

Boiler Guarantee and Inspection Reports from the Manchester Steam Users Association

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ENGAGEMENT FOR GUARANTEE.

NOT EXCEEDING £300.

THE MANCHESTER STEAM USERS' ASSOCIATION,

FOR THE PREVENTION OF STEAM BOILER EXPLOSIONS, AND FOR THE ATTAINMENT OF ECONOMY IN THE APPLICATION OF STEAM.

Offices, 9, Mount Street, Albert Square, Manchester.

Date, *April 10. 1877*

To Messrs.

J. Baker

Friends Retreat

York.

Sir

Gentlemen,—I beg to inform you that your Boiler is accepted for Guarantee, and that I am instructed by the Guarantors whose names are given on the other side, to engage on their behalf, and I do hereby engage on their behalf, subject to the terms and conditions of Guarantee hereinafter given, that in the event of the explosion of your Boiler, No 1 (Guaranteed pressure) 55 lbs, within one year from the time of its last (last) examination, that is to say on or before the Nineteenth (19th) day of March 1878.

whether that Explosion shall only partially injure or entirely destroy the said Boiler, that the damage done thereby, either to the Boiler itself or to the surrounding property other than by Fire, shall be made good to the extent of, but not exceeding £300, provided that the Guarantee Fund be not exhausted by other claims consequent on explosion, before your own claim shall become due; since it must be clearly understood that none of the Guarantors engage, under any circumstances, to advance more than the total amount of £1,000 each during the whole term of their Guarantee, viz., from January 1st, 1877, to December 31st, 1880; while it must also be understood that the Boiler described hereinafter is the Boiler referred to above as being guaranteed, and also that the terms and conditions, hereinafter stated, are those on which this Engagement for Guarantee is given, as well as that the names of the Guarantors given hereinafter are the names of those gentlemen on whose behalf this engagement is entered into.

Sir

I am, Gentlemen,

Yours faithfully,

J. R. [Signature]



Secretary.

NAMES OF GUARANTORS.

PRESIDENT.

HUGH MASON, Esq., Ashton-under-Lyne.

VICE-PRESIDENTS.

SIR THOMAS BAZLEY, Bart., M.P., Manchester.

JOHN PENN, Esq., C.E., F.R.S., Greenwich.

SIR JOSEPH WHITWORTH, Bart., F.R.S., Manchester.

EXECUTIVE COMMITTEE.

LOUIS J. CROSSLEY, Esq., Halifax.

ADAM DUGDALE, Esq., Blackburn.

CHARLES HEATON, Esq., Bolton.

JAMES PETRIE, Esq., Rochdale.

SAMUEL RIGBY, Esq., Warrington.

THOS. SCHOFIELD, Esq., Manchester.

JAMES TAYLOR, Esq., Wigan.

WRIGHT TURNER, Esq., Pendleton.

GUARANTEE FUND.

From the experience the Executive Committee have had in the working of this Association for the last twenty-two years, they are confident that the rates adopted are adequate to meet all the demands that will be made upon them. But to give the Members of the Association generally full confidence that their claims will be met in the event of Explosion, the Members of the Committee of Management, whose names are given above, offer a guarantee of £1,000 each for the next four years, that is to say from January 1st, 1877, to December 31st, 1880. Thus the Guarantee Fund amounts to at least £12,000, which is amply sufficient to meet all the claims that may be made upon it. But none of the Guarantors pledge themselves to make a greater advance than £1,000 each, nor to extend the term of the Guarantee beyond December 31st, 1880, so that their ultimate liability, under all circumstances, will be limited to the payment of £1,000 each between January 1st, 1877, and December 31st, 1880.

PARTICULARS OF BOILER PREVIOUSLY REFERRED TO

Name and Locality of Works York.

Index No. and Position of Boiler One (No 1) Single boiler.

General Description of Boiler Cornish. Maker's Name

General Dimensions of Boiler. Shell: Length 10 feet 6 ins. Diameter 4 1/2

The approved Load upon the Safety-valve per square inch, and which must by no means be exceeded, or the Guarantee is void.

NOTE.—The pressure given is understood to be sufficient for the requirements of the steam user at the time of issuing the Guarantee, and pressure beyond that mentioned above, the terms of the Guarantee will be enlarged in order to allow of this, on making application to the boiler, and that the safety-valve is suitably re-adjusted for the increase.

TERMS AND CONDITIONS OF GUARANTEE.

The object of the Guarantee is not so much to insure the Members against pecuniary loss in case of Explosion, as to give a pledge of the *bona fide* intention of the Association to prevent the occurrence of Explosions by efficient supervision and careful Periodical Boiler Inspection. To this end all its arrangements are framed, and it has determined to adopt such a course as will not remove from the Members the entire responsibility of the charge of their own Boilers, and therefore does not make compensation for those minor cases of damage to furnace crowns through overheating, which arise either from the carelessness of the attendant, or want of due precaution on the part of the owner, and to compensate for which would remove inducement to carefulness. The Guarantee is offered to the Members, relying upon their fair co-operation; its object is PREVENTION rather than COMPENSATION, and the following are prescribed as its terms and conditions:—

No. 1. That the load on the safety-valve approved by the Association's Chief Engineer shall not be exceeded.

No. 2. That the Chief Engineer and Inspectors shall at all reasonable times have access to all the Boilers enrolled, as well as to the apparatus connected therewith on which safety depends, and that the Members shall afford such fair facilities as may be necessary for the satisfactory examination of the Boilers.

No. 3. That on the discovery by the Members or their servants of any defect in their Boilers at all affecting their safety, prompt notice thereof in writing shall be sent to the Chief Engineer, and that no Boilers shall be worked on when either known or suspected to be in a dangerous state.

No. 4. That in the event of Explosion, however partial the injury arising from that Explosion may be, should Members wish to claim Compensation for their loss, immediate notice thereof in writing shall be sent to the Chief Engineer, and an opportunity afforded him of examining the Boiler before repairs are commenced or the parts disturbed.

No. 5. That the Members' Subscriptions shall be paid in advance, on the enrolment of the Boiler, and renewed in the month of January in each year.

No. 6. That should any dangerous defects either arise or manifest themselves in an approved Boiler during the term of Guarantee; or should the privilege of the Guarantee be found to be abused, and any Guaranteed Boiler be neglected or submitted to unfair treatment, the Chief Engineer shall, in such cases, have the power to suspend the Guarantee until such defects be repaired, and such treatment of the Boiler corrected as he may consider necessary for its safety. The Members, however, shall be free to withdraw from the Association under these circumstances, should they wish to do so, and shall be repaid so much of their subscription as may then be due to the unexpired portion of the year, or to the service to be rendered.

No. 7. That no compensation shall be made unless Explosion take place and the Boiler be rent, though it will by no means be essential to a Claim for Compensation that the Boiler be entirely destroyed, since Compensation will be made in the event of every Explosion, however partial the Boiler may be injured, and whether the Explosion arise from collapse of the furnace tube or tubes, rupture of the shell, or failure of any part of the Boiler whatever.

REFERRED TO IN THIS SHEET AS BEING GUARANTEED.

Boiler's Name Lanett Marshall Date of Make 1872
 Diameter 4 feet 3 ins. Furnace Tubes: Diameter 2 feet 3 ins.
 Guarantee will be vitiated, is Fifty five pounds (55 lbs.)

Guarantee, and is not necessarily a limit of the safe working pressure of the boiler. Should it be desired to raise the application to the Chief Engineer of the Association, provided that the pressure required does not exceed the safety of the

Exd. 8/10-4-77



ENGAGEMENT FOR GUARANTEE

NOT EXCEEDING £300.

To Messrs. Di Coker.

Wals.

Index No. of Boiler No 1

Friend's Retreat.

Date from March 19. 1871

to March 19. 1878.

THE MANCHESTER

STEAM USERS' ASSOCIATION.

GUARANTEE FUND, £10,000.

493

THE MANCHESTER STEAM USERS' ASSOCIATION,

FOR THE

PREVENTION OF STEAM BOILER EXPLOSIONS AND FOR THE ATTAINMENT OF ECONOMY IN THE APPLICATION OF STEAM

ESTABLISHED 1854.

SIR WILLIAM FAIRBAIRN, BART., C.E., F.R.S., LL.D., FOUNDER.

GUARANTEE FUND, £10,000.

This Association undertakes the Periodical Inspection of Steam Boilers, with a view of preventing Explosions, and gives a PECUNIARY GUARANTEE of the integrity and efficiency of its Inspections to the amount of £500 on each Boiler enrolled, so that in the event of the Explosion of an approved Boiler—whether that Explosion arise from collapse of the furnace tubes, or from rupture of the shell, or failure of any part of the Boiler whatever—all damage done thereby, other than by fire, whether to the Boiler itself or to the surrounding property, will be made good to the extent of £500.

INSPECTION, however, is an essential condition of GUARANTEE, and unless Members afford the Association an opportunity of making an annual "Internal" and "Flue" examination, they cannot receive a Guarantee of the safety of their Boilers.—NOTE: See remarks on examinations at back of sheet.

REPORT ON INSPECTOR'S EXAMINATION.

OFFICES: 9, MOUNT-STREET, ALBERT SQUARE, MANCHESTER.

No. of Reports in Set *One.*

Date *September 8th 1876.*

Report No. *1.*

Firm No. *1569.*

Messrs.

Wm. Baker.

The Grivels Wheat,

York.

Sir

Gentlemen,—I have to inform you that on the *21st ult.* your Boilers

No. *1.*

at

the above place

was

examined at an ordinary visit

by Inspector

W. H. H. H.

and as far as *it* could be seen, *was* found in the condition stated

in the following pages, and subjoined are my general remarks thereon:—

The boiler was found in working condition as far as could be ascertained on "External" examination under steam. We note that a new pressure gauge has been applied on the boiler—the old gauge is still on the boiler and is 2 1/2 lbs. slow. The guarantee is about to expire and we shall be glad to make the annual "Entire" examination for its renewal. Please see above and back of sheet.

C. E. Fletcher. Chief Engineer.

Mrs.

BOILERS.

(For Definition of Terms see Note at Foot.)

Nos. reported on below *No. 1.*

Nos. at work *No. 1.*

Nos. at rest _____

External *No. 1.*

Internal _____

Flue _____ Entire _____

Pressure at which Safety Valves blow.—Gauge

*Old gauge 41 lb.
New " 46 "*

Indicator *49 lb.* Stated *50 lb.*

External Condition of Shell

In order where visible.

External Condition of Furnaces

In order as seen from the furnace door.

Condition of Fusible Plugs

None.

Smoke Prevention

Feed Inlet

Requires no comment.

Feed Back Pressure Valves

Feed Stop Valves

Glass Water Gauges

Combined.

Externally in order.

In order.

Blow-out Apparatus at bottom of Boiler

Tested and found externally in order.

Blow-out Apparatus at surface of Water

None.

Safety Valves

Tested by hand, free in action.

Steam Pressure Gauges

Checked by indicator, as above. — Old gauge 41 lb. shows new gauge practically in order.

DEFINITION OF TERMS

An *External Examination* of a Boiler may be made either when it is at work or at rest, and all such particulars are then taken, and only such as are accessible to the shell and furnace crowns, as well as the number and suitability of the fittings, in addition to questions of general economic efficiency.

An *Internal Examination* is only made when steam is down and the Boiler is opened. The condition is then investigated of all such surfaces of the plates as are accessible to the inside of the shell.

At a *Flue Examination* the Inspector goes up both the internal furnace tubes and external brickwork flues, and examines the surfaces of the plates usually exposed to the fire.

From this it will be seen that while the state of the surfaces on the inside of the shell will be reported on under the head of "Internal" condition of shell, that plates under the head of "Internal" condition of furnace and flue tubes.

ADDITIONAL PARTICULARS.

Which can only be ascertained on an Internal and Entire Examination.

CONDITION OF THE SURFACES OF THE PLATES EXPOSED TO THE ACTION OF STEAM OR WATER, AND ASCERTAINED ON AN INTERNAL EXAMINATION.

Internal Condition of Shell

Internal Condition of Furnace and Flue Tubes

Angle or T Iron Hoops

Angle Irons at Shell Furnaces, &c.

Stays

Incrustation

CONDITION OF THE SURFACES OF THE PLATES EXPOSED TO THE ACTION OF THE FLAME AND HEATED GASES AS WELL AS THOSE IN CONTACT WITH THE BRICKWORK SEATING, AND ASCERTAINED ON A FLUE EXAMINATION.

External Condition of Shell in Flues

External Condition of Flue Tubes.

DEFINITION OF TERMS.

as are accessible without entering either the manhole, the furnaces, or the flues. Thus, such an examination deals with the external condition of the plates as are accessible within the manhole, and are usually in contact with the steam or water. This examination is the most important of the three. of the plates usually exposed to the action of the flame and heated gases. This examination is the most important of the three. of shell, that of the inside of furnaces and internal flue tubes will fall under the head of "External" condition, and the outside surface of their



REPORT ON INSPECTOR'S EXAMINATION.

Report No. 1

Run No. 1569.

Date

April 1869

THE MANCHESTER
STEAM USERS' ASSOCIATION.

NOTES TO MEMBERS ON "ENTIRE" EXAMINATIONS.

1. "ENTIRE" EXAMINATIONS.—It is essential to complete inspection that an "ENTIRE" examination—which includes an "INTERNAL" and "FLUE" examination—should be made at least once a year of every Boiler, since the "EXTERNAL" condition of a Boiler affords no assurance that corrosion has not stealthily weakened the plates on their surfaces concealed from view. Without these annual "ENTIRE" examinations, the Association cannot give its members a Guarantee of the safety of their Boilers.

2. OPPORTUNITIES FOR "ENTIRE" EXAMINATIONS.—To afford the members an opportunity of having these annual "ENTIRE" examinations made, the Association's Inspectors are prepared at any one of their "Ordinary" periodical visits to get inside the Boilers and go up the flues, provided that the Boilers be prepared for it by the owners, so that the Inspector may be able to make the examinations.

3. But should it not be convenient to stop the Boilers off at any one of the "Ordinary" periodical visits, then the members can, on giving the Secretary of the Association due notice, have extra visits—termed "Additional"—at any time convenient to themselves, for the purpose of making these annual "ENTIRE" examinations; but for that purpose only, since otherwise they will be reckoned as "Special." These "Additional" visits are no expense to the members beyond the Inspector's second-class railway or coach fare from Manchester and back, where such has to be incurred, no charge being made either for the time occupied in making the examinations, or drawing up the Reports.—See details of "Examinations and Visits," in Association's Synopsis of Rules and Regulations.

4. Members would do well to take advantage of general holidays, such as Christmas time, Easter and Whitsuntide, as well as of any local holidays that may occur in their district, for the purpose of having "ENTIRE" examinations of their Boilers made.

5. NOTICE FOR "ADDITIONAL" VISITS.—When an "ADDITIONAL" visit is wanted by a member at ordinary times, notice should be sent to the Secretary of the Association a week beforehand, since the Inspector's rounds are laid out several days in advance. But for visits at the times of general holidays, much earlier requests should be made, in order to prevent disappointment, since these opportunities are in so great demand that the books are then frequently filled up for a month previously, and the preference is always given to the first applicant.

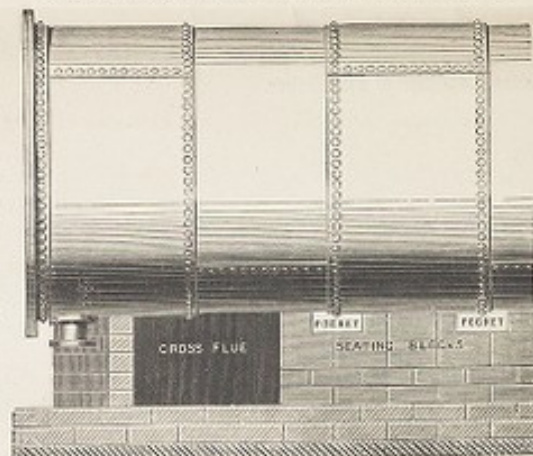
6. PREPARATION FOR "ENTIRE" EXAMINATIONS.—Without suitable preparations by the members for "ENTIRE" Boiler examinations, it is impossible to make them satisfactory, and for want of such preparations, disappointment, as well as loss of time and money, frequently results.

7. In the first place, the Boilers must be stopped off, the fires drawn, and the water let out; also, the manhole as well as the mudhole cover must be taken off, and the Boiler cooled. The external flues must be opened and swept, and the ashes from the furnace removed; while, in addition, it is advisable to take down the brickwork firebridge once a year, since it is often found to conceal defects; also, the incrustation should be removed, as far as possible, from the inside of the Boiler, and the soot entirely from the outside. Sweeps are apt to neglect to brush the plates thinking it sufficient to clean the brickwork flues.

8. The Association must beg the co-operation of its members in having their Boilers properly prepared. It is unreasonable to expect an Inspector either to examine a Boiler when the brickwork is nearly red hot, or to do the work of a sweep. An Inspector's duty begins when the sweep's ends; while the suitable cleaning of the flues, and brushing off the soot from the plates, is as important to economical working as it is to efficient inspection.

9. When the Boilers are set upon mid-feather walls, it is important—since these walls are so frequently found to harbour and conceal dangerous corrosion—that the members should have the brickwork cut away where the ring seams of rivets rest upon it, so that the condition of the plates may be seen. This may easily be done by plunging out a small channel or pocket across the wall as shown in the accompanying sketch. This need not be bricked up after the examination, but may be allowed to remain permanently, and can be filled up with a little fire-clay between each inspection.—(See Association's printed Monthly Report for July, 1867.) These remarks are also applicable to Boilers set on side walls when seating blocks are not introduced, and the bottom of the flues is flat.

SKETCH OF POCKETS OR CHANNELS TO BE CUT OUT OF MID-FEATHER AND WIDE SEATING WALLS WHERE TRANSVERSE OR RING SEAMS OF RIVETS RUN ACROSS THEM.—See Paragraph No. 9.



THE MANCHESTER STEAM USERS' ASSOCIATION,

FOR THE

PREVENTION OF STEAM BOILER EXPLOSIONS AND FOR THE ATTAINMENT OF ECONOMY IN THE APPLICATION OF STEAM.

ESTABLISHED 1854.

SIR WILLIAM FAIRBAIRN, BART., C.E., F.R.S., LL.D., FOUNDER.

GUARANTEE FUND, £10,000.

This Association undertakes the Periodical Inspection of Steam Boilers, with a view of preventing Explosions, and gives a PECUNIARY GUARANTEE of the integrity and efficiency of its INSPECTIONS to the amount of £200 on each Boiler enrolled, so that in the event of the Explosion of an approved Boiler—whether that Explosion arise from collapse of the furnace tubes, or from rupture of the shell, or failure of any part of the Boiler whatever—all damage done thereby, other than by fire, whether to the Boiler itself or to the surrounding property, will be made good to the extent of £200.

INSPECTION, however, is an essential condition of GUARANTEE, and unless Members afford the Association an opportunity of making an annual "Internal" and "Flue" examination, they cannot receive a Guarantee of the safety of their Boilers.—NOTE: See remarks on examinations at back of sheet.

REPORT ON INSPECTOR'S EXAMINATION.

OFFICES: 9, MOUNT-STREET, ALBERT SQUARE, MANCHESTER.

No. of Reports in Set *One*

Date *April 9th 1877.*

Report No. /

Firm No. *1569.*

Messrs. *D. C. Baker.*

*The Friends Retreat
York.*

One Enclosure.

No. /

at

the above place

by Inspector

Barthley.

Sir Gentlemen,—I have to inform you that on the 19th ultimo your Boilers were examined at an ordinary visit and as far as they could be seen, were found in the condition stated

in the following pages, and subjoined are my general remarks thereon:—

As noted within a fracture has developed in the lower part of the first furnace plate near to the flanged seam, over which a covering plate has been applied, secured by six set screws, there has been leakage at this part, and at our inspectors suggestion, we understand that a few more set screws are to be put in. We prefer that all repair plates should be firmly riveted, as trouble is generally experienced by leakage from bolted joints. But in the present instance it will be preferable to try again to make the defect good as suggested by the Inspector before incurring the expense of a riveted repair plate.

Excepting the above the boiler was in order throughout as seen upon entire examination.

Enclosed we respectfully hand you the renewal guarantee. Pressure 55 lbs.

L. E. Fletcher.
L.E.

Chief Engineer.

BOILERS.

(For Definition of Terms see Note at Foot.)

Nos. reported on below	<i>No 1</i>	Nos. at work	-	Nos. at rest	<i>No 1</i>
External	-	Internal	-	Flue	-
Pressure at which Safety Valves blow.—Gauge	<i>No steam</i>	Indicator	-	Entire	<i>No 1</i>
				Stated	<i>50 lb</i>

External Condition of Shell

In order where visible.

External Condition of Furnaces *Slight fracture on the first plate at bottom at edge of flanged seam 2 1/2 inches long. A copper plate has been applied over the defect secured by two set screws. Otherwise in order. Bars removed. bridge in position.*

Condition of Fusible Plugs

No plugs. Float in order.

Smoke Prevention

Feed Inlet

Requires no remark.

Feed Back Pressure Valves

Feed Stop Valves

Glass Water Gauges

Combined.

Internally in order.

In order.

Blow-out Apparatus at bottom of Boiler

Tested and found externally in order.

Blow-out Apparatus at surface of Water

None.

Safety Valves

Tested by hand - free in action.

Steam Pressure Gauges

Stands at zero without pressure.

DEFINITION OF TERMS.
An External Examination of a Boiler may be made either when it is at work or at rest, and all such particulars are then taken, and only such as are accessible to the shell and furnace crowns, as well as the number and suitability of the fittings, in addition to questions of general economic efficiency.
An Internal Examination is only made when steam is down and the Boiler is opened. The condition is then investigated of all such surfaces of the plates as are exposed to the internal pressure.
At a Flue Examination the Inspector goes up both the internal furnace tubes and external brickwork flues, and examines the surfaces of the plates as are exposed to the internal pressure.
An Entire Examination embraces the three preceding, viz.:—The External, Internal, and Flue.
From this it will be seen that while the state of the surfaces on the inside of the shell will be reported on under the head of "Internal" condition of shell, that plates under the head of "Internal" condition of furnace and flue tubes.

ADDITIONAL PARTICULARS.

Which can only be ascertained on an Internal and Entire Examination.

CONDITION OF THE SURFACES OF THE PLATES EXPOSED TO THE ACTION OF STEAM OR WATER, AND ASCERTAINED ON AN INTERNAL EXAMINATION.

Internal Condition of Shell

No 1.

In order.

Internal Condition of Furnace and Flue Tubes

Ditto

Angle or T Iron Hoops. Flanged seams.

Ditto.

Angle Irons at Shell Furnaces, &c.

In order.

Stays

None.

Incrustation

Not returned by the inspector this visit.

CONDITION OF THE SURFACES OF THE PLATES EXPOSED TO THE ACTION OF THE FLAME AND HEATED GASES AS WELL AS THOSE IN CONTACT WITH THE BRICKWORK SEATING, AND ASCERTAINED ON A FLUE EXAMINATION.

External Condition of Shell in Flues

No 1.

In order.

Flues dry and satisfactorily prepared.

External Condition of Flue Tubes.

In order.

DEFINITION OF TERMS.

Plates as are accessible without entering either the manhole, the furnaces, or the flues. Thus, such an examination deals with the external condition of the plates as are accessible within the manhole, and are usually in contact with the steam or water. The examination of the plates usually exposed to the action of the flame and heated gases. This examination is the most important of the three. The examination of the inside of shell, that of the inside of furnaces and internal flue tubes will fall under the head of "External" condition, and the outside surface of their



REPORT
ON
INSPECTORS' EXAMINATION.

Report No. 1 From No. 1569.

Date April 9th 1877.

THE MANCHESTER
STEAM USERS' ASSOCIATION.

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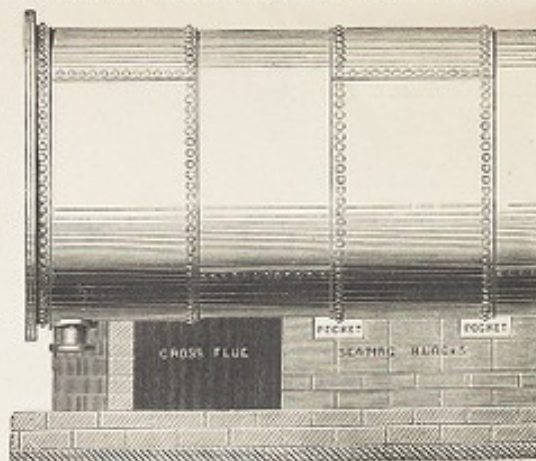
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SKETCH OF POCKETS OR CHANNELS TO BE CUT OUT OF MID-FEATHER AND WIDE SEATING WALLS WHERE TRANSVERSE OR RING SEAMS OF RIVETS RUN ACROSS THEM.—See Paragraph No. 9.



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GUARANTEE FUND, £10,000.

This Association undertakes the Periodical Inspection of Steam Boilers, with a view of preventing Explosions, and gives a PRECUNARY GUARANTEE of the integrity and efficiency of its Inspectors to the amount of £300 on each Boiler enrolled, so that in the event of the Explosion of an approved Boiler—whether that Explosion arise from collapse of the furnace tubes, or from rupture of the shell, or failure of any part of the Boiler whatever—all damage done thereby, other than by fire, whether to the Boiler itself or to the surrounding property, will be made good to the extent of £300.

INSPECTION, however, is an essential condition of GUARANTEE, and unless Members afford the Association an opportunity of making an annual "Internal" and "Fire" examination, they cannot receive a Guarantee of the safety of their Boilers.—NOTE: See remarks on examinations at back of sheet.

REPORT ON INSPECTOR'S EXAMINATION.

OFFICES: 9, MOUNT-STREET, ALBERT SQUARE, MANCHESTER.

No. of Reports in Set *One*

Date *August 20th 1877*

Report No. /

Firm No. *1569*

Messrs.

Dr. Carter. Joseph Quanton Esq.

The Grunds Retreat.

York.

Sir Gentlemen,—I have to inform you that on the 30th ultimo your Boilers

No. /

at

the above place

was ~~more~~ examined at an *Ordinary* visit

by Inspector

Harley

and as far as ~~they~~ *it* could be seen, ~~more~~ *was* found in the condition stated

in the following pages, and subjoined are my general remarks thereon:—

The Smith's pressure gauge is 12 lbs. slow, as noted within; this should be adjusted at an early opportunity.

The boiler was found in satisfactory working condition as far as could be ascertained upon External examination.

L. E. Fletcher.

Chief Engineer.

L. E. Fletcher

BOILERS.

(For Definition of Terms see Note at Foot.)

Nos. reported on below No 1.

Nos. at work No 1.

Nos. at rest -

External No 1.

Internal -

Flue -

Entire -

Pressure at which Safety Valves blow.—Gauge

Bowdon Smith's
144 lbs. 144 lbs.

Indicator *46 lbs* Stated *50 lbs*

External Condition of Shell

In order as far as visible.

External Condition of Furnaces

In order as far as visible from furnace door.

Condition of Fusible Plugs

Smoke Prevention

Feed Inlet

Requires no present remark.

Feed Back Pressure Valves

Feed Stop Valves

Glass Water Gauges

Combined.

Externally in order.

In order.

Blow-out Apparatus at bottom of Boiler

Tested and found externally in order.

Blow-out Apparatus at surface of Water

Safety Valves

Tested by hand - free in action.

Steam Pressure Gauges

Checked by the indicator as stated above. Bowdon gauge practically in order. Smith's gauge is 12 lbs slow and requires adjusting.

DEFINITION OF TERMS.

An External Examination of a Boiler may be made either when it is at work or at rest, and all such particulars are then taken, and only such, as are accessible with the shell and furnace crowns, as well as the number and suitability of the fittings, in addition to questions of general economic efficiency.

An Internal Examination is only made when steam is down and the Boiler is opened. The condition is then investigated of all such surfaces of the plates as are accessible. At a First Examination the Inspector goes up both the internal furnace tubes and external brickwork flues, and examines the surfaces of the plates exposed to fire.

From this it will be seen that while the state of the surfaces on the inside of the shell will be reported on under the head of "Internal" condition, that of the plates under the head of "Internal" condition of furnace and flue tubes.

ADDITIONAL PARTICULARS.

Which can only be ascertained on an Internal and Entire Examination.

CONDITION OF THE SURFACES OF THE PLATES EXPOSED TO THE ACTION OF STEAM OR WATER, AND ASCERTAINED ON AN INTERNAL EXAMINATION.

Internal Condition of Shell

Internal Condition of Furnace and Flue Tubes

Angle or T Iron Hoops

Angle Irons at Shell Furnaces, &c.

Stays

Incrustation

CONDITION OF THE SURFACES OF THE PLATES EXPOSED TO THE ACTION OF THE FLAME AND HEATED GASES AS WELL AS THOSE IN CONTACT WITH THE BRICKWORK SEATING, AND ASCERTAINED ON A FLUE EXAMINATION.

External Condition of Shell in Flues

External Condition of Flue Tubes.

OF TERMS.

are accessible without entering either the manhole, the furnaces, or the flues. Thus, such an examination deals with the external condition of the plates as are accessible within the manhole, and are usually in contact with the steam or water. This examination is the most important of the three. of shell, that of the inside of furnaces and internal flue tubes will fall under the head of "External" condition, and the outside surface of their



REPORT ON INSPECTORS' EXAMINATION.

Report No. 1
Date August 20th 1877
Page No. 1569.

THE MANCHESTER
STEAM USERS' ASSOCIATION.

NOTES TO MEMBERS ON "ENTIRE" EXAMINATIONS.

1. "ENTIRE" EXAMINATIONS.—It is essential to complete inspection that an "ENTIRE" examination—which includes an "INTERNAL" and "FLUE" examination—should be made at least once a year of every Boiler, since the "EXTERNAL" condition of a Boiler affords no assurance that corrosion has not stealthily weakened the plates on their surfaces concealed from view. Without these annual "ENTIRE" examinations, the Association cannot give its members a Guarantee of the safety of their Boilers.

2. OPPORTUNITIES FOR "ENTIRE" EXAMINATIONS.—To afford the members an opportunity of having these annual "ENTIRE" examinations made, the Association's Inspectors are prepared at any one of their "Ordinary" periodical visits to get inside the Boilers and go up the flues, provided that the Boilers be prepared for it by the owners, so that the Inspector may be able to make the examinations.

3. But should it not be convenient to stop the Boilers off at any one of the "Ordinary" periodical visits, then the members can, on giving the Secretary of the Association due notice, have extra visits—termed "Additional"—at any time convenient to themselves, for the purpose of making these annual "ENTIRE" examinations; but for that purpose only, since otherwise they will be reckoned as "Special." These "ADDITIONAL" visits are no expense to the members beyond the Inspector's second-class railway or coach fare from Manchester and back, where such has to be incurred, no charge being made either for the time occupied in making the examinations, or drawing up the Reports.—See details of "Examinations and Visits," in Association's Synopsis of Rules and Regulations.

4. Members would do well to take advantage of general holidays, such as Christmas time, Easter and Whitsuntide, as well as of any local holidays that may occur in their district, for the purpose of having "ENTIRE" examinations of their Boilers made.

5. NOTICE FOR "ADDITIONAL" VISITS.—When an "ADDITIONAL" visit is wanted by a member at ordinary times, notice should be sent to the Secretary of the Association a week beforehand, since the Inspector's rounds are laid out several days in advance. But for visits at the times of general holidays, much earlier requests should be made, in order to prevent disappointment, since these opportunities are in so great demand that the books are then frequently filled up for a month previously, and the preference is always given to the first applicant.

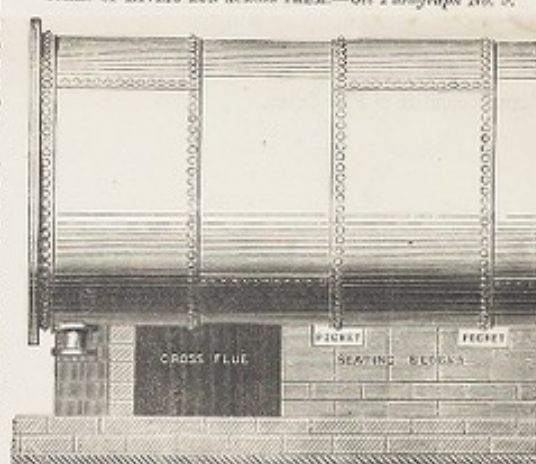
6. PREPARATION FOR "ENTIRE" EXAMINATIONS.—Without suitable preparations by the members for "ENTIRE" Boiler Examinations, it is impossible to make them satisfactorily, and for want of such preparations, disappointment, as well as loss of time and money, frequently results.

7. In the first place, the Boilers must be stopped off, the fires drawn, and the water let out; also, the manhole as well as the mudhole cover must be taken off, and the Boiler cooled. The external flues must be opened and swept, and the ashes from the furnace removed; while, in addition, it is advisable to take down the brickwork firebridge once a year, since it is often found to conceal defects; also, the incrustation should be removed, as far as possible, from the inside of the Boiler, and the soot entirely from the outside. Sweeps are apt to neglect to brush the plates thinking it sufficient to clean the brickwork flues.

8. The Association must beg the co-operation of its members in having their Boilers properly prepared. It is unreasonable to expect an Inspector either to examine a Boiler when the brickwork is nearly red hot, or to do the work of a sweep. An Inspector's duty begins when the sweep's ends; while the suitable cleaning of the flues, and brushing off the soot from the plates, is as important to economical working as it is to efficient inspection.

9. When the Boilers are set upon mid-feather walls, it is important—since these walls are so frequently found to harbour and conceal dangerous corrosion—that the members should have the brickwork cut away where the ring struts of rivets rest upon it, so that the condition of the plates may be seen. This may easily be done by ploughing out a small channel or pocket across the wall as shown in the accompanying sketch. This need not be bricked up after the examination, but may be allowed to remain permanently, and can be filled up with a little fire-clay between each inspection.—(See Association's printed Monthly Report for July, 1897.) These remarks are also applicable to Boilers set on side walls when seating blocks are not introduced, and the bottom of the flues is flat.

SKETCH OF POCKETS OR CHANNELS TO BE CUT OUT OF
MID-FEATHER AND WIDE SEATING WALLS WHERE TRANSVERSE OR RING
SPACES OF RIVETS RUN ACROSS THEM.—See Paragraph No. 9.



Form prescribed by the Secretary of State, under Section 11 of the Factory and Workshop Act, 1901.

Form 55.
Jan. 1902.

MANCHESTER STEAM USERS' ASSOCIATION FOR THE PREVENTION OF STEAM BOILER EXPLOSIONS AND FOR THE ATTAINMENT OF ECONOMY IN THE APPLICATION OF STEAM.

Report of Examination of Steam Boiler in the Factory at The Friends Retreat Park

Occupier of Factory

Date of Examination 5th July, 1902.

Description of Boiler, or Distinctive Number.	Nature of Examination.* (Also state in this column whether Boiler was properly scaled for the purpose of the examination.)	Condition of Boiler. (a) External. (b) Internal.	Condition of Mountings. (a) Safety Valve. (b) Steam Gauge. (c) Water Gauge. (d) Other Mountings.	Permissible Working Pressure (for ensuing 14 months) subject to any conditions stated in col. (6).	REMARKS, including Statement of Repairs (if any) required, and of period within which they should be executed.
(1)	(2)	(3)	(4)	(5)	(6)
<i>Cornish, 1161.</i>	<i>Entire Satisfactory</i>	<i>Ext. $\frac{1}{2}$ Satisfactory Int. $\frac{1}{2}$ Satisfactory</i>	<i>not working but apparently in order.</i>	<i>55th</i>	

* Facilities must be given by the occupier for such inspection (internal and external), hammer testing, drilling, lifting, hydraulic testing, steam trial, or other means of testing, as may be necessary for the purpose of thorough examination.

† i.e. pressure as calculated from dimensions, thickness, and other data, ascertained by examinations. Allowance should be made for conditions of working if unusual or exceptionally severe.

I certify that I have thoroughly examined the one Boiler above described, which was properly prepared, and so far as its construction permits, made accessible for the purpose, and that the above is a true report of the result of the examinations.

Signature J. V. Hunderland.

Qualification INSPECTOR TO THE
MANCHESTER STEAM USERS'
ASSOCIATION.

Address: 9, Mount St., Manchester.

Counter-Signature C. E. Brown
(When required by Section 11.) *Chief Engineer.*

Name of Company MANCHESTER STEAM USERS'
ASSOCIATION.

Date 18 JUL 1902

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