(No Model.)

J. & J. H. RAPPS & W. B. BUCHANAN.

BOILER FLUE PLUG.

No. 549,155. Patented Nov. 5, 1895.

Fig. 1.

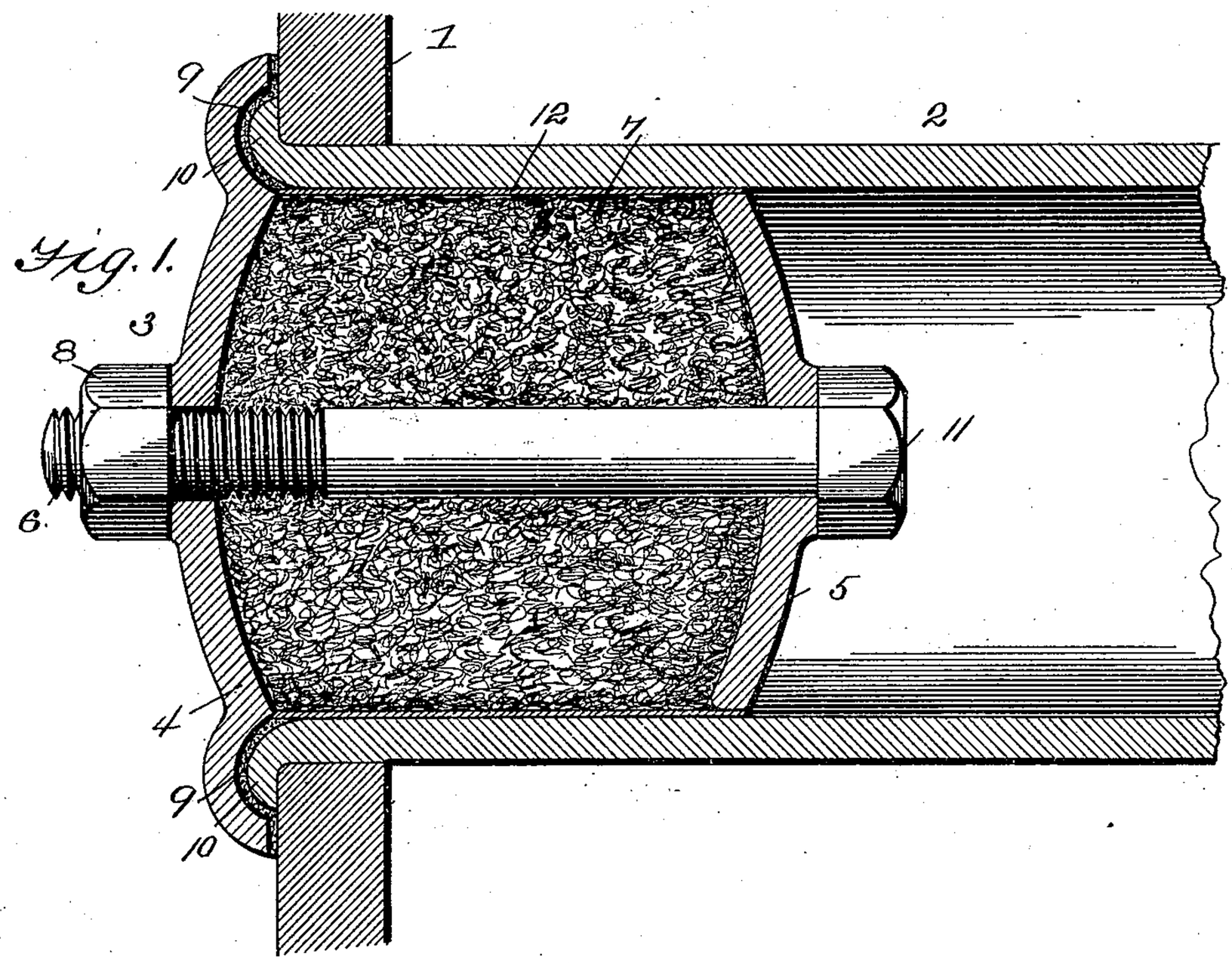
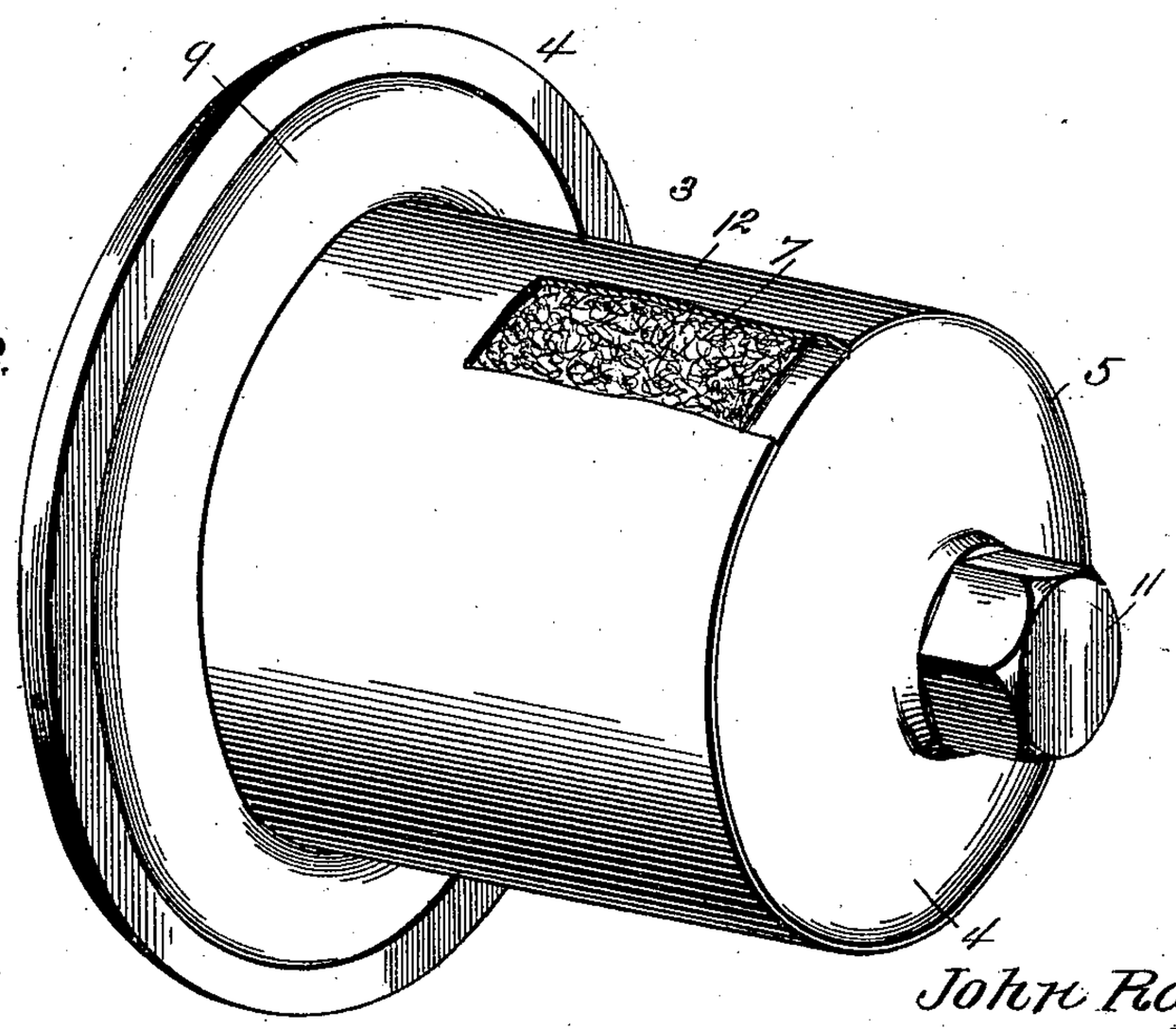


Fig. 2.



Witnesses

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UNITED STATES PATENT OFFICE.

JOHN RAPPS, JOHN H. RAPPS, AND WILLIAM B. BUCHANAN, OF RACINE, WISCONSIN.

BOILER-FLUE PLUG.

SPECIFICATION forming part of Letters Patent No. 549,155, dated November 5, 1895.

Application filed March 13, 1895. Serial No. 541,599. (No model.)

To all whom it may concern:

Be it known that we, JOHN RAPPS, JOHN H. RAPPS, and WILLIAM B. BUCHANAN, citizens of the United States, residing at Racine, in the county of Racine and State of Wisconsin, have invented a new and useful Boiler-Flue Plug, of which the following is a specification.

Our invention relates to a boiler-flue plug adapted for use in stopping the ends of boiler-flues when said flues leak by reason of corrosion or other injury; and the object in view is to provide a simple and inexpensive plug which may be inserted with facility and without loss of time in either end of a flue without the necessity of securing the same by a bolt extending through the entire length of the flue, to provide a compressible plug which may be expanded after insertion in the end of the flue; and, furthermore, to provide a corrosible plug which, after insertion in the flue, is adapted to be secured to the inner surface thereof by corrosion, the composition of the plug being such as to have substantially the same ratio of expansion and contraction under similar degrees of heat as the flues.

Further objects and advantages of the invention will appear in the following description, and the novel features thereof will be particularly pointed out in the appended claims.

In the drawings, Figure 1 represents a longitudinal section of a plug constructed in accordance with our invention applied in the operative position to a boiler-flue. Fig. 2 is a detail view, in perspective, of the plug before application.

Similar numerals of reference indicate corresponding parts in both figures of the drawings.

1 designates a crown-sheet of a boiler, in which is fitted the end of a flue 2, and 3 represents a plug constructed in accordance with our invention and comprising inner and outer heads or plates 4 and 5, a bolt 6, connecting said heads or plates, and a compressible filling 7, interposed between the heads or plates and adapted to be expanded laterally into contact with the inner surface of the flue by the adjustment of the heads or plates toward each other by means of a nut 8, threaded upon the outer extremity of the bolt 6. The inner head or plate 4 is adapted to fit snugly within the flue as shown clearly in Fig. 1, and the outer head or plate is of larger diameter than the flue and is provided with an annularly grooved or channeled rim 9 to fit over the bead 10 at the outer end of the flue. The heads or plates are concavo-convex in construction and are arched in opposite directions, whereby their concave faces are disposed toward the interposed filling 7, while their convex faces are adapted to receive the pressure of the head 11 of the bolt 6 and the nut 8, which is threaded upon the outer end of said bolt. By means of this construction heads or plates constructed of material of comparatively inferior strength may be employed without detracting from the efficiency of the plug.

The filling 7 which is interposed between the concave faces of the heads or plates is a composition of compressible nature, preferably containing a corrosible ingredient, such as iron-filings, whereby after insertion in the flue, provided sufficient moisture is applied, said filling will become corroded, and thereby fastened securely to the surface of the flue and in effect form a part thereof. In order to hold this interposed filling in proper position before the insertion of the plug in the flue, we preferably employ a sheath or cylindrical casing 12, of fusible material, such as tin-foil, whereby after the insertion of the plug in the flue said sheath or casing is melted by the heat of the flue to allow the ingredients composing the filling to come in direct contact with the surface of the flue. The necessary moisture for insuring the corrosion of the metallic filings forming a part of the filling is supplied by immersing the plug in water preparatory to inserting it in the flue, and after insertion the tightening of the nut 8 expands the filling laterally to cause a uniform contact thereof with the surface, and thus insure a compact structure when the above-described corrosion has taken place.

From the above description it will be seen that the construction of the improved plug is simple and that its application can be ac-

complished without loss of time when a leak occurs in any of the flues of a boiler, and, furthermore, when the leak appears at one end of a flue it is not necessary to extend a fastening-bolt throughout the entire length of the flue. Obviously when a leak or collapse occurs at an intermediate point of a flue a plug may be inserted in either end thereof, as in the ordinary practice.

Various changes in the form, proportion, and the minor details of construction may be resorted to without departing from the spirit or sacrificing any of the advantages of this invention.

Having described our invention, what we claim is—

1. A boiler flue plug having a filling of corrosible material, as metallic filings, adapted to be arranged in contact with the inner surface of a flue after applying sufficient moisture to insure corrosion, substantially as specified.

2. A boiler flue plug having inner and outer heads or plates, an adjusting bolt connecting said plates, and an interposed filling of corrosible material adapted to be expanded laterally by the adjustment of the heads or plates to insure uniform contact with the inner surface of a flue, substantially as specified.

3. As an article of manufacture, a boiler flue plug having opposite heads or plates connected by an adjusting bolt, a comminuted filling interposed between the heads or plates, and a sheath or casing of fusible material inclosing said filling and adapted to be destroyed by heat subsequent to the insertion of the plug in a boiler flue to allow contact of said filling with the surface of the flue, substantially as specified.

In testimony that we claim the foregoing as our own we have hereto affixed our signatures in the presence of two witnesses.

JOHN RAPPS.
JOHN H. RAPPS.
WILLIAM B. BUCHANAN.

Witnesses:
M. D. MORRIS,
J. E. TRUMP.