Oct. 5, 1948. A. F. HEINSS 2,450,798

WRECKING TRUCK BOOM SUPPORT

Filed Nov. 5, 1946

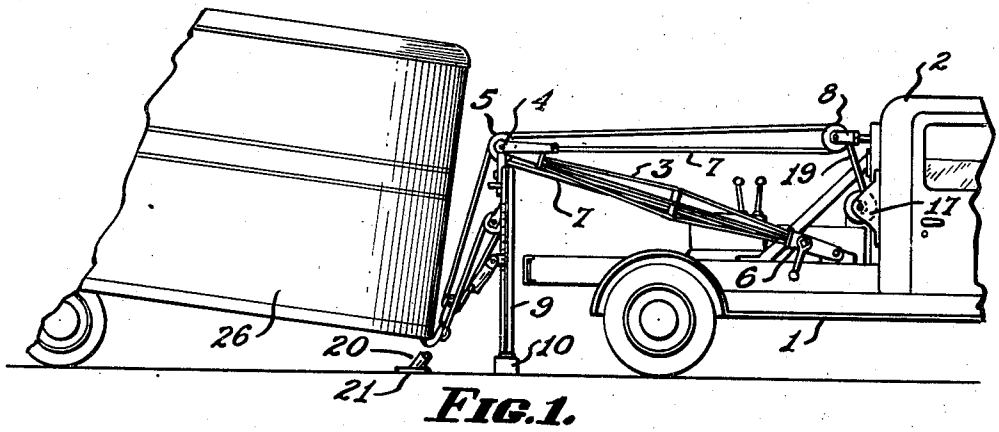


FIG. 1.

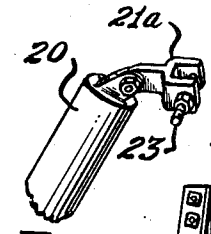


FIG. 6.

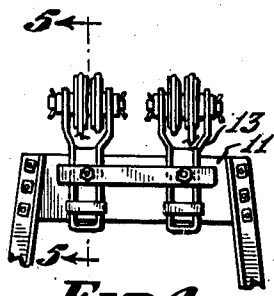


FIG. 4.

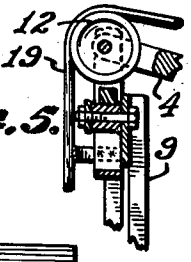


FIG. 5.

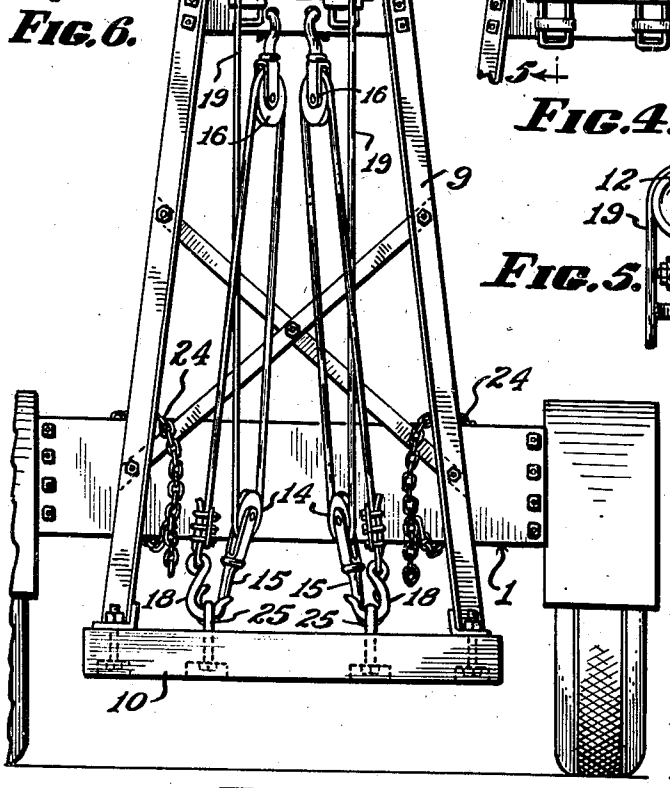


FIG. 2.

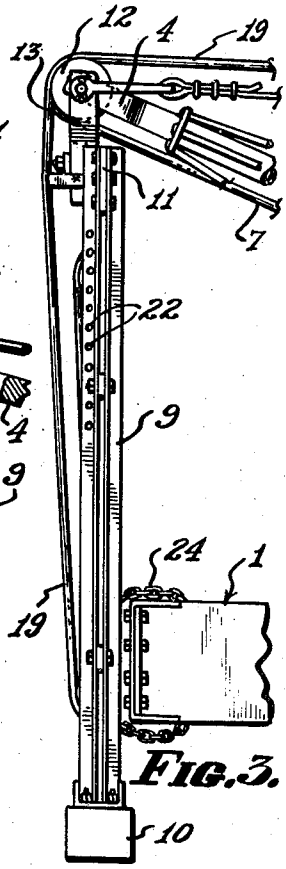


FIG. 3.

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WRECKING TRUCK BOOM SUPPORT

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4 Claims. (Cl. 214—86)

1

My invention relates to frames for reinforcing and supporting the peak end of the boom in wrecking trucks.

In several well-known makes of wrecking trucks, or as they are called in the trade "wreckers," an automobile body has mounted on the frame back of the driver's seat cab, a split A-type boom pivoted at the front end of the body. The boom arms extend upwardly and at an angle toward the back of the body where the boom end or peak normally projects beyond the rear end of the body. The elevation of the boom is adjustable by means of lines or cables which pass over a sheave in the peak and the tension of which is adjusted by means of a winch normally operated by a crank.

When the wrecker lifts a load, such as a wrecked truck or trailer, cables which run through sheaves at the peak of the boom are attached to the load, and the load is lifted by means of a power winch mounted on the body of the truck.

As is apparent from the above description, if the load is very heavy, the downward pull on the end or peak of the boom is extremely great. Inasmuch as the lifting action in a wrecker of this type is fulcrumed on the rear walls of the wrecker, which are usually quite a distance forward of the peak of the boom, it is only the weight of the truck at its point of center of gravity multiplied by the power arm of the lever represented by the distance of the truck's center of gravity forwardly from the rear wheels as related to the weight of the load multiplied by the weight arm represented by the horizontal distance of the boom peak rearwardly of the rear wheels, which prevents the truck from turning over backwardly.

From the above it is apparent that a truck of the above type may not lift loads over a certain predetermined weight.

It is an object of my invention to provide an auxiliary support for the peak of the boom which permits a relatively light truck to lift an extremely heavy weight and far beyond the weight liftable without the use of my support.

It is a further object of my invention to provide a supporting frame for the peak of the boom which has attached thereto a hoist which permits a definite mechanical advantage in the hoist of the truck and permits the power winch lifting the load to raise up a far greater weight than is mechanically possible without my hoist.

A further object of my invention is to provide a supporting frame for the peak of the boom having all of the above advantages, but which is

2

rugged and strong and relatively inexpensive to make, and which may be easily carried by the wrecker when in transit and removed or detached from the wrecker body and placed in position when the wrecker is lifting a heavy load.

These and other objects of my invention, which will be set forth hereinafter or will be apparent to one skilled in the art upon reading these specifications, I accomplish by that certain construction and arrangement of parts, of which I shall now describe an exemplary embodiment. Reference is made to the drawings which form a part hereof and in which:

Figure 1 is a side elevation of a wrecker using my novel support in the lifting of a heavy trailer body.

Figure 2 is an end elevation of the body of the wrecker showing my novel auxiliary mounted on the wrecker for carrying.

Figure 3 is a side elevation of the auxiliary support shown in Figure 2.

Figure 4 is a rear elevation of the peak of my auxiliary support showing the sheaves in load lifting position.

Figure 5 is a cross-section taken on the section line 5—5 of Figure 4.

Figure 6 is a detailed view of the anti-slipping or spacing bar attachment for auxiliary support shown in Figure 1.

Briefly, in the practice of my invention, I provide a support in the shape of an A-frame with the peak attached to the peak of the boom and with the base, when in operation, resting on the ground. The lifting line for the load runs through a block and tackle hoist, one end of which is attached to the frame and the other to the load, thus providing a mechanical advantage between the force exerted by the winch and the force applied to the load. The block and tackle hoist is made up of sheaves and hooks in such a manner that it may be attached to the load to provide the above described mechanical advantage or may be attached to the load so as to eliminate the mechanical advantage for use with very light loads.

The auxiliary support is attached to the peak of the boom on the wrecker and when the wrecker is in transit, is lifted up by the boom peak and removably attached to the rear of the body of the wrecker.

Referring to the drawings, in Figure 1 the rear end of the wrecker body 1 has mounted pivotally thereon, behind the cab 2, a boom 3. The boom 3 is normally of the A-type comprising two individual booms and terminating in a peak 4. The

peak usually has two boom elevating sheaves 5 journaled thereon, as shown in Figure 1. The boom elevating mechanism comprises a winch 6 operated by a crank and operating a line 7 which runs from the winch 6 over the sheave 5 forwardly and over a sheave 8 which is fastened to a brace behind the cab of the structure, rearwardly to the peak of the boom 4 where it is made fast. From this it is apparent that when the winch 6 is operated to play out or take in the line 7, the angle of the boom 3 will be varied, and the peak 4 will be moved upwardly or downwardly.

My auxiliary support for the peak 4 of the boom 3 comprises an A-shaped frame 9 having a relatively heavy ground block 10. While I have shown the frame of the support as A-shaped, this is no limitation on my invention since other shapes may be preferred. However, in my exemplary embodiment, the sides of the frame are formed of angle irons bolted together with a relatively heavy strap at the peak or top 11, sandwiched therebetween. At the peak 11 of my auxiliary support, I provide at least one sheave 12. In the exemplary embodiment shown, I have illustrated two sets of sheaves 12, since I preferably provide two separate hoists operated by separate winches.

The sheaves 12 are mounted on the peak 11 of my frame by means of forked journals 13 which are permanently attached to the peak 11 of the frame. I preferably so mount the forked journals as to permit relative vertical movement between them and the peak 11 of my frame, limited, however, as shown in Figures 2 and 4.

The sheaves 12 are also incorporated into the peak 4 of the boom 3 (see Figures 3 and 5).

When my frame is in use, it is lowered to the ground, as shown in Figure 1, by manipulating the angle of the boom 3 and so that the sheaves 12 will be directly supported by the peak 11 of my auxiliary support, the base 10 of which rests upon the ground.

A block and tackle hoist is attached to my supporting frame and consists of a sheave 14 to which is attached a hook 15 and a sheave 16 either permanently fastened to the peak 11 of my frame or hooked thereto, as shown in Figure 2. The tackle line 19 runs from a power winch 17 mounted on the wrecker through appropriate sheaves and over the sheave 12, around the sheave 14, around the sheave 16, and terminates in a hook 18 which is fastened to its free end.

When my auxiliary supporting frame is in use, I preferably mount thereon a spacing bar or anti-slipping bar 20. I preferably apply two such bars, one associated with each side of the frame 9. The bars 20 terminate in a forked clamp 21, which may be positioned and clamped to the sides of the frame 9 and the other end of which terminates in either a foot 21, which rests against the ground, or an abutment which may be positioned against the load. In the exemplary embodiment shown, I have provided a series of holes 22 in the angle iron forming the sides of my frame 9 and a screw bolt 23 associated with the clamp 21. This permits the mounting of the spacing bars by slipping the clamp 21 over the web 21 of the angle iron forming the sides and screwing the bolt 23 in the selected hole 22.

When the wrecker is in transit, my supporting frame is carried by the peak 4 of the boom 3, which is elevated to lift the base 10 of the frame off the ground. In order to prevent swinging of the frame, I preferably chain the frame to the rear of the wrecker by chains 24, and the hooks 18 and 15 associated with the block and tackle hoist are inserted under staples 25 mounted in the base 10. This prevents the device from rattling around and it is shown in this position in Figures 2 and 3.

The operation of my auxiliary frame in taking the load is as follows. The wrecker is backed up to the load, which in the drawings is depicted by the trailer body 26. The chains 24 are removed permitting the frame 9 to hang from the peak 4 of the boom 3. The boom 3 is lowered by the use of the winch 6 until the base 10 of the frame 9 rests upon the ground to the rear of the wrecker. With a very heavy load, such as a loaded trailer body 26, hooks 15 and 18 are removed from the staples 25 and attached to the load 26. Spacer or anti-slipping bars 20 are placed in position both to assist in supporting the frame 9 and to prevent the load 26 from riding up and against the frame 9 as it is raised.

In order to raise the load 26, the power winch or winches 17 is started, which takes up on the hoist line 19. Inasmuch as both hooks 18 and 15 are attached to the load 26, while the other sheave 16 carrying the line 19 remains attached to the peak 11 of the frame 9, the combination of the sheaves 16, 14 and 12 acts as a block and tackle hoist having a mechanical advantage of 3-to-1 and the great proportion of the weight of the load 26 is borne by the vertical, auxiliary frame 9, which in turn is supported on the ground.

In the event that the load 26 is relatively light and a mechanical advantage of 3-to-1 is not necessary or desired, hook 18 alone is fastened to the load and hook 15 remains in the staple 25 attached to the bottom 10 of the frame 9. In this case the winch 17 will have a direct pull on the load 26 and there will be no mechanical advantage incorporated in the hoist.

While I have shown a hoist with a mechanical advantage of 3, which may be so attached to the load as to change the mechanical advantage, I do not intend to limit myself to a hoist with a mechanical advantage of 3-to-1, since I may use more sheaves which would result in a higher mechanical advantage.

It is to be understood that the boom 3 may be of a different type from that shown and may be mounted differently from that shown upon the wrecker. It may be designed so as to project to the side of the wrecker as well as to the rear. The boom 3 may be an A-type boom having two separate and distinct hoist lines operated by separate power winches, or it may have a single hoise line.

From the above it is apparent that I have devised an auxiliary frame which, when in position, supports the peak of the boom upon the ground and takes the great proportion of the load off of the wrecking truck entirely, thus preventing its tilting backwardly. It is also apparent that due to my hoist arrangement with the mechanical advantage gained thereby, I can lift a much greater load than is permissible with a given winch and a direct line to the load.

It is to be understood that modification may be made in my invention without departing from the spirit thereof, and I do not intend to limit myself otherwise than as pointed out in the claims which follow.

I claim:

1. In combination with the body of an automobile vehicle of the wrecker type having a boom the peak of which extends beyond the body, an auxiliary support for the peak of the boom com-

prising a frame the peak of which is attached to the peak of the boom and the base of which is supported on the ground when in operative position, a block and tackle hoist having one block attached to the frame and the other block adapted to be attached to a load, the line of the tackle running to a winch on the body of the vehicle, so that in raising the load at least a portion of the weight of the same will be borne by the frame, and spacing bars attached to the frame and blocking the tendency of the load to ride against the frame.

2. In combination with the body of an automobile vehicle of the wrecker type having a boom the peak of which extends beyond the body, an auxiliary support for the peak of the boom comprising a frame the peak of which is attached to the peak of the boom and the base of which is supported on the ground when in operative position, a block and tackle hoist having one block attached to the frame and the other block adapted to be attached to a load, the line of the tackle running to a winch on the body of the vehicle, so that in raising the load at least a portion of the weight of the same will be borne by the frame, and spacing bars attached to the frame and blocking the tendency of the load to ride against the frame, said spacing bars being adjustable on and removable from the frame.

3. In combination with the body of an automotive vehicle of the wrecker type having an A-boom pivotally mounted at the front of the body, the peak of which extends up at an angle at the rear of the body, an auxiliary support for the peak of the A-boom comprising an A-frame provided with means for demountably supporting the same at the rear of the body, and said auxiliary support provided with means for adjustably retaining anti-slipping bars to prevent the load slipping against the truck body or the frame during use.

4. In combination with the body of an automobile vehicle of the wrecker type having a boom the peak of which extends beyond the body, an auxiliary support for the peak of the boom comprising a frame the peak of which is attached to the peak of the boom and the base of which is supported on the ground when in operative position, a block and tackle hoist consisting of a sheave mounted on the peak of the boom, a sheave having a hook adapted to be attached to either the load or the frame, a second sheave attached to the frame near its peak and a hook adapted to be attached to the load or the frame and a tackle line running from a winch on the body over the above enumerated sheaves and fastened to the last mentioned hook, so the mechanical advantage of the hoist may be changed by either fastening one or both hooks to the load.

ARTHUR F. HEINSS.

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