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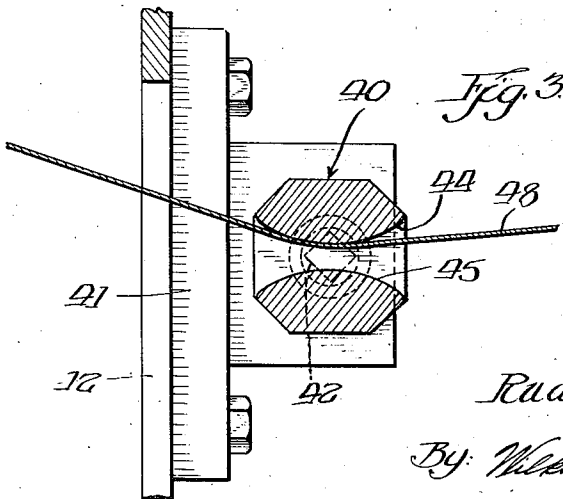
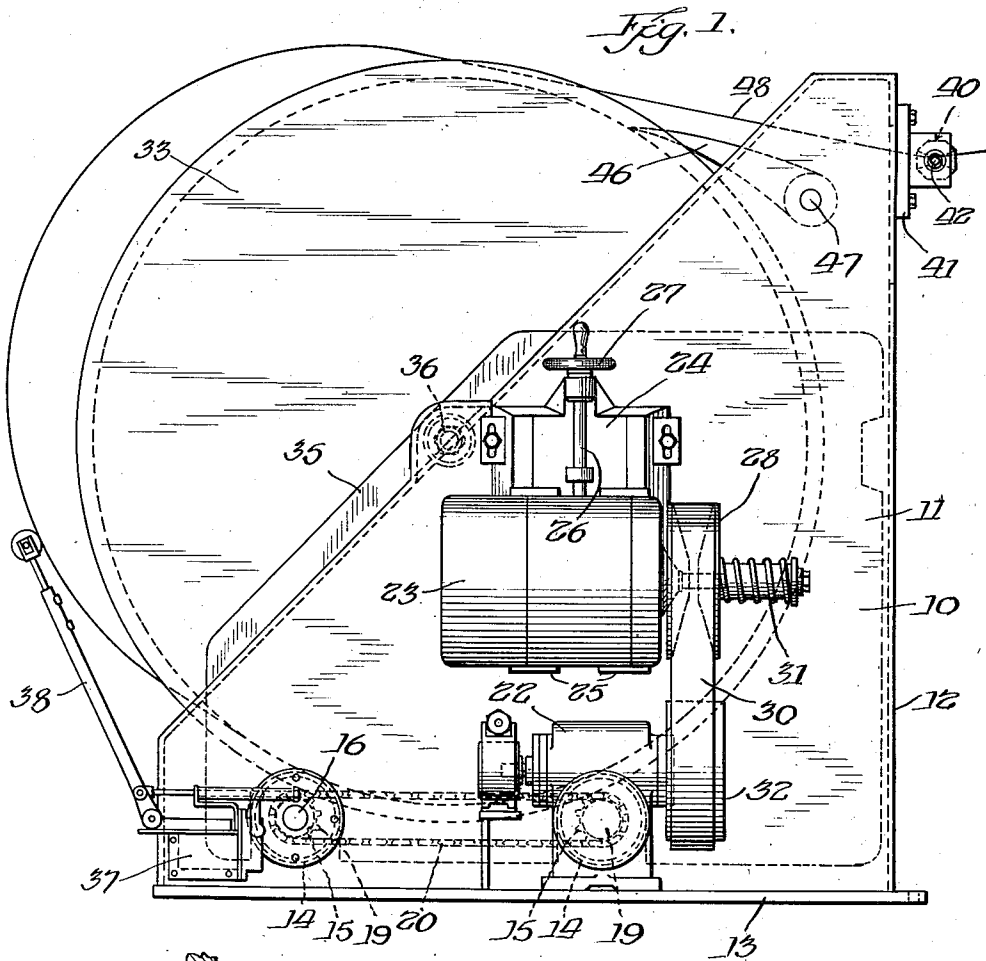
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2,267,175

GRADLE REEL FOR COIL STOCK

Filed Sept. 15, 1939

2 Sheets-Sheet 1



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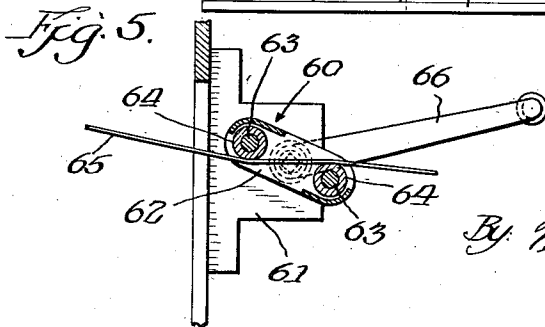
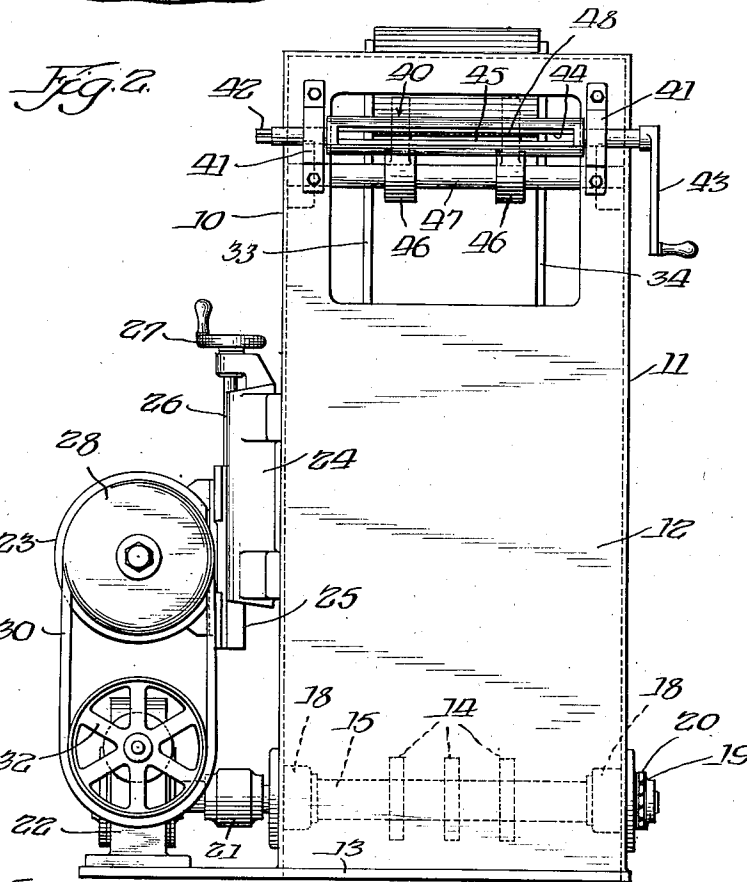
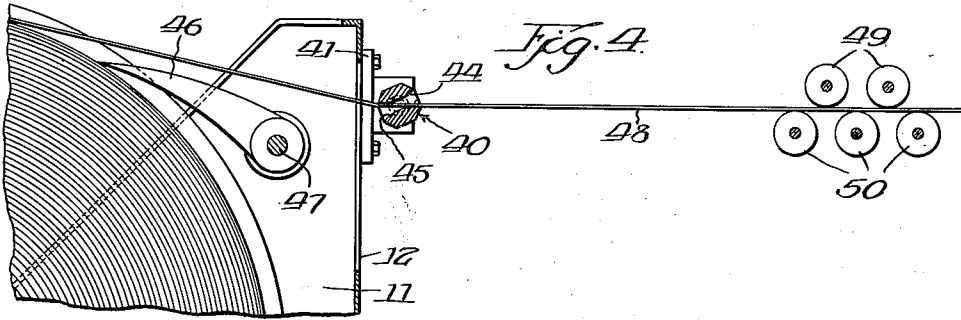
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CRADLE REEL FOR COIL STOCK

Filed Sept. 15, 1939

2 Sheets-Sheet 2



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## UNITED STATES PATENT OFFICE

2,267,175

## CRADLE REEL FOR COIL STOCK

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Application September 15, 1939, Serial No. 295,023

5 Claims. (Cl. 153—32)

The invention relates to reels for supporting coil stock and has reference more particularly to a power driven cradle type reel which will incorporate stock bending means for facilitating the handling of the initial length of stock and its entrance into straightening and feeding rolls.

In the embodiment of the invention shown in the drawings the reel for supporting the coil stock is of the cradle type and the supporting rolls have contact with the periphery of the stock which is in the form of a coil. The supporting rolls are driven by power means such as an electric motor and by means of a variable speed device the coil may be driven at about the correct speed with seldom starting and stopping of the motor, although it is customary for cradle reels to employ a loop engaging arm for automatically governing the motor in response to the size of the outer loop of the material unwinding from the coil.

It is an object of the invention to provide a reel for coil stock with manually operable stock bending means and which may have associated therewith fingers for stripping or peeling the stock from the coil. Said fingers are particularly useful when the coil is first rotated for stripping the leading edge of the stock and for directing the same toward the bender.

Another object resides in the provision of a reel for coil stock which will embody novel means whereby a clean and straight leading portion of the stock can be presented to straightening and feeding rolls. As a result a good first stamping operation can be performed and a substantially perfect blank is secured.

Another and more specific object of the invention resides in a reel having novel improvements thereon which will eliminate much of the hard manual labor which requires several men for removing the leading front edge of stock from the coil and in initially presenting a straight portion to other mechanism such as straightening and feeding rolls.

With these and various other objects in view the invention may consist of certain novel features of construction and operation as will be more fully described and particularly pointed out in the specification, drawings and claims appended hereto.

In the drawings which illustrate an embodiment of the invention and wherein like reference characters are used to designate like parts—

Figure 1 is a side elevational view of a cradle type reel embodying the improvements of the present invention;

Figure 2 is a front elevational view of the reel shown in Figure 1 and which clearly illustrates the location of the stock bending means;

Figure 3 is a vertical sectional view through said stock bending means;

Figure 4 is a view diagrammatically illustrating the manner in which the leading portion of the stock is bent when presenting said leading portion to feeding and straightening rolls; and

Figure 5 is a vertical sectional view showing a modified form of stock bending means.

Referring to the drawings, the invention is shown as applied to a reel including side members 10 and 11 and end member 12 and a bottom member 13. When the coil of stock material is positioned between the side frames the same is supported and also rotated by peripheral contacting rolls 14 suitably fixed to the transverse shafts 15 and 16 in proper adjusted position transversely of the shafts. The rolls may have a covering of Duprene rubber to provide the necessary friction for rotating the coil of stock material, or said rolls may be formed of wood or other material. The shafts are suitably mounted in journal portions 18 provided therefor on the inside surface of each frame member 10 and 11.

Both shafts extend beyond the frame member 11 and are each provided with a sprocket 19 adapted to receive the endless chain 20 for operatively connecting the shafts so that they rotate in unison and at the same speed. Shaft 15 extends beyond member 10 and is operatively connected by coupling 21, Figure 2, to a gear housing 22, which is in turn driven by an electric motor 23. The frame member 10 is provided with the fixed support 24 which slidably receives the guide 25 having the electric motor secured thereto. The position of the motor vertically of the support 24 may be varied by means of the elongated screw 26 which has fixed to its upper end the adjusting wheel 27. The shaft of the motor is provided with a speed varying pulley designated by numeral 28, one cone member of which is yieldingly biased into contact with the endless belt 30 by the coil spring 31. Said belt passes around the pulley 32 which connects with the coupling 21 through gear housing 22 and accordingly the shafts 15 and 16 are driven by the motor 23. Automatically with a change in elevation of the motor the speed varying pulley 28 will drive pulley 32 at a faster or at a slower speed, depending on the direction of movement of said motor.

The side edges of the coil of stock when supported on the rolls 14 are protected by rotatable

discs 33 and 34 journaled by transversely adjustable plates 35 through means of stud shafts 36. When the reel is operating the electric motor is controlled by the switch 37 and which control is responsive to the size of the outer loop of stock material unwinding from the coil. As shown in Figure 1 the outer loop will contact the arm 38. Through linkage the arm connects with the switch so that the switch is actuated in response to movement of the arm.

The reel of the invention is provided with stock bending means to facilitate the handling of the initial length of stock, particularly its entrance into straightening and feeding rolls. The bender, designated in its entirety by numeral 40, is journaled at its respective ends by supports 41 and the projecting ends of the bender are squared as at 42 for receiving a crank 43 whereby the bender may be rotated. The longitudinal slot 44 forms an opening through which the stock passes and the surfaces 45 of said slot are curved as shown in Figure 3 so as not to mar or damage the stock in any manner.

Stripping fingers 46 are rotatably supported by rod 47 so that the fingers will rest on the periphery of the coil and particularly a new coil when the diameter is a maximum. It is preferred that the fingers have adjustment along the length of the rod 47 in order that they may be located the desired distance from either edge.

After a new coil of stock has been placed on the supporting rolls 14 so that the front edge of the top or outer loop points in the direction of the bender, the stripping fingers are rotated and allowed to rest on the periphery of the coil as in Figure 1. If all binding straps have been cut power can be applied to the supporting rolls, causing the coil to rotate, which will eventually bring the front edge of the outer loop into contact with the chisel points of the fingers 46. During this initial rotation of the coil the band bender 40 is held by crank 43 so that the slot 44 is ready to receive the leading portion of the stock which will be stripped by the fingers. When about five or six inches of stock is within the bender the coil is stopped and pressure is placed on handle or crank 43 so as to lock the stock inside of the bender. The direction of rotation of the bender is illustrated in Figure 4. Sufficient pressure is applied to bend the stock to produce a straight length and it will be understood that the bending is in a direction opposite to the curved shape thereof.

The operation of rotating the coil to feed five or six inches of stock within the bender and which is then straightened is repeated several times. This produces a straight section 48 long enough to reach the straightening and feeding rolls 49 and 50. When the stock overlaps at least three straightening rolls these are closed upon the stock until the same is firmly gripped.

Following the above operation power may be turned on the rolls 50 and also the supporting rolls 14 for the coil to feed the straightened stock to the dies of a press or the like. After feeding by the straightening and feeding rolls has been started the hand bender is allowed to idle and thus the stock will run through the same with the slot 44 merely functioning as a guide.

The stock bending means facilitates handling of the initial length of stock and its entrance into the straightening and feeding rolls. Considerable manual labor is eliminated and the stock is not subjected to pounding by crow bars and hammers as has heretofore been the case.

On the contrary, a straight portion is initially removed from the coil and this can be presented to the press for a good first stamping operation.

In Figure 5 a modified form of stock bending means is disclosed wherein rollers are employed for contacting the stock material. The bender designated in its entirety by numeral 60 consists of an open frame extending between and suitably journaled by brackets 61. Said open frame includes end members 62 connected by a pair of shafts 63, each journaled a roller 64. The strip material 65 in passing through the open frame is caused to contact at spaced points the rollers 64 which results in bending of the stock material to produce a straight length for presentation to straightening and feeding rolls. The journaling means for the open frame 60 is squared at the ends projecting beyond the brackets 61 for receiving a handle 66. By means of the handle the frame can be rotated for the purpose of applying sufficient pressure to the stock material for bending the same and which bending, as previously described, is in a direction opposite to the curvature assumed by the stock material as a result of coiling of the same. Since the rollers 64 rotate freely on their shafts they do not mar or scratch the surface of the stock material when caused to contact the same.

The invention is not to be limited to or by details of construction of the particular embodiment thereof illustrated in the drawings, as various forms of the device will of course be apparent to those skilled in the art without departing from the spirit of the invention or the scope of the claims.

What is claimed is:

1. In a reel of the cradle type for supporting coil stock, in combination, a frame, spaced shafts journaled by said frame, at least one supporting roller fixed to each shaft and having contact with the periphery of the coil to thereby support said coil, power means for driving said shafts to cause the coil to rotate, stock bending means rotatably supported by the frame and operative when actuated to bend the stock in a direction opposite to the curvature the stock assumes when on the coil, and stripping fingers also rotatably supported by the frame for stripping the stock from the coil as the same rotates.

2. In a reel of the cradle type for supporting coil stock, in combination, a frame including a base and side members, spaced shafts journaled by said side members, at least one supporting roller fixed to each shaft and having contact with the periphery of the coil to thereby support the coil, means operatively connecting said shafts, an electric driving motor, means connecting said motor with one of the shafts, whereby rotary movement is imparted to said coil, stock bending means rotatably supported by said frame including a member having a longitudinal slot therein through which the stock is adapted to pass, the interior surfaces of said slot being curved so as to prevent damage to the material, and manual means for rotating said member.

3. In a reel of the cradle type for supporting coil stock, in combination, a frame including a base and side members, spaced shafts journaled by said side members, at least one supporting roller fixed to each shaft and having contact with the periphery of the coil to thereby support the coil, means operatively connecting said shafts, an electric driving motor, means connecting said motor with one of the shafts, whereby rotary movement is imparted to said coil, stock

bending means rotatably supported by said frame including a member having a longitudinal slot therein through which the stock is adapted to pass, the interior surface of said slot being curved so as to prevent damage to the material, manual means for rotating said member, and stripping fingers rotatably supported by the frame and adapted to rest on the periphery of the coil of stock for stripping the stock therefrom as the coil rotates, said fingers being located in advance of the stock bending means whereby said fingers have operation to direct the stock toward said means.

4. In a reel of the cradle type for supporting coil stock, in combination, a frame including a base, spaced side members and a front member, spaced coil supporting shafts journaled by said base for supporting the coil by contact with the periphery thereof, said frame having an open rear end whereby the coil may be located between the spaced side members and on the supporting shafts therefor, stock bending means supported by the front member of said frame at the upper end thereof and disposed outwardly from said member, said means including a transverse member having a longitudinal slot therein through which the stock is adapted to pass, and means rotatably supporting said transverse member whereby the same may be rotated for

imparting a sharp bend to the stock passing through the same and which may be opposite to the curvature the stock assumes when on the coil.

5. In a reel of the cradle type for supporting coil stock, in combination, a frame including a base, spaced side members and a front member, spaced coil supporting shafts journaled by said base for supporting the coil by contact with the periphery thereof, said frame having an open rear end whereby the coil may be located between the spaced side members and on the supporting shafts therefor, stock bending means supported by the front member of said frame at the upper end thereof and disposed outwardly from said member, said means including a transverse member having a longitudinal slot therein through which the stock is adapted to pass, means rotatably supporting said transverse member whereby the same may be rotated for imparting a sharp bend to the stock passing through the same, and stripping fingers rotatably supported between the spaced side members at the upper end thereof for stripping the stock from the coil as the same rotates, said fingers being located in advance of the stock bending means whereby said fingers have operation to direct the stock toward said means.

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