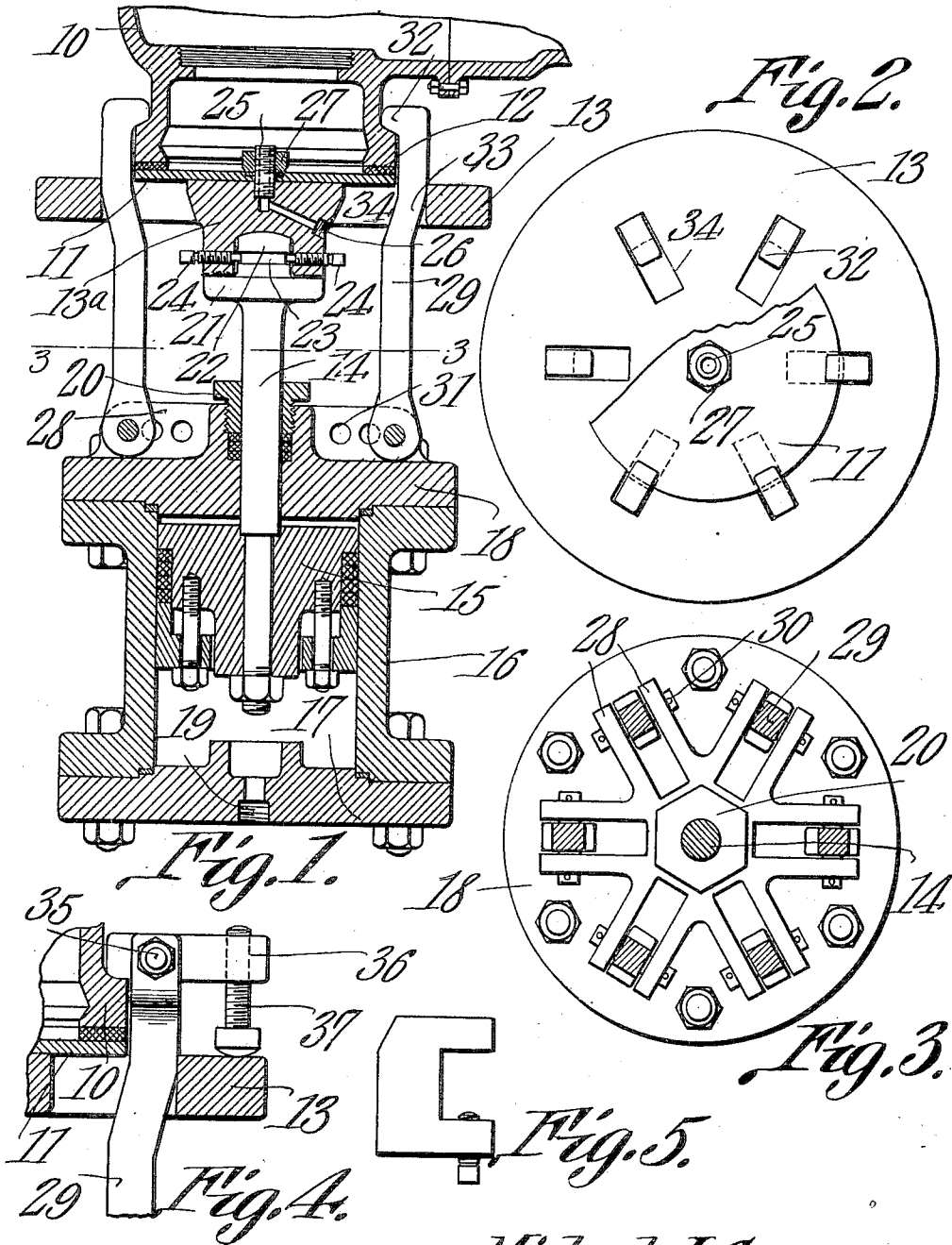


971,191.

Patented Sept. 27, 1910.



Witnesses

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# UNITED STATES PATENT OFFICE.

MICHAEL J. GRAY, OF BURLINGTON, NEW JERSEY.

## TESTING-CLAMP.

971,191.

Specification of Letters Patent. Patented Sept. 27, 1910.

Application filed March 22, 1910. Serial No. 550,990.

*To all whom it may concern:*

Be it known that I, MICHAEL J. GRAY, a citizen of the United States, residing at Burlington, in the county of Burlington and State of New Jersey, have invented a new and useful Testing-Clamp, of which the following is a specification.

This invention relates to apparatus for making hydrostatic tests on pipes, gate valves, hydrants, and similar fixtures to determine their solidity, strength, and the accuracy of workmanship thereon, as well as their suitability for the service for which they are designed.

It is the object of the invention to provide an improved device for clamping and holding in position the piece to be tested, and also to provide a plate against which the piece rests, and which forms a closure therefor.

The invention also has for its object to provide a device of the kind stated which can be readily applied, and which securely holds the piece to be tested.

With these objects in view, the invention consists in a novel construction and arrangement of parts to be hereinafter described and claimed, and in order that the invention may be better understood, reference is had to the accompanying drawing forming a part of this specification, in which,

Figure 1 is a vertical section of the device showing the same applied to a gate valve to be tested, a fragment of the same being shown. Fig. 2 is a plan view of the device. Fig. 3 is a horizontal section on the line 3—3 of Fig. 1. Fig. 4 shows a modified form of gripping arm. Fig. 5 shows a clamp employed for adjusting certain parts to be hereinafter described for different sized valves.

In the drawing, 10 denotes a fragment of the casing of a gate valve to be tested hydrostatically. Against one of the open ends of the valve casing is placed a plate 11 to provide a closure for the casing. Between the plate and the end of the valve casing is interposed a gasket 12 in order that a water tight joint may be had.

The plate 11 is carried by a cross head 13 connected to the rod 14 of a plunger 15 working in a fluid pressure cylinder 16. This cylinder is closed at its ends by heads 17 and 18, and in the head 17 is an opening 19 to which is connected the pipe which supplies the fluid pressure to the cylinder. The

head 18 is provided with a stuffing box 20 through which the plunger rod 14 passes.

The outer end of the plunger rod 14 is formed with an enlargement 21 having a stud 22 which enters a recess made in a central enlargement 13<sup>a</sup> on the underside of the cross head 13. In the stud is an annular groove 23 into which extend the inner ends of set screws 24 threaded through the enlargement 13<sup>a</sup>.

Into the cross head 13 screws a nipple 25, which opens at one end into the interior of the valve casing 10, and communicates at its opposite end with a part 26 opening through the side of the enlargement 13<sup>a</sup>. To this port is adapted to be connected a pipe or hose for supplying the testing water, the same flowing through the port, and through the nipple into the interior of the valve casing or other piece to be tested. The nipple passes through a central opening in the plate 11, and is screw threaded on the outside to receive a nut 27 which is screwed against the face of said plate, and holds the latter securely in place on the cross head.

The cylinder head 18 is formed with radially extending ribs 28 which are arranged in pairs as shown in Fig. 3. Between each pair of ribs is pivotally mounted a gripping arm 29. The gripping arm fits loosely between the pair of ribs, and is pivotally secured thereto by a pin 30 passing through aligned openings 31 in said ribs, and through an opening in the arm. A series of openings are made in the ribs, in order that the gripping arms may be adjusted with respect to the axis of the cylinder 16, and thus set according to the outer diameter of the piece to be tested. The free ends of the gripping arms are inturned as indicated at 32 so as to engage the flange at the end of the piece. The gripping arms are also slightly offset at their free ends, this offset portion being joined to the main portion of the arm by an inclined portion 33. In the cross head 13 are slots 34 through which the inclined portions of the gripping arms extend. The inclines of the gripping arms form wedging shoulders, and when said shoulders are engaged by the outer ends of the slots 34, the arms swing forwardly and tightly grip the valve casing or other piece to be tested.

In operation, the valve casing 10 or other piece to be tested, is placed in line with the plate 11, the gasket 12 being interposed be-

tween the said plate and the end of the valve casing. The plunger 15 will be in retracted position, in which position the cross head 13 will be lowered sufficiently on the gripping arms to enable the same to be placed in position around the end of the valve casing. Fluid pressure is then turned into the cylinder 16, whereupon the plunger 15 moves upwardly therein, and clamps the plate 11 against the open end of the valve casing. At the same time the outer ends of the slots 34 engage the wedging shoulders formed by the incline 33, whereupon the gripping arms 29 are swung forwardly to tightly grip the valve casing, and in which position they are held by the cross head. The pressure may then be turned into the valve casing through the port 26 and the nipple 25. After the piece has been tested, it is released by retracting the plunger 15. This movement of the plunger withdraws the plate 11 from the end of the piece, and at the same time moves the cross head down the inclined portion 33 of the gripping arm, so that the latter may swing outwardly to release the piece.

Fig. 4 shows a slightly modified form of gripping arm one or more of which will be employed in addition to the arms 29 when the piece to be tested is irregular in contour. To the free end of this form of gripping arm is pivoted, as indicated at 35, a finger 36, one end of said finger engaging the piece to be tested in the same manner as, and in connection with the inturned end 32 of the gripping arms 29. Through the other end of the finger is threaded a screw 37, the head of which rests on the cross head 13. The arm is placed in gripping and release position in the same manner as the arms 29. The screw 37 is provided for adjusting the finger 36 to the piece to be tested.

Fig. 5 shows a device which is employed for adjusting the gripping arms for smaller valves or castings. The device is a U-shaped member, one of which is placed in each of the slots 34 to reduce the length thereof. The member is held in place in the slot by a set screw. A smaller plate 11 will also be employed with this device.

What is claimed is:

1. The combination with a fluid-pressure cylinder, of pivoted gripping arms carried by said cylinder, a plunger working in the cylinder, a rod connected to the plunger, means carried by the rod for moving the gripping arms into operative position, and a closure for the part to be gripped carried by the rod.

2. The combination with a fluid-pressure cylinder, of pivoted gripping arms carried by said cylinder, the pivotal connection of said arms being adjustable with respect to the axis of the cylinder to set the arms for

work of different sizes, a plunger working in the cylinder, a rod connected to the plunger, and means carried by the rod for moving the gripping arms into operative position.

3. The combination with a fluid-pressure cylinder, of radially extending ribs on one of the cylinder heads, said ribs being arranged in pairs, and having a series of registering openings, gripping arms mounted between the ribs, pins passing through said arms and the openings for pivotally connecting the said arms to the ribs, a plunger working in the cylinder, a rod connected to the plunger, and means carried by the rod for moving the gripping arms into operative position.

4. The combination with a fluid-pressure cylinder, of pivoted gripping arms carried thereby, a pivoted finger carried by the free ends of said gripping arms, said finger being engageable with the part to be held, a plunger working in the cylinder, a rod connected to the plunger, and means carried by the rod for moving the arms into operative position.

5. The combination with a fluid-pressure cylinder, of pivoted gripping arms carried thereby, a plunger working in the cylinder, a rod connected to the plunger, a cross head carried by the rod, and having means for moving the gripping arms into operative position, a pivoted finger carried by the free ends of the arms, and engageable at one end with the part to be clamped, and a set screw threaded through the other end of the finger, and engaging the cross head.

6. The combination with a fluid-pressure cylinder, of pivoted gripping arms carried by said cylinder, a plunger working in the cylinder, a rod connected to the plunger, means carried by the rod for moving the gripping arms into operative position, and a closure for the part to be gripped carried by the rod, said closure having a passage opening into said part.

7. The combination with a fluid-pressure cylinder, of pivoted gripping arms carried thereby, said arms having inclines, a plunger working in the cylinder, a rod connected to the plunger, a cross head carried by the rod, and having portions engageable with the inclines of the gripping arms for swinging the same into operative position, and a plate carried by the cross head, said plate engaging the open end of the part to which the gripping arms are applied, to provide a closure therefor.

In testimony that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two witnesses.

MICHAEL J. GRAY.

Witnesses:

WILLIAM BONARD,  
GEORGE H. WILSON, Jr.