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BOULDER, COLORADO

SECOND ANNUAL REPORTS

OF THE

Inspector of Steam Boilers

FOR THE

STATE OF COLORADO.

1889-1890.

PETER P. EGAN, Inspector.



DENVER:

COLLIER & CLEVELAND LITH. CO., STATE PRINTERS.

1890.

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FIRST ANNUAL REPORT

OF THE

Inspector of Steam Boilers

FOR THE

STATE OF COLORADO,

FROM JULY 1, 1889 TO DECEMBER 31, 1889.

PETER P. EGAN. INSPECTOR.



DENVER:
COLLIER & CLEVELAND LITH. CO., STATE PRINTERS.
1890.

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OFFICE OF THE INSPECTOR OF STEAM BOILERS, }
DENVER, COLO., January 1, 1890. }

To his Excellency,

JOB A. COOPER,

Governor of Colorado:

SIR:—In compliance with the law “establishing the office of Inspector of Steam Boilers, and defining the duties of the inspector,” I have the honor of submitting to you the first annual report of the office.

You no doubt are aware that the law did not take effect until July 1, 1889, and being unavoidably delayed in procuring the necessary apparatus, the active work did not begin for some time after, consequently the inspections made cover but a little more than a period of four months—to January 1, 1890. During that time the total number of boilers inspected were 424, in which were found 990 defects, of which 279 were considered dangerous.

The defects are classified as follows:

	TOTAL DEFECTS.	DANGEROUS.
Safety valves defective in construction	114	53
Boilers without safety valves	2	2
Defective pressure gauges	184	27
Boilers without pressure gauges	4	4
Defective water gauges	126	92
Boilers in which all water gauges were defective	16	16
Defective bracing	97	5
Defective blow-offs	32	14
Boilers without blow-offs	10	10
Burned plates	90	7
Blistered plates	29	5
“Bagged” plates	19	8
Cases of internal grooving	18	4
Cases of internal incrustations and deposit	166	15
Cases of external corrosion and leakage	73	7
Mud drums condemned	10	10
Totals	990	279

IV REPORT OF STEAM BOILER INSPECTOR.

There were five boilers regarded as unsafe and were condemned for further use, as the law requires.

Nine pressure gauges, which were found to be utterly worthless, were also condemned. Repairs have been ordered on 137 boilers, some of them being very extensive, while others were but slight.

The condition of many of the boilers which came under inspection can scarcely be realized. The table shows 114 safety valves defective in construction, 53 of which were dangerous. Two boilers were discovered that never had a safety valve and yet they were in constant use. In nine other cases two boilers have been found with but one safety valve, and that scarcely large enough for one. Worse still, three boilers were discovered with but one safety valve, which should be attached only to but one boiler.

Of the 379 pressure gauges on the 424 boilers inspected, the table shows 184 or nearly one-half defective, 27 of them being dangerously so.

When it is known that some of the boilers having dangerous defects in their plates, safety valves and steam pressure gauges are in charge of men who know but very little of the duties pertaining to the positions of a stationary engineer, it can be readily understood what dangers to life and limb surround persons working in their neighborhood.

There are many boilers not in use at present which should be condemned, but as the law provides only for the inspection of boilers in active operation, those that are idle cannot be examined and their actual condition exposed.

During the existence of this office there have been no boiler explosions in the State, except the boiler of a locomotive, which did not come within the jurisdiction of the law establishing this office.

Respectfully yours,

PETER P. EGAN,

State Boiler Inspector.

SECOND ANNUAL REPORT

OF THE

Inspector of Steam Boilers

FOR THE

STATE OF COLORADO,

FROM JANUARY 1, 1890, TO OCTOBER 31, 1890.



DENVER, COLORADO:
THE COLLIER & CLEVELAND LITH. CO., STATE PRINTERS.
1890.

OFFICE OF STATE INSPECTOR OF BOILERS, }
DENVER, COLO., Nov. 15, 1890. }

To His Excellency,

JOB A. COOPER,

Governor of Colorado.

SIR:—In compliance with the law “Establishing the office of Inspector of Steam Boilers, and defining the duties of the Inspector,” I have the honor of submitting to you the Second Annual Report of this office, embracing a period of ten months, beginning January 1, and ending October 31, 1890. During that time 563 boilers were inspected, in which were found 1,125 defects, 308 of which were considered dangerous.

The defects are classified as follows:

	Total Defects.	Dangerous.
Safety valves defective in construction	134	58
Boilers without safety valves	1	1
Defective pressure-gauges	257	43
Boilers without pressure-gauges	2	2
Defective water-gauges	108	56
Boilers in which all water-gauges were defective	5	5
Defective bracing	45	16
Defective blow-offs	11	11
Boilers without blow-offs	10	10
Burned plates	127	22
Blistered plates	44	7
“Bagged” plates	28	10
Cases of internal grooving	26	3
Cases of internal incrustation or deposit	174	44
Cases of external corrosion and leakage	137	12
Mud drums condemned	4	4
Cases of pittings	10	2
Cracked flue sheets	2	2
Totals	1,125	308

Ten boilers inspected were regarded as unsafe, and were consequently condemned as the law requires.

Repairs were ordered to be performed on 210 boilers; the repairs ordered to be performed on many of these boilers were quite extensive, consisting in some cases, on one boiler, of new sheets, new tubes, new pressure-gauges, new water-gauges, new pipe-fittings, additional bracing of boiler and the enlargement of the safety valve.

There were 134 defective safety valves of which 58 were dangerous; one boiler had no safety valve, while in seventeen other cases two boilers were discovered having but one safety valve for both.

Of the 547 pressure-gauges inspected, 257 of that number were defective, 43 of them had dangerous defects, 20 being so worthless that they were condemned from further use. In ten cases two boilers had but one pressure-gauge, and in two cases batteries of four were found having but one pressure-gauge for the four boilers; slight errors or defects found in pressure-gauges were usually corrected by the inspector.

Allow me to call attention to a paragraph in the last report of this office, which reads:

“There are many boilers not in use at present which is believed should be condemned, but as the law provides only for the inspection of boilers in active operation, those that are idle cannot be examined into and their actual condition exposed.” The stimulus given to the mining industry of the State during the last year has caused many old boilers to be put again in use, but this office find it nearly impossible to inspect many of them, because of their isolated location and a lack of funds. In this connection I may say that the duties of the office as outlined by the law are so vast, that without adequate appropriations it is impossible to perform them with that degree of promptness necessary,

or with the satisfaction expected by those who are interested in the practical operations of the law, and for whose safety it was enacted.

Five boiler explosions occurred during this last year, by which six persons were injured, one fatally; none of these boilers had undergone State inspection, the location of but one of them was ever made known to this office, and that one was reported by the owners to have been "recently thoroughly repaired, and was consequently in first class condition."

The following are the details of the explosion :

LEADVILLE, April 29th, 1890.

Boiler owned by Davis & Evans, used for sawing wood,—exploded causing injury of Evans and damage to property of about one hundred (\$100.00) dollars; boiler was locomotive pattern and of the following dimensions: 10 feet 3 inches long, 34 inch diameter, C. No. 1 iron, 26 tubes, 6 feet 9 inches long, 3-inch diameter. From information received after I arrived, I learned that the boiler had exploded with 85 pounds of steam; cause of explosion,—boiler was worn out and not in fit condition for steam use.

WATKINS, August 26th, 1890.

Boiler owned by Kansas Pacific Railroad used for pumping water, exploded; causing injury to Lincoln Smith, engineer, and S. E. Painter, bridge inspector, damaging property about two hundred (\$200.00) dollars; boiler was known as an upright "Shapley's Patent;" 5 feet 6 inches in height, largest diameter 32-inch, C. No. 1 iron; boiler pressure supposed to have been 60 pounds to the square inch when it exploded; cause—this boiler was eaten very nearly through in several places from pitting and grooving.

TOMICHI, August 31st, 1890.

Boiler owned by the Magna Charta Tunnel Company used for drilling tunnel, exploded, causing death of Richard Medzzan, engineer, and damaging property two thousand (\$2,000.00) dollars; boiler was of the locomotive pattern, and of the following dimensions: 10 feet 3 inches in length, 34 inches in diameter, C. H. No. 1 iron $\frac{1}{4}$ -inch in thickness, 47 tubes 2 inches in diameter, 6 feet 3 inches long. From statements made by parties working around this boiler before the accident, places the pressure at 40 pounds to the square inch; cause—stay bolts in fire sheet being of poor iron, broke from sheet one at a time until sheets were weakened and pressure too great; boiler had previously run at 100 pounds to the square inch.

MONTROSE, September 27th, 1890.

Boiler owned by Frederick Hamlin, used in a saw mill, twenty-five miles from Montrose, exploded, injuring two men, William Young and Peter Funk, latter slightly; damage to property about one thousand (\$1,000.00) dollars; boiler was of the locomotive pattern and of the following dimensions: length 12 feet 2 inches, 40-inch in diameter, C. H. No. 1 iron, $\frac{1}{4}$ -inch in thickness, 53 tubes 2-inch in diameter, 7 feet 2 inches long; cause—boiler had been running with a pressure of 125 pounds to the square inch. If it had been inspected it would not be allowed a greater pressure than 75 pounds to square inch; this explosion was from over-pressure.

BRECKENRIDGE, Sept. 27th, 1890.

Boiler owned by W. R. Williams, used for sawing wood, exploded, doing no injury to persons and causing little damage to property; this was a small upright tube boiler about 5 feet high, 30 inches in diameter; cause—low water and excessive pressure.

A fact frequently presenting itself and to which I referred to in my last report, is the incompetency of persons having charge of steam boilers; when upon inspection internal incrustations and deposits, in some cases the accumulations of years, had been discovered, the "engineer" could scarcely be made to understand the need of regularly washing or cleaning out boilers and considered it unnecessary work, neither could they comprehend the necessity of being particular about the condition of safety valves, pressure-gauges, blow-offs, or of other parts of boilers, engines and their connections. When such a lack of intelligence is shown by persons in charge of dangerous machinery, the wonder is that more accidents do not occur; it also shows the need of some regulations compelling those who may be employed as stationary engineers, to be possessed of some practical knowledge concerning the duties they are expected to perform.

In conclusion allow me to thank you for the courtesies you have at all times extended to this office.

Respectfully yours,

P. P. EGAN,

State Boiler Inspector.

LAW

ESTABLISHING THE OFFICE OF

Inspector of Steam Boilers

FOR THE

STATE OF COLORADO.

DENVER, COLORADO:
THE COLLIER & CLEVELAND LITH. CO., STATE PRINTERS.
1890.

INSPECTOR OF STEAM BOILERS.

(H. B. 66.)

AN ACT

ESTABLISHING THE OFFICE OF INSPECTOR OF STEAM BOILERS, AND DEFINING THE DUTIES OF THE INSPECTOR.

Be it enacted by the General Assembly of the State of Colorado:

SECTION 1. The Governor of the State of Colorado shall, by and with the advice and consent of the Senate, on or before April 1, 1889, appoint an inspector of steam boilers. The person so appointed shall be well qualified, from practical experience in the use and construction of boilers, generators, super-heaters, and their appurtenances, used for the generating of steam for power, steaming or heating purposes, and shall be neither directly nor indirectly interested in the manufacturing, ownership or agency of same. The duty of said inspector shall be to inspect steam boilers throughout the State, as hereinafter specified and directed. The inspector shall hold office for the term of two years from the date of his appointment, and until his successor shall be appointed and qualified, and before entering on the duties of his office he shall give a good and sufficient bond in the sum of five thousand (5,000) dollars for the faithful performance of his duties, to be approved by the Attorney General and deposited with the Secretary of State. Said inspector shall receive an annual salary of two thousand five hundred (2,500) dollars, and mileage at ten cents per mile, payable as other State officers; *Provided*, He shall not receive mileage to exceed five hundred dollars in any one year. Said inspector may

appoint deputy inspectors in each judicial district in the State, and who shall have the same powers as the inspector, who shall receive as compensation four dollars per day while actually employed, and shall be paid in the same manner as other State officers, and mileage at ten cents per mile. He may also employ a clerk at an annual salary not exceeding one thousand (1,000) dollars, to be paid monthly, as other State officers.

SEC. 2. The inspector shall devote his time and attention to the duties of the office. He shall carefully inspect and test every stationary boiler and steam generating apparatus under pressure used for stationary power, as provided by this act, including all attachments and connections, located within the State of Colorado, once annually, and shall give the owner or user of any steam boiler five days' notice of the time when he shall make such inspection; *Provided*, That any owner or user of any steam boiler in this State who may desire to insure such boiler in any reputable insurance company, and who shall desire to have an inspection made for the purpose of said insurance, may give to said State steam boiler inspector ten days' notice in writing of the time of such contemplated insurance inspection, and it shall thereupon be the duty of said State steam boiler inspector to cause the annual State inspection [by] this act provided, to be made at the same time that said examination for insurance is made; he shall examine into and report to the Governor the cause of any boiler explosion that may occur within the State. He shall keep in his office a complete and accurate record of the names of owners or users of steam boilers inspected, giving a full description of the same, the amount of pressure allowed, the date when last tested, and shall make an annual report to the Governor.

SEC. 3. It shall be the duty of every owner or user of steam boiler, or boilers in use, or to be used, in any part of this State, within thirty days after the passage

of this act, and once a year thereafter, at such convenient times, and in such manner and form as may be determined by rules and regulations to be made therefor by the inspector, to report to said inspector the location of such steam boiler, or boilers, and all apparatus and appliances connected therewith; and the strength and security of such boilers shall be tested by hydrostatic pressure, each boiler being tested one-third greater than the ordinary working steam pressure used, and to a pressure demanded by the owner; and the certificate of inspection herein provided shall state the maximum pressure at which such boiler may be worked. If at any time the inspector shall find a boiler which, in his judgment, is unsafe, after inspecting the same, he shall condemn its future use. All boilers to be tested by hydrostatic pressure shall be filled with water by the owners, or users, and they shall furnish the necessary labor required to work and handle the pumps in applying the test, which pumps shall be furnished by the inspector, if necessary. All certificates shall be for one year, unless sooner revoked for cause.

SEC. 4. The owners or users of steam boilers, or engineers in charge of same, shall not allow a greater pressure in any boiler than is stated in the certificate of inspection granted by the inspector. No person or persons shall use or cause to be used for generating steam any boiler that has been condemned as unsafe by the inspector. Before the owner, owners or users of any steam boiler or boilers shall have said boilers placed in position, he or they shall notify the inspector, who shall, within ten days from the date of receiving such notification, examine the same and satisfy himself that the construction, material, bracing and all other parts of such boiler or boilers are such as to assure the safety of the same. Any person or persons violating any of the provisions of this section shall be deemed guilty of a misdemeanor, and, upon conviction thereof, shall be

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