April 21, 1959 S. S. McINTYRE, SR 2,883,068

SWIVEL JIB FOR MOBILIZED LOG YARDERS AND THE LIKE

Filed July 14, 1955

2 Sheets-Sheet 1

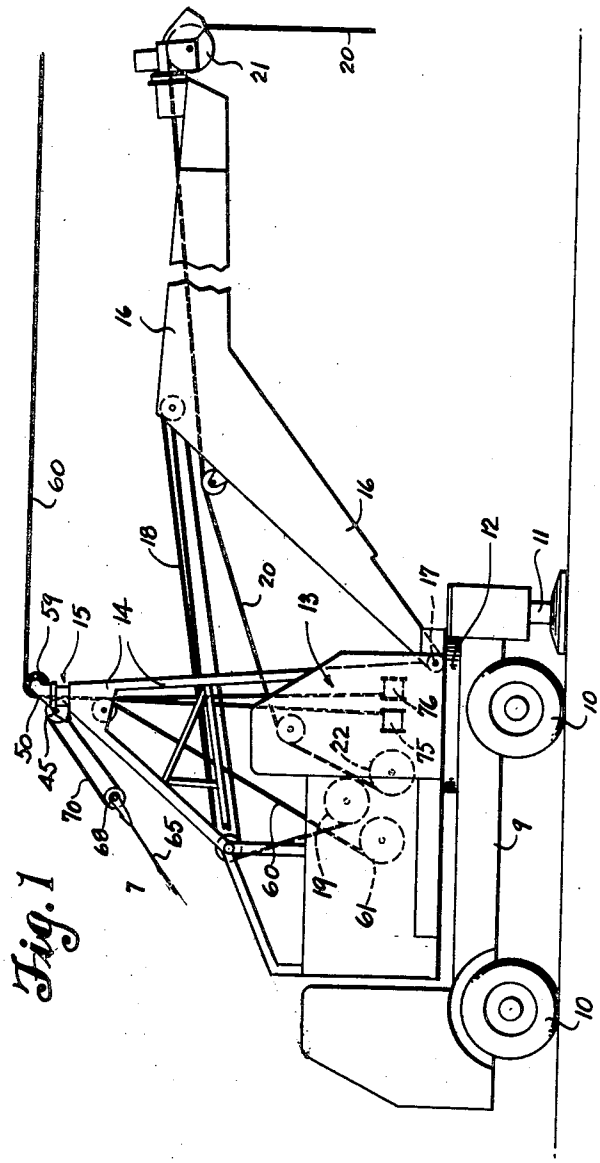


Fig. 1

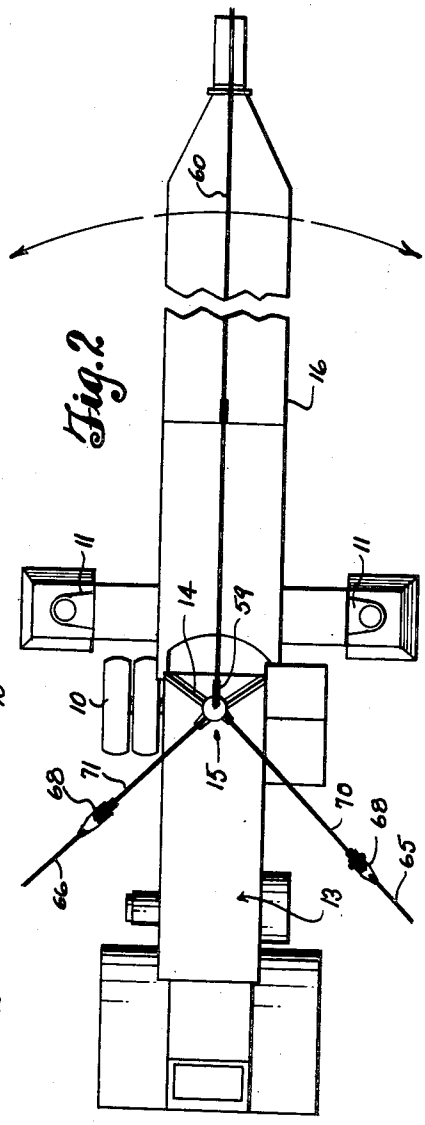


Fig. 2

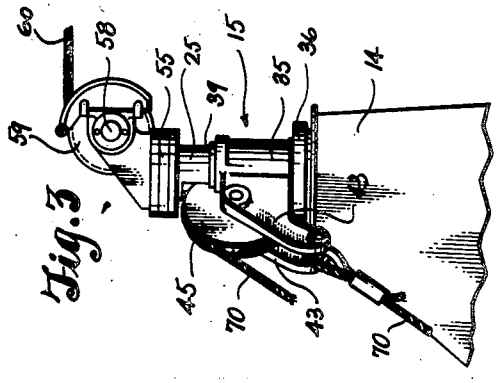


Fig. 3

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Fig. 5

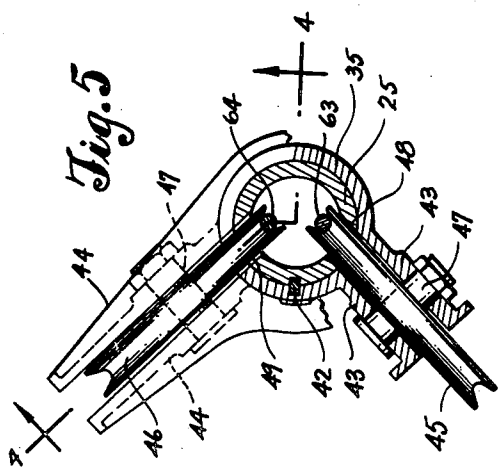


Fig. 6

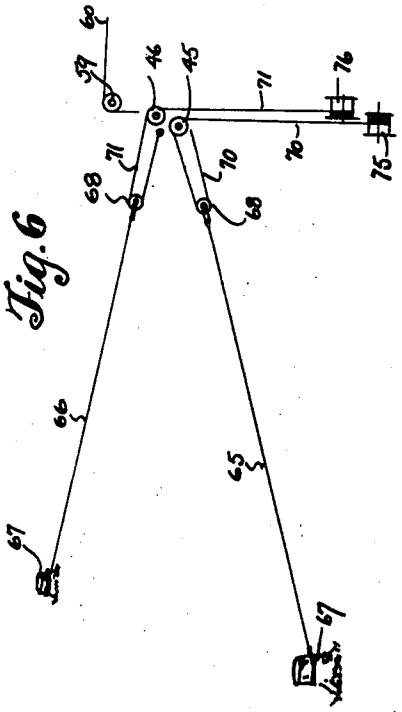
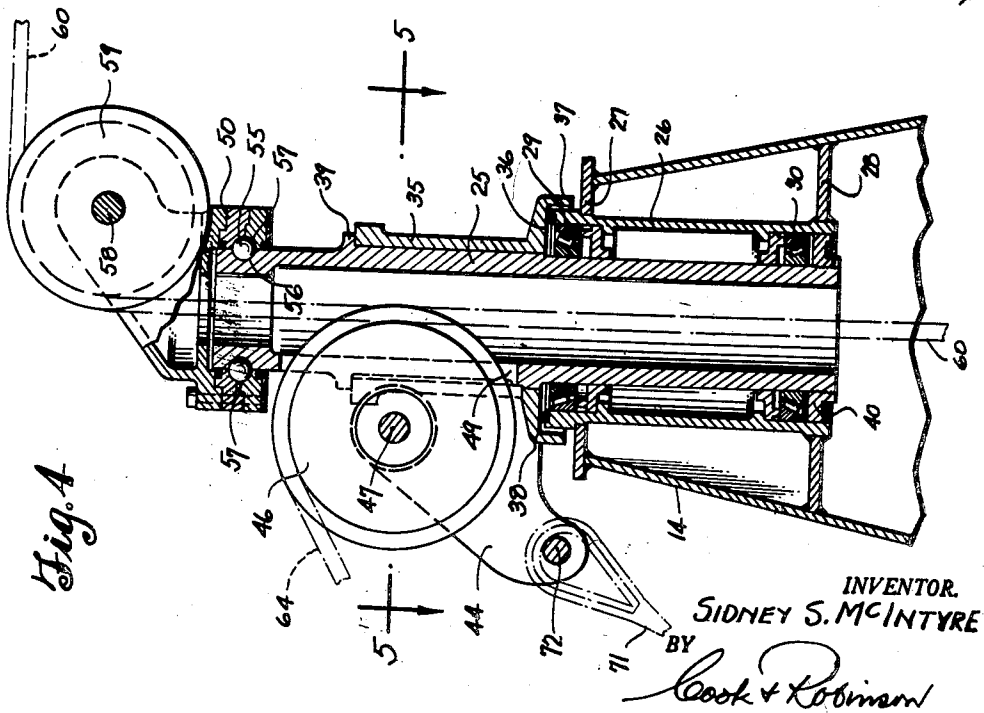


Fig. 4



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United States Patent Office 2,883,068 Patented Apr. 21, 1959

2,883,068

SWIVEL JIB FOR MOBILIZED LOG YARDERS AND THE LIKE

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Application July 14, 1955, Serial No. 522,091

2 Claims. (Cl. 212—70)

This invention relates to logging vehicles. More particularly it relates to improvements in a device known in the industry in which it is used as a "Swivel jib" and which, in the present showing, is especially adapted for use at the upper end of the mast or tower as carried on a mobilized log yarding and loading vehicle to serve the purpose of the spar tree in ordinary cable logging operations.

The present day type of mobilized log yarding and loading vehicle is equipped with a turntable on which a tower and a loading boom are mounted. The tower carries a sheave in a block or fairleader at its upper end over which a haul-in line is extended for log yarding purposes. Vehicles or machines of this type, which are used for the yarding of logs from opposite sides of the vehicle and which also use the swinging boom for loading at either or both sides of the vehicle, have guy lines extended from the upper end of the tower to anchoring means at opposite sides of the vehicle to prevent possible tipping of the vehicle and tower structure under lateral pull of the yarding cable, and under the swinging of the loaded boom from side to side.

It has been found to be quite desirable and advantageous to be able to apply and to adjust the tension of the guying lines by devices located on the deck of the machine, and in consideration of this and for other reasons presently apparent, it has been the principal object of this invention to provide means which makes it possible in a practical and convenient way, to control the adjustment of tension of guy lines by means on the deck of the vehicle instead of at their outer ends or anchor points. Furthermore, to provide a tension adjusting connection between guy lines and tower that is not, in any way, affected by the turntable action of the yarder mechanism.

More specifically stated, the objects of the present invention reside in the provision of a swivel jib mounted by a tubular shank and on which shank sheave wheels are mounted in such manner that the haul-in line and the tensioning connections for the guy lines, all extend thereto through the tubular shank from cable winding means located on the deck of the machine.

It is a further object of the present invention to provide a swivel mounting on the jib shank for the fairleader or sheave over which the haul-in cable operates so that it will automatically adjust itself on the shank to the direction of pull on the cable and regardless of turntable action of the tower.

Furthermore, the present structure includes a mounting for the sheaves, over which the guy line tension adjusting cables are extended, are mounted in planes at right angles to each other; this mounting being keyed on the shank which, in turn, has swivel action in a supporting bearing by which it is mounted at the top of the tower.

Further objects and advantages of the present invention reside in the details of construction and combination of the parts embodied by the swivel jib, and in their mode of use, as will hereinafter be fully described.

In accomplishing these and other objects of the invention, I have provided the improved details of construction, the preferred forms of which are illustrated in the accompanying drawings, wherein:

Fig. 1 is a side view of a mobilized logging vehicle having a log yarder and tower mounted on a turntable thereon and equipped with a swivel jib embodied by the present invention.

Fig. 2 is a plan or top view of the machine indicating the relative position of the loading boom and guy lines.

Fig. 3 is a somewhat enlarged side view of the swivel jib as applied to the top of the tower.

Fig. 4 is an enlarged sectional view of the swivel jib; the section being taken substantially on the plane of the line 4—4 in Fig. 5.

Fig. 5 is a horizontal section taken substantially on line 5—5 in Fig. 4, showing the relationship of the sheaves which carry the guy line tensioning cables.

Fig. 6 is a view showing in a diagrammatic way, a tensioning cable connection with one of the guy lines.

Referring more in detail to the drawings:

In Fig. 1 a present day type of mobilized yarder and loader has been shown. This vehicle comprises the base frame or chassis 9 as equipped with ground wheels 10 for highway or road travel of the machine, and with outrigger supports 11 at the rear end. Mounted upon the vehicle chassis by a turntable base 12, is a log yarder which has here been designated in its entirety by reference numeral 13. Fixed to the yarder base is a fabricated mast or tower 14 which, at its apex or top is equipped with the swivel jib embodied by the present invention and which is designated in its entirety by reference numeral 15.

Mounted on the yarder base structure or turntable 12 is a log loading boom 16, fixed and supported by hinge pins 17 at its inner end for its vertical oscillation as raised or lowered by the usual pulley arrangement including the cable 18 and cable winding drum 19; the drum being associated with the drums of the yarder mechanism in any satisfactory manner. A log lifting cable 20 is extended along the boom and over a fairleader 21 at its outer end. The inner end portion of the cable 20 is wound on a drum 22 that also is associated with the yarder mechanism.

The swivel jib, 15, as shown in sectional detail in Fig. 4, comprises a tubular mounting shank 25 of elongated, cylindrical form. This has its lower end portion contained for axial rotation and support in a bearing housing 26 that is fixed in the upper end of the tower 14. As shown in Fig. 4, the housing 26 is cylindrical; is vertically disposed, and fixed at its upper and lower ends in web plates 27 and 28 which are fixed horizontally in the tower structure. The mounting shank 25 is coaxial of the housing 26 and is supported for rotation therein by antifriction taper roller bearings designated at 29 and 30, applied within upper and lower ends of housing 26. It is further to be understood that the swivel shank is coaxially aligned with, and also ordinarily vertically aligned with the axis of rotation of the turntable.

Applied to the tubular shank 25 immediately above the housing 26 is a sheave mounting sleeve 35, formed at its lower end with an annular flange 36 that closely overlies and projects beyond the upper end portion of the housing 26; this flange being formed with a downwardly extending peripheral lip 37. A joint sealing gasket 38 is disposed between the upper end of housing 26 and flange 36. At its upper end the sleeve 35 rests against an annular, downwardly facing shoulder 39 formed on the shank 25. Thus, through the mediacy of the sleeve as engaged against the shoulder 39, and a nut 40 that is threaded onto the lower end of the shank and seated against the bearing 30, the shank is held against endwise shifting. The

sleeve 35 is keyed, as best shown at 42 in Fig. 5, to the shank, and therefore these parts turn together.

As shown best in Fig. 5, the sheave wheel mounting sleeve 35 is formed with two sets of radially directed sheave mounting arms or flanges 43—43 and 44—44, in which cable guiding sheaves 45 and 46, respectively, are mounted for rotation on axles 47. It will be understood by reference to Fig. 5 that the sheave wheels 45—46 are rotatable in vertical planes, and at right angles to each other. Furthermore, as shown in Figs. 4 and 5, both the shank and sleeve are longitudinally slotted, as at 47—47 and the two sheave wheels 46—47 extend through these slots into the passage in the tubular shank for a purpose presently explained.

At the upper end of the shank 25, a block 50 is mounted for axial rotation thereabout. The block is secured to the shank through the mediacy of anti-friction ball bearings 55 that are mounted for rolling travel in an annular raceway 56 in the shank and raceway 57 in the block. Mounted on the block, to rotate on a horizontal axis 58, is a sheave wheel 59 by which the haul-in cable 60 is carried. As indicated in Fig. 4, the sheave 59 is so disposed that the cable 60 as extended therefrom to the cable winding drum, extends axially through the tubular shank for winding onto and from the drum; this being designated by numeral 61 and is one of the drums of the yarder.

It is further to be observed, by reference to Fig. 5, that the sheaves 45 and 46 are so disposed that cables passed thereto through the tubular shank extend along opposite sides of the cable 60 as contained in the shank.

The guying of the tower against lateral tipping under a load supported by the boom when extending in a lateral direction, and also to counteract haul-in line pull, or log lifting operations of any kind by the boom is effected by guy lines 65 and 66 arranged as schematically shown in Fig. 6. These guy lines are suitably anchored at their outer ends as to stumps, trees 67. At their inner ends, which terminate short of the swivel jib, they are each equipped with a pulley block 68, as shown in Fig. 6. Guy line tensioning cables 70 and 71 for the two guy lines, respectively, have ends attached to pins 72 that are extended through and between the lower ends of paired sheave mounting arms 43—43 and 44—44 of the sleeve 35 as shown in Fig. 4, and are extended outwardly therefrom and through the corresponding pulley blocks 68 then back to the swivel jib passing over the sheave wheels 45 and 46, and from these downwardly through the tubular shank to individual power operated cable winding drums 75 and 76 mounted on the yarder. By the winding in of these cables, the guy lines can be brought to the desired holding tension, and by proper control of these drums to draw in or pay out the tensioning cables, the guy lines can be adjusted to meet conditions or requirements.

The important feature of the present invention resides in the provision of means for effecting and controlling tension of the guy lines, as well as to control the haul-in line, through the mediacy of cable winding drums, all of which are located on the deck of the yarder, this being made possible by provision of the swivel jib and the extending of the lines from the cable winding drums through the tubular shank. Rotation of the yarder for log loading does not change the tension adjustment of cables due to the fact that the swivel jib is vertically and axially aligned with the axis about which the turntable rotates.

Having thus described my invention, what I claim as new therein and desire to secure by Letters Patent is:

1. A swivel jib construction of the character described comprising a turntable, a tower mounted on the turntable, a bearing housing mounted on the upper end of said tower, an axially rotatable tubular shaft mounted in and supported by said bearing housing, said tubular shaft extending above the bearing housing, a plurality of spaced vertical slots in the extended portion of said shaft, a collar secured to the tubular shaft above said bearing, paired radial arms secured to the collar in radial alignment with each of said slots, sheave wheels rotatably mounted in vertical planes between each pair of arms, a plurality of cable winding drums at the base of the tower, a cable leading from each cable drum through said shaft and over a sheave wheel, said drums being operable to adjust the effective length of the cables, a rotatable block mounted on the upper end of said shaft and a haul-in line leading over said block above and clear of said sheaves.

2. A swivel jib construction as in claim 1, wherein said cables are respectively interconnected with a guy-line and the free end of each cable is secured to the pair of arms which supports the sheave over which the cable passes.

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