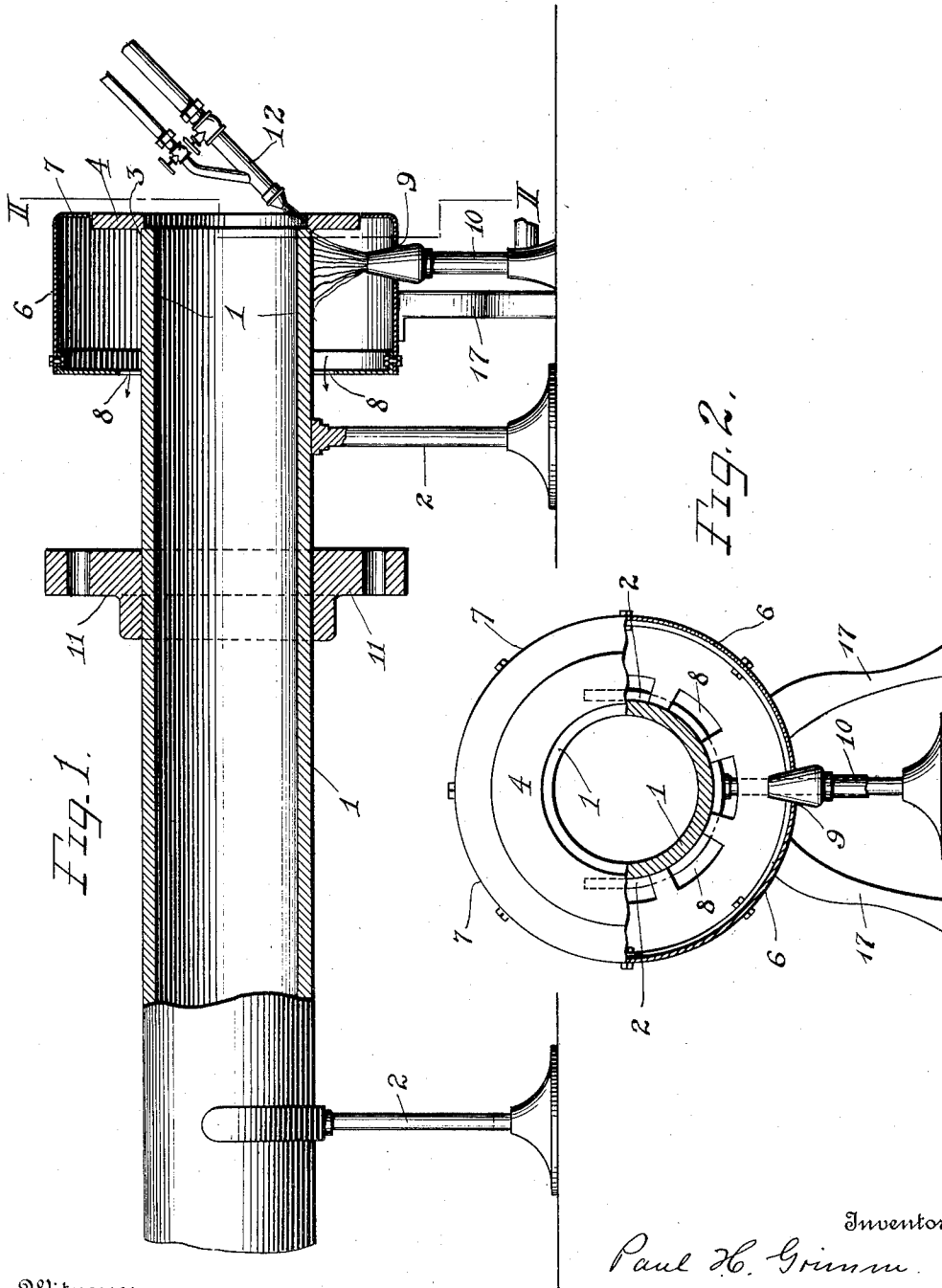


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APPLICATION FILED APR. 8, 1911.

1,039,930.

Patented Oct. 1, 1912.

2 SHEETS—SHEET 1.



Witnesses

J. Milton Jester
C. F. Mason

By

W. F. Schenck

Inventor

Paul H. Grimm

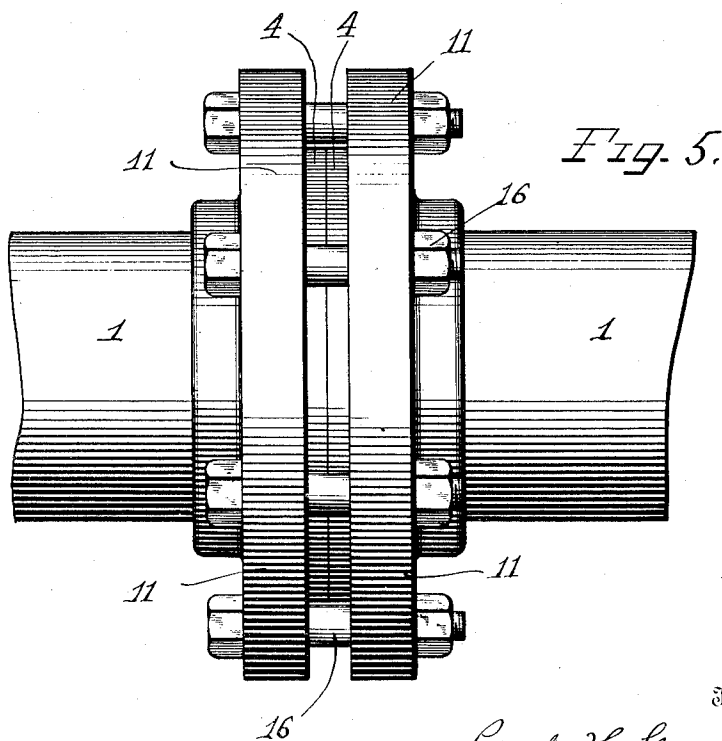
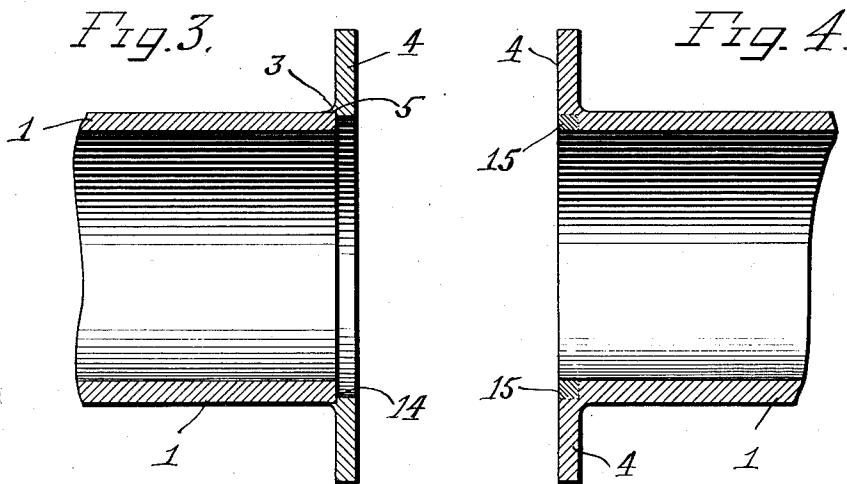
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Attorney

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UNITED STATES PATENT OFFICE.

PAUL H. GRIMM, OF GLEN COVE, NEW YORK, ASSIGNOR TO CHARLES G. CORNELL, JR.,
OF GREENWICH, CONNECTICUT.

METHOD OF ATTACHING A COLLAR TO THE END OF A PIPE.

1,089,930.

Specification of Letters Patent.

Patented Oct. 1, 1912.

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To all whom it may concern:

Be it known that I, PAUL H. GRIMM, a citizen of the United States, residing at Glen Cove, in the county of Nassau and State of New York, have invented certain new and useful Improvements in Methods of Attaching a Collar to the End of a Pipe, of which the following is a specification.

My invention relates to a process or method for attaching or fusing on a collar or flange to the end of a pipe.

The object of my invention is to provide a process or method in which the cost of production is reduced to a minimum and during the carrying out of the method the surfaces and material operated upon are always in clear view for observation and any defect in the perfect union of the metals can be readily detected and corrected.

A further object is to provide a process or method so that the finished product or pipe sections can be firmly secured together at their joints and the impingement of the packing at said joints is complete, and at the same time the bore of the pipe is uniform in diameter with no water pockets at said joints.

Further objects and advantages of the invention will appear from the hereinafter detailed description.

The invention consists of steps particularly pointed out in the appended claims.

In order that my process or method may be readily understood, the same will be illustrated in connection with the accompanying two sheets of drawings in which similar reference characters indicate the same parts in the several figures of drawings.

Figure 1 shows a longitudinal section of the preferred form of apparatus for carrying out my process or method; Fig. 2 is a section on line II—II of Fig. 1; Fig. 3 is an enlarged sectional view showing how the flange is supported on the end of the pipe section before it is connected to the same; Fig. 4 is a sectional view showing how the end of the pipe appears after the flange is fused and fastened to the end of the pipe; and Fig. 5 is a side view showing how the ends of the pipe sections are assembled.

Referring to Figs. 1 and 2, my process or method is carried out as follows: A section of pipe, 1, rests loosely and is revolvably held in a plurality of supports 2, 2. On the end of the pipe section (see Fig. 3) is

slipped a collar 4 supported thereon by means of a small lip or shoulder 3, said collar having also formed on the same side as the lip a slight recess 5, adapted to snugly receive the end of the pipe 1, leaving a rectangular space formed by the end wall of the pipe 1 and inside face of the collar 4, said collar 4 having been previously machined and the end of the pipe or walls of the rectangular space thoroughly cleaned of all dirt and grease, for the reasons hereinafter described.

Supported on any suitable legs 17, is a hood 6, which loosely surrounds the end of the pipe 1 and collar 4, the outer end of said hood slidably fitting the outer periphery of the collar 4. The hood 6 is also provided with a series of small openings 8, 8, on the inner side, and a small opening 9 for the insertion of any form of heating torch 10. The usual swivel flange 11, must be slipped over the end of the pipe before the collar 4 and hood 6 are adjusted, as shown.

The several parts being arranged as shown in Fig. 1 and described, an ordinary and inexpensive heating torch 10, is lighted and so regulated that the same heats the end of the pipe 1 to a red heat, the products of combustion passing out of the openings 8. After the end of the pipe 1 is sufficiently heated, and continuing the use of the torch 10, an oxy-acetylene blow-pipe 12 is applied as shown, by simultaneously impinging the flame against the collar 4 and end of pipe 1, at their interior circular line of contact 14, (see Fig. 3) until the metal of both parts becomes liquid and the same are fused together. This operation is repeated at a plurality of and preferably symmetrically arranged points, so as to firmly hold the collar 4 to the end of pipe 1. After this step, the high heat of the blow pipe 12, is gradually transferred to the different sections of this rectangular space formed by the end of the pipe and inside of the collar, by slowly rotating the pipe 1, on its supports 2, and the operation of fusing together the end of the pipe 1 to the lip 3 and collar 4 is repeated; and simultaneously while the end of the pipe and collar are liquid and running together, additional metal is melted off of Swedish iron wire or metal and enough amalgamated with the fluid metal of the end of the pipe and collar to build up and entirely fill the rectangular space as represented by the

shaded section 15, of Fig. 4. After the welding operations are performed, the collar is machined in any desired manner so as to form a square corner near the bore of the pipe and a flat surface for the packing which goes between the abutting ends of the pipe sections.

The advantages of this method of forming a flange or collar on the end of the pipe, are that when two such flanged pipe ends are placed together in practice, the bore of the pipe is uniform and no water pockets are formed at the joints, as in the case of many prior pipe couplings. The finished weld made by my invention makes a perfectly homogeneous union between the end of the pipe, the inside diameter of the collar and the new metal or Swedish iron which has been added, and in no sense are the metals united by the molten Swedish iron acting similar to a solder, but rather by molecular union of the three metals composing the Swedish iron pipe and collar by inter-fusion. This perfect union of the metals is made possible by my method, for the reason that the welding surfaces are constantly in sight and it can be seen whether they are perfectly clean and free from substances which would interfere with the securing of a strong weld, thereby avoiding all use of a flux, and at the same time seeing that the metals and parts have actually been fused together. It has also been found that by my method a flange can be secured to a pipe six inches in length, while in the prior couplings and methods of which I am aware, eighteen inches of pipe are required. Furthermore, by the method herein described the welded or connecting surfaces are square, thereby effecting a maximum resistance to the pipe and flange being separated. It has also been found that by the use of a heating torch 10, which previously brings the end of the pipe to a red heat, before the oxy-acetylene blow pipe is applied, the cost of fastening a flange to a pipe section is reduced to a minimum for the reason that the oxygen and acetylene used in an oxy-acetylene burner are expensive, and by my method, said burner is not used to pre-heat the pipe before fusing the same, but only comes into play during the welding operations.

Fig. 5 represents the finished joint, in which 16 represents the bolts passing through the swiveled flanges 11, and adapted to tightly draw up the abutting flanges 4, secured to the ends of the pipe sections by my process.

In attaching collars to the ends of pipes, it must be considered that both ends of the pipe to be treated will have a collar attached. These collars after they are welded on, must be practically parallel with each other before they are faced. After facing, they must be exactly parallel. It follows, therefore, that

the ends of the pipe itself must be made parallel before the collar is placed on the pipe. In practice I find that iron or steel pipes as they come from the mill are never axially straight and hence their ends are not parallel with each other. To weld collars on pipes in this condition would result in the collars being so much out of parallelism that when the collars are finally faced off, they would not be of the same thickness on their periphery. Hence, I prepare the pipe to receive the collars by placing it in a lathe which has two revolving cutter heads, and face off both ends at the same time. The pipe itself during the facing operation remains stationary. When the recesses of the collars are now slipped over the ends of the pipe and against the slight shoulders, they take a position which make the collars at the ends of the pipe, practically parallel, regardless of the curvature of the pipe, should there be any. After the collars are welded on in this position, the pipe with its collars is again placed in the lathe and faced off, both ends at the same time. This results not only in exact parallelism, but also in exact length, both of which are of the greatest importance in high grade work for heavy steam pressures.

What I claim is:—

1. The method of making a flanged pipe by uniting a collar to the end of a pipe, which comprises supporting the collar on the edge of the end of the pipe by means of a small lip on said collar so that the inner periphery of said collar rests on and projects from the end of the pipe, melting and fusing the metal at the contiguous end of the pipe and inner periphery of the collar and adding metal in a fused state during the said melting and fusing of the end of the pipe and inner periphery of the collar.

2. The method of making a pipe having a flanged end, which comprises supporting a collar on the edge of the end of the pipe by means of a small lip on said collar so that the inner periphery of said collar rests on and projects from the end of the pipe, melting and fusing the metal at the contiguous end of the pipe and inner periphery of the collar and adding metal in a fused state during the said melting and fusing of the end of the pipe and inner periphery of the collar sufficient to fill up the angular pocket between the end of the pipe and inner periphery of the collar.

3. The method of making a pipe having a flanged end, which comprises supporting a collar on the edge of the end of the pipe by means of a small lip on said collar so that the inner periphery of said collar rests on and projects from the end of the pipe, heating the end of the pipe and collar to a red heat by a torch, melting and fusing the metal at the contiguous end of the pipe and

inner periphery of the collar by means of oxy-acetylene blow pipe and adding metal in a fused state during the said melting and fusing of the end of the pipe and inner periphery of the collar sufficient to fill up the angular pocket between the end of the pipe and inner periphery of the collar.

4. The method of making a flanged pipe by uniting a collar to the end of a pipe, which comprises supporting the collar in a substantially vertical position on the edge of the end of the pipe supported in a horizontal position so that the inner periphery of said collar rests on and projects from the end of the pipe, slowly rotating said pipe and collar, melting and fusing the metal at the lowest section of the contiguous end of the pipe and inner periphery of the collar during the rotation of said pipe and collar, and adding metal in a fused state during the said melting, fusing and rotation of the end of the pipe and inner periphery of the collar.

5. The method of making a flanged pipe

by uniting a collar to the end of a pipe, which comprises supporting the collar in a substantially vertical position on the edge of the end of the pipe supported in a horizontal position so that the inner periphery of said collar rests on and projects from the end of the pipe, slowly rotating said pipe and collar, melting and fusing the metal at the lowest section of the contiguous end of the pipe and inner periphery of the collar during the rotation of said pipe and collar and adding metal in a fused state during the said melting, fusing and rotation of the end of the pipe and inner periphery of the collar sufficient to fill up the angular pocket between the end of the pipe and inner periphery of the collar.

In testimony whereof I affix my signature in presence of two witnesses.

PAUL H. GRIMM.

Witnesses:

JAMES J. PHELAN,
MORRIS SALTPETER.