

(No Model.)

C. S. HALL & E. J. WATSON.

MAKING WIRE.

No. 293,011.

Patented Feb. 5, 1884.

Fig. 1.

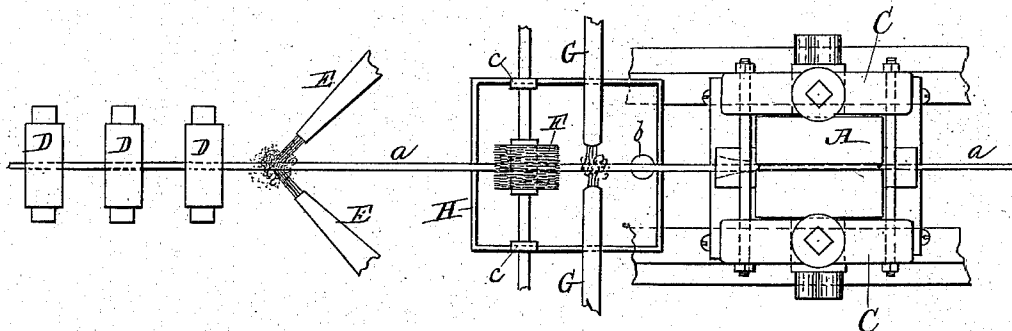


Fig. 2.

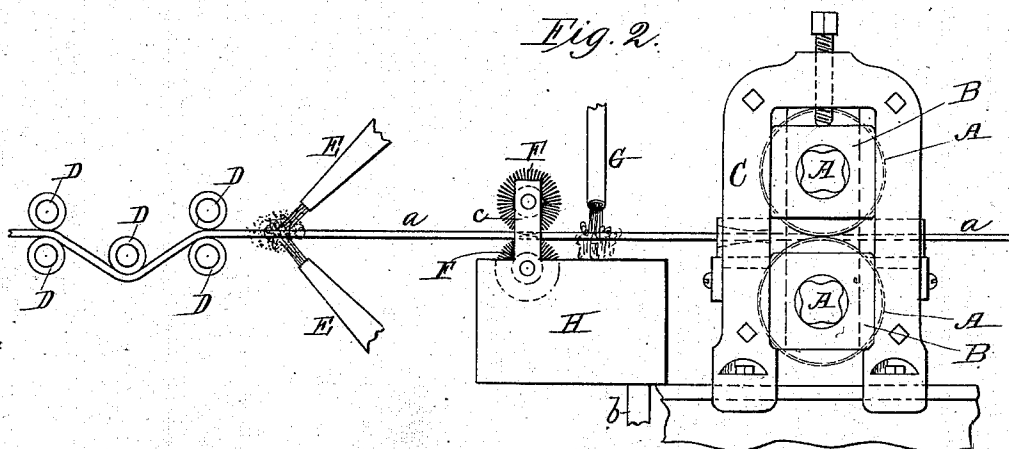


Fig. 3.

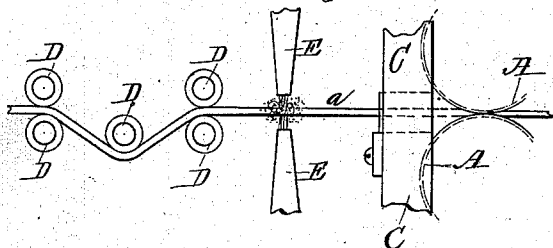
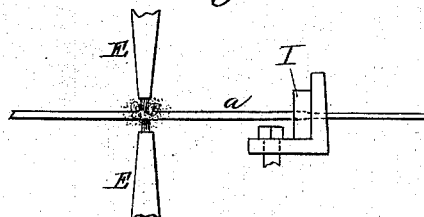


Fig. 4.



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UNITED STATES PATENT OFFICE.

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MAKING WIRE.

SPECIFICATION forming part of Letters Patent No. 293,011, dated February 5, 1884.

Application filed February 21, 1883. (No model.)

To all whom it may concern:

Be it known that we, CHARLES S. HALL and EDWIN J. WATSON, both of Worcester, in the county of Worcester and State of Massachusetts, have invented certain new and useful Improvements in Apparatuses for Straightening, Cleaning, and Reducing or Shaping Wire or Wire Rods; and we do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming a part of this specification, and in which—

Figures 1 and 2 represent a top or plan view and side view, respectively, of an apparatus for carrying out our aforesaid improvements, the same being shown in combination with the first set of rolls of a continuous or other wire-rod-rolling mill. Figs. 3 and 4 represent modifications, which will be hereinafter more fully explained.

Our invention relates to improvements in apparatuses for straightening, cleaning, and reducing or shaping wire or wire rods continuously or by separate operations, as hereinafter more fully described. Its objects are greater economy and the production of a better quality of wire rods than can now be obtained.

To enable those skilled in the art to which our invention belongs to make and use the same, we will proceed to describe it more in detail.

In the drawings, A A represent a set of reducing or shaping rolls, which are fitted to turn in suitable bearings, B B, in housings C C. As said housings C C and parts connected therewith are of ordinary and well-known construction, no further description in reference to the same is here necessary.

The parts marked D represent straightening or guide rolls, for guiding and removing the kinks or bends in the wire *a*, preparatory to being cleaned or otherwise treated.

The parts E are nozzles or pipes for conducting a sand-blast (from any suitable device for producing said blast) against the surface of the wire or wire rods, to remove the scales or dirt from the surface of the same as it is continuously fed forward.

F F are brush-wheels, made of fine wire or similar material, for removing any scales or dirt that may have escaped the sand-blast, and G G are pipes for conducting water against the surface of the wire or wire rods after the cleaning operations, to rinse off such loose dirt as may remain upon it after said operations. As the water is poured onto the wire, it passes into a reservoir or tank, H, which is provided with an outlet and waste pipe, *b*, for conducting the waste water where desired. In this instance the brush-wheels F are fitted to turn in bearings formed in the upright standards *c c*, formed upon or secured to the side of the tank H; but any other means of support may be employed for the same, if preferred. Said wheels, as well as their straightening or guide rolls D, may be turned by any suitable and convenient driving mechanism.

If desired, the water poured upon the wire *a* may be mixed with lime, soda, or similar chemicals for preventing said wire from corroding; and, if preferred, instead of pouring the aforesaid mixture upon the wire by means of pipes G, said pipes may be dispensed with, and the wire thus treated by passing it under guide-rolls or their equivalents through a bath of said mixture.

The sand-blast may be applied through any desired number of tubes or nozzles E, and any desired number of brush-wheels may be employed for the purpose before described. The arrangement of both may also be varied for producing the aforesaid results, and the wire may be conducted over suitable guides as it is fed forward, so that it will pass through and receive the action of the sand-blast any desired number of times.

Our invention may be applied not only to reducing or shaping rolls, as before described, but to reducing-dies I, (see Fig. 4,) for reducing wire by drawing in the usual way. It is also applicable in treating any size, shape, or kind of wire requiring such treatment.

In Fig. 3 we have represented only the straightening or guide rolls D, nozzles or pipes E, and a portion of the housings C and rolls A, the brush-wheels F, water-pipes G, and tank H being removed. This arrangement of

the apparatus may be employed with good effect for certain kinds of wire—as, for instance, wire whose surface may be easily cleaned, or which requires less cleaning than other kinds of wire. In Fig. 4 the same arrangement is shown after straightening in connection with a reducing-die, I. The same or similar result to that above described might be obtained by using one or more sets of brush-wheels F in place of the sand-blast between the straightening and guide rolls and rolls A or die I.

Wires or wire rods may be treated continuously by our improved apparatus; or they may be straightened, cleaned, and reduced or molded into different shapes by separate operations; or they may be straightened and cleaned at one operation, and afterward reduced, shaped, or drawn at another operation.

That the advantages of our invention may be more readily understood, we will state what some of the principal disadvantages of old apparatuses are. In the first place, a large amount of room for the cleaning-vats and dry-houses is required, and therefore requiring a large and expensive outlay for buildings and appliances. A great deal of time is unnecessarily wasted in loosening up the coils preparatory to immersing them in the acid cleaning-bath, so that the acid can penetrate between the strands and clean all parts as perfectly as possible. This is more especially true in regard to flat wire or rods, which require a great deal more time for this purpose than round wire. This, together with the number of times the wire must be handled, makes it an expensive operation. By the use of our apparatus the wire rods can be taken as they leave the rolling-mill, or wire as it leaves the annealing-furnaces, and cleaned, as before described, without any previous preparation, and at the same operation reduced or shaped in size, thus saving much in expense. Then, again, the sand-blast and brush-wheels clean the wire quicker and more thoroughly than an acid bath, as every portion of the surface of the

wire is acted upon, being treated singly instead of in a coil, where one strand is liable to come in contact and be covered by another. Another objection to the old apparatuses is that by the use of acids the quality of the wire is greatly impaired, which, as is seen, is entirely obviated by our invention.

We are aware it is not new to clean the surface of metals by means of a sand-blast, and therefore make no claim, broadly, to such feature, our invention being confined to its combination with a rolling-mill for manufacturing wire or wire rods by a continuous operation, as hereinbefore described.

We are also aware it is not new to clean the surfaces of saw-blades and similar sheets of metal by means of a sand-blast, and therefore make no claim, broadly, to the same, our claim being confined simply to its use in connection with apparatuses for straightening, cleaning, and reducing or shaping wire or wire rods, as hereinbefore set forth.

Having described our improvements in apparatuses for straightening, cleaning, and reducing or shaping wire or wire rods, what we claim therein as new and of our invention, and desire to secure by Letters Patent, is—

1. The combination of means whereby the sand-blast is applied through one or more nozzles, E, with the straightening-rolls D and reducing-rolls A, substantially as and for the purpose set forth.

2. The combination of means whereby the sand-blast is applied through one or more nozzles, E, with the straightening-rolls D, substantially as and for the purpose set forth.

3. The combination of means whereby the sand-blast is applied through one or more nozzles, E, with the reducing-rolls A, substantially as and for the purpose set forth.

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