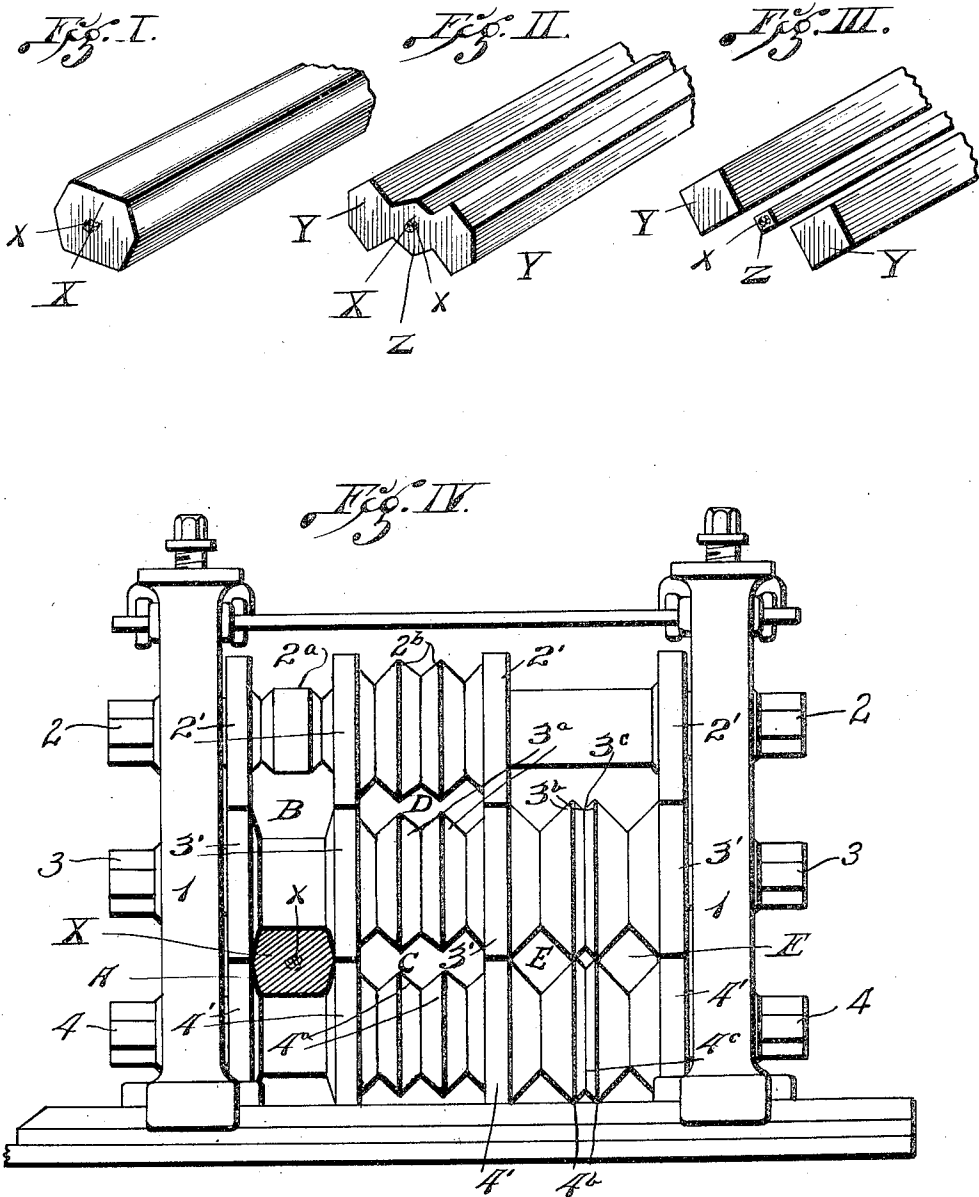


J. H. DODS.  
METHOD OF MAKING WROUGHT ARTICLES.  
APPLICATION FILED MAY 6, 1909.

942,489.

Patented Dec. 7, 1909.



ATTEST.

*Wm. Harrington.*  
C. F. Bull

INVENTOR.  
JOHN H. DODS.

BY *E. H. Knight* ATTOR.

# UNITED STATES PATENT OFFICE.

JOHN H. DODS, OF LAWRENCE, KANSAS.

## METHOD OF MAKING WROUGHT ARTICLES.

942,489.

Specification of Letters Patent.

Patented Dec. 7, 1909.

Application filed May 6, 1909. Serial No. 494,255.

*To all whom it may concern:*

Be it known that I, JOHN H. DODS, a citizen of the United States of America, residing in Lawrence, in the county of Douglas and State of Kansas, have invented certain new and useful Improvements in Methods of Making Wrought Articles, and of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

My invention relates to a method of making wrought articles, and in the carrying out of which the "pipe" or segregated inner portion of ingots may be removed for the purpose of rendering the wrought articles free from pipe flaws as distinguished from wrought articles produced from ingots in which the "pipe" is permitted to remain and in which wrought articles there is liable to be present serious flaws, as a consequence of the metal not being compact or homogeneous throughout the wrought article.

Figure I is a perspective view of an ingot as it appears after the first passage through a set of rolls in carrying out my method. Fig. II is a perspective view of the ingot as it appears after one or more passes through a set of rolls tending toward separation of the central or "pipe" portion of the ingot from the main body of the ingot. Fig. III is a perspective view of the bloom sections as in carrying out my method they appear after the final pass of the blooming mill, and showing the central portion containing the pipe flaws of the ingot cut out and separated from the blooms. Fig. IV is an elevation of a rolling mill such as may be used in carrying out my method.

In carrying out my method, I take an ingot properly heated and pass it a plurality of times between a set of rolls in a rolling mill that are provided with retaining flanges and cutting or separating flanges, the former flanges of the rolls being of service in limiting the lateral movement of the body of metal during the rolling operation, and the latter flanges performing the office in a gradual manner of crowing the outer portions of the body of metal outwardly toward the retaining flanges, while the central portion or "pipe" containing portion of the body of metal remains between the separating or cutting flanges and is gradually lessened in cross section to be finally severed from the outer portions, whereby the outer

portions from which wrought articles are to be made, are, as they emerge from the rolls, after the final pass, in a flawless condition.

In rolling ingots in accordance with my improvement, I preferably use a rolling mill such as is illustrated in Fig. IV, and of which a brief description will next be given. 1 designates the standards of the rolling mill, in which are journaled the rolls 2, 3, and 4. These rolls are provided respectively with retaining flanges 2', 3', and 4', that subdivide the spaces between the rolls into passageways A, B, C, D, and E. The sections of the rolls between which the passageway A is located are cylindrical in shape, in order that the first pass of an ingot may be made through the passageway A for the purpose of rendering the ingot of a nearly square shape in cross section, as illustrated in Figs. I and IV, wherein the ingot is designated by the letter X and its "pipe" by the letter  $\alpha$ . The section of the roll 2 that surrounds the cylindrical roll section immediately beneath it is provided with a central separating flange 2<sup>a</sup> that is adapted to operate upon the ingot when it is passed through the passageway B and whereby the initial act in the separation of the "pipe" from the ingot is performed. The sections of the rolls between which the passageway C is located are provided with a pair of V-shaped separating flanges 3<sup>a</sup> and 4<sup>a</sup> that act to cut into the ingot as it is passed through the passageway C and also to force the outer portions of the body of metal outwardly toward the retaining flanges of said roll sections. The ingot, after the pass through the passageway C, is in the condition illustrated in Fig. II, and comprises the two outer portions Y and the central portion Z, which at this time remain unsevered from the two outer portions. The ingot is then passed through the passageway D in order that the pair of separating flanges 3<sup>a</sup> of the roll 3 and a corresponding pair of separating flanges 2<sup>b</sup> of the roll 2 may operate upon the ingot in the same manner as it was operated upon when the pass was made through the passageway C. The passageway D is of less height than the passageway C, and consequently when the pass is made through the passageway D, the ingot is reduced in thickness and progress is made in the separation of the central portion Z of the ingot from the outer portions Y. The final step in carrying out the method is by the pass of the ingot through the passageway E

between sections of the rolls 3 and 4 that are provided with separating flanges 3<sup>b</sup> and 4<sup>b</sup>, which extend into close proximity to each other and are separated by grooves 3<sup>c</sup> and 4<sup>c</sup>, through which the central or "pipe" portion Z of the ingot passes, while the outer portions Y of the ingot pass through the spaces between the separating flanges and the retaining flanges of the roll sections mentioned. As this final pass of the ingot through the rolls takes place, the central "pipe" portion of the ingot is separated from the outer portions, thus producing wrought members that are free from pipe flaws and which may be then further rolled for the production of wrought articles of any description it may be desired to produce.

I claim:—

1. The improved method herein described of making wrought articles, which consists in casting an ingot larger in cross section

than is necessary for the wrought article to be produced, then rolling the ingot to spread its outer portion from its central pipe portion and expose the pipe portion, then severing the outer portion from the pipe portion, and finally reducing the outer portion.

2. The improved method herein described of making wrought articles, which consists in casting an ingot larger in cross section than is necessary for the wrought article to be produced; then rolling the ingot longitudinally to separate its outer portion from its central pipe portion and expose the pipe portion, then severing the outer portion from the pipe portion, and finally reducing the outer portion.

JOHN H. DODS.

In the presence of—

ELWYN L. ATTER,  
EARL C. HALL.