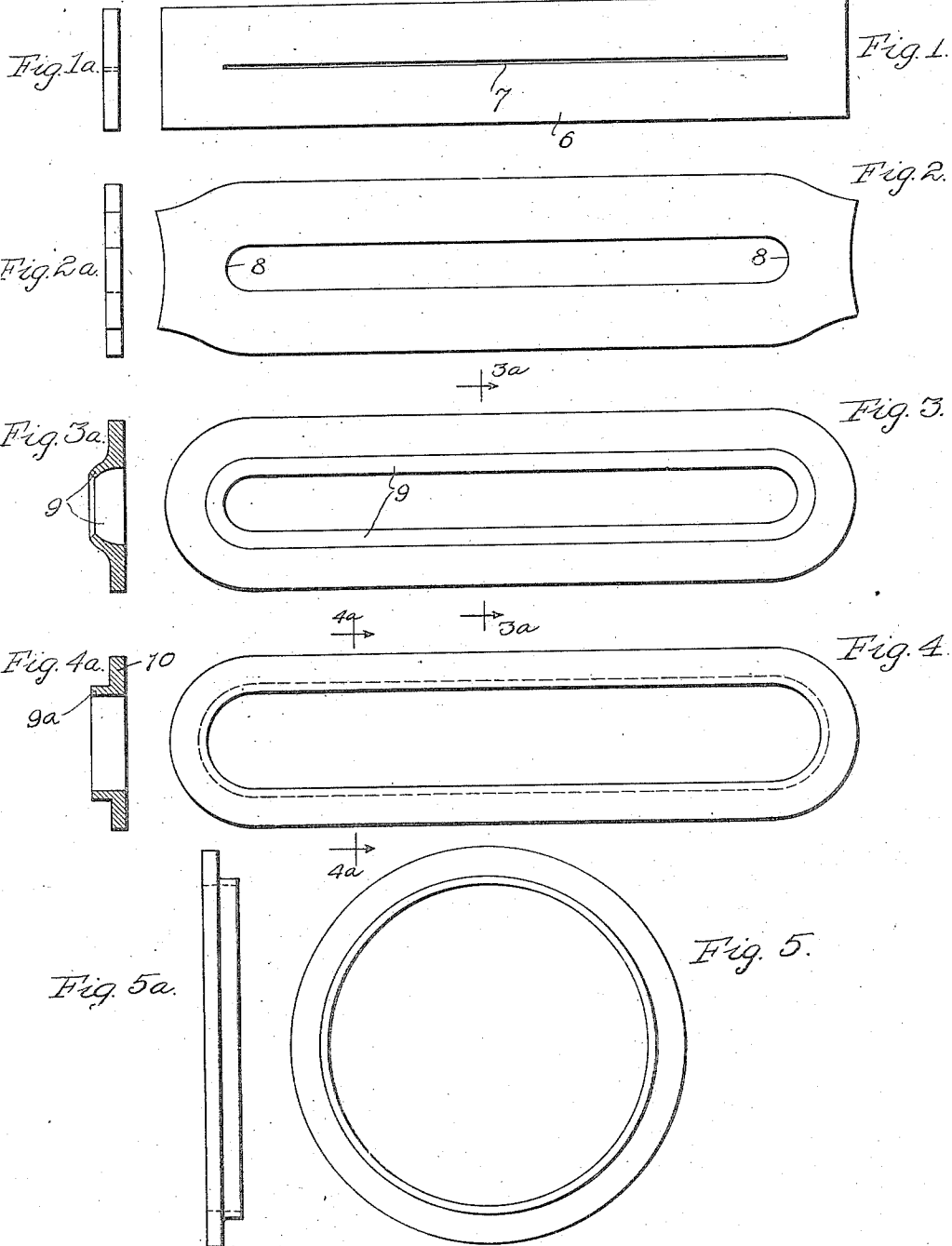


J. H. TAYLOR.
PROCESS OF MAKING FLANGES.
APPLICATION FILED APR. 9, 1915.

1,243,005.

Patented Oct. 16, 1917



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UNITED STATES PATENT OFFICE

JAMES HALL TAYLOR, OF CHICAGO, ILLINOIS.

PROCESS OF MAKING FLANGES.

1,243,005.

Specification of Letters Patent.

Patented Oct. 16, 1917.

Application filed April 9, 1915. Serial No. 20,120.

To all whom it may concern:

Be it known that I, JAMES HALL TAYLOR, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in Processes of Making Flanges, of which the following is a full, clear, concise, and exact description, reference being had to the accompanying drawings, forming a part of this specification.

My invention relates to the art of metal working and is concerned with a process of manufacturing what are known as "pipe flanges", or, commonly, "flanges".

It is the object of my invention to provide a seamless forged steel flange and, in accomplishing this purpose, I eliminate certain difficulties which have heretofore been encountered in the metal-working industry. In making steel flanges of the larger diameters heretofore, either stock angle steel was used or a rolling process was employed, or the flange was pressed from large circular blanks cut from plate steel. In the first method it is impossible to secure commercial angles of the proper thickness, and a welded seam is also undesirable. In the second method, it is extremely difficult to roll the billet into shape for the larger diameters, as has been found by experience, unless they are extremely heavy and undesirable for the purpose intended. The third method is extremely wasteful.

According to my invention the manufacture is carried out by successive die operations, the various stages being illustrated in the accompanying drawings, in which:

Figure 1 illustrates, in plan, the billet with the first operation;

Fig. 1^a is an end view of the billet in this first stage;

Fig. 2 illustrates, in plan, the article after the next operation has been performed;

Fig. 2^a is an end view of the article in the stage shown in Fig. 2;

Fig. 3 illustrates, in plan, the article after the next operation has been performed;

Fig. 3^a is a sectional view taken on the plane of the line 3^a—3^a of Fig. 3;

Fig. 4 illustrates, in plan the article after the next operation has been performed;

Fig. 4^a is a sectional view taken on the plane of the lines 4^a—4^a of Fig. 4;

Fig. 5 illustrates the finished article, in plan; and,

Fig. 5^a is an edge view of the finished article.

A flat elongated billet is employed, this billet being of a uniform thickness, slightly greater than the greatest thickness required in the finished article.

In Fig. 1 this billet is illustrated at 6, and the length thereof is approximately half the circumference of the flange to be formed, suitable allowances for the die operations being, of course, made.

The first step is to provide the billet with the central slit or slot 7, extending longitudinally of the billet and being spaced equally between the sides and between the ends, as illustrated.

The next step is to separate the sides. This is done by means of suitable dies, to secure the spread illustrated in Figs. 2 and 2^a, leaving a central opening, elongated and with rounded ends 8—8.

It will be seen that the first step may be dispensed with, the blank shown in Fig. 2 being formed with elongated opening in some other way.

The next step is illustrated in Figs. 3 and 3^a. Here again the article is submitted to the action of dies for the purpose of forging downwardly or outwardly a portion around the inner periphery of the blank. This downwardly or outwardly forged portion is illustrated at 9, and, as shown, is of slightly diminished cross section.

The next operation is illustrated by Figs. 4 and 4^a, wherein, it will be seen, the portion 9 has been forced into a right-angled position relative to the flange itself, thus forming the neck 9^a, the flange itself being illustrated at 10. It will be understood that during the operations which have been described the main portion of the billet, which results ultimately in the flange 10, is brought down to its proper thickness. At the same time the neck 9^a is brought down to its proper thickness, as shown, being of a somewhat lesser thickness than the flange itself.

The next step is to transform the loop

shaped article of Fig. 4 into the circular form illustrated in Fig. 5. This is a mere stretching or reforming operation, which thus produces the final article illustrated in the last two figures.

I claim as new and desire to secure by Letters Patent of the United States:

1. The process of making a forged flange which consists in centrally slitting an elongated flat blank, partially spreading the two sides thus formed, stamping the inner peripheral portion of the article obliquely downward while holding the remaining outer peripheral portion in flat condition, and then forcing said inner peripheral portion into a right-angled position relative to the remaining portion.

2. The process of making a forged flange which consists in centrally slitting an elongated flat blank, partially spreading the two sides thus formed, stamping the inner peripheral portion of the article obliquely downward while holding the remaining outer peripheral portion in flat condition, then forcing said inner peripheral portion into a right-angled position relative to the remaining portion, and then reforming the elongated loop-shaped article thus formed into circular form.

3. The process of making a forged flange which consists in first forming a central elongated opening in an elongated flat blank, and then forcing the central portion of the blank into a position at an angle to the face of the blank while holding the remaining outer peripheral portion in flat condition.

4. The process of making a forged flange which consists in first forming a central elongated opening in an elongated flat blank, then forcing the central portion of the blank into a position at an angle to the face of the blank while holding the remaining outer peripheral portion in flat condition, and then reforming the elongated loop-shaped article thus formed into circular form.

5. The process of making a forged flange which consists in first forming a central elongated opening in an elongated flat blank, then forcing the central portion of the blank

into a position at right angles to the face of the blank while holding the remaining outer peripheral portion in flat condition, and then reforming the elongated loop-shaped article thus formed into circular form.

6. The process of making a forged flange which consists in first slitting an elongated flat blank, then spreading the two sides thus formed, and then forcing the central portion of the blank into a position at an angle to the face of the blank while holding the remaining outer peripheral portion in flat condition.

7. The process of making a forged flange which consists in first slitting an elongated flat blank, then spreading the two sides thus formed to form a central opening with rounded ends, and then forcing the central portion of the blank into a position at an angle to the face of the blank while holding the remaining outer peripheral portion in flat condition.

8. The process of making a forged flange which consists in first forming a central elongated opening in an elongated flat blank, then forcing the central portion of the blank into a position at an angle to the face of the blank while holding the remaining outer peripheral portion in flat condition, then spreading the two sides thus formed, and then reforming the elongated loop-shaped article thus formed into circular form.

9. The process of making a forged flange which consists in centrally slitting an elongated flat blank, partially spreading the two sides thus formed to form a central opening with rounded ends, stamping the inner peripheral portion of the article obliquely downward while holding the remaining outer peripheral portion in flat condition, and then forcing said inner peripheral portion into a right-angled position relative to the remaining portion.

In witness whereof, I hereunto subscribe my name this 5th day of April, A. D. 1915.

JAMES HALL TAYLOR.

Witnesses:

LESLIE W. FRICKE,
ERNEST W. RAPALEE.