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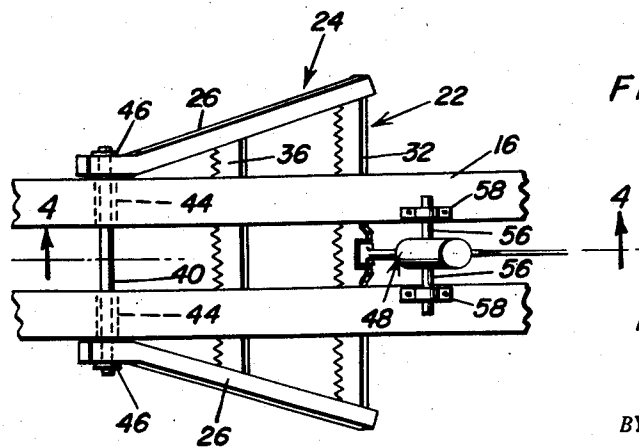
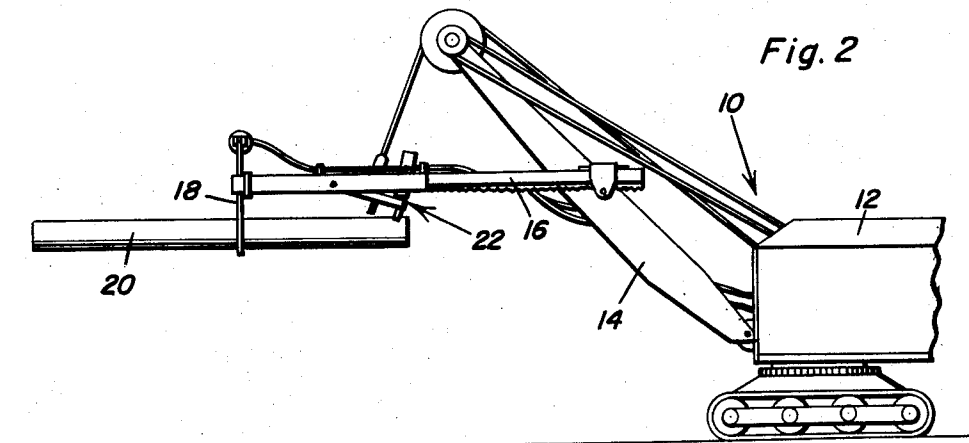
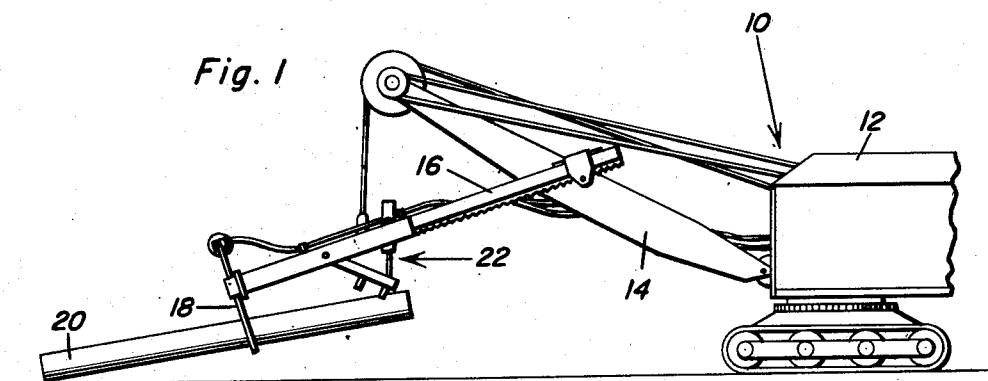
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2,903,146

ADJUSTABLE HEEL FOR USE WITH LOG TONGS AND DIPPER STICK

Filed June 18, 1957

2 Sheets-Sheet 1



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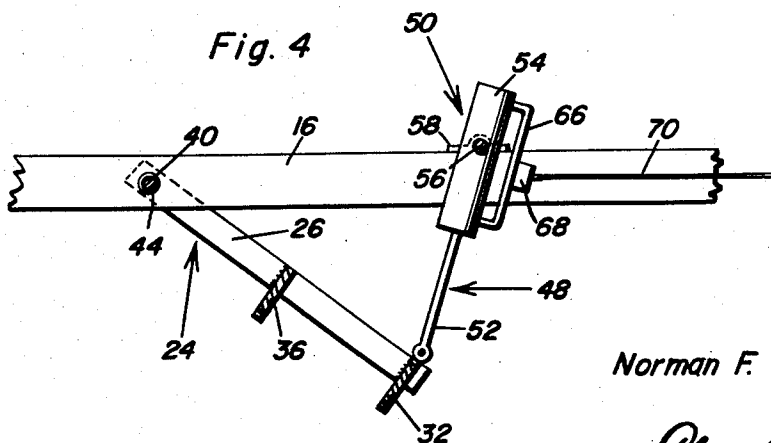
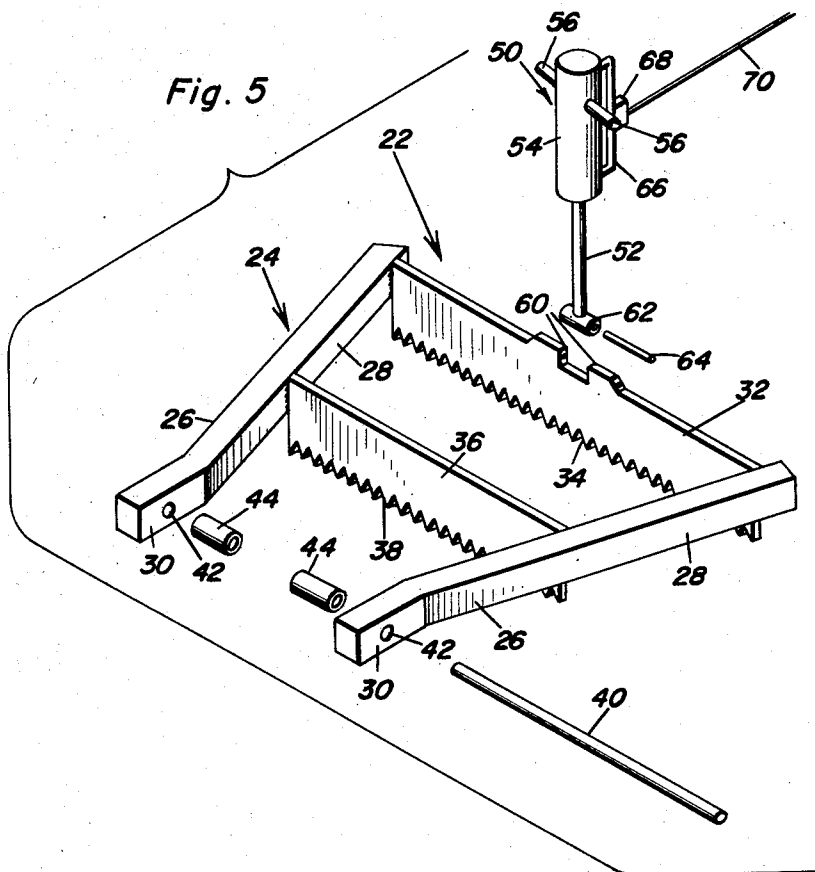
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ADJUSTABLE HEEL FOR USE WITH LOG TONGS AND DIPPER STICK

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2 Sheets-Sheet 2



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2,903,146

ADJUSTABLE HEEL FOR USE WITH LOG TONGS AND DIPPER STICK

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5 Claims. (Cl. 214—147)

This invention relates in general to new and useful improvements in material handling machines, and more particularly to improvements in log handling machines.

In order that logs may be loaded onto trucks, flatcars and the like, there are in use cranes of the type which includes a boom having mounted thereon a dipper stick. Carried by the outer end of the dipper stick are suitable log tongs. When loading the logs, it is desirable that the logs be disposed horizontally so that they may be conveniently positioned. Heretofore there has been devised a heel which is mounted on the dipper stick rearwardly of the log tongs for engagement with the logs so as to attempt to retain the log in the horizontal position. However, because of the fact that the heel is fixed, this does not completely accomplish the desired result.

It is therefore the primary object of this invention to provide an improved heel for dipper sticks for use in conjunction with log tongs, the heel being of an adjustable type whereby the heel may be adjusted to compensate for the particular log being handled so that the log may be horizontally disposed.

Another object of this invention is to provide an adjustable heel for use in conjunction with log tongs and on a dipper stick, the adjustable heel including a frame pivotally mounted on the dipper stick rearwardly of the log tongs and an extensible link extending between the frame and the dipper stick for selectively positioning the frame whereby a heel portion of the frame may engage a log carried by the log tongs to retain the log in a horizontal position.

A further object of this invention is to provide an improved heel for use on a dipper stick in conjunction with log tongs for retaining a log in a horizontal position, the heel being adjustable and being in the form of a frame pivotally connected to the dipper stick in depending relation, the frame being retained in adjusted position by an extensible link in the form of a power unit having a reciprocating power shaft, the power unit being remotely controllable whereby the length of the link may be varied as desired from a remote point such as the operator's seat of the machine of which the dipper stick is a part.

These together with other objects and advantages which will become subsequently apparent reside in the details of construction and operation as more fully hereinafter described and claimed, reference being had to the accompanying drawings forming a part hereof, wherein like numerals refer to like parts throughout, and in which:

Figure 1 is a fragmentary side elevational view of a log handling vehicle which is equipped with the adjustable heel which is the subject of this invention and shows the heel in an initial log engaging position;

Figure 2 is an elevational view similar to Figure 1 and shows the heel in position between the log in a horizontal position when the log is elevated;

Figure 3 is an enlarged fragmentary horizontal sectional view taken through an intermediate portion of the dipper stick of the log handling machine of Figure 1 and shows generally the details of the adjustable heel;

Figure 4 is an enlarged fragmentary longitudinal sectional view taken substantially upon the plane indicated by the section line 4—4 of Figure 3 and shows further the details of the adjustable heel; and

Figure 5 is an enlarged exploded perspective view of the heel.

Referring now to the drawings in detail, it will be seen that there is illustrated in Figures 1 and 2 a log handling machine which is in the form of a power shovel and referred to in general by the reference numeral 10. The power shovel 10 is of the conventional type and includes a cab 12 which has extending therefrom a boom 14. Carried by the boom 14 is a dipper stick 16. Carried by the outer end of the dipper stick 16, which will be considered the forward end of the dipper stick 16, is a log tong assembly 18. The log tong 18 is used for loading logs, such as the log 20 on trucks, flatcars, etc. In order that the log 20 may be horizontally disposed when being loaded, as is best shown in Figure 2, there is carried by an intermediate portion of the dipper stick 16 rearwardly of the log tong 18 the adjustable heel which is the subject of this invention, the adjustable heel being referred to in general by the reference numeral 22. As is best shown in Figure 5, the adjustable heel 22 includes a frame which is referred to in general by reference numeral 24. The frame 24 is formed of a pair of side rails 26 which have rearwardly diverging portions 48 and parallel forward portions 30. The rear ends of the frame rails 26 are connected together by a transverse plate 32 which has a lower serrated edge 34. The plate 32 is in the form of a rear heel portion. Intermediate portions of the frame rails 26 are also connected together by an intermediate plate 36 which has a lower serrated or toothed edge 38. The plate 36 forms an intermediate heel portion.

In order that the frame 24 may be pivotally mounted on the dipper stick 16, there is provided a transverse pivot shaft 40. The pivot shaft 40 has outer ends thereof disposed within aligned bores 42 in the forward portion 30 of the frame rails 26. The pivot shaft 40 is also journaled in sleeves 44 which are mounted in the dipper stick 16, as is best shown in Figure 3. The pivot shaft 40 is retained in place by means of collars 46 mounted on outer ends thereof outwardly of the frame rails 26.

In order that the frame 24 may be retained at the necessary angle to hold the log 20 in a horizontal position, there is provided an extensible ring which is referred to in general by the reference numeral 48. The extensible ring 48 includes a power unit 50 which is in the form of a fluid motor. The power unit 50 includes a reciprocating power shaft 52 which is actually the piston rod of the fluid motor 50. The fluid motor 50 also includes a cylinder 54.

The extensible link 48 extends between the dipper stick 16 and the plate 32 and is pivotally connected to the dipper stick 16 by a pair of trunnions 56 which extend from opposite sides of the cylinder 54. The trunnions 56 are journaled in suitable pillar blocks 58 carried by the dipper stick 16, as is best shown in Figure 3.

As is best shown in Figure 5, the plate 32 has projecting upwardly from the central part of the upper edge thereof a pair of transversely spaced ears 60. The ears 60 have disposed therebetween a sleeve 62 secured to the lower end of the piston rod 52. Extending through the ears 60 and the sleeve 62 is a pin 64 which connects the piston rod 52 to the plate 32.

The fluid motor 50 is of the double acting type and opposite ends of the cylinder 54 are communicated with each other by means of a by-pass line 66. Disposed within the by-pass line intermediate the ends thereof is a control valve 68. In order that the control valve 68 may be manually controlled, there is provided a control

line 70 which extends to the cab 12, to be actuated by the operator of the shovel 10.

At this time, it is pointed out that the power unit 50 could be in the form of an electric motor or other types of power units which commonly replace hydraulic motors or other types of fluid motors. Also, the control valve 68 in lieu of being mechanically operated by means of a cable 70, may be hydraulically operated or may be electrically operated.

In the operation of the present invention, when the control valve 68 is opened, the frame 24 will move downwardly to the position illustrated in Figures 1 and 4. When a log, such as the log 20 is picked up utilizing the log tongs 16, the rear part of the log 20 will swing upwardly and engage the adjustable heel 22. As the log 20 is being elevated, the operator of the shovel 10 may open the valve 68 and permit bleeding of fluid from the upper end of the cylinder 54 into the lower end. This permits the pressure of the log 20 on the adjustable heel 22 to pivot the frame 24 upwardly to the position illustrated in Figure 2. At this time the control valve 68 is permitted to return to its closed position and further shortening of the link 48 is prevented. The log 20 will thus be held in a horizontal position.

It will be readily apparent that by providing an adjustable link, such as the link 48, whose length may be controlled from the cab of the shovel 10, there has been provided a suitable adjustable heel which may be operated with a minimum of effort by the operator of the shovel 12 to haul a log being loaded in a horizontal position irrespective of the exact point where the log is grasped by the log tongs, the diameter of the log, or the fact that the log is not perfectly straight. Also, because of the simplicity of construction of the invention, it will be seen that the invention is practically foolproof in operation, and is not subject to normal wear and tear as is found on many types of adjustable equipment.

The foregoing is considered as illustrative only of the principles of the invention. Further, since numerous modifications and changes will readily occur to those skilled in the art, it is not desired to limit the invention to the exact construction and operation shown and described, and accordingly, all suitable modifications and equivalents may be resorted to, falling within the scope of the invention as claimed.

What is claimed as new is as follows:

1. In combination with a dipper stick and log tongs, an adjustable log positioning heel, said log positioning heel comprising a frame, pivot means carried by said dipper stick pivotally mounting said frame to an intermediate portion of said dipper stick in depending relation, and a remotely controllable extensible link disposed remote from said pivot means and extending between said frame and said dipper stick to retain a log carried by said log tongs in a horizontal position.

2. In combination with a dipper stick and log tongs, an adjustable log positioning heel, said log positioning

heel comprising a frame, pivot means carried by said dipper stick pivotally mounting said frame to an intermediate portion of said dipper stick in depending relation, and a remotely controllable extensible link disposed remote from said pivot means and extending between said frame and said dipper stick to retain a log carried by said log tongs in a horizontal position, said link being in the form of a power unit including a reciprocating power shaft.

3. In combination with a dipper stick and log tongs, an adjustable positioning heel, said log positioning heel comprising a frame, pivot means carried by said dipper stick pivotally mounting said frame to an intermediate portion of said dipper stick in depending relation, and a remotely controllable extensible link disposed remote from said pivot means and extending between said frame and said dipper stick to retain a log carried by said log tongs in a horizontal position, said link being in the form of a fluid motor including a reciprocating piston rod.

4. In combination with a dipper stick and log tongs, an adjustable positioning heel, said log positioning heel comprising a frame, pivot means carried by said dipper stick pivotally mounting said frame to an intermediate portion of said dipper stick in depending relation, and a remotely controllable extensible link disposed remote from said pivot means and extending between said frame and said dipper stick to retain a log carried by said log tongs in a horizontal position, said link being in the form of a fluid motor including a reciprocating piston rod, said fluid motor being of the double acting type and including a cylinder, a by-pass line extending between opposite ends of said cylinder, and a control valve in said by-pass line.

5. In combination with a dipper stick and log tongs, an adjustable positioning heel, said log positioning heel comprising a frame, pivot means carried by said dipper stick pivotally mounting said frame to an intermediate portion of said dipper stick in depending relation, and a remotely controllable extensible link disposed remote from said pivot means and extending between said frame and said dipper stick to retain a log carried by said log tongs in a horizontal position, said link being in the form of a fluid motor including a reciprocating piston rod, said fluid motor being of the double acting type and including a cylinder, a by-pass line extending between opposite ends of said cylinder, and a control valve in said by-pass line, said control valve being provided with a remotely controllable operator.

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