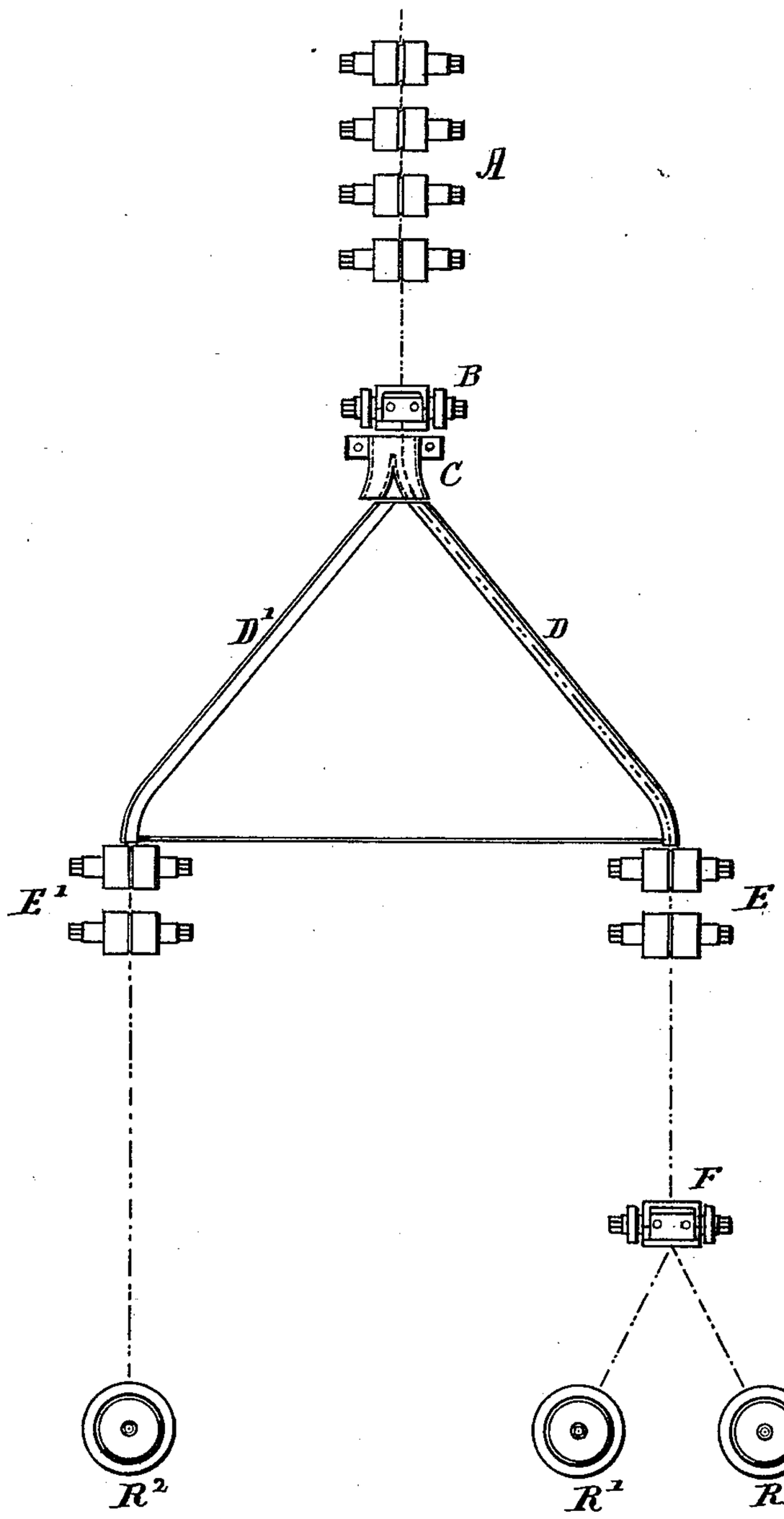
(No Model.)

F. H. DANIELS.

ART OF MAKING WIRE RODS.

No. 351,365. Patented Oct. 26, 1886.



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FRED H. DANIELS, OF WORCESTER, MASSACHUSETTS.

ART OF MAKING WIRE RODS.

SPECIFICATION forming part of Letters Patent No. 351,365, dated October 26, 1886.

Application filed July 3, 1886. Serial No. 207,037. (No model.)

To all whom it may concern:

Be it known that I, FRED H. DANIELS, a citizen of the United States, residing at Worcester, in the county of Worcester and State of Massachusetts, have invented certain new and useful Improvements in the Art of Making Wire Rods, of which the following, together with the accompanying drawing, is a specification, sufficiently full, clear, and exact to enable persons skilled in the art to which this invention appertains to make and use the same.

The object of my present invention is to produce wire rods with greater rapidity and economy than by the present employed processes, and to avoid the large percentage of waste occasioned in the rolling of rods by continuous method as ordinarily practiced.

My present invention consists in a method of producing or making wire rods from very large or heavy billets, weighing about five or six times (more or less) as much as the weight of billets such as are ordinarily used for continuous rolling into wire rods, wherein the billet is partially reduced and intermediately during the rolling or reducing operations the partially-reduced rod is divided into parts or sections, and the reduction of such parts separately continued and completed by further rolling operation; then the separately-finished rods are again cut into a number of sections of desired length or weight for handling, and said sections separately reeled into coils, the intermediate cutting operations being performed while the rod is in a heated condition, or as it issues from the reducing-rolls.

In carrying out my invention I employ apparatus of suitable size and capacity for heating and working the larger billets. The heating-furnaces may be of ordinary or any suitable construction, and for the primary and secondary reduction of the rods trains of rolls mounted and arranged as in the ordinary "continuous" rolling-mill may be employed, the leading rolls being adapted for doing heavier work. The primary and two or more secondary trains may be arranged substantially as illustrated in my Letters Patent No. 292,794, or in other suitable manner, if preferred. Reeling mechanism of any suitable kind may be employed, preferably two or more reels, to receive and coil alternate sections of the rod, and permit time for discharge without allowing the rod to accumulate in advance of the reeling.

In the drawing the figure is a diagram illustrative of the nature of my invention, and showing the arrangement in a mill-plant of a primary rolling-train, a cutting-off apparatus, a plurality of secondary rolling-trains, a secondary cutting-off apparatus, and reels for coiling the finished rod.

The details of mountings, gearing, and means of driving the rolls is not shown herein, as any person conversant with rolling-mills will readily understand the same without illustration.

I do not desire to confine my process of making wire rods to any particular detail of mechanical devices, as variously-arranged mechanism may be used to accomplish the various manipulations without change in the essential feature of my improved method of treatment.

Referring to the drawing, A denotes a primary train of reducing-rolls.

B indicates a shearing mechanism or cutters for severing a partially-reduced rod as it comes from the primary reducing-train.

C indicates a switch for directing the severed sections of rod alternately to the right and left through guides or conductors D D′ to the secondary rolling or finishing trains E E′.

F indicates a secondary cutting apparatus or shears for severing the finished rod into sections; and R, R′, and R² indicate reels or apparatus for coiling the finished rod.

My improved method of making rods is as follows: I take a billet or bar of metal weighing six hundred pounds, (more or less,) which, when properly heated, is passed through the primary train of rolls A, whereby it is reduced to a medium size, and in order to obviate the inconvenient elongation the rod is severed into sections by the shears or cut-off mechanism, which sections are alternately directed to the right and left, to be further rolled in one of the several secondary trains, wherein the reduction of the rod is completed, and after which it is again severed by the shears or cut-off mechanism F into convenient lengths to form coils of convenient weight for handling, or into sections of, say, about one hundred pounds weight, (more or less,) which sections are alternately directed to separate reels, as R and R′, and thereby coiled up, the coil-

section of rod being discharged from one reel during the time it is being wound onto another, so that said second reel will be ready to receive the end of the rod when the following section is severed. In some instances it may be desirable to sever the rod more frequently before the secondary rolling, and to coil the rod without severing it after it comes from the secondary train, as indicated by the reel R^2, at the left of the drawing; but ordinarily I consider it preferable to run the rod through the secondary trains in as long lengths as practical, and to sever the rod into sections to be alternately coiled on separate reels after the rolling is finished.

The advantages gained by this method of working rods are the avoidance of waste by reason of imperfect portions of rod which have to be cut off, and also a material advantage in the running and wear of the machinery, the labor and attendance on the mill, and the speed of production.

In my application for Letters Patent, Serial No. 189,791, I have described a process in which rods are rolled from large billets, severed into sections, and then reeled, while the present application embraces a process of rolling rods from large billets, severing them into sections intermediately of the rolling operation, and then completing the reduction in a plurality of secondary trains; also, the same together with the severing of the rod into a second series of sections before the final reeling.

What I claim as of my invention, and desire to secure by Letters Patent, is—

The improvement in the art of making wire rods by continuous operation, which consists in rolling down a large or heavy billet to form an extended rod of a size somewhat larger than the finished size, severing the partially-reduced rod after it comes from the primary rolls into sections, alternately directing said sections to separate sets of finishing-rolls for completing the reduction thereof, then severing the finished rod into sections of convenient weight for handling, and separately coiling or reeling said sections, substantially as set forth.

Witness my hand this 30th day of June, A. D. 1886.

FRED H. DANIELS.

Witnesses:
CHAS. H. BURLEIGH,
ELLA P. BLENUS.