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Rodach

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[54] **REEL FOR COLLING STRIP**

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[30] **Foreign Application Priority Data**

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[52] **U.S. Cl.** **242/78.3,** 242/74

[51] **Int. Cl.** **B21c 47/06,** B65h 75/28

[58] **Field of Search** 242/78.3, 74

[56] **References Cited**

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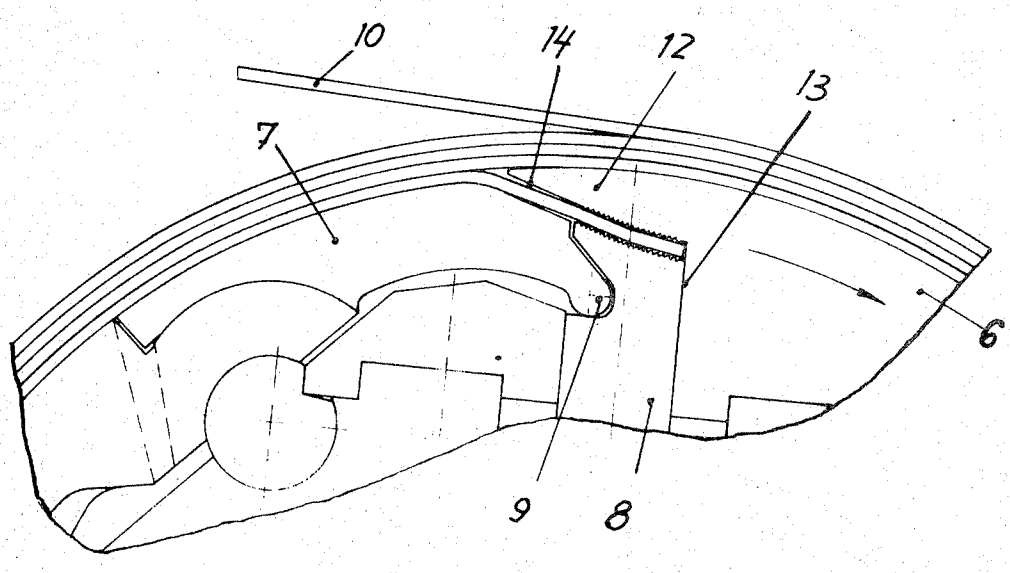
[57] **ABSTRACT**

The reel comprises a plurality of expansible shell portions, expanding bars operable to expand said shell portions, a radially movable clamping bar for clamping a strip end portion, and a pivotally movable transition member, which is coupled to said clamping bar by interengaging therewith and adapted to guide a strip portion adjacent to said clamped strip end portion.

7 Claims, 9 Drawing Figures



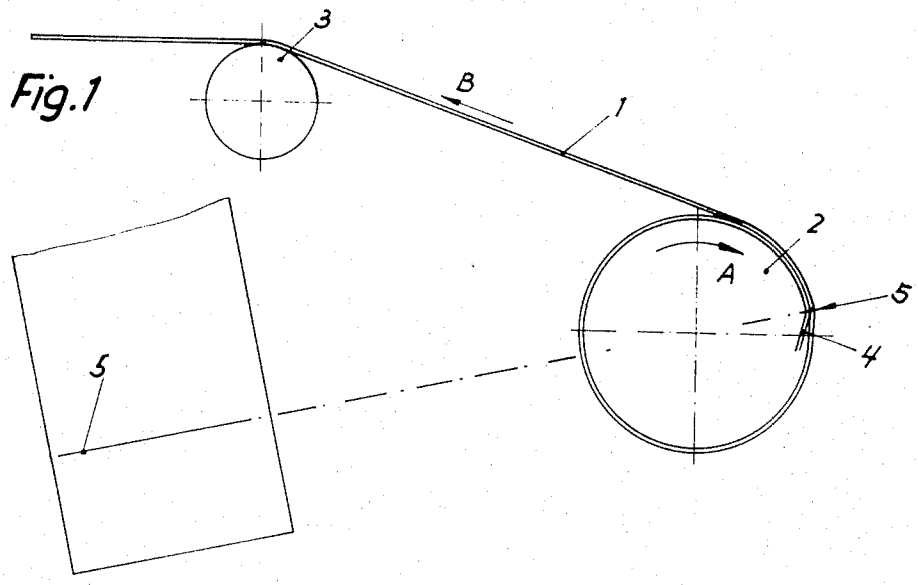


Fig.1

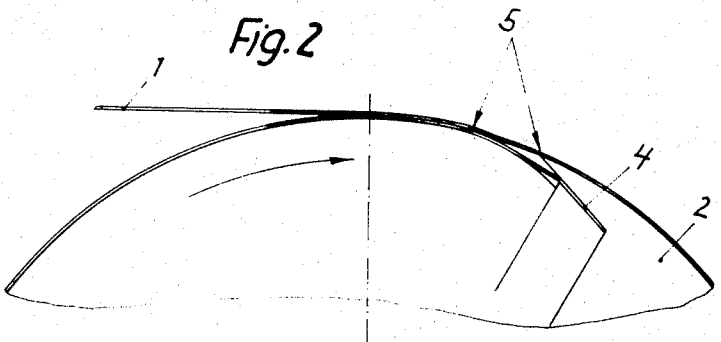


Fig.2

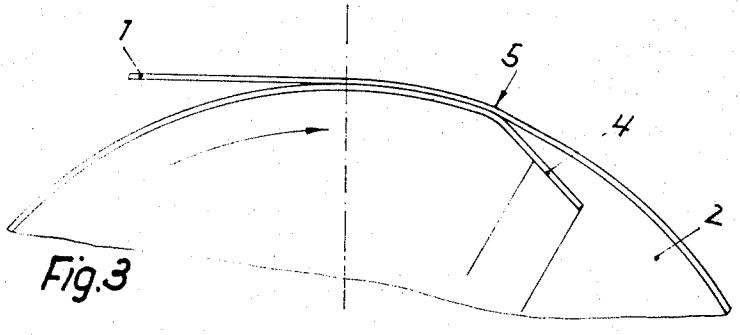


Fig.3

Fig.4

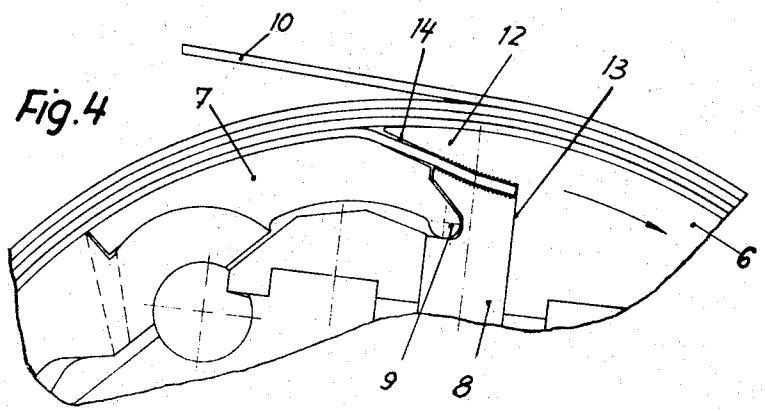
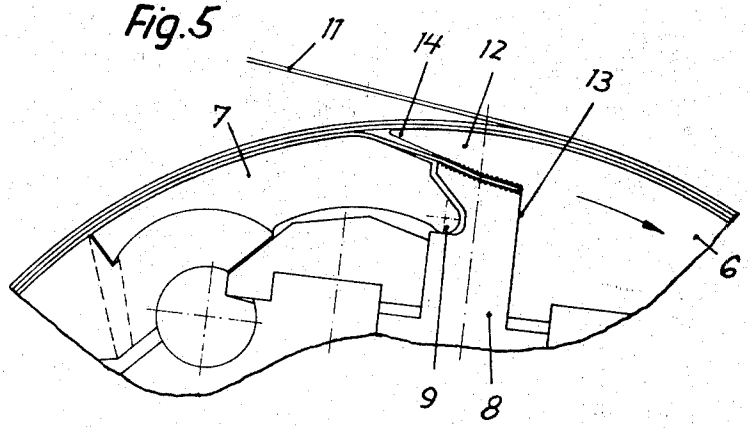


Fig.5



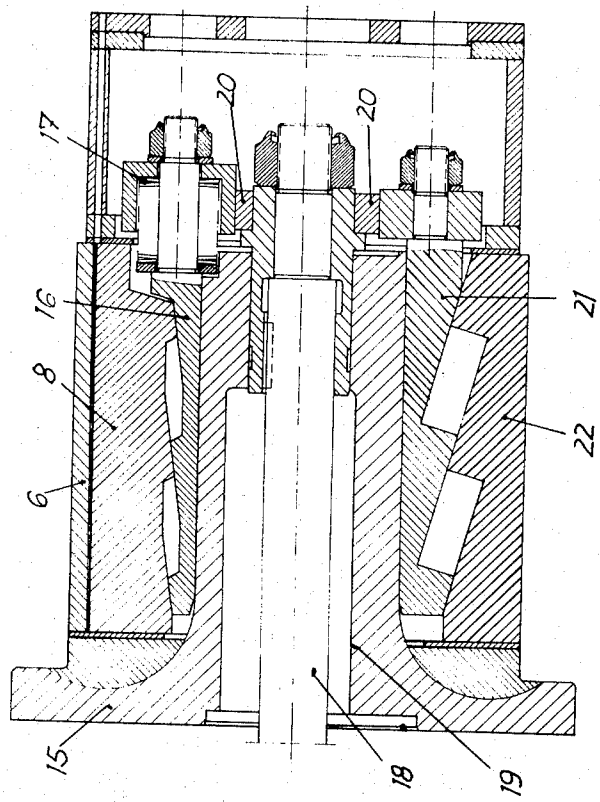


Fig. 7

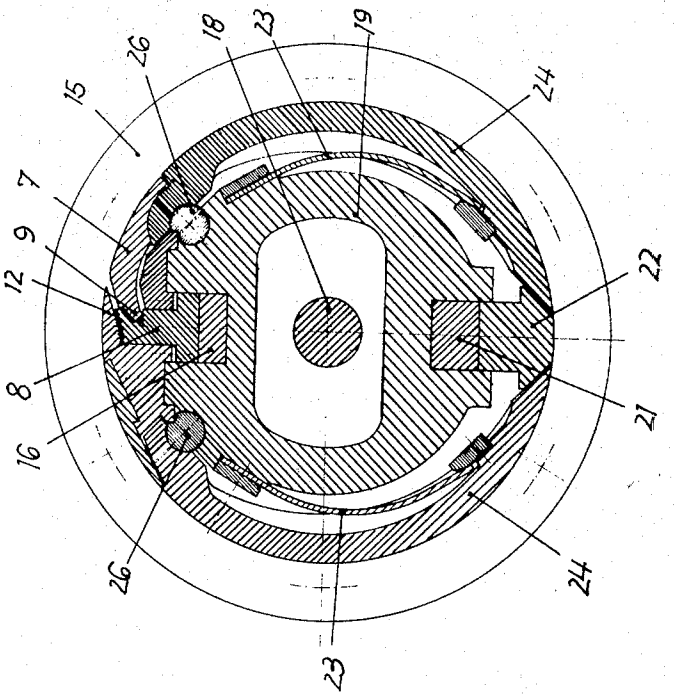


Fig. 6

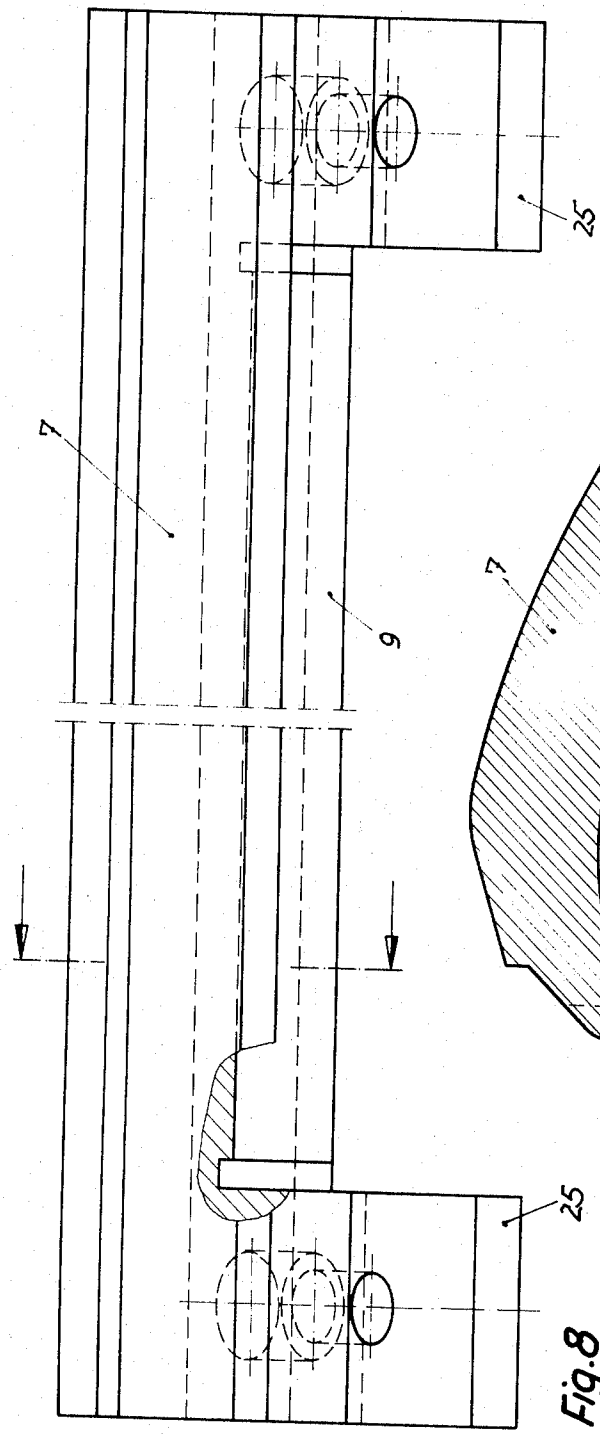


Fig.8

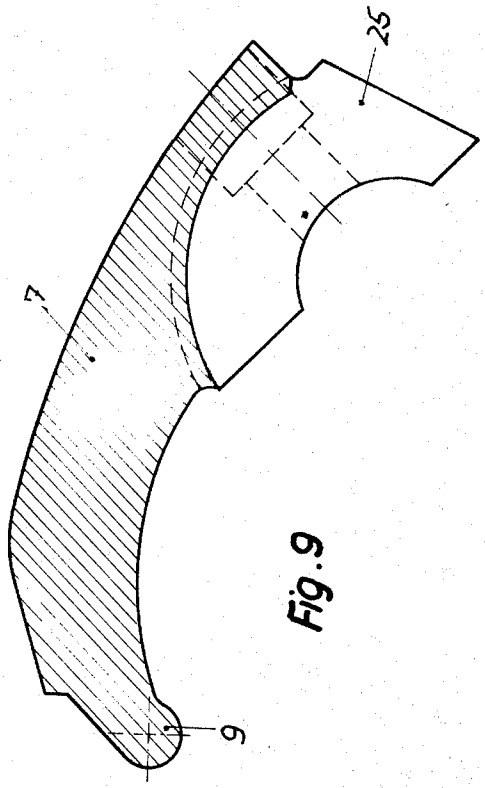


Fig.9

REEL FOR COLLING STRIP

This invention relates to a reel for coiling strip, particularly strip metal in strip-manufacturing and -processing plants.

Reels are known which comprise radially displaceable, expansible shell portions, which are adjustable by means of expanding bars, and a pivotally movable transition member for guiding a transitional strip portion adjacent to the clamped end portion of the strip. In such an arrangement, it is difficult to ensure a reliable clamping of the end portion of the strip and a satisfactory transition from the clamped portion to the coiled strip. The strip is liable to be kinked or compressed at said transition and depending on the thickness of the strip and the properties of its material such deformations are propagated more or less into the coiled strip so that a leading portion thereof is unusable.

In a reel for coiling strip, particularly strip metal in strip-manufacturing and -processing plants which reel comprises preferably radially displaceable, expansible shell portions, which are adjustable by one or more expanding bars, and a pivotally movable transition member for guiding a transitional strip portion adjacent to the clamped end portion of the strip, these disadvantages are eliminated according to the invention in that a radially displaceable clamping bar for clamping the end portion of the strip interengages with and is thus coupled to the transition member. This results both in a satisfactory clamping action and in a smooth transition between the clamped portion of the strip and the coiled strip because the transition member serves only to guide the transitional portion of the strip and the clamping bar serves only to clamp the end portion of the strip. The two functions are thus performed by separate parts and these parts are coupled for performing their functions.

Specifically, the clamping bar is fitted in a longitudinal groove between the hinged expansible shell portions, which groove is covered by a projection leaving a narrow slot for receiving the end portion of the strip, whereas the transition member which interengages with and is thus coupled to the clamping bar provides a smooth path for the transitional portion of the strip. The clamping bar is operatively connected to a wedge bar, which is spring-biased in the clamping direction. Owing to the wedge transmission, the clamping force derived from the spring force is multiplied.

The clamping bar is operatively connected to the axially displaceable wedge bar, which is adjustable by means of an expanding rod, which extends through the hollow core of the reel and is displaceable by pneumatic or hydraulic force.

The expanding rod may be operatively connected to a cross-member and by means of the same may be used to adjust a first wedge bar, to which a clamping bar for clamping the end portion of the strip is operatively connected by means of pressure plungers, and to adjust additional wedge bars, to which respective expanding bars for adjusting the expansible shell portions are operatively connected.

An embodiment of a reel according to the invention is shown by way of example on the drawings, in which

FIGS. 1 to 3 are diagrammatic views showing a reel in which kinks are formed in the strip.

FIG. 4 and 5 are fragmentary sectional views showing the clamping means of a strip reel according to the invention used with two strips differing in thickness.

FIGS. 6 and 7 are, respectively, a transverse sectional view and a longitudinal sectional view showing a strip reel according to the invention and

FIGS. 8 and 9 are enlarged views showing, respectively, in elevation and cross-section the transition member which in accordance with the invention is disposed over and hinged to the clamping bar.

FIGS. 1 to 3 of the drawing illustrate the coiling of a strip 1 on a conventional reel 2 in the direction A. The reel is preceded by a deflecting roller 3 and the strip is subjected to tension in the direction of the arrow indicated by the arrow B. It is apparent that kinks 5 are formed in the strip where the latter is clamped at 4. Depending on the thickness and material of the strip, these kinks result in a deformation of the coiled strip to a smaller or larger depth. The invention eliminates this disadvantage while ensuring a reliable clamping.

This is illustrated in FIGS. 4 and 5, which show a reel 6 which adjacent to the area in which the leading end of the strip is clamped is provided with at least one transition member 7, which is pivotally movable inwardly from a position in which it is flush with the outside peripheral surface of the reel 6. The transition member interengages with and is thus coupled at 9 to the slidably mounted clamping bar 8. This is indicated in FIGS. 4 and 5 in conjunction with two strips 10 and 11 differing in thickness at the clamping means. The clamping bar 8 is fitted in a longitudinal groove 13, which is formed in the reel and covered by a projection 12 leaving a narrow slot 14 for receiving the strip. The transition member 7, which interengages with and is thus coupled to the clamping bar 8, ensures a smooth transition path for the strip.

As is apparent from FIGS. 6 and 7, the reel 6 is mounted only at one end at 15. The clamping bar 8 is held by a spring 17 in engagement with a wedge bar 16, which is axially slidable by means of an expanding rod 18. Owing to the wedge transmission, the clamping force derived from the spring 17 is a multiple of the spring force. The latter extends in the hollow core 19 of the reel and is pneumatically or hydraulically slidable. The expanding rod 18 carries a cross-member 20, which engages the wedge bar 16 to adjust the same, also engages a second wedge bar 21, on which an expanding bar 22 is seated. Two hinged expansible shell portions 24 are urged by springs 23 against the expanding bar 22, as is apparent from FIG. 6.

FIGS. 8 and 9 show the transition member 7 provided with a coupling portion for connection to the clamping bar 8, and at both ends with bearing portions 25 for pivotally mounting the transition member on the hinge pin 26 of one of the expansible shell portions 24.

What is claimed is:

1. A reel for coiling strip, which comprises:
- a plurality of expansible shell portions;
- an expanding bar operable to expand the shell portions;
- a radially movable clamping bar for clamping a strip end portion;
- a pivotally movable transition member which is coupled to the clamping bar by interengaging therewith and adapted to guide a strip portion adjacent to the clamped strip end portion;
- the clamping bar being operatively connected to an axially slidable wedge bar;
- a hollow core being provided; and

an expanding rod slidably mounted in the core and operable by suitable power drive means to adjust the wedge bar.

2. A reel for coiling strip as set forth in claim 1 wherein the shell portions are hingedly mounted.

3. A reel for coiling strip as set forth in claim 1 wherein a body is provided which extends between the shell portions and carries the same; the body being formed with a longitudinal groove and with a projection covering the groove and leaving a narrow slot for receiving a transitional strip portion adjacent to the strip end portion; the clamping bar being fitted in the groove; and the transition member providing a smooth transition path for such transitional strip portion extending through the slot.

4. A reel for coiling strip as set forth in claim 1 wherein the clamping bar is operatively connected to the wedge bar which is spring-loaded in the clamping direction.

5. A reel for coiling strip as set forth in claim 1 wherein an additional wedge bar is provided and operatively connected to said expanding bar to adjust the expansible shell portion associated therewith; and a cross-member is provided which operatively connects the expanding rod to the wedge bar operatively connected to the clamping bar and also operatively connects the expanding rod to the additional wedge bar, whereby the expanding rod is adapted to adjust both of the wedge bars.

6. A reel for coiling strip, particularly strip metal in strip-manufacturing and processing plants, comprising a pair of expansible shell portions; an expansion bar operable to adjustably expand the shell portions; a radially movable and adjustable clamping bar member movable between an inoperative position and an operative position engaging and clamping an end portion of a strip to hold the strip in operable position on the reel, the clamping bar being operatively connected to an axially slidable wedge-shaped bar; the radially adjustable clamping bar resting against and adjacent to the axially adjustable wedge-shaped bar; and a transition member movable in a pivotable manner about one end portion connected with the reel with the other end portion operatively engageable with the clamping bar for radially directed movement therewith whereby in the inoperative position of the clamping bar the transition member is adapted to guide an end portion of the strip into a position adjacent the clamping bar, and radially movable with the clamping bar to an operative position where the strip end portion is securely clamped to the reel.

7. A reel for coiling strip as set forth in claim 6 further characterized by the transition member being pivotally supported on one of the expandable shell members for pivotal movement relative thereto.

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