

July 11, 1967

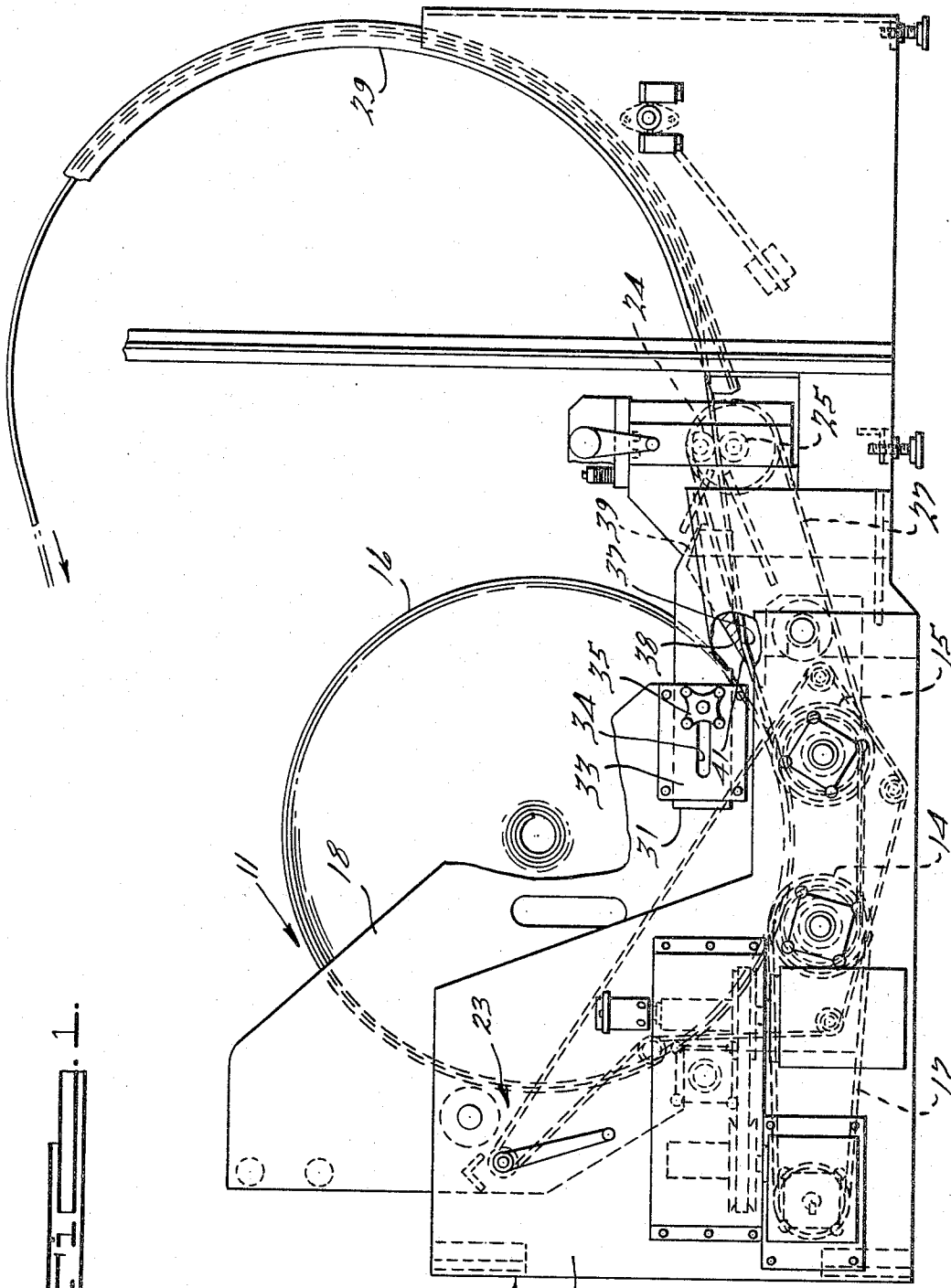
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3,330,497

MEANS FOR DIRECTING COILED SHEET METAL STOCK TO PINCH ROLLS

Filed June 10, 1965

2 Sheets-Sheet 1



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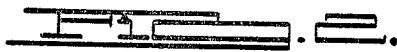
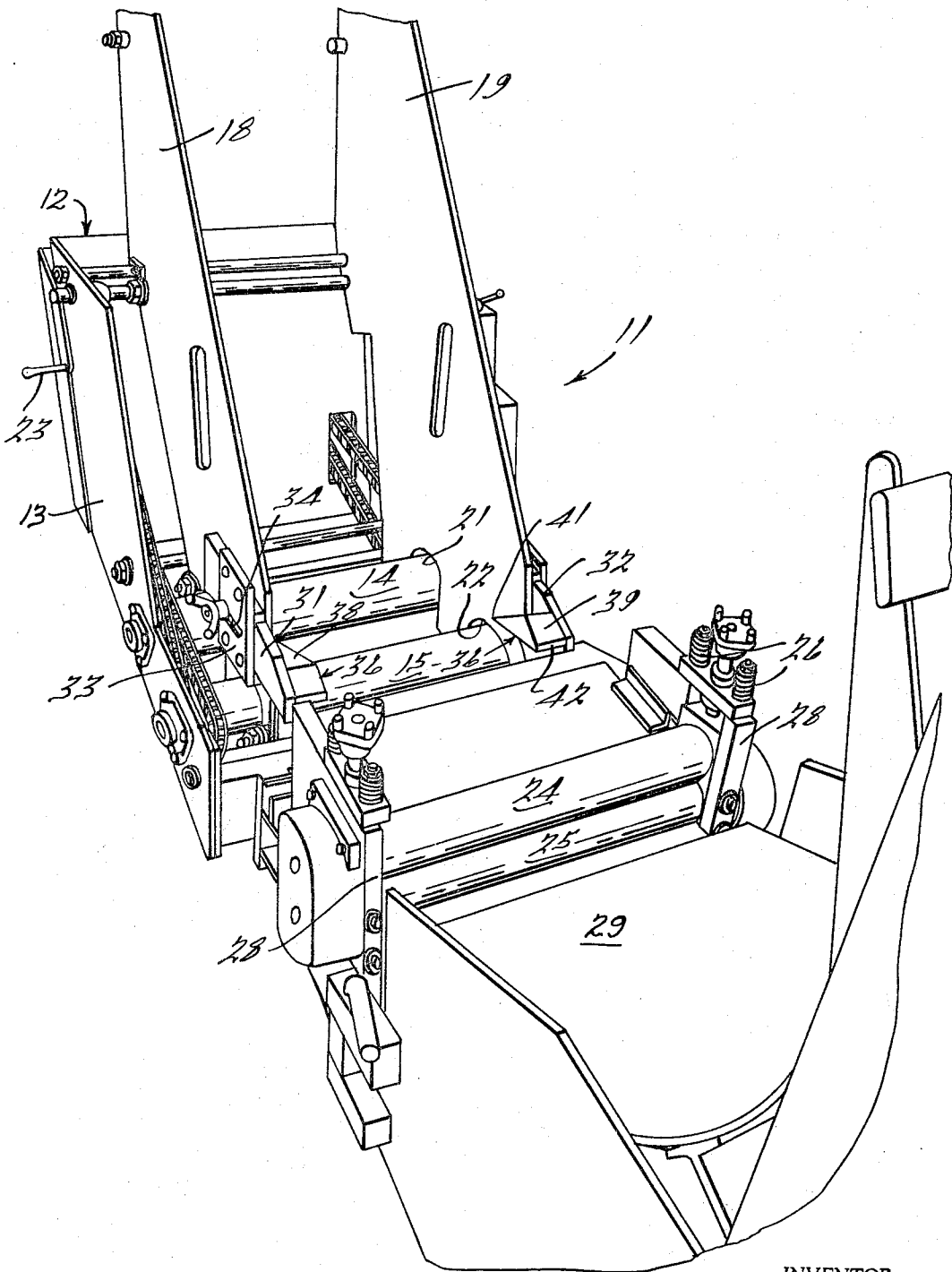
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MEANS FOR DIRECTING COILED SHEET METAL STOCK TO PINCH ROLLS

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Filed June 10, 1965, Ser. No. 462,831

4 Claims. (Cl. 242—78.8)

This invention relates to equipment for handling coils of sheet metal stock, and more particularly, to apparatus for directing such stock from the coil to pinch rolls which draw the stock from the coil.

It is an object of the present invention to provide novel and improved apparatus for directing coiled sheet metal stock to the pinch rolls without the necessity of handling the leading end of the coil.

It is another object to provide an improved device of this character which is adjustable for various sizes of rolls and will be positive in its action at all times.

It is a further object to provide an improved apparatus having these characteristics, which is of simple and economical construction, occupies a minimum of space, and requires little or no maintenance.

Other objects, features and advantages of the present invention will become apparent from the subsequent description, taken in conjunction with the accompanying drawings.

In the drawings:

FIGURE 1 is a side elevational view of a coil cradle and its appurtenant parts, parts being broken away and showing the coil directing means engaging the stock, and

FIGURE 2 is a perspective view of the cradle taken from a forward position and showing the guide wedges and their supporting plates.

Briefly, the illustrated embodiment of the invention comprises a pair of wedge-shaped coil guiding members secured to the side plates of a coil cradle of the type having drivable support rollers for a sheet metal coil, and a pair of pinch rolls spaced forwardly of the support rollers and adapted to frictionally engage the stock while rotating. The wedge members are disposed between the forward ends of the side plates and the pinch rolls. Each wedge is secured to a supporting plate which in turn is slidably adjustable on its respective coil side plate, so that the position of each wedge in the direction of movement of the stock may be preselected. The wedge supporting plates are adjustable on a horizontal path and the wedges themselves are inclined in such manner that when the coil is rotated by its supporting rollers, its leading edge will engage the undersides of the wedges and be forced downwardly away from the body of the coil as it moves forwardly. The path of movement will carry the leading stock edge directly to the pinch rolls, which will engage the leading edge and continue to draw the stock forwardly. With proper adjustment, the wedges will thus be capable of directing the stock to the pinch rolls without the necessity of manual manipulation.

Referring more particularly to the drawings, the coil cradle is generally indicated at 11 and comprises a frame generally indicated at 12, this frame having a pair of parallel upright side plates 13. The side plates are relatively high adjacent the rearward end of the cradle and are of lesser height adjacent the forward end. A pair of coil supporting rollers 14 and 15 extend between side plates 13 adjacent the lower end thereof. These rollers are adapted to support a coil 16 of sheet metal stock in such a manner as to permit it to be uncoiled in the direction of the forward end of the cradle. For this purpose, a chain drive 17 is provided for rollers 14 and 15.

A pair of side guide plates 18 and 19 are provided coil 16. These side plates are vertically disposed, and are

spaced inwardly from the sides 13 of frame 12. These guide plates are of inclined shape as seen in FIGURE 1, their lower edges having clearance recesses 21 and 22 for rollers 14 and 15 respectively, as seen in FIGURE 2. The spacing between plates 18 and 19 may be adjusted by a crank 23 in accordance with the width of the coil.

A pair of pinch rolls 24 and 25 are disposed forwardly of cradle 11. Roll 24 is disposed above roll 25, and is urged by springs 26 toward roll 25. A chain drive 27 is provided for lower pinch roll 25, the pinch rolls being supported at their ends by uprights 28. The pinch rolls are adapted to receive the sheet metal being fed from the coil and frictionally engage the stock so as to feed it from the coil, for example, toward a curved guide 29 which will lead the stock to a stock feeder for a press or the like.

Pinch rolls 24 and 25 are spaced some distance forwardly of rollers 14 and 15, and in accordance with the present invention, means are provided for deflecting the leading edge of the coil stock toward the pinch rolls. For this purpose, a pair of supporting plates 31 and 32 are slidably supported on the outsides of plates 18 and 19, respectively. The means for supporting each plate 31 and 32 comprises an enclosed track 33 mounted on the outside of each plate 18 and 19 adjacent the forward lower end thereof, tracks 33 extending horizontally, as seen in FIGURE 1. Each track 33 is provided with a horizontal slot 34, and a lock nut 35 is threaded into each of the plates 31 and 32 and extends through slot 34, so that the distance of each plate 31 and 32 relative to supporting rollers 14 and 15 may be preselected.

A deflecting wedge generally indicated at 36 is secured to the inside surface of each of plates 31 and 32, as seen in FIGURE 2. Each wedge 36 has an undersurface 37, indicated in FIGURE 1, this undersurface sloping downwardly in a direction toward the lower portion of coil 16 and being tangent to that portion of roller 15 which supports the coil. The upper portion of each wedge 36 comprises a relatively long surface 38 and a relatively short surface 39. Surfaces 37 and 38 together form a relatively sharp rearward edge 41 on each wedge 36, edge 41 extending along the full width of each wedge. The included angle of surfaces 37 and 38 is relatively small, as seen in FIGURE 1. It is smaller than the included angle between surfaces 37 and 39, the latter surface sloping downwardly in a direction away from coil 16. The juncture between surfaces 37 and 39 may comprise a flat portion 42, indicated in FIGURE 2.

Each wedge 36 extends a sufficient distance inwardly from its respective plate 31 or 32 to engage the adjacent portion of the leading edge of the coil 16, but the distance between the two wedges 36 is much greater than their width, as will be evident from a study of FIGURE 2.

The angle of inclination of surface 37 of each wedge 36 is such that, if extended, it would pass slightly above the mating portions of pinch rolls 24 and 25. Proper adjustment of wedges 36 will permit the wedges to enter between the leading edge of coil 16 and the next inward turn of the coil as the coil is driven in a counterclockwise direction, as seen in FIGURE 1, from a completely coiled position. This will be accomplished by the entrance of sharp edge 41 into this space as the coil is rotated. The leading edge of the coil will engage surface 37 and will be smoothly deflected thereby in the manner shown in FIGURE 1. That is to say, the sheet metal will be deflected slightly downwardly so that its continued movement will bring it to the juncture of pinch rolls 24 and 25. The pinch rolls will grab the sheet metal coil and will continue to drive it toward the curved guide 29. As the coil continues to unwind, it will slide along the undersides of wedges 36 so that the wedges will not only perform the function of initially opening the coil but of con-

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tinually deflecting it toward the pinch roll as the coil is unrolled. During the uncoiling operation, wedges 36 may be additionally adjusted if necessary to compensate for the decreasing outside coil diameter so as to retain an optimum position for deflection of the sheet metal toward the pinch rolls.

It will thus be seen that an apparatus has been provided which eliminates the need for manual manipulation or handling of a sheet metal coil which is to be unwound, and permits the automatic deflection of the leading edge and remainder of the coil toward the pinch rolls.

While it will be apparent that the preferred embodiment of the invention disclosed is well calculated to fulfill the objects above stated, it will be appreciated that the invention is susceptible to modification, variation and change without departing from the proper scope or fair meaning of the subjoined claims.

What is claimed is:

1. In an apparatus for directing coiled sheet metal stock to pinch rolls, forward and rear supporting rollers for a coil of sheet metal stock, a pair of pinch rolls spaced forwardly from said support rollers, a pair of deflecting wedge members disposed between said forward support rollers and said pinch rolls, a pair of side guides for said coil, means securing one edge member in fixed position to each side guide, and a pair of surfaces on each wedge member forming an acute angle with its apex facing said forward supporting roller, one of said surfaces be-

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ing substantially tangent to that portion of the forward supporting roller which is engageable by the coil.

2. The combination according to claim 1, said last-mentioned surface of each wedge member being in a plane which extends above the juncture of said pinch rolls.

3. The combination according to claim 1, said means for securing each wedge member to its respective side guide is adjustable and comprising a pair of supporting plates for said wedge members overlapping said side guides, tracks on said side guides for said supporting plates, and screw-and-slot connections between said tracks and said supporting plates.

4. The combination according to claim 1, said means for securing each wedge member to its respective side guide is adjustable in a horizontal plane, said wedge surface being inclined upwardly and away from said forward supporting roller.

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