July 6, 1937. W. B. EWING 2,086,125

METHOD OF MAKING PIPE

Original Filed June 25, 1934

Fig. 1.

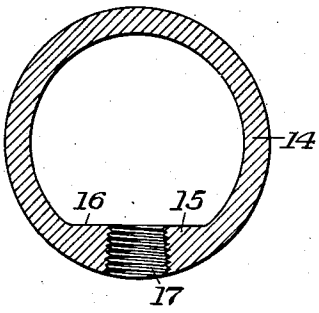


Fig. 2.

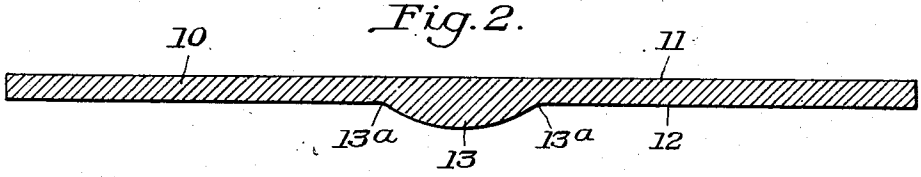


Fig. 3

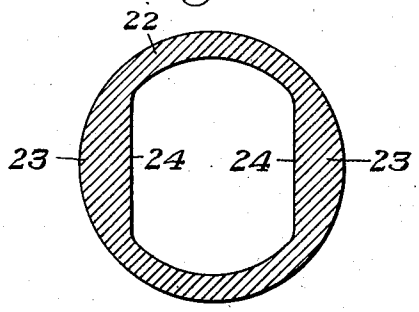
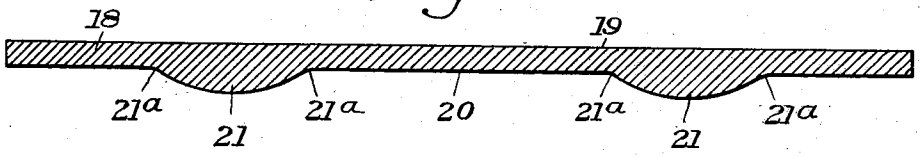


Fig. 4.



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METHOD OF MAKING PIPE

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Continuation of application Serial No. 732,300, June 25, 1934. This application March 27, 1935, Serial No. 13,323

2 Claims. (Cl. 29—157.4)

This invention relates to the manufacture of metallic pipe having a thickened wall portion. The invention relates still more particularly to the manufacture of seamed or welded pipe having a thickened wall portion and such as is especially adapted for use as header pipe in piping systems, such, for example, as gas ranges and the like. This application is a continuation of my copending application Serial No. 732,300, filed June 25, 1934.

It is customary in certain piping installations, such as in gas ranges, to provide a header pipe or conduit through which the incoming gas flows and to drill and tap such header pipe at intervals for attachment of the burner connections. The header pipe must have a substantial wall thickness in order that the thread tapped therein may be of sufficient extent to maintain both a structurally strong and a gas-tight joint. However, if the entire header pipe wall is made of requisite thickness to insure mechanically strong gas-tight threaded joints between the header pipe and the burner connections the header pipe will be heavier than necessary under the conditions of pressure to which it is subjected, resulting in waste of metal and unduly high cost of the installation.

To meet this problem it has heretofore been proposed to provide seamless pipe with a longitudinally extending thickened wall portion adapted to be tapped to receive the burner connections. However, production of this seamless pipe has entailed relatively high cost and other problems have been encountered which have not been satisfactorily solved.

I have found that pipe of the type above mentioned can be formed economically and to good advantage from the standpoint of strength by providing a generally flat blank or skelp having a portion of relatively great thickness and seaming or welding together the edges of such blank or skelp to form the pipe. The high cost of seamless pipe is eliminated, as well as the disadvantages, particularly as to the limitation in size, encountered in the production of cast pipe. The pipe may be made according to my invention throughout a wide range of sizes and to suit various particular conditions.

Other details, objects and advantages of the invention will become apparent as the following description of certain present preferred embodiments thereof proceeds.

In the accompanying drawing I have shown certain present preferred embodiments of the invention, in which,

Figure 1 is a transverse cross-sectional view through a seamed pipe having a drilled and tapped thickened wall portion;

Figure 2 is a transverse cross-sectional view through a skelp adapted to be used in the manufacture of the pipe shown in Figure 1;

Figure 3 is a transverse cross-sectional view similar to Figure 1 showing a modified form of seamed pipe having two thickened wall portions; and

Figure 4 is a transverse cross-sectional view through a skelp adapted to be used in the manufacture of the pipe shown in Figure 3.

I provide an elongated generally flat blank or skelp whose edges are substantially parallel and whose thickness is uneven. Preferably such blank has at least one portion of relatively great thickness, the remainder of the blank being of substantially even or uniform thickness. The portion or portions of relatively great thickness preferably extend longitudinally of the blank and also preferably extend from one face only of the blank so that the opposite face is substantially smooth or plane throughout.

I prefer to roll a skelp having a thickened wall portion and to bend such skelp and weld together the edges thereof to form the pipe. The skelp preferably has a raised portion or projection, preferably outwardly rounded, on one face thereof which is formed during rolling of the skelp and extends from end to end thereof. In Figure 2, for example, there is shown a skelp 10 having a substantially flat or plane upper surface 11 and likewise a substantially flat or plane lower surface 12 except that such lower surface is interrupted by a longitudinally extending projection 13. The projection 13 is outwardly rounded and the curvature of the surface thereof is preferably substantially the same as the curvature of the outer surface of the pipe to be formed. The projection may be, and preferably is, formed during rolling of the skelp and so as to be integral therewith; or a separate piece may be attached, as by welding, to a skelp of ordinary manufacture. Formation of the skelp in the desired shape may be provided for by the use of suitably faced rolls.

I provide fillets 13*a* at the juncture of the portions 12 and 13 of the skelp. The fillets are preferably quite small but they do definitely relieve the relatively sharp corners which would otherwise be present at the juncture of the surfaces of the portions 12 and 13. The fillets have an important function in that they provide for the formation of an externally smooth pipe out of the skelp when the skelp is bent with the portion 13 outside as will presently be described. Unless small fillets are provided at the juncture of the surfaces of the portions 12 and 13, there is danger that the pipe will have external depressions which are highly undesirable.

The skelp 10 is bent, preferably with the projection 13 outside, and the opposite edges of the skelp are connected together to form a pipe, preferably by welding. The welding may be either

of the butt type or of the lap type, or the edges of the skelp or blank may be otherwise seamed together. The welding operation may be performed in the usual manner by the use of an ordinary bell.

In Figure 1 there is shown in cross section a pipe such as might be formed out of a skelp such as shown in Figure 2. The pipe shown in Figure 1 has a wall 14 of substantially uniform thickness throughout except for the relatively thickened portion 15 which has an inner generally flat surface 16. When the skelp shown in Figure 2 is bent to form a pipe with the projection 13 outside, the curved surface of the projection becomes, with little or no appreciable deformation, a portion of the outer surface of the pipe. The portions of the skelp laterally of the projection are bent so that the outer surfaces thereof form substantially a continuation of the outer surface of the projection with substantially the same curvature, the pipe being externally substantially circular. The pipe is drilled and tapped, as shown at 17, to receive a threaded connection as for a gas burner if the pipe is to be used as a header in a gas range. The thickened portion allows of a sufficient number of threads to insure a mechanically tight and also a gas-tight joint between the header and the connection. At the same time an undue weight of material in the remainder of the header pipe is avoided.

A modified form of blank or skelp is shown in Figure 4. The blank or skelp 18 has a substantially flat or plane upper surface 19 and likewise a substantially flat or plane lower surface 20 except that such lower surface is interrupted by two longitudinally extending projections 21. The projections 21 are outwardly rounded similarly to the projection 13 of Figure 2 and the curvature of the surfaces thereof is preferably substantially the same as the curvature of the outer surface of the pipe to be formed. Fillets 21*a* are provided which are exactly analogous to the fillets 13*a* above described and for the same purpose. The skelp 18 may be formed similarly to the skelp 10. It is then bent and the ends connected together in a manner which may be similar to that in which the skelp 10 is bent and its ends connected, the skelp 18 resulting in a pipe shown in cross section in Figure 3. Such pipe has a wall 22 of substantially uniform thickness throughout except for the relatively thickened portions 23 which have inner generally flat surfaces 24. Either or both of the thickened portions 23 may be tapped and drilled if desired. The number of thickened portions may be varied and more than two may be provided.

While it is preferred and is desirable for most purposes to bend the blank or skelp with the projection or projections outside before joining the edges thereof, it may also be bent with the same inside if desired. The shape of the pipe thus formed depends on the shape of the projection, and if the same is properly shaped the pipe produced may have a substantially uniform internal diameter and a longitudinally extending hump on the outside. It is normally preferable, however, for the pipe to have a substantially uniform external diameter with the thickened portion or portions projecting internally thereof, as in Figures 1 and 3.

As above indicated, the blank may be formed otherwise than by rolling and, although it is preferred to form the thickened portion or projection integral and homogeneous with the blank, a separate piece or portion may be connected therewith, as by welding or otherwise, prior to bending. The thickened portion need not extend continuously longitudinally of the pipe but may be intermittent. In such case if the thickened portion is disposed internally of the pipe it is desirable to mark the pipe exteriorly to indicate the location of the thickened portion or portions.

Although the branch connections will ordinarily be effected by drilling and tapping, this is not essential, and the pipe wall may be pierced or provided with an opening in any desired manner. The openings may be provided, as by punching, before the blank is bent into pipe form.

It is preferred to have the seam or weld spaced substantially from the thickened portion of the pipe, although this is not essential, and a thickened weld or seam may be especially provided to serve the desired purpose. If the weld is spaced substantially from the thickened portion this will increase the strength of the pipe. When there is only one thickened portion I ordinarily position the weld opposite the thickened portion. When there are two thickened portions I prefer to position the weld substantially midway between them. The weld may be somewhat stronger than the portions of the pipe between the weld and the thickened portion so that an exceptionally strong header pipe is provided. This is one particular advantage over seamless or cast pipe of the same general type, especially when it is desired to reduce the wall thickness of the body of the pipe to as great an extent as practicable.

While I have shown and described certain present preferred embodiments of the invention, it is to be distinctly understood that the same is not limited thereto but may be otherwise variously embodied and practiced within the scope of the following claims.

I claim:

1. The method of making pipe having a thickened wall portion adapted to have an opening formed therethrough, comprising forming an elongated blank having at an intermediate portion thereof an outwardly transversely convexly curved longitudinally extending projection on one face thereof with fillets between said projection and the adjacent portions of the blank, the curvature of the surface of such projection approximating the curvature of the outer surface of the pipe to be formed, bending the blank transversely with said projection outside, and welding together the edges of the blank to form pipe.

2. The method of making pipe comprising forming an elongated blank having at an intermediate portion thereof an outwardly transversely convexly curved longitudinally extending projection on one face thereof with fillets between said projection and the adjacent portions of the blank, the curvature of the surface of such projection approximating the curvature of the outer surface of the pipe to be formed, bending the blank transversely with said projection outside, welding together the edges of the blank to form pipe, and forming an opening through the portion formed by such projection.

WYLIE B. EWING.