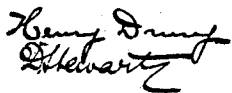


W. WRIGHT.
CHECK VALVE FOR BOILERS.

Patented Apr. 11, 1893.



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by his atty.
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UNITED STATES PATENT OFFICE.

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CHECK-VALVE FOR BOILERS.

SPECIFICATION forming part of Letters Patent No. 495,082, dated April 11, 1893.

Application filed February 6, 1893. Serial No. 461,141. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM WRIGHT, a citizen of the United States, residing at Wilmington, in the county of New Castle, in the State of Delaware, have invented a certain new and useful Improvement in Check-Valves for Boilers, of which the following is a true and exact description, reference being had to the accompanying drawings, which form a part of this specification.

My invention relates to check valves for steam boilers and has for its object to provide a steam boiler with a check valve which shall be located on the inside of a locomotive or other boiler in order to prevent any escape of steam in case of collision or injury to the feed pipes and yet which can be easily removed from the boiler in order to re-grind the valve or otherwise to repair it.

Heretofore it has been found impracticable to arrange a vertically acting check valve within a boiler because of the difficulty of regrinding it to its seat when it became worn, and therefore various expedients have been used which however do not operate as well as a vertically acting valve. My invention consists therefore in arranging the valve seat at the inlet of a feed pipe to a boiler so that the check valve therein may be inside the boiler, but that the seat and valve may be readily removed for regrinding the valve to its seat and other repairs.

My invention is illustrated in the accompanying drawings in which,

Figure 1 shows my improved check valve and feed pipe attached to a boiler. Fig. 2 is a section on the line *x-y* of Fig. 1, and Fig. 3 is a front view of the casing C with the feed pipe removed.

A represents a boiler shell having therein an opening A²; secured to the boiler by bolts or rivets as F.

B is a plate which is preferably flanged at *b'* and which has an opening at *b*. A valve seat casing or cage C' having an opening *c*³ is fastened to plate B through a flange C⁴ preferably by bolts as F' shown fitting into counterbores *d* in the feed pipe D projects into the boiler through the opening *b* of the plate B and has formed thereon a valve seat C² preferably horizontal and flat as shown.

A vertically acting check valve *c* is arranged to seat on the valve seat C² and has a stem *c'* guided in a spider C³ in the casing; the seat C² must be so far inside of the edge of opening *b* that it and the valve seated on it can be inserted and removed. A feed pipe D with an opening *d*³ is fastened to the valve casing C by bolts as F² and preferably a ring E is ground to make a bevel joint at *e* is used to make a perfectly tight joint between the casing C and the feed pipe D.

A' represents the outer casing of the boiler and has an opening in it large enough to permit the withdrawal of the casing C', and lagging L is shown between the boiler shell and the outer casing and fitted over the flanged plate B.

L' represents fire felt on the boiler shell inside of the lagging L. A cross bar K may extend from one side to the other of the casing C to facilitate removal as shown. Water enters by the feed pipe D and raises the check valve *c*; this movement of the check valve will be vertical and the throw may be limited by any desired means, as a pin, as shown at *c*² but I prefer to form a stop as *b*² on the casing B.

The removal of the check valve and casing is readily effected by removing the feed pipe and unbolting and withdrawing the part *c'* of the valve casing through the opening *b* in the plate B which is larger than this portion of the casing. It will be noticed that the casing C' is not secured directly to the boiler but to the plate B, and that the flange B does not have to be removed from the boiler shell. Between the flange B and the boiler shell a suitable packing is always placed which is apt to stick to the flange and boiler shell and the bolts too which extend into the boiler become corroded and are therefore very difficult to remove. But by fastening the valve casing C' to the plate B the connecting bolts are protected from the corroding influence of the water in the boiler and a ground joint can be made between the casing C and the flange B which can easily be opened when it is desired to remove the casing. Neither the outer casing A' of the boiler nor the lagging need be cut or removed as would be necessary in removing the much larger flange B.

Having now described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination with a boiler of a plate
5 B secured around an opening therein, a valve
seat casing C' formed so as to be inserted
and removed through the opening in the plate
B and having a rim C⁴ adapted to rest on the
outside of said plate, said casing having also
10 a valve seat C² lying inside the edge of the
opening in plate B, and a check valve c
adapted to seat itself on seat C² and when so
seated to pass through the opening in plate B
with the casing C'.
- 15 2. The combination with a boiler of a plate
B secured around an opening therein, a valve
seat casing C' formed so as to be inserted
and removed through the opening in the plate
B and having a rim C⁴ adapted to rest on the
20 outside of said plate, said casing having also
a substantially horizontal valve seat C² lying
inside the edge of the opening in plate B, and
a check valve c adapted to seat itself on seat
C² and when so seated to pass through the
25 opening in plate B with the casing C'.
3. The combination with a boiler of a plate
B secured around an opening therein and

having a finger b² extending inside the boiler
to serve as a valve stop, a valve seat casing
C' formed so as to be inserted and removed 30
through the opening in the plate B and having
a rim C⁴ adapted to rest on the outside of said
plate, said casing having also a valve seat C²
lying inside the edge of the opening in plate
B, and a check valve c adapted to seat itself 35
on seat C² and when so seated to pass through
the opening on plate B with the casing C'.

4. The combination with a boiler of a plate
B secured around an opening therein, a valve
seat casing C' formed so as to be inserted 40
and removed through the opening in the plate
B and having a rim C⁴ adapted to rest on the
outside of said plate, said casing having also
a valve seat C² lying inside the edge of the
opening in plate B, a check valve c adapted 45
to seat itself on seat C² and when so seated to
pass through the opening in plate B with the
casing C' and a boiler cover extending over
the edges of the plate B and to or nearly to
the edges of the flange C⁴.

WILLIAM WRIGHT.

Witnesses:

FRANK S. EVANS,
WM. S. HUKILL.