My current invention pertains to an improved method and means for repairing metallic boilers and similar structures, such, for example, as are commonly employed for heating purposes, a leading aim and prime object of the invention being the provision of a procedure which facilitates and hastens the repair and yet permits it to be accomplished at relatively low cost.

Metallic boilers, which are usually located in the basements of buildings, are subject to serious damage by rust, not so much by reason of the ordinary use of the boiler, but because basements are likely to become flooded through rains, backing up of water through drains, etc., and such conditions rust out the lower parts of the boiler, requiring the installation of a new one or the proper and adequate reconditioning of the old one.

The present invention, therefore, relates to a new and improved method of repairing the lower or base portions of such damaged boilers.

This is accomplished according to the basic principles of this invention by cutting away the injured rusted parts of the boiler, preferably progressively, and replacing the removed parts by new efficient ones, while the boiler as a whole remains properly and adequately supported by the remaining unremoved parts and/or the new portions.

The practice of my invention according to its present preferred procedure is illustrated in the accompanying drawings forming a part of this specification and throughout the views of which like elements or members have been designated by the same reference numerals.

In the drawings:
- Figure 1 illustrates a metallic boiler in perspective and the dotted line thereon indicates the division between the lower rusted section thereof and the upper efficient portion of the boiler;
- Figure 3 is a view indicating a part of the new procedure and shows in plan two of the new corner-members;
- Figure 3 is an elevation of such a corner-member;
- Figure 4 is an end view of the same; and
- Figure 5 is a vertical section on line 5—5 of Figure 2.

Referring to the drawings, it will be observed that the dotted line in Figure 1 has beneath it the parts of the boiler which must be renewed to put it in proper operative condition and this is to be accomplished by cutting away the portions of the boiler beneath such line and replacing them with new sections.

To accomplish this desired object, four corner-elements are made in the manufacturer’s plant at a cost relatively small as compared with attempting to construct them on the spot.

Each such sectional corner-element comprises a right-angle, outer metal-plate 11, a corresponding inner right-angle plate 12 spaced inwardly away from such external plate 11 a distance corresponding to that of the boiler, a right-angle base-plate 13 welded to the lower margins of plates 11 and 12, and staybolts 14, 14 fastening the plates together at a suitable distance above the base-plate.

The repair is preferably, but not necessarily, made in the following manner.

One lower corner portion of the damaged boiler is cut away, as by an acetylene-torch, and removed, and, while the boiler is supported by its remaining parts, one such corner-element of proper dimensions is introduced into place as a substitute for the removed corner-section, and the upper edges of both of its plates are welded to the lower edges of the corresponding plates of the boiler.

Thereupon, another corner-section is removed in similar manner and replaced by a like new corner-element, and then the remainder of the lower section of the boiler between the replaced corner-elements is cut away and removed, whereupon an outer plate 15 of suitable length and height and having an inwardly-extended, lower marginal-flange 16 is introduced into position and its top edge is welded to the lower edge of the outer plate just above it, its upright edges are welded to the ends of the two-corner-elements, and the ends of its flange are welded to the ends of the bottom-plates of the pair of corner-members.

Thereafter, a companion inner plate 17 is located in place and its edges welded to the flange 16, to the edges of the inner, bent plates 12, 12 of the two corner-members, and to the lower edge of the boiler-plate above it.

After this has been accomplished, another corner portion of the boiler is cut away and taken out and a new one put in its place, these actions occurring while the boiler is supported in part by its damaged sections and partially by the already inserted, fitted and secured new parts, whereupon additional external and internal plates 18 and 17 are introduced and welded in place after the parts which they are to replace have been eliminated, and so on until the boiler is completely repaired or reconditioned.

As will be readily understood, the exact order
or sequence in which the sections of the boiler are cut away and cast aside and the new parts introduced and welded in place is of little importance and such operations are subject to change as occasion or preference dictates, the important point being that the corner-members are all pre-formed and fabricated and are not made on the spot, whereby substantial expense and material time is saved in repairing the boiler.

The instant invention, set forth in the appended claims, is subject to various changes and modifications without departure from the heart and essence of the invention and without the loss or sacrifice of any of its material benefits and advantages.

I claim:

1. In the process of repairing the lower hollow walls of damaged metallic boilers, the steps of successively cutting away and removing damaged sections of the lower portion of the boiler walls and replacing the same by new sections in a manner and in any order whereby the boiler remains supported in position partly by original sections of the boiler walls and partially by new sections during at least at portion of the repairing operation, the corner-sections of the boiler walls being replaced by premade open-top corner-members, each comprising an external right-angle plate, an inner right-angle plate spaced inwardly away from said external plate, a right-angle bottom-plate secured to the lower margins of said external and internal plates, said external and internal plates above said bottom-plate being fastened together in spaced-apart relation by staybolts, welding the top edges of both of said external and internal right-angle plates of each said corner-section to the lower edges of the corresponding plates of the boiler, filling in the spaces between said corner-members by intervening outer and inner spaced-apart plates one of which latter plates has a flange, constituting the bottom of such intervening portion, welding said flange to the other plate of said intervening portion, welding the ends of said intervening outer and inner plates to the corresponding plates of the two adjacent corner-members, welding the ends of said intervening flange to the ends of the bottom plates of said two adjacent corner-members, and welding the top edges of said outer and inner intervening plates to the lower edges of the corresponding plates of the boiler, said steps of welding said intervening portions being performed in any order.

2. The process set forth in claim 1 in which said flange is an inwardly-extended flange on said outer intervening plate.

3. In the process of repairing the lower hollow walls of damaged metallic boilers, the steps of successively cutting away and removing the damaged sections of the lower portion of the boiler-walls and replacing the same in succession by new sections in such manner and in any order that the boiler remains supported in position while undergoing the repairs partly by original sections of the boiler-walls and partially by new sections during at least a portion of the repairing operation, each corner-section of the boiler-walls being replaced by a premade open-top corner-member, each comprising an external right-angle plate, an internal right-angle plate spaced inwardly away from said external plate, a right-angle bottom-plate secured to the lower margins of said external and internal plates, said external and internal plates above said bottom-plate being fastened together in spaced-apart relation by staybolts, each intermediate-section of the boiler-walls being replaced by inner and outer spaced-apart plates, one of which has a bottom marginal flange forming the bottom-wall of such intermediate-section, welding the top edges of both of said external and internal right-angle plates of each said corner-section to the lower edges of the corresponding plates of the boiler, welding said flange of each intermediate-section to the other plate of said section, welding together the ends of said external and internal right-angle plates of each corner-section to the ends of the inner and outer plates of the next adjacent intermediate-sections, welding together the ends of the bottom-plate of each corner-section and the ends of the bottom flanges of the next adjacent intermediate-sections, and welding the top edges of said outer and inner plates of each intermediate-section to the lower edges of the corresponding plates of the boiler, said removal of damaged sections of the boiler, their replacement by said corner-sections and intermediate-sections, and said welding operations being performed in any order consistent with the support of the boiler in its original position during such operations.

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