A. H. NILSON.

WIRE STRAIGHTENER.

APPLICATION FILED DEC. 27, 1920.

1,414,371. Patented May 2, 1922.

Fig. 1

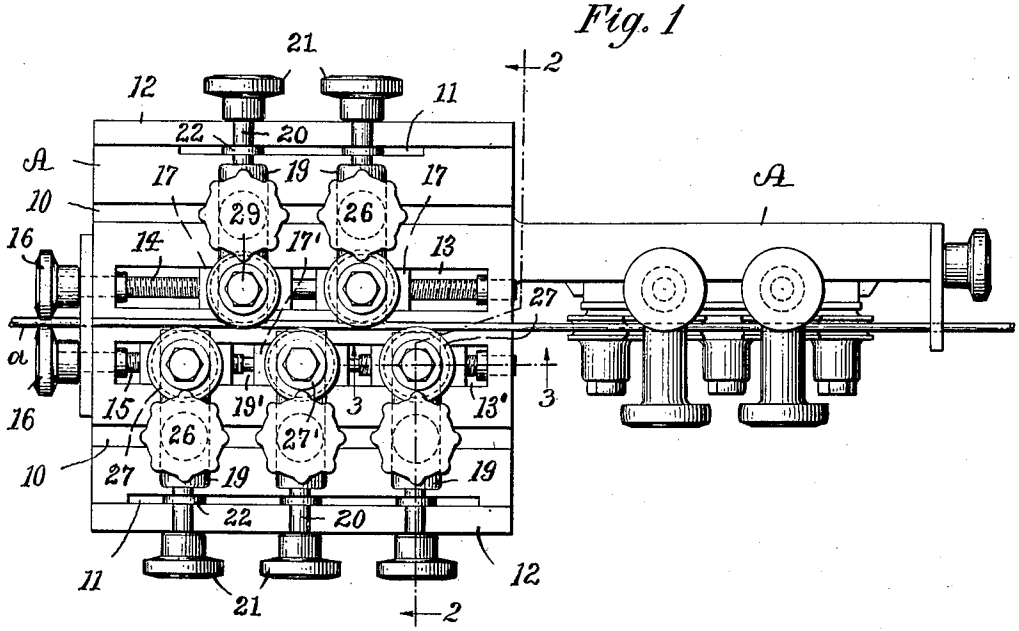


Fig. 2

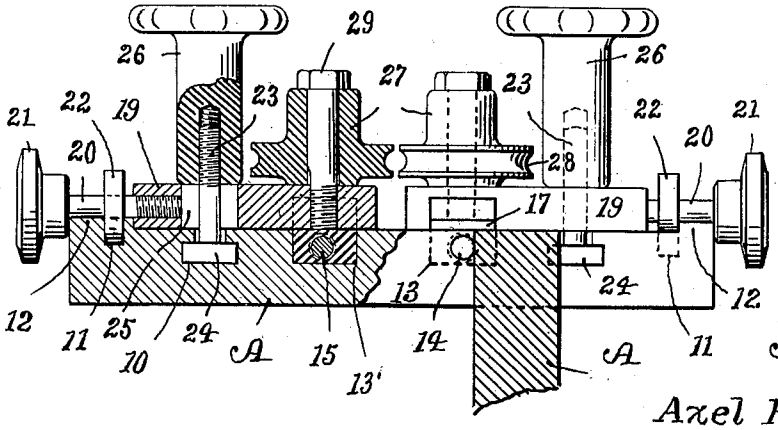
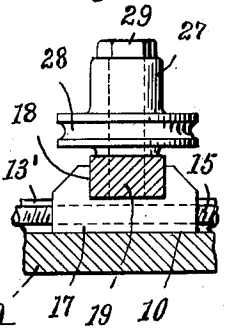


Fig. 3



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WIRE STRAIGHTENER.

1,414,371. Specification of Letters Patent. Patented May 2, 1922.

Application filed December 27, 1920. Serial No. 433,288.

To all whom it may concern:

Be it known that AXEL H. NILSON, a citizen of the United States, and resident of Bridgeport, in the county of Fairfield and State of Connecticut, has invented certain new and useful Improvements in Wire Straighteners, of which the following is a specification.

This invention relates to wire straighteners and refers more particularly to that class of straighteners used in connection with wire forming machines and through which the wire is passed preparatory to the cutting and bending operations.

Wire straightening devices of this class usually include two sets of straightening rolls, positioned adjacent to each other, and through which the wire to be straightened is passed. These two sets are further arranged at right angles to each other so that one series of rolls will operate in a vertical plane, and in this respect my present invention is similar.

The object of the invention is to provide a wire straightening device that is adapted for all required adjustments to accommodate different sizes of wire. Further to provide adjusting means whereby the guide rolls between which the wire passes, may be adjusted both to and from the wire, when threaded therebetween, and sidewise to and from each other, which is particularly desirable to better accommodate wires of different thickness, since I find that the thicker the wire the further apart the rolls should be spaced in both directions.

The construction and arrangement of the two sets of rolls are alike in construction and each set preferably includes a series of five rolls, two upon one side and three upon the other, their position being staggered with relation to each other. In this respect it is also a feature of the device that while all of the rolls are made adjustable toward and from the wire, yet a portion of them only need be made adjustable sidewise, the lower center roll having no sidewise movement, and is adapted for adjustment to and from the wire only.

With these and other objects in view the invention resides and consists in the construction and novel combination and arrangement of parts hereinafter more fully described, illustrated in the accompanying drawings, and pointed out in the claims hereto appended, it being understood that various changes in the form, proportion, size and minor details of construction within the scope of the claims may be resorted to without departure from the spirit or sacrificing any of the advantages of the invention.

Similar characters of reference denote like or corresponding parts throughout the several figs. of the accompanying drawings forming a part of this specification, and upon which,

Fig. 1 shows a plan view of my improved form of wire straightener.

Fig. 2 is a cross sectional view, partly in elevation, taken on line 2—2 of Fig. 1, and

Fig. 3 is a detail sectional view taken on line 3—3 of Fig. 1.

It will be noted that each roll is specially positioned with reference to the other rolls, and operate similarly and in conjunction with each other as the wire is drawn through. It is further to be observed that each roll is mounted on a separate slide, and which as shown are slidably mounted in guide ways of the base. Therefore similar characters of reference will be employed to designate the like parts connected with the several rolls.

The two sets of straightening rolls as shown in the drawings are arranged in alignment and are mounted on the flat bed portions A—A of the casting, disposed at right angles to each other. These beds as well as the mechanisms mounted thereon are alike in construction and therefore my detail description of one will answer as a description of both. These beds are each provided with shouldered guide ways 10—10 and longitudinal grooves 11—11 adjacent to their outer raised edge portions 12—12. The two guide slots 13 and 13′ in the base are located near the center of the base. In the guide slot 13 is a screw 14 and in the guide slot 13′ is a somewhat similar screw 15. The end portions of these screws are journalled in the base, and provided with attached operating handles 16 by means of which the screw may be turned. A right hand thread is cut on one end portion of each screw and a left hand thread on the other end portion.

These screws are for the purpose of providing longitudinal adjustment to the rolls,

that is adjustment in the direction of the length of the wire. The rolls are each mounted on a separate holder having independent means for vertical or crosswise adjustment. These holders in turn are each guided in a shoe which like the holder and roll are of similar construction.

One threaded end portion of the upper screw 14 engages the shoe 17 mounted in one end portion of the guideway 13 while the other threaded end portion engages a similar shoe 17 fitted in the other end portion of the same guideway. Each of these shoes include a way 18 in which a holder 19 is mounted and adapted to be moved backward and forward at a right angle to the movement of the shoe. These adjustments of the holder 19 are obtained by the independent adjusting screws 20 provided with operating handles 21 for turning the same and having collars 22 that turn in the slot 11 to hold the screws against endwise movement and so as to insure the forward and backward movement of the holder by the turning of the screw. The holders 19 are clamped to the bed by screw bolts 23 whose heads 24 engage the shouldered ways 10 in the bed and whose shank portion passes up freely through slot 25 of the holder and have their threaded end portion engaged by the clamping nuts 26.

In addition to the right and left hand threads provided on the adjusting screw 15 mounted in the lower slot 13′ for moving the two outer shoes and holder 19 of of the lower series of rolls, I provide on said screw an intermediate plain or unthreaded portion 19′ that has its bearing in the central shoe 17′, of the lower series of rolls. The operative effect therefore of this screw is to move the two outer rolls 27 of the lower series sidewise, to and from the center roll 27′ which at all times remains in a central position with relation to the remaining rolls of that series.

A wire guide roll is thus carried on each slide 19 so as to guide the wire, and are each journalled on a bolt 29, the threaded end of which is seated in a tapped hole in each slide 19. The grooves 28 in the face of the rolls of the two sets and series are in alignment, so that by adjusting the rolls, by the above described adjusting mechanism, different sizes of wire can be accommodated and straightened with improved results.

By way of a review of the description of the operation of my invention, it will be apparent that a represents a piece of wire positioned in the straightener as in the act of passing therethrough, first between one set of five rolls and then through the other set of a like number. In order to better accommodate different size wires, the rolls are all adjustable to and from the wire by means of the adjusting screws 21. The center roll 27′ of the lower series is not adjustable sidewise, but the adjacent roll on each side is adjustable sidewise to and from said center roll, by means of the screw 15. The upper rolls included in the upper series are also adjustable sidewise, that is, in line with the movement of the wire, so that they may be set at any desired distance apart and with relation to the position of the rolls in the lower series.

Having thus described my invention, what I claim and desire to secure by Letters Patent, is—

1. In a wire straightener of the class described, a series of aligned rolls, and means for simultaneously adjusting said rolls in such manner that the same can at all times remain equal distances apart.

2. In a wire straightener of the class described, in a series of aligned rolls, and a single means for adjusting said rolls from and toward each other, whereby the rolls will at all times be spaced equal distances apart.

3. In a wire straightener of the class described, a series of aligned rolls including an intermediate roll and rolls upon the opposite sides thereof, and means for simultaneously adjusting said rolls toward or from said intermediate roll.

4. In a wire straightener of the cless described, the combination of an upper aligned series of rolls, a lower aligned series of rolls, means for adjusting said rolls vertically toward and from a wire when positioned between said series, and means for simultaneously adjusting the outer rolls of one of the series toward and from the center roll of the same series.

5. In a wire straightener of the class described, the combination of an upper series of rolls and a lower series of rolls adapted to pass a wire between said series, means for adjusting the rolls toward and from the wire, and a single means for adjusting the rolls of each series toward and from each other.

6. In a wire straightener of the class described, the combination of a bed having a slot therein, guide shoes mounted in the slot, holders carried by the shoes, rolls mounted on the holders, means for adjusting the holders in one direction and independent means for adjusting both the shoes and holders in another direction.

7. In a wire straightener of the class described, the combination of a bed having a guideway therein, holders mounted on the bed, rolls mounted on the holders, means for adjusting the holders in one direction, independent means for adjusting the holders in another direction toward and from each other, and means carried in the guideway for securing the holders to the bed.

8. In a wire straightener of the class de-

scribed, the combination of a bed having a slot therein, guide shoes mounted in the slot, holders carried by the shoes, rolls mounted on the holders, means for adjusting the holders in one direction, a screw having a right and left thread for adjusting the shoes and holders toward and from each other.

Signed at Bridgeport, in the county of Fairfield and State of Connecticut, this 22nd day of December A. D., 1920.

AXEL H. NILSON.

Witnesses:
EDITH H. HUENERBERG,
MARY E. KEELY.