May 12, 1931. G. A. WISE 1,805,302

ROUND STRAIGHTENER

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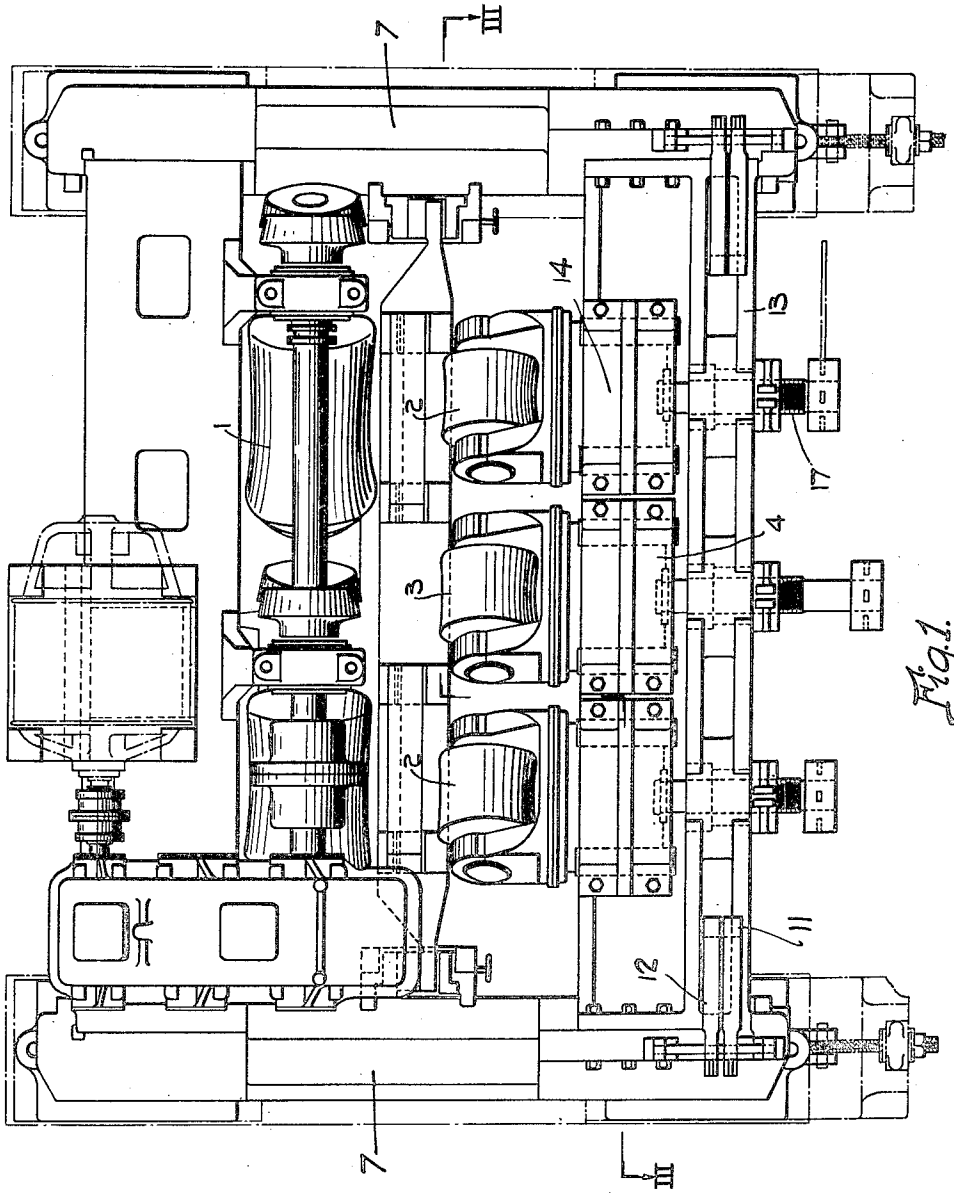


Fig. 1.

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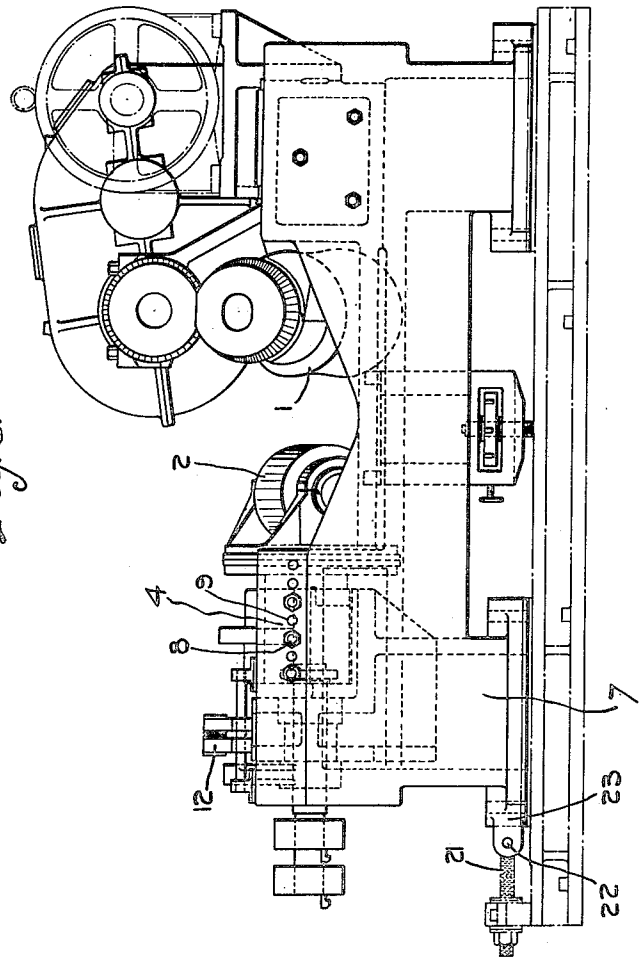
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Fig. 2.



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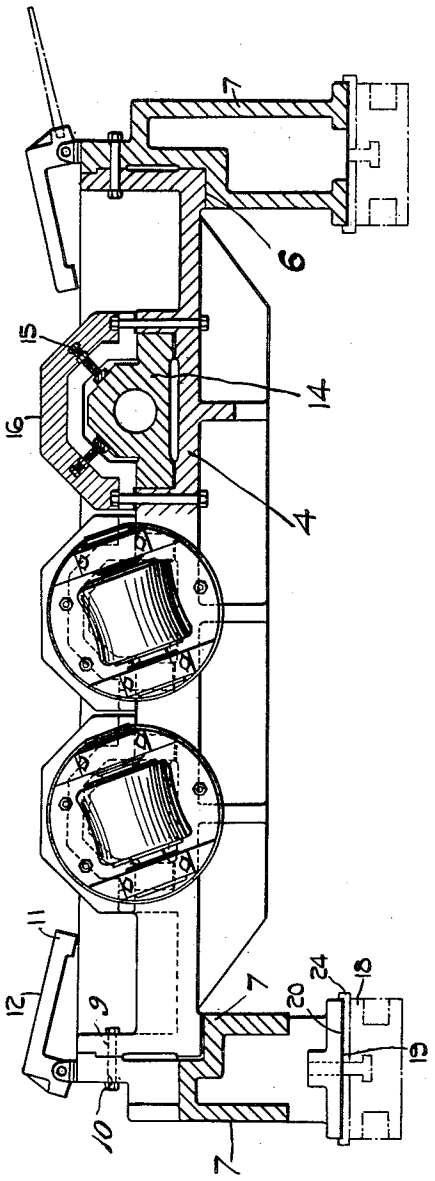


Fig 3

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UNITED STATES PATENT OFFICE

GEORGE A. WISE, OF PITTSBURGH, PENNSYLVANIA, ASSIGNOR TO SUTTON ENGINEERING COMPANY, A CORPORATION OF PENNSYLVANIA

ROUND STRAIGHTENER

Application filed October 1, 1929. Serial No. 396,430.

This invention relates to a round-straightening machine.

The type of straightening machine embodying the features of the present invention is that of a cross-roll straightener comprising pairs of contoured driven and contoured idler rolls with an intermediate pressure roll. In machines of this type, when designed for use with stock of relatively great diameter, as, for example, tubes of a diameter from eight to eighteen inches, the adjustment of the idler rolls toward the driven rolls to accommodate stock of the smaller diameters presents a problem. If, for example, the idler roll brackets are moved from a position for eighteen-inch stock to a position for eight-inch stock, independent adjustment of the idler roll brackets leaves a material overhang, that is, a relatively great distance throughout which the idler roll brackets are not directly supported. In such position of the idler roll brackets the rigidity of the machine is impaired with consequent obvious disadvantages.

One object of the invention is to provide a round-straightening machine of the type indicated, in which the idler roll brackets are mounted in a common frame, and this frame is made adjustable as a whole toward and away from the driven rolls, thus avoiding excessive overhang of the idler roll brackets and minimizing independent adjustment thereof.

Another object of the invention is to provide independent fine adjustment of each of the idler roll brackets in the idler roll frame common to all of them, thus permitting an accommodation between steps of adjustment of the idler roll frame and permitting the idler rolls independently to be arranged conformably to the condition of the stock being run.

In the accompanying drawings Figure 1 is a plan view of the machine as a whole; Figure 2 is an end elevation thereof; and Figure 3 is a vertical sectional view through the machine on the line III—III of Figure 1.

In the accompanying drawings the reference numeral 1 designates the driven rolls of the machine, which, it is to be understood, are mounted in fixed lateral and vertical position; and reference numeral 2 designates the co-operating idler rolls which must be adjusted toward and from the driven rolls, to accommodate stock of various diameters. The intermediate pressure roll is designated by the reference numeral 3.

The idler roll side frame 4 is a continuous structure which is provided adjacent the lower edges thereof with faces 5 arranged to slide on shelves 6 in the end stands 7 of the machine. Sliding movement of the idler roll frame in the end stands may be produced by any suitable means, such as jack screws (not shown) The idler roll frame is secured in adjusted position against movement longitudinally of the machine by means of bolts 8 passing through co-operating bolt holes 9 and 10 in the idler roll frame 4 and end stands 7, respectively. While the bolts 8 prevent longitudinal displacement of the idler roll frame and define the transversely adjusted position of the frame, it is necessary to provide suitable backing means to support the frame transversely of the machine during its use in the straightening, polishing or rounding of stock. Unless the jack screws for adjusting the idler frame toward and from the driven rolls be of particularly great size and strength, in order to fulfill this purpose, it is desirable to provide special backing means, such as the means shown.

The special backing means, as shown, comprise a plurality of filler blocks 11 formed integral with angular arms 12 which are pivoted to the end stands 7. Each of the filler blocks 11 is of a width corresponding to the distance between the centers of adjacent bolt holes. During adjustment of the idler frame the filler blocks 11 are swung backwardly out of position. When the idler frame has been adjusted, and the bolts 8 have been inserted and fastened down, one or more of the filler blocks 11 is swung into position to fill the space between the outer end of the idler roll frame 4 and the side frame proper 13 of the machine.

Each of the brackets 14 for the co-operating idler rolls 2 and the idler constituting the intermediate pressure roll 3 are slidable

transversely of the idler roll frame 4, and of the machine as a whole. As shown in section in Figure 3 of the drawings, the brackets 14 are slidable on the idler roll frame and are held firmly in adjusted position therein by means of pressure screws 15 passing through caps or cover plate 16. Transverse sliding movement of the idler roll brackets 14, to effect their independent adjustment is produced by means of jack screws 17.

With the arrangement of the present invention the idler roll frame 4 as a whole is moved transversely on the end stands 7, to effect a rough adjustment for the diameter of the stock to be operated on. It is held in this adjusted position by means of bolts 8, and supported against forces operating transversely of the machine by suitable means, such as the filler blocks 11. A fine adjustment to supplement the rough adjustment between adjacent bolt holes and to permit proper relative positioning of the idler rolls 2 co-operating with the driven rolls 1, and the intermediate pressure roll 3, is effected by the independent adjustment of the brackets of each of these idler rolls. The rigidity of the machine is thus increased without sacrifice of fine adjustment.

What I claim is:

In a cross roll straightening machine the combination of driven rolls stationary as to linear movement, idler rolls, an idler roll mounting frame common to all the idler rolls and movable toward and from the driven rolls for rough adjustment of the idler rolls relatively thereto, an individual mounting bracket for each idler roll mounted in the frame for movement therein in the plane of movement of the frame and support throughout against forces acting angularly to its path of movement, and means for producing independent movement of each of the idler roll brackets in the frame to effect a fine adjustment of the idler rolls relatively to the driven rolls.

In testimony whereof I have hereunto set my hand.

GEORGE A. WISE.