2 Sheets—Sheet 1.

H. CHISHOLM.

Apparatus for Manufacturing Wire.

No. 211,458. **Patented Jan. 21, 1879.**

Fig. 1.

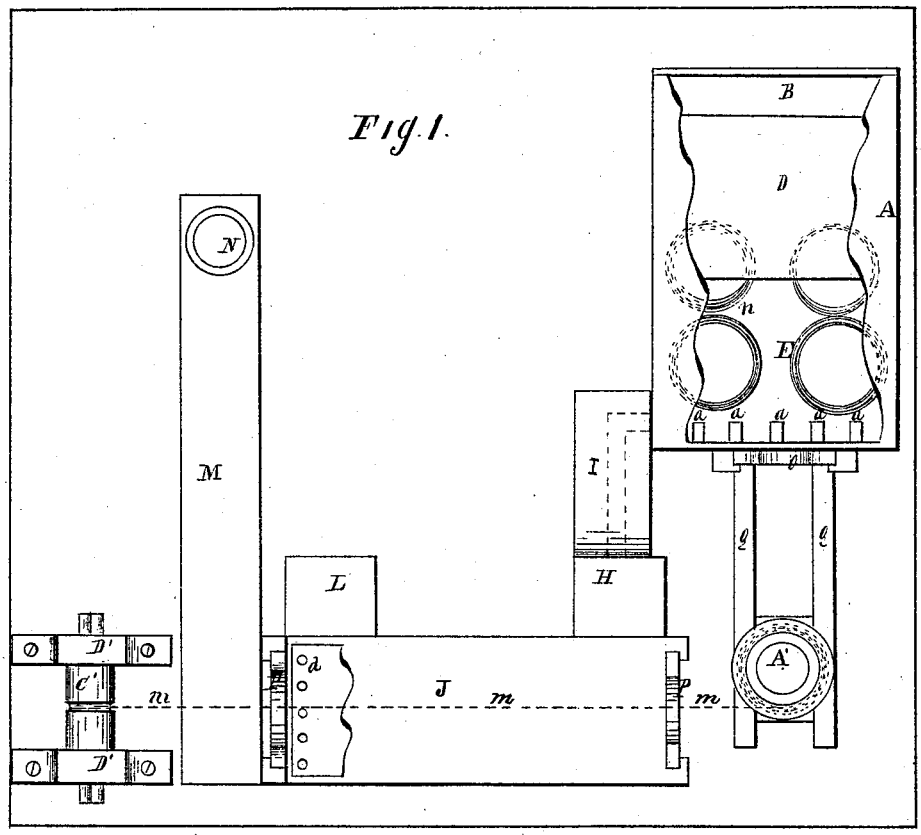
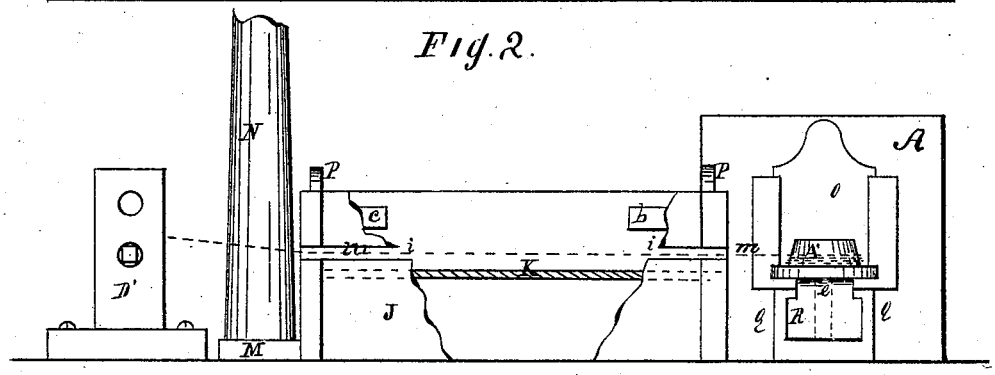


Fig. 2.



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2 Sheets—Sheet 2.

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Apparatus for Manufacturing Wire.

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Fig 3.

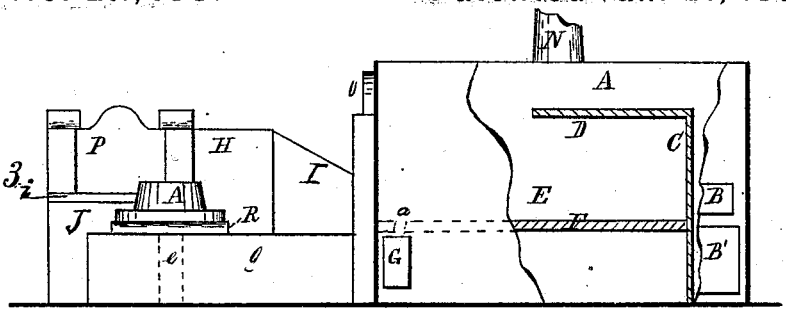
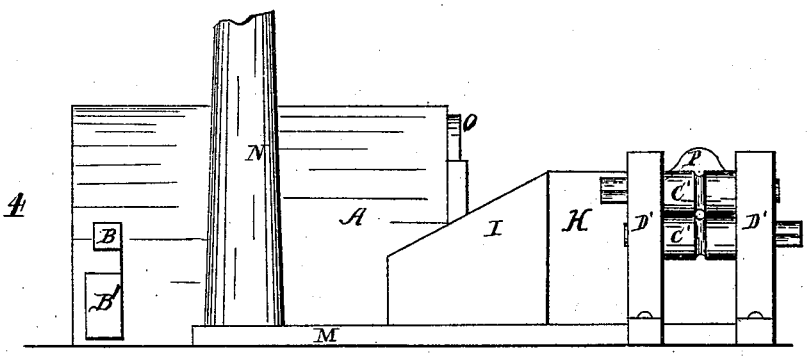


Fig 4



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UNITED STATES PATENT OFFICE

HENRY CHISHOLM, OF CLEVELAND, OHIO.

IMPROVEMENT IN APPARATUS FOR MANUFACTURING WIRE.

Specification forming part of Letters Patent No. **211,458**, dated January 21, 1879; application filed September 30, 1878.

To all whom it may concern:

Be it known that I, HENRY CHISHOLM, of Cleveland, in the county of Cuyahoga and State of Ohio, have invented a certain new and Improved Apparatus for Manufacturing Wire by Hot-Rolling; and I do hereby declare that the following is a full, clear, and complete description thereof.

The nature of this invention relates to the art of manufacturing wire by hot-rolling, instead of by the expensive and laborious method of annealing and drawing hitherto practiced, which will be more fully described hereinafter, and set forth in the claims.

For a full and complete description of said invention, reference will be had to the following specification, and to the accompanying drawings, making a part of the same, in which—

Figure 1 is a plan view of the furnaces, reel, and rolls. Figs. 2, 3, and 4 are side elevations.

Like letters of reference refer to like parts in the several views.

A represents the primary furnace, which may be of any suitable size, as the work may require. B is the fire-place; B′, the ash-pit, and C, Fig. 3, the bridge-wall. A portion of the outer wall and top of the furnace A is shown as broken away in Figs. 1 and 3, that the inside may be seen.

D is a horizontal projection of the bridge-wall, extending partially over the chamber E of the furnace, which serves the purpose of reverberating the heat, and of which chamber F is the bottom or floor. Near the front end of the said floor are apertures *a*, Fig. 1, opening into the flue G, Fig. 3, underneath.

The auxiliary heating-chamber is in open relation with the primary furnace through the intervention of the auxiliary furnace H and the flue I, said flue I being a continuation of the flue G. The auxiliary furnace opens into the auxiliary heating-chamber through the aperture *b*, and of which chamber K is the floor, Fig. 2. At the opposite end of the auxiliary chamber is another auxiliary furnace, L, Fig. 1, which is also openly related to the said chamber J by an aperture, *c*, Fig. 2. In the end of the floor of the auxiliary chamber J are diving flues or openings *d*, Fig. 1, through which the smoke, &c., from the primary and auxiliary furnaces escapes to the stack or chimney N.

Access is had to the chamber of the primary furnace through the door O, and to the auxiliary heating chamber or oven through the doors P, respectively, at either end thereof.

The auxiliary furnaces are constructed as furnaces of that class in ordinary use, and simply consist of a fire-place, grate, and ash-pit, no one particular construction being essential. The fire-place of the primary furnace is also constructed in a similar manner.

Extending forward in front of the door of the primary furnace are a pair of ways or guides, Q, Figs. 1 and 2, between which is fitted, so as to slide freely, a block, R, in which is mounted a spool or drum, A′, free to rotate in the block, and provided with the spindle indicated by the dotted lines *e*.

C′ are a pair of rollers journaled in suitable housings arranged directly in front of the end of the auxiliary heating-chamber, and in such relation to the door thereof as to be in line with the same, as shown in the drawings.

The practical operation of the above-described several devices is substantially as follows: A coil or coils of wire or rods, as they come from the mill, are placed in the chamber of the primary furnace, as indicated at *n*, wherein they are heated to a proper working degree, from which a heated coil is then taken and placed upon the drum A′, which, for that purpose, is pushed along to the door of the furnace, and then brought back to the position shown in Fig. 1. The end of the coil is taken and passed through the auxiliary chamber and extended to the rolls, as indicated by the dotted line *m m*.

To facilitate the introduction of the end of the coil into and through the chamber, a narrow horizontal slash or opening, *i*, Fig. 2, is made in the side of the chamber, through which the wire is quickly passed into said chamber. The slash or opening is then closed by an apron or door, which may be of any suitable material, and attached to the wall of the chamber by any appropriate means. The gripe of the rolls upon the wire as it is being reduced by them draws upon it and uncoils it from the drum, and draws it through the chamber, wherein the proper heat of the wire

for rolling is obtained, so that the wire passes to the rolls in a sufficiently-heated state to be easily worked by them.

The wire may be introduced into and passed through the chamber J by passing it directly through the doors P, in which case the slash or opening *i* is closed up. It is, however, preferred to use the opening as herein described, and which may be in the top of the chamber instead of in the side. In the event the waste heat from the primary furnace is not sufficient to heat the auxiliary heating-chamber to the desired degree, the auxiliary furnace H is then used for that purpose, and if further heat is necessary the auxiliary furnace L can be used in connection therewith.

The rods from which wire is to be rolled can be conducted at once into the primary furnace from the rolls while they are yet hot, and thereby save the time and expense of reheating them in the furnace.

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

1. The combination of the primary furnace, A, constructed as described, drum A′, ways Q Q, heating-chamber provided with the slot *i*, through which the end of the coil is inserted, as described, and reducing-rolls C′.

2. The furnace A, having the fire-wall D, extending partially over the furnace-chamber as a hood, and the drop-flues *a a*, in combination with flues G and I, furnace H, and reheating-chamber J, substantially as and for the purpose described.

3. The combination of the primary furnace, A, constructed as described, drum A′, ways Q Q, heating-chamber provided with the slot *i*, auxiliary furnaces H and L, and reducing-rolls C′, all substantially as and for the purpose described.

HENRY CHISHOLM.

Witnesses:
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J. H. BURRIDGE.