July 30, 1940. W. E. KANE 2,209,337

ROD AND TUBE STRAIGHTENING MACHINE

Filed July 8, 1938 3 Sheets-Sheet 1

FIG. 1.

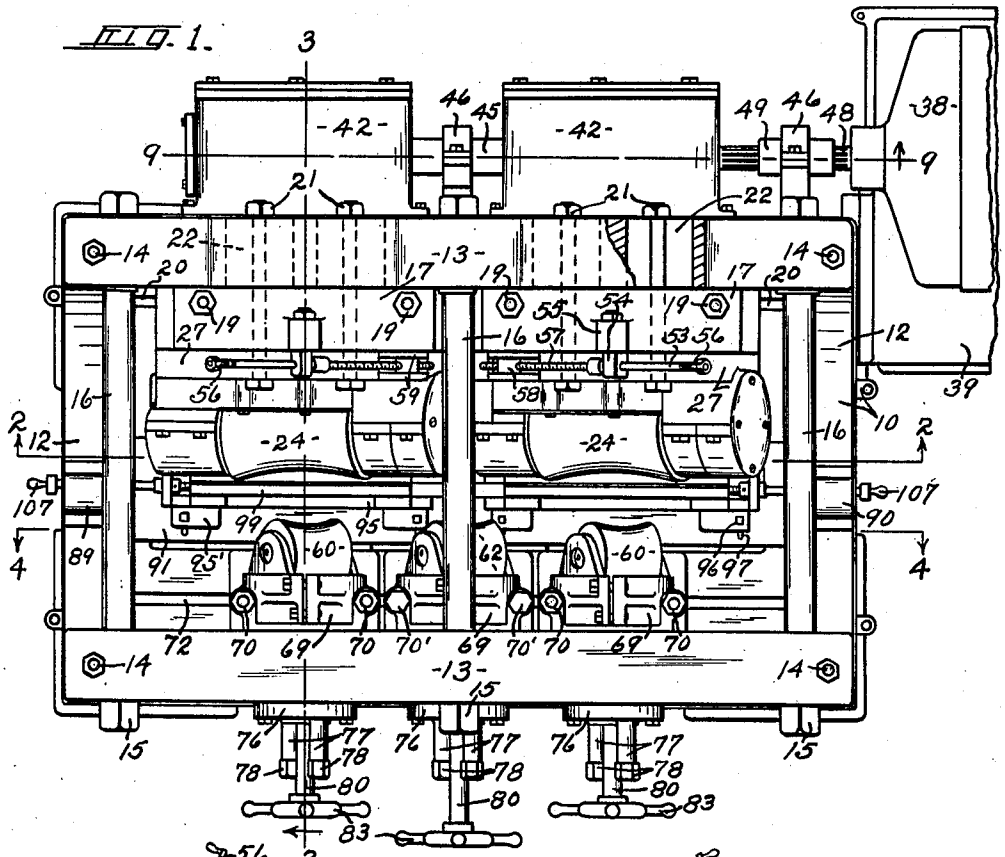
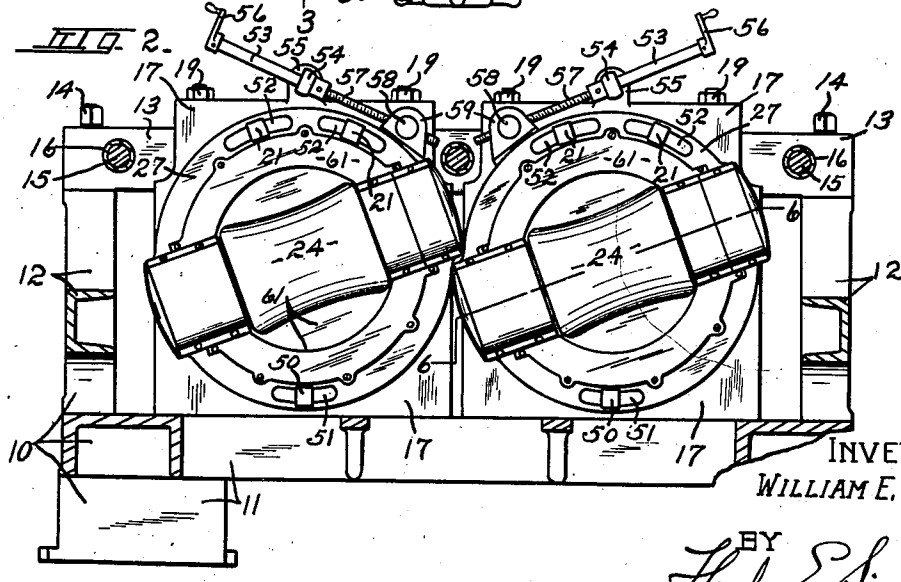


FIG. 2.



INVENTOR
WILLIAM E. KANE

BY
Theodore E. Simonton
ATTORNEY

July 30, 1940. W. E. KANE 2,209,337

ROD AND TUBE STRAIGHTENING MACHINE

Filed July 8, 1938 3 Sheets-Sheet 2

FIG. 3.

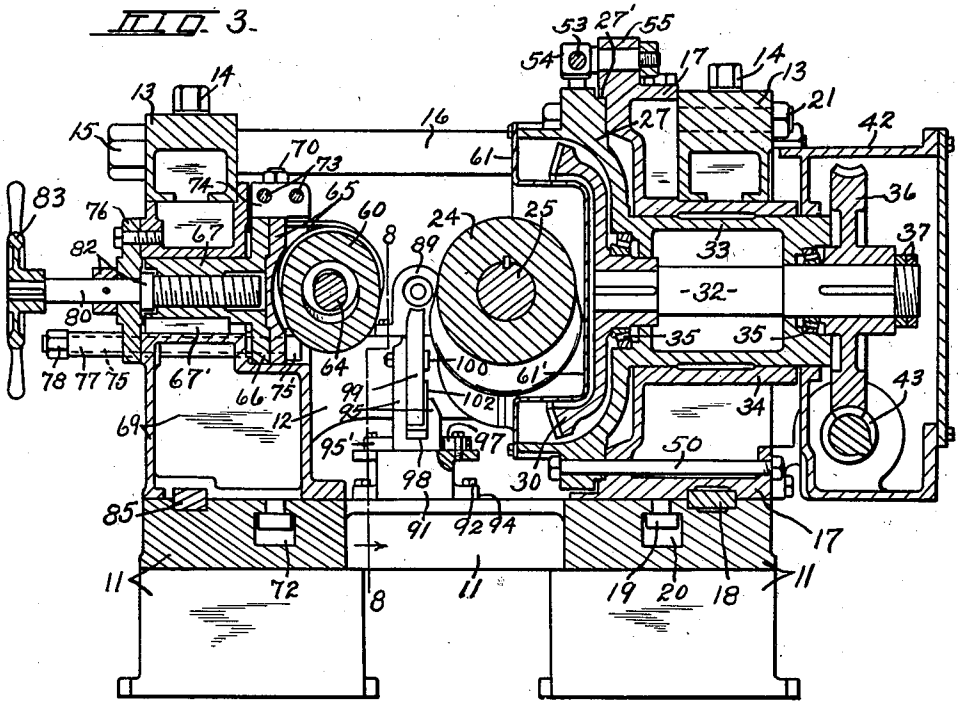


FIG. 4.

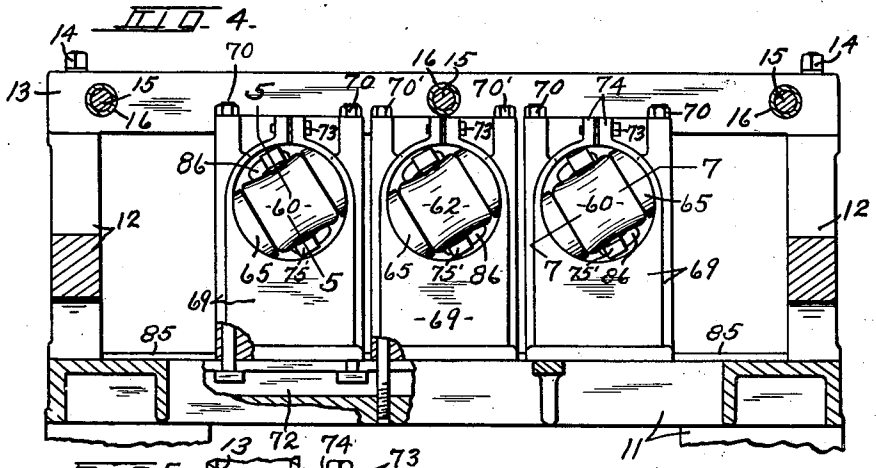
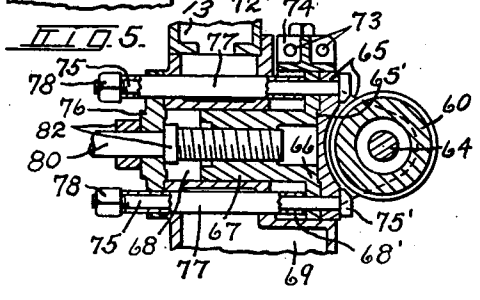


FIG. 5.



INVENTOR
WILLIAM E. KANE

BY
Theodore E. Simonton

ATTORNEY

July 30, 1940. W. E. KANE 2,209,337

ROD AND TUBE STRAIGHTENING MACHINE

Filed July 8, 1938 3 Sheets-Sheet 3

FIG. 6.

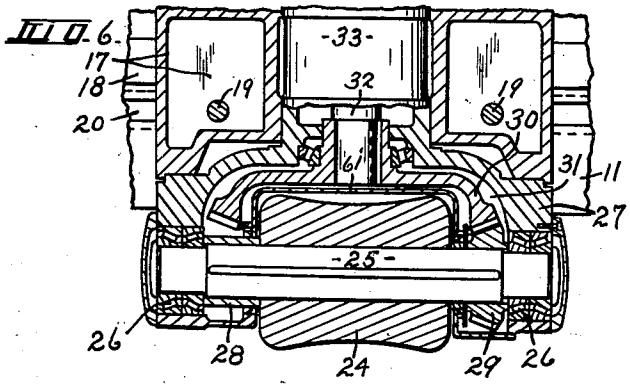


FIG. 7.

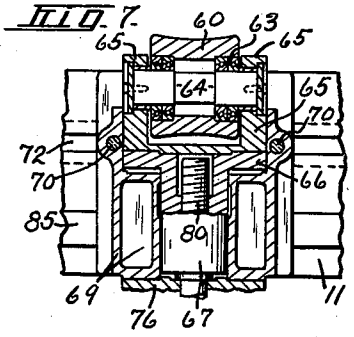


FIG. 8.

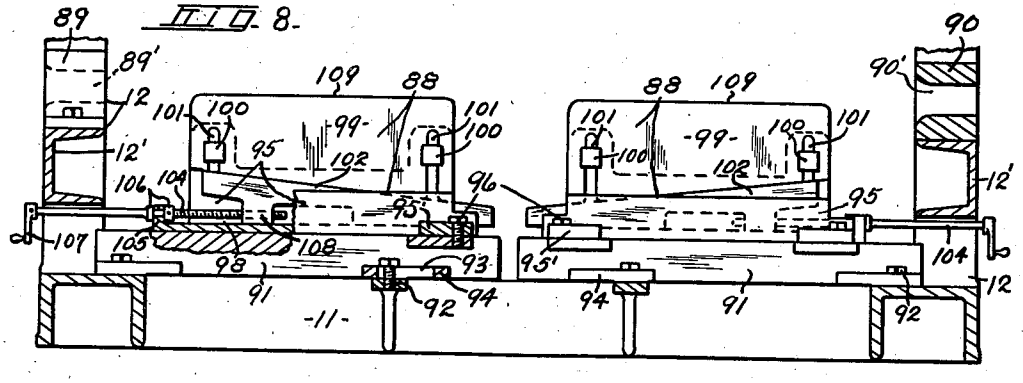
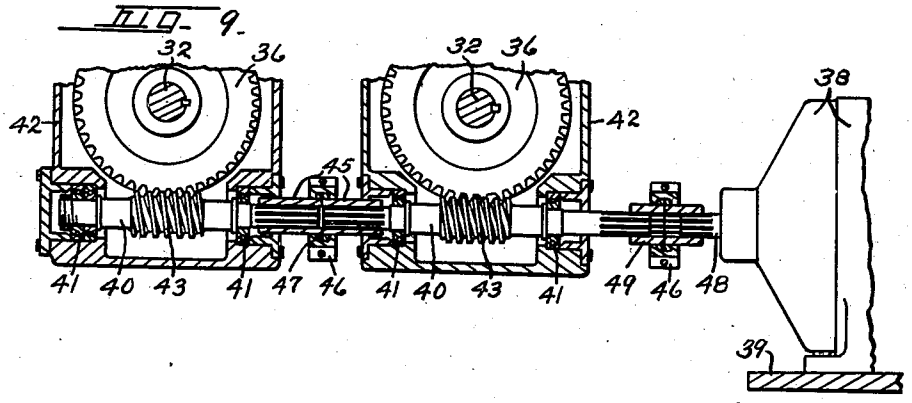


FIG. 9.



INVENTOR
WILLIAM E. KANE

BY
Theodore L. Simonton
ATTORNEY

Patented July 30, 1940

2,209,337

UNITED STATES PATENT OFFICE

2,209,337

ROD AND TUBE STRAIGHTENING MACHINE

William E. Kane, Syracuse, N. Y., assignor to Kane & Roach, Inc., Syracuse, N. Y., a corporation of New York

Application July 8, 1938, Serial No. 218,138

14 Claims. (Cl. 153—60)

This invention relates to improvements in a rod and tube straightening machine of the class commonly known as a cross roll straightener and in which a plurality of rolls of the concave or contoured face type are rotatably supported by corresponding housings carried by a suitable support or frame. In this instance, there are five rolls used in the machine and which consists of two primary or drive rolls, two secondary or idler rolls and an intermediate or pressure roll. The two primary rolls are arranged in spaced relation to each other longitudinally of the frame and cooperate with the two secondary rolls to provide a pair of straightening passes. The pressure roll is mounted intermediate the two secondary rolls opposite the space between the two primary rolls for pressure engagement with the corresponding portion of the stock passing through the machine.

The main object of the invention is to provide a roll and tube straightening machine of general, simplified and improved construction and which will function in an improved, more efficacious manner.

In carrying out the above mentioned object, the primary and secondary rolls are mounted for adjustment longitudinally of the supporting frame, that is, substantially parallel with the direction of movement of the work through the passes. The secondary and pressure rolls are mounted for additional adjustment transversely of the direction of movement of the stock to adapt the machine to straightening stocks which have diameters that differ from each other.

In order to permit angular adjustments of the primary and secondary rolls, said rolls are rotatably mounted in yokes which are in turn rotatably connected with corresponding housing members carried by the supporting frame.

In addition to the above mentioned structures, there is provided simple means connected with the yoke members for the secondary rolls for producing axial movement of said yoke members to move the secondary rolls toward and from the primary rolls.

Another important feature of the invention is that the yokes and housing members for the secondary rolls are so constructed the yoke members will be supported directly by the housings throughout the entire range of axial adjustments of said yoke members and thereby practically eliminate the usual overhang of the yoke members with respect to the housing members when the secondary rolls are in their innermost position adjacent the primary rolls.

Yet another important feature is the provision of simple compact means including a gear mounted in each yoke member for the primary rolls substantially coaxial with the respective yoke for driving said primary rolls.

A further object is to provide means for clamping the yokes to the respective housing members in all angular adjustments of said yokes with respect to said housing members.

Other objects and advantages pertaining to the construction of the machine and to the form and relation of the parts thereof will more fully appear from the following description taken in connection with the accompanying drawings, in which:

Figure 1 is a top plan with portions thereof broken away and in section, illustrating a machine embodying the various features of this invention.

Figure 2 is a longitudinal sectional view taken substantially in the plane of the line 2—2, Figure 1, a portion of the frame being broken away.

Figure 3 is a vertical transverse sectional view taken on line 3—3, Figure 1.

Figure 4 is a longitudinal vertical sectional view taken substantially in the plane of the line 4—4, Figure 1, lower portions of the frame being broken away.

Figure 5 is a detail sectional view taken on line 5—5, Figure 4.

Figure 6 is a detail sectional view taken on line 6—6, Figure 2.

Figure 7 is a detail sectional view taken on line 7—7, Figure 4.

Figure 8 is a longitudinal vertical sectional view taken substantially on line 8—8, Figure 3, illustrating the means for supporting the stock during the movement thereof through the passes.

Figure 9 is a detail vertical sectional view taken substantially on line 9—9, Figure 1.

The machine, as illustrated in the drawings, comprises a supporting frame 10 which includes a base 11, a pair of end plates 12 extending upwardly from the base 11, and a pair of rails 13 which extend longitudinally of the base from one end plate to the other. The rails 13, plates 12 and base 11 are secured together by suitable bolts 14. The rails 13 are tied to each other by tie-bolts 15 and spacing sleeves 16, as illustrated in Figures 1, 2 and 3.

Mounted upon the base 11 at one side thereof are two housing members 17 which are slidably connected with the base by a key 18 extending longitudinally of the base in recesses provided in the adjacent surfaces of said base and housing

members, as shown in Figure 3. Each of the housing members 17 is clamped to the base 11 by bolts 19 which extend vertically through the housings and have the heads thereof mounted in a T-slot 20 extending longitudinally through the base adjacent the inner side of the key 18. The upper portion of the housing members 17 slidably engage the lower and inner surfaces of the rail 13 positioned at the adjacent side of the frame 10 and are each clamped to these rails by a pair of bolts 21. These bolts 21 extend through elongated horizontally disposed slots 22 provided in the rail 13 which permit the bolts to be moved longitudinally of the rails during the adjustment of the housing members with respect to said rails longitudinally of the frame.

The numeral 24 represents the primary rolls which are keyed to or otherwise secured to shafts 25. Each of these shafts 25 is journaled at its ends in suitable bearings 26 secured in a yoke 27. A spacing sleeve 28 is mounted on each shaft 25 between one end of the roll 24 and the corresponding bearing 26. A bevel gear 29 is mounted on each shaft 25 between the opposite end of the corresponding roll 24 and the bearing 26 adjacent thereto.

As shown in Figure 6, each gear 29 is in meshing engagement with a similar bevel gear 30 which is positioned in a recess 31 provided in the face of the yoke 27 adjacent the roll 24 carried thereby. Each of the bevel gears 30 is mounted on a shaft 32, as shown in Figure 3, which extends outwardly from said gear through the shank 33 of the corresponding yoke 27, said shank being rotatably mounted in a bearing aperture 34 provided in each housing member 17. The shaft 32 is arranged substantially coaxially with the yoke shank 33 and is journaled in suitable bearings 35 carried by said yoke and shank. The outer end of each shaft 32 extends beyond the outer end of the corresponding shank 33 and has secured thereto a worm gear 36 which is clamped to the shaft adjacent the outer bearing member 35 by nuts 37. The nuts 37 and bearing members 35 coact with the gears 30 and 36 and the shank 33 for maintaining the shaft 32 against axial movement with respect to said shank. The shafts 32 are rotated in unison by a motor 38 mounted upon a base 39 mounted adjacent one end of the frame 10.

The means for operatively connecting the gears 36 with the motor 38 comprises a pair of worm shafts 40, one for each gear 36. As shown in Figure 9, these worm shafts 40 are rotatably mounted in suitable bearings 41 carried by gear cases 42, there being one gear case for each gear 36. These gear cases are secured by bolts or other suitable means to the outer face of corresponding housing members 17, as shown in Figures 1 and 3. Each worm shaft 40 has connected therewith a worm 43 which is in meshing engagement with a corresponding worm gear 36.

The worm shafts 40 are arranged in the gear casings 42 in substantially coaxial relation with each other and have the adjacent ends thereof connected to each other by a flexible coupling 45 splined thereto. The coupling 45 is journaled in a bracket 46 which is secured in any suitable manner to the base 11. The coupling 45 may be of any suitable construction and, as shown, is provided with an annular flange 47 which travels in a corresponding groove in the bracket 46 for maintaining the coupling against axial movement during the axial movements of the shafts 40 when the housings 17 are being adjusted longitudinally of the frame 10. The shafts 40 are so constructed that they will be maintained against axial movement with respect to the housings 42 during the adjustment of said housings longitudinally of the frame 10. The shaft 40 adjacent the motor 38 is connected with the drive shaft 48 of said motor by a coupling 49 which is constructed similar to the coupling 45. This coupling 49 is also mounted in a bracket 46 secured to the frame 10 and which is adapted to maintain the coupling against axial movement during the adjustment of the housing 42 mounted adjacent the motor 38.

Each of the yokes 27 is further rotatably supported by the housing member therefor by the engagement of a circular flange 27 formed on the yoke in a corresponding recess formed in the adjacent portion of the housing member. Each yoke is clamped to the corresponding housing member 17 by a bolt 50 which extends through an elongated slot 51 provided in the lower portion of the corresponding yoke and through the adjacent portion of the housing 17. The upper portion of each yoke is clamped to the corresponding housing 17 and to the adjacent rail 13 by the hereinbefore mentioned bolts 21 which extend through corresponding elongated slots 52 provided in the upper portion of each yoke.

The slots 51 and 52 are formed substantially concentric with the yoke 27 so as to provide for a limited degree of rotation of the yoke with respect to the housing 17 and frame 10. Each yoke 27 is rotated with respect to the housing in which it is supported by means of a screw member 53 rotatably mounted in a stud 54 which in turn is journaled in a boss 55 provided on the upper end of the corresponding housing member 17. The outer end of each screw member 53 is provided with a crank 56 by which the screw may be manually rotated. The opposite or inner end of each screw member 53 is provided with screw threads 57 which engage in a corresponding threaded opening provided in a pin 58 journaled in a boss 59 mounted on the periphery of the yoke 27, as illustrated in Figures 1 and 2.

The adjustment of the yokes 27 is for the purpose of bringing the primary rolls 24 carried thereby into proper angular relation with the tube or bar to be straightened. This angular adjustment of the yoke and roll is of course accomplished after the bolts 21 and 50 have been loosened and the yokes are secured in the adjusted position by tightening these bolts which, as hereinbefore stated, clamp the yokes to the corresponding housing members 17. When the primary rolls 24 are to be adjusted toward or from each other, the yokes supporting said rolls may be maintained clamped to the corresponding housing members 17 by the bolts 50 while the bolts 21 are loosened to permit said relative adjustment of the housings relative to each other and to the frame 10. This arrangement of the bolts 50 and 21 permits the ready adjustment of the housing members 17 while maintaining the yokes 27 in the adjusted position. However, it will be understood that when it is desired to adjust the yokes with respect to the housing members, the bolts 21 and 50 will be loosened for releasing the yoke from clamping engagement with the housing member. The gears 30 may, as shown in Figures 3 and 6, be enclosed in the recesses 31 of the yokes by covers 61 secured to the inner vertical faces of the yokes. Each cover 61 has the central portion 61' thereof pressed laterally to provide a recess for receiving

the adjacent portion of the corresponding primary roll 24 therein.

The secondary rolls 60 and the intermediate roll 62 are constructed and supported alike and the description of the supporting means for one of these rolls will suffice for the description of all of them. Each roll 60 or the roll 62 is provided with bearings 63 mounted in the ends thereof substantially coaxially therewith. In the bearings 63 is rotatably mounted a shaft 64 which has the ends thereof secured in a yoke 65, as shown more particularly in Figures 5 and 7.

The yoke 65 is rotatably mounted upon a supporting member or head 66 as by the circular flange and recess construction shown at 65', Figures 3 and 5. The head 66 is provided with a cylindrical shank 67 slidably mounted in an opening 68 provided in a housing 69 mounted on the base 11 at the opposite side thereof from the housings 17, said opening 68 having the longitudinal center thereof arranged substantially in the horizontal plane of the axes of yokes 27. The head 66 is maintained against rotation with respect to the housing by a key 67', as shown in Figure 3.

The housing members 69 for the two secondary rolls 60 are slidably mounted upon the base 11 and are clamped thereto by bolts 70 which extend downwardly through said housings and have the heads thereof positioned in a T-slot 72 provided in the upper portion of the base 11, as shown in Figures 3 and 4. The upper portions of the housing 69 for the secondary rolls have sliding engagement with the lower and inner side surfaces of the adjacent rail 13.

The housing 69 for the intermediate or pressure roll 62 is fixedly secured to the base 11 by bolts 70' which extend downwardly through suitable holes provided in the housing at opposite sides thereof and have the lower ends thereof extended through the T-slot 72 and screw-threaded into the adjacent portion of the base 11. The housing 69 for the pressure roll is thus secured to the base substantially midway between the ends thereof, but if desired it may be made adjustable longitudinally of the base as are the housings for the secondary rolls 60.

Each head 66 and the yoke 65 connected thereto are circular in form and are mounted in an enlarged portion 68' of the openings 68. Each head 66 and its yoke are substantially equal in diameter and are releasably clamped to the housing 69 by screws 73 provided in a slotted portion 74 of the housing 69 arranged at the upper side of the opening 68'. Each yoke 65 is rotatable with respect to its head 66 and is releasably clamped thereto by a pair of bolts 75 which extend through aligned holes provided in the yoke 65, head 66, the adjacent portions of the housing 69 and a retaining plate 76 secured to the housing, as shown in Figure 5. Upon each bolt 75 is mounted a spacing sleeve 77 which extends outwardly from the head 66 through the housing 69 and plate 76. A nut 78 is screw-threaded on the outer end of each bolt 75 to engage the outer end of the corresponding sleeve 77 and cooperates with said sleeve and the head 75' of the bolt, which is positioned adjacent the inner face of the yoke 65 for clamping the yoke to the head 66. The sleeves 77 are slidably mounted in the housing 69 and retaining plate 76 so as to move in unison with the yoke and head during the longitudinal adjustment of the head with respect to the housing for bringing the roll carried thereby toward or from the plane of travel of the stock through the machine.

The axial adjustment of the head 66 and yoke 65 is accomplished by means of a screw 80 arranged coaxially with the shank 67 of the head and screw-threaded therein as shown in Figure 5. The screw 80 extends outwardly from the shank 67 through an opening provided in the retainer plate 76 and has collars 82 provided thereon at opposite sides of the plate 76 for maintaining said screw against axial movement with respect to the plate. The outer end of the screw 80 is provided with a suitable hand wheel 83.

The opening portion 68' is of sufficient length to permit the maximum adjustment of the head 66 without moving said head and the adjacent portion of the yoke 65 out of engagement with the wall of said opening. It will, therefore, be seen that the head and yoke are always in contact with and supported by the housing member 69 at all axially adjusted positions of said yoke and head. Furthermore, it will be observed that the yoke and head may always be clamped in the adjusted position to the housing member 69 by the coaction of the slotted portion 74 of the housing and the screws 73. The lengths of the bolts 75 and spacing sleeve 77 are such that the nuts 78 will always be positioned at the outer sides of the corresponding housing 69 so that the yoke may be clamped to or released from the head 66 at all axial positions of said head by the manipulation of said nuts.

The housings 69 supporting the secondary roll 60 are slidably connected with the base 11 by a key member 85 mounted, like the key member 18, in suitable recesses provided in the adjacent surfaces of the base 11 and housings 69 intermediate the T-slot 72 and the outer longitudinal side of the base. It will now be understood that each yoke 65 and head 66 therefor may be adjusted axially by manipulation of the screw 80 after the slotted portion 74 of the housing has been released from clamping engagement with the head and yoke by loosening of the screws 73 and, after the axial adjustment of the head and yoke has been made, these members may be again clamped in the adjusted position to the housing by tightening screws 73.

When it is desired to adjust a yoke 65 angularly with respect to the head 66, this may be accomplished by loosening the screws 73 and nuts 78 and then rotating the yoke with respect to the head. In order that the yoke may be freely rotated with respect to the head, the openings, as 86, provided in the yoke for receiving the bolts 75 therethrough, are elongated and formed substantially concentric with the axis of the head 66, as illustrated in Figure 4. After the yoke has been adjusted angularly with respect to the head, it may again be clamped to said head by tightening the nuts 78, after which the head and yoke are clamped to the housing 69 by tightening screws 73. The adjustment of the housing 69 supporting the secondary roll 60 longitudinally of the frame 10 may be accomplished while maintaining the head and yoke clamped to the housing in the adjusted position thereof after the bolts 70 have been loosened.

In Figures 1, 3 and 8, there is illustrated a pair of work supports 88 cooperating with an inlet and an outlet guide member 89 and 90, respectively, for guiding the work during the passage thereof between the primary and secondary rolls. The inlet and outlet guide members 89 and 90 are mounted on portions 12' of the end

plates 12 and one provided with openings, as 89' and 90' respectively, for receiving the stock therethrough.

The work supports 88 are mounted on the base 11 intermediate the end plates 12 adjacent the respective passes formed by the cooperating primary and secondary rolls. Each of these work supports comprises a base member 91 which is secured to the base 11 for longitudinal adjustment with respect thereto by screws 92 which pass through elongated openings 93 formed in laterally disposed flanges or feet 94 connected with the base 91 and screw-threaded into the adjacent portion of the base 11.

A guide block 95 is mounted upon each base 91 and is secured to said base by screws 96. These screws 96 extend downwardly through openings 97 provided in laterally projecting feet 95' on the guide block 95 at opposite sides thereof and are screw-threaded in the adjacent upper portion of the corresponding base 91. The openings 97 are elongated transversely of the guide block 95 so that said block may be adjusted transversely of the corresponding base member 91 when the screws 96 are loosened, and one end of the block 95 may be advanced further than the other so as to obtain a slanting position of the guide block in relation to the longitudinal axis of the machine. Each guide block 95 is provided with a longitudinally extending recess 98 provided in the upper portion thereof in which is mounted a guide plate 99. The guide plate 99 is clamped to an adjacent side of the guide block by means of bolts 100 which extend through corresponding elongated apertures 101 extending upwardly from the lower edge of the guide plate. The lower longitudinal edge of each guide plate 99 is tapered from the outer ends of said plate downwardly toward the other or inner end thereof.

Mounted in the recess 98, beneath the corresponding guide plate, is a wedge member 102 which has the upper edge thereof tapered in accordance with the lower edge of the corresponding guide plate 99 for slidably contacting said edge of the guide plate. Each wedge 102 is adjusted longitudinally in the corresponding recess with respect to the guide block 95 and the guide plate 99 carried thereby by means of a screw member 104 which is rotatably mounted intermediate its ends in an upwardly extending boss 105 provided on the guide block 95 adjacent the outer end thereof, as shown in Figure 8. The screw 104 is provided with a pair of collars 106 arranged at opposite sides of the boss 105 for maintaining the screw against axial movement with respect to the corresponding guide block. The outer end of each screw 104 is provided with a crank 107 by which said screw may be manually rotated. The inner end portion of the screw has screw-threaded engagement, as at 108, with the corresponding wedge 102 so that rotation of the screw will produce longitudinal movement of the wedge for elevating or lowering the corresponding guide plate 99.

When the wedge 102 is adjusted, the screws 100 are, of course, loosened to permit the free vertical movement of the corresponding guide plate. After the plate has been adjusted by the wedge to bring the upper longitudinal edge 109 of the guide plate in proper alignment with the apertures 89' and 90' in the inlet and outlet guide members 89 and 90, the screws 100 are tightened and cooperate with the corresponding wedge member 102 to maintain the guide plate in the adjusted position. The upper edge 109 of each guide plate 99 may, as illustrated in Figure 3, be formed slightly concave in cross section so as to more efficaciously engage the work as said work is moved through the passes for guiding the same.

Although there is shown and particularly described the preferred embodiment of the invention, it is not desired to be limited to the exact construction shown as various changes in the form and relation of the parts thereof may readily be made without departing from the spirit of the invention as set forth in the appended claims.

I claim:

1. In a rod and tube straightening machine comprising a frame, a housing member supported by said frame, a primary roll, a yoke for said roll having a shank rotatably connecting the same to the housing member, a shaft journaled in said yoke shank substantially coaxial therewith, means including a pair of intermeshing gear members secured respectively to the roll and to said shaft for transmitting rotary motion from the shaft to said roll, and means for rotating said shaft.

2. A straightening machine as defined in claim 1 having means for adjustably clamping the yoke to said housing member.

3. A straightening machine as defined in claim 1 wherein the housing member is mounted on the frame for adjustment with respect thereto, and means connected with the housing member, yoke and frame for releasably securing the same to each other.

4. In a straightening machine of the class described, in combination, a supporting member, a roll, a yoke for said roll, means connecting said yoke with the supporting member for both rotary and axial movement with respect thereto, and means connected with the supporting member and engageable with the yoke in uniform spaced relation to the axis of the roll at all positions of axial and rotary adjustments thereof for releasably securing said yoke to said supporting member.

5. In a straightening machine of the class described, a housing member having a bearing opening extending therethrough, a secondary roll, a yoke for said roll, a supporting member for said yoke mounted in said housing opening for axial adjustment with respect to said housing, said housing having a resilient slotted portion adjacent one side of said opening engageable with the yoke and supporting member in all positions of axial adjustment thereof, and clamping elements associated with said slotted portion for releasably moving said portion into clamping engagement with said yoke and supporting member.

6. In a straightening machine of the class described, a frame, a housing member mounted on said frame for adjustment with respect thereto, a supporting head connected with said housing member having movement with respect to said housing transversely of said adjustment movement thereof, a secondary roll, a yoke for said roll rotatably associated with the supporting head, and means releasably securing the yoke to said head, said means including screw members extending through aligned holes provided in the yoke, head and housing member, and spacing elements mounted on said screw members between the outer ends thereof and the head member, said

spacing members being freeely movable through said holes provided in the housing member.

7. A straightening roll structure as defined in claim 6 having additional means associated with the housing and engageable with said yoke and supporting head for releasably clamping said yoke and head to the housing member.

8. In a straightening machine of the class described, in combination, a supporting means having a bearing aperture therein, a primary roll, a yoke for said roll having a shank journaled in said bearing aperture for rotatably supporting the yoke, a shaft journaled in said yoke shank coaxially therewith, a pair of intermeshing gears connected respectively with said shaft at the inner end of the shank and with said roll for transmitting rotary motion from the shaft to the roll, means for driving said shaft comprising a driven shaft adapted to be connected directly with a motor, and a second pair of intermeshing gears connected directly with said shafts respectively adjacent the outer end of the shank for transmitting rotary motion from one shaft to the other.

9. In a straightening machine of the class described, a frame, a supporting member mounted on said frame for movement with respect thereto, a primary roll, a yoke for said roll journaled in said supporting member, a shaft journaled in said yoke, means operatively connecting the shaft with the roll for transmitting rotary motion from the shaft to said roll, and means for rotating said shaft comprising a drive member mounted in fixed relation with respect to said frame, a driven shaft rotatably connected with the supporting member to move therewith, a pair of intermeshing gears connected with said shaft member, and means operatively connecting the second shaft with said drive member including a coupling element having splined engagement with at least one of said latter members for axial movement with respect thereto.

10. In a straightening machine of the class described, in combination, a supporting member, a roll, a yoke for said roll, means connecting said yoke with the supporting member for both rotary and axial movement with respect thereto, means connected with the supporting member and engageable with the yoke at all positions of axial and rotary adustments thereof for releasably securing said yoke to said supporting member, and means connected with the yoke and with the first mentioned means to move therewith independently of the supporting member during the axial adjustment of said yoke for releasably securing said yoke and said first mentioned means to each other.

11. In a rod and tube straightening machine of the character described, in combination, a base, a pair of supporting members mounted on said base, at least one of said members being adjustable with respect to the base, a pair of yoke members journaled in said supporting members, a pair of primary rolls rotatably carried by said yoke members with the axes of rotation thereof substantially normal to the axis of rotation of the corresponding yoke member, means for rotating said rolls in unison comprising two gears secured to the rolls to rotate said rolls, a pair of additional gears mounted coaxially with the yoke members and having meshing engagement with said first mentioned gears respectively, and means for rotating said additional gears at all positions of said adjustment of the supporting member.

12. A straightening machine as defined in claim 11 wherein said latter means includes a drive member mounted in fixed relation with respect to said base, and means operatively connecting the drive member with the additional gears including an operating element connected with the adjustable supporting member to move therewith.

13. In a straightening machine of the class described, in combination, a supporting member including a contractible sleeve, a roll, a yoke for supporting said roll, a head positioned within said sleeve movable with respect to said supporting member, means for rotatably mounting said yoke on said head, and means for contracting said sleeve.

14. In a straightening machine of the class described, in combination, a supporting member including a contractible sleeve, a head slidably mounted within said sleeve arranged for axial movement therein, a roll, a yoke for supporting said roll, said yoke being slidably supported within said sleeve, means for rotatably securing said yoke to said head, and means for contracting said sleeve to clamp said head and said yoke.

WILLIAM E. KANE.