

Aug. 26, 1947.

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2,426,569

COIL TILTER

Filed July 19, 1945

2 Sheets-Sheet 1

FIG. 1.

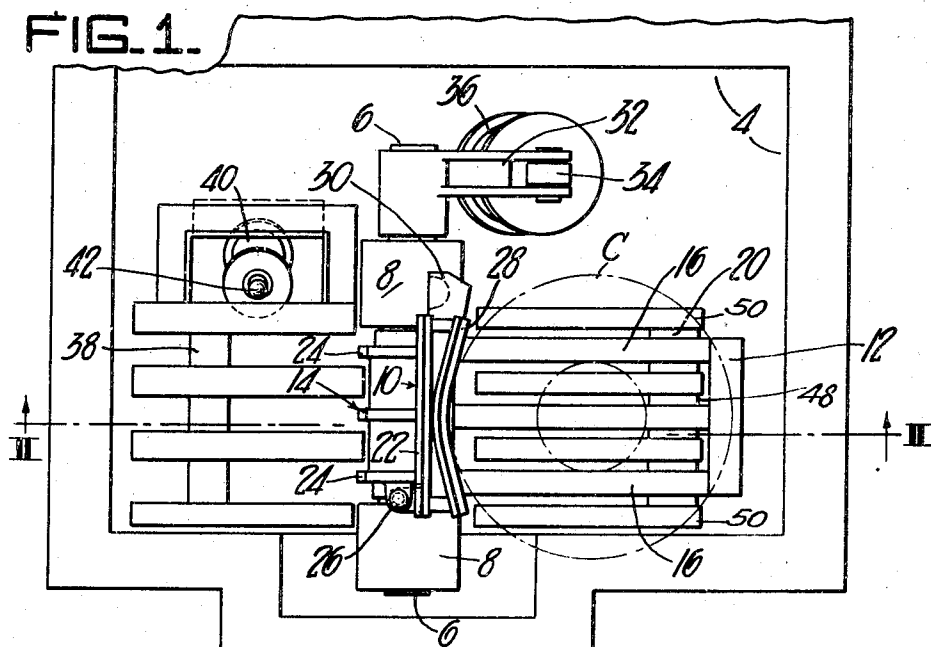
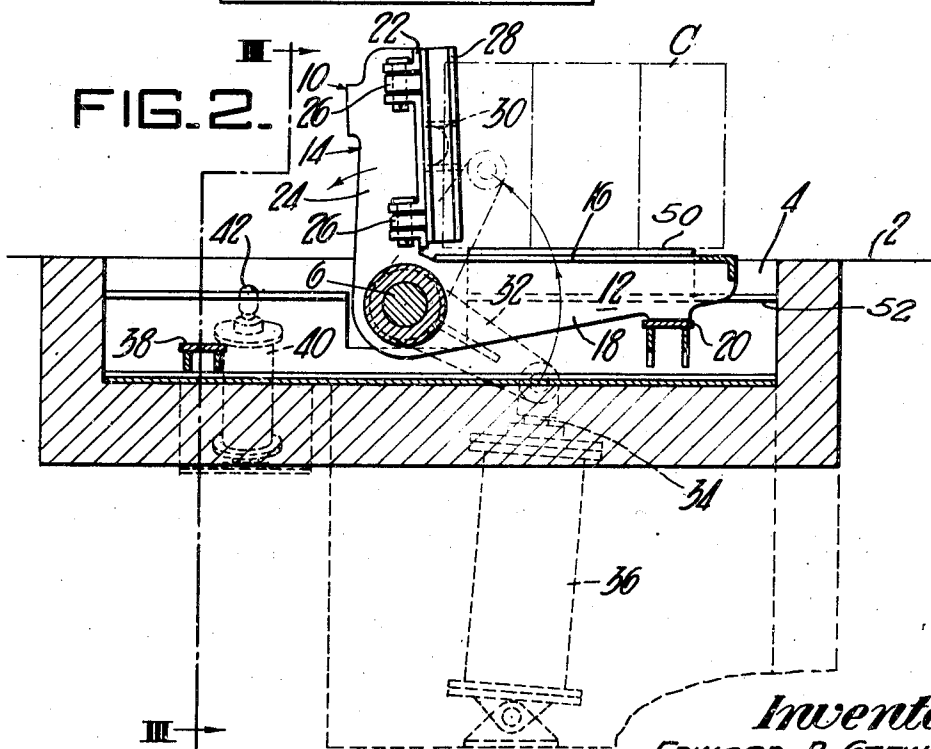


FIG. 2.



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FIG. 3.

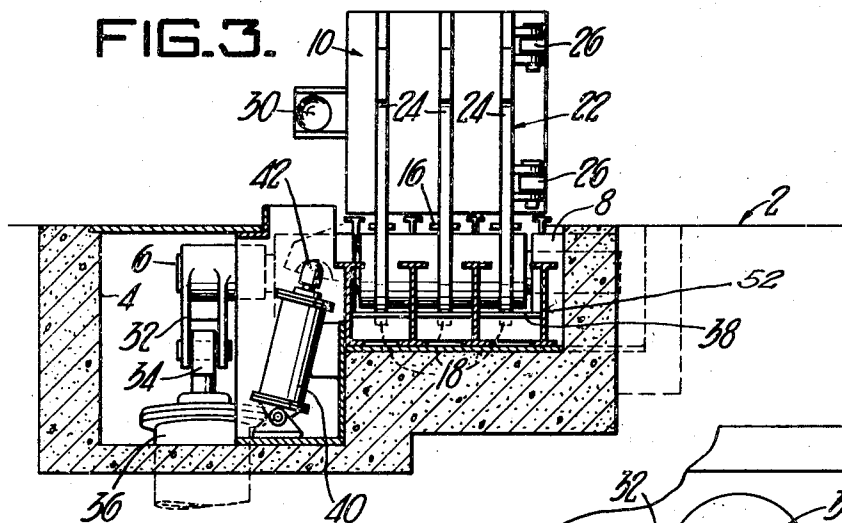


FIG. 4.

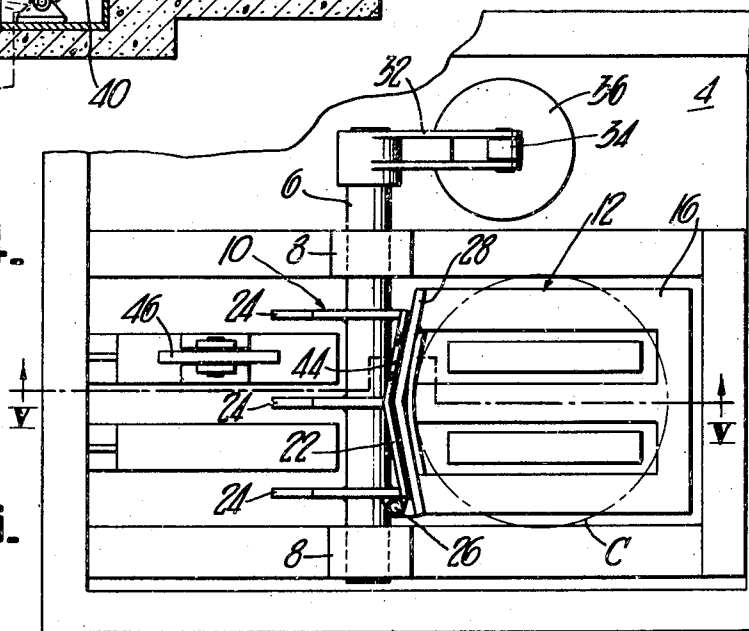


FIG. 6.

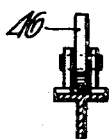
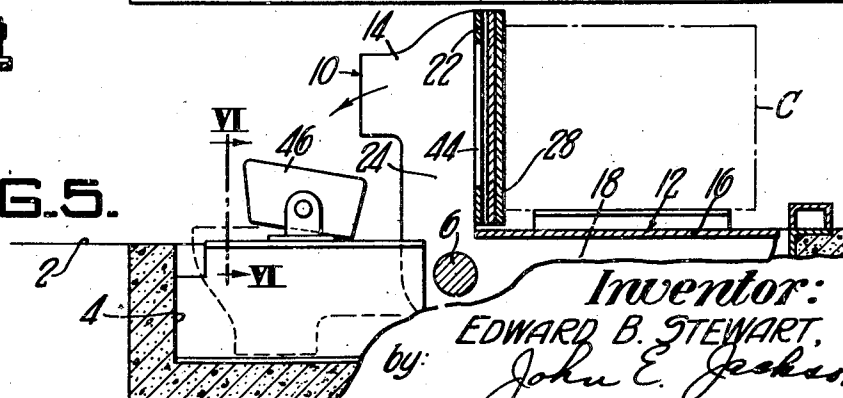


FIG. 5.



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UNITED STATES PATENT OFFICE

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COIL TILTER

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3 Claims. (Cl. 214—130)

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This invention relates to a coil tilter and more particularly to such a tilter for use in tilting a coil of steel strip from a vertical to a horizontal position, or vice versa.

In the processing of strip it is often stored in coil form between various processes and ordinarily the coils are arranged in an upright position on a pile several coils high. In processing the strips the coils are ordinarily arranged with their axes horizontal. The coil handling mechanism for carrying coils from the storage pile to the processing equipment is the carriage type which grips the coils internally and supports them in a horizontal position. An electromagnet suspended from a crane is used to lift the coils from the piles and rest them on the floor in a vertical position. It is then necessary to tilt the coil into a horizontal position before it can be picked up by the coil carriage. In some cases it is necessary to return a coil arranged in a horizontal position to the pile, in which case it must be tilted back to a vertical position.

It is therefore an object of my invention to provide a coil tilter which will tilt the coil from a vertical to a horizontal position.

Another object is to provide such a device which will also tilt the coil from a horizontal to a vertical position.

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

Figure 1 is a plan view of one embodiment of my invention;

Figure 2 is a view taken on the line II—II of Figure 1;

Figure 3 is a view taken on the line III—III of Figure 2;

Figure 4 is a plan view of a modification;

Figure 5 is a sectional view taken on the line V—V of Figure 4; and

Figure 6 is a view taken on the line VI—VI of Figure 5.

Referring more particularly to the drawings, reference numeral 2 indicates a mill floor which has a pit 4 therein. Arranged in the pit is a shaft 6 mounted in bearings 8. Mounted on the shaft 6 between the bearings 8 is an L-shaped support 10 which has a normally substantially horizontal leg 12 and a normally substantially vertical leg 14. The leg 12 is made from a plate 16 welded to reinforcing ribs 18 which rest on a cross-beam 20 when the leg 12 is in horizontal position. It will be noted that the top of the leg 12 is at substantially floor level. The vertical leg 14 is made from a plate 22 welded to rein-

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forcing ribs 24. Pivotaly mounted on the leg 14 by means of hinges 26 is a cradle 28. On the side opposite the hinges 26 the cradle 28 is provided with a bracket 30, the purpose of which will appear later. The shaft 6 carries a lever arm 32 at one end which is connected to the piston rod 34 of a pivotally mounted air cylinder 36. On the side of the pit opposite beam 20 there is a second cross-beam 38 and a second pivotally mounted air cylinder 40 which has a cap 42 mounted on the end of its piston rod.

When it is desired to tilt a coil from a vertical to a horizontal position, the coil C is placed in a vertical position on the horizontal leg 12. Since the coil is of great weight and is often dropped a short distance onto the horizontal leg, it is desirable to provide means to absorb the shock caused by loading the coils on the device. For this purpose the plate 16 is made up in a plurality of sections with openings 48 therebetween. Extending upwardly through each of these openings above the plate 16 is a bar 50 which is supported on an I-beam 52. Since the top of the bars 50 extend above the top of the horizontal leg 12, the shock due to loading coils onto the tilter from the crane magnet is absorbed by the bars 50 and I-beams 52, thus preventing damage to the support 10. Air is then supplied to the cylinder 36 to rotate the support 10 through an angle of approximately 90°, in which position the leg 14 will be resting on the cross-beam 38. During the movement the coil C will slide down against the cradle 28 and will rest thereon in a horizontal position at the end of the movement. Air is then supplied to the cylinder 40 to raise the piston rod cap 42 into contact with the bracket 30. Continued movement of the piston rod raises the end of the cradle and rotates it about the hinges 26 to discharge the coil C from the tilter. When it is desired to tilt a coil from a horizontal to a vertical position, the coil is placed on the cradle 28 while the leg 14 is in a horizontal position and the cap 42 in its lowered position. Air is then applied to the top of cylinder 36 to rotate the shaft 6 and return the support 10 to its normal position.

Figures 4, 5 and 6 disclose a second embodiment of the invention in which the coil is automatically discharged from the tilter when moved from a vertical to a horizontal position. This embodiment is identical with the first embodiment, except that the vertical leg 14 has an opening 44 therethrough on the side opposite the hinges 26. In place of the cylinder 40 there is provided a plate 46 which is in line with the opening 44. As

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the leg 14 approaches a horizontal position, the bottom of the cradle 28 contacts plate 46 which extends up through opening 44 to automatically rotate the cradle about the hinges 26 to discharge the coil from the tilter. This embodiment is not suitable for tilting the coil from a horizontal to a vertical position. While the legs 12 and 14 are described as horizontal and vertical legs it will be understood that they may vary considerably from the horizontal and vertical without destroying the utility of the invention.

While two embodiments of my invention have been shown and described, it will be apparent that other adaptations and modifications may be made without departing from the scope of the following claims.

I claim:

1. A coil down tilter comprising a pivotally mounted L-shaped support, said support having a normally substantially horizontal leg for supporting a coil with its axis perpendicular thereto and a normally substantially vertical leg, said horizontal leg having openings therein, a stationary coil support extending upwardly through said openings above the top of said normally horizontal leg, a cradle pivotally mounted on said vertical leg, means for rotating the support about its pivot to move the normally horizontal leg to a vertical position and the normally vertical leg to a horizontal position, said movement tilting the coil from a vertical position on the normally horizontal leg to a horizontal position on the cradle, and means for rotating the cradle about its pivot to discharge the coil from the tilter.

2. A coil down tilter comprising a pivotally mounted L-shaped support, said support having a normally substantially horizontal leg for supporting a coil with its axis perpendicular thereto and a normally substantially vertical leg, said horizontal leg having openings therein, a stationary coil support extending upwardly through said openings above the top of said normally horizontal leg, a cradle pivotally mounted on said vertical leg, means for rotating the support about

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its pivot to move the normally horizontal leg to a vertical position and the normally vertical leg to a horizontal position, said movement tilting the coil from a vertical position on the normally horizontal leg to a horizontal position on the cradle, a bracket on said cradle extending beyond the vertical leg on the side opposite the pivot of the cradle, and means for contacting said bracket to raise the end of the cradle when it is in substantially a horizontal position to rotate it about its pivot and discharge the coil from the tilter.

3. A coil down tilter comprising a pivotally mounted L-shaped support, said support having a normally substantially horizontal leg for supporting a coil with its axis perpendicular thereto and a normally substantially vertical leg, said horizontal leg having openings therein, a stationary coil support extending upwardly through said openings above the top of said normally horizontal leg, a cradle pivotally mounted on said vertical leg, means for rotating the support about its pivot to move the normally horizontal leg to a vertical position and the normally vertical leg to a horizontal position, said movement tilting the coil from a vertical position on the normally horizontal leg to a horizontal position on the cradle, said vertical leg having an opening therethrough on the side opposite the pivot of the cradle, and means adapted to extend through said opening to contact the cradle when it is in substantially a horizontal position and rotate it about its pivot to discharge the coil from the tilter.

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