

Title (en)

Line for straightening strip material wrapped to a coil and for feeding in the same to a processing machine

Title (de)

Bandanlage zum Geraderichten von zu Coils aufgewickeltem Bandmaterial und zur Einführung desselben in eine Weiterverarbeitungsmaschine

Title (fr)

Installation de redressage d'un matériau en bande enroulé autour de bobines et à l'introduction de celui-ci dans une machine de traitement

Publication

EP 1916042 A1 20080430 (DE)

Application

EP 07016142 A 20070817

Priority

DE 102006050287 A 20061023

Abstract (en)

The line for straightening strip material (3) wrapped to a coil (2) and for feeding in the strip material to a processing machine, comprises a winder (4), on which the coil is holdable and the strip material of the coil is windable, a feed (5) for the delivery of the strip material from the line to the processing machine, a straightening machine (6) displaced between the winder and the feed, a device (23) for cutting the strip material end of the coils and the strip material beginning of the coils, and a device for connecting the cut strip material end with the cut strip material beginning. The line for straightening strip material (3) wrapped to a coil (2) and for feeding in the strip material to a processing machine, comprises a winder (4), on which the coil is holdable and the strip material of the coil is windable, a feed (5) for the delivery of the strip material from the line to the processing machine, a straightening machine (6) displaced between the winder and the feed, a device (23) for cutting the strip material end of the coils and the strip material beginning of the coils according to a predefinable outline related to the level stretched by the length and breadth of the strip, and a device for connecting the cut strip material end with the cut strip material beginning. The straightening machine is hung at guides and its winder-side line inlet is raised or lowered. The cutting device is adjustable so that the non-predefinable outline by stressed places processes the work piece producible from the strip material in the processing machine. The straightening machine comprises a separating mechanism at the line intake so that it is adjustable and controllable. The strip remainder and/or strip end hook of the strip material windable on the winder are obligatorily separated. The separating mechanism is formed as a plasma or laser cutting device, which is propelable with a high number of revolutions and is displaceable by a ball caster spindle mechanism with gear motor in an angle of 90 degrees to the direction of travel of the strip material. A cutting- and connecting device are arranged in the feed at the line-intake side. The distance between the cutting device and the middle of the feed rolls of the feed is an integer multiple of the feed length. The strip material end and -beginning of the coil circumscribed by the cutting device are positioned to one another in the area of the connection device arranged between the cutting device and the feed inlet. The distance between the connecting device and the cutting device and/or the center of a feed roller corresponds to the feed length or an integer multiples of the feed length. A cutting and/or a connecting head of the cutting device and/or the connecting device are propelable by a drive device with servomotor, servo frequency converter and ball spindle mechanism. The cutting head is formed as laser or plasma cutter head. The connecting head is formed as laser or plasma welding head. The cutting device cuts according to predefined data in a work piece memory. The connecting device is formed as clinching device. A centering device is arranged in the straightening machine for centering the strip material in horizontal direction. The upper straightening rolls of the straightening machine is held for few seconds in ventilatable manner and the strip side guides of the centering device are centrally adjustable after ventilation of the upper straightening rolls by positioning motor-thread spindle mechanism. The line has displacement gauges or fork light barriers, by which the circulating path of the guides of the centering device is penetratable and is placed in the bandwidth distance in centering position. The strip-side guides are formed as hardened and polished strip-side guides. The feed-side strip outlet of the straightening machine is raised and lowered. The straightening machine and/or the strip inlet of the straightening machine is adjustable with all outside diameters of the coils in an optimal beginning of the strip transfer position. The straightening machine and/or the strip outlet of the straightening machine with different vertical position of the feed and/or the processing machine proximate to the feed motion is adjustable into the optimal beginning of strip transfer position. A swivel bearing of the straightening machine, around which the strip inlet during raising and lowering is tiltable, is adjustable in vertical direction with respect to the guide and/or the guides. A vertical position drive for the strip inlet of the straightening machine comprises a servomotor, servo frequency converter and ball spindle mechanism. A vertical position drive for the strip outlet of the straightening machine comprises two servomotor, servo frequency converter and ball spindle mechanism. A horizontal position drive for the straightening machine comprises a servo gear motor, a precision gear wheel and a precision gear rack. The horizontal and the vertical position drives are operable at the same time. A discharge brake torque of an outlet brake of the winder is controllable dependent upon the outside diameter of the coils. The straightening machine at the strip inlet has a strip end sensor for detecting the availability of the strip remainder. The straightening machine is displaceable by the horizontal position drive with standing straightening machine roles with the strip speed in horizontal direction. A displacement sensor is arranged at the feed motion and by which the strip speed is detectable and transferred to a control device of the horizontal position drive. A sensor startable by the straightening machine is arranged in a predefined distance of 1.5 m. The horizontal position drive is adjustable for a distance of 1 m with a creep speed. A transfer table is arranged within the area of the inlet-side of the separating device. The separating mechanism is formed as compactly formed shears for the strip material beginning.

Abstract (de)

Eine Bandanlage (1) zum Geraderichten von zu Coils (2) aufgewickeltem Bandmaterial (3) und zur Einführung desselben in eine Weiterverarbeitungsmaschine hat einen Abwickler (4), auf dem das Coil (2) halterbar und das Bandmaterial (3) vom Coil (2) abwickelbar ist, einen Vorschub (5), mittels dem das Bandmaterial (3) aus der Bandanlage (1) an die Weiterverarbeitungsmaschine übergebbar ist, und eine Richtmaschine (6), die zwischen dem Abwickler (4) einerseits und dem Vorschub (5) andererseits verfahrbar, an einer oder mehreren Führungen (7) aufgehängt und deren abwicklerseitiger Bandeinführung (9) heb- und senkbar ist. Um einen störungsfreieren und kontinuierlicheren Betrieb der Bandanlage sowie der nachgeschalteten Weiterverarbeitungsmaschine zu realisieren, wird vorgeschlagen, dass die Bandanlage (1) eine Schneidvorrichtung (23) zum Beschneiden des Bandmaterialendes eines Coils (2) und des Bandmaterialanfangs des darauf folgenden Coils (2) entsprechend einer vorgebbaren Kontur, bezogen auf die durch die Bandlängs- und Bandbreitenrichtung aufgespannte Ebene, und eine Verbindungsvorrichtung (23) zum Verbinden des beschneiten Bandmaterialendes mit dem beschneiten Bandmaterialanfang aufweist, wobei die Schneidvorrichtung (23) so einstellbar ist, dass die vorgebbare Kontur nicht durch beanspruchte Stellen des aus dem Bandmaterial (3) in der Weiterverarbeitungsmaschine herstellbaren Werkstücks verläuft.

IPC 8 full level

B21C 47/18 (2006.01); **B21C 47/24** (2006.01); **B21D 1/02** (2006.01); **B21D 43/02** (2006.01); **B21D 43/28** (2006.01); **B23D 15/06** (2006.01); **B23K 26/26** (2006.01)

CPC (source: EP)

B21C 47/18 (2013.01); **B21C 47/247** (2013.01)

Citation (search report)

- [YAX] DE 9015198 U1 19920305
- [Y] EP 0659518 A1 19950628 - LORRAINE LAMINAGE [FR]

- [XA] EP 0368234 A2 19900516 - FECKER GMBH MASCHBAU [DE]
- [Y] DE 2461495 A1 19750710 - INTERLAKE INC
- [A] DE 2461496 A1 19750710 - INTERLAKE INC
- [A] US 3722251 A 19730327 - WITHROW D
- [A] DE 2748613 A1 19790503 - FREI HANS JOACHIM
- [A] DE 2949095 B1 19810326 - WEINGARTEN AG MASCHF
- [A] EP 0875305 A1 19981104 - EDT RIPOLL A SF FOUNDATION TAM [ES]
- [A] EP 0396498 A1 19901107 - OXYTECHNIK GES SYSTEMTECH [DE]
- [A] DE 3701667 C1 19880114 - MANNESMANN AG
- [A] JP S51119364 A 19761019 - ISHIKAWAJIMA HARIMA HEAVY IND, et al
- [A] DE 1552928 A1 19720309 - WIRTH ALFRED & CO KG
- [A] EP 1413371 A2 20040428 - SANKYO SEISAKUSHO KK [JP]
- [A] DATABASE WPI Derwent World Patents Index; AN 1989-218551, XP002465167

Cited by

CN105895363A; CN117300439A; CN103659273A; CN109967566A; CN110479799A; CN113275894A; CN103128356A; CN105397493A; CN114347332A; CN108296308A; CN105750359A; CN105855327A; CN109890557A; CN102489775A; CN112621235A; CN116902770A; US11426819B2

Designated contracting state (EPC)

AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HU IE IS IT LI LT LU LV MC MT NL PL PT RO SE SI SK TR

Designated extension state (EPC)

AL BA HR MK RS

DOCDB simple family (publication)

EP 1916042 A1 20080430; EP 1916042 B1 20091118; AT E448891 T1 20091215; DE 102006050287 A1 20080430; DE 102006050287 B4 20211028; DE 502007002018 D1 20091231

DOCDB simple family (application)

EP 07016142 A 20070817; AT 07016142 T 20070817; DE 102006050287 A 20061023; DE 502007002018 T 20070817