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J. B. NOVAK

3,350,129

PLATE HANDLING DEVICE

Filed May 12, 1965

FIG. 1.

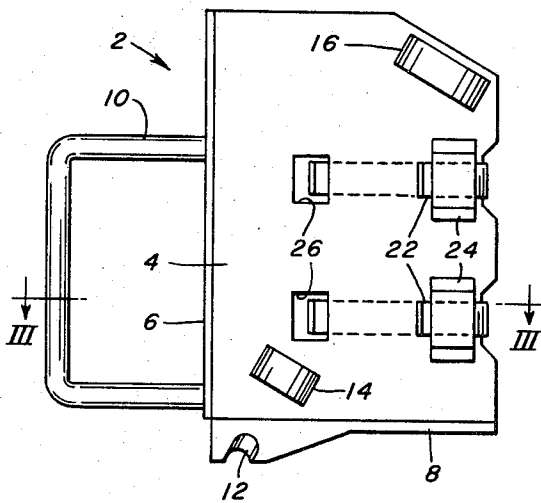


FIG. 2.

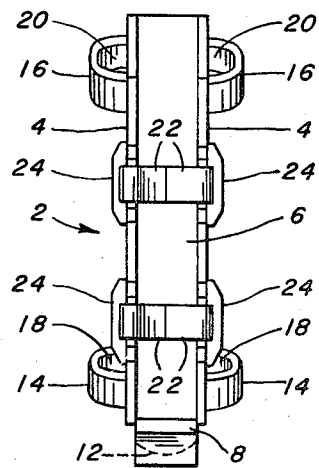


FIG. 3.

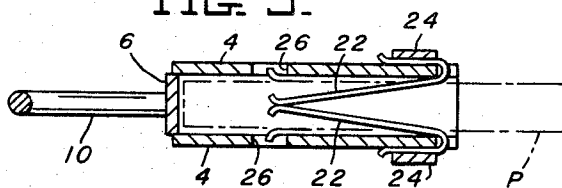


FIG. 5.

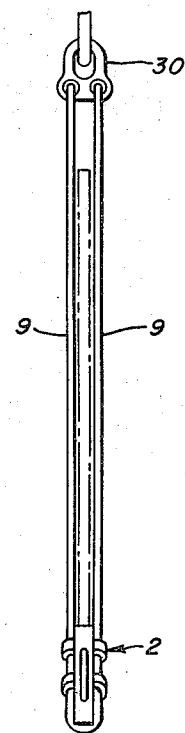
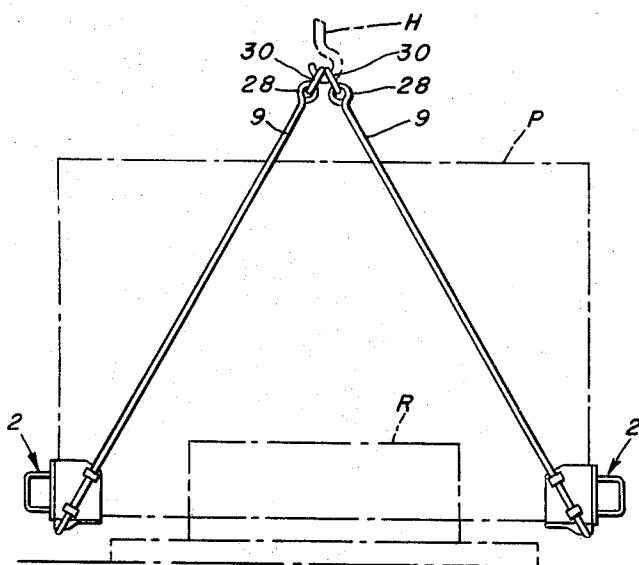


FIG. 4.



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3,350,129

PLATE HANDLING DEVICE

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 1 Claim. (Cl. 294-67)

ABSTRACT OF THE DISCLOSURE

Device comprises a rigid, rectangular pocket formed with two side walls, an end wall, and a bottom. The device is adapted, when applied to a bottom corner of a metal plate, to be engaged and lifted by a sling cable suspended from a crane hook. Resilient holding means are provided inside the pocket to maintain it positively attached to a plate before a lifting force is applied.

The present invention relates generally to material-handling equipment and, more particularly, to a novel and unique corner-gripping device adapted to be applied to heavy plate material to facilitate the handling thereof.

Prior to my invention, considerable difficulty was encountered in lifting, transporting and storing large, heavy metal plates in upright or vertical position. Usually, C-clamps or mechanical gripping devices suspended from a crane hook were used to handle such material. These devices were designed to apply a clamping force on the metal plate as an upward force was applied to the devices by the chain or cable by which they were attached to a crane hook. This manner of handling plates did not prove completely satisfactory for various reasons. One of the most important of such reasons was the danger involved. When using such devices, it was necessary for one or more workmen to manually hold the devices in place on the plate until a lifting force was applied by the crane hook and cables. At times, the lifting force was not applied evenly so that one of the gripping devices would not tighten on the plate and the plate would be lifted unevenly or would fall, causing a hazardous situation for workmen in the area. Frequently, when the plate was set down on edge after being transported to a location, thereby causing elimination of tension on the supporting cables, the gripping devices would become loose, permitting the plate to fall and, thus, create a major safety hazard. Also, the prior-art gripping devices were prone to slippage if oil or scale were present on the surface of the plate being gripped.

Accordingly, it is the primary object of my invention to provide an improved and unique plate-lifting device for positively engaging the bottom corners of a plate for lifting the same in a vertical position.

It is a more specialized object of my invention to provide an improved lifting device as set forth by the above object which is in the shape of a rigid, rectangular pocket formed with two side walls, an end wall and a bottom, and which is adapted, when applied to a bottom corner of a plate, to be engaged and lifted by a sling cable suspended from a crane hook.

It is another object of my invention to provide an improved lifting device of the character set forth above including resilient holding means which function to maintain the device positively attached to the plate before a lifting force is applied.

These and other objects will become more apparent after referring to the following specification and attached drawing, in which:

FIGURE 1 is a front elevational view of the plate-handling device of the invention;

FIGURE 2 is a side elevational view looking at the right side of FIGURE 1;

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FIGURE 3 is a cross-sectional view taken along the line III-III of FIGURE 1 with parts omitted for clarity;

FIGURE 4 is a front elevational view showing devices of the invention in operative position on a plate during lifting; and

FIGURE 5 is a side elevational view of FIGURE 4.

Referring more particularly to the drawing, reference numeral 2 designates generally the device of the invention which is substantially a rectangularly shaped pocket having two spaced, parallel side walls 4, a wall 6 extending between walls 4 at one end and a closed bottom 8. The top of the pocket is open, as is the end opposite the end wall 6. A handle 10 is rigidly affixed to the outer surface of the end wall 6 whereby the device can be manipulated.

The bottom 8 is provided with a protuberance at one end having a groove 12 formed therein for accommodating a sling cable 9, as will become apparent.

A cable guide 14 is provided on the outer surfaces of the side walls 4 immediately above the groove 12. Another cable guide 16 is provided on each side wall 4 adjacent its upper edge, diametrically opposed to and aligned with guides 14. The opening 18 of each guide 14 is slightly larger than the sling cable 9, while the opening 20 of each guide 16 is enlarged and elongated sufficiently to allow for free adjustment or minor misalignment of the sling cable 9 in operation.

Two pairs of flat leaf springs 22, bent in a substantially J-shape, are secured to the side walls 4 by means of clamping brackets 24, which may be welded or otherwise rigidly secured to the outer surfaces of the side walls 4. The short leg of each of the springs 22 is bent around the edge of one of the side walls and is secured by a clamping bracket 24. The long leg of each spring 22 extends inwardly between the side walls 4, as best shown in FIGURE 3. The tension of springs 22 urges the ends of the long legs of each pair toward each other. When a plate is engaged in the pocket formed between the two side walls, the leaf springs exert a resilient force on the plate to hold the device 2 thereon, as shown in broken lines in FIGURE 3. Relief holes 26 are provided through the side walls 4 for receiving the bent outer ends of the long legs of the springs so that the springs will lie flat against the inner surfaces of the walls 4 when a plate of maximum thickness is being handled, as shown in phantom outline in FIGURE 3.

Each of the devices 2 is used in conjunction with a sling cable 9, which is first inserted in the groove 12 at a point intermediate its length; and then one end thereof is threaded through the cable guides 14 and 16 on one side wall and the other end is threaded through the pair of cable guides on the other side wall. An eye 28 is then formed on each end of the cable in the conventional manner to permit its attachment to a crane hook.

Referring now to FIGURES 4 and 5, in operation to lift a plate P from a raised, vertical-plate storage rack R, a device 2 of the invention with a sling cable attached thereto is picked up by its handle 10 and is manually placed on the two lower corners of the plate P. The ends of the sling cables 9 are then brought up on either side of the plate P and affixed to a crane hook H by means of shackle-bolts 30 or similar means through the eyes formed at the ends of the cables. The tension force exerted by springs 22 holds the devices 2 in place on the plate P while the sling cables are being attached to the crane hook.

The crane hook is then raised, causing the sling cables to grow taut and lift the plate P from the storage rack. The plate can then be carried by the crane hook to the desired destination.

When the plate P is finally set down, thus relieving the tension on the sling cables 9, to remove the devices 2

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of the invention from the plate P, it is only necessary to pull them from the plate by grasping the handles 10 and exerting a slight pulling force. The two devices remain attached to the crane hook, suspended by the sling cables 9, and can thus be carried back to the storage rack for use in picking up another plate.

While one embodiment of my invention has been shown and described, it will be apparent that other adaptations and modifications may be made without departing from the scope of the following claim.

I claim:

A device for lifting plate comprising a pocket adapted to receive a corner of a plate, said pocket including spaced side walls, a bottom, and a wall at one end, said pocket

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being open at the top and at the end opposite said one end, a leaf spring in said pocket adapted to be deflected by the corner of a plate when the pocket is applied thereto, and at least a pair of sling-guide eyes spaced across the width of said side walls externally thereof.

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