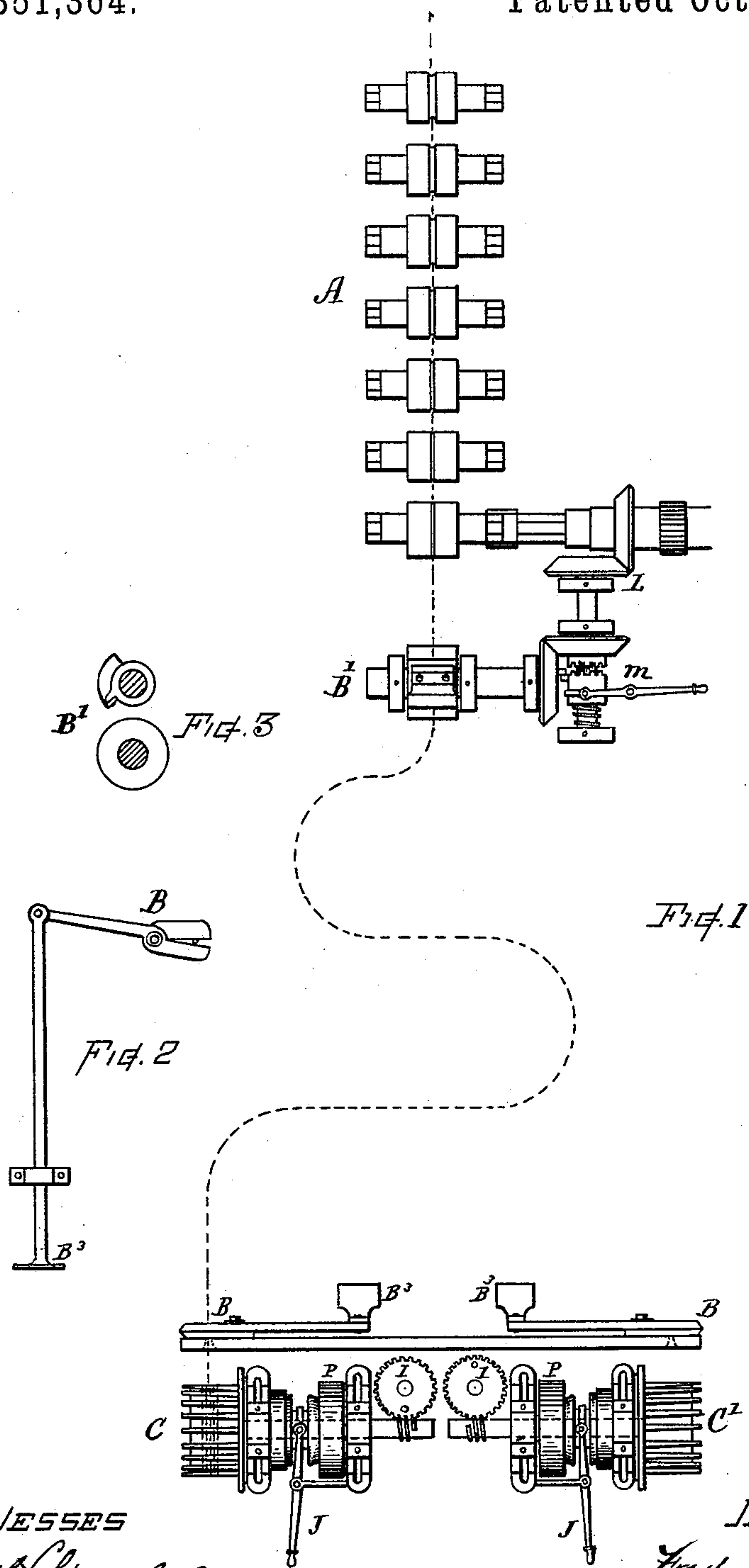


(No Model.)

F. H. DANIELS.
ART OF MAKING WIRE RODS.

No. 351,364.

Patented Oct. 26, 1886.



WITNESSES

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FRED H. DANIELS, OF WORCESTER, MASSACHUSETTS.

ART OF MAKING WIRE RODS.

SPECIFICATION forming part of Letters Patent No. 351,364, dated October 26, 1836.

Application filed January 26, 1836. Serial No. 139,791. (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 drawings, 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 invention is to produce wire rods with greater rapidity and economy than by the present employed processes, and to avoid the larger percentage of waste caused in continuous rolling-mills, by reason of finned or enlarged portions of rod which are unsuitable for drawing, and which occur at the ends of rods which are reduced or formed by "continuous" rolling in the ordinary way.

My invention consists in making the rods from very large or heavy billets, weighing about five or six times (more or less) as much as the ordinary billets weight, and then, after the rod is reduced, cutting the finished or partially-finished rod into a number of sections of convenient weight for handling and separately reeling said sections into coils, the intermediate cutting operation being performed automatically or otherwise while the rod is in 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 large billets. The heating-furnace may be of ordinary or any suitable construction, and for reducing the rod a train of rolls mounted for operation in continuous order, substantially as in the ordinary continuous rolling-mill, with the leading rolls adapted for doing heavier work, and a longer train for the reduction; or, if preferred, a primary train and two secondary trains, such as shown in my Letters Patent No. 292,794, can be used. Reeling mechanism of any suitable kind, automatic or otherwise, may be employed, two or more separate reels being required for successful operation.

In the drawings I have shown diagrams and devices illustrative of the nature of mechanism suitable for carrying out my method of producing wire rods.

Figure 1 shows a plan diagram of the latter

part of a rod-rolling mill, the cutter mechanism, and reels. Fig. 2 shows a form of cutter that may be used by hand or foot. Fig. 3 is a rotary cutter for operation by power.

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 drawings, A denotes the train of reducing-rolls, B indicates shears or cutters for severing the rod, and C C' denote reels. 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.

In my improved method of making wire rods, I take a billet or bar of metal weighing some six hundred pounds, more or less. This billet is properly heated and then run through the continuous rolling-mill A to reduce it to a finished or small-sized wire rod of, say, No. 6 gage, more or less. The ordinary weight convenient for handling, which is about one hundred pounds or less, makes a rod some six hundred feet in length. It will thus be seen that a six-hundred-pound billet would make a rod of some thirty-six thousand feet in length. The end of this rod, as it issues from the rolls, is taken through the shear to the reel C, and it is wound thereon until the coil contained on the reel has reached the desired size of, say, one hundred pounds. The rod is then severed by the shears B, and the severed end is taken to the other reel, C', and a second section of, say, one hundred pounds, is coiled onto said second reel, C', and the rod again severed. In the meantime, the coil having been removed from the first reel, C, the severed end is entered on said first reel and a third coil of similar size coiled thereon, and so on in like manner the rod is cut into sections and the sections separately reeled until the end of the rod is reached.

As illustrative of mechanism whereby the severing of the rod can be effected in the manner set forth, I have herein shown a lever-shear, B, (see Figs. 1 and 2,) which shear is placed at the entrance-passage to the reel, one jaw being fixed to the guard-frame, while the other jaw is provided with an arm to which a

treadle, B³, is connected, whereby the jaws can be closed by the attendant placing his foot upon and depressing said treadle. Another means for severing the rod is by a rotary cutting apparatus, as indicated at B' in Figs. 1 and 3. This rotary-shear mechanism may be located near the foot of the rolling train, and be connected with the driving mechanism of said rolling train by suitable gearing, as L, and be provided with a stop-clutch, as at m, whereby the shear can be thrown into and out of action, as desired. Any other suitably-arranged mechanism may be employed, if preferred, for severing the rod, as I do not confine my invention to a particular construction of mechanical devices.

The advantages gained by this method of working rods is that there are no finned or enlarged ends except on the first and last sections, averaging, say, six feet each or twelve feet waste, as against seventy-two feet waste by the ordinary process; also, a material advantage in the running and wear of the mill, as the rolls and guides work easier and smoother on a continual line of metal than they do when

jumping from butts to heads of rods; and, also, there is less liability of the rods "cobbling" or choking in the passes of the rolls and guides.

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

1. The improvement in the art of making wire rods by continuous operation, which consists in rolling an extended rod from a large or heavy billet, cutting the produced rod into sections, and reeling into coils of convenient weight for handling, substantially as set forth.

2. The improvement in the art of making wire rods, which consists in rolling down a very large or heavy billet to form a long rod, automatically severing said rod into sections of convenient weight for handling, and separately reeling said sections to form coils, substantially as hereinbefore set forth.

Witness my hand this 8th day of January, A. D. 1886.

FRED H. DANIELS.

Witnesses:

CHAS. H. BURLEIGH,
S. R. BARTON.