G. E. BAILIE.

SAFETY POCKET CYLINDER HEAD.

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1,182,445.

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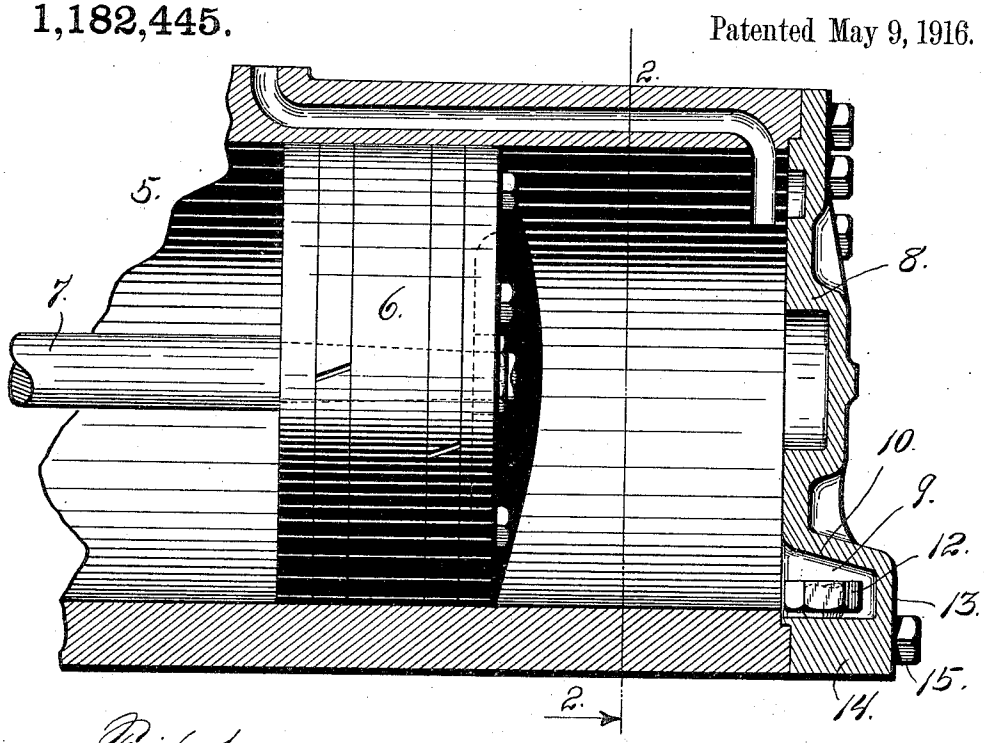


Fig. 1.

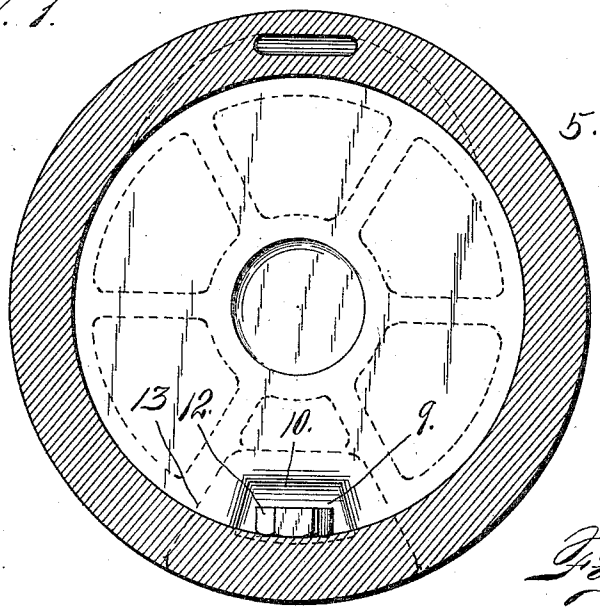


Fig. 2.

Witnesses

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SAFETY-POCKET CYLINDER-HEAD.

1,182,445. Specification of Letters Patent. Patented May 9, 1916.

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To all whom it may concern:

Be it known that I, GEORGE E. BAILIE, a citizen of the United States, residing in the city and county of Denver and State of Colorado, have invented certain new and useful Improvements in Safety-Pocket Cylinder-Heads; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the characters of reference marked thereon, which form a part of this specification.

My invention relates to cylinder heads for engines, being more especially adapted for use in connection with the cylinder heads of locomotives in which the cylinders occupy a horizontal or inclined position.

The object of the invention is to avoid injury to the cylinders or pistons, or both, by reason of some hard object as a nut or bolt head getting in between the piston and the cylinder head, whereby in the effort to complete the piston's stroke, injury is done either to the cylinder or piston. This difficulty may result in breaking the cylinder head or in bending the piston stem.

It very frequently happens that one of the nuts employed in securing the members of the piston together, gets loose and drops down between the forward extremity of the piston and the head of the cylinder. As these pistons approach very closely to the head, normally there is not space or clearance enough to make room for an object of this size, consequently, some part of the construction must be injured. Hence, the object of my improvement is to overcome this difficulty and to this end, I form a pocket in the cylinder head of such size as to make room for a nut or other object, in case the same should drop down between the forward extremity of the piston and the head, as heretofore explained. This pocket is formed in the lowermost part of the cylinder head, the latter being reinforced sufficiently to make room for a pocket of the necessary size. By virtue of this construction and arrangement, if a nut or other object becomes loose and drops between the piston and the cylinder head, it will be shoved into the said pocket and no injury will result to any part of the construction.

Having briefly outlined my improvement, I will proceed to describe the same in detail, reference being made to the accompanying drawing, in which is illustrated an embodiment thereof.

In this drawing,—Figure 1 is a fragmentary sectional view of a cylinder equipped with my improvement, the piston being shown in elevation. Fig. 2 is a cross section taken on the line 2—2, Fig. 1, looking toward the right.

The same reference characters indicate the same parts in all the views.

Let the numeral 5 designate the cylinder considered in its entirety; 6 the piston head, and 7 the stem of the piston. The head 8 of the cylinder is provided with a pocket 9 formed in the lowest portion of the head and communicating with the piston chamber. The rear extremity of this pocket is preferably larger than its forward extremity, whereby the upper wall 10 of the pocket is downwardly inclined from its inner extremity, the wall on opposite sides being correspondingly inclined. This special construction facilitates the entrance of the object, as a nut 12, into the pocket as the piston moves forwardly toward the head. This pocket 9 necessitates the reinforcing of the cylinder head as shown at 13, in order to make it practicable to form a pocket of the necessary size for the purpose. Again, in order that the strength of the cylinder head may not be diminished by the formation of the relatively large cavity or pocket 9 therein, the portion 14 of the cylinder head below the pocket is of the same length as the longitudinal depth of the pocket, plus the thickness of its forward wall. Hence, the bolts 14 which are employed to secure the cylinder head in place, must be long enough to pass through the greater thickness of the head where the pocket is located. In all other respects, the cylinder remains unchanged. It will therefore be noted that my improvement is exceedingly simple and will involve practically no extra expense in the construction of cylinder heads after the proper pattern has been obtained.

The pocket, as heretofore intimated, should be formed in the lowest part of the head, since any part, as a nut or bolt head which may become loose between the piston and the cylinder head, will assume the lowermost position, and consequently, will be

in alinement with the pocket and will naturally travel thereinto, under the influence of the movement of the piston head, in the regular performance of the latter's function.

While only one head of the cylinder, namely, the forward head, has been illustrated in the drawing, it must be understood that the rear head should also be equipped with a pocket 9, since it may be necessary to utilize such a pocket in the event that an article, as a nut or bolt, may be accidently left in the cylinder at the time the latter is constructed. In this event, a similar pocket in the rear head would prevent accident, since the article would be moved, during the rearward stroke of the piston, into the said pocket.

Having thus described my invention, what I claim is,—

1. A cylinder, one of whose heads is provided with a pocket formed in its lowermost portion only and communicating with the body of the chamber.

2. A cylinder, one of whose heads is provided with a pocket in its lowermost portion only and extending beyond the body of the cylinder and communicating with the chamber of the latter.

3. A cylinder, one of whose heads is provided with a pocket in its lowermost portion only and extending entirely beyond the body of the cylinder and communicating with the chamber of the latter, the said pocket being largest at its inner extremity.

4. A cylinder, one of whose heads is provided with a pocket in its lowermost portion only and extending entirely beyond the body of the cylinder and communicating with the chamber of the latter, the head being reinforced in order to give sufficient volume to the pocket, the lower part of the head where it joins the cylinder below the pocket having a reinforced segment adapted to receive the fastening devices, the outer front wall of this segment being flush with the adjacent corresponding wall of the pocket.

In testimony whereof I affix my signature in presence of two witnesses.

GEORGE E. BAILIE.

Witnesses:
MAZE KIRBY,
A. EBERT O'BRIEN.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."