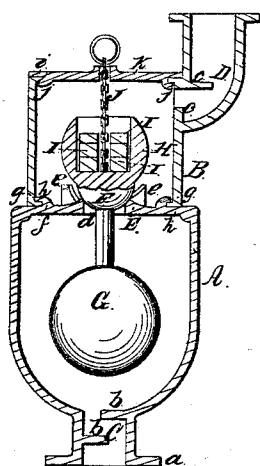
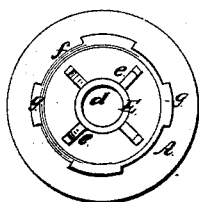


*J. G. Harrison,*  
*Steam Safety Valve.*  
*N<sup>o</sup> 67,538.      Patented Aug. 6, 1867.*

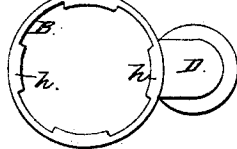
*Fig. 2.*



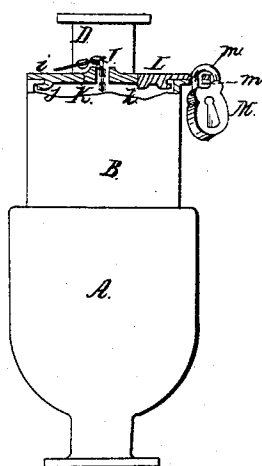
*Fig. 3.*



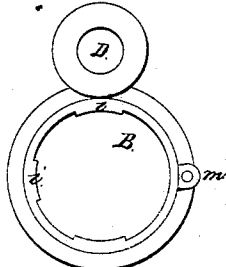
*Fig. 4.*



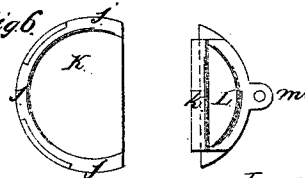
*Fig. 1.*



*Fig. 5.*



*Fig. 6.*



*Witnesses:*

*McComb*  
*Ch Reed*

*Inventor:*

*Joseph G. Harrison*

# United States Patent Office.

JOSEPH G. HARRISON, OF NEW YORK, N. Y.

*Letters Patent No. 67,538, dated August 6, 1867.*

## IMPROVEMENT IN STEAM SAFETY-VALVES.

The Schedule referred to in these Letters Patent and making part of the same.

### TO ALL WHOM IT MAY CONCERN:

Be it known that I, JOSEPH G. HARRISON, of the city, county, and State of New York, have invented a certain new and useful Improvement in Lock-Up Safety-Valves, of which the following is a full, clear, and exact description, reference being had to the accompanying drawing, forming part of this specification, and in which—

Figure 1 represents an elevation of a lock-up safety-valve constructed according to my improvement, a portion thereof being shown in section.

Figure 2, a vertical section of the same, in a plane at right angles to fig. 1.

Figure 3, a plan of the valve-seat and chamber or case on which the same is arranged.

Figure 4, an inverted plan of an upper case or chamber.

Figure 5, a top view or plan of such upper case or chamber, with its lids or covers removed, and

Figure 6 an inverted plan of said lids or covers.

Similar letters of reference indicate corresponding parts.

The nature of my invention consists, firstly, in combination with a close or lock-up case of a ball or globe-faced valve carrying a pendulum or suspension-weight; also, in such connection, a weight or weights above the valve; likewise in a novel construction, attachment, and mode of closing or securing an outer lock-up chamber to the valve. By this my improvement a freer, easier, and more certain or steady action is secured to the valve, which will be found especially advantageous in its application to the boilers of sea-going vessels and locomotives, or wherever the position of the valve is liable to be changed from a perpendicular to one more or less inclined to the horizon, said improvement also affording great facility for attaching and detaching a lock-up chamber to the valve with perfect security of the same when locked, and, on being unlocked, admitting of easy access for adjustment of the weights or examination, and so forth, of the valve.

Referring to the accompanying drawing, the box or structure containing the valve is here represented as made up of two separate chambers or cases, A B, the one mounted upon the other in a locking and detachable manner, which construction is preferred for reasons hereinafter given. The bottom case, A, is secured by a lower flange, *a*, and permanent joint to the boiler. The entrance C to this chamber, as also the escape or outlet D to the upper chamber, may be provided with suitable partitions or projections, *b c*, arranged to intercept or prevent any tampering with the valve, either from the interior or exterior of the boiler. E is the valve-seat or socket, arranged in the top of the lower chamber, and F the valve controlling a passage, *d*, which establishes the communication between the upper and lower chambers A B. This valve, F, which may be directed to its seat in falling, by guides *e*, is of a globe-faced construction, and has pendent from it, in a rigid manner, what may be termed a pendulum or suspension-weight, G, which secures to the valve a close fit in deviations of it from a line perpendicular to the horizon, and free action, under all circumstances, with, by its frequent oscillation when closed, perfect security against becoming stuck. To enlarge or further utilize this feature, however, it is desirable also to load the valve above, say, by a weight or upper box, H, to the valve containing weights, I, that not only serve to give increased steadiness and freedom of action to the valve, but which, on opening the case, may be inserted or removed at pleasure to adjust the valve to lift under any desired or given pressure, the pendulum-weight G being of itself materially less than what is necessary to control the maximum pressure to which the boiler should be subjected.

Not only in sea-going vessels, where the valve is exposed to a rolling motion, will this ball and socket pendulum-weighted valve be relieved of sticking or binding when it should lift, but wherever there is any jar or vibration, and few boilers are free from such, the valve will be kept loose in its seat, and ever ready for action whenever the pressure in the boiler exceeds the load on the valve, and thus is perfect safety secured.

While a different construction of lock-up case may be adopted, I prefer to make the two chambers A B separate structures, as hereinbefore referred to, and so connect them that the upper one, B, may be attached with facility and in close contact to the lower one, and, when the case is unlocked, so that it may readily be detached; also may be unopened to adjust the valve or weights, I, without removal of the upper case.

The advantages acquired by such a construction and attachment of the upper chamber B, as regards the facility it affords for erection, repair, adjustment, or examination of the valve generally, are self-evident. The

means I employ to carry into effect such a construction of the valve-box or case are as follows: On the top of the lower case A is a rim-projection, *f*, having inclined flange-sections, *g*, and the upper case B, provided at its bottom with similar but reversely-inclined flange-sections, *h*, which, entering between the inclined or flange-sections, *g*, are made, on suitably turning the upper case B, to lock under the section *g*, and so hold the two cases together, a reverse turning of the upper case serving to unlock the attachment, which, however, may be secured against or prevented, when the lid of the case is locked, by any suitable means, say by a pin made to pass through any two or more of the flange-sections *g h*. J is the lifting-chain, connected with the valve for raising or working the latter by hand, said chain passing through the lid of the upper case, and being operated direct or otherwise, as desired. This lid is made up of sections, K L, the one, K, at least, of which should be secured in a manner similar to that adopted for holding the two cases together, by forming the top of such upper case, B, with inclined flanged sections, *i*, and under surface of the lid portion K with reversely-inclined flange-sections, *j*, to establish a lock, while the remaining lid portion L should have a lip or strip, *k*, made to fit under the lid-section K, and so that, when the portion L is secured by a padlock, M, passed through ears *m m*, projecting from the upper case and lid portion L, the interior of the valve-case is inaccessible, but on unlocking the case and removing the padlock, may be got at for ordinary purpose without removing the entire lid, by simply lifting off the section L of the same.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The combination, with a lock-up valve-box or case, of a ball or globe-faced valve, F, working in a suitable socket or seat, and carrying a pendulum-weight, G, for operation substantially as and for the purpose herein set forth.
2. The combination of the removable weights I with the globe-shaped valve F and pendulum-weight G, substantially as and for the purpose specified.

JOSEPH G. HARRISON.

Witnesses:

J. W. COOMBS,

G. W. REED.