July 15, 1941. F. A. FORD ET AL 2,249,379

PUSH-OFF DEVICE FOR TAKE-UP OF COLD ROLLING MACHINES

Filed July 6, 1939

FIG. 1.

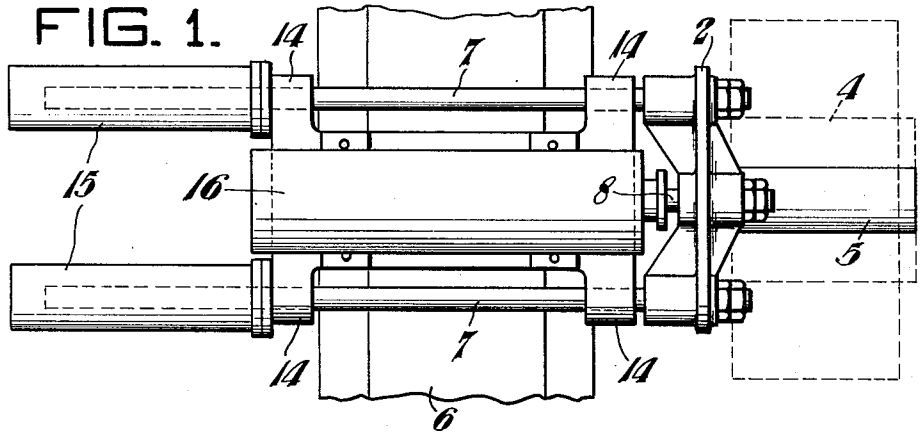


FIG. 2.

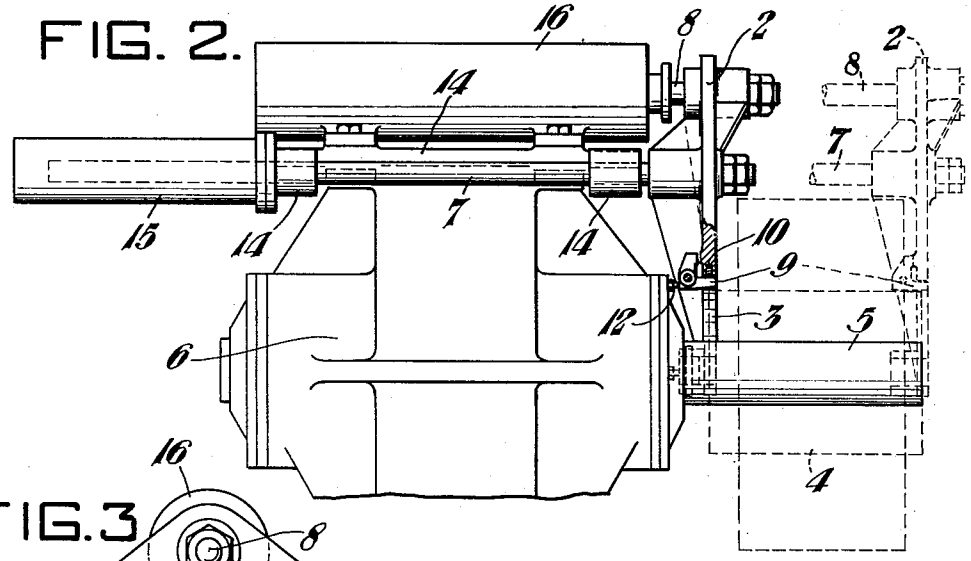


FIG. 3

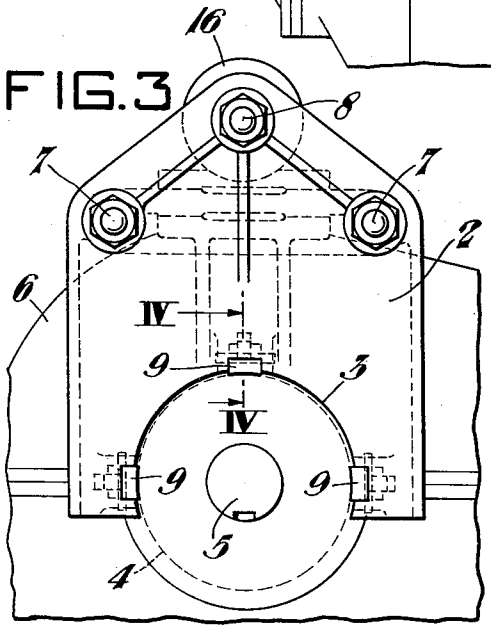
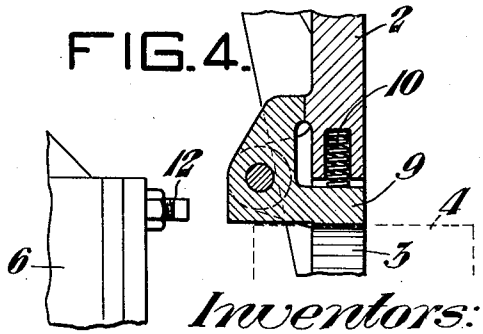


FIG. 4.



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PUSH-OFF DEVICE FOR TAKE-UP OF COLD ROLLING MACHINES

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6 Claims. (Cl. 242—81)

The present invention relates to a push-off device for use in connection with take-up blocks on cold rolling machines.

As the finished metal passes through the rolling mill, it is usually coiled on a take-up block which is done under tension and results in a very tight coil of material, which makes it difficult to strip off of the take-up block when the coil is completed. Under previous practice, the stripping off of the material from the take-up block was usually accomplished by a flat plate mounted at right angles to the face of the take-up block with its lower end encircling the upper half of the take-up block. This flat plate is supported from its upper end by two horizontal guide bars and is pushed forward along the face of the block and returned by an air cylinder. In order to avoid scoring the take-up block during such procedure, it is necessary that a clearance be maintained between the face of the block and the push-off plate. When the push-off device is operated, the inside layers of the coil would usually stick to the block, causing the coil to telescope, which resulted in curtailed production and defective material.

Under the present invention, these defects have been overcome in that there is provided a push-off device which is generally effective for removing the coiled material from the take-up block.

An object of the present invention is to provide a push-off device having a plurality of equally spaced push-off dogs for engaging the coiled material and insuring uniform movement of the inside layers of the coil during the push-off operation.

Another object of the present invention resides in raising the dogs from the face of the block when the push-off device is fully retarded.

Other objects and advantages will become apparent as the description proceeds and reference is had to the accompanying drawing, in which:

Figure 1 is a top plan view of the embodiment of the present invention;

Figure 2 is a side elevation, partly in section, of Figure 1;

Figure 3 is an end view; and,

Figure 4 is a detailed sectional view taken on line IV—IV of Figure 3, showing the means for raising the dogs when the push-off block is fully retarded.

In the drawing, the push-off device comprises a push-off plate 2 provided with a semi-circular cut out portion 3 spanning or disposed over the hub or mandrel 4 of the take-up block, which hub or mandrel 4 is mounted upon a shaft 5 formed as an integral part or as an extension from the shaft of the driving motor 6. The upper portion of said push-off plate 2 is provided with equally spaced openings for receiving the guide rods 7 and piston rod 8 which are secured to said push-off plate 2 by nuts or other conventional fastening means.

Pivotally mounted upon said push-off plate 2 at spaced intervals around the cut out portion 3, are push-off dogs 9 adapted to contact the surface of the take-up block 4 when the push-off plate is operated to remove the coiled material from the take-up block 4 and thereby prevent telescoping of the inner coils of said material. Positioned within the push-off plate 2, adjacent the point where the dogs 9 are pivotally mounted, are coil springs 10 for exerting a downward pressure upon said dogs 9 so as to maintain them in contact with the surface of the take-up block or mandrel 4. Secured upon the motor 6, at points in alignment with the positioning of the pivoted push-off dogs 9, are adjustable stop screws 12 which contact the dogs 9 when said push-off plate is fully retarded so as to raise the dogs upwardly against the compression of the springs 10 and out of contact with the surface of the take-up block or mandrel 4, thereby preventing wear on the dogs during the time that the take-up block is revolving.

Mounted upon the top of the motor, in any conventional manner, are supporting brackets 14, through which the guide rods 7 extend for reciprocating movement within the guide rod housings 15 secured to one of the supporting brackets 14. Also secured to the supporting brackets 14 is the push-off cylinder 16 within which the piston rod 8 moves.

In operation, when the coil of material coming from the rolling mill has been coiled upon the take-up block 4 and it is desired to remove the same, the push-off plate 2 is moved to the dotted line position shown in Figure 2 and during such movement, the push-off dogs 9 contact the surface of the take-up block 4 so as to insure movement of the coiled material from the take-up block without the danger of telescoping of the inner coils.

When the coiled material has been removed from the take-up block, the push-off device is in the dotted line position shown in Figure 2, and when the push-off plate is fully retarded, the dogs are raised from the face of the take-up block by the stop screws 12 engaging the end of said dogs 9 so as to move them about their pivot and upwardly against the spring tension 10

so as to avoid wear on the dogs during the time the take-up block is revolving in its procedure of receiving a new coil of material from the rolling mill.

While we have shown and described a specific embodiment of the present invention it will be seen that we do not wish to be limited exactly thereto, since various modifications may be made without departing from the scope of the invention, as defined by the following claims.

We claim:

1. A device for removing coiled material from a take-up block comprising a plate having an arcuate end portion, means on said plate for contacting the inner coils of said material, and means for moving said plate transversely across the outer periphery of the take-up block to remove the coiled material therefrom, said means contacting the inner coils of said material comprising pivoted dogs and including springs normally urging said dogs inwardly toward the material-receiving surface of the take-up block.

2. A device for removing coiled material from a take-up block comprising a plate having an arcuate end portion, means on said plate for contacting the inner coils of said material, means for moving said plate transversely across the outer periphery of the take-up block to remove the coiled material therefrom, said means contacting the inner coils of said material comprising pivoted dogs, and means for engaging said dogs when said device is returned to its original position to raise said dogs out of contact with the take-up block so as to prevent wear on said block when the same is revolving to coil material thereon.

3. A device for removing coiled material from a take-up block comprising a plate, equally spaced dogs pivotally mounted on said plate, means normally urging said dogs toward the material-receiving surface of the take-up block for contacting the inner coils of said material, means for moving said plate back and forth across said take-up block, and means contacting the dogs when said plate is moved back across the take-up block after discharging a coil of material therefrom to raise said dogs away from said material-receiving surface.

4. A device for removing coiled material from a take-up block comprising a plate, equally spaced dogs pivotally mounted on said plate for contacting the inner coils of said material, means for moving said plate back and forth across said take-up block, and means contacting said dogs when said plate is moved back across the take-up block after discharging a coil of material therefrom to raise said dogs out of contact with the surface of said take-up block.

5. A device for removing coiled material from a take-up block comprising a plate adapted to be disposed transversely and spaced from the exterior surface of said block, said plate having a face thereof adapted to contact the outer coils of said material, means on the plate for contacting the inner coils of the material, said means having sliding contact with said surface of the block and having a material-contacting face disposed substantially in the plane of said plate face, whereby to remove the coiled material from the block without telescoping the inner coils thereof by a movement of the plate and means longitudinally of the block.

6. The combination with a take-up block for cold rolling machines, of a device for stripping coiled material therefrom, said device including a plate adapted to be disposed transversely and spaced from the exterior surface of said block, said plate having a face thereof adapted to contact the outer coils of said material, means on the plate for contacting the inner coils of the material, said means having sliding contact with said surface of the block and having a material-contacting face disposed substantially in the plane of said plate face, and means for moving said plate and sliding contact means longitudinally of the block to remove the coiled material therefrom without telescoping of the inner coils of the material.

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