

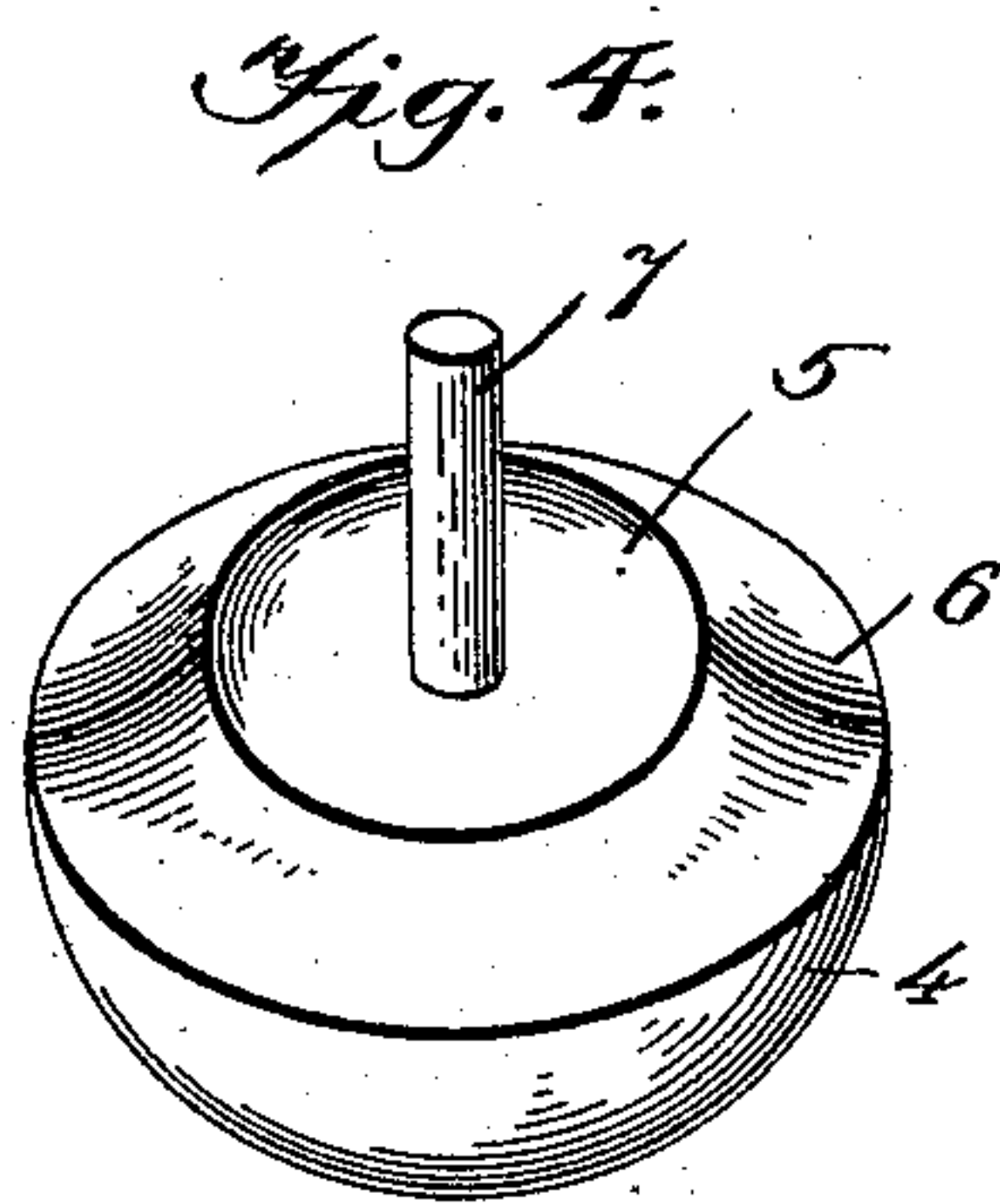
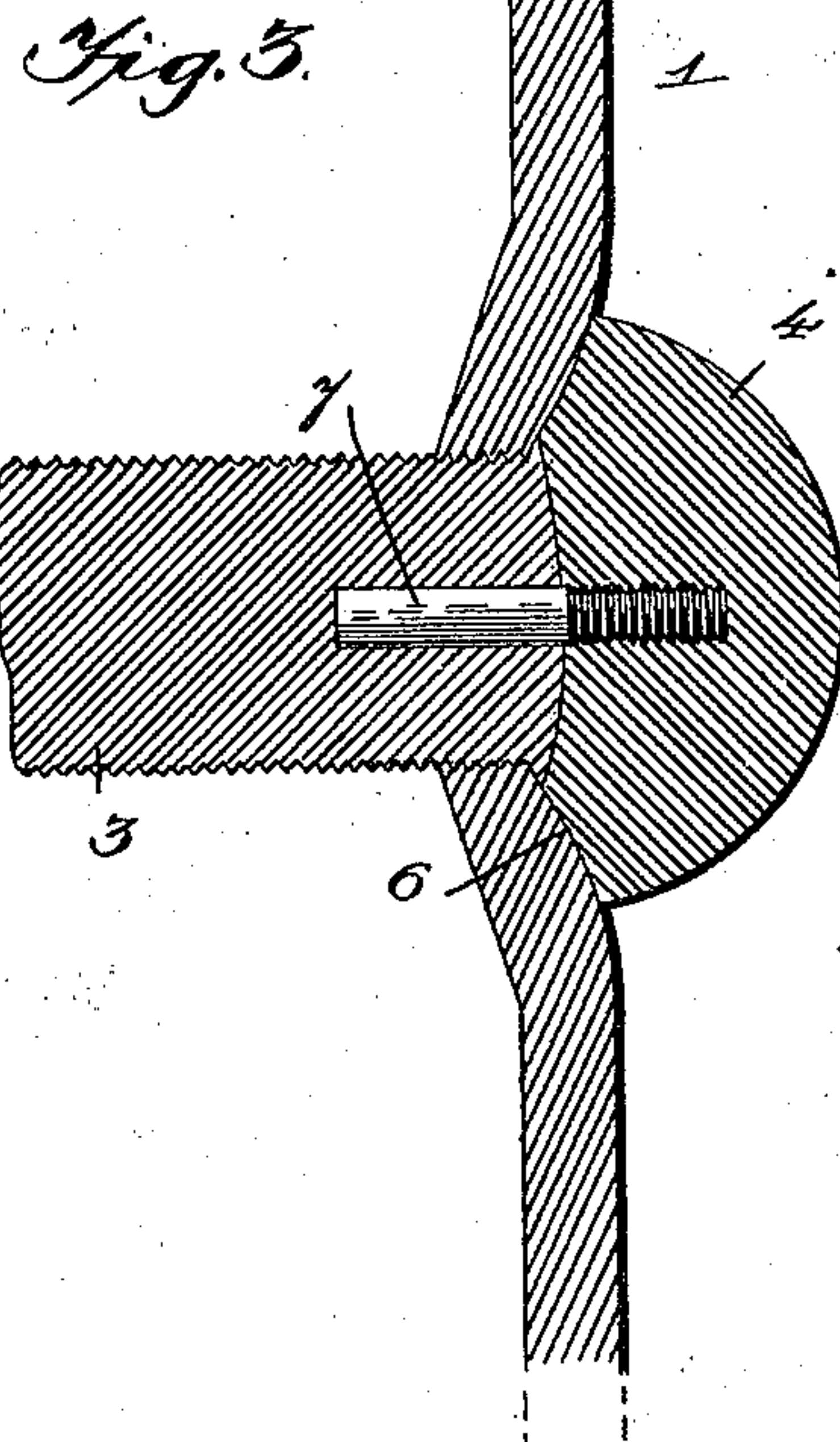
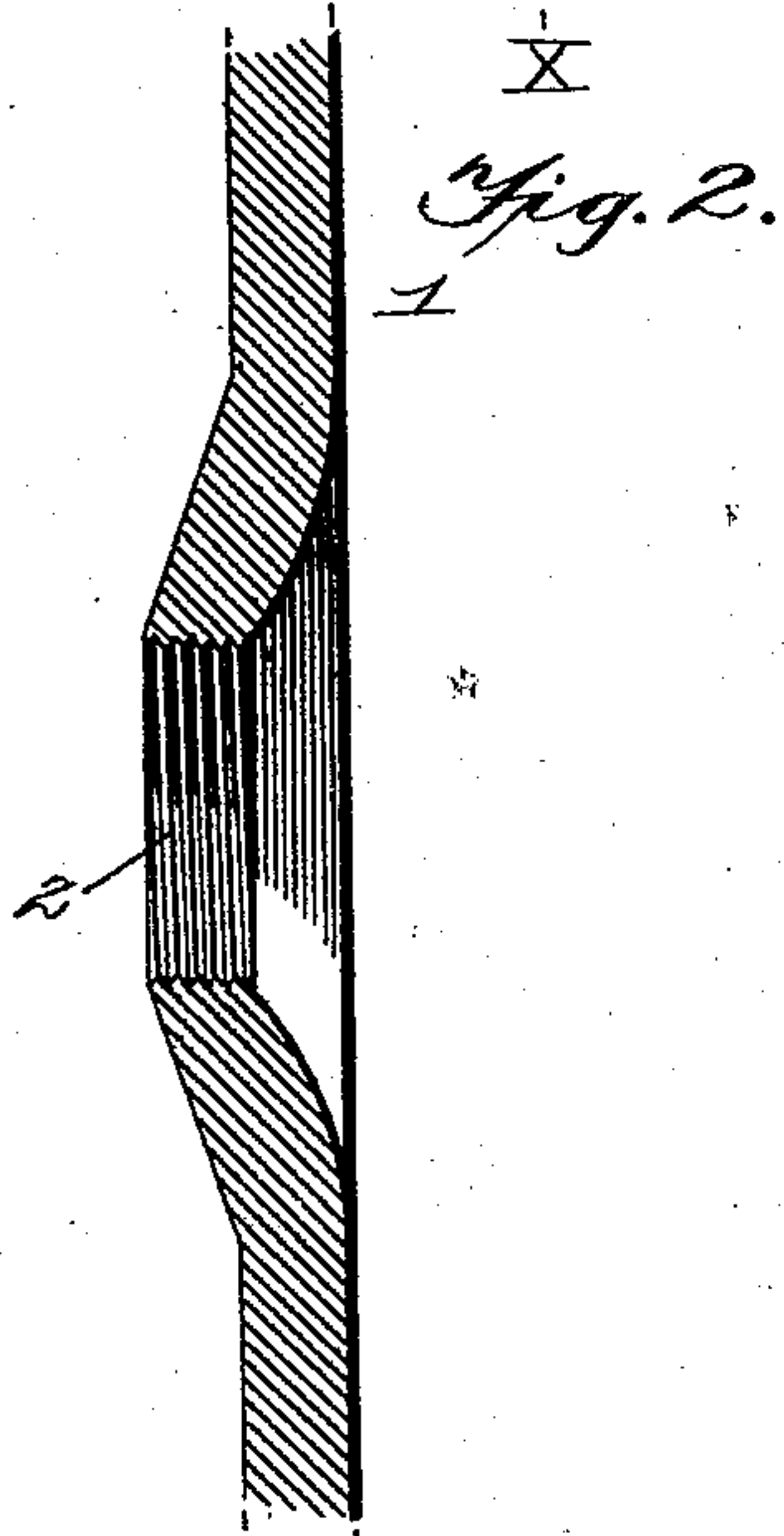
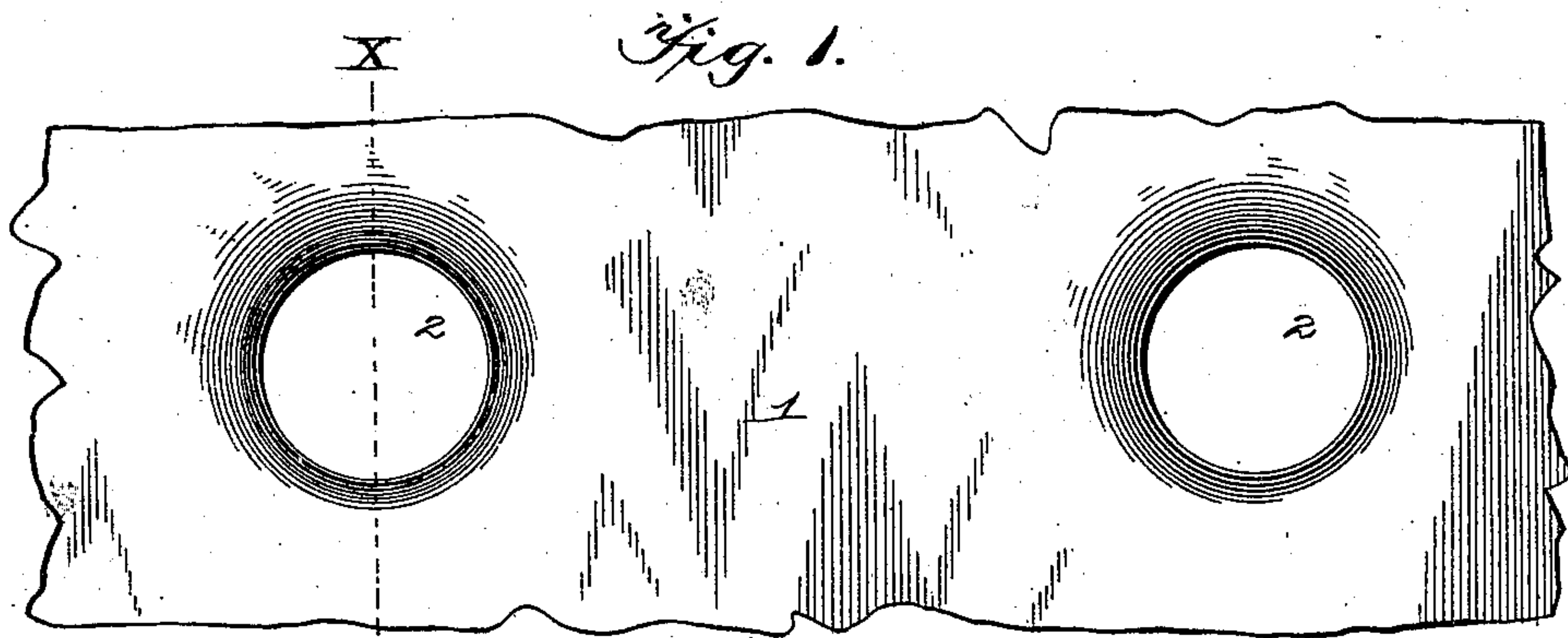
(No Model.)

J. COUR.

MEANS FOR SECURING AND PROTECTING STAY BOLTS.

No. 576,036.

Patented Jan. 26, 1897.



Inventor
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Witnesses

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UNITED STATES PATENT OFFICE.

JOSEPH COUR, OF CHICAGO, ILLINOIS.

MEANS FOR SECURING AND PROTECTING STAY-BOLTS.

SPECIFICATION forming part of Letters Patent No. 576,036, dated January 26, 1897.

Application filed September 16, 1896. Serial No. 606,055. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH COUR, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have
5 invented a new and useful Means for Securing and Protecting Stay-Bolts, of which the following is a specification.

To secure a tight and substantial joint between the stay-bolt and the sheets forming
10 the walls of the fire-box of steam-boiler furnaces has proven a difficult matter, owing to the high temperature and the great amplitude of movement due to contraction and expansion when cooling and firing. Various ways
15 have been attempted to obviate and meet this objectionable feature, but a perfectly satisfactory, simple, and effective means has not been devised, and it is the purpose of this invention to overcome all or nearly all the
20 objections urged against present methods and to prevent the burning out of the stay-bolt joints formed between the stay-bolts and the fire-box walls or boiler-sheets, obviate leaking, and guard against cracking and breaking
25 occasioned by contraction and expansion.

The improvement consists in flaring the stay-bolt opening away from the fire side of the boiler-sheet by depressing the portion of the boiler-sheet immediately surrounding the
30 bolt-opening and securing the inner end of the stay-bolt thereto in the usual way by riveting or upsetting and applying a protecting-knob to the inner end of the stay-bolt, all as will appear more fully from the subjoined
35 description.

For a full understanding of the merits and advantages of the invention, reference is to be had to the accompanying drawings and the following description.

40 The improvement is susceptible of various changes in the form, proportion, and the minor details of construction without departing from the principle or sacrificing any of the advantages thereof, and to a full disclosure
45 of the invention an adaptation thereof is shown in the accompanying drawings, in which—

Figure 1 is a view of a portion of a boiler-furnace sheet as seen from the fire side.
50 Fig. 2 is a section thereof on the line X X.
Fig. 3 is a detail section showing the stay-

bolt and the protecting-knob in position. Fig. 4 is a detail view of the protecting-knob.

Corresponding and like parts are referred to in the following description and indicated
55 in the several views of the drawings by the same reference-characters.

The boiler-furnace sheet 1 is provided with a series of stay-bolt openings 2 in the ordinary way, said openings being threaded to
60 receive the inner ends of the stay-bolts, and the portion of the sheet bordering upon the openings is flared away from the fire side of the sheet by being depressed or swaged, as shown most clearly in Figs. 2 and 3, thereby
65 admitting of the inner end of stay-bolt 3 being removed from the plane of the fire side of the sheet, so as to be protected in a measure from the direct action of the flame and hot
70 gases sweeping along the fire side of the sheet, and which results disastrously and shortens the life of a steam-boiler furnace by burning the stay-bolt and causing a leaky joint. Each stay-bolt 3 is placed in position in the
75 ordinary manner, and after being screwed into the bolt-openings 2 its inner end is riveted or upset.

As generally practiced, the stay-bolt openings are in the same plane with the boiler-furnace sheet, and the riveting or upsetting
80 of the stay-bolts tends to subject the sheet to a high tension, and when the said sheet is heated this tension is amplified by expansion and increases the liability to rupture, whereby a leak results. By flaring the bolt-open-
85 ings the tension is confined to that portion of the sheet immediately surrounding the bolt-openings and which is deflected by the flaring portion, and in a similar manner the contraction and expansion are confined to the
90 flaring portion surrounding the bolt-openings, thereby relieving the body of the sheet in a great measure of the strain, which is the chief cause of cracking and leaky joints. The ends
95 of the stay-bolts, being removed from the fire side of the sheet, are not so liable to be burned out as when they come flush with the fire side or project from the same.

The joint formed between the stay-bolt and boiler-furnace sheet is guarded by a protector in the shape of a knob 4, and this knob
100 likewise masks the inner end of the stay-bolt

and prevents it being subjected to the direct action of the fire. This knob 4 is approximately of semispherical form, and is of a size to overlap the flaring portion of the bolt-opening, 5 and its inner face has a concave depression 5 to receive the inner convex end of the stay-bolt and a hollow beveled rim portion 6 to conform to and fit snugly against the flaring portion surrounding the bolt-opening. A 10 dowel 7 or similar fastening is employed to secure the knob to the inner end of the stay-bolt, said dowel being let into corresponding openings formed in the parts 3 and 4.

Having thus described the invention, what 15 is claimed as new is—

1. In combination, a boiler-furnace sheet provided with stay-bolt openings, flared by being depressed or swaged away from the fire side and a stay-bolt secured in an opening of 20 the sheet and having its inner end remote from the fire side of the said sheet, substantially as and for the purpose set forth.

2. In combination, a boiler-furnace sheet provided with a stay-bolt opening flared by

being depressed or swaged away from the fire 25 side, a stay-bolt secured in said opening and having its end portion upset, a knob snugly fitting the flaring portion immediately surrounding the stay-bolt opening, and a dowel connecting the knob with the stay-bolt, sub- 30 stantially as set forth.

3. The combination with a boiler-furnace sheet having an opening flared by being depressed or swaged away from the fire side, and a stay-bolt secured in the said flaring opening, 35 of a protector having a concave depression to receive the inner end of the stay-bolt, and a beveled rim portion to fit against the flaring portion of the boiler-furnace sheet surrounding the bolt-opening, substantially as 40 set forth.

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

JOSEPH COUR.

Witnesses:

MICHEAL FARRELL,
FRANK PERRY.