

(No Model.)

P. T. LARGE & J. W. THOMAS.
MAKING ROLLED METAL RODS OR BARS.

No. 450,330.

Patented Apr. 14, 1891.

Fig. 2.

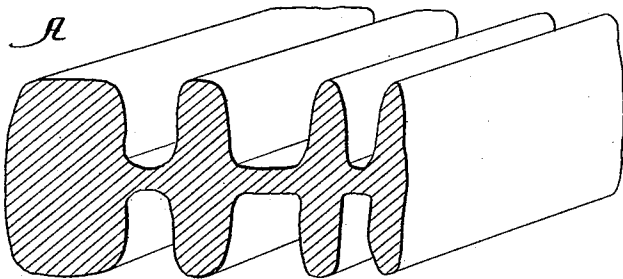


Fig. 1.

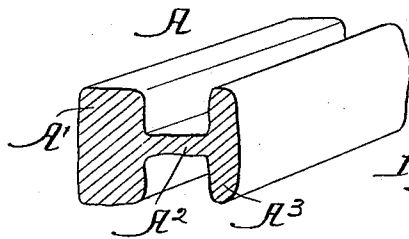


Fig. 3.

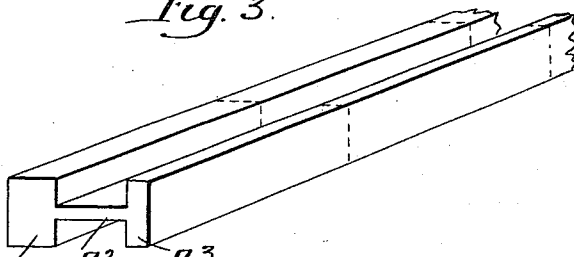


Fig. 4.

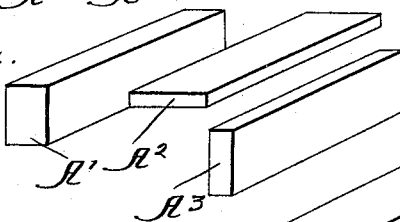
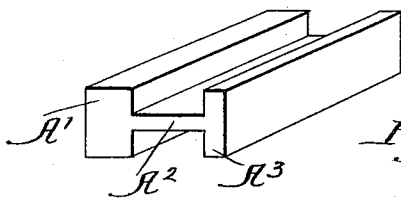


Fig. 5.



Witnesses:

Jean Elliott.
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UNITED STATES PATENT OFFICE

PRESTON T. LARGE AND JOHN W. THOMAS, OF CHICAGO, ILLINOIS.

MAKING ROLLED METAL RODS OR BARS.

SPECIFICATION forming part of Letters Patent No. 450,330, dated April 14, 1891.

Application filed May 14, 1890. Serial No. 351,724. (No model.)

To all whom it may concern:

Be it known that we, PRESTON T. LARGE and JOHN W. THOMAS, citizens of the United States, residing at Chicago, county of Cook, and State of Illinois, have invented certain new and useful Improvements in a Process of Making Rolled Metal Rods or Bars, which are fully set forth in the following specification, reference being had to the accompanying drawings, forming a part thereof.

The purpose of this invention is to provide a method or process for use in rolling mills in producing steel and iron rods or bars of commercial or special forms, wherein it shall be possible to run through the mill and carry through the process of rolling to completion in desired form several patterns or styles of rod or bar simultaneously from one original billet once heated, thereby making it possible, with a limited capacity as to machinery, heating appliances, and space, to fill several orders simultaneously, instead of being obliged, as under the present methods, to start each order by casting an ingot expressly for the purpose of the order or particular lot or pattern of rod or bar desired.

Our new process consists, primarily and fundamentally, in the formation of what is termed a "plural" billet, which preferably is produced by casting a plural ingot, which, upon being heated to the condition of what is known as a "bloom," and run through the rolls to elongate and reduce it in substantially the same transverse form in which it is cast, is then subdivided transversely into shorter sections, constituting the billets. The form or class of forms included under the term "plural" ingot and "plural" billet, as we employ this term, may be understood by reference to the drawings, wherein—

Figure 1 is a sectional perspective of a simple form of plural ingot. Fig. 2 is a sectional perspective of another form of plural ingot capable of more subdivisions than the first. Fig. 3 represents the ingot shown in Fig. 1 after it has been "bloomed"—that is, reheated and passed through the rolls to elongate and reduce it. This form may be termed a "billet" within the meaning in which we employ that term; but in practice such long billet would be transversely subdivided to form the shorter and more conveniently manipu-

lated billets and indicated by the dotted lines, showing the transverse divisions in Fig. 3. Fig. 4 represents a billet such as shown in Fig. 4 split or slit longitudinally by parallel planes which separate the several members of the original billet into independent bars. Fig. 5 represents several independent bars after they have been rolled out into several different forms of commercial rod or bar, which constitute the complete product.

In employing this process we first cast in the usual manner the plural ingot A, the form which entitles it to the name "plural" being that which it derives by virtue of being made up of several members, as $A' A^2 A^3$, joined one onto another in succession in such manner that each plane of junction is at the edge—that is to say, the face of the least area—of one of the members, so that the bloom or billet may be slit longitudinally at the plane of the greater face of one member by making a cut whose area is only that of the lesser face of the other member severed.

In practical operation of this process these several planes of junction or planes of "severance," as they might with equal propriety be called, must be parallel, or at least not intersecting within the limits of the bloom or billet, merely because it is not convenient in practice to make the severance otherwise than at parallel planes, and the complete success of the process depends upon being able to perform these several steps rapidly and without rehandling the metal, and so without necessity of reheating after the bloom is once introduced between the rolls for the purpose of reducing and elongating. To resume the description of the process, an ingot of the form indicated having been cast is reheated in the usual manner of treating ingots for the purpose of rolling, and introduced into rolls corresponding to the form of the ingot, and rolled down to the desired transverse dimensions, and then passed through the slitters, which separate its several members $A' A^2 A^3 A^4$, &c., each of which may pass through separate rolls or separate passes or grooves in the same rolls for further reduction to the several forms of rod or bar desired.

The mechanism for rolling and slitting is familiar and need not be here described.

The several members of the billet may be of

greatly-different size and form, being made to correspond more or less approximately, if desired, to the several ultimate forms of rod or bar wanted, and this is one of the advantages of this process, that the ingot or member of an ingot which is to make the given form of rod may, in the original instance, without material increase of cost of that part of the process—that is, the casting and blooming—be made to approximate the ultimate form needed, thereby reducing the labor and expense of subsequent rolling.

This process applied in rolling-mills in lieu of the present process, which consists in casting a simple ingot, usually approximately a rectangular parallelepipedon, and blooming it down and rolling it out all to one form of rod or bar, necessitating the casting of a separate ingot, and running it separately through the entire process for each pattern wanted, will vastly reduce the cost by making it possible with a small mill and limited facilities to make four or five or even a dozen forms of rod or bar to fill as many different orders as cheaply as with the same mill and appliances,

and the same quantity of metal could be made all into one form of rod or bar. It practically, therefore, multiplies the capacity of a given mill as to the range of work which it can turn out in a given time as many times as the number of the members of the ingot employed.

We claim—

The process of making rolled metal rod or bar, which consists in making an integral billet of the form herein described, consisting of several parallel members which are alternately thick and thin relatively, slitting such billet longitudinally to sever its members from each other, and rolling the severed members simultaneously to desired forms, substantially as set forth.

In testimony whereof we have hereunto set our hands, at Chicago, Illinois, in the presence of two witnesses, this 1st day of May, A. D. 1890.

PRESTON T. LARGE.
JOHN W. THOMAS.

Witnesses:

CHAS. S. BURTON,
JEAN ELLIOTT.