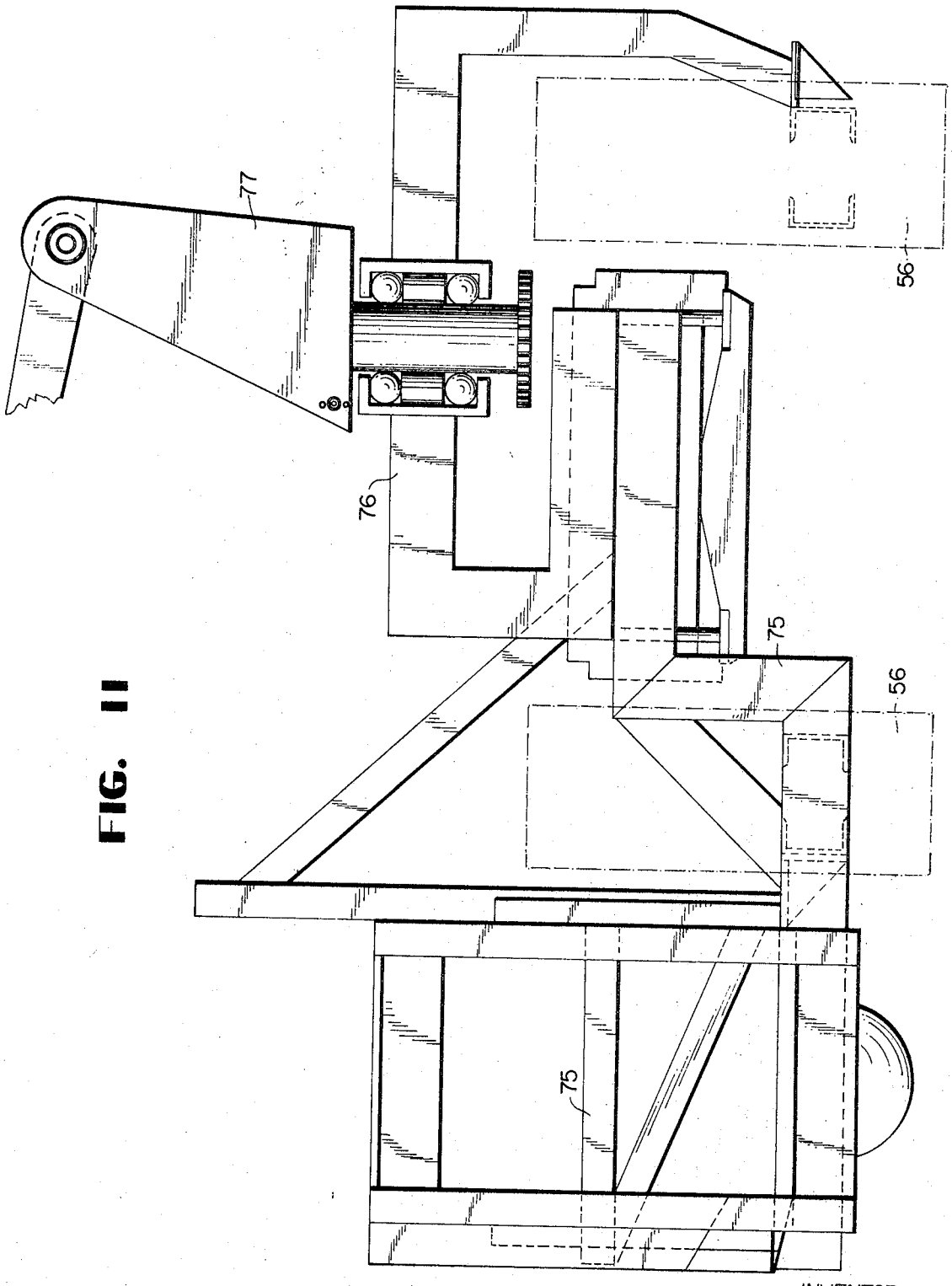


FIG. 11

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United States Patent Office 3,525,503 Patented Aug. 25, 1970

3,525,503

NAILED BOARD REMOVING DEVICE

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Continuation-in-part of application Ser. No. 590,907, Oct. 31, 1966. This application May 12, 1969, Ser. No. 830,184

Int. Cl. B66f 3/24

U.S. Cl. 254—124 9 Claims

ABSTRACT OF THE DISCLOSURE

An apparatus for salvaging nailed boards used in the building of temporary roads over marsh land etc. The apparatus includes a frame having a fixed and a movable jaw adapted to grip a board therebetween and a rocker heel member about which said jaws are pivoted to raise the board from its support. Means are provided to close the jaws and pivot the frame about the rocker heel. The apparatus also includes a shaker conveyor for advancing thus removed boards to a nail bending device and thence to a board stacking device.

The present invention relates to a nailed board removing device and is a continuation-in-part of my presently pending similarly titled application Ser. No. 590,907 filed Oct. 31, 1966. This invention has for an object to take up board road lumber more commonly employed with and about oil rigs and the like where a road into soft fill or marsh areas is made of wood to accommodate heavy equipment which must be trucked into and out of the area incident to drilling an oil well. When the well is brought in and the equipment removed, the need for the heavy duty road is no longer necessary and the lumber employed must be salvaged. Heretofore this has been a manual job requiring many man hours of labor and resulted in time delay as well as expense.

Board roads of the type described have a top layer of boards nailed to bottom longitudinal runners with fifty-penny nails. The boards are three (3) inches by eight (8) inches and vary in length from eight (8) to sixteen (16) feet. The device of the present invention clamps opposite sides of a board and rocks it hydraulically as to pull the nails out of the under boards and thereby free the board for reuse elsewhere.

A further object of the present invention is the provision of a device which can be readily attached to a back hoe or other prime mover having a boom and hydraulic operating cylinder and ram.

A still further object of the present invention is the provision of a frame unit which may be attached to a crawler unit and which not only removes the boards but which shakes the mud loose, bends the nails and stacks the boards for reuse.

With the foregoing and other objects in view, the invention will be more fully described hereinafter, and will be more particularly pointed out in the claims appended hereto.

In the drawings, wherein like symbols refer to like or corresponding parts throughout the several views:

FIG. 1 is a perspective view of a device constructed in accordance with the present invention mounted on a back hoe shown removing nailed boards from a board road.

FIG. 2 is a perspective view of the device of FIG. 1 showing the mounting of the position locating means on a back hoe boom carriage.

FIG. 3 is a perspective view of the device of FIG. 2 taken at an enlarged scale.

FIG. 4 is a right hand elevational view of the device of FIG. 3.

FIG. 5 is a rear perspective view of the device of FIGS. 2 through 4 emphasizing the rocker plates.

FIG. 6 is an enlarged front elevational view of the device of FIGS. 2 through 5.

FIG. 7 is an enlarged longitudinal sectional schematic showing the applied forces of the present device to remove a board.

FIG. 8 is a side elevational view of the entire apparatus of the present invention.

FIG. 9 is a fragmentary perspective view of the nail bending means of the present invention.

FIG. 10 is a top plan view of the apparatus of FIG. 8.

FIG. 11 is a vertical transverse section taken on the line 11—11 in FIG. 10 at a magnified scale.

Referring for the moment to FIG. 1, **10** designates the longitudinal runners of a board road across which are nail-end 3 x 8 inch boards **11** varying in length from eight (8) to sixteen (16) feet which are nailed with fifty-penny nails **12** (FIG. 7). A back hoe **13** having the conventional dip stick **14** with hydraulic cylinder **15** and ram **16** has a boom carriage **17** comprising two spaced arms **18** and tail pieces **19** pivotally secured at **20** to the free end of the dip stick while the tail pieces **19** are secured to the ram **16** for tilting the carriage about the pivot **20**.

Pivoted between the spaced apart side arms **18** at **21** is a tilt block **22** having bearings **23** supporting a shaft **24** which is connected to and supports the position locating means **25** which is a cylindrical member. A fluid motor **24a** rotates the shaft **24** and position locator **25**.

As best seen in FIGS. 5 and 6 the base of the position locator **25** has pivot trunnions **26** which are pivoted in blocks **27** secured to a base plate **28** welded between two runners **29** and **30** which define the primary guide means, the rear of the runners **29**, **30** have enlarged curved heel plates **31**, **32**. The front of the runners act as guides over which slide guide straps **33**, **34** secured to the top of a movable jaw **35**.

The rear of the runners **29**, **30** have welded thereto lugs **36**, **37** to which are secured actuating cylinders and rams **38**, **39** connected at their other end to lugs **40**, **41** welded to the movable jaw **35**. At the top of the straps **33**, **34** are welded limit stops **42**, **43** which cooperate with complemental stops **44**, **45** welded to the runners **29**, **30**.

As best seen in FIGS. 4 and 5 the static jaw **46** in the form of an angle iron in cross section is welded beneath the runners **29** and **30** and base plate **28** with the face **47** forwardly. Suitable struts **48** are provided to add rigidity to the structure by joining with weldments.

Extending off one side of the static jaw **46** is a plate **49** having a slotted strap **50** which accommodates a locating pin **51** which is adapted to be visible by the back hoe operator to facilitate his insertion of same between two spaced apart boards.

The movable jaw **35** as best seen in FIG. 4 has a beveled cut nose **35a** and an under cut lip **35b**. Secured to the top of jaw **35** is a pivot lug **52** which is connected to the ram **53** of cylinder **54**. The rear end of cylinder **54** is secured to an anchor plate **55** which is welded to the position locating tube **25**.

Referring now to FIGS. 8 and 10, **56** designates a crawler unit having two tracks, the unit being propelled by a prime mover **57**. Facing the machine from the front on the right hand ends of FIGS. 8 and 10, the board shaker and propelling means **58** is shown having two longitudinal runners **59**, **60** between which are rotatably mounted rollers **61** having serrated circumferentially spaced projections **62**. Each roller **61** is individually driven by a hydraulic motor **63** receiving its supply from a main hydraulic motor **64** driven by the prime mover

57. The motors 64 are controlled by valves 65 on the operators control deck 66.

Rearwardly of unit 58 is the nail bending means 67, as best seen in FIG. 9 which comprises a pair of rollers 68, 69 hydraulically driven and having projections 70 extending from the periphery thereof to engage nails extending from boards to flatten same against the boards.

Located rearwardly of the nail bending means 67 is a further shaker conveyor unit similar to 58 which receives the boards which have had mud shaken therefrom and the nails therein bent flat for transfer to a board stacking means 71 having base supports 72 and top clamping jaws 73 actuated by cylinders 74 for confining the boards into a bundle until a chain sling can be wrapped thereabout for transportation to a site of reuse.

Referring now to FIG. 11, the entire unit is bolted in place on a crawler tractor unit having crawlers 56, a subframe 75 supports the board shaker and propelling unit 58 and a platform 76 supports the swivel mount 79 for the board removing device 25 mounted on the boom or dip stick 14. The swivel mount may be rotated about its vertical axis by a motor chain drive with sprocket 80. The operators seat 81 is secured on platform 76 accessible to controls 82 for moving the crawler forward or rearward causing the board removing device 25 to remove boards as described herein before.

IN OPERATION

Referring now to FIGS. 1 and 7, the back hoe operator regulates the dip stick 14 so that the carriage 17 places the unit over the board to be removed. The motor 26 positions the unit azimuthwise while the dip stick cylinder 15 controls the angle of entry of the locating pin 51 and static jaw 46 into the slot between two boards to be removed. The unit is then rested upon the boards and the movable jaw 35 is closed by actuation of the cylinders 38, 39.

Thereafter tilt cylinder 54 is actuated to pull up on the front of the primary guide means through the movable jaw 35 causing the unit to pivot about trunnions 26 and to rock on heel plates 31, 32 which removes the board as best seen in FIG. 7. The boom carriage is then swung over to remove the board and the jaws opened and the unit put back in original position to remove another board.

The hydraulic power for opening the device of the present invention comes from the hydraulic plant 64 on the crawler unit 56 and is regulated through suitable valve controls 65 known to those skilled in the art.

The boards are then swung over to the shaker and propelling means 58 where the projections 62 on rollers 61 driven by hydraulic motors 63 beat the board to shake mud from it while advancing it to the nail bending means 67 where the boards enter between rollers 68, 69 and projections 70 bend the nails extending from the board flat thereagainst while providing a positive gripping and propelling action to move the boards rearwardly while continuing to beat mud from them and to position the thus cleaned boards for transfer to the board stacking means 71 where they are stored until a sufficient quantity has been collected to form a bundle for reuse at which time a truck having a winch and A-frame places a chain sling around the boards for transport to a site where a new board road is being laid.

Although I have disclosed herein the best forms of the invention known to me at this time, I reserve the right to all such modifications and changes as may come within the scope of the following claims.

What I claim is:

1. For use in removing boards nailed on a board road an extractor unit comprising

(a) a position locating means,

(b) a primary guide means pivotally connected to said position locating means and adapted to be placed over the boards to be removed,

(c) static jaw means extending beneath said primary guide means forward of said pivotal connection to said position locating means and being adapted to fit into the slot between adjacent boards of the board road,

(d) a movable jaw means slidably carried by said primary means,

(e) means connected between said primary guide means and said movable jaw means to close said jaw means to confine a board between said static jaw means and said movable jaw means,

(f) rocker heel plate means at the rear of said primary guide means, and

(g) means coacting between said position locating means and said primary guide means to cause said primary guide means to pivot relative to said position locating means about said rocker heel plates to raise the static and movable jaw to remove the board and nails holding same to the road bed.

2. A board extractor unit as claimed in claim 1 wherein said position locating means is a vertical shaft pivotally mounted in a boom carriage for rotation through 180°, said shaft and rotation mounting being pivoted to said carriage and said carriage being adapted to be tilted about a pivot to orient said position locating means and its connected primary guide means.

3. A board extractor unit as claimed in claim 1 wherein said primary guide means includes a pair of spaced apart runners the front ends of which guide strap means carrying the movable jaw and the rear ends of which terminate in said rocker heel plates.

4. A board road extractor as claimed in claim 1 wherein said static jaw means is welded to said primary means and is of an angle iron cross section.

5. A board extractor as claimed in claim 1 wherein said movable jaw means is provided with guide straps which slide over said primary guide means.

6. A board extractor as claimed in claim 1 wherein said means connected between said primary guide means and said movable jaw means are a pair of hydraulic cylinders and rams.

7. A board extractor as claimed in claim 1 wherein said rocker heel plates carried by said primary guide means cooperate with an hydraulic ram and cylinder connected between said position locating means and said movable jaw means to pry the board entrapped between the jaws from the road bed.

8. A board extractor as claimed in claim 1 further comprising board slot positioning means carried by said static jaw means to facilitate guiding of the static jaw into the slot between two adjacent spaced apart nailed boards.

9. A board extractor as claimed in claim 1 further comprising a boom carriage frame to which said position locating means is pivoted at its base for rotation and the top of which is adapted to be pivoted to the free end of a dip stick and having a portion adapted to be connected to the dip stick operating ram.

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OTHELL M. SIMPSON, Primary Examiner

U.S. Cl. X.R.

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