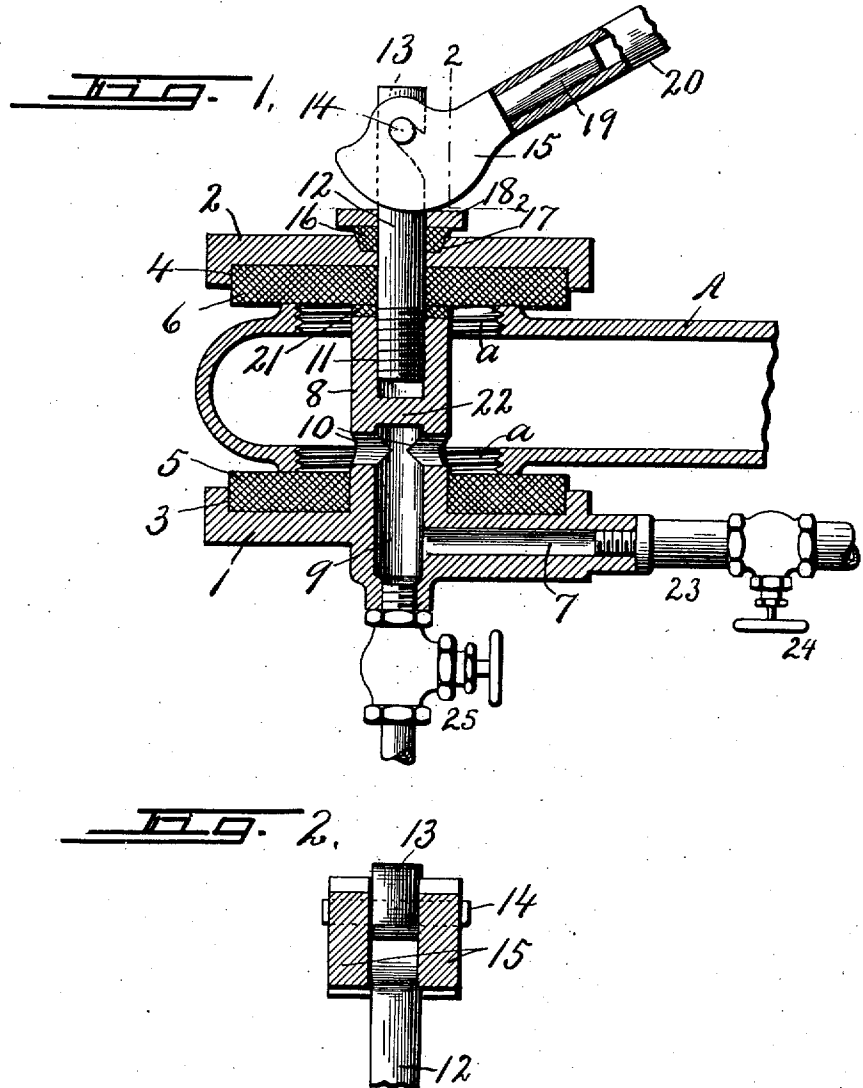


G. C. TALLMAN.

TESTING APPARATUS FOR HOLLOW CASTINGS.
APPLICATION FILED JULY 27, 1911.

1,017,704.

Patented Feb. 20, 1912.



Witnesses

E. J. Stambly
W. E. Chare

Inventor

G. C. Tallman

By Howard P. Duison
Attorney

UNITED STATES PATENT OFFICE.

GEORGE C. TALLMAN, OF SYRACUSE, NEW YORK.

TESTING APPARATUS FOR HOLLOW CASTINGS.

1,017,704.

Specification of Letters Patent.

Patented Feb. 20, 1912.

Application filed July 27, 1911. Serial No. 640,799.

To all whom it may concern:

Be it known that I, GEORGE C. TALLMAN, of Syracuse, in the county of Onondaga, in the State of New York, have invented new and useful Improvements in Testing Apparatus for Hollow Castings, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

This invention relates to certain improvements in testing apparatus for hollow castings, such as radiator sections, boiler sections, and similar articles having alined openings in the opposite sides thereof.

Hollow castings of this character are usually made as thin as possible within the limits of safety for lightness and economy in manufacture and as in all castings, there is more or less liability of the existence of blow holes, fine cracks and other imperfections which are invisible to the naked eye but which are made perceptible by the usual method of testing by subjecting the hollow article to liquid pressure from the inside to render such imperfections perceptible so that the casting may be repaired or broken up and returned to the junk.

The hollow castings, as for example, in radiator and boiler sections are preferably tested separately, and one of the primary objects of my present invention is to render this operation more expeditious and less laborious than has heretofore been practiced and thereby greatly increase the output for a given period of time. In other words I have sought to provide in a simple clamping device means for admitting the water under pressure to the interior of the article under test with additional means for forcing the clamping heads into contact with the opposite sides of the article by a single movement of the hand and to permit reasonable adjustment of the clamping heads relatively to each other to receive castings of different thicknesses.

Other objects and uses will be brought out in the following description.

In the drawings—Figure 1 is a sectional view, partly in elevation, of a testing apparatus embodying the various features of my invention, showing also a portion of a radiator section under test. Fig. 2 is a sectional view through the cam taken on line 2—2, Fig. 1, showing a portion of the draw rod in elevation.

This testing apparatus comprises a pair

of opposed coaxial clamping heads —1— and —2— of cast metal or other suitable material having their adjacent sides provided with recesses —3— and —4— for receiving and retaining suitable packing rings —5— and —6— of rubber or equivalent material of sufficient size or area to effectively cover the alined openings as —a— of the article as a radiator section —A— under test, the packings —5— and —6— serving to prevent leakage through the openings —a— during such test.

One of the sections as the section —1— is provided with an inlet passage —7— and a central inwardly projecting hub —8— having a central passage —9— communicating with the inlet passage —7— and one or more branch passages —10— leading from the passage —9— to the interior of the hollow casting —A— when the clamping heads are in operative position for closing the openings —a—.

The inner end of the hub —8— is provided with a threaded socket —11— for receiving the inner threaded end of a draw rod —12—. This draw rod —12— extends outwardly through alined openings in the clamping head —2— and its packing ring —6— and is provided at its outer end with a hook-shaped bearing —13— for interlocking engagement with suitable pins or hooks —14— of a cam or eccentric —15—.

As a further protection against leakage during the testing operation, I provide an additional packing member —16— of rubber or equivalent material which is seated in a recess —17— in the outer face of the clamping head —2—.

The recess —17— and packing member —16— are preferably tapered inwardly so that when pressure is brought to bear upon the packing member in a manner hereinafter described, the tapering sides of the recess —17— will force the packing inwardly against the sides of the draw rod —12— and thereby prevent any possibility of leakage at this joint.

The packing member —16— extends beyond the outer face of the clamping head —2— and forms a seat for a metal bearing plate —18— which is engaged by the eccentric or cam face of the cam —15—.

The cam —15— is adapted to be operated by hand and for this purpose is provided with a reduced extension —19— for receiving a tubular handle —20— of any desired

length according to the leverage required to firmly press the clamping heads against opposite faces of the casting.

The clamping head —2— and its packing 5 —6— are slidable or adjustable on the draw rod —12— and thereby permits the clamping heads to be drawn together relatively to each other against opposite sides of the hollow section —A— under test by simply 10 rocking the handle of the cam —15— downwardly in which position the cam will be retained while the operator inspects the casting for leakages.

As previously intimated, the draw rod 15 —1— constitutes an adjustable extension of the hub —8— for permitting the adjustment of the clamping heads relatively to each other to conform to different thicknesses of castings which it may be desired to 20 test, and in order to prevent the testing liquid from passing around the inner end of the hub —8— to the draw rod —6—, I preferably insert one or more auxiliary packing rings —21— between the inner face of the 25 packing —6— and adjacent end of the hub —8—.

Communication between the passage —9— and socket —11— is cut off by means of a partition —22—, thereby further preventing 30 the passage of the liquid to the joint between the draw bolt —12— and clamping head —2—.

The inlet —7— may be connected by a pipe —23— to any source of liquid or water 35 supply under pressure, the flow of the liquid to the testing apparatus being controlled by a suitable valve —24— and after the test is made, the testing liquid may be drawn off by opening an outlet valve —25— which is 40 normally closed during the testing operation.

After the test is made, the cam —15— may be detached from the draw rod —2— by simply tilting the handle upwardly sufficiently to allow the pins or studs —14— to 45 be withdrawn through the open side of the hook —13—, whereupon the clamping head —2— with its packing —6— and other parts carried thereby may be withdrawn from 50 the outer end of the draw rod —12— or the said draw rod may be unscrewed from the hub —8— and withdrawn together with the clamping head —2— and parts carried thereby, whereupon the radiator section may 55 be removed from the hub —8— and clamping head —1— and another hollow section placed thereon and reclamped in position for repeating the operation previously described.

In placing the section —A— in operative 60 position for testing, its apertured portion is allowed to rest against the packing section —5— of the head —1— with the hub —8— projecting through at least one of the 65 apertures —a—, whereupon the other clamp-

ing head —2— with its packing section —6— is placed against the opposite face of the section —a— and the draw rod —12— is then screwed down into the hub —8— until 70 the plate —18— is in proper position to receive the cam —15— when the latter is engaged with the hook-shaped extremity —13— with the handle rocked upwardly to bring the low point of the cam near the center of the draw rod.

If any further adjustment is required to 75 bring the cam in proper position for final tightening, the entire draw rod together with the cam may be rotated sufficiently to produce this result. In other words I have provided not only for the axial adjustment of 80 the draw rod independently of the clamping heads but have also provided the additional and more important final tightening adjustment by means of the cam which renders the operation of tightening the clamp- 85 ing heads upon the article to be tested more expeditious and less laborious than has heretofore been practiced.

What I claim is:

1. A testing apparatus for hollow castings 90 having alined openings in opposite sides, said testing apparatus comprising opposite clamping heads, connections between said heads having portions thereof adapted 95 to pass through the openings and including means for forcing the heads toward each other, one of the heads and adjacent portion of the connections having fluid passages therein leading from the exterior of 100 such head to a point in the exterior of the connections between said head for admitting a testing fluid to the interior of the casting.

2. A testing device for hollow castings 105 comprising opposed clamping heads, adjustable connections between the central portions of the heads including means for forcing the heads toward each other, one of the heads and adjacent portion of the connections having fluid passages therein leading 110 from the exterior of such head to a point in the exterior of the connections between the heads for admitting the testing fluid to the interior of the casting.

3. A testing device for hollow castings 115 comprising opposed clamping heads having packings on their inner faces, one head having an opening therethrough, connections between the central portions of the heads and extending through such opening, said 120 connections including a bearing member across the outer end of said opening, and means engaged with said bearing for drawing the heads toward each other, the opposite head and adjacent portion of the connections having fluid passages leading from 125 the exterior of such head to a point in the exterior of the adjacent portion of said connections between the heads.

4. A testing device for hollow castings 130

comprising opposed clamping heads having packings on their inner faces, one of said heads being provided with an inlet for the testing fluid and also provided with a central hub having outlet passages communicating with the inlet, said hub having an extension projecting through and beyond the opposite head, a bearing on said opposite head, and a cam pivoted to the outer end of the extension and engaged with said bearing, and means for rocking the cam.

5. In a testing device for hollow castings, a clamping head having an inlet for the testing of the fluid and provided with an inwardly projecting hub having an outlet communicating with the inlet for permitting the discharge of the testing fluid into an article under test, an additional clamping head opposed to the first named clamping head and provided with an opening therethrough, an extension on the hub projecting through said opening and beyond the outer face of the additional head, a bearing on said additional head, and a cam lever connected to the outer end of said extension and having its cam face engaged with said bearing.

6. In a testing device for hollow castings, a clamping head having an inlet for the testing of the fluid and provided with an inwardly projecting hub having an outlet communicating with the inlet for permitting the discharge of the testing fluid into an article under test, an additional clamping

head opposed to the first named clamping head and provided with an opening there- 35 through, an extension on the hub projecting through said opening and beyond the outer face of the additional head, a bearing on said additional head, a cam lever connected to the outer end of said extension and hav- 40 ing its cam face engaged with said bearing, said clamping members having their inner sides provided with recesses, and packing members seated in said recesses.

7. A testing device for hollow castings 45 comprising opposed clamping heads having recesses in their inner sides and packings seated in said recesses, one of said heads having an inlet for the testing fluid, and a central hub provided with an outlet commu- 50 nicating with the inlet for permitting the passage of the testing fluid to the interior of an article under test, said hub being provided with an axially adjustable extension projecting through an opening in the oppo- 55 site head, a bearing plate on said opposite head, and a cam lever pivoted to the outer end of said extension and having its cam face engaged with said bearing.

In witness whereof I have hereunto set 60 my hand on this 22nd day of July 1911.

GEORGE C. TALLMAN.

Witnesses:

H. E. CHASE,
E. F. SPEARING.