

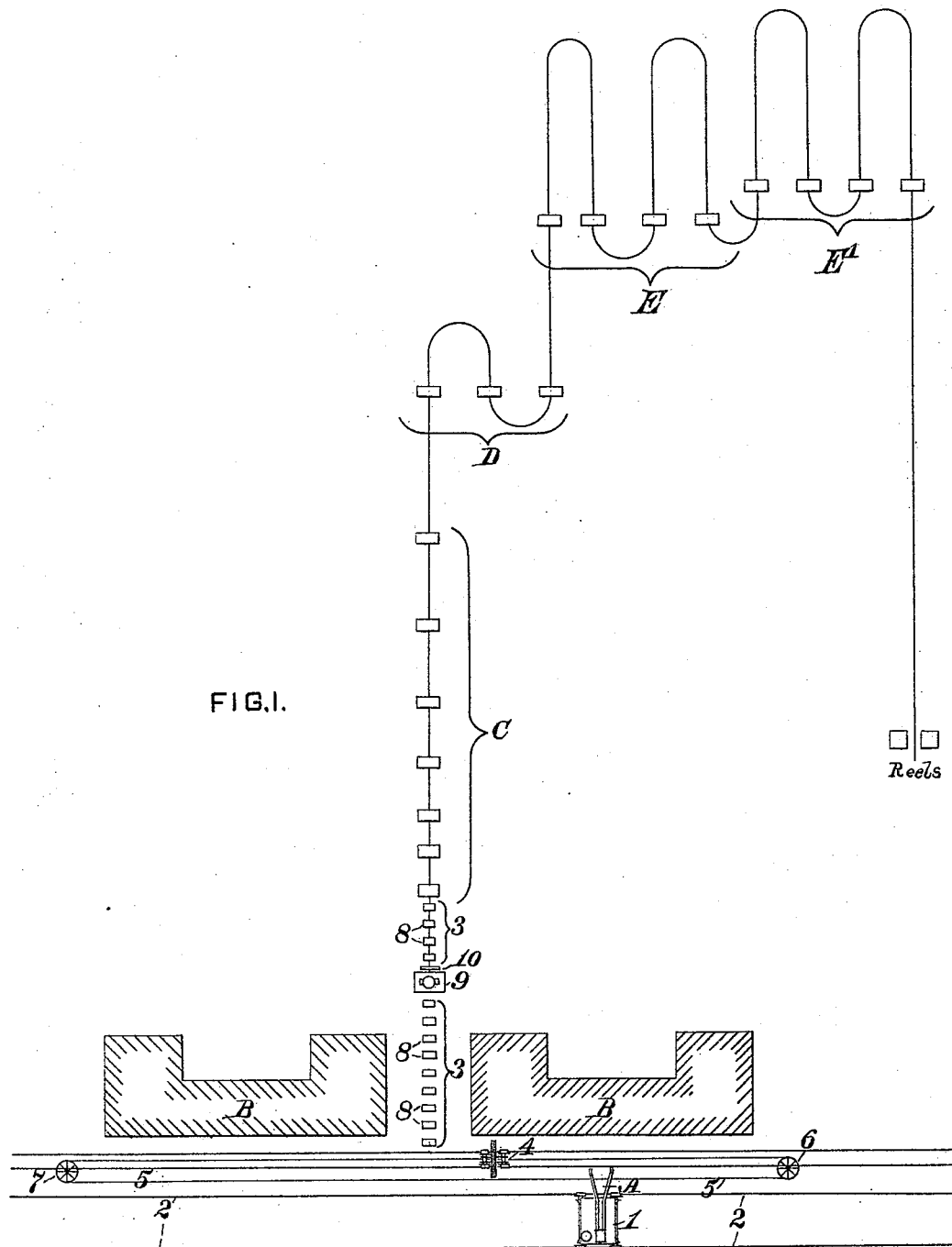
(No Model.)

2 Sheets—Sheet 1.

W. GARRETT.  
ROLLING MILL PLANT.

No. 492,156.

Patented Feb. 21, 1893.



WITNESSES:

Darwin S. Wolcott  
F. E. Gaither.

INVENTOR,

William Garrett  
by George H. Christy  
Att'y.

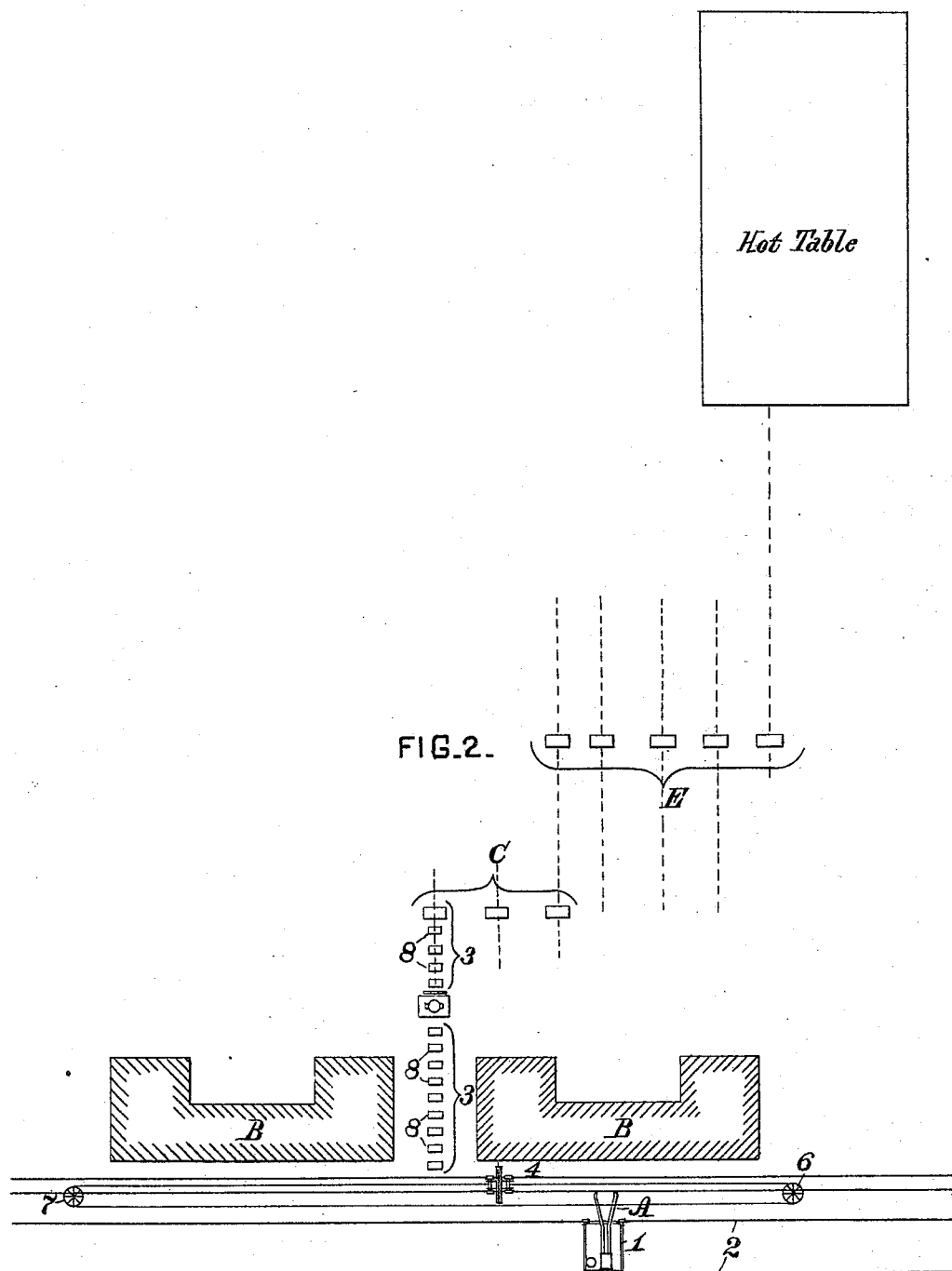
(No Model.)

2 Sheets—Sheet 2.

W. GARRETT.  
ROLLING MILL PLANT.

No. 492,156.

Patented Feb. 21, 1893.



WITNESSES:

Danwin S. Wolcott  
F. E. Gaither

INVENTOR,

William Garrett.  
by George H. Christie  
Att'y.

# UNITED STATES PATENT OFFICE.

WILLIAM GARRETT, OF JOLIET, ILLINOIS.

## ROLLING-MILL PLANT.

SPECIFICATION forming part of Letters Patent No. 492,156, dated February 21, 1893.

Application filed August 1, 1890. Renewed October 11, 1892. Serial No. 448,513. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM GARRETT, a citizen of the United States, residing at Joliet, in the county of Will and State of Illinois, have  
5 invented or discovered certain new and useful Improvements in Rolling-Mill Plants, of which improvements the following is a specification.

The invention described herein relates to certain improvements in rolling mill plants, and is applicable to rod mills, and mills employed in manufacturing merchantable forms of iron and steel.

It is the usual practice in rolling mills to break down and then divide an ingot weighing say two thousand five hundred or three  
15 thousand five hundred pounds into blooms weighing about one hundred and fifty pounds, more or less, that size of bloom being as large as is practicable to handle during subsequent  
20 reduction to wire rods or other merchantable forms without extra cost for labor. These blooms are then charged into a suitable heating furnace and when heated are reduced to the desired form. As it is practicable to so  
25 operate the rolling mill as to reduce two or three of such blooms a minute the work of charging the blooms into the heating furnaces and withdrawing them therefrom with sufficient rapidity to enable the mill to be oper-  
30 ated to its full capacity, is very severe and exhausting. And further, while operating on blooms of this size, automatic machinery can not be operated with sufficient rapidity to supply the mill when running at its full capacity.

35 The object of this invention is to provide suitable mechanism whereby it is possible to charge larger blooms into the heating furnaces, said blooms being subsequently divided up to the desired size, before passing into the  
40 reducing rolls, and in that way rendering it possible to charge and draw the furnaces more slowly, and thereby rendering it practicable to use automatic machinery in the charging and drawing operations.

45 In the accompanying drawings forming a part of this specification, Figure 1 is a plan view of a rod mill plant embodying my invention, and; Fig. 2, is a similar view of a merchant mill plant constructed in accordance with my  
50 invention.

In the practice of my invention the ingot, weighing two thousand five hundred or three

thousand five hundred pounds, more or less, is broken down or reduced in the usual or any  
suitable manner, until it is as regards its cross  
55 sectional dimensions, about four or five inches square more or less; it is then divided transversely into blooms weighing about three hundred or four hundred and fifty pounds more or less, dependent upon the size of blooms de-  
60 sired, that is to say, the ingot when reduced as described, is so divided as to form what might be termed double or triple blooms, *i. e.* having double or treble the weight of blooms  
heretofore used. These double or triple blooms  
65 are then caught in the jaws of the charging apparatus A, and placed in one or the other of the heating furnaces B.

The charging apparatus A is preferably mounted on a car or truck 1 so that it may be  
70 shifted from one furnace to the other, the truck being mounted on rails 2 arranged along the front of the furnaces, but if desired, a charging apparatus may be arranged in front of each furnace. After this double  
75 or triple bloom has been properly heated, it is withdrawn from the furnace by the charging apparatus, which, if mounted in a truck, is shifted along until the bloom can be de-  
posited upon the feed table 3; but if the  
80 charging and drawing apparatus is stationary, the bloom is deposited thereby upon a car 4 mounted on rails arranged in front of the furnaces and in proximity to the feed table. This car 4 can be shifted in any desired man-  
85 ner, as for example, by an endless chain 5 passing around a driven pulley 6 and a guide pulley 7 arranged at opposite ends of the travel of the car.

The feed table consists of a series of driven  
90 rollers 8, whereby the double or triple bloom is carried along to and through the shears 9, until the front end of the bloom comes in contact with a stop 10. This stop is so lo-  
cated with reference to the shears, as to check  
95 the bloom when so much thereof as will form when cut off, a bloom of the usual or any desired dimensions. The shear is then operated so as to cut off the portion of the double or triple bloom projecting through the shears.  
100 The stop is then shifted so as to permit the severed portion being carried along by the feed rollers, to the first pass of the train C, the movable blade of the shear being held in

its closed position, so as to prevent any forward movement of the other portion of the bloom. As soon as the first or severed portion of the bloom has progressed sufficiently far through the train C, the shear blade is raised, thereby permitting the rear portion of the double or triple bloom to be carried along to said train C, or until arrested by the stop 10, which is interposed in its path if a triple or larger bloom is being operated on. In the latter case, the shear is again operated to cut off another portion which is then carried to the train C.

It will be readily understood by those skilled in the art that, by starting with a double or triple bloom, the charging and drawing operations can be carried on more leisurely, without reducing the rapidity of operation of the mill, and that the use of machinery for effecting the charging and drawing operations permits of the handling of the larger blooms, and by starting with a double or triple bloom, *i. e.* one heavier than those heretofore employed, and then dividing such double or triple bloom after heating, into two or more single blooms, sufficient time is gained to permit of the employment of machinery. As the double or triple bloom is quite large, there will be sufficient heat retained by the last portion thereof to permit of its easy reduction.

This improvement can be employed in the manufacture of wire rods as shown in Fig. 1, in the manufacture of merchant iron, as shown in Fig. 2, or in the reduction of iron or steel to any desired product.

While any desired construction and arrangement of rod mill may be employed, the form of mill described and shown in the application of William Swinbank, filed April 23, 1890, Serial No. 349,123, patented December 23, 1890, No. 443,304, is preferred. This mill generally stated, consists of a billet train C, having its rolls arranged in the form of a continuous train as described in said application, intermediate train D, and rod trains E.

In Fig. 2, the invention is shown as applied to a mill employed for the production of merchant bars, the roughing train C and finishing train E, being constructed and arranged in the usual or any suitable manner, and the hot table being located in convenient proximity to the finishing train. After each section, or, as it has heretofore been termed, single bloom has been sheared from the double, triple or larger bloom, it is carried by the continuously operated feed rollers 8 to the first pass of the train C, and then reduced to a wire rod merchant bar, or other desired product, in the customary manner.

I claim herein as my invention—

1. In a rolling mill plant, the combination of one or more furnaces, a charging and drawing apparatus, a reducing train, a feed table for carrying the bloom to the reducing train, a shearing mechanism and a stop, said shearing mechanism and stop being arranged at suitable points along the line of the feed table, substantially as set forth.

2. In a rolling mill plant, the combination of a heating furnace, a reducing train, mechanism for transferring a bloom from the heating furnace to the reducing train, and shear mechanism to divide said bloom in two or more sections, during its passage from the heating furnace to the reducing train, substantially as set forth.

3. In a rolling mill plant, the combination of one or more furnaces, a feed table, a car for transferring the bloom from the furnace to the feed table, a charging and drawing apparatus for charging the blooms into the furnace and placing them on the car, a shearing mechanism and a stop arranged along the line of the feed table, and a reducing train, substantially as set forth.

In testimony whereof I have hereunto set my hand.

WILLIAM GARRETT.

Witnesses:

DARWIN S. WOLCOTT,  
R. H. WHITTLESEY.