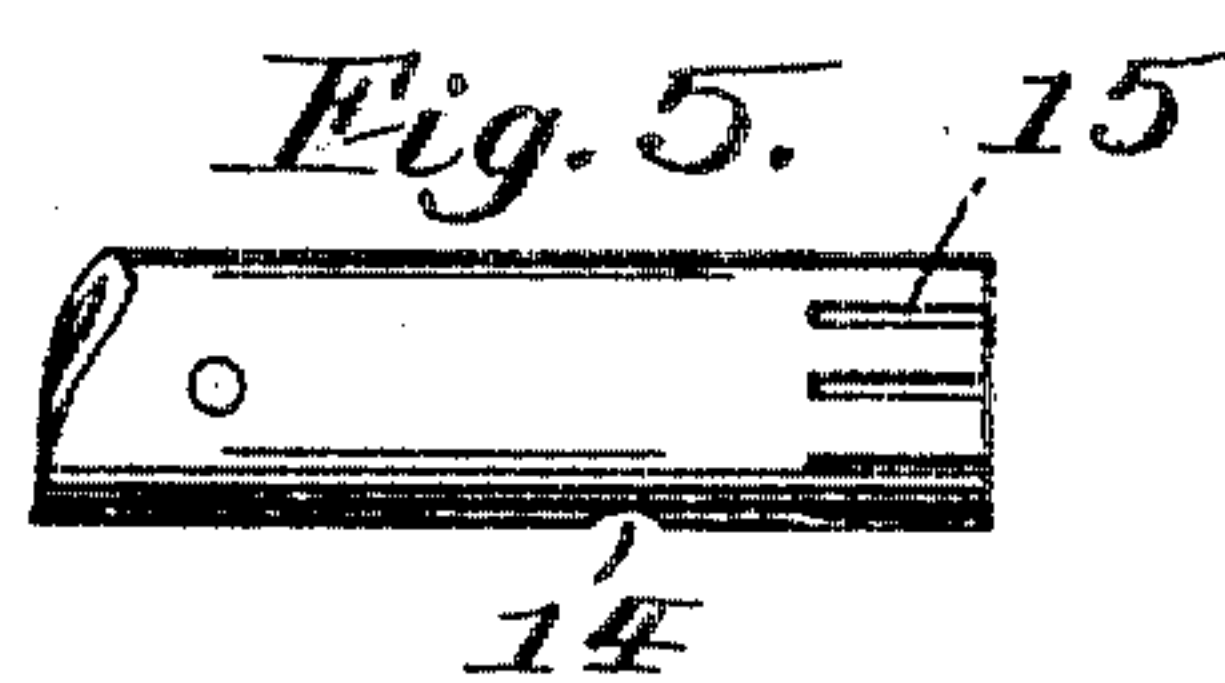
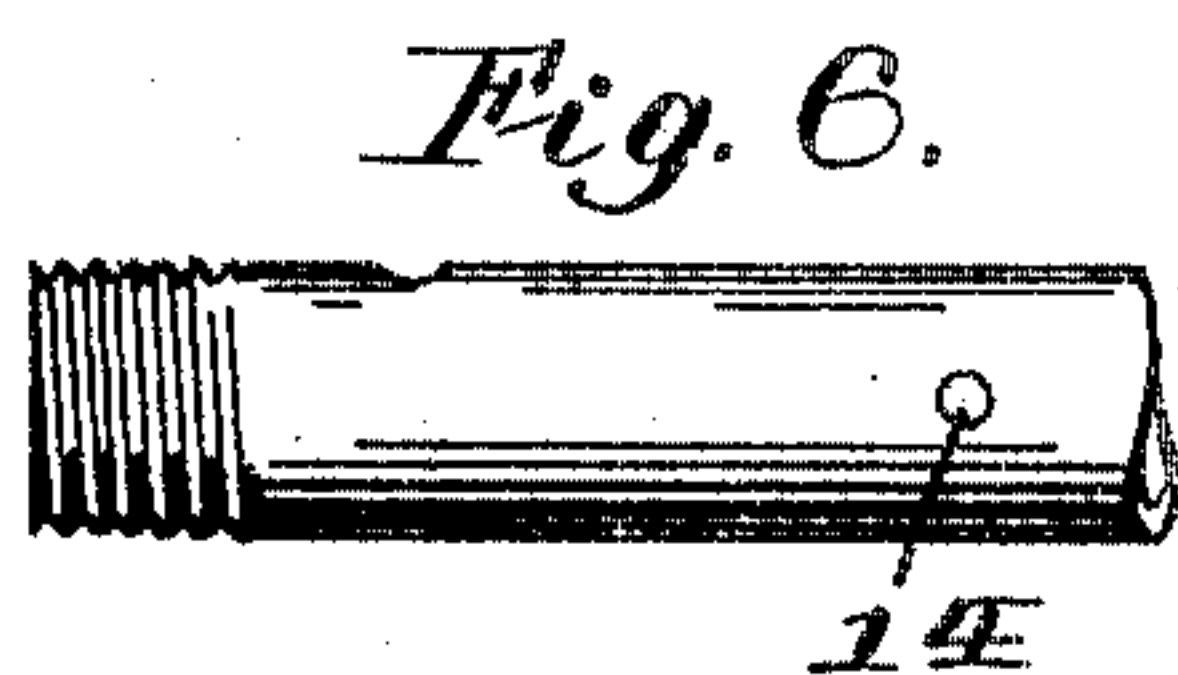
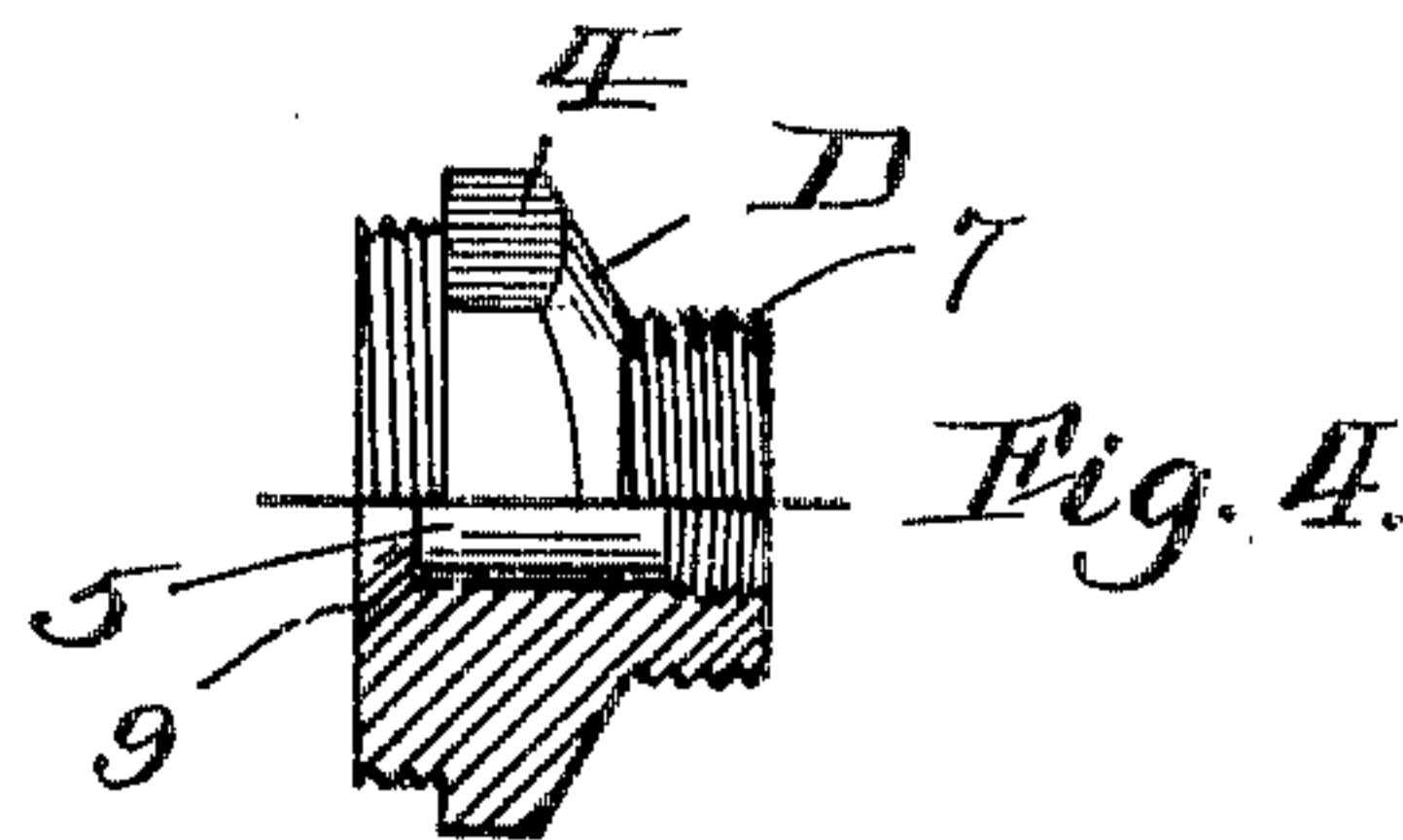
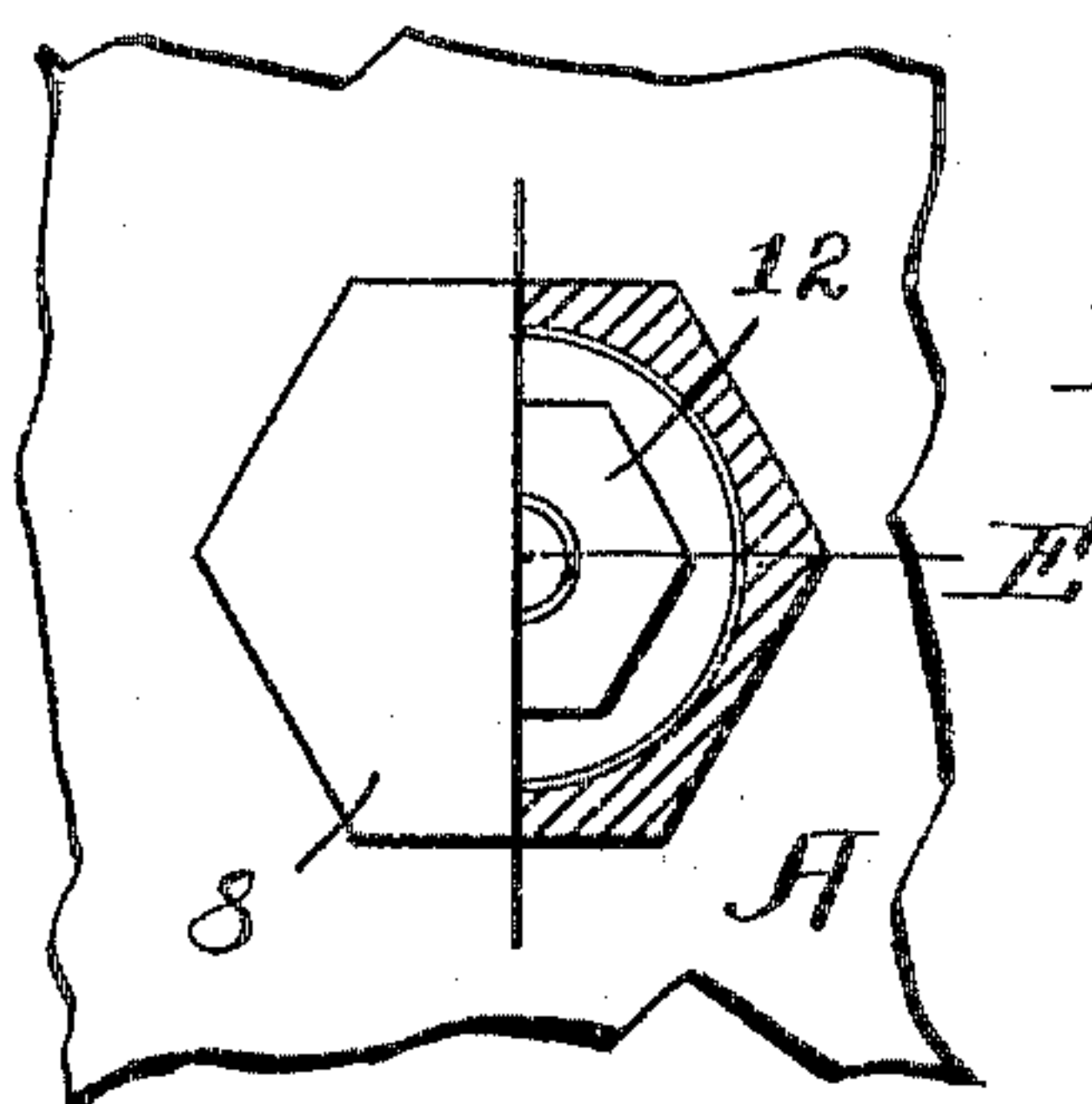
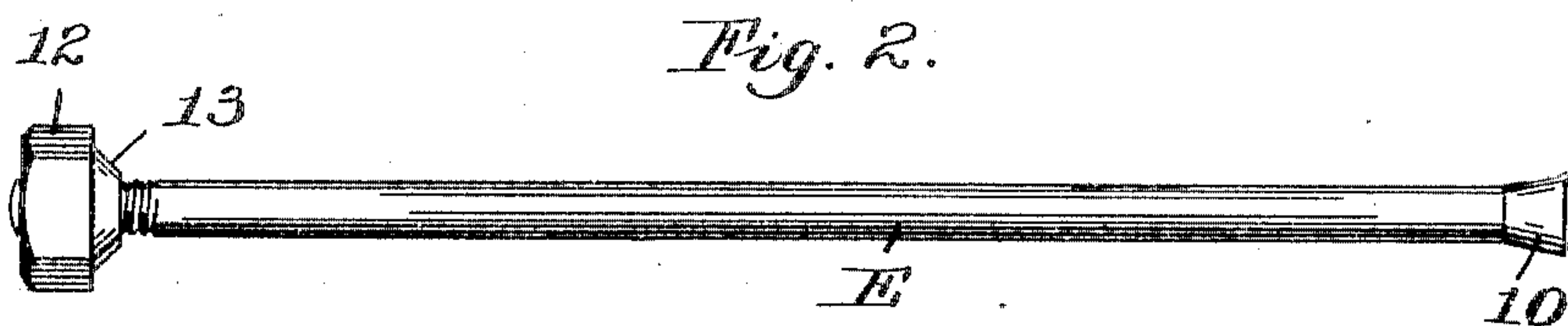
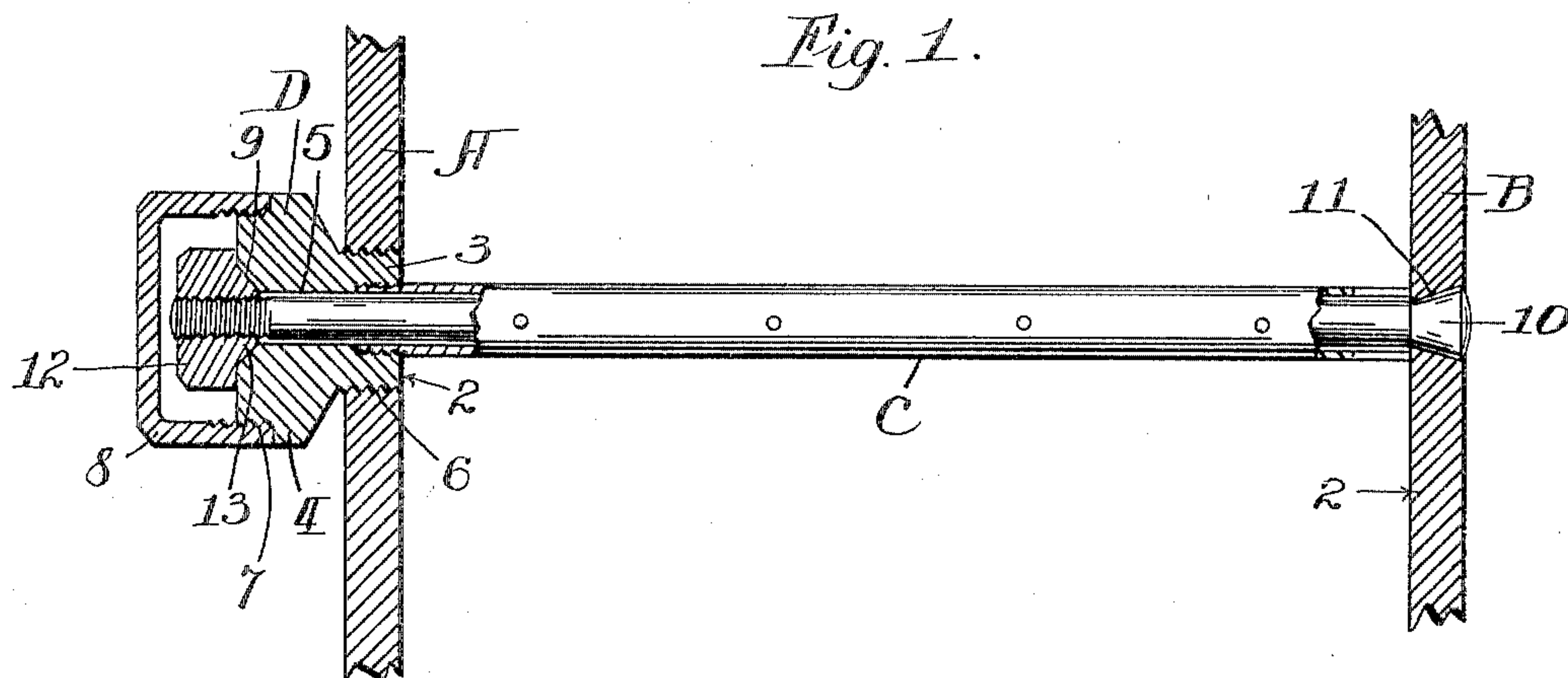


No. 793,949.

PATENTED JULY 4, 1905.

R. F. O'HEARN.
BOILER STAY.
APPLICATION FILED OCT. 6, 1904.



Witnesses:
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Marion Machovec

Inventor:
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Attorney.

UNITED STATES PATENT OFFICE.

ROBERT F. O'HEARN, OF BARNESVILLE, MINNESOTA.

BOILER-STAY.

SPECIFICATION forming part of Letters Patent No. 793,949, dated July 4, 1905.

Application filed October 6, 1904. Serial No. 227,404.

To all whom it may concern:

Be it known that I, ROBERT F. O'HEARN, a citizen of the United States, residing at Barnesville, in the county of Clay and State of Minnesota, have invented a new and useful Boiler-Stay, of which the following is a specification.

My invention relates to improvements in boiler-stays, and has for its objects to hold the boiler-sheets in normal position when the stays are attached thereto and to permit said stays to be adjusted and easily taken apart and removed from the exterior of the boiler.

Further objects are simplicity of construction and effectiveness in use.

To these ends my invention consists, in combination with a pair of boiler sheets or walls, of a stay-bolt passing through said sheets and means for retaining said sheets in normal position when the stay-bolts are tightened.

In the accompanying drawings, forming part of this specification, Figure 1 is a longitudinal section of my invention applied to a pair of boiler-sheets. Fig. 2 is a view of the stay-bolt. Fig. 3 is a view, partly in section, looking at the end of the cap. Fig. 4 is a longitudinal view, partly in section, of the adjusting-bolt. Fig. 5 is a view of one end of the retaining-tube, and Fig. 6 is a view of the other end of said tube.

In the drawings, A and B represent a pair of boiler sheets or walls between which a retaining-tube C is placed with one end impinging against the inner face 2 and its other end fastened by threads to the adjusting-bolt D in the sheet A. This tube is adjusted to the sheets to form a retainer or stop by which they are prevented from being unevenly drawn together. A stay-bolt E of less diameter than the inner diameter of said retaining-tube passes through said tube and sheets, as shown. The adjusting-bolt D, having a head 4 and longitudinal passage-way 5, is threaded in the opening 6 in the sheet A and is formed with a threaded cap-screw 7, on which the cap 8 is turned, and also with a conical recess 9. One end of the stay-bolt has a conical shoulder 10, which fits in the conical opening 11 in the sheet B. The other end of the stay-bolt passes loosely through the passage-way 5 in the adjusting-bolt and is threaded to

receive the nut 12. This nut has a conical face 13, which seats in the recess 9 in the adjusting-bolt.

In use the end of the tube shown in Fig. 6 is screwed into the end of the adjusting-bolt. The bolt is then turned in the threaded opening 6 and the end of the tube shown in Fig. 5 adjusted to the face 2 of the sheet B. The stay-bolt E is passed through the opening in the wall B and passage-ways in the adjusting-bolt and retaining-tube. The nut 12 is then turned on the threaded end of the stay-bolt and tightened and the cap applied to the stud-bolt over said nut. The objects of the conical shoulder 10 and face 11 and adjusting-bolt are to form a tight joint between the parts and prevent leakage from within the boiler, also to permit the tube C to be adjusted in place or removed from the exterior of the boiler. The object of the cap is to additionally protect against leakage of the parts. The tube C is perforated at 14 and slotted at 15 to permit the water and steam in the boiler circulating in contact with the stay-bolt and to prevent it from burning or deteriorating.

Having described my invention, what I claim as new, and desire to protect by Letters Patent, is—

1. A boiler-stay, consisting of a pair of tube-sheets, an adjusting device on one of said sheets, a retaining-tube impinging against the inner face of the other sheet and connected to said adjusting device, and a stay-bolt tending to hold said sheets against said tube and adjusting device.

2. A boiler-stay, consisting of tube-sheets, one of which has a conical opening, an adjusting device connected to the other of said sheets, a retaining-tube connected to said adjusting device, and a stay-bolt passing through said sheets and having a conical shoulder on one end to fit said conical opening.

3. A boiler-stay, consisting of tube-sheets, a stay-bolt, a retaining-tube between said sheets, and an adjusting device removably connected to one of said sheets and having said tube attached thereto.

4. A boiler-stay, consisting of tube-sheets, an adjusting device carried by one of said sheets, a retainer carried by said adjusting

device, and a stay-bolt coacting with said adjusting device and retainer.

5 5. A boiler-stay, consisting of a pair of tube-sheets, an adjusting device on one of said sheets, a perforated retaining-tube impinging against the inner face of the opposite sheet and connected to said adjusting device, and a stay-bolt passing through said adjusting device and opposite sheet.

10 6. A boiler-stay, consisting of tube-sheets, one of which has a conical opening, an adjusting device connected to the other of said sheets and having a conical recess, a retaining-tube connected to said adjusting device, 15 a stay-bolt passing through said tube and adjusting device and having a conical head seated in said conical opening, and a nut having a conical shoulder seated in the conical recess of said adjusting device.

20 7. A boiler-stay, consisting of tube-sheets, an adjusting-bolt in one of said sheets, a retaining-tube connected to said bolt having its end impinging against the opposite sheet, and a stay-bolt passing through said tube, adjusting-bolt and opposite sheet.

25 8. A boiler-stay, consisting of tube-sheets,

an adjustable bolt threaded through one of said tube-sheets, a retaining-tube between said sheets having one of its ends fastened to said adjusting-bolt, a stay-bolt passing through 30 one of said sheets, retaining-tube and adjusting-bolt, a nut threaded on said bolt to hold said sheets in place, and a cap over said nut.

9. A boiler-stay, consisting of a pair of tube-sheets, one having a conical opening 11, an 35 adjusting-bolt D threaded in one of said sheets and having a conical recess 9, a perforated retaining-tube C carried by said adjusting-bolt, a stay-bolt E through said tube and having a conical shoulder 10 on one end and adapted to 40 seat in said conical opening 11, and a nut threaded on the other end of said stay-bolt having a conical face 13 adapted to seat in the conical recess 9 in said adjusting-bolt.

In testimony whereof I have signed my name 45 to this specification in the presence of two subscribing witnesses.

ROBERT F. O'HEARN.

Witnesses:

I. E. HOVLAND,
ORRIS OLIVER.