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P. E. CHISLER

3,299,628

MASTER LINK FOR SUSPENSION DEVICE AND MANUFACTURE THEREOF

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Fig. 1.

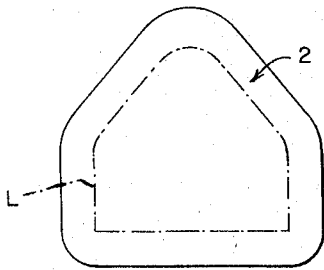


Fig. 2.

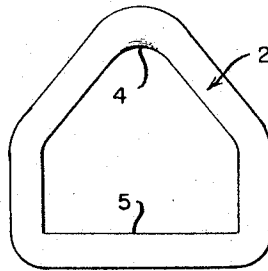


Fig. 3.

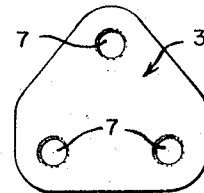


Fig. 4.

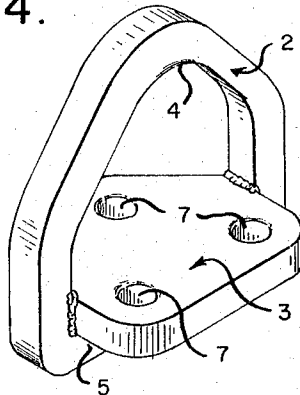


Fig. 5.

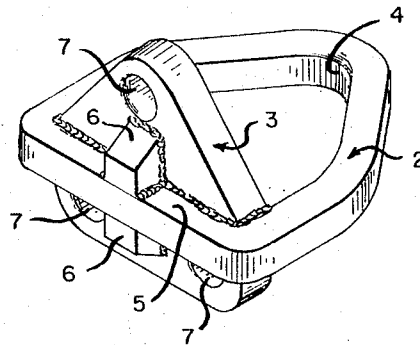


Fig. 6.

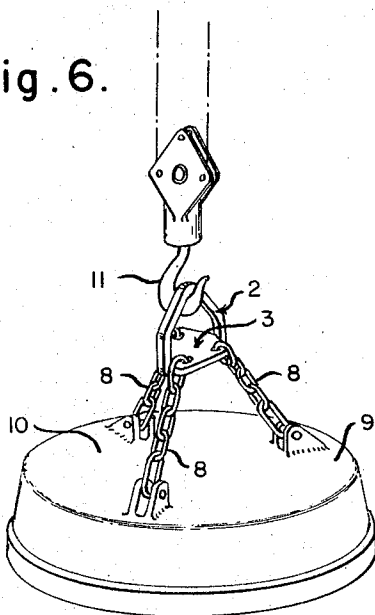
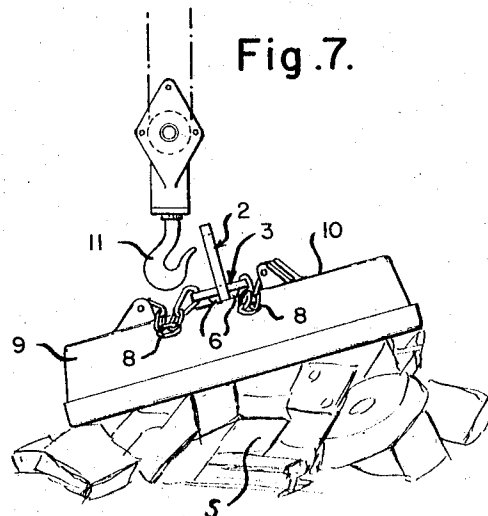


Fig. 7.



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MASTER LINK FOR SUSPENSION DEVICE AND MANUFACTURE THEREOF

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11 Claims. (Cl. 59—84)

This invention relates to a master link for a suspension device and the manufacture thereof. It has to do particularly with a master link of the type used for carrying from a crane hook a device suspended by suspension elements such as lengths of chain or cable. A prime example of the use of a master link of the type to which my invention relates is in the suspending of an electromagnet such as is used for piling and loading scrap, lifting and dropping a "headache ball," etc.

While my invention has a wide variety of other uses it will be described for purposes of explanation and illustration as embodied in a master link for carrying a magnet by means of three suspension chains and practiced in the manufacture of such a master link. It is common to employ a master link having an eye through which a crane hook passes and having means for connecting thereto three suspension chains. The tops of the suspension chains are connected to the master link and the bottoms thereof are connected to the magnet so that the magnet can be raised, lowered and shifted sidewise by the crane.

From time to time it may be necessary to temporarily discontinue use of the magnet to permit the crane to be employed elsewhere, after which the crane returns and picks up the magnet and the work is resumed. It is desirable for the master link at such times to have its eye disposed substantially vertically to enable the crane operator to move the crane hook into the eye of the master link through manipulation of the crane without the aid of a helper working on the ground or without himself getting down to insert the crane hook into the eye of the master link. Various attempts have been made to provide master links which when set down will be disposed with the eye for receiving the crane hook extending vertically but despite considerable complexity and expense such master links have not been practical and have not satisfactorily solved the problem.

I provide a master link which effectively solves the problem above mentioned and which when set down is disposed with the eye for receiving the crane hook extending substantially vertically. I also have devised a novel yet practical and economical method of manufacturing such a master link.

I provide a master link for a suspension device comprising a base portion adapted to carry suspension elements such as chains and having a substantially flat face upon which the master link is adapted to be set down and a portion having therein an opening constituting an eye adapted to receive a crane hook, the second mentioned portion being disposed substantially perpendicular to said substantially flat face of the base portion so that when the master link is set down on said substantially flat face the second mentioned portion extends upwardly with its eye in generally upright position to be adapted to receive a crane hook solely through manipulation by the crane operator without the necessity of introduction of the crane hook into the eye of the master link by a workman on the ground. I preferably provide three holes in the base portion of the master link arranged generally as the apices of a triangle for the connection to the master link of suspension elements such as chains. The substantially flat face of the base portion of the master link is desirably in the form of a cross whose center is approximately in the

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vertical axis of the master link when set down on the substantially flat face.

I further provide a master link for a suspension device comprising a generally upright member having therein an opening constituting an eye adapted to receive a crane hook and a generally horizontal member seated in the opening of the generally upright member and projecting laterally therefrom and fastened in fixed position relatively to the generally upright member so as in effect to be integral therewith, the generally horizontal member having means for attaching suspension elements thereto. The generally upright member is preferably a plate having formed therein a generally flat bottomed opening constituting an eye adapted to receive a crane hook and the generally horizontal member may be a plate seated on the generally flat bottom of the opening of the generally upright plate. The master link preferably has means disposed beneath the generally horizontal member whose bottom is substantially coplanar with the bottom of the generally upright member to constitute a substantially flat face upon which the master link is adapted to be set down. The generally horizontal member may have lugs welded to the bottom thereof at opposite sides of the generally upright member and whose bottoms are substantially coplanar with the bottom of the generally upright member to constitute a substantially cross-shaped substantially flat face upon which the master link is adapted to be set down.

I further provide a method of making a master link for suspension devices comprising cutting a blank out of the interior of a metal plate leaving the metal plate in the form of an eye adapted to receive a crane hook, turning the blank to a position with its general plane substantially perpendicular to the general plane of the metal plate and seated in the eye of the metal plate, fastening the blank to the metal plate in its new position seated in the eye of the metal plate with its general plane substantially at right angles to the general plane of the metal plate so as in effect to be integral with the metal plate and providing the blank with means for attaching suspension elements thereto. The eye preferably has an apex and an opposed generally flat bottom and the blank may be seated upon the generally flat bottom of the plate with its general plane substantially perpendicular to the general plane of the plate. Lugs may be welded to the bottom of the blank, the bottoms of the lugs being substantially coplanar with the bottom of the plate to constitute a substantially flat face upon which the master link is adapted to be set down.

Other details, objects and advantages of the invention will become apparent as the following description of a present preferred embodiment thereof and a present preferred method of practicing the same proceeds.

In the accompanying drawings I have shown a present preferred embodiment of the invention and have illustrated a present preferred method of practicing the same in which

FIGURE 1 is a plan view of a metal plate of generally symmetrical pentagonal shape out of which my master link is made, showing in chain lines the cutting line for cutting a blank out of the plate;

FIGURE 2 is a plan view of the plate after the blank has been cut out;

FIGURE 3 is a plan view of the blank with three holes formed therein;

FIGURES 4 and 5 are isometric views of my master link;

FIGURE 6 is an isometric view of my master link supported by a crane hook and in turn supporting an electromagnet through three chains; and

FIGURE 7 is an elevational view showing how my master link is disposed with its eye in generally upright position when set down by the crane hook.

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Referring now more particularly to the drawings, there is shown a metal plate designated generally by reference numeral 2 out of which a blank designated generally by reference numeral 3 is cut, leaving the plate 2 in the form of an eye with an apex 4 at one end and a flat bottom 5 at the opposite end. The sides of the eye are vertical near the bottom and incline toward each other above the vertical lower portions. The blank 3 has the same outline as the opening forming the eye in the plate 2. The blank 3 may be cut out by any appropriate method, as, for example, by use of an oxyacetylene cutting torch. Both the plate and the blank are shown as being of generally symmetrical pentagonal shape. The cutting line where the blank 3 is cut out of the plate 2 is indicated by chain lines and marked L in FIGURE 1.

When the blank 3 has been cut out of the plate 2 it is turned at right angles and set upon the flat bottom 5 of the plate as shown in FIGURES 4 and 5 and welded to the plate. Lugs 6 are welded to the bottom of the blank 3 at opposite sides of the flat bottom of the plate 2, the bottoms of the lugs 6 being coplanar with the flat bottom of the plate 2. The lugs 6 are on opposite sides of the plate 2 and form therewith a face of generally cross shape upon which the master link thus formed is adapted to be set down. Such face is substantially planar and perpendicular to the plate 2 containing the eye for receiving the crane hook.

The blank 3 has three holes 7 bored therethrough arranged generally as the apices of a triangle for connection to the master link of suspension elements such as chains 8, although suspension elements of other forms such as lengths of cable may be employed. The chains 8 carry a magnet such as an electromagnet 9 which may have a generally flat top 10. The magnet is adapted to be raised, lowered and moved sidewise by a crane whose hook 11 enters the eye in the plate 2 of the master link.

When the crane is to be disengaged from the master link carrying the magnet the crane hook is lowered, resulting in first setting down the magnet (the magnet is shown in FIGURE 7 set down on a pile S of a metal scrap) and subsequently setting down the master link upon the flat top of the magnet. The flat bottom of the master link seats upon the flat top of the magnet resulting in the eye of the master link projecting generally vertically upwardly, even when the magnet is set down on an irregular surface such as a pile of scrap, providing for unhooking of the crane hook from the eye of the master link and subsequent reintroduction of the crane hook into the eye of the master link solely through manipulation by the crane operator by means of his controls without the necessity of introduction of the crane hook into the eye of the master link by a workman on the ground. The chains 8 assist in maintaining the master link in upright position atop the magnet as they tend to feestoon down the sides of the magnet exerting a stabilizing force upon the master link to maintain it seated in upright position atop the magnet. When the crane hook is to be reinserted into the eye of the master link this can easily be accomplished by the crane operator by actuation of his controls to cause the hook to enter the master link without assistance.

Thus the master link effectively accomplishes its purpose yet is of extremely simple and economical structure and may be made at low cost without the use of special tools or equipment.

While I have shown and described a present preferred embodiment of the invention and have illustrated a present preferred method of practicing the same it is to be distinctly understood that the invention is not limited thereto but may be otherwise variously embodied and practiced within the scope of the following claims.

I claim:

1. A master link for a suspension device comprising a base portion adapted to carry suspension elements such as chains, the master link having a substantially flat face

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spaced substantially below the base portion upon which the master link is adapted to be set down and a portion having therein an opening constituting an eye adapted to receive a crane hook, the second mentioned portion being disposed substantially perpendicular to said substantially flat face of the master link so that when the master link is set down on said substantially flat face the second mentioned portion extends upwardly with its eye in generally upright position to be adapted to receive a crane hook solely through manipulation by the crane operator without the necessity of introduction of the crane hook into the eye of the master link by a workman on the ground.

2. A master link for a suspension device comprising a base portion having three holes therein arranged generally as the apices of a triangle for the connection to the master link of suspension elements such as chains, the master link having a substantially flat face spaced substantially below the base portion upon which the master link is adapted to be set down and a portion having therein an opening constituting an eye adapted to receive a crane hook, the second mentioned portion being disposed substantially perpendicular to said substantially flat face of the master link so that when the master link is set down on said substantially flat face the second mentioned portion extends upwardly with its eye in generally upright position.

3. A master link for a suspension device comprising a base portion adapted to carry suspension elements, the master link having a substantially flat face in generally the form of a cross spaced substantially below the base portion upon which the master link is adapted to be set down and a portion having therein an opening constituting an eye adapted to receive a crane hook, the second mentioned portion being disposed substantially perpendicular to said substantially flat face of the master link so that when the master link is set down on said substantially flat face the second mentioned portion extends upwardly with its eye in generally upright position, the center of said substantially flat face being approximately in the vertical axis of the master link when set down on said substantially flat face.

4. A master link for a suspension device comprising a generally upright member having therein an opening constituting an eye adapted to receive a crane hook and a generally horizontal member seated in the opening of the generally upright member and projecting laterally therefrom and fastened immovably relatively to the generally upright member so as in effect to be integral therewith, the generally horizontal member having means for attaching suspension elements thereto.

5. A master link for a suspension device comprising a generally upright plate having formed therein a generally flat bottomed opening constituting an eye adapted to receive a crane hook and a generally horizontal plate seated on the generally flat bottom of the opening of the generally upright plate and projecting laterally therefrom and fastened immovably relatively to the generally upright plate so as in effect to be integral therewith, the generally horizontal plate having means for attaching suspension elements thereto.

6. A master link for a suspension device comprising a generally upright plate having formed therein an opening having an upward apex and a generally flat bottom constituting an eye adapted to receive a crane hook and a generally horizontal plate having the shape and dimensions of the opening in the generally upright plate seated on the generally flat bottom of the opening of the generally upright plate and projecting laterally therefrom at both sides of the generally upright plate and fastened in fixed position relatively to the generally upright plate so as in effect to be integral therewith, the generally horizontal plate having bores therein at opposite sides of the generally upright plate for attaching suspension elements to the generally horizontal plate.

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7. A master link for a suspension device comprising a generally upright member in the form of a closed hollow figure constituting an eye adapted to receive a crane hook and a generally horizontal member seated in the generally upright member and projecting laterally therefrom and fastened in fixed position relatively to the generally upright member so as in effect to be integral therewith, the generally horizontal member having means for attaching suspension elements thereto, the master link having means disposed beneath the generally horizontal member whose bottom is substantially coplanar with the bottom of the generally upright member to constitute a substantially flat face upon which the master link is adapted to be set down.

8. A master link for a suspension device comprising a generally upright member having therein an opening constituting an eye adapted to receive a crane hook and a generally horizontal member seated in the opening of the generally upright member and projecting laterally therefrom and fastened in fixed position relatively to the generally upright member so as in effect to be integral therewith, the generally horizontal member having means for attaching suspension elements thereto, the generally horizontal member having lugs welded to the bottom thereof at opposite sides of the generally upright member and whose bottoms are substantially coplanar with the bottom of the generally upright member to constitute a substantially cross-shaped substantially flat face upon which the master link is adapted to be set down.

9. A method of making a master link for suspension devices comprising cutting a blank out of the interior of a metal plate leaving the metal plate in the form of an eye adapted to receive a crane hook, turning the blank to a position with its general plane substantially perpendicular to the general plane of the metal plate and seated in the eye of the metal plate, fastening the blank to the metal plate in its new position seated in the eye of the metal plate with its general plane substantially at right angles to the general plane of the metal plate so as in effect to be integral with the metal plate and providing the blank with means for attaching suspension elements thereto.

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10. A method of making a master link for suspension devices comprising cutting a blank out of the interior of a metal plate leaving the metal plate in the form of an eye having an apex and an opposed generally flat bottom adapted to receive a crane hook, turning the blank to a position with its general plane substantially perpendicular to the general plane of the metal plate and seated upon the generally flat bottom of the eye of the metal plate and projecting laterally at both sides of the metal plate, fastening the blank to the metal plate in its new position seated upon the generally flat bottom of the metal plate with its general plane substantially at right angles to the general plane of the metal plate and projecting laterally at both sides of the metal plate so as in effect to be integral with the metal plate and forming in the blank bores for attaching suspension elements thereto at opposite sides of the metal plate.

11. A method of making a master link for suspension devices comprising cutting a blank out of the interior of a metal plate leaving the metal plate in the form of an eye adapted to receive a crane hook, turning the blank to a position with its general plane substantially perpendicular to the general plane of the metal plate and seated in the eye of the metal plate, fastening the blank to the metal plate in its new position seated in the eye of the metal plate with its general plane substantially at right angles to the general plane of the metal plate so as in effect to be integral with the metal plate and welding to the bottom of the blank lugs whose bottoms are substantially coplanar with the bottom of the plate to constitute a substantially flat face upon which the master link is adapted to be set down.

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