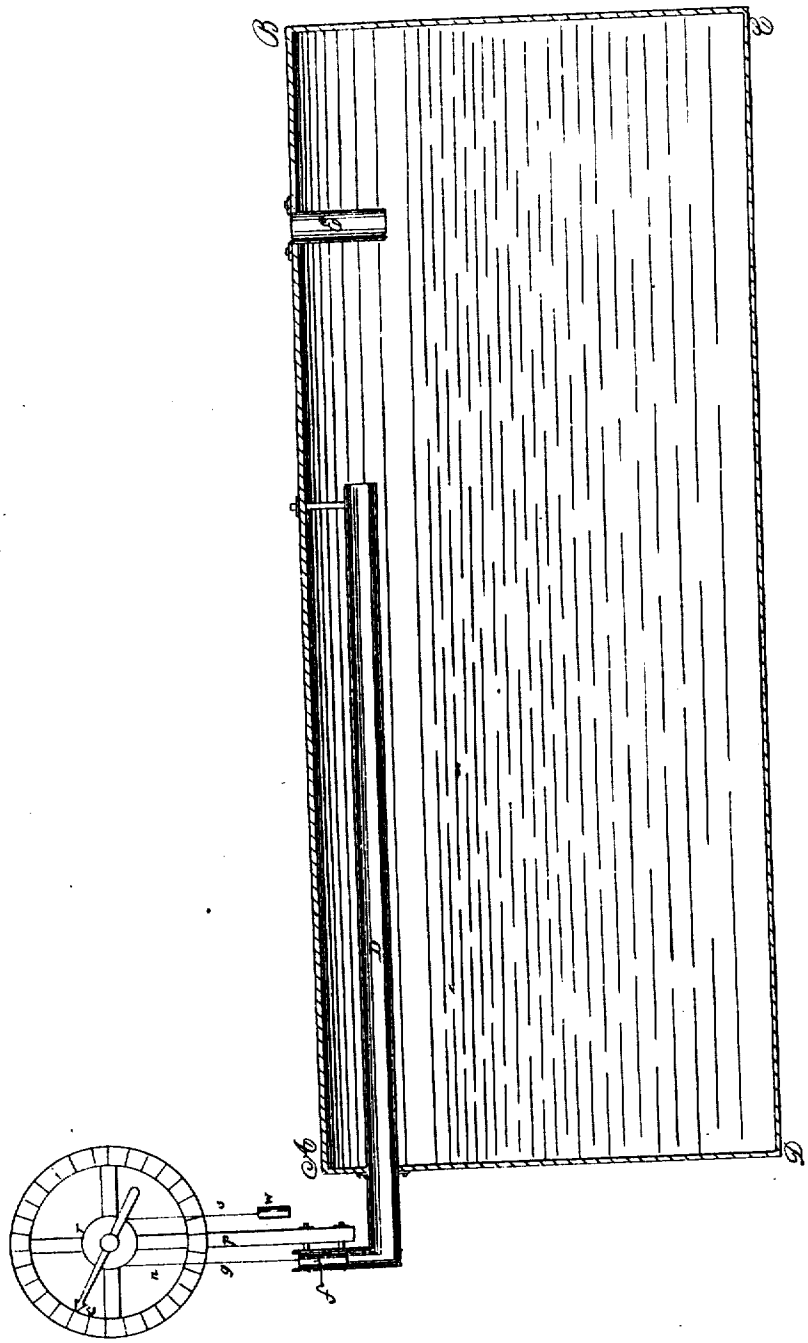
6157½X

A. B. Quimby.

Steam Safety Valve.

Patented Oct. 1, 1830.



AM. PHOTO-LITHO. CO. N.Y. (OSBORNE'S PROCESS)

A. B. Dumby

Letters Patent

To which is prefixed a Specification and making part of the same containing a description in the words of the said A. B. Dumby himself of the improvement in the mode of preventing explosions in the boilers of Steam Engines

To all to whom these Presents may concern Be it known that I A. B. Dumby have invented a mode of preventing explosions in the Boilers of Steam Engines by the application of the expansive force of mercury oil or other suitable fluid substance not only by indicating the temperature of the contained steam but also by opening a valve for its escape or to sound an alarm and I do declare that the following is a full & exact description of the same. Within the boiler and near its upper part where it would be surrounded by steam I place a tube or reservoir of iron or other suitable material in which is contained the mercury or other fluid or suitable substance intended to operate by its expansion and descending I prefer to any other article. This tube or reservoir may be of various forms but the following I illustrate the usual common one viz. A iron tube of twenty inches in length and of such a diameter within as to hold long ways endwise with the Boiler. It is placed horizontally, one end of this tube is closed perfectly the other is open & screwed internally to receive a screw plug which is made to pass out through the top of the Boiler. the Boiler in this particular part being enlarged for the purpose to about one fourth of an inch in diameter. A tube of this size will contain about 18 pounds of mercury which from the difference of the expansion between oil and iron will when the reservoir is filled rise in the smaller tube to the height of about 1/5 of an inch with an increase of temperature equal to some degree of Fahrenheits scale. This arrangement is given for the purpose of explification but different sizes will be found necessary according to circumstances. In the vertical tube I place a wire which is connected to the bell or alarm and the plug in the top of the boiler is made to rise by the expansion of the

mercury. Sometimes I intend to allow this simply to float upon the mercury, permitting it to slide easily within the tube, but in general I design to surround it with a suitable packing in the manner of ordinary pistons. From the top of it is to be extended a rod or stem having upon it a toothed rack, a chain or other contrivance, which shall give motion to an index and indicate the temperature of the mercury and consequently that of the steam.

When the piston or plunger rises to a certain height, resulting from the highest temperature which it is thought safe for the steam to acquire, the head of it is to be made to press against a lever or other suitable contrivance which by being raised shall open a valve and let off the steam. The arrangement of this part will admit of an infinite number of variations, one of which is exhibited in the drawing deposited in the Patent Office. When the steam is let off, it may be either in large or in small quantities as may be preferred. But it is my design in general to suffer it to escape only in such quantity as being conducted into a trumpet formed tube shall serve to give an alarm that the proper precautions may be immediately taken by the Engineer.

As it is believed that an explosion never takes place until the temperature of the steam is greater than it ought to be, whether the quantity of water in the Boiler be great or small it is not thought necessary to accompany this invention with any other apparatus for showing the height of the water. The object in view is to obtain that information which shall be the means of guarding against an explosion whether the danger may arise from heating the water too highly or from what has been called surcharged steam which is produced when the water is too low and consequently the steam is itself exposed to the direct heating effect of the fire.

What I claim as my invention is my mode of the application of the expansive force of mercury, also [illegible] lever to communicate motion to an index [illegible] the temperature of the steam [illegible]

to [illegible] which shall allow the steam to escape and thereby reduce within the temperature it tends to produce danger, and thus obviate whether the same be done by the arrangement which is herein specified or by any other dependent upon the same principles,

Witness
Thos. P. Jones
And. W. Jackson

Aaron Baldwin Quimby

884 words

(Granted Octbr 1. 1830)