

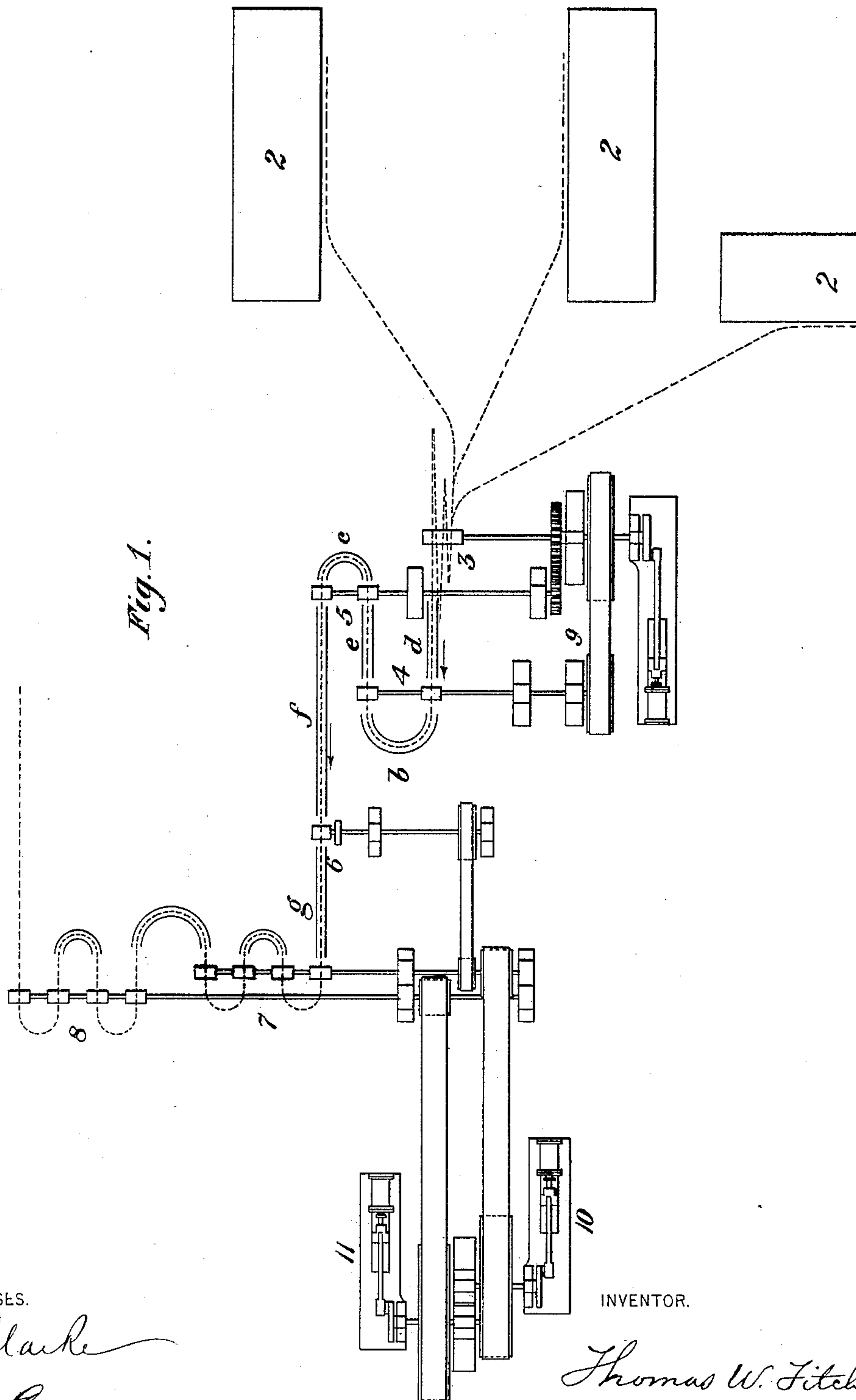
(No Model.)

2 Sheets—Sheet 1.

T. W. FITCH.  
WIRE ROD MILL.

No. 435,810.

Patented Sept. 2, 1890.



WITNESSES.

*W. M. Clarke*  
*N. J. Corwin*

INVENTOR.

*Thomas W. Fitch*

(No Model.)

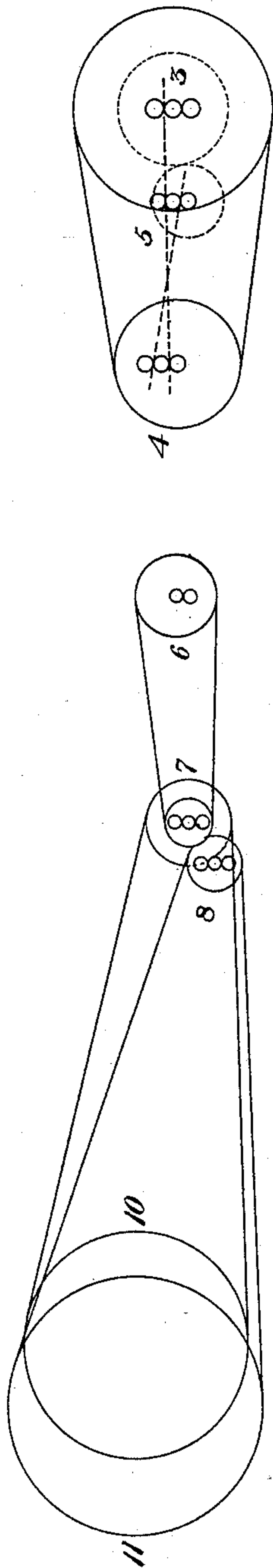
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Fig. 2.



WITNESSES.

*A. M. Clarke*  
*M. J. Conner*

INVENTOR.

*Thomas W. Fitch*

# UNITED STATES PATENT OFFICE.

THOMAS W. FITCH, OF PITTSBURG, PENNSYLVANIA.

## WIRE-ROD MILL.

SPECIFICATION forming part of Letters Patent No. 435,810, dated September 2, 1890.

Application filed June 27, 1890. Serial No. 356,965. (No model.)

*To all whom it may concern:*

Be it known that I, THOMAS W. FITCH, of Pittsburgh, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Wire-Rod Mills, of which the following is a full, clear, and exact description.

My invention has for its object to provide an improved plant or system of rolls for wire-rod mills adapted to afford a mill compact and convenient in arrangement, capable of being operated with comparatively little labor, and of producing an increased output. It is an improvement on a rod-mill for which on 27th of June, 1890, I filed a patent application, Serial No. 356,966; and it consists in combining with the so-called "rod-train" and "billet-train," which may be of usual construction and arrangement, roll-passes, through which the rod travels in four continuous passes, and two loops from the billet-train to the first pass of the rod-train.

The invention is illustrated in the accompanying drawings, in which—

Figure 1 shows the mill in plan view, and Fig. 2 shows in diagram a side elevation thereof.

Like symbols of reference indicate like parts in each.

The drawings do not illustrate the details of construction of the rolls or of their housings and driving-gear, since these are so familiar to those skilled in the art that minute description and illustration of them would not serve to make the specification more intelligible.

In the drawings, 2 2 are the usual bloom-heating furnaces.

3 is the set of three-high rolls forming the billet-train, through which the bloom is passed several times, as indicated in the drawings by the dotted line, which represents the continuous course of the metal through the mill. After its reduction by the billet-train the rod passes through a train of rolls 4, having two passes, between which it travels in a loop *b*, thence in a direct course to a train 5, also having two passes, between which the rod travels in a loop *c*, and thence in a direct course and in a reverse direction through a set of rolls 6

to the rolls of the rod-train, which consist of sets of rolls 7 and 8, through which the rod passes in loops back and forth, as in the well-known Belgian mill. The rod thus travels in four continuous passes *d e f g* and two loops *b* and *c* between the billet-train and the first pass of the rod-train. From the last set of the rod-train the rod may be delivered to the reel, where it is coiled and bundled. The passes of the rolls are preferably shaped so that the cross-section of the rod shall be changed alternately from square to oval, and suitable guide-troughs and repeaters are used to guide and deliver the rod to the rolls in the usual manner.

9 10 11 are the driving-engines. The engine 9 may be employed to drive the rolls 3, 4, and 5. The engine 10 may drive the rolls 6 and 7, and the engine 11 may drive the rolls 8. The diameters of the rolls and their driving mechanism are such that the rolls or sets of rolls shall travel at successively greater rates of speed to compensate the reduction and elongation of the rod as it passes through the mill.

The advantages of my invention will be appreciated by those skilled in the art. The mill is convenient and economical in its construction and arrangement, and is well adapted to produce a large output. It will be understood that in its use several rods may be caused to pass through the rolls at the same time, and the mill will be found to be suited to be used in such manner with safety to the workmen and with a minimum of necessary labor.

I claim—

In a rod-mill, the combination, with the billet-train and rod-train, of roll-passes 4 5 6, through which the rod travels in four continuous passes, and two loops from the billet-train to the first pass of the rod-train, substantially as and for the purposes described.

In testimony whereof I have hereunto set my hand this 26th day of June, A. D. 1890.

THOMAS W. FITCH.

Witnesses:

W. B. CORWIN,  
H. M. CORWIN.