

(No Model.)

J. C. TAFT.

EXPANSIBLE VESSEL FOR STEAM TRAPS.

No. 353,176.

Patented Nov. 23, 1886.

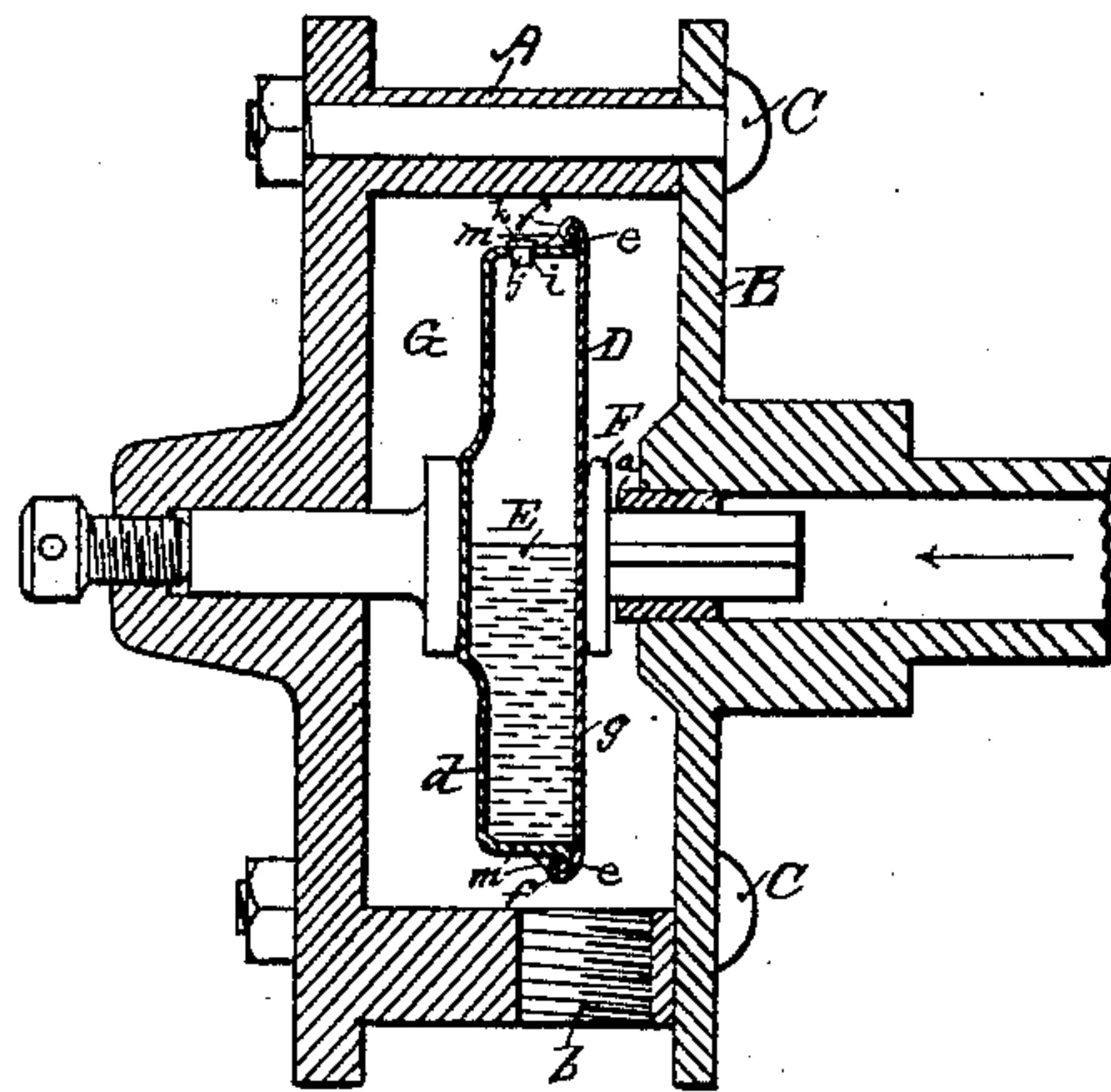


Fig. 1.

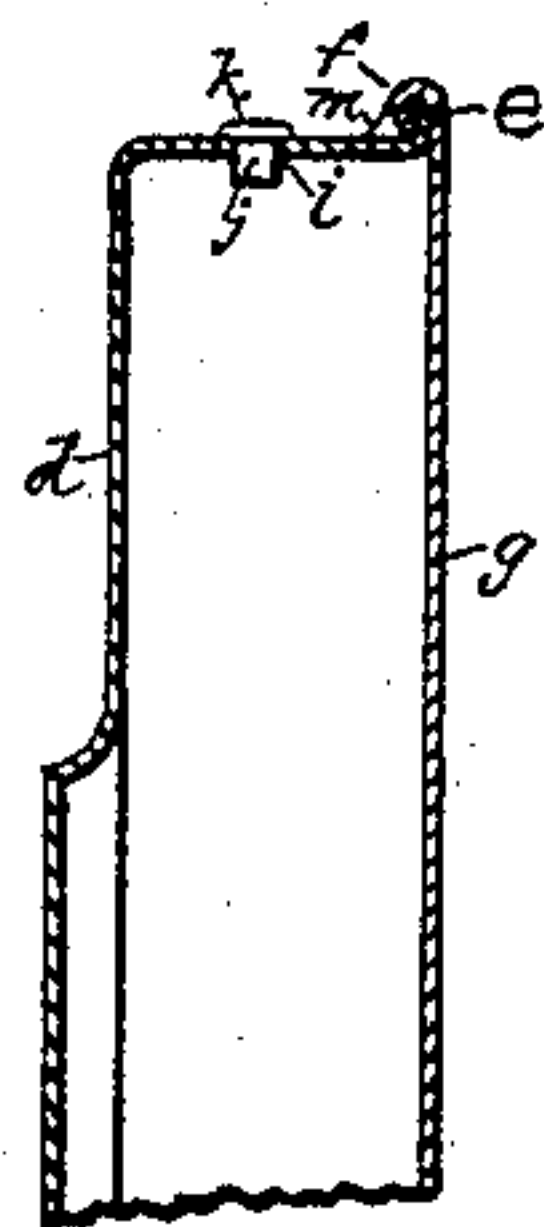


Fig. 2.

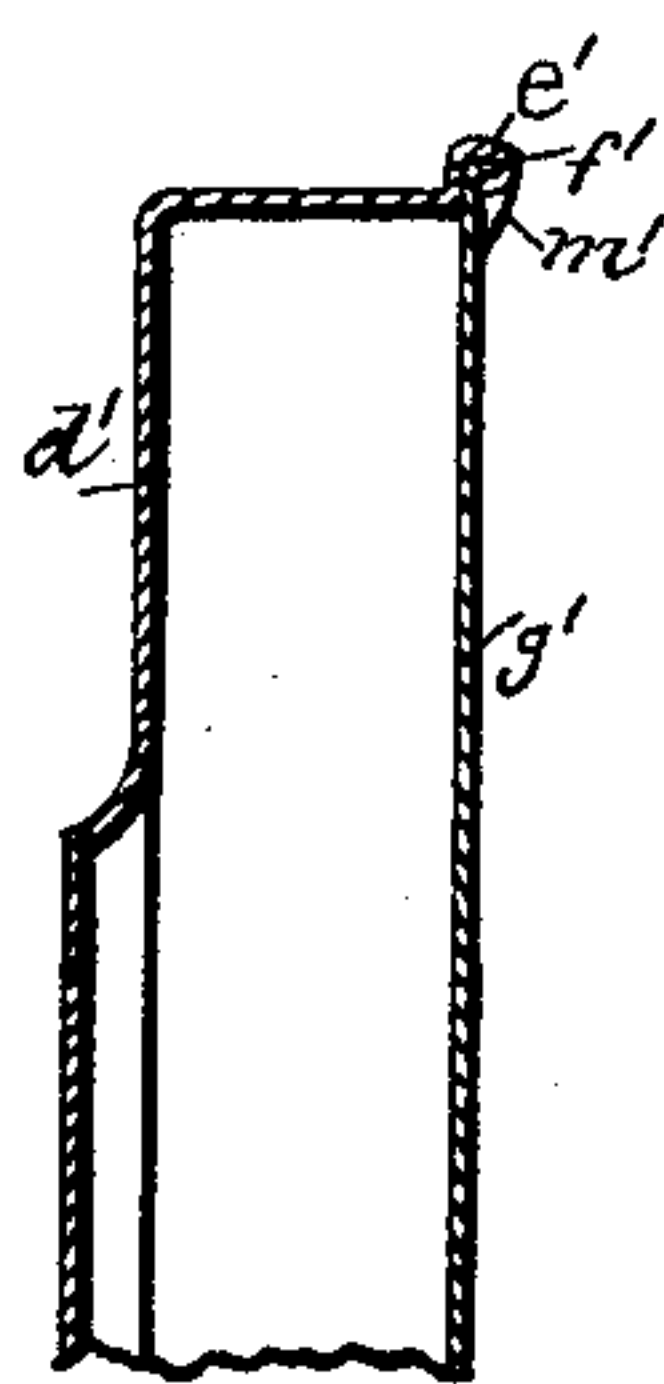


Fig. 3.

Witnesses.

Mark A. Heath
James W. Beaman

Inventor.

Jerome C. Taft.
per S. Scholfield,
attorney.

UNITED STATES PATENT OFFICE.

JEROME C. TAFT, OF PROVIDENCE, R. I., ASSIGNOR TO JETHRO M. HAWES, EDWARD C. HAWES, AND ROWLAND G. HAWES, ALL OF SAME PLACE.

EXPANSIBLE VESSEL FOR STEAM-TRAPS.

SPECIFICATION forming part of Letters Patent No. 353,176, dated November 23, 1886.

Application filed August 21, 1886. Serial No. 211,563. (No model.)

To all whom it may concern:

Be it known that I, JEROME C. TAFT, of Providence, in the State of Rhode Island, have invented a new and useful Improvement in
5 Expansible Vessels for Steam-Traps, of which the following is a specification.

My invention relates to an improvement in that class of steam-traps in which an expansible vessel is employed for closing the steam-
10 inlet opening of the trap; and it consists in the improved construction of the expansible vessel, whereby the same is made to have greater durability and sensitiveness than heretofore.

15 Figure 1 is an axial section of a steam-trap provided with my improved expansible vessel. Fig. 2 is an enlarged detail section of the expansible vessel. Fig. 3 is a similar detail section showing the ordinary form of construction.
20 tion.

In the accompanying drawings, A is the outer case or shell, having a removable head, B, secured to the opposite portion of the case by means of the bolts C. Within the closed
25 chamber G of the trap is placed the expansible vessel D, which is partially filled with a readily-evaporated fluid, E. The expansion of the fluid E within the expansible vessel D causes a bulging of the opposite sides of the same, thus closing the valve F to its seat *a*,
30 and preventing the escape of steam from the steam-pipes until the gradual condensation of the steam to the form of water has cooled the contained vapor in the expansible vessel sufficiently to cause the valve to be raised from its
35 seat by the overcoming pressure of the steam in the pipes, so as to allow the water of condensation to escape under the valve and to pass off through the outlet-orifice *b* of the trap, the operation of opening and closing the valve at the inlet-opening being repeated as often as required, to allow the water of condensation to escape from the steam-pipes to
40 which the trap is attached.

45 The expansible vessel D is made in two parts, of hardened sheet metal, the cup-formed portion *d* being provided with an outwardly and backwardly turned flange, *e*, over which is turned the edge *f* of the disk portion *g*, after
50 which the turned seam is filled with solder *m*,

thus leaving the disk portion *g* free to expand without liability of loosening the solder at the joint. The expansible vessel D is to be partially filled with the readily-evaporated fluid E through the aperture *i*, which, after filling, 55 is closed by means of the metal plug *j*, having a head, *k*, which is soldered to the cylindrical rim of the cup formed portion *d* of the expansible vessel, thus securing a perfectly-tight joint. 60

The method heretofore employed for constructing the expansible vessel is shown in Fig. 3, in which the edge *e'* of the cup-formed portion *d'* is turned over the flanged edge *f'* of the disk portion *g'*, and in this case the stock 65 employed must be comparatively soft, and even with the greatest possible precaution in the manufacture a large proportion of such vessels are cracked at their turned edges, which are rendered extremely hard in the process of 70 spinning or forming, and when so cracked or broken they are rendered worthless. An increased thickness of stock is also rendered necessary in manufacturing such expansible 75 vessels, which materially diminishes the sensitiveness of the same. The solder *m'* also extends down the face of the disk portion *g'* on the side of the escaping water and steam, and is therefore subject to a wearing or cutting 80 action, and the solder so placed causes extra rigidity in the disk portion *g'* of the expansible vessel.

When it is understood that in making a proper expansible vessel for the purpose of operating the valve of a steam-trap, it is essen- 85 tial that the sheet-metal stock of which the vessel is constructed should be held at its proper spring-temper, which would be destroyed by any process of annealing, and that such expansible vessels, as heretofore con- 90 structed, have been necessarily made of comparatively soft and thick stock, so that their durability and efficiency were on that account greatly impaired.

The advantages of my improved construction will be readily apparent. 95

It will be seen that the cup-formed portion, which must be made by spinning the sheet metal, will necessarily have a hardened edge, which is very liable to crack when turned in- 100

ward by the necessary spinning process, where-
as such edge can be turned outwardly without
danger of disintegrating the metal. The cup-
formed portion *d* may therefore be formed of
5 much harder and thinner stock than has been
employed in practice heretofore, and the disk
portion *g*, which simply has its edge turned
over the flange *e* of the cup portion, without
being previously spun into cylindrical or other
10 shape, may also be made of very hard stock,
and also of less thickness, and the expansible
vessel so constructed will have great durabil-
ity and extreme sensitiveness to changes of
internal pressure. The solder *m* of the joint,
15 being at the back of the flange *e*, will not affect
the sensitiveness of the movement of the disk

portion *g*, which is left free to expand and con-
tract through its extreme limit.

I claim as my invention—

An expansible vessel made of hardened 20
sheet metal having a cup-formed portion pro-
vided with an outwardly and backwardly
turned flange, and a disk portion having its
edge turned inward over the edge of the out-
wardly and backwardly turned flange of the 25
cup-formed portion, and soldered at the joint
so formed, substantially as described.

JEROME C. TAFT.

Witnesses:

SOCRATES SCHOLFIELD,
JOHN S. LYNCH.