Sept. 9, 1958 A. MELLER, JR 2,851,177

COIL RECEIVING APPARATUS

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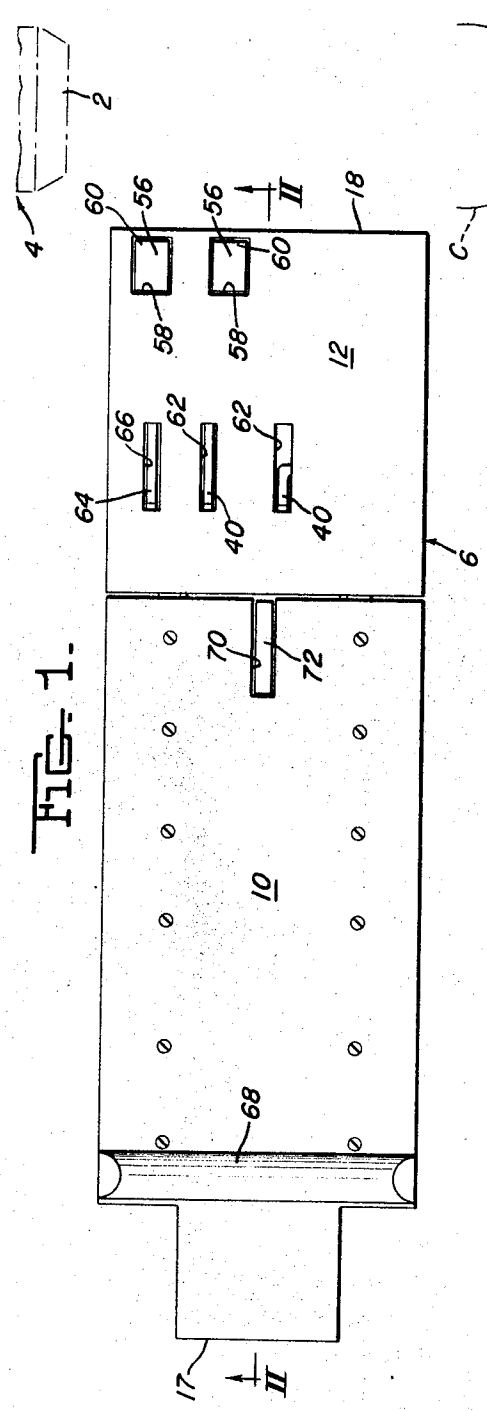


FIG. 1.

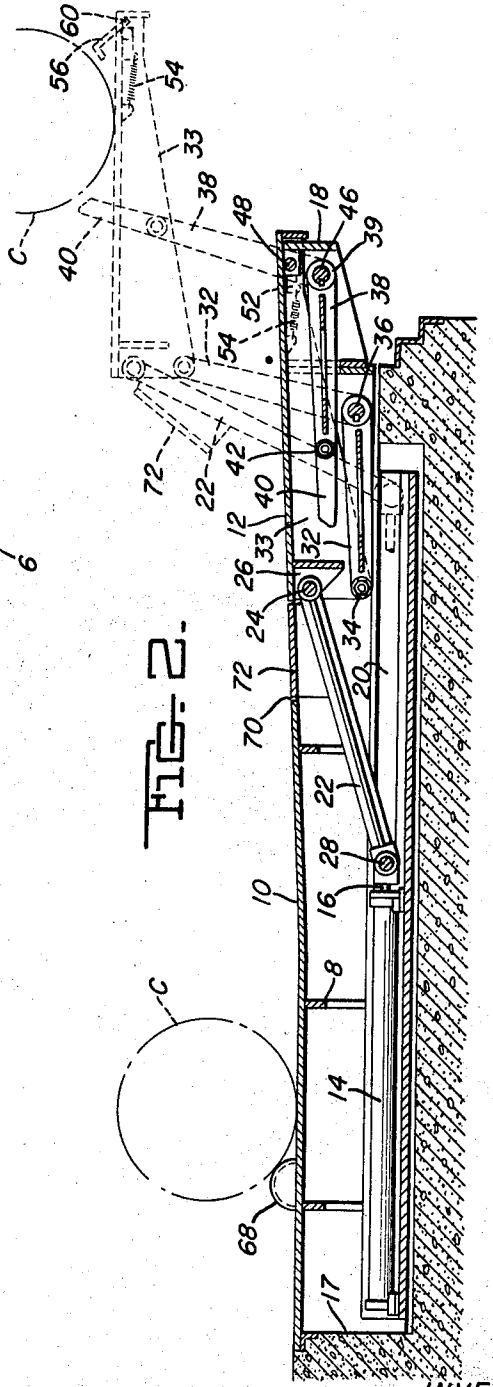


FIG. 2.

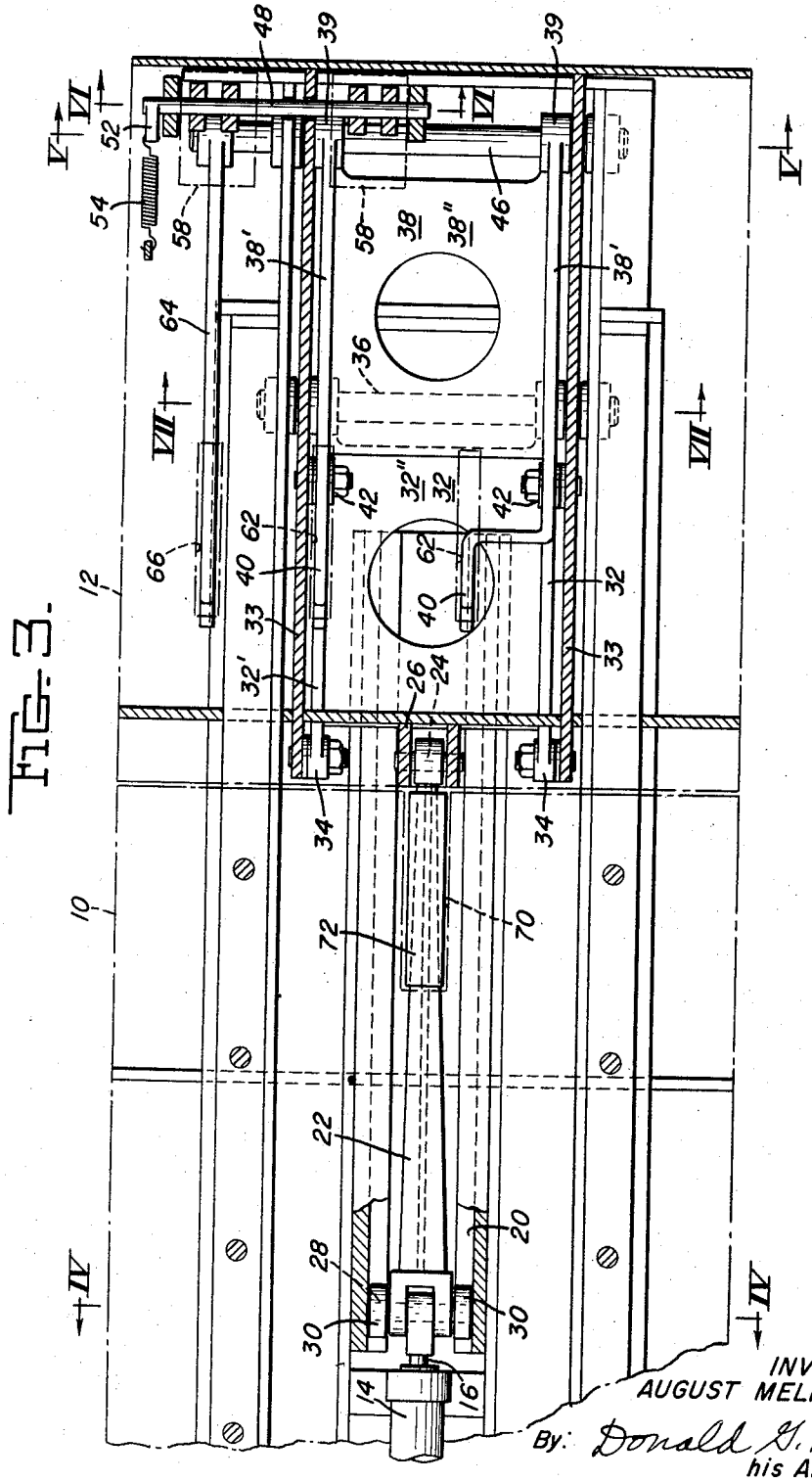
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FIG. 3.



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FIG. 4.

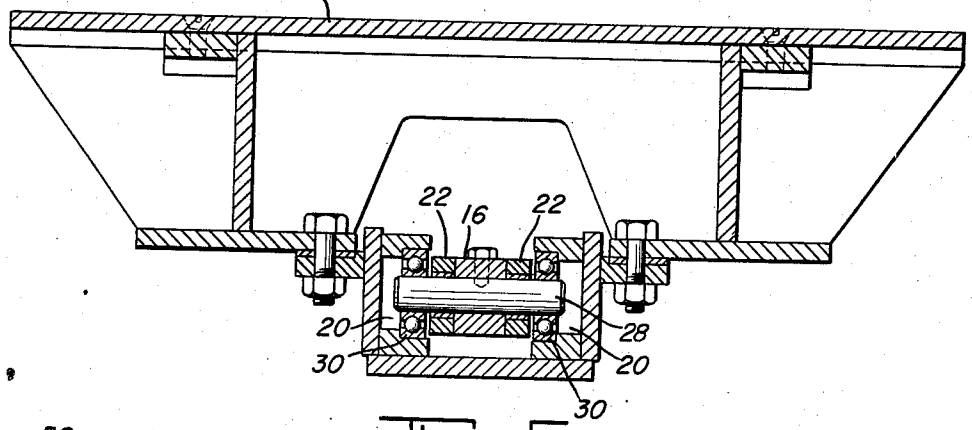


FIG. 5.

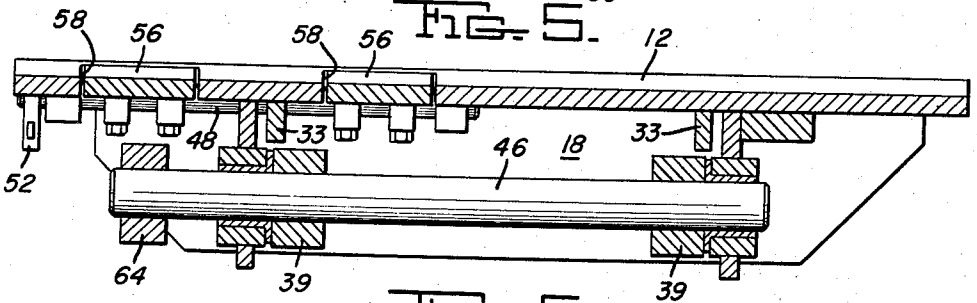


FIG. 6.

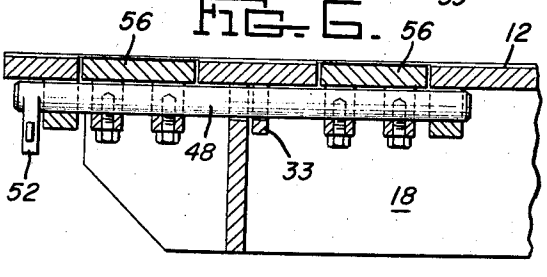
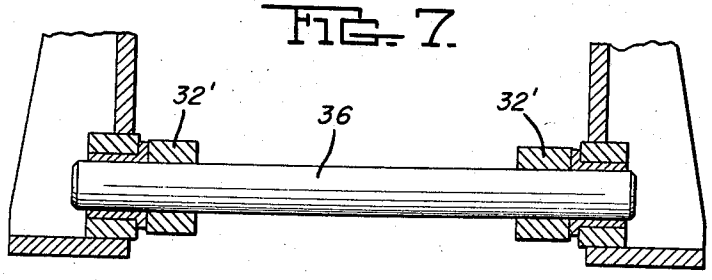


FIG. 7.



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COIL RECEIVING APPARATUS

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Application October 1, 1956, Serial No. 613,291

3 Claims. (Cl. 214—130)

The present invention relates generally to material handling apparatus and more particularly to a transfer device for receiving and transferring bundles of coiled material.

Among the objects of the invention is to provide apparatus for receiving bundles of coiled material periodically removed from processing equipment which can be installed in a location remote from the processing equipment and includes a coil-receiving platform adapted to be moved into position proximate to the processing equipment.

Another object of the invention is to provide a gravity ramp having an elevatable platform portion which can be raised arcuately away from the ramp to receive a coil and transfer it to the ramp.

It is another object of the invention to provide an elevatable platform supported on a frame and parallelogram linkages connecting the platform and frame whereby the platform is lifted as it is moved away from the frame.

It is another object of the invention to provide an elevatable platform of the character described above provided with coil stop means which will automatically assume operative position as the platform is raised and resume inoperative position when the platform is lowered onto the frame.

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

Figure 1 is a top plan view;

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

Figure 3 is a view similar to Figure 1 with the top plate shown in dotted lines to show underlying structural elements;

Figure 4 is a cross sectional view taken on lines IV—IV of Figure 3;

Figure 5 is a cross sectional view taken on line V—V of Figure 3;

Figure 6 is a cross sectional view taken on line VI—VI of Figure 3; and

Figure 7 is a cross sectional view taken on line VII—VII of Figure 3.

Referring more particularly to the drawings reference numeral 2 designates the mandrel of strip mill uncoiler 4. The uncoiler, which is not claimed as part of the invention, is of conventional structure well known in the art and therefore will not be described in detail. The coil receiving apparatus of the invention is designated generally by the reference numeral 6 and includes a frame 8 and a gravity ramp 10 supported on the frame. The gravity ramp includes an elevatable platform 12 which in normal lowered position constitutes a detached continuation of the ramp 10. The coil receiving apparatus 6 is disposed below and to one side of the mandrel 2. Although the apparatus of the invention is described in conjunction with an uncoiler for purposes of illustration it is to be noted that it is not restricted to such use but

may be used for receiving bundles of coiled material from other types of equipment.

A double acting fluid pressure cylinder 14 having a piston rod 16 projecting from one end is disposed in the frame 10 adjacent one end 17 thereof with the piston rod 16 directed toward the opposite end 18 of the frame. A guideway 20 in the frame 10 extends from the end of the cylinder 14 toward the end 18 of the frame.

A connecting rod 22 is pivotally attached by one end to the projecting end of the piston rod 16 and extends angularly upwardly therefrom to a pivotal connection 24 with a flange 26 which depends from the undersurface of the platform 12. As best shown in Figure 3 the connecting rod 22 is attached intermediate the side edges of the platform 12 adjacent the end thereof toward the ramp 10. A pin 28 connects the connecting rod 22 with the piston rod 16. Bearings 30 are rotatively mounted around the projecting extremities of the pin 28 and are adapted to facilitate travel of the piston rod 16 along the guideway 20 when the piston rod is projected from the cylinder 14.

Parallelogram linkages are provided for lifting the platform 12 as it is moved away from the ramp 10. The parallelogram linkages include a link 32 pivotally attached by one end 34 to a flange 33 which depends from the underside of the platform 12 and extends along the length of the platform. The link 32 extends from the pivotal connection at its end 34 in a substantially horizontal plane and is connected by its other end to a shaft 36. The shaft 36 is rotatably mounted in the frame 8 and extends transversely thereof in a plane below the platform 12 as best shown in Figure 7. A link 38 is pivotally connected adjacent its one end 40 to the flange 33 at a point 42 intermediate the length of the platform 12. The opposite end 39 of link 38 is keyed on a shaft 46. The shaft 46 is rotatably mounted in the frame 8 and extends transversely thereof adjacent its end 18.

A transverse shaft 48 is rotatably mounted on the underside of the platform 12 adjacent the end thereof toward the end 18 of the frame. The shaft 48 is provided with a lever arm 52 on one end which is connected with one end of a tension spring 54. The opposite end of the spring 54 is attached to the bottom of the platform 12. A pair of spaced chocks 56 are mounted on the shaft 48. As shown in Figures 1, 5 and 6 each of the chocks 56 fits in an opening 58 in the surface of the platform 12 when the platform is in normal lowered position. When the platform 12 is elevated, as shown in broken lines in Figure 2, the shaft 48 is rotated by means of the lever arm 52 and spring 54. Rotation of the shaft 48 causes the chocks 56 to project upwardly from the surface of the platform 12. Each of the chocks 56 is provided with a flange 60 which is adapted to contact the frame 8 when the platform 12 is lowered, thereby causing rotation of the shaft 48 against the force of the spring 54 to lower the chocks 56 into the openings 58.

In operation, when it is desired to remove a coil C from the mandrel, the cylinder 14 is actuated to project the piston rod 16. Projection of the piston rod 16 moves the platform 12 away from the ramp 10 by means of the connecting rod 22. As the platform 12 is moved away from the ramp, links 32 and 38 lift the platform to a position subjacent the end of the mandrel 2, as shown in broken lines in Figure 2.

When the platform 12 is raised, the end 40 of link 38 is projected above the surface of the platform 12 through slots 62 to function as a stop. A link 64 is keyed on the end of the shaft 46 spaced from the link 38. The free end of the link 64 is adapted to project upwardly through a slot 66 in the platform 12 to function as a coil stop when the platform is in elevated position. After

the platform **12** has been elevated into position adjacent the mandrel **2** the coil C is stripped from the mandrel and positioned on the platform **12** between the chocks **56** and the upwardly projecting ends of the links **38** and **64**. The platform **12** is then lowered by actuating cylinder **14** to retract piston rod **16**. Lowering of the platform **12** causes the projecting ends of the links **38** and **64** to be lowered below the platform **12**. When the platform reaches normal lowered position, the flanges **60** engage the top of the frame **8** and rotate shaft **48** to move the chocks **56** into inoperative position in the openings **58**. The coil is then free to roll down the sloping ramp **10** until it engages a coil stop **68**.

The edge of the ramp **10** adjacent the platform **12** is provided with a longitudinal slot **70** so that the connecting rod **22** may move upwardly without interference. A plate **72** is affixed to the top of the connecting rod **22** and fits in the slot **70**, as best shown in Figures 1 and 2, when the platform is in normal lowered position.

Link **32** is made up of two spaced bars **32'** connected together intermediate their lengths by transverse plate **32''**. Link **38** is formed of two spaced bars **38'** connected together intermediate their ends by means of a transverse plate **38''**.

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 claims.

I claim:

1. Coil-receiving apparatus comprising a frame, a gravity ramp on said frame, a platform on said frame adapted when in normal position to constitute a continuation of said ramp, parallelogram linkages pivotally connected to said platform and to said frame effective to lift the platform when it is moved away from said normal position, one of said linkages having a projecting end adapted to project upwardly of said platform through an opening therein when said platform is in elevated position, and power means mounted in said frame for moving said platform away from and toward said ramp.

2. Coil-receiving apparatus comprising a frame, a gravitey ramp on said frame, a platform on said frame adapted

when in normal position to constitute a continuation of said ramp, parallelogram linkages pivotally connected to said platform and to said frame effective to lift the platform when it is moved away from said normal position, power means mounted in said frame for moving said platform away from and toward said ramp, and a guideway in said frame extending longitudinally thereof for said last-named power means.

3. Coil-receiving apparatus comprising a frame, a gravity ramp on said frame, a platform adapted when in normal position to constitute a continuation of said ramp, first and second links each having one end pivoted to said frame and being pivoted adjacent its other end to said platform so as to lift the platform when it is moved away from said normal position, a first transverse shaft rotatably mounted on said frame and spaced below said platform at a point intermediate the length of said platform, a second transverse shaft rotatably mounted on said frame adjacent the end thereof remote from said ramp, said one end of said first link being rigidly attached to said first shaft and said one end of said second link being rigidly attached to said second shaft, a third link rigidly attached by one end to said second shaft in spaced relation to said second link, said third link normally extending from said second shaft in a horizontal plane substantially parallel with said second link, said platform having openings therethrough adjacent the edge thereof toward said ramp, said one end of said second link and the free end of said third link being adapted to project upwardly of said platform through said openings to thereby provide stops on said platform when the latter is raised from said normal position, and means mounted in said frame for moving said platform away from and toward said ramp.

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