

Feb. 25, 1958

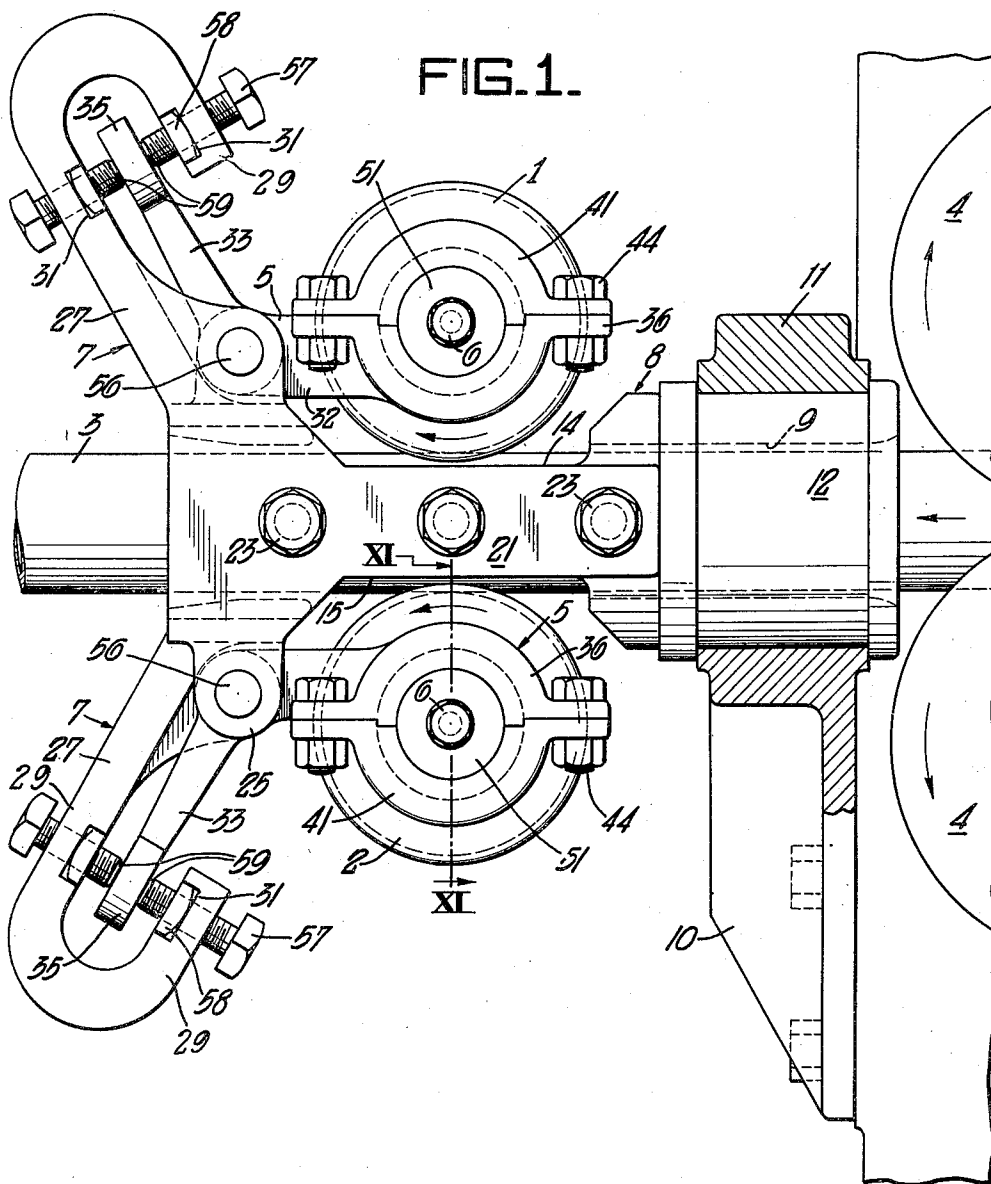
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2,824,512

APPARATUS FOR STAMPING TRAVELING PRODUCT

Filed March 31, 1954

4 Sheets-Sheet 1



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4 Sheets-Sheet 2

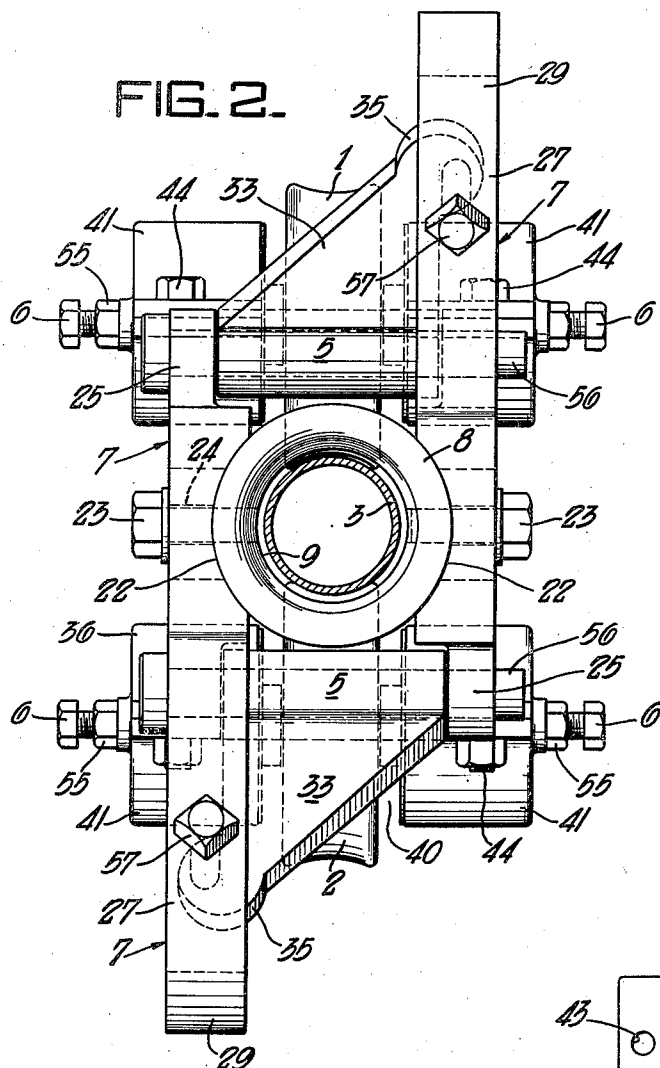


FIG. 9.

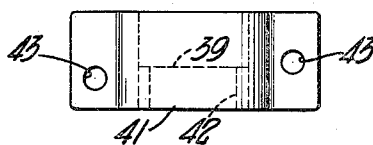
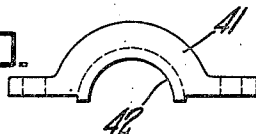


FIG. 10.



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FIG. 3

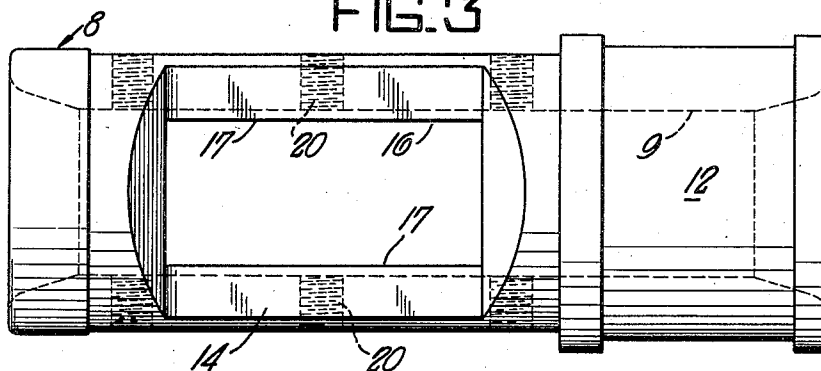


FIG. 4

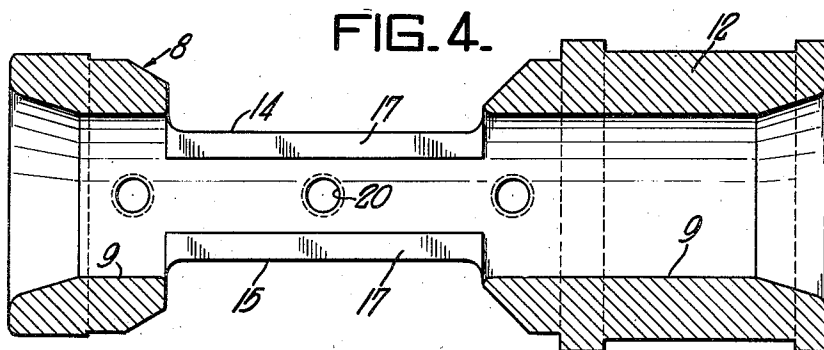
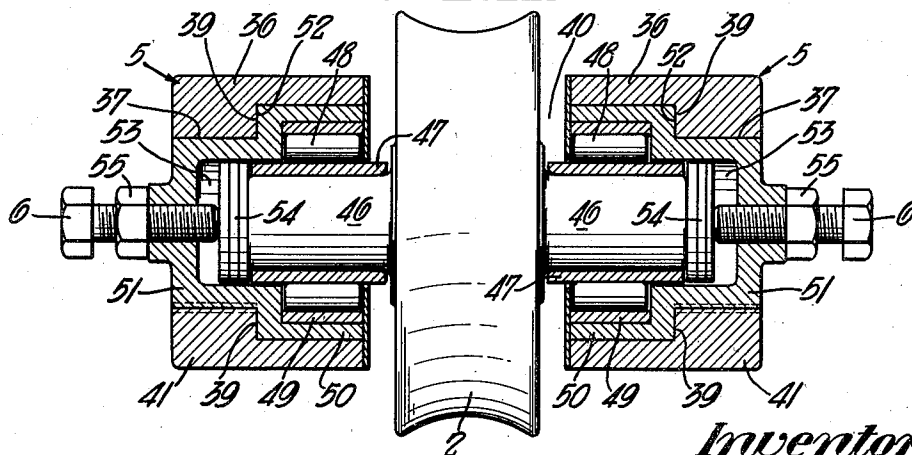


FIG. 11



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FIG. 6.

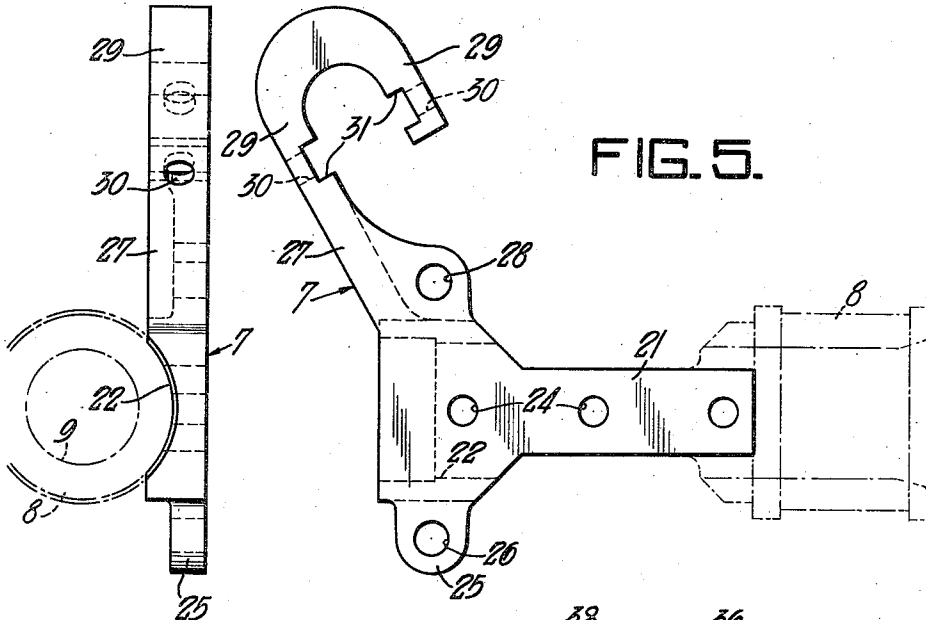


FIG. 7.

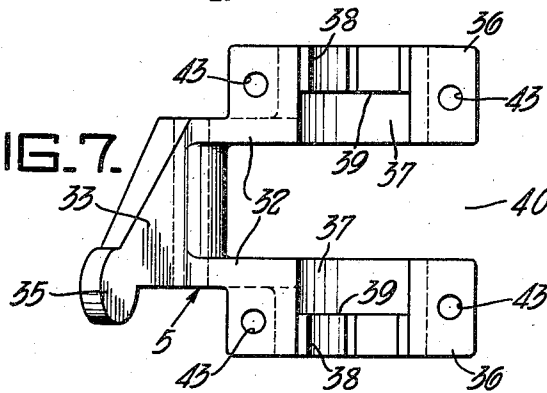
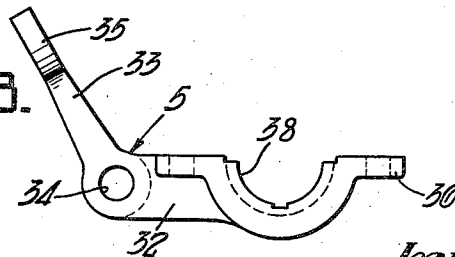


FIG. 8.



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APPARATUS FOR STAMPING TRAVELING PRODUCT

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Application March 31, 1954, Serial No. 420,082

9 Claims. (Cl. 101—6)

This invention relates to an apparatus for stamping pipe or other traveling products with indicia providing an indication of its grade of steel or other information, and, more particularly, is directed to an improved mounting for the vertically spaced guide and stamp rolls by which their relative positions may be adjusted in both horizontal and vertical directions with respect to the moving product.

In the manufacture of pipe and tubing, it is frequently necessary to stamp the grade of steel or other indicia on the entire length of the product and the stamping operation is commonly performed as the product emerges from a mill. For this purpose, the customary stamping apparatus comprises a pair of vertically spaced stamp and guide rolls which are driven by the movement of the pipe through a roll-pass defined by their peripheries and which have provisions for vertical movement to positions in operative stamping engagement with product. In one common form of apparatus, the position of the lower guide roll is adjusted by bolts located underneath the moving product, and the upper stamp roll has a spring biasing its vertical movement to a position engaged with the product. Weakening of the stamp roll biasing spring in use results in a chattering movement thereof and a poor stamping operation. In addition, adjustment of the bolts for the lower guide roll is a source of trouble due to freezing by reason of their location under the guide roll where they are subjected to dirt and cooling water dripping from the guide roll. A further disadvantage of conventional stamping apparatus is the lack of provision for adjusting the horizontal position of either the stamp roll or the guide roll with respect to the traveling product.

One of the principal objects of this invention is to provide in stamping apparatus of the character referred to an improved mounting for the vertically spaced stamp and guide rolls which has provisions for adjusting and fixing the horizontal and vertical positions of both the stamp and guide rolls for operative stamping engagement with a traveling product and with respect to a stationary guide through which the product is moving.

A further object of the invention is to provide the upper stamping roll and lower guide roll of a stamping apparatus respectively with a vertically movable mounting structure having provisions for adjusting and fixing its vertical position and for adjusting the axial and horizontal position of the roll therein.

Other objects and advantages of the invention will be apparent from the following description.

In the drawing, there is shown a preferred embodiment of the invention. In this showing:

Figure 1 is a side elevational view of an apparatus constructed in accordance with the principles of this invention;

Figure 2 is an end view looking from the left of Figure 1;

Figure 3 is a plan view of a guide used in the apparatus of Figure 1;

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Figure 4 is a vertical sectional view of the guide shown in Figure 3;

Figure 5 is a side elevational view of one of the stationary mounting brackets used in the apparatus of Figure 1;

Figure 6 is an end view looking from the left of Figure 5;

Figure 7 is a plan view of one of the adjustable supporting brackets used in the apparatus of Figure 1;

Figure 8 is a side elevational view of the adjustable supporting bracket shown in Figure 7;

Figure 9 is a plan view of a bearing cap used on the bracket shown in Figure 7, and Figure 10 is an elevational view thereof; and

Figure 11 is a sectional view taken substantially along the line XI—XI of Figure 1.

In Figure 1 of the drawings, an upper stamp roll 1 and a lower guide roll 2 are shown in their operative positions for marking indicia on pipe or tubing 3 as it is delivered from the finishing rolls 4 of a sizing and reducing mill. The upper stamp roll 1 and lower guide roll 2 are conventional and their specific constructions have not been shown in the drawings, it being sufficient to point out that their peripheries define a roll pass through which pipe 3 moves as it emerges from a finishing mill and that movement of the pipe 3 through such pass rotates the rolls in the direction indicated by the arrows in Figure 1 to effect a stamping operation on the pipe. The relative positions of the rolls 1 and 2 with their axes respectively extending transversely of and arranged above and below the traveling article is conventional.

The rolls 1 and 2 are mounted in upper and lower adjusting brackets 5 of identical construction and by which their relative vertical positions may be adjusted for proper stamping engagement with the pipe in a manner to be described. The mounting of each of the rolls 1 and 2 on their respective brackets 5 includes a pair of bolts 6 by which their horizontal and axial positions may be adjusted relative to the moving pipe in a manner to be described. Each of the adjusting brackets 5 is mounted on a stationary supporting bracket 7 secured to one side of a guide 8, the stationary bracket 7 for the upper stamping roll 1 being secured to one side of the bracket 8 and the stationary supporting bracket 7 for the lower guide roll 2 being secured to the other side of the bracket 8 as best shown in Figure 2. The guide 8 has an axially extending opening 9 through which the pipe 3 moves as it emerges from the finishing rolls 4 and which is secured to the housing for the finishing rolls 4 by a bracket 10. The bracket 10 is provided with detachable clamping parts 11 which have clamping engagement with a collar 12 at the inner end of the guide 8 to mount it in operative position with respect to the mill.

As best shown in Figures 3 and 4, material is removed from the upper and lower portions 14 and 15 of the guide 8 to provide vertically extending and aligned openings 16 through which the peripheries of the rolls 1 and 2 project into marking engagement with the tube when mounted in position in a manner to be described. Opposite edges 17 of the openings 16 are parallel. Opposite sides of the guide 8 have a plurality of centrally located and axially spaced tapped openings 20 between the edges 17 for a purpose to be described.

The stationary mounting brackets 7 referring now to Figures 2, 5 and 6, each have a mounting part 21 with a horizontally extending groove 22 on its inner face for engagement with a side of the guide 8, the groove 22 having a curvature corresponding to the curvature of the side of the guide 8. The brackets 7 are respectively secured to the guide 8 by tap bolts 23 which extend through openings 24 in the horizontal portions 21 and

have threaded engagement in the tapped openings 20. The outer end of each bracket 7 has a laterally extending lug 25 with a pivot opening 26 and an outwardly projecting arm 27 with a pivot opening 28 at its point of connection to the arm 21. The pivot openings 26 and 28 are equally spaced with respect to the centerline of the horizontal portion 21 so that when the brackets 7 are mounted on opposite sides of the guide 8 as shown in Figure 2 each pivot opening 28 in one of the brackets 7 will be aligned with a pivot opening 26 on the other of the brackets 7 for the reception of a pivot pin for mounting the adjusting brackets 5 in a manner to be described. The outer end of each arm 27 has a semi-circular shape providing spaced parts 29 respectively having axially aligned openings 30 for the reception of set screws. Slots 31 are provided on the facing surfaces of the parts 29 at the inner ends of openings 30 for a purpose to be described.

The movable mounting brackets 5, as best shown in Figures 7 and 8, are in the nature of bell cranks having a horizontally extending arm 32 and an angularly and upwardly extending arm 33 with a pivot opening 34 at their point of intersection. The outer end of the bell crank arm 33 has an operating part 35 which is received in the space between the parts 29 on the stationary bracket 7 in a manner to be described. The horizontal arm 32 is bifurcated to provide spaced bearing supports 36 which respectively have centrally located and axially aligned openings 37 of semi-circular shape. The outer ends 38 of the openings 37 have a reduced diameter to provide inwardly facing abutments 39. The spacing of the supports 36 provides a space 40 therebetween through which the guide and stamp rolls project when mounted on the brackets 5. As shown in Figures 9 and 10, bearing caps 41 are provided for attachment to the supports 36. The caps 41 have semi-circular recesses 42 of a shape corresponding to the shape of the semi-circular openings 37 so that when mounted in position on the supports 36 the abutment 39 extends around a full circle. The caps 41 and supports 36 are provided with openings 43 for the reception of bolts 44 which secure the caps 41 to the bearing supports 36 as shown in Figure 1.

The manner in which the guide and stamp rolls are mounted by the bearing supports 36 and caps 41 will be best understood by reference to Figure 11. In this showing one of the rolls is shown positioned in the space 40 between the supports 36 and has stub shafts 46 projecting axially from opposite sides thereof. The stub shafts 46 mount bushings 47 which form the inner race of a roller bearing assembly 48 having its outer race 49 mounted in the inner end 50 of a mounting cup 51. The mounting cup 51 has an external surface which is shaped to the contour of the openings 42 and 37 in the caps 41 and supports 36 and has an annular shoulder 52 for abutting engagement with the annular shoulder 39 therein. The stub shafts 46 terminate short of the ends of the openings 53 in the mounting cups 51. The adjusting bolts 6 have threaded engagement in the ends of the cups 51 and have their inner ends engaged with thrust plates 54 which bear against the outer ends of the stub shafts 46. By adjusting the bolts 6, the axial position of the stub shafts 46 with respect to the bearing assemblies 48 may be adjusted to vary the axial or horizontal position of the rolls in the space 40 between the arms 36. Lock nuts 55 are provided for preventing accidental movement of the adjusting bolts 6.

The operation and advantages of the apparatus will be best understood by giving consideration to the manner in which the parts thereof are assembled as shown in Figures 1 and 2. After first securing the guide 8 in position on the mounting bracket 10, the stationary brackets 7 are fastened to opposite sides of the guides 8 by the tap bolts 23 with the adjusting arm 27 for the lower guide roll projecting downwardly and the adjusting arm 27 for the upper stamp roll projecting upwardly. A movable

bracket 5 is then mounted on each stationary bracket 7 by aligning its pivot opening 34 with aligned pairs of pivot openings 26 and 28, and its mounting is completed by inserting a pivot pin 56 through these aligned openings. With the brackets 5 mounted on the stationary brackets 7 in this manner, the actuating parts 35 on the arms 33 are positioned in the space between the parts 29 at the ends of the stationary bracket arms 27. Set screws 57 are then inserted through the openings 30 and threaded through square nuts 58 positioned in the slots 31 to positions with their inner ends 59 engaged with opposite surfaces of the actuating parts 35. The square nuts 58 are held against rotation by engagement with the sides of the slots 31. Adjustment of the set screws 57 is effective to adjust the angular position of the mounting bracket arm 33 with respect to the stationary bracket arms 27. Changing the angular position of the arm 33 in this manner imparts a similar angular movement to horizontal arm 32 to elevate or lower the roll supported thereon.

The stamp and guide rolls are mounted in position on the arms 32 by first applying the cups 51 and bearing assemblies 48 to their stub shafts 46. The rolls with cups 51 and bearings assembled thereon are then moved to positions in which their peripheries project through the space 40 between the bearing mounting parts 36 and with the cups 51 received in the openings 37. The assembly is then completed by securing the bearing caps 41 in position as described above.

After assembly of the apparatus in this manner, the vertical position of the rolls 1 and 2 with respect to the traveling pipe 3 is adjusted by adjustment of the set screws 57. Horizontal adjustment of the rolls 1 and 2 is made by operating the set screws 6 to move the stub shafts 46 axially with respect to the mounting cups 51. Attention is particularly directed to the fact that the rolls 1 and 2 are fixedly secured against movement in both horizontal and vertical directions out of their adjusted positions by the set screws 6 and 57. In this respect, it will be noted that the set screws 57 and set screws 6 are arranged in pairs and that the bearing engagement of their inner ends respectively with the movable bracket parts 35 by which vertical adjustments of the rolls are effected and with the thrust plates 54 through which horizontal adjustments of the stub shafts 46 are effected positively prevents movement of the parts 35 and 54 after the rolls have been moved to a position in which they have proper stamping engagement with the traveling product moving therethrough.

The mounting of the rolls 1 and 2 provided by the bell-crank supports 5 and adjusting screws 57 enables the position of each of the rolls to be adjusted relative to the guide 8. In this manner, the size of the pass between the rolls 1 and 2 can be regulated according to the size of the pipe or tubing being rolled by the mill 4. Different sizes of pipe, in accordance with conventional practice, are delivered by the mill through the guide 8 with their center lines positioned substantially centrally of the guide. By providing for independent vertical adjustment of each of the rolls 1 and 2, their relative positions may be regulated with respect to the center-line of the pipe and the external surface thereof for proper rolling and stamping engagement therewith.

While one embodiment of our invention has been shown and described it will be apparent that other adaptations and modifications may be made without departing from the scope of the following claims.

We claim:

1. In stamping apparatus having a pair of spaced rolls for stamping indicia on an article moving through a pass defined by the peripheries of said rolls, a stationary support through which the moving article has a guided movement, a pair of bell-crank levers respectively having pivotal connections on opposite sides of said support for pivotal movement about parallel axes respectively above and below the moving article and extending transversely

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of its path of movement, each of said levers having a horizontally extending mounting arm and an outwardly extending adjusting arm, bearing assemblies mounting said rolls for rotation on said mounting arms, and adjusting means engaged with each of said adjusting arms for pivoting them respectively about their pivotal connections to thereby change the position of the mounting arms connected thereto and the rolls mounted thereon with respect to said stationary support.

2. In stamping apparatus having a pair of spaced rolls for stamping indicia on an article moving through a pass defined by the peripheries of said rolls, a stationary support through which the moving article has a guided movement, a pair of bell-crank levers respectively having pivotal connections on opposite sides of said support for pivotal movement about parallel axes respectively above and below the moving article and extending transversely of its path of movement, each of said levers having a horizontally extending mounting arm and an outwardly extending adjusting arm, bearing assemblies mounting said rolls for rotation on said mounting arms, adjusting means engaged with each of said adjusting arms for pivoting them respectively about their pivotal connections to thereby change the position of the mounting arms connected thereto and the rolls mounted thereon with respect to said stationary support, and means cooperating with said bearing assemblies for adjusting the positions of said rolls in an axial direction on their respective mounting arms.

3. In stamping apparatus having a pair of spaced rolls for stamping indicia on an article moving through a pass defined by the peripheries of said rolls, a stationary support through which the moving article has a guided movement, a pair of bell-crank levers respectively having pivotal connections on opposite sides of said support for pivotal movement about parallel axes respectively above and below the moving article and extending transversely of its path of movement, each of said levers having a horizontally extending mounting arm and an outwardly extending adjusting arm, each of said rolls having a pair of spaced bearing assemblies mounting it for rotation on one of said mounting arms and a pair of set-screws cooperating with said bearing assemblies for adjusting its position in an axial direction on its mounting arm, and separate pairs of set-screws respectively engaged with opposite sides of said adjusting arms for adjusting their angular positions with respect to said stationary support to thereby adjust the position of the rolls on the mounting arms connected therewith.

4. In stamping apparatus having a pair of vertically spaced rolls respectively rotatable about parallel axes extending transversely with respect to a roll pass positioned between said rolls and defined by peripheral portions thereof, a stationary support through which the article has a guided movement through said roll pass, said support having a pair of vertically extending openings in upper and lower portions thereof and through which said pass defining peripheral roll portions respectively extend and have stamping engagement with the moving article, a pair of bell-crank levers respectively having pivotal connections on opposite sides of said support for pivotal movement about axes parallel to said first-named axes, each of said levers having a horizontally extending mounting arm and an outwardly extending adjusting arm, bearing assemblies mounting said rolls for rotation on said mounting arms, adjusting means engaged with each of said adjusting arms for pivoting them respectively about their pivotal connections to thereby change the position of the mounting arms connected thereto and the rolls mounted thereon with respect to said stationary support, and means cooper-

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ating with said bearing assemblies for adjusting the positions of said rolls in an axial direction on their respective mounting arms.

5. The invention defined in claim 4 characterized by the adjusting means engaged with said adjusting arms comprising a pair of set screws for each adjusting arm which have threaded engagement with said support and ends in abutting engagement with opposite sides of the adjusting arm engaged thereby.

6. The invention defined in claim 4 characterized by the adjusting means cooperating with said bearing assemblies comprising a pair of set-screws for each roll, each of said pairs of set-screws having threaded engagement with one of said mounting arms on opposite sides of the roll mounted thereon and including means effective upon rotation of the set-screws to move the roll on said one mounting arm in an axial direction with respect thereto.

7. In stamping apparatus having a pair of vertically spaced rolls respectively rotatable about parallel axes extending transversely with respect to a roll pass positioned between said rolls and defined by peripheral portions thereof, a stationary guide for guiding the movement of the article through said pass and having a mounting connection at one end thereof, a pair of stationary brackets respectively mounted on opposite sides of said guide and having a pair of vertically spaced pivot openings with each pivot opening in one of the brackets aligned with a pivot opening in the other of said brackets to provide two pairs of aligned pivot openings respectively positioned above and below the path of article movement and extending transversely thereof, pivot pins extending through each of said pairs of aligned openings and a bell-crank lever pivotally mounted on each of said pivot pins, each of said levers having a horizontally extending mounting arm, bearing assemblies mounting one of said rolls thereon, and an outwardly projecting adjusting arm, each of said brackets having a bracket arm extending along one of said lever adjusting arms with spaced parts at its outer end straddling said one adjusting arm, and set-screws threaded in said spaced parts and engaged with opposite sides of said one adjusting arm for adjusting its angular position with respect to said stationary guide.

8. The invention defined in claim 7 characterized by each of said bell-crank lever mounting arms being bifurcated to provide a central opening through which the peripheral portion of the roll mounted thereon projects into stamping engagement with the moving article, the bearing assemblies mounting a roll on said mounting arm comprising separate bearing assemblies secured to each of its bifurcations.

9. The invention defined in claim 8 characterized by each of said separate bearing assemblies including a set-screw for adjusting the position of the roll supported thereby in an axial direction and transversely with respect to said central opening.

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