June 25, 1957 K. WEINBERGER 2,796,974

ARTICLE TRANSFER MECHANISM

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FIG. 1

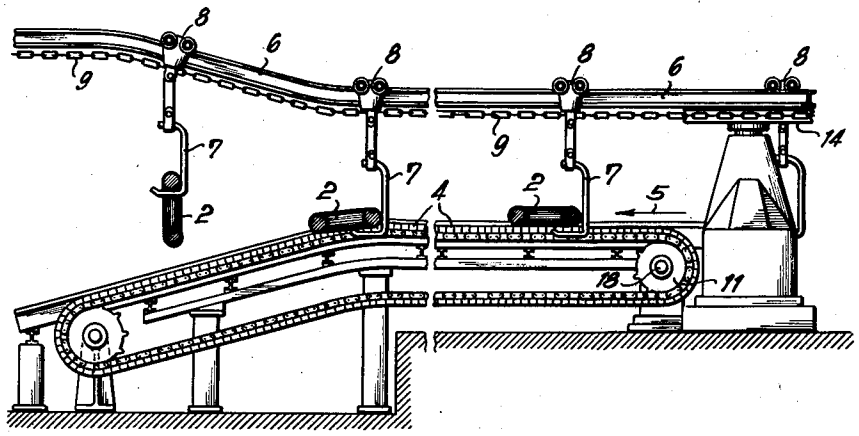
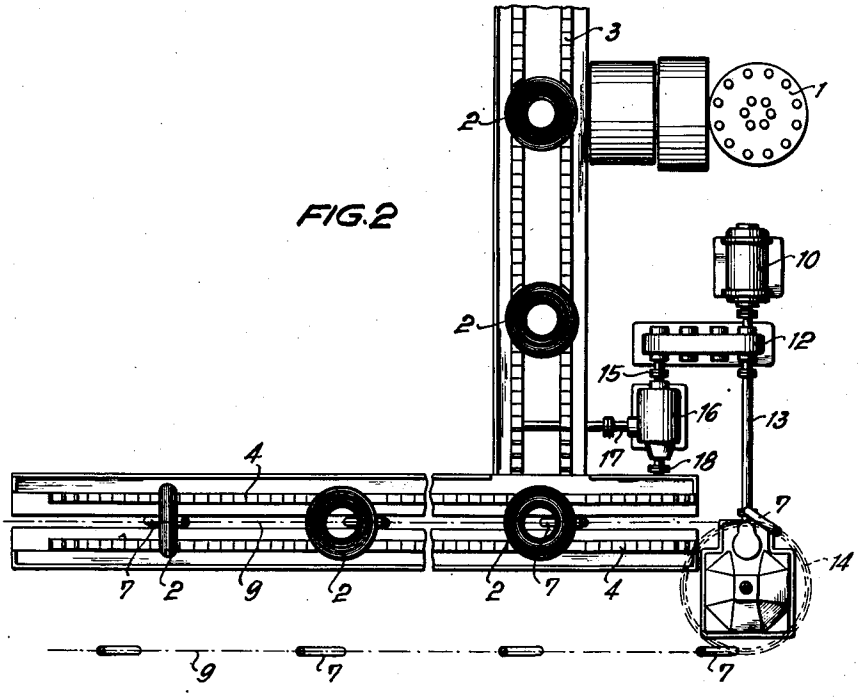


FIG. 2



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FIG. 3

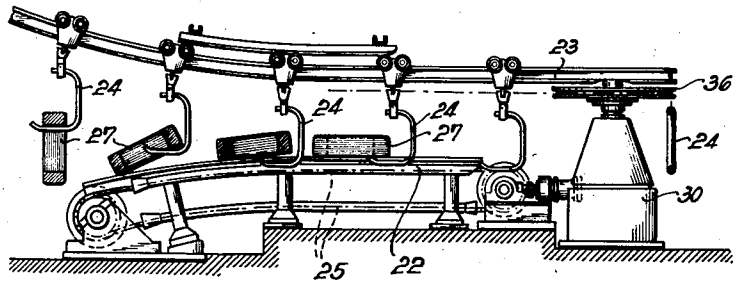
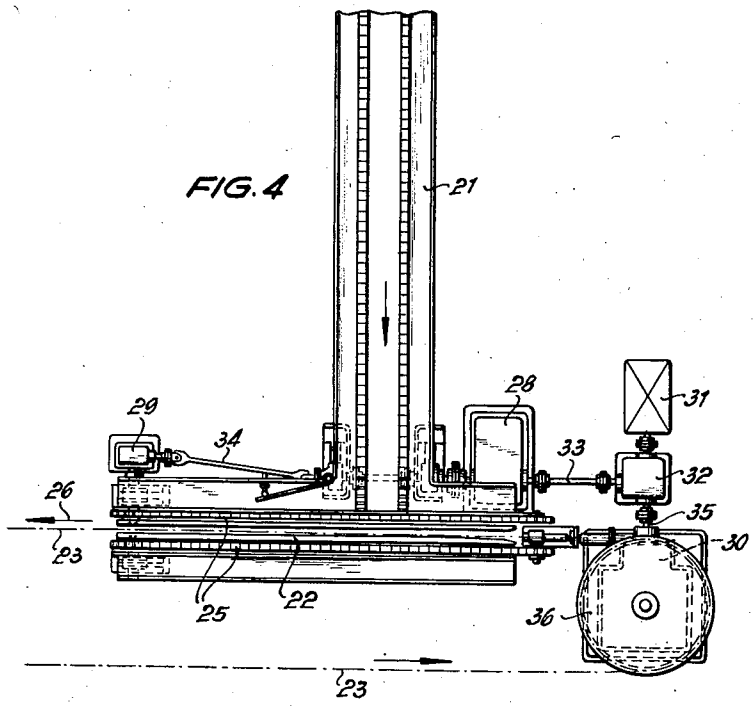


FIG. 4



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ARTICLE TRANSFER MECHANISM

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Application April 29, 1954, Serial No. 426,442

Claims priority, application Germany May 5, 1953

7 Claims. (Cl. 198—177)

For transporting wires produced in a rolling mill and wound into bundles hook railways are preferred. However, as the bundles are wound hot, they must be cooled before being delivered to the hook railway to such an extent that they do not deform. With this object in view a chain conveyor is usually arranged between the reels and the hook railway. The transfer of the bundles from the chain conveyor to the hook railway presents difficulties which it has been endeavoured to overcome by constructions which are relatively expensive to produce.

The present invention overcomes these difficulties with very simple means.

It is proposed, according to the invention, to arrange the chain conveyor and the hook railway in a section at the end of the conveying path of the chain conveyor so that they tend to move apart in vertical direction to enable the hooks to take up the bundles. Thus, a smooth transfer of the bundles from the chain conveyor to the hook railway is attained without additional means.

The chain conveyor and the hook railway are preferably so arranged that they are inclined to the horizontal at the same angle but in opposite directions.

In this arrangement the chain conveyor and hook railway circulate at the same conveying speed. To ensure uniformity of travel of the chain conveyor and the hook railway, the drive of the chain conveyor is geared up with the hook railway.

So as to bring the hooks of the hook railway under the bundles on the chain conveyor it is particularly recommended that the hooks of the hook railway be brought into the range of the chain conveyor at the chain reversal point of the chain conveyor on the delivery side.

Two embodiments of the invention are illustrated by way of example in the accompanying drawings, in which:

Fig. 1 shows the first form of construction in side elevation,

Fig. 2 is a top plan view of Fig. 1,

Fig. 3 shows the second form of construction in side elevation,

Fig. 4 is a top plan view of Fig. 3.

The bundles **2** wound on the reel **1** are fed by an auxiliary conveyor **3** to a main conveyor **4** which carries them along in the direction of the arrow **5**. A guide rail **6** is arranged above the main conveyor **4** and guides the hooks **7** with their carriages **8** which are moved by an endless chain **9**. The auxiliary conveyor **3**, main conveyor **4** and the chain **9** of the hook railway are driven by a common motor **10** and interconnected by gearing. The motor **10** drives the shaft **13** thru the intermediary of a gearing **12** and the shaft **13** rotates the driving wheel **14** for the endless chain **9**. Another train of gearing **16** is driven by a shaft **15** and drives the auxiliary conveyor **3** thru the intermediary of a shaft **17** and driving wheel **11** for the main chain conveyor **4** thru the intermediary of a shaft **18**. The hooks **7** run into the range of the chain conveyor **4** already at the chain reversal point **11**. The chain conveyor **4** and hook railway run at the same

conveying speed so that the hooks always engage under the bundles **2**. In the section at the end of the conveying path of the chain conveyor **4** the chain conveyor **4** descends and the guide rail **6** of the hook railway ascends so that the chain conveyor and hook railway tend to move apart. At the same time the bundles **2** are lifted off the chain conveyor **4** by the hooks **7** of the hook railway which engage under the bundles **2**.

The present invention is not restricted to the details of the forms of construction described. Thus the hooks need not be introduced into the range of the chain conveyor at the chain reversal point of the chain conveyor on the delivery side, but it is also possible to allow the hooks to swing into the range of the hook railway at any other point of the chain conveyor, for example by suitably guiding the hooks from above or from the side.

It is frequently necessary, when carrying the wire wound in bundles in reels at the rolling heat, first to deposit the bundles on a chain conveyor to allow them to cool before they are transferred to the hook railway and conveyed to the store room or for further treatment.

For transferring the bundles from the chain conveyor to the hook railway a chain conveyor is provided in the first form of construction in which the hooks of the hook railway run between the two chain strands of the conveyor. The chain conveyor and hook railway run parallel to each other along almost the entire length of the chain conveyor. Towards the end of the chain conveyor this and the hook railway are guided so that they tend to separate in vertical direction, thus effecting the take-over of the bundles by the hook railway in a very simple manner. If the chain conveyor requires a considerable length of about 60 to 80 meters with a conveying speed of about 4 to 10 meters per minute, in order to give the bundles sufficient time to cool, the hook railway will have to be unnecessarily extended. The plant therefore becomes difficult to supervise and to a certain extent is susceptible to trouble. This objection is overcome in the second form of construction illustrated in Figs. 3 and 4. In this case the chain conveyor cooperating with the hook railway is kept as short as possible and in particular is arranged at right angles to a longer chain conveyor at the delivery end thereof.

To ensure synchronous running of the conveyors, the drive of the longer chain conveyor on which the bundles cool down, is geared up with the short delivery conveyor and the hook railway.

The wire leaving the rolling mill train is wound at its rolling temperature into bundles on reels. These wire bundles are deposited on the chain conveyor **21** if necessary with the aid of an interposed auxiliary conveyor in the manner described in connection with the first form of construction. This conveyor, the delivery end of which is shown in the drawing, has a total length of about 60 to 80 meters. During the time which each bundle remains on the chain conveyor the bundle cools down to such an extent that it can be delivered to the hook railway. The bundle then passes from the chain conveyor **21** on to the delivery conveyor **22**. Furthermore a hook railway is provided, the hooks of which enter between the chains **25** of the delivery conveyor **22** in the direction of conveyance. The hooks **24** of the hook railway run parallel with the chains **25** of the delivery conveyor **22** at least along the stretch in which the bundles **27** are transferred from the chain conveyor **21** to the delivery conveyor **22**.

As in the first form of construction the delivery conveyor **22** and the hook railway **23** tend to move apart in vertical direction, with the result that the bundles **27** are taken over by the hooks **24** of the hook railway **23** from the delivery conveyor **22**. The driving gear **28** of the chain conveyor **21** and also the driving gear **29** of

the delivery conveyor **22** and the drive **30** of the hook railway are positively interconnected. The common driving motor **31** drives a gearing **32**, which through the intermediary of the shaft **33** drives the gearing **28** which in turn drives not only the chain conveyor **21** but thru the intermediary of the cardan shaft **34** drives the gear **29** for the delivery conveyor **22**. The gear **32** also drives the driving chain wheel of the hook railway **23** thru the intermediary of the shaft **35**.

I claim:

1. In an installation for automatically lifting wire coils from a chain conveyor of the type having spaced parallel chains, the combination of an overhead track hook conveyor so positioned over a portion of said chain conveyor to constitute a transfer point, the hooks of said hook conveyor passing between the spaced parallel chains of said chain conveyor in the same direction of motion of said chain conveyor and at a speed at least equal to the speed of said chain conveyor, said hook conveyor and said chain conveyor being operated in timed relation with each other such that the hooks of said hook conveyor engage each coil of wire as it progresses along said chain conveyor from the rearward outer side and from below at said transfer point, and said chain conveyor and said hook conveyor diverge vertically upon leaving said transfer point whereby said coils of wire are each supported at the rearward side by a hook while the forward side is lowered with respect to said rearward side to prevent free swinging movement of said coil on said hook.

2. An arrangement as set forth in claim 1, wherein the chain conveyor and the hook railway are inclined to the horizontal at the same angle but in opposite directions.

3. An arrangement as set forth in claim 1, wherein the drive of the chain conveyor and the hook railway are intergeared to ensure uniform speed of travel.

4. An arrangement as set forth in claim 1, wherein the chain conveyor cooperating with the hook railway is as short as possible and arranged at right angles to a longer chain conveyor at the delivery end thereof.

5. An arrangement as set forth in claim 1, wherein the chain conveyor cooperating with the hook railway is as short as possible and arranged at right angles to a longer chain conveyor at the delivery end thereof, and wherein the drives of this longer chain conveyor, the shorter chain conveyor and of the hook railway are geared up together.

6. Installation according to claim 1, characterized in that the chain conveyor and the hook track diverge from one another vertically at the point where the hook seizes the wire coil at an angle of approximately 30° so that in lifting the wire coil from the chain conveyor the coil is lifted slowly and without giving rise to swinging of the coil on the hook.

7. The installation according to claim 1, characterized in that two coplanar chain conveyors are provided perpendicular to one another so that the first chain conveyor delivers the wire coils to the second chain conveyor and the wire coils are then taken along by the second chain conveyor and the hook track extends above the second chain conveyor in parallelism thereto while the hooks of the track engage around the wire coils from the rearward outer side as they are delivered from the first chain conveyor to the second chain conveyor.

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