Feb. 11, 1964 J. J. EAVES 3,120,898

DEVICE FOR HANDLING LOGS AND THE LIKE

Filed Dec. 1, 1960

FIG. 1

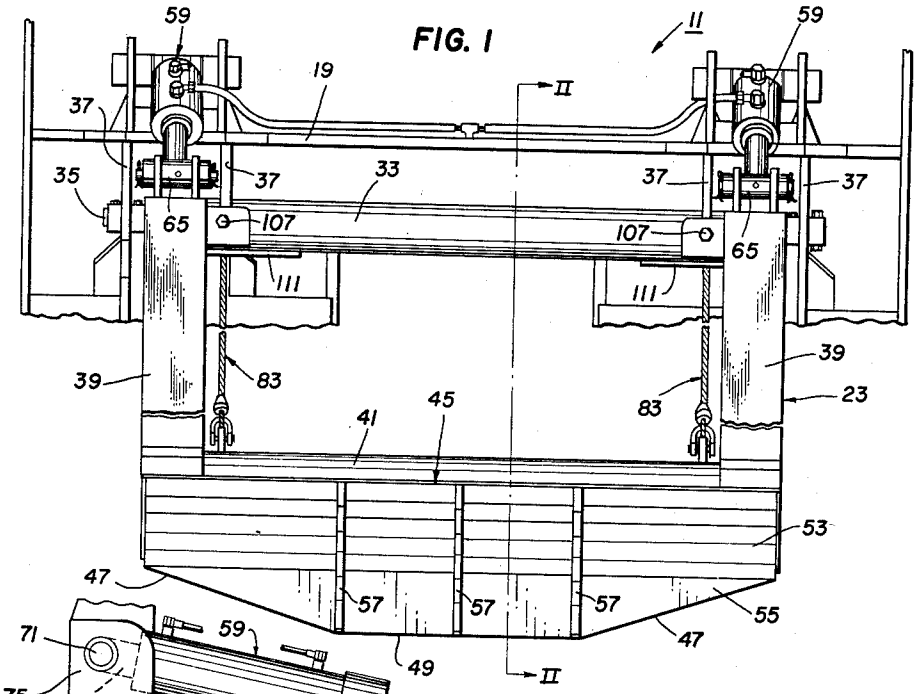


FIG. 2

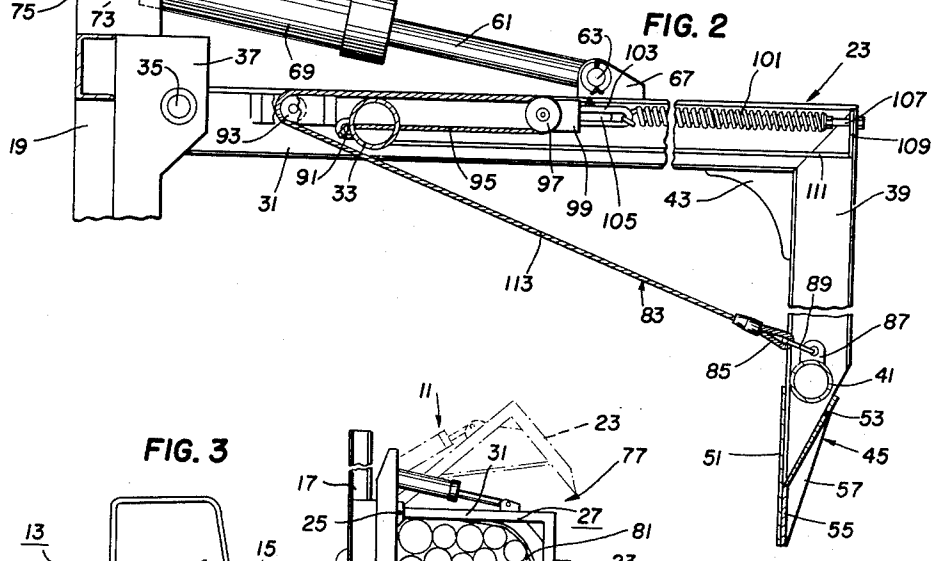
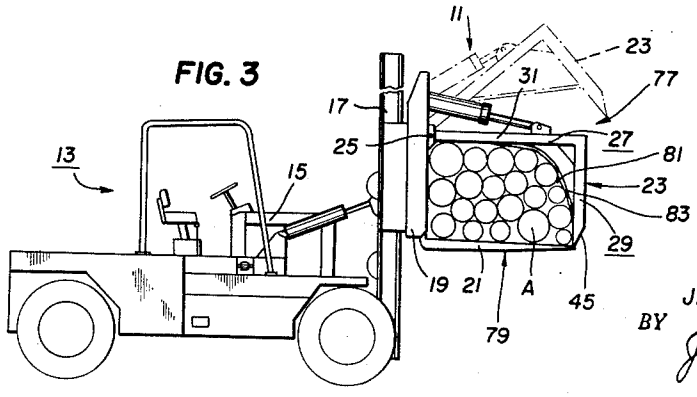


FIG. 3



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United States Patent Office 3,120,898 Patented Feb. 11, 1964

3,120,898

DEVICE FOR HANDLING LOGS AND THE LIKE

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Filed Dec. 1, 1960, Ser. No. 73,101
3 Claims. (Cl. 214—654)

This invention relates to improvements in devices for handling logs, lumber and the like, and is particularly adapted for use with the so-called fork-lift type of log and lumber handling machines.

In using the above mentioned type of machines, the logs are carried by the load supporting structure or forks with the forks contacting the logs intermediate the ends thereof and with the logs extending transversely of the machine and projecting laterally out in opposite directions from the forks. Heretofore, in the use of these machines the logs had to be evenly balanced on the lifting forks or they would fall off when traveling over uneven and rough terrain. In other words, it was necessary for the forks to contact the logs at the center of gravity thereof or they would tilt to one side and fall off.

Thus, one of the objects of the present invention is to provide, in a log and lumber handling machine, an attachment or device for holding the logs on the lifting forks so that even though the logs are not evenly balanced on the forks they will not fall off.

A further object is to provide such an attachment which holds the logs by encircling the logs and putting downward pressure thereon.

A further object is to provide such an attachment which makes it possible to carry more logs on the lift forks.

A further object is to provide such an attachment which, due to the fact that the logs do not have to be balanced, eliminates much maneuvering to exactly position the logs, thereby saving much time and making it an easier job.

A further object is to provide such an attachment which is adapted to hold packaged lumber in place while traveling over rough terrain.

A further object is to provide means in such an attachment to conform to the irregular contour of the logs to exert downward pressure thereon.

A further object is generally to improve the design and construction of devices for handling logs and the like.

The means by which the foregoing and other objects of the present invention are accomplished and the manner of their accomplishment will be readily understood from the following specification upon reference to the accompanying drawings, in which:

FIG. 1 is a fragmentary front elevational view of the attachment of the present invention.

FIG. 2 is a fragmentary sectional view taken as on the line II—II of FIG. 1, with parts broken away for purposes of illustration.

FIG. 3 is a reduced side elevational view of a log handling machine embodying the present invention, and shown in use to carry logs.

Referring now to the drawings in which the various parts are indicated by numerals, it is contemplated that the attachment or device 11 of the present invention be used with any suitable machine adapted to handle logs, lumber and the like. For example, a typical machine with which the device 11 is adapted to be used is shown in FIG. 3 wherein it will be seen a log handling machine 13 includes a self-propelled wheeled vehicle 15 having a mast 17 adjacent the forward part thereof upon which is slidably mounted a carriage 19 adapted to be moved upwardly and downwardly along mast 17 by suitable means to raise and lower the load A, which is illustrated in this figure as logs. Also, in the usual manner mast 17

is adapted to be power actuated to tilt the mast forwardly or rearwardly. In addition, machine 13 preferably includes the usual load supporting structure 21 attached to carriage 19 and extending forwardly therefrom, and which is preferably in the form of the usual pair of lift forks that are spaced laterally and rigidly attached adjacent the lower end of carriage 19 in the usual manner for upward and downward movement therewith.

Device 11 includes a load retainer 23 pivotally joined adjacent its inner end to carriage 19 for pivot about a horizontal axis as at 25. Retainer 23 includes in general a top portion 27, extending from adjacent carriage 19 outwardly, and an end portion 29 attached to the top portion adjacent the outer end thereof and depending therefrom. Top portion 27 is preferably constructed in the form of an open framework including spaced parallel side members 31 which are rigidly interconnected by a transverse pipe 33 extending therebetween and rigidly joined thereto. Side members 31 are the actual parts pivotally attached to carriage 19, as above described, and are preferably attached to the carriage as by means of pins 35 extending through aligned apertures in the inner ends of side members 31 and in the forwardly projecting portions 37 of carriage 19.

End portion 29 is preferably also of open framework construction and preferably includes a pair of spaced parallel legs 39 rigidly attached adjacent the upper ends thereof respectively to the side members 31 adjacent the outer ends thereof with the legs 39 preferably extending downwardly at a 90 degree angle relative to side members 31. Legs 39 and side members 31 are preferably, though not necessarily, of I-beam construction. A transverse brace member 41, preferably in the form of a pipe, rigidly interconnects legs 39. Brackets 43 are rigidly attached to side members 31 and legs 39 adjacent the junctures thereof to provide further rigidity to retainer 23. End portion 29 additionally includes a transverse portion 45 rigidly attached to and extending between the lower ends of legs 39. Transverse portion 45 is preferably tapered, as viewed from the side thereof as in FIGS. 2 and 3, towards the distal end thereof; and the lower outer edges 47, as viewed from the front thereof as in FIG. 1, extend downwardly and inwardly to a substantially horizontally disposed intermediate lower edge 49. Transverse portion 45 is formed by any suitable means and preferably includes a plate 51 attached to and extending across between legs 39 on the inner sides thereof and extending therebelow. The lower ends of legs 39 are preferably formed at an angle, as best seen in FIG. 2, to which is preferably rigidly attached a plate 53 extending thereacross, as best seen in FIGS. 1 and 2. Another plate 55 is attached in back-to-back relationship with plate 51 on the portion of plate 51 extending past legs 39. A plurality of vertical stiffener members 57 are fixedly attached to plates 53, 55 in laterally spaced relationship.

A pair of double acting jacks 59 are provided for pivoting retainer 23. Jacks 59 are preferably, though not necessarily, of a hydraulic type and are of the usual construction including piston rods 61 which are respectively pivotally attached to side members 31 by suitable means as pins 63 extending through aligned apertures in the end portions 65 of the piston rods and rotatably through lugs 67 fixedly attached to side members 31. The cylinders 69 of jacks 59 are respectively pivotally attached to carriage 19 for pivot about a substantially horizontal axis by suitable means, as pins 71 respectively extending through lugs 73 fixedly attached to the cylinder and through apertures in upstanding portions 75 fixedly attached to carriage 19. It will be understood that when jacks 59 are retracted retainer 23 will be moved thereby into a raised position, as for

example, like the one shown in broken lines in FIG. 3 wherein it will be seen an opening 77 is provided between the retainer and load supporting structure 21 so that the load A can be placed thereon or removed therefrom. Also, it will be understood that when jacks 59 are extended retainer 23 will be moved thereby into a lowered position, as shown in solid lines in FIG. 3, in which position retainer 23 with carriage 19 and supporting structure 21 establish an enclosure 79 defining a transverse opening or space 81 through which the load A extends and which enclosure completely surrounds the load and retains it on supporting structure 21. Thus, it will be seen in FIG. 3 that top portion 27, which is substantially horizontal and spaced above load supporting structure 21, forms the top of enclosure 79 and the load supporting structure 21 forms the bottom thereof. In addition, it will be understood that end portion 29 forms one end of enclosure 79 and the portion of carriage 19 opposite end portion 29 forms the other end so that a substantially rectangular enclosure 79 is established.

A pair of cables are angled across space 81 respectively from end portion 29 to top portion 27. Each of cables 83 and its related parts are substantially identical and the following description of one will suffice for both. The lower end of cable 83 is coupled to end portion 65 by suitable means, as for example, by a loop 85 being provided in the end of the cable which is coupled to an apertured lug 87 as by means of a shackle 89, with the lug in turn being fixedly attached to brace member 41. The other end of cable 83 is anchored to top portion 27 by suitable means, as for example, by extending the end of the cable through apertures, not shown, in pipe 33 and securing the end of the cable by means of a clamp 91 of known construction. A guide pulley 93 is rotatably mounted from one of side members 31 by suitable means. Cable 83 is led over guide pulley 93, and between the guide pulley and the point of attachment of the cable with top portion 27 the cable is doubled back upon itself to establish a bight 95. Another pulley 97 engages cable 83 in bight 95. Pulley 97 is rotatably mounted by suitable means on a movable block 99. A tension spring 101 is coupled adjacent one end to block 99 by suitable means, as for example, shackle 103 which extends through an aperture, not shown, in a projection 105 attached to block 99 and which shackle is engaged by the end of the spring. The opposite end of spring 101 is fixedly anchored to top portion 27 by suitable means, as for example, bolt means 107 attached to the end of the spring and extending through an aperture, not shown, in an anchor plate 109 fixedly attached to side member 31 adjacent the outer end thereof. An elongated plate 111 is attached to and projects laterally outwardly from side member 31 and preferably extends from adjacent pipe 33 to anchor plate 109. It will be understood that spring 101 urges block 99 to the right, as viewed in FIG. 2, which exerts a pull through pulley 97 on bight 95 to tend to lengthen the bight and pull cable 83 taut so that when unengaged by a load the portion 113 of cable 83 normally extends at an angle from end portion 29 to top portion 27, as best seen in FIG. 2. When retainer 23 is moved downwardly onto a load the cables 83 press against the load and hold it tightly.

From the foregoing description it will be understood that a very efficient and unique means is provided for holding a load, as logs or the like, on a supporting structure so that the logs or the like do not have to be evenly balanced thereon but are retained against tilting when going over rough terrain and the like. In addition, it will be understood that a unique cable arrangement provides a great deal of flexibility since it is not necessary for the logs to fill up completely space 81 but the logs will be compressed together by the cables even though not filling up the space, as best seen in FIG. 3. In other words, the logs will be held tightly even though a full load is not being carried. It will further be understood that a great deal of time and effort may be saved by the use of the present invention since the operator of the log handling machine 13 does not have to do a lot of maneuvering to get the logs exactly balanced.

Although the invention has been described and illustrated with respect to a preferred embodiment thereof, it is to be understood that it is not to be so limited since changes and modifications may be made therein which are within the full intended scope of this invention as hereinafter claimed.

I claim:

1. In a machine for handling logs and the like of the type including a carriage and a load supporting structure connected to said carriage and projecting forwardly therefrom, the improvement in said machine comprising a retainer having an inner end pivotally joined to said carriage above said supporting structure and pivotable between a lowered position and a raised position, said retainer including a top portion extending outwardly from adjacent said carriage and an end portion attached to said top portion adjacent the outer end thereof and depending therefrom, said end portion being substantially perpendicular to said top portion, when said retainer is in said lowered position said top portion extending substantially horizontally, when in said lowered position said retainer establishing with said carriage and said supporting structure an enclosure surrounding the load to prevent the load from falling off of said supporting structure, jack means attached adjacent one end to said carriage and attached adjacent the opposite end to said retainer for moving said retainer between said lowered and raised positions, when in said raised position said retainer establishing an opening between the lower end of said end portion and said supporting structure to permit the load to be moved from and to said supporting structure, cable means angled across from said end portion to said top portion and coupled adjacent opposite ends respectively to said portions in position to contact the load carried on said supporting structure, resilient means urging said cable towards a taut position whereby said cable is adapted to exert pressure on said load when pressed thereagainst to hold the load tightly on said supporting structure.

2. In a machine for handling logs and the like of the type including a carriage and a load supporting structure connected to said carriage and projecting forwardly therefrom, the improvement in said machine comprising a retainer having an inner end pivotally joined to said carriage above said supporting structure and pivotable between a lowered position and a raised position, said retainer including a top portion extending outwardly from adjacent said carriage and an end portion attached to said top portion adjacent the outer end thereof and depending therefrom, when in said lowered position said retainer establishing with said carriage and said supporting structure an enclosure surrounding the load to prevent the load from falling off of said supporting structure, jack means attached adjacent one end to said carriage and attached adjacent the opposite end to said retainer for moving said retainer between said lowered and raised positions, when in said raised position said retainer establishing an opening between the lower end of said end portion and said supporting structure to permit the load to be moved from and to said supporting structure, at least one cable angled across from said end portion to said top portion and coupled adjacent opposite ends respectively to said portions in position to contact the load carried on said supporting structure, resilient means urging said cable towards a taut position whereby said cable is adapted to exert pressure on said load when pressed thereagainst to hold the load tightly on said supporting structure, said resilient means including a guide pulley rotatably mounted on said retainer and engaging said cable, said cable being doubled back between said guide pulley and one

of the anchored ends of said cable to establish a bight, a movable pulley block, a pulley rotatably mounted on said block and engaging said bight of said cable, and spring means coupled adjacent one end to said retainer and adjacent the opposite end to said block for urging said bight in a direction towards the lengthening thereof and thereby tightening said cable.

3. In a machine for handling logs and the like of the type including a carriage and a load supporting structure connected to said carriage and projecting forwardly therefrom, the improvement in said machine comprising a retainer having an inner end pivotally joined to said carriage above said supporting structure and pivotable between a lowered position and a raised position, said retainer including a top portion extending outwardly from adjacent said carriage and an end portion attached to said top portion adjacent the outer end thereof and depending therefrom, when in said lowered position said retainer establishing with said carriage and said supporting structure an enclosure surrounding the load to prevent the load from falling off of said supporting structure, jack means attached adjacent one end to said carriage and attached adjacent the opposite end to said retainer for moving said retainer between said lowered and raised positions, when in said raised position said retainer establishing an opening between the lower end of said end portion and said supporting structure to permit the load to be moved from and to said supporting structure, a pair of laterally spaced cables angled across from said end portion to said top portion and respectively coupled adjacent the opposite ends thereof to said portions in position to

contact the load carried on said supporting structure, a pair of resilient means respectively urging said cables towards tautness whereby said cables are adapted to exert pressure on said load when pressed thereagainst to hold the load tightly on said supporting structure, said pair of resilient means each including a guide pulley rotatably mounted on said retainer and engaging one of said cables, said one of said cables being doubled back between said guide pulley and one of the anchored ends of said one of said cables to establish a bight, a movable pulley block, a pulley rotatably mounted on said block and engaging said bight, and spring means coupled adjacent one end to said retainer and adjacent the opposite end to said block for urging said bight in a direction toward the lengthening thereof and thereby tightening said one of said cables.

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