

(No Model.)

H. TABOR.

CYLINDER HEAD FOR STEAM ENGINES.

No. 303,070.

Patented Aug. 5, 1884.

Fig. 1.

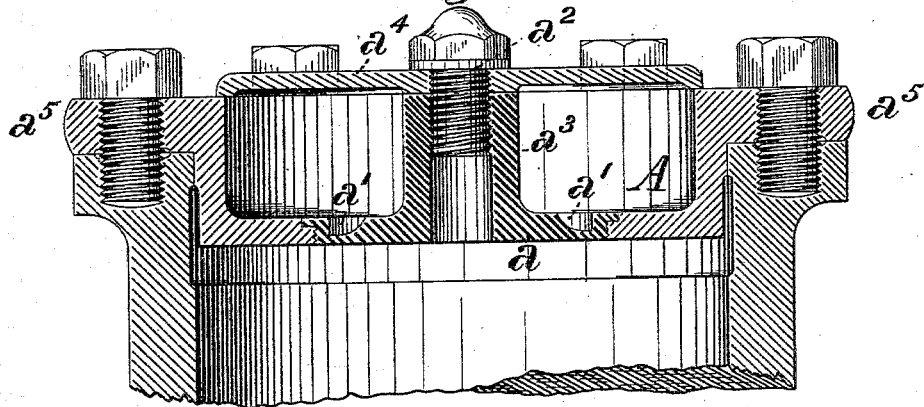
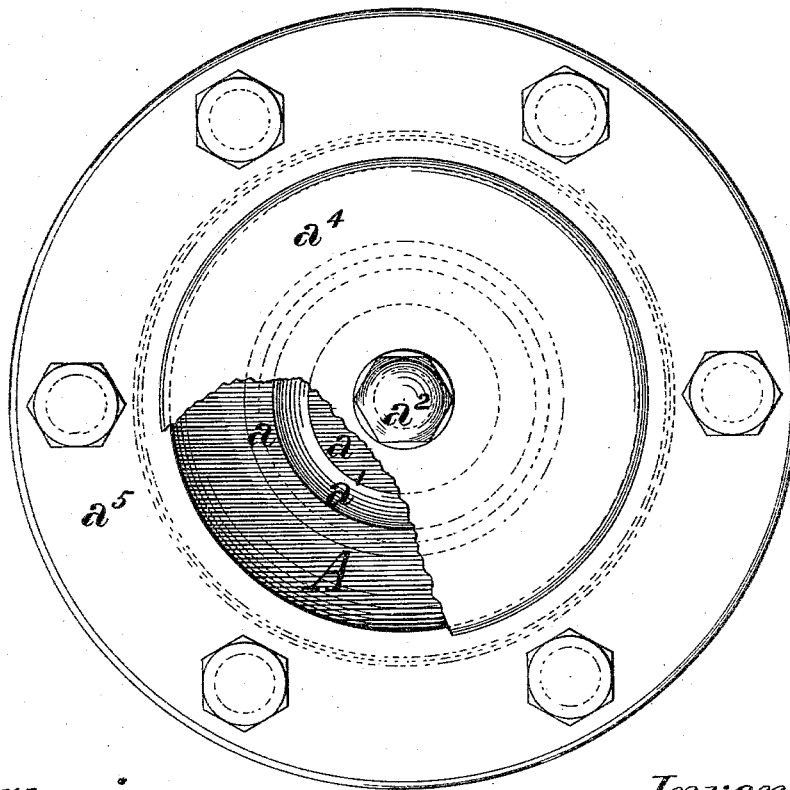


Fig. 2.



Witnesses:

J. Snowden Bell.
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UNITED STATES PATENT OFFICE.

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CYLINDER-HEAD FOR STEAM-ENGINES.

SPECIFICATION forming part of Letters Patent No. 303,070, dated August 5, 1884.

Application filed January 23, 1884. (No model.)

To all whom it may concern:

Be it known that I, HARRIS TABOR, a citizen of the United States, residing at Allegheny, county of Allegheny, State of Pennsylvania, have invented or discovered a new and useful Improvement in Cylinder-Heads for Steam-Engines; and I do hereby declare the following to be a full, clear, concise, and exact description thereof, reference being had to the accompanying drawings, making a part of this specification, in which—like letters indicating like parts—

Figure 1 is a central transverse section through a cylinder-head embodying my invention, and Fig. 2 a plan or top view of the same.

The object of my invention is to enable the relief of over-pressure induced in the cylinder of a steam or other engine by an accumulation of water therein to be effected without substantial damage to the cylinder or other members of the engine; and to this end my improvement consists in the combination, with a cylinder-head, of a relief-plate, an outer casing, and a connecting-bolt, as hereinafter more fully set forth.

In the operation of steam-engines accidents of more or less serious character are frequently occasioned through the neglect of the engineer to clear the cylinder of water which has accumulated by the condensation of steam therein and in the steam and exhaust pipes, or which has been carried over with the steam by priming, or by reason of the water-level in the boiler being unduly high. In addition to the damage which the engine itself sustains, serious loss often results from the stoppage of the machinery which it operates, and it is consequently desirable not only to exercise all possible effort and precautions for the prevention of accidents of the character referred to, but also to reduce, as far as may be, their injurious effect where preventive measures have been neglected or proven insufficient.

My invention is designed to comply with the requirement last stated by providing a member whose capacity of resistance, while

sufficient to sustain the maximum pressure which may be normally and safely exerted in the cylinder, is so limited relatively to that of other members subject to equal strain as to insure its fracture before the attainment of a sufficiently high degree of pressure to effect damage to other parts, and which, when broken, can be quickly and cheaply replaced.

To carry out my invention, I provide a cylinder-head, A, having a relief-plate, *a*, driven or screwed into its body against a shoulder therein, by which it is prevented from being forced outwardly by internal pressure, and form in the plate *a* a groove or recess, *a'*, the depth of which is such as to reduce the strength of the relief-plate to such degree as shall be proper to sustain a determined pressure greater than the maximum working-pressure under which the engine is designed to operate, and less than that which would be sufficient to cause damage to other parts in the event of breakage. The relief-plate will consequently remain intact so long as the normal working-pressure, or any safe addition thereto, is not exceeded; but upon the exertion of internal pressure in excess of the limit of resistance which it is constructed to afford it will fracture through the groove *a'*, and relieve such excess of pressure without injurious effect other than causing a brief stoppage of the engine for the insertion of a new plate. The relief-plate is connected by a bolt, *a²*, engaging a thread in a central hub or boss, *a³*, on its outer side, to an outer plate, *a⁴*, which rests on the top of the flange *a⁵* of the cylinder-head. The flange and body of the head being located in different planes, a cylindrical space is formed within the head, on its outer side, for which the outer plate serves as a cap or cover. The outer plate, *a⁵*, serves to jacket the head, as is desirable, as well as to present a neat external finish.

I claim herein as my invention—

1. The combination, substantially as set forth, of a cylinder-head and a relief-plate the strength of which is less than that of the head.
2. The combination, substantially as set

forth, of a cylinder-head and a relief-plate having its transverse section reduced by a groove or recess.

3. The combination, substantially as set forth, of a cylinder-head, a grooved or recessed relief-plate secured against a shoulder therein and having an outwardly-projecting hub or boss, an outer plate bearing on the

flange of the head, and a bolt connecting said outer plate with the hub of the relief-plate. 10

In testimony whereof I have hereunto set my hand.

HARRIS TABOR.

Witnesses:

J. SNOWDEN BELL,
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