

**THE MODERN PRACTICE OF BOILER
ENGINEERING, CONTAINING
OBSERVATIONS ON THE CONSTRUCTION
OF STEAM BOILERS; AND UPON FURNACES
USED FOR SMOKE PREVENTION, WITH A
CHAPTER ON EXPLOSIONS**

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The Modern Practice of Boiler Engineering, Containing Observations on the Construction of Steam Boilers; And upon Furnaces Used for Smoke Prevention, with a Chapter on Explosions
by Robert Armstrong & John Bourne

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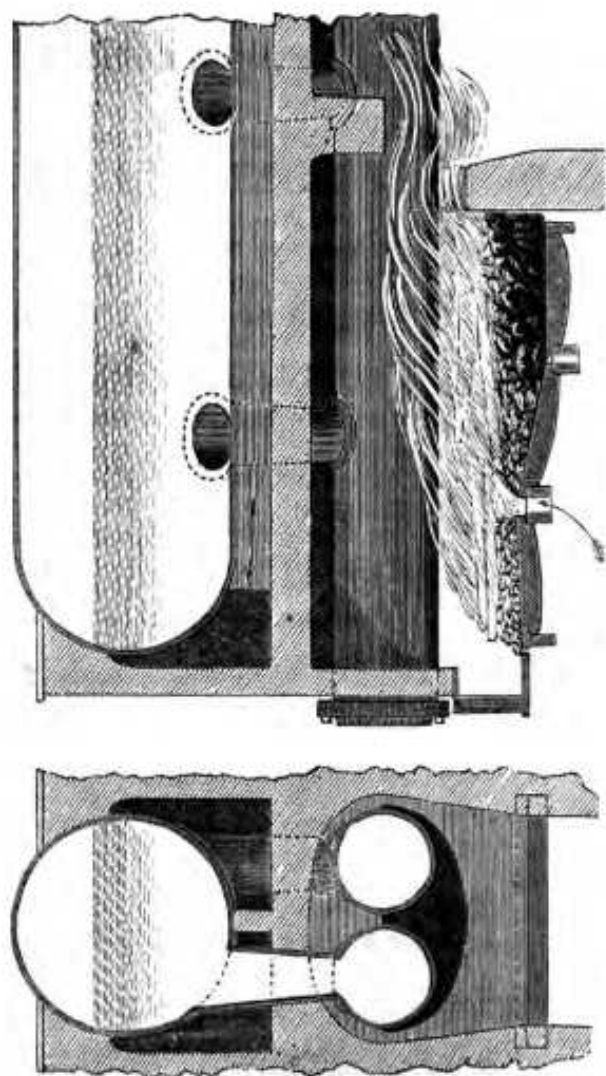
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ROBERT ARMSTRONG & JOHN BOURNE

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A NEW CONSTRUCTION OF FURNACE FOR "BURNING ITS OWN SMOKE," AS APPLIED TO AN ELEPHANT BOILER, AND ADAPTED TO THE USE OF WASTE TIMBER, SLACK, AND OTHER MIXED FUEL, BY R. ARMSTRONG, C.E., 1855.



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CONTAINING OBSERVATIONS OF THE
CONSTRUCTION OF STEAM BOILERS;
AND UPON FURNACES USED FOR
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WITH A CHAPTER ON EXPLOSIONS.

BY ROBERT ARMSTRONG, C. E.,
CONSULTING ENGINEER.

REVISED, WITH THE ADDITION OF NOTES, AND AN
INTRODUCTION

BY JOHN BOURNE, ESQ.

LONDON:
E. AND F. N. SPON, 16, BUCKLESBURY.

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1856.

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TO

ROBERT STEPHENSON, Esq., C. E.,
PRESIDENT OF THE INSTITUTION OF CIVIL ENGINEERS,
M.P., F.R.S., &c. &c.

RESPECTED SIR,

I venture to dedicate these pages to you, both as a manifestation of my reverence for the memory of your late Father, of whose genius and persistency I was for many years an admiring spectator ; and as a slender token of my sense of your own eminent talents as an engineer, and of your estimable personal character. While some engineering reputations are known to rest on diplomatic adroitness, and others are altogether hollow and conventional, it is known to be your great distinction that the fabric of your fame is as solid as it is imposing, and is held in most esteem by those whose pursuits best enable them to judge of its quality.

I am, dear Sir, faithfully yours,

R. ARMSTRONG.

PREFACE.

THE design of the present work is to place the reader in possession of sound information respecting some of the best kind of boilers at present in use, and also to indicate the course which future improvements to be efficient and of material benefit must necessarily pursue.

The subject of smoke-burning which is reckoned one of the important topics of the present day I have endeavoured to illustrate in such a manner as both to correct the erroneous and exaggerated statements made by interested patentees, and to convey just and moderate ideas upon that subject.

The explosions of boilers is a question still involved in much obscurity, some of which