Nov. 8, 1938. E. F. SCHUMAN 2,135,916

AUTOMATIC STOP FOR TAKE-UP BLOCKS

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FIG. 1.

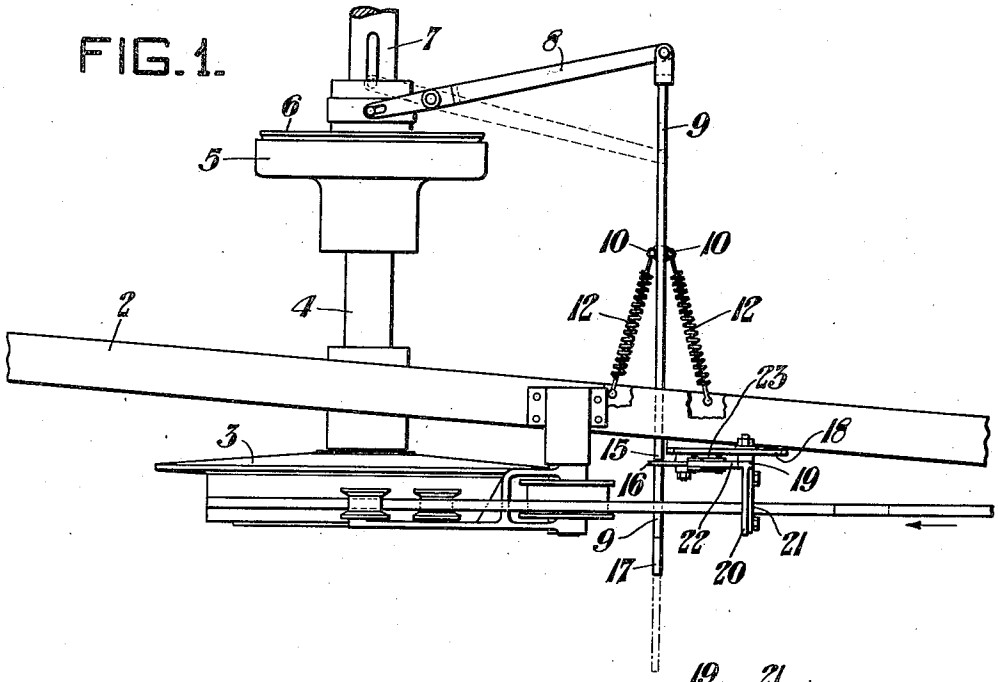
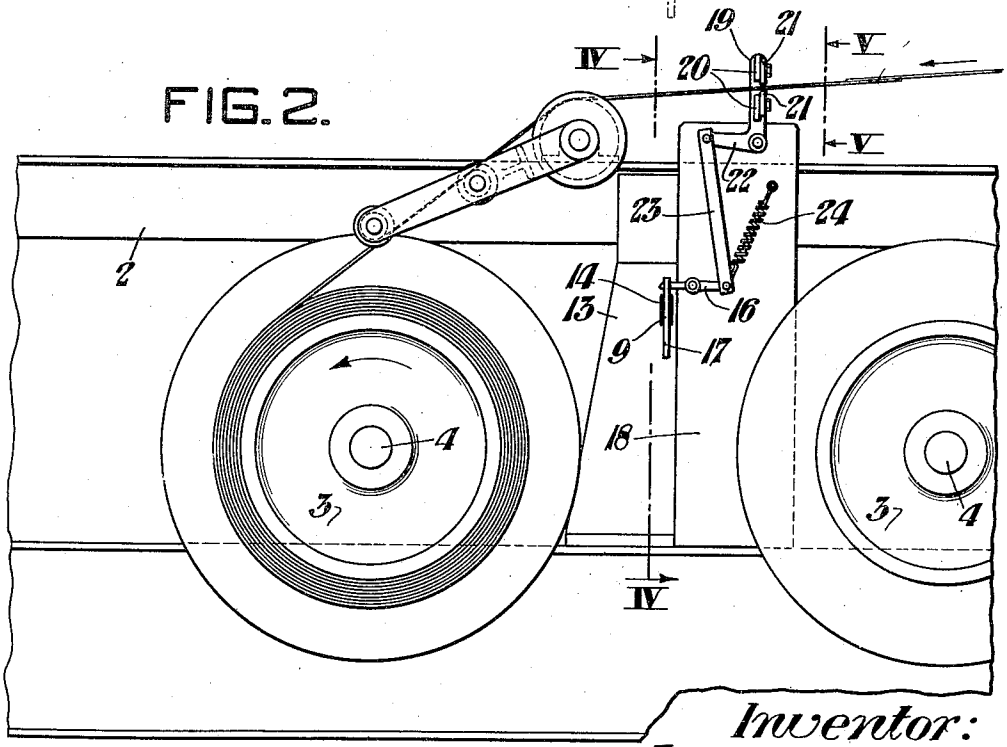


FIG. 2.



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FIG. 3.

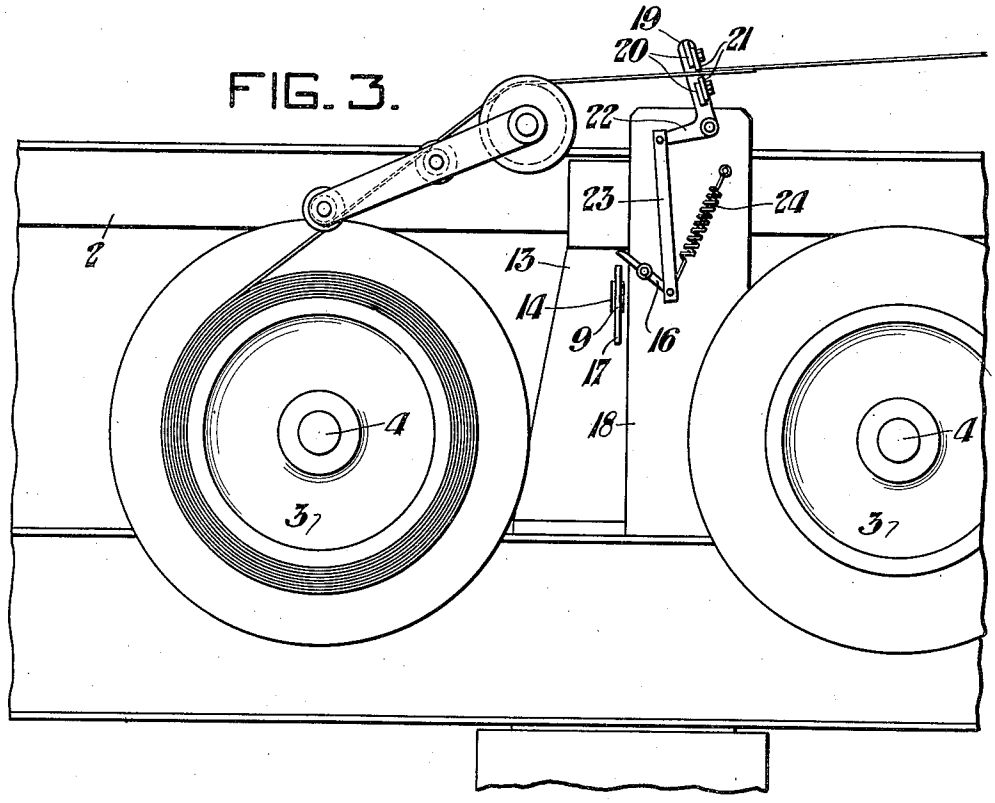


FIG. 4.

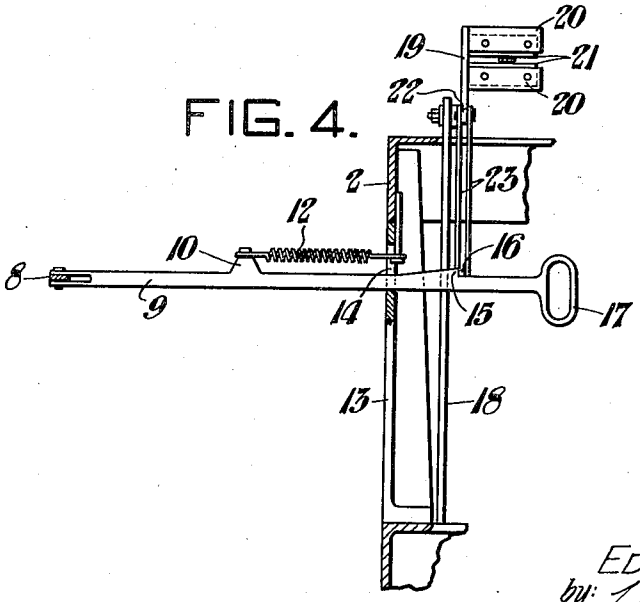
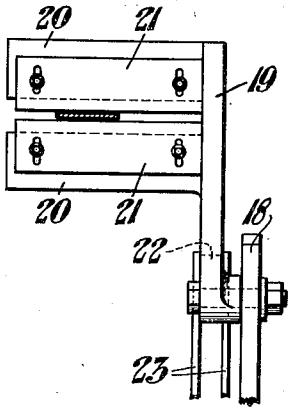


FIG. 5.



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Patented Nov. 8, 1938 2,135,916

UNITED STATES PATENT OFFICE

2,135,916

AUTOMATIC STOP FOR TAKE-UP BLOCKS

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Application June 30, 1937, Serial No. 151,285

2 Claims. (Cl. 192—126)

The present invention relates to an automatic stop for take-up blocks.

In the treatment of coils of narrow strip steel, it is usually fed through a coating bath and then into a heating furnace where the coating is baked on the strip. After sufficient baking, the strip enters a cooling zone where the temperature is reduced in order to make manual handling of the strip possible, after which the strip passes through constant speed pull-out rolls and is vibrated onto take-up blocks.

When it is desired to make such a process continuous it is necessary to attach the end of one coil to the beginning of another. This is done by lapping the ends of the strips and spot welding the lapped portions.

However, it is necessary to cut out the welded portion of the strip before it is wound upon the take-up blocks, and provision must be made to stop rotation of each take-up block until the double thickness of metal formed by the welding operation has been cut out of the strip.

An object of the present invention relates to a mechanism for automatically stopping rotation of the take-up blocks as the weld approaches the same for winding thereon.

A further object is to provide a device which is actuated by the welded portion of the strip to disengage the clutch from each individual take-up block and stop rotation thereof until the welded portion has been removed from the strip.

Other objects and advantages will become apparent as the description proceeds, in which:

Figure 1 is a plan of a section of the take-up block frame showing how the automatic stop mechanism is applied thereto;

Figure 2 is a side elevation of Figure 1, showing the position assumed by the automatic stop when the take-up block is running;

Figure 3 is a similar view to Figure 2 but showing the position assumed by the mechanism when the take-up block has been stopped;

Figure 4 is an enlarged detailed section on line IV—IV of Figure 2; and,

Figure 5 is an enlarged detailed section on line V—V of Figure 2.

In the drawings, the numeral 2 represents the take-up frame upon which is supported a plurality of take-up blocks 3. For the purpose of illustration, the drawings show only a section of the entire take-up block frame. However, it is to be expressly understood that each individual take-up block upon the take-up frame has an automatic stop mechanism identical to that shown in the drawings.

Extending from each take-up block is a shaft 4 on the end of which is mounted a clutch-housing 5 for receiving a clutch 6 carried on the end of the drive-shaft 7, the latter shaft for each take-up block being simultaneously driven in any conventional manner (not shown).

Secured to each clutch 6 is a clutch-lever 8 having pivotally connected thereto a lever 9 which extends transversely of the take-up frame and parallel to the shafts 4 and 7. Each lever 9 is provided with projections 10 to which are secured the ends of springs 12, while the other ends of said springs are secured, in any desired manner, to the take-up frame 2. The take-up frame is provided with plates 13 having slots 14 through which the levers 9 pass.

Each of the levers 9 is provided with a slot or, if desired, an extension 15 which engages a pivoted catch 16 and maintains the levers 9 in the position shown in full lines in Figure 1 so that the clutch-levers 8 maintain the clutch 6 in engagement with the clutch-housing for rotating the take-up blocks 3. The ends of the levers 9 are provided with a hand-grip 17 in order that the levers may be restored to their full line position after the automatic stop has disengaged the clutch and stopped the rotation of the take-up blocks.

A supporting-plate 18 is secured to the take-up frame 2 and pivotally carried by said supporting-plate is a tripping lever 19 which includes laterally extending spaced arms 20 between which the strips are adapted to pass. Secured to each of the arms 20 and adjustably mounted thereon are plates 21. Pivotally secured to an extension 22 of the trip lever 19 is a connecting link 23, said link being pivotally connected, at its other end, to the catch 16. A spring 24 connected to the lever 23 and to the supporting-plate 18 returns the tripping lever 19 and catch 16 to their operating position after they have been tripped and released by the weld on the strip material.

In the continuous process of treating strips, the ends of the strips are lapped and spot welded. Before the strip material can be wound upon the take-up blocks it is necessary to cut out the welded portion and, as each welded portion is removed from the strip, means must be provided to stop each individual take-up block until the operator has completed this operation. Under the present invention, as the double thickness of metal formed by the welding of the overlapped ends approaches the individual take-up blocks it engages the trip lever 19. The plates 21 having been previously adjusted to limit the space to less than the double

thickness of metal caused by the welding of the ends together, results in a movement of the tripping lever 19, of each take-up block, in the direction of the travel of the strip. In so doing, downward movement is imparted to the lever 23 and, due to its pivotal connection with the catch 16, causes an upward movement of the catch 16. This releases the lever 9 and, in so doing, permits the springs 12 to move the lever 9 to the position shown in the dotted lines in Figure 1. Such a movement of lever 9 carries the clutch-lever 8 to the dotted line position shown in Figure 1, and thereby disengages the clutch from its clutch-housing and stops rotation of the individual take-up blocks 3. After the weld has been cut out from the strip, the coil banded and removed from the take-up block, the end of the new coil is threaded through the plates 21 and take-up block 3. The operator, by grasping the handle 17, is enabled to restore the lever 9 to its full line position shown in Figure 1 and, in so doing, the catch 16, through pressure of the springs 24, engages in the slot or projection 15 on the lever 9 and holds the clutch in operating position for rotating the take-up blocks 3 until again released by the next succeeding weld on the strip or, if desired, at any time desired by the operator.

While I have shown and described one specific embodiment of my invention, it will be seen that I 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.

I claim:

1. In combination with the coiling of coils of narrow strip steel including a take-up block and driving means therefor, means for automatically disengaging the take-up driving means from said take-up block upon abnormal variations in the predetermined thickness of the strip steel being wound upon said take-up block, said last mentioned means including a lever pivotally connected to said driving means, a lever pivotally connected to said first mentioned lever and extending transversely thereof, a tripping lever pivotally supported on the take-up block frame and means on said transversely extending lever engaging means on said take-up block support for holding said first mentioned lever in cooperative position with said driving means for maintaining a driving connection between the driving means and the take-up block, said tripping lever movable about its axis by abnormal variations in the predetermined thickness of the material being wound upon said take-up block to automatically disengage the driving means from said take-up block and prevent further rotation of said take-up block until that portion of the strip steel having the abnormal thickness has been removed from the strip.

2. In combination with take-up block for coiling strip steel including driving means for a clutch, automatic means for disengaging said clutch to stop rotation of said take-up block upon abnormal variations in the predetermined thickness of said strip steel approaching said take-up block, said automatic means comprising a lever pivotally connected to said clutch, a lever pivotally connected to said clutch lever and extending transversely thereto, a tripping lever support carried by the take-up block frame, a tripping lever pivotally mounted on said support, adjustable means on said tripping lever for limiting the thickness of strip steel passing to said take-up block, a lever pivotally connected at one end to said tripping lever and at its other end to a catch member, said catch member pivotally mounted on said support and engaging means on said transversely extending lever for maintaining said clutch in driving engagement, and spring means connected to said transversely extending lever and said take-up frame for moving said transversely extending lever to disengage said clutch when said tripping lever is moved about its axis by an abnormal thickness of the strip material for releasing said catch member from contact with said transversely extending lever whereby rotation of said take-up block is stopped until the abnormal thickness of material has been removed from said strip.

EDWARD F. SCHUMAN.