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(54) **Method and system for feeding a coil of metal strip to an un-coiler and un-coiling the metal strip.**

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(73) Proprietor: **KAWASAKI STEEL CORPORATION**
No. 1-28, 1-Chome Kitahonmachi-Dori
Chuo-Ku, Kobe-City Hyogo 651(JP)

(72) Inventor: **Shitomi, Makoto c/o Kawasaki Steel Corporation**
Mizushima Works
Kawasakidori 1-chome
Mizushima
Kurashiki-shi Okayama-ken(JP)
Inventor: **Naruse, Yutaka c/o Kawasaki Steel Corporation**
Mizushima Works
Kawasakidori 1-chome
Mizushima
Kurashiki-shi Okayama-ken(JP)
Inventor: **Suganuma, Namio c/o Kawasaki Steel Corporation**
Mizushima Works
Kawasakidori 1-chome
Mizushima
Kurashiki-shi Okayama-ken(JP)
Inventor: **Takeno, Tadayoshi c/o Kawasaki Steel Corporation**
Mizushima Works
Kawasakidori 1-chome
Mizushima
Kurashiki-shi Okayama-ken(JP)

(74) Representative: **Nony, Michel**
Cabinet NONY & CIE
29, rue Cambacérès
F-75008 Paris (FR)

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Description

The present invention relates generally to a system for feeding a coil, such as a metal strip coil, to an uncoiler. More specifically, the invention relates to a system applicable for uncoiling a metal strip for supplying it to a continuous treatment line, such as a pickling line or plant, a mill or so forth.

Description of the Background Art

In recent years, there have been developed and proposed a plurality of types of system for continuous processing of metal strip, or sheet. In order to supply a metal strip to a continuous processing line to be treated, a metal strip coil has to be uncoiled or unwound as the metal strip therefrom is fed into the treatment line. In order to do this an uncoiler is provided at upstream end of the treatment line. The uncoiler first frees the end of the metal strip from the coil or in other words "opens the coil" and thereafter performs the uncoiling operation.

In such a conventional system, the coil-opening operation performed by the coil opener takes a relatively long time which increases the overall process time. For example, in a conventional line, it takes about 180 sec. from the time the previous coil becomes spent to the time a new coil is opened and strip from the new coil is fed to the process line. In comparison to this, the overall process time required for treatment of the metal strip is about 300 sec. The uncoiling operation time generally becomes a "loss-time" in the metal strip treatment process. Therefore, the ratio of loss-time to process time is about 37.5%. This can be improved by providing a plurality of uncoilers. When two or more uncoilers are provided, the efficiency of uncoiling operations can be improved by performing coil-opening operation by one uncoiler while the other uncoiler is uncoiling. Thus by providing two uncoilers in the line, loss-time can be shorted to about 110 sec. and the loss-time ratio can be reduced at about 26.8%.

However, providing two or more uncoilers requires more space and cost move. Additionally, the uncoiling line contruction becomes more complicated requiring additional facilities for selectively feeding the coils to the uncoilers.

In order to solve the aforementioned problem, An improved system for continuously treating the metal strip has been discussed in "Recent Cold Strip Plant and Development of Manufacturing Techniques in This Country" published by Japan Metal Association, on August 20, 1977. It discloses a system for supplying a coil of metal strip, which comprises means for transporting a coil of metal strip, a coil opener which releases the end of the metal strip from the coil for uncoiling, and an uncoiler.

As a typical coil-opener, Chizeru magnet system coil-opener may be utilized for opening the coil. The Chizeru magnet coil-opener comprises means for driving the coil to rotate, a knife for peeling the end of the metal strip from the coil and a magnetic chuck for chucking the peeled end and feeding it to the entrance of the treatment line. For example, the magnetic chuck may feed the end of the metal strip into a pinch roller of a tandem mill.

By employing the coil-opener, efficiency with which the metal strip can be fed to the treatment line is increased. However, on the other hand, in order to improve the coil-opener and to make the coil-opener cooperative with the uncoiler, additional facilities, such as a walking-beam type conveyer for transporting the metal strip coil, a coil transporting means and a coil lifting means or the combination thereof are necessary. This makes the metal strip supply system for the treatment line bulky.

JP-A-57 149020 discloses a system for uncoiling and feeding a metal strip treatment line, comprising :

an uncoiler for uncoiling a coil of metal strip for feeding the uncoiled metal strip to said metal strip treatment line, said uncoiler having a mandrel :

first means for transporting said coil of metal strip from a supply station to a coil-opening station, said first means holding the central axis of said coil of metal strip essentially parallel to said axis of said mandrel ;

second means, provided in said coil-opening station, for opening the coil ;

third means, associated with said second means, for holding the strip end released from the coil by means of said second means away from the coil ; and

fourth means for transporting the opened coil of metal strip, while said third means holds the strip end away from the coil, from said coil-opening station to an uncoiling station where said uncoiler is provided, said fourth means holding the axis of said coil of metal strip essentially parallel to said axis of said mandrel.

In this document the new coil is held outside the line prior to be received by the uncoiler and then the new coil is positioned in the unwounding position.

After this, the coil returns to an in-line position for the uncoiling procedure.

According to this the down time or stop time is rather long and thus the line effectiveness is reduced.

Furthermore, since the uncoiler requires a large stroke, the cost of the uncoiler is increased as well as the space required therefor.

In addition, in the prior system, new coils are loaded in line with the coil being uncoiled and, therefor, the overall length of the line is great.

The features known from JP-A-57 149 020 are disclosed in the pre-characterizing part of claim 1.

SUMMARY OF THE INVENTION

Therefore, it is an object of the present invention to provide a metal strip supply system for an uncoiler, which avoids the above mentioned drawbacks of the conventional art set forth above.

Further, it is an object of the invention to provide a more compact metal strip supply system for a metal strip treatment process.

In order to accomplish the aforementioned and other objects, a metal strip supply system, according to the present invention, is characterized in that

the axis of said mandrel of said uncoiler is perpendicular to the feeding direction of supply of the uncoiled metal strip ; and

said third means comprises holding means for holding the strip end and transfer means supporting said holding means for movement along said transporting path so that said holding means moves therealong according to movement of said metal strip coil by means of said fourth means.

In the preferred construction, the second means and fourth means are symultaneously operable so that the second means can perform coil opening operation on one coil while the uncoiler performs uncoiling operation on another coil. The first means and fourth means transports the metal strip coil by means of a common coil transporting means.

On the other hand, the common coil transporting means comprises a coil car movable along a transporting path extending in a direction that is essentially parallel to the axis of the mandrel.

The coil car may have means for setting the metal strip coil onto the second means and to the uncoiler. On the other hand, the second means may comprise a driving means for supporting the coil of metal strip and rotatingly driving the coil in a predetermined direction, a guide means movable toward and away from the coil of metal strip to contact the coil while the coil is rotating to release the strip end from the coil. The second means further comprises actuator means associated with the guide means for moving the guide means toward and away from the coil of metal strip. On the other hand, the third means comprises a holding means for holding the strip end and transfer means supporting the holding means for movement along the transporting path so that the holding means moves therealong according to movement of the metal strip coil by means of the fourth means.

BRIEF DESCRIPTION OF THE DRAWINGS

The present invention will be understood more fully from the detailed description given herebelow and from the accompanying drawings of the preferred embodiment of the invention, which, however, should not be taken to limit the invention to the specific embodiment but are for explanation and understanding only.

In the drawings:

Fig. 1 is a plan view of the preferred embodiment of the metal strip uncoiling and supplying system according to the invention;

Fig. 2 is a side elevation of the preferred embodiment of the metal strip uncoiling and supplying system of Fig. 1, as viewed along the arrow II;

Fig. 3 is a plan view showing arrangement according to another embodiment of the metal strip uncoiling and supplying system; and

Fig. 4 is a side elevation of the metal strip uncoiling and supplying system of Fig. 3.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring now to the drawings, particularly to Figs, 1 and 2, the preferred embodiment of a metal strip uncoiling and supplying system, according to the present invention, is generally provided upstream of a metal strip processing line, such as that of a pickling plant, or rolling mill or so forth. The preferred embodiment of the metal strip uncoiling and supplying system includes an uncoiler 20 with a mandrel 21. The axis of the mandrel 21 is perpendicular to the direction toward which the uncoiled metal strip is supplied.

Coils of metal strip 22 are transported by means of a coil transporting means which is generally represented by the reference numeral 24. The coil 22 is comprised of a metal strip wound in a per se well known manner and has a central essentially circular hole. By the transporting means 24 a path for the metal strip coils 22, which extends substantially parallel to the axis of the mandrel 21 is defined. During transportation of the coils of metal strip to the uncoiler 20, the transporting means aligns the axes of the central holes of the coils of metal strip with the axis of the mandrel 21 of the uncoiler 20.

A coil-opener 26 is provided in the transporting path defined by the transporting means at a position unstream of the uncoiler 20. The coil-opener 26 is designed to slightly uncoil or free the end of the coiled metal strip so that the uncoiler 20 can easily perform uncoiling operation. The coil-opener 26 has a device 28 for holding the free end of the metal strip. The device 28 will be hereafter referred

to as "coil end holder device".

The aforementioned transporting means comprises a pair of stationary skids 30 which define the aforementioned transporting path, and a plurality of coil cars 32. The stationary skids 30 extend substantially parallel to each other from a coil storage area (not shown) to the uncoiler 20 so that the coil cars 32 may move there along to supply the coils of metal strip 22 to the uncoiler. As is well known, each coil of metal strip 22 is lifted by means of a crane from the coil storage area and mounted on the coil car 32. The coil car 32 is then driven along the stationary skids in per se well known manner.

The coil car 32 has a lifter 34 for lifting the coil of metal strip 22 mounted thereon. The lifter 34 is driven to set the coil of metal strip 22 on cradle rollers 36 at a position opposing the coil opener 26 and onto the mandrel 21 of the uncoiler 20.

As shown in Fig. 2, the coil-opener 26 incorporates the aforementioned cradle rollers 36. The cradle rollers 36 are mounted on the stationary skids 30 with their rotational axes extending essentially parallel to the stationary skids. Each of the cradle rollers 36 is associated with a driving motor (not shown) to be rotatingly driven by the latter in order to rotate the metal strip coil 22 set thereon.

A guide table 38 is provided facing the periphery of the metal strip coil 22 on the cradle rollers 36. The guide table 38 is pivotably connected to a pivotal arm 39 which is, in turn, pivotably connected to a base 43. In other words, the guide table 38 is pivotable about a pivot 38a which is supported at the free end of the pivotal arm 39. On the other hand, the pivotal arm 39 is pivotable about a pivot 39a which is supported by means of a mounting bracket 41 of the base 43. The pivotal arm 39 is also connected to an actuator 40. In the preferred embodiment, the actuator 40 comprises an air cylinder having a cylinder rod 40a pivotably connected to the pivotal arm 39 in order to allow relative angular displacement between the pivotal arm 39 and the cylinder rod 40a about a pivot 40b. On the other hand, the guide table 38 is associated with an actuator 42. The actuator 42 preferably comprises an air cylinder having a cylinder rod 41a pivotably connected to the guide table 38 in order to allow relative angular displacement between the guide table 38 and the cylinder rod 41a about a pivot 41b. The air cylinders 40 and 42 operate the pivotal arm 39 and the guide table 38 so that the free end edge of the guide table may contact with the periphery of coil of the metal strip 22 for releasing the end of the metal strip from the coil. The guide table 38, the pivotal arm 39 and the air cylinders 40 and 42 constitute a coil-opening mechanism in the coil-opener 26.

The coil end holding device 28 is provided above the cradle rollers 36. The coil end holding device comprises a magnetic chuck 44. The magnetic chuck 44 is suspended from a guide mechanism 46. The guide mechanism 46 includes a transfer beam 48 extending along a section of transporting path of the coils of metal strip between the coil-opener 26 and the uncoiler 20. A guide carridge 50 having rollers 50a engages with the transfer beam 48 for movement along the latter. The guide carridge 50 supports a vertical guide 53. The vertical guide 53 comprises a cylindrical outer guide 53a and a cylindrical or rod form inner guide 53b which is arranged coaxially within the outer guide. The outer guide 53a is fixed to the guide carridge 50 at its top end. On the other hand, the inner guide 53b is thrustingly movable up or down. The inner guide 53b has its lower end connected to the aforementioned magnetic chuck 44 through a mounting bracket 53c. The mounting bracket 53c has an extention 53d, to which the lower end of a cylinder rod 52a of an actuator 52 is connected. In the preferred construction, the actuator 52 also comprises an air cylinder. The air cylinder 52 drives the inner guide 53b of the vertical guide bearing the magnetic chuck 44 up and down.

It should be appreciated that, though the shown embodiment employs a magnetic chuck for holding the coil end, it would be possible to use a clamp or a suction holder for holding the strip end released from the coil 22.

In the operation of the above-mentioned preferred embodiment of the metal strip supply system, the metal strip coils 22 are continuously supplied to the coil transporting means, The coil cars 32 of the coil transporting means receive respective coils of metal strip coil 22 to transport them along the transporting path defined by the stationary skids 30. At this time, the coil of metal strip 22 on the coil car 32 is arranged so that the feed direction of the metal strip uncoiled therefrom matches with the supply direction of the metal strip treatment line at the position of the uncoiler 20. Therefore, in the example of Fig. 2, the coil of metal strip 22 is placed on the coil car so as to be unwound in a clockwise direction.

At the position of the transporting path opposite the coil-opener 26, the lifter 34 of the coil car 32 is actuated to lift up the coil of metal strip 22 and set it onto the cradle rollers 36. Then, as shown in Fig. 2 the cradle rollers 36 are driven in a counterclockwise direction by means of the driving motor. By driving the cradle rollers 36 in counterclockwise direction, the metal strip coil 22 on the cradle rollers 36 is driven to rotate in clockwise direction.

As coil of the metal strip 22 driven to rotate by the cradle rollers 36, the air cylinders 40 and 42 are actuated to pivotally move the pivotal arm 39 and the guide table 38 so that the edge of the guide table comes into contact with the periphery

of the coil of metal strip from the left side. The angular positions of the pivotal arm 39 and the guide table 38 are adjusted depending upon the diameter of the metal strip coil 22, as shown by phantom lines in Fig. 2.

By contacting the edge of the guide table from the left to the periphery of the coil of metal strip 22 which is rotating in clockwise direction, the edge of the metal strip comes into contact with the edge of the guide table thus separating it from the coil. Therefore, the end of the metal strip can be freed.

Then, the air cylinder 52 is actuated to drive the inner guide 53b of the vertical guide 53 downwards to bring the magnetic chuck into contact with the freed end of the metal strip, thereby allowing the magnetic chuck 44 to magnetically hold the strip coil end.

After the magnetic chuck has grasped the coil end, the lifter 34 of the coil car 32 is again actuated to carry the coil of metal strip coil 22 toward the uncoiler 20. At the same time, the guide carriage 50 with the vertical guide 53 moves together with the coil of metal strip 22 while holding the end of the strip by means of the magnetic chuck 44.

At the position opposite the uncoiler 20, the lifter 34 of the coil car 32 is again actuated to bring the center hole of the coil of metal strip 22 into alignment with the the mandrel 21. The metal strip coil 22 is then set on the mandrel of the uncoiler 20. Then, uncoiling operation is carried out by the uncoiler 20 in a per se well known manner.

As one coil of metal strip coil is uncoiled by the uncoiler 20, the next coil 22 is set on the coil-opener 26 to be opened.

It would be desirable to control operation performed by the system such as driving of the coil cars, and drive timing of the cradle rollers 36, air cylinders 40, 42 and 52 and the lifter 34 of the coil car by means of a controller which may comprise a computer-based control unit. The coil cars 32 may be controlled to stop at the position, at which the coil cars receive the coils of metal strip supplied from the coil storage area. On the other hand, the controller may monitor the position of respective coil cars for stopping a coil cars when it reaches the position of the coil-opener. After stopping the coil car 32 at the coil-opening position, the controller feeds a drive signal to the lifter 34 for setting the coil 22 onto the cradle rollers 36. Setting of the coil of metal strip 22 onto the cradle roller 36 may be detected by means of a coil sensor (not shown). Then, the controller feeds a drive signal to the driving motor to rotatingly drive the cradle rollers 36 to rotate the coil of metal strip 22 thereon. After starting rotation of the metal strip coil 22 on the cradle rollers 36, the controller feeds acutation signals to a pressure control unit (not shown) for the air cylinders 40 and 42 to move the pivotal arm 39 and the guide table 38. During this movement, the angular positions of the pivotal arm 39 and the guide table 38 may be feedback controlled utilizing sensors (not shown) which directly detect the angular position of the pivotal arm and the guide table, or, detect pressure in the air cylinders for indirectly detecting the the angular position or the pivotal arm and the guide table. When the end of the coil of metal strip 22 is opened by means of the coil opening mechansim set forth above, the controller detects this and stops the rotation of the coil of metal strip. At the same time, an actuation signal is fed to a pressure control unit (not shown) for the air cylinder 52 to lower the magnetic chuck 44. During this movement, the controller may monitor the position of the magnetic chuck and detect when the magnetic chuck is holding the freed end of the coil. Thereafter, the controller again feeds a drive signal for the lifter 34 to release the opened coil of metal strip 22 from the cradle rollers 36. When the controller has confirmed complete release of the coil of metal strip from the cradle rollers 36 its drives the coil car toward the uncoiler. The controller detects the coil car reaching the uncoiler 20 to feed an actuation signal to the pressure control unit for the air cylinder 52 for adjusting the position of the coil so that it may be acurately set on the mandrel. Setting of the mandrel is confirmed. After this, a drive signal is fed to the uncoiler for starting uncoiling operation.

With the controller set forth above, the driving timing of each component of the metal strip supply system may optimized.

As will be appreciated herefrom, a metal strip supply system according to the present invention is effective for continuously and efficiently uncoiling coils of metal strip for allowing continuous operation of a metal strip treatment line, such as a pickling line, a rolling mill line or so forth with substantially loss-time. Furthermore, according to the shown embodiment, since the same transporting means, i.e. coil car, can be used before and after opening the coil, the construction of the metal strip supply system is simplifier and less expensive. Furthermore, since the metal strip supply system has less components, it can be made more compact.

Figs. 3 and 4 show another embodiment of a metal strip supply system, according to the invention. In this embodiment, the coils of metal strip supplied from the coil yard are transported to the coil-opening position by means of a walking beam 56 mounted on a stationary skids 52. As shown in Fig. 4, the walking beam 56 comprises a movable carriage 60 associated with a drive cylinder 58. A walking beam body 66 is mounted on the movable carriage 60 through lifting links 64. A lifting cylinder 62 is connected to at least one of the lifting links

64 for adjusting the position of the walking beam body 66 relative to the movable carriage.

The coil-opener 26 and the strip end holding device 28, which have the identical construction as set out with respect to the former embodiment, are provided at the coil-opening position. Therefore, at the coil-opneing position, the coil of metal strip 22 transported by the walking beam 56 is set on the cradle rollers 54 supported by the stationary skids 52 for performing the coil opening operation set forth above.

After the coil-opening operation, the metal strip coil 22 is transferred with the coil end holding device 28 by means of the walking beam 56, to the coil car 32.

Claims

1. A system for uncoiling and feeding a metal strip to a metal strip treatment line, comprising :

an uncoiler (20) for uncoiling a coil (22) of metal strip for feeding the uncoiled metal strip to said metal strip treatment line, said uncoiler having a mandrel (21) :

first means (24) for transporting said coil of metal strip from a supply station to a coil-opening station, said first means holding the central axis of said coil of metal strip essentially parallel to said axis of said mandrel ;

second means (26), provided in said coil-opening station, for opening the coil ;

third means (28), associated with said second means, for holding the strip end released from the coil by means of said second means away from the coil ; and

fourth means (32) for transporting the opened coil of metal strip, while said third means holds the strip end away from the coil, from said coil-opening station to an uncoiling station where said uncoiler is provided, said fourth means holding the axis of said coil of metal strip essentially parallel to said axis of said mandrel,

characterized in that

the axis of said mandrel (21) of said uncoiler (20) is perpendicular to the feeding direction of supply of the uncoiled metal strip ; and

said third means (28) comprises holding means (44) for holding the strip end and transfer means (46) supporting said holding means for movement along said transporting path so that said holding means moves therealong according to movement of said metal strip coil by means of said fourth means.

2. A system as set forth in claim 1, wherein said second means and fourth means are simultaneously operable so that said second means can perform a coil opening operation on one coil while said uncoiler performs an uncoiling operation on another coil.

3. A system as set forth in claim 1, wherein said first means and fourth means transports said coil of metal strip by means of a common coil transporting means (32).

4. A system as set forth in claim 3, wherein said common coil transporting means comprises a coil car (32) movable along a transporting path extending in a direction which is essentially parallel to the axis of said mandrel (21).

5. A system as set forth in claim 4, wherein said coil car (32) comprises means (34) for setting said coil of metal strip onto said second means and to said uncoiler.

6. A system as set forth in claim 1, wherein said second means (26) comprises driving means (36) for supporting said coil of metal strip and rotatingly driving said coil in a predetermined direction, guide means (38) movable toward and away from said coil of metal strip to contact said coil while said coil is rotating to release the strip end from the coil.

7. A system as set forth in claim 6, wherein said second means (26) further comprises actuator means (40,42) associated with said guide means (38) for moving said guide means toward and away from said coil of metal strip.

Patentansprüche

1. Anlage zum Abwickeln und Zuführen eines Metallbandes zu einer Metallband-Behandlungsanlage, die umfaßt:
eine Abwickelvorrichtung (20) zum Abwickeln eines Bundes (22) aus Metallband zur Zufuhr des abgewickelten Metallbandes zu der Metallband-Behandlungsanlage, wobei die Abwickelvorrichtung einen Dorn (21) aufweist;
eine erste Einrichtung (24) zum Transport des Bundes aus Metallband von einer Zufuhrstation zu einer Bundöffnungsstation, wobei die erste Einrichtung die Mittelachse des Bundes aus Metallband im wesentlichen parallel zur Achse des Dorns hält;
eine zweite Einrichtung (26), die in der Bundöffnungsstation vorhanden ist und das Bund öffnet;
eine dritte Einrichtung (28), die mit der zweiten

Einrichtung verbunden ist und das Bandende, das von dem Bund gelöst worden ist, mittels der zweiten Einrichtung von dem Bund weghält; und

eine vierte Einrichtung (32) zum Transport des geöffneten Bundes aus Metallband von der Bundöffnungsstation zu einer Abwickelstation, an der die Abwickelvorrichtung vorhanden ist, wobei die dritte Einrichtung das Bandende von dem Bund weghält, wobei die vierte Einrichtung die Achse des Bundes aus Metallband im wesentlichen parallel zur Achse des Dorns halt, **dadurch gekennzeichnet,** daß

die Achse des Dorns (21) der Abwickelvorrichtung (20) senkrecht zur Vorschubrichtung der Zufuhr des abgewickelten Metallbandes ist; und

die dritte Einrichtung (28) eine Halteeinrichtung (44) umfaßt, die das Bandende hält, sowie eine Überführungseinrichtung (46), die die Halteeinrichtung an dem Transportweg entlang beweglich hält, so daß sich die Halteeinrichtung entsprechend der Bewegung des Metallbandbundes mittels der vierten Einrichtung auf selbigem bewegt.

2. Anlage nach Anspruch 1, wobei die zweite Einrichtung und die vierte Einrichtung gleichzeitig arbeiten, so daß die zweite Einrichtung einen Bundöffnungsvorgang an einem Bund ausführen kann, während die Abwickelvorrichtung einen Abwickelvorgang an einen anderen Bund ausführt.

3. Anlage nach Anspruch 1, wobei die erste Einrichtung und die vierte Einrichtung das Bund aus Metallstreifen mittels einer gemeinsamen Bundtransporteinrichtung (32) transportieren.

4. Anlage nach Anspruch 3, wobei die gemeinsame Bundtransporteinrichtung einen Bundwagen (32) umfaßt, der auf einem Transportweg beweglich ist, der in einer Richtung verläuft, die im wesentlichen parallel zur Achse des Dorns (21) ist.

5. Anlage nach Anspruch 4, wobei der Bundwagen (32) eine Einrichtung (34) zur Anbringung des Bundes aus Metallband auf der zweiten Einrichtung und auf der Abwickelvorrichtung umfaßt.

6. Anlage nach Anspruch 1, wobei die zweite Einrichtung (26) eine Antriebseinrichtung (36) umfaßt, die das Bund aus Metallband trägt und das Bund drehend in einer vorgegebenen Richtung bewegt, eine Führungseinrichtung (38), die auf das Bund aus Metallband zu und von ihm weg beweglich ist und mit dem Bund in Kontakt ist, während sich das Bund dreht, um das Bandende von dem Bund zu lösen.

7. Anlage nach Anspruch 6, wobei die zweite Einrichtung (26) des weiteren mit der Führungseinrichtung (38) verbundene Bewegungseinrichtungen (40,42) umfaßt, die die Führungseinrichtung auf den Bund aus Metallband zu und von ihm weg bewegen.

Revendications

1. Système pour dévider et charger une bande de métal sur une ligne de traitement de bande de métal, comportant :

un dévidoir (20) pour dévider une bobine (22) de bande de métal pour charger la bande de métal dévidée sur ladite ligne de traitement de bande de métal, ledit dévidoir possédant un mandrin (21) :

des premiers moyens (24) pour transporter ladite bobine de bande de métal depuis un poste d'alimentation jusqu'à un poste d'ouverture de bobine, lesdits premiers moyens maintenant l'axe central de ladite bobine de bande de métal sensiblement parallèle audit axe dudit mandrin;

des seconds moyens (26), prévus dans ledit poste d'ouverture de bobine, pour ouvrir la bobine ;

des troisièmes moyens (28), associés auxdits seconds moyens, pour maintenir l'extrémité de la bande dégagée de la bobine à l'aide desdits seconds moyens, écartée de la bobine ; et

des quatrièmes moyens (32) pour transporter la bobine ouverte de bande de métal, tandis que lesdits troisièmes moyens maintiennent l'extrémité de la bande écartée de la bobine, dudit poste d'ouverture de la bobine jusqu'à un poste de dévidage où se trouve ledit dévidoir, lesdits quatrièmes moyens maintenant l'axe de ladite bobine de bande de métal sensiblement parallèle audit axe dudit mandrin,

caractérisé en ce que

l'axe dudit mandrin (21) dudit dévidoir (20) est perpendiculaire à la direction de chargement de délivrance de la bande de métal dévidée ; et

lesdits troisièmes moyens (28) comportent des moyens de maintien (44) pour maintenir l'extrémité de la bande et les moyens de transfert (46) supportant lesdits moyens de maintien pour un déplacement le long dudit trajet de transport de sorte que lesdits moyens de maintien se déplacent le long de celui-ci

conformément au déplacement de ladite bobine de bande de métal à l'aide desdits quatrièmes moyens.

2. Système selon la revendication 1, dans lequel lesdits seconds moyens et lesdits quatrièmes moyens sont actionnables simultanément de sorte que lesdits seconds moyens peuvent effectuer une opération d'ouverture de bobine sur une bobine, tandis que ledit dévidoir accomplit une opération de dévidage sur une autre bobine.

3. Système selon la revendication 1, dans lequel lesdits premiers et lesdits quatrièmes moyens transportent ladite bobine de bande de métal à l'aide d'un moyen de transport de bobine commun (32).

4. Système selon la revendication 3, dans lequel ledit moyen de transport de bobine commun comporte un chariot de bobine (32) déplaçable le long d'un trajet de transport s'étendant dans une direction sensiblement parallèle à l'axe dudit mandrin (21).

5. Système selon la revendication 4, dans lequel ledit chariot de bobine (32) comporte des moyens (34) pour fixer ladite bobine de bande de métal sur lesdits seconds moyens et sur ledit dévidoir.

6. Système selon la revendication 1, dans lequel lesdits seconds moyens (26) comportent des moyens d'entraînement (36) pour supporter ladite bobine de bande de métal et entraîner en rotation ladite bobine dans une direction prédéterminée, des moyens de guidage (38) pouvant être rapprochés et éloignés de ladite bobine de bande de métal pour venir en contact de ladite bobine tandis que cette dernière tourne pour dégager l'extrémité de la bande de la bobine.

7. Système selon la revendication 6, dans lequel lesdits seconds moyens (26) comportent en outre des moyens d'actionnement (40, 42) associés auxdits moyens de guidage (38) pour rapprocher et éloigner lesdits moyens de guidage de ladite bobine de bande de métal.

FIG. 1

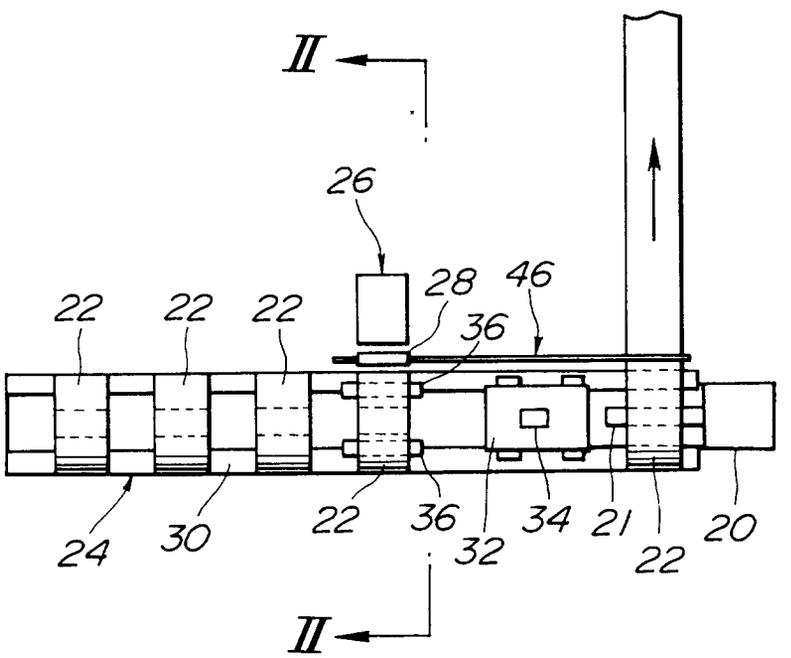
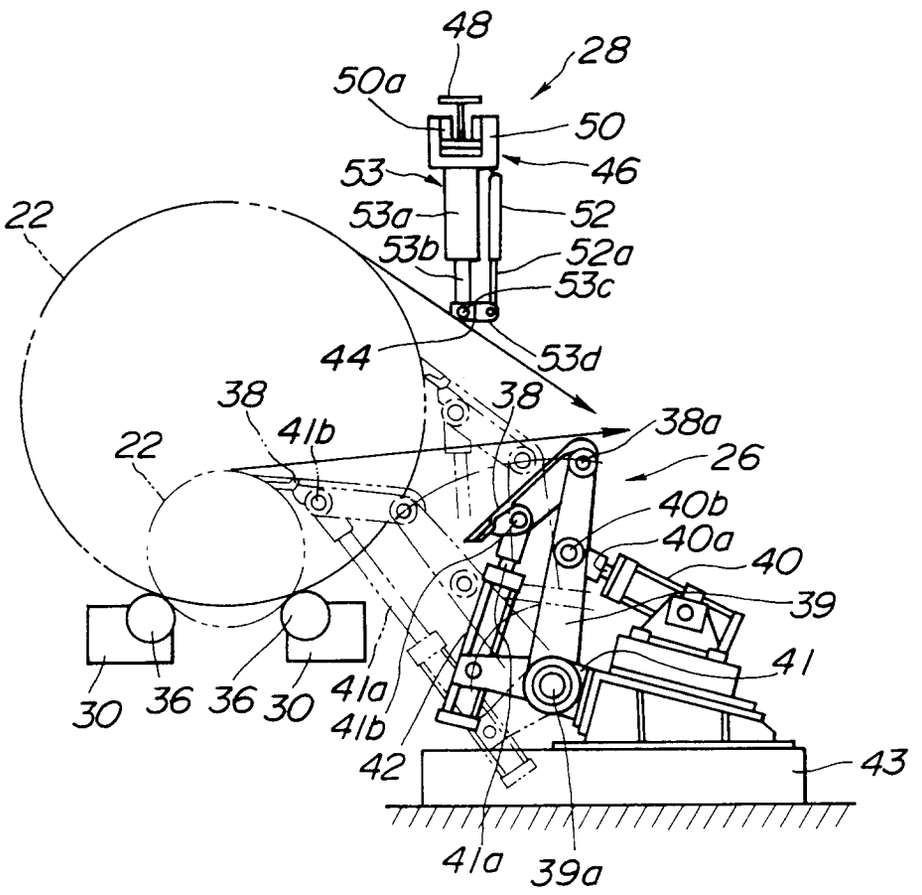


FIG.2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53c
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53d
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41b
38a
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43
41a
39a

FIG.3

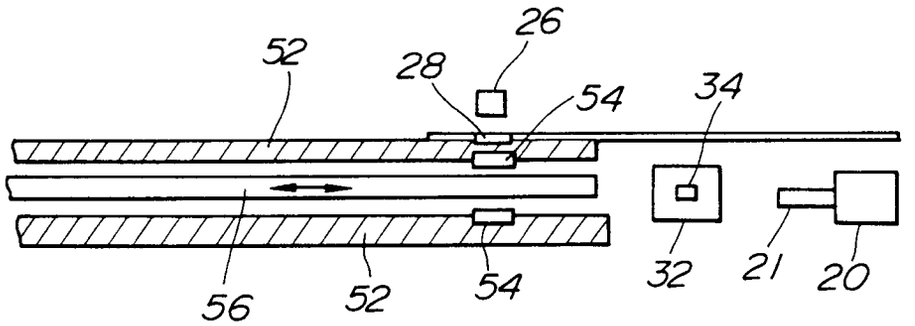

FIG.4