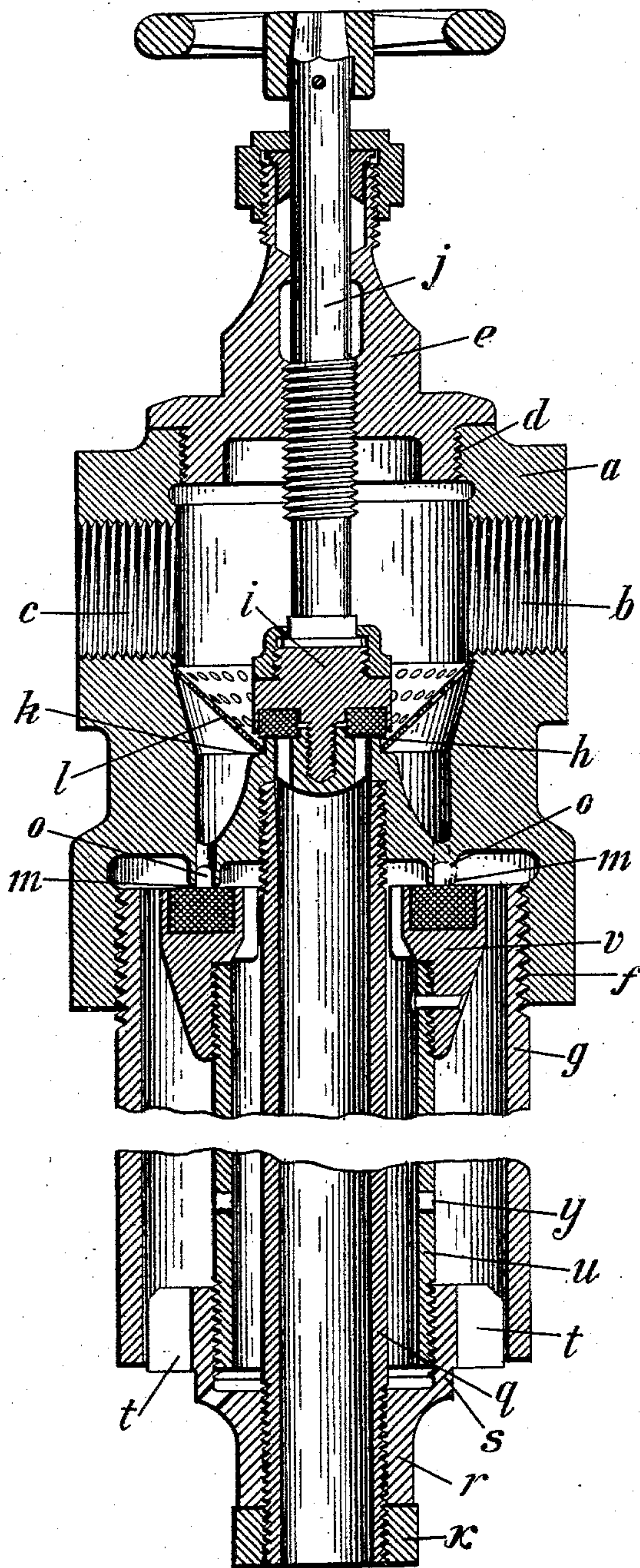


No. 757,694.

PATENTED APR. 19, 1904.

J. M. TOWNE.  
AUTOMATIC STEAM TRAP.  
APPLICATION FILED JUNE 12, 1902.

NO MODEL.



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# UNITED STATES PATENT OFFICE.

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## AUTOMATIC STEAM-TRAP.

SPECIFICATION forming part of Letters Patent No. 757,694, dated April 19, 1904.

Application filed June 12, 1902. Serial No. 111,317. (No model.)

*To all whom it may concern:*

Be it known that I, JOSEPH M. TOWNE, a citizen of the United States, residing at East Orange, Essex county, New Jersey, have invented certain new and useful Improvements in Automatic Steam-Traps, of which the following is a specification.

My invention relates to automatic steam-traps, and has for its object to produce an automatic trap for carrying off the water of condensation which would otherwise accumulate in a system of steam-pipes and at the same time while draining off the water of condensation to prevent the waste of steam.

In United States Letters Patent No. 477,855, dated June 28, 1892, is shown a steam-trap specially adapted for use in steam-heating systems of railroad-cars, in which the difference in the coefficients of expansion of the two different metals is relied upon to effect the draining off of the water of condensation as it accumulates. My present invention is an improvement upon such steam-trap and will be described with special reference to the accompanying drawing, which shows one form of steam-trap in which my invention is embodied, it being understood that this drawing is illustrative merely and shows but one of many forms in which my invention may be embodied.

The drawing shows a longitudinal section of the steam-trap, the tubes thereof being fore-shortened in order to save space, it being understood that the broken-away portion is of considerably greater length than is shown in the drawing.

In the drawing, *a* indicates the head-piece of the steam-trap, tapped laterally at *b* and *c* for the reception of suitable circulating or other fluid-conducting pipes of the steam system. The head is tapped at the top at *d* for the reception of a suitable gland *e* and at the bottom at *f* for the reception of a pipe or external casing *g*. The head is provided with a suitable valve-seat *h*, with which a blow-off valve *i*, carried by a stem *j* in the gland *e*, is adapted to cooperate. This valve-seat is likewise grooved at its circumference to form a shoulder *k* for the reception of a frusto-con-

ical strainer *l*. The head is also provided with a lower valve-seat *m*, apertured at suitable points of its periphery, as at *o o*. The metal constituting or supporting the valve-seats *h* and *m* is tapped for the reception of an extra-heavy wrought-iron pipe *q*. This wrought-iron pipe *q* has screwed thereon a frame *r*, having integral therewith a spider *s*, having lugs or arms *t* intervening between the annular body of the spider and the outer pipe or casing *g*. The body of the spider is tapped for the reception of a brass pipe *u*, upon the upper end of which is screwed a valve *v*, adapted to bear against the seat *m*. A suitable lock-nut *w* is provided for the purpose of locking the bushing *r* in place when the parts are originally adjusted, it being understood that when the metal of the trap is at the temperature which would be imparted to it by the presence of steam only in the chambered portion thereof communicating with the steam circulation the valve *v* will be held against its seat *m* with just sufficient force to adequately prevent the escape of steam, and when the accumulation of water occurs in the chamber above the valve sufficient to produce a lowering of the temperature the unequal expansion of the iron and brass tubes *q u* will cause the valve *v* to be held away from its seat sufficiently far to enable the water to be discharged over the valve *v* into the pipes *u* and *g* until when the steam begins to issue the temperature conditions will be restored and the valve *v* will be brought against its seat, preventing the escape of steam, pipe *u* being provided with holes or apertures *y* to permit the escape of water from the said pipe into the outer casing or tube *g*, from which it will be discharged into the atmosphere.

Having described one form of my invention and the mode of operation thereof, what I claim, and desire to secure by Letters Patent, is—

1. In an expansion-trap, in combination, a head provided with a valve-seat, a valve adapted to the said seat, an expansion member carrying the said valve, an external casing surrounding the said expansion member, a spider intervening between the external casing and the



expansion member and an adjustable supporting and locking means for supporting the expansible member in its adjusted position.

2. In an expansion-trap the combination of  
5 a chambered head divided by a partition having a valve-seat on each of the two faces thereof, a plurality of tubes, one within the other, constituting an expansion device, one tube carrying a valve cooperating with one seat  
10 and a manually-operated valve cooperating with the other seat and adapted to discharge steam through a portion of the space within the inner tube.

3. An expansion-trap, comprising in combination a supporting-head, a plurality of  
15 tubes constituting an expansion device projecting from said head and connected thereto, a valve carried by one of the said tubes, a valve-seat in the head adapted to said valve, another  
20 valve-seat in the said head, a hand-operated valve also in the said head, the valve-seat for said hand-operated valve permitting steam to escape from the trap through a space in the interior of the interior tube when the hand-  
25 operated valve is off its seat.

4. In an expansion-trap, the combination of a plurality of tubes, one within the other constituting an expansion device, an automatic valve connected with the expansion device, a  
30 valve-seat in the head and a hand-operated valve cooperating with the said valve-seat and adapted when operated to permit the discharge of steam through a space in the interior of the interior tube.

35 5. In an expansion-trap, the combination of

a head located entirely at one end of the trap, a plurality of tubes supported thereby, one located within the other to constitute an expansion device, the interior tube *q* being open to the atmosphere, a valve-seat in the head  
40 communicating with the tube *q*, an automatically-operated valve and a hand-operated valve cooperating with the seat communicating with tube *q* and adapted to permit the discharge of steam through the tube *q*, substantially as described.  
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6. In an expansion-trap, the combination of a chambered head divided by a partition having a valve-seat on each of the two faces thereof, an expansion-operated valve cooperating  
50 with one seat and a manually-operated valve cooperating with the other seat, an outer tube *u* and an inner tube *q* under the control of the manually-operated valve, whereby steam may be blown through the trap by the pipe *q* without coming in contact with the outer tube *u*.  
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7. In an expansion-trap, the combination of a head at one end of the trap having a valve-seat, a plurality of connected tubes supported from said head and constituting an expansion  
60 device and one of the said tubes carrying a suitable valve adapted to the valve-seat, a hand-operated valve in the head and means whereby steam may be blown through the trap out of contact with one of the tubes.

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Witnesses:

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