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J. A. KING

2,670,985

SHEET LIFTING MECHANISM

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FIG. 1.

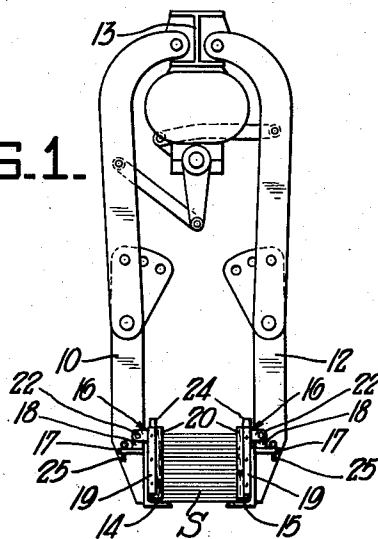


FIG. 2.

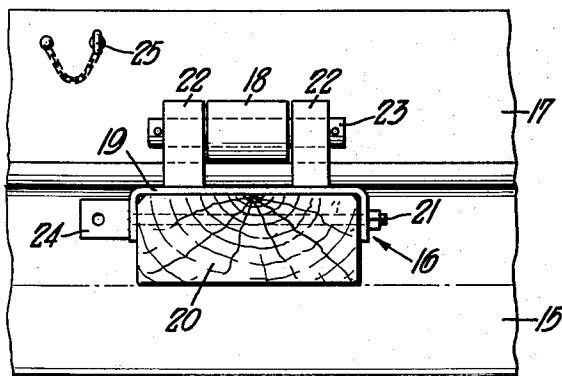


FIG. 3.

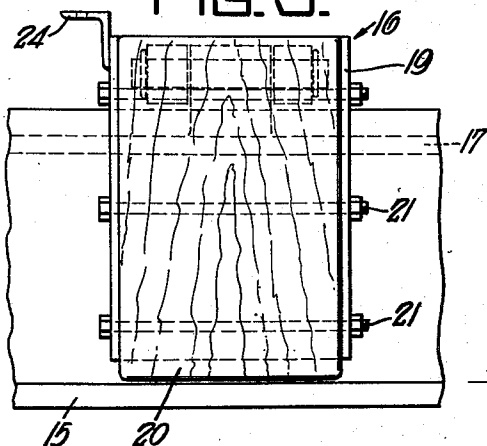
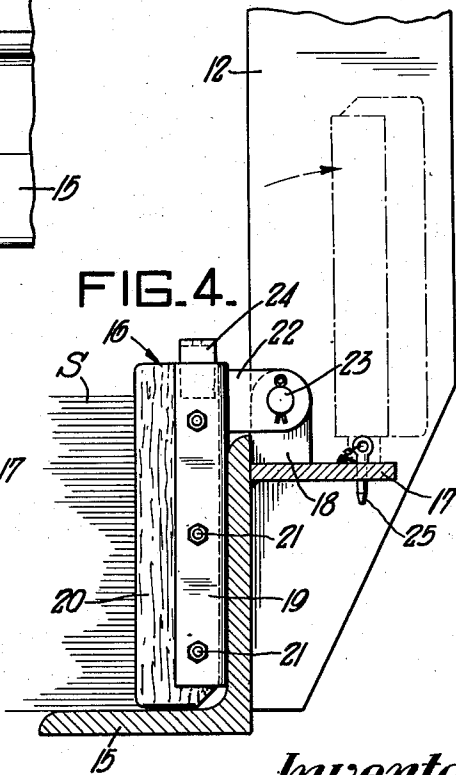


FIG. 4.



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SHEET LIFTING MECHANISM

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4 Claims. (Cl. 294-106)

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This invention relates to improvements in mechanisms for lifting piles of metal sheets.

Conventionally such mechanisms comprise two series of jointed arms which are hinged at their upper ends to the opposite sides of a supporting structure. The lower ends of these arms carry angle irons which have opposed inwardly projecting flanges adapted to engage under a pile of sheets for supporting it. The whole mechanism normally is carried by a suitable overhead crane. The supporting structure carries means for closing and opening the arms and thus engaging and disengaging loads. The extremes to which said arms can be opened and closed of course are limited and determine the width range of sheets which the mechanism can handle. However, the flanges on the angle irons project far enough inwardly to support sheets which are too narrow to be engaged at their side edges by the vertical legs of the angle irons and the arms. The mechanism cannot safely handle sheets of such narrow width unless fillers are inserted at the side edges of the sheets to prevent slippage.

An object of the present invention is to provide sheet lifting mechanisms of the type described which have improved filler devices permanently attached thereto and readily movable into operative or inoperative positions as needed.

A more specific object is to provide sheet lifting mechanisms which have improved fillers permanently hinged with respect to the angle irons and quickly movable about their hinged joints to operative positions within the angle irons and inoperative positions clear of the space between the angle irons.

In accomplishing these and other objects of the invention, I have provided improved details of structure, a preferred form of which is shown in the accompanying drawing, in which:

Figure 1 is an end elevational view of a sheet lifting mechanism which is equipped with fillers in accordance with the present invention;

Figure 2 is a fragmentary top plan view of one of the fillers;

Figure 3 is a fragmentary side elevational view of a filler; and

Figure 4 is a fragmentary end elevational view of a filler.

Figure 1 shows a sheet lifting mechanism which comprises two series of jointed arms 10 and 12 hinged at their upper ends to a supporting structure 13. At their lower ends the arms carry opposed angle irons 14 and 15, the horizontal flanges of which project inwardly and are adapted

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to engage under and support a pile of sheets S. Apart from the fillers, hereinafter described, the lifting mechanism can be of any standard or desired construction, and therefore is not described in greater detail.

In accordance with the present invention, each of the angle irons 14 and 15 carries one or more hinged filler devices 16. As best shown in Figures 2, 3 and 4 the back of the vertical leg of each angle iron has a reinforcing plate 17 welded thereto, which plate carries upstanding hinge brackets 18, one for each filler device. Each filler device includes a metal backing plate 19 of channel shape in plan and a block 20, preferably of hardwood, fixed within said backing plate by bolts 21. The back face of the backing plate carries a pair of hinge brackets 22 which are connected to one of the hinge brackets 18 by a pin 23.

The filler devices can be moved to operative positions shown in solid lines in Figure 4 in which their blocks 20 are situated immediately within the opposed inner faces of the vertical legs of the angle irons 14 and 15. Thus they adapt the lifting mechanism for handling relatively narrow piles of sheets that otherwise would leave open spaces between the legs of the angle irons and the side edges of the sheets. The filler devices cannot slip out of place since they are permanently hinged with respect to the angle irons.

When not needed, the filler devices can be swung upwardly to inoperative positions shown in dot-dash lines in Figure 4 in which they overlie the reinforcing plates 17 and thus are clear of the space between the angle irons. One end of the backing plate 19 of each filler device preferably carries a small clip angle 24 which is positioned against the upper face of the reinforcing plate when the filler device is in its inoperative position. A keeper pin 25 is chained to the reinforcing plate adjacent each filler device and is adapted to be inserted through mating apertures in the clip angle 24 and the reinforcing plate for holding the filler device in its inoperative position.

From the foregoing description it is seen that the present invention affords a simple safety device that assures proper support for piles of narrow sheets in a lifting mechanism. The device is readily installed on existing lifting mechanisms without otherwise altering their structure.

While I have shown and described only a single embodiment of the invention, it is apparent that

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modifications may arise. Therefore, I do not wish to be limited to the disclosure set forth but only by the scope of the appended claims.

I claim:

1. In a sheet lifting mechanism which includes a supporting structure, two series of arms hinged at their upper ends to opposite sides of said supporting structure, and angle irons fixed to the lower ends of said arms and having inwardly projecting flanges adapted to engage under and support a pile of sheets, the combination with said angle irons of filler devices comprising blocks adapted to occupy operative positions immediately inside said angle irons, and hinge means attaching said blocks with respect to said angle irons and enabling said blocks to be moved to inoperative positions clear of the space between said angle irons.

2. In a sheet lifting mechanism which includes a supporting structure, two series of arms hinged at their upper ends to opposite sides of said supporting structure, and angle irons fixed to the lower ends of said arms and having inwardly projecting flanges adapted to engage under and support a pile of sheets, the combination with said angle irons of filler devices comprising blocks adapted to occupy operative positions immediately inside said angle irons, hinge means attaching said blocks with respect to said angle irons and enabling said blocks to be moved to inoperative positions clear of the space between said angle irons, and fastening means for holding said blocks in their inoperative positions.

3. In a sheet lifting mechanism which includes a supporting structure, two series of arms hinged at their upper ends to opposite sides of said supporting structure, angle irons fixed to the lower ends of said arms and having inwardly projecting flanges adapted to engage under and support a pile of sheets, and reinforcing plates fixed to the

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outside of said angle irons, the combination with said angle irons of filler devices comprising blocks adapted to occupy operative positions immediately inside said angle irons, hinge means attaching said blocks to said reinforcing plates and enabling said blocks to be moved to inoperative positions in which they overlie said reinforcing plates and are clear of the space between said angle irons, and fastening means for holding said blocks in their inoperative positions.

4. In a sheet lifting mechanism which includes a supporting structure, two series of arms hinged at their upper ends to opposite sides of said supporting structure, angle irons fixed to the lower ends of said arms and having inwardly projecting flanges adapted to engage under and support a pile of sheets, and reinforcing plates fixed to the outside of said angle irons, the combination with said angle irons of filler devices comprising backing plates hingedly connected to the tops of said reinforcing plates, blocks attached to the faces of said backing plates, said blocks being adapted to occupy operative positions immediately inside said angle irons and being movable about the hinged connections to inoperative positions in which they overlie said reinforcing plates and are clear of the space between said angle irons, and fastening means for holding said blocks in their inoperative positions.

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