

# Laying Out for Boiler Makers and Sheet Metal Workers

*A Practical Treatise on the Layout of  
Boilers, Stacks, Tanks, Pipes, Elbows and Miscellaneous  
Sheet Metal Work*

THIRD EDITION

(Reprinted in 1921)

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OVER 800 ILLUSTRATIONS

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# PREFACE TO FIRST EDITION

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This book has been compiled for the purpose of giving the practical boiler maker the information necessary to enable him to lay out in detail different types of boilers, tanks, stacks and irregular sheet metal work. While the work of laying out, as it is carried on in the boiler shop, requires considerable technical knowledge in addition to that gained by a practical mechanic in the course of his experience in the shop, yet a complete mastery of such subjects as geometry, mechanics and similar branches of elementary mathematics is not essential for doing the work. For this reason no attempt has been made to present these subjects separately from a theoretical standpoint. The practical application of certain of the principles involved in these subjects is, however, very important, and this has been explained in a practical way in connection with different jobs of laying out which form a part of the every-day work in every boiler shop. Only those layouts which are of immediate material use to boiler makers are described, and as far as possible the minor details are given so as to make each problem complete.

The first two chapters explain the methods of laying out by orthographic projection and triangulation, since these are the two principal methods used in solving any problem in laying out. A few simple problems are given in each case from which the application of the methods to more complicated problems may be learned. The chapters which take up the detailed layout of different types of boilers give not only the methods for laying out the actual boiler but also the rules for determining the size, shape and strength of the different parts. These computations are given more in detail in the case of the plain tubular boiler, since the problems involved in this case are general and may be applied to almost any other type of boiler.

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# PREFACE TO THIRD EDITION

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In order to enlarge the scope of the book, the third edition has been revised so that it includes all of the material published in the first edition, with the addition of sixty-seven new laying out problems. The new material has been added to Chapter VIII, and it includes a wide range of work, showing the layout and construction of regular and irregular elbows, pipe connections, transition and offset pieces, taper courses, spiral pipe, hemispherical water tanks, firebox wrapper sheets for locomotive boilers, hoods, uptakes and smokeboxes for Scotch boilers, Y breechings, twisted pipe work, ship ventilators, three-way connections, compound elbows and many other complicated problems. The chapter on Miscellaneous Calculations shows how to figure the strength and efficiency of riveted joints, the area of circular segments and some simple problems in estimating the cost of boiler construction.

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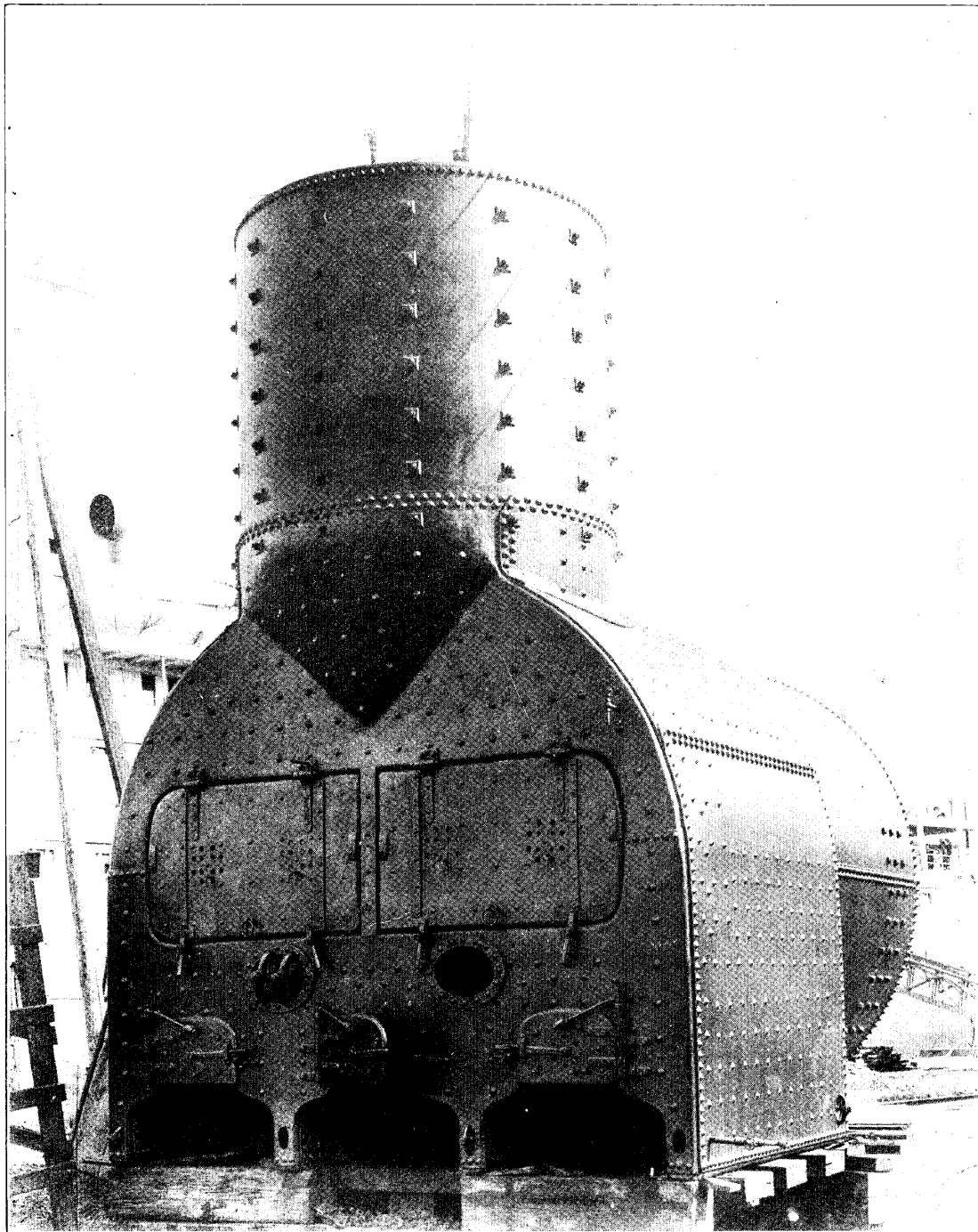
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FLUE AND RETURN TUBULAR BOILER INSTALLED ON THE UNITED STATES REVENUE CUTTER "PERRY." 11 FEET 6 INCHES DIAMETER BY 17 FEET LONG, STEAM PRESSURE 60 POUNDS PER SQUARE INCH.