

No. 886,051.

PATENTED APR. 28, 1908.

J. FRASER.
SAFETY VALVE.
APPLICATION FILED NOV. 7, 1906.

Fig. 1.

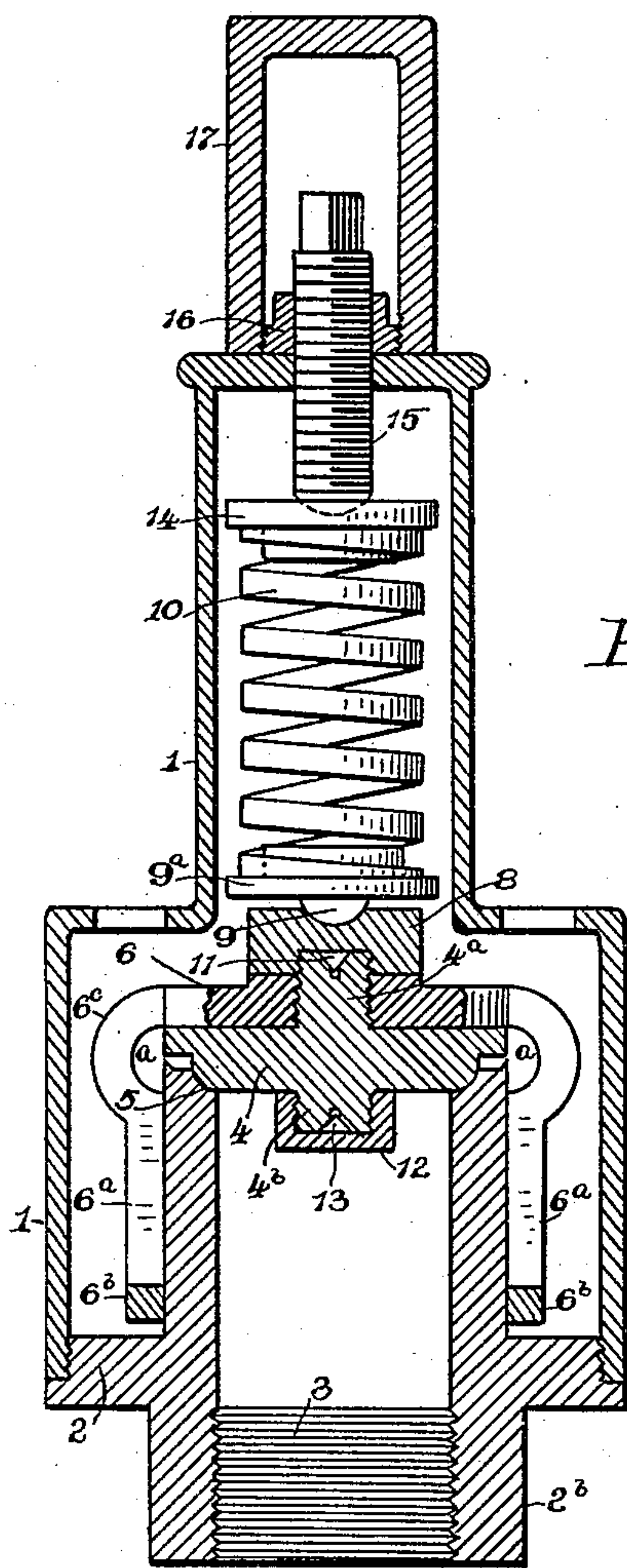


Fig. 2.

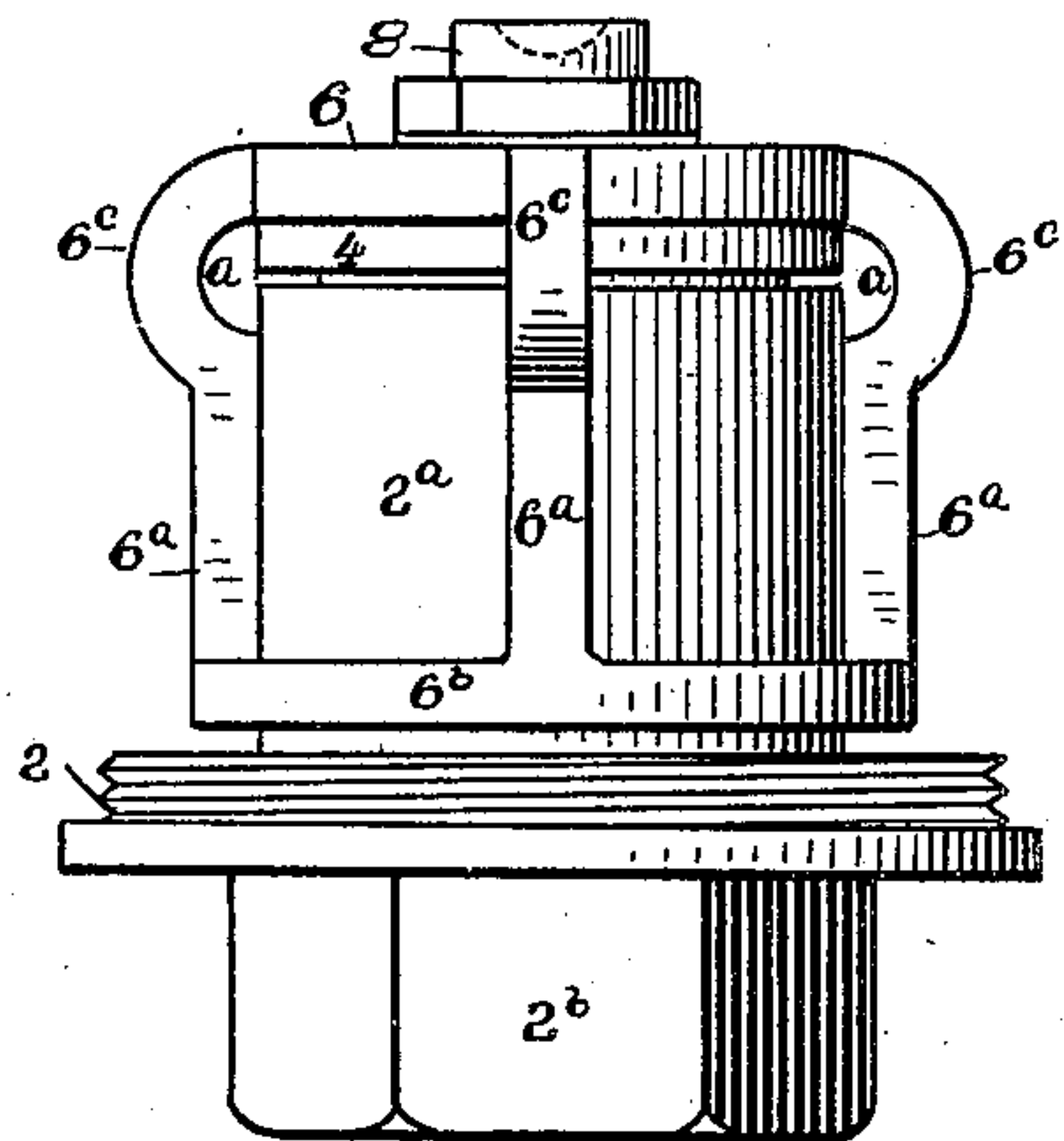


Fig. 3.

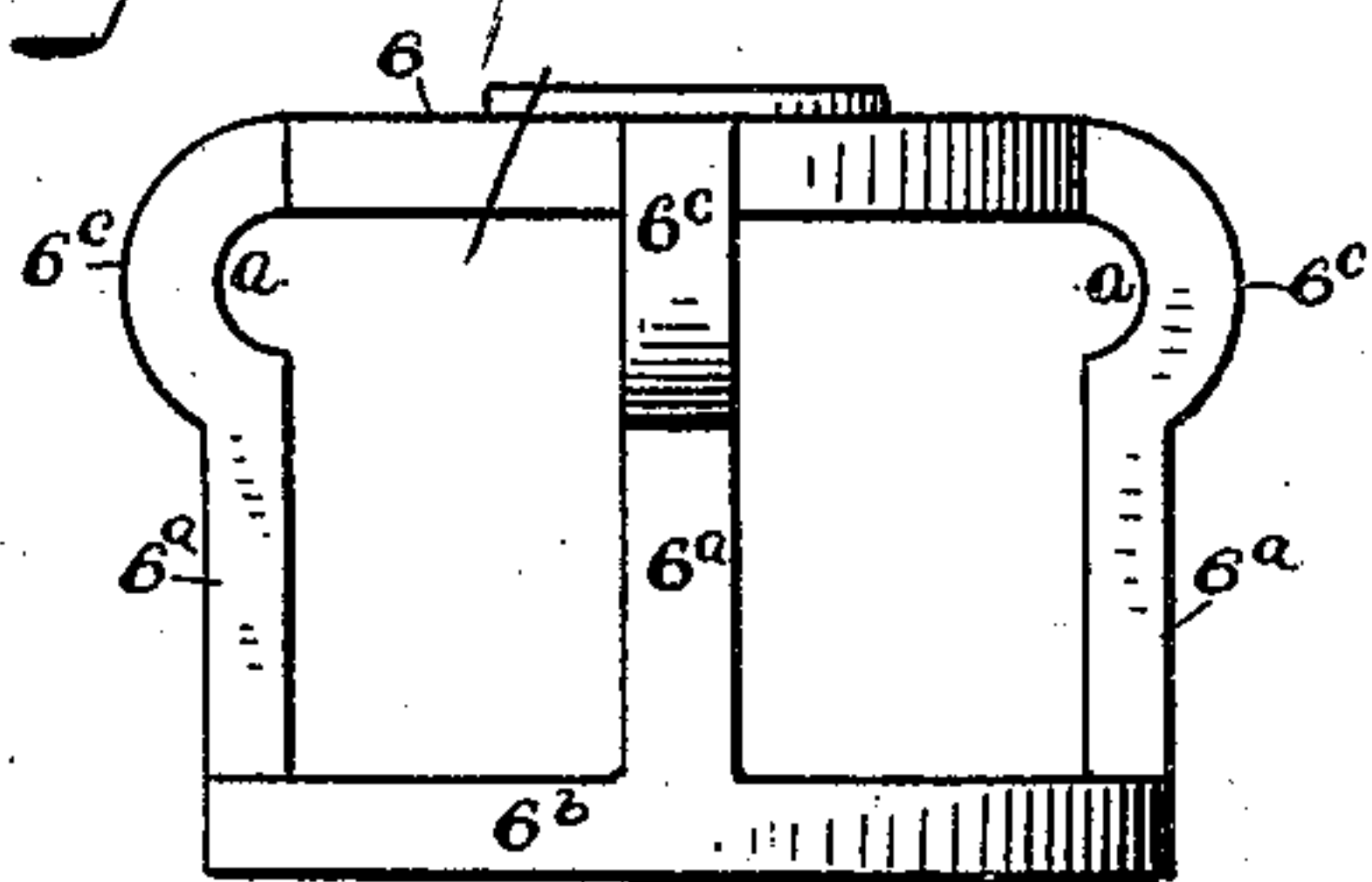


Fig. 4.

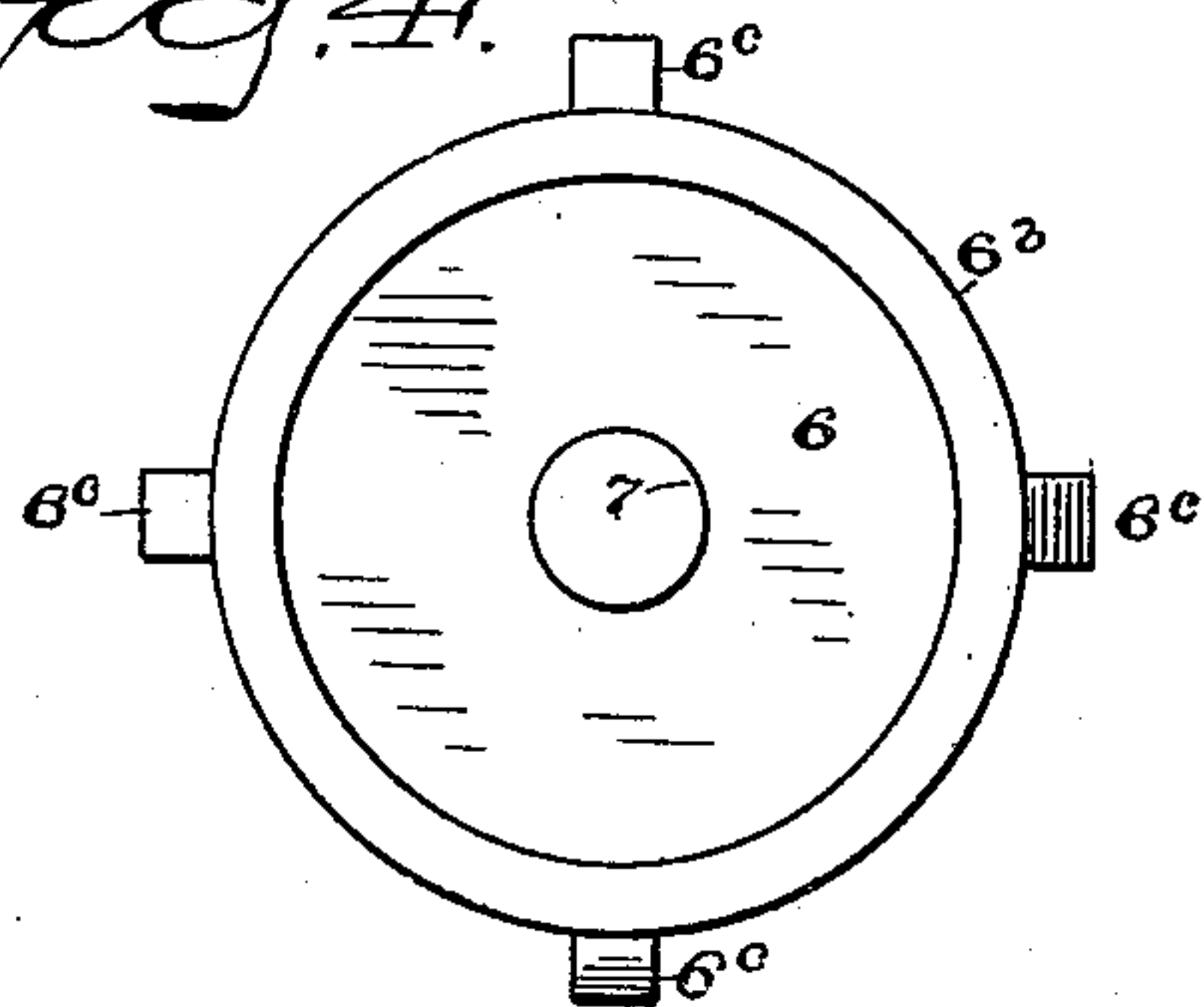
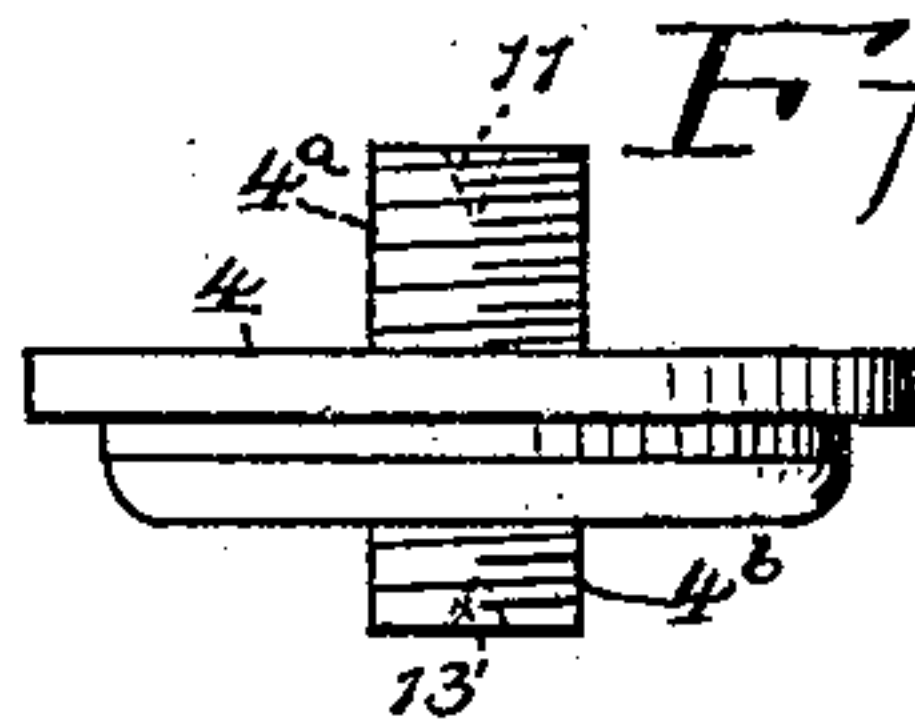


Fig. 5.



WITNESSES

H. A. Lamb.
A. K. Lovell.

INVENTOR

James Fraser.
BY Geo. D. Phillips.

His ATTORNEY.

UNITED STATES PATENT OFFICE.

JAMES FRASER, OF NEW HAVEN, CONNECTICUT.

SAFETY-VALVE.

No. 886,051.

Specification of Letters Patent.

Patented April 28, 1908.

Application filed November 7, 1906. Serial No. 342,371.

To all whom it may concern:

Be it known that I, JAMES FRASER, a citizen of the United States, and a resident of New Haven, in the county of New Haven and State of Connecticut, have invented certain new and useful Improvements in Safety-Valves, of which the following is a specification.

My invention relates to safety valves, and particularly to that class known as "pop safety valves" wherein the valve is located between a pressure spring on one side and the steam pressure on the other.

To enable others to understand my invention, reference is had to the accompanying drawings in which:

Figure 1—represents a central sectional view of the outer shell and valve. Fig. 2—is a detached view of the plug carrying the valve seat, also a view of the valve and its guide mounted on the column rising from the plug. Fig. 3—is a detail side elevation of the valve guide. Fig. 4—is a detail bottom plan view of the valve guide. Fig. 5—is a detail side elevation of the valve.

1—represents the outer shell whose lower threaded mouth is mounted on the threaded portion —2— of the hollow plug. This threaded portion of the plug, together with the column or raised valve seat —2^a— and the hexagon projection —2^b— below are formed of one piece of metal. The internal thread —3— of the plug is adapted to connect with the boiler pipe, not shown.

4—is the valve mounted on the valve seat —5— located at the top of the cylindrical column —2^a. The valve guide comprises the top —6—, the vertical ribs —6^a— and the base ring —6^b—, all integral with each other. The valve and its guide are detachably secured to each other through the medium of the threaded hole —7— in the top of the guide, and the threaded extension —4^a— of the valve, and when thus attached, the guide will slidably embrace the column —2^a— of the plug and move up and down with the valve and thus maintain the proper working relation between the valve and its seat. The upper part of the vertical ribs of the guide is curved outward at —6^a— so as to form the recess —a— opposite the mouth of the valve, so that, said ribs will not interfere with the free escape of steam when the valve is lifted.

8—is a cap nut screwed on to the threaded extension —4^a— of the valve projecting

through the upper surface of the guide, and in the top of this nut is a curved seat adapted to receive the ball end —9— of the head —9^a— of the compression spring —10. This nut serves a threefold purpose, viz: a lock nut to hold the valve seat and its guide firmly together; to form a seat for the lower end of the spring; and also to form a cover for the V shaped center —11— in the end of the threaded extension —4^a—.

12—is a threaded cap embracing the lower threaded projection —4^b— of the valve for the express purpose of covering the V shaped center —13—. As the valve has occasionally to be refaced or trued up, it is absolutely essential that these centers preserve their original shape so that, when the valve is detached from its guide and mounted on the lathe centers, both sides of the valve and the threaded extensions will run true. If the centers —11— and —13— are unprotected and thereby exposed to the corrosive action of the steam, their original shape will soon be destroyed, thus making it impossible for it to run true in refacing the valve. It will thus be readily seen how important it is to protect these centers, for, while the sides of the valve could be refaced from the imperfect centers, the threaded projections could not be, and when the valve was re-attached to the guide, the sides and threaded projections, not being true with each other, would produce a cramping effect between the guide and column —2^b—, which would prevent the proper seating of the valve. The upper end of the spring —10— carries the head —14— adapted to receive the rounded end of the adjusting screw —15—. 16—is a jam nut for said screw, and —17—is a cap or cover for the end of said screw, whose threaded mouth engages the outer threaded portion of said nut.

From the foregoing description it can readily be seen that my improved safety valve has many advantageous features. It is simple in construction; has but few parts, and those readily accessible, the guide being on the outside of the raised seat or column leaves a free uninterrupted passage for the steam on the interior, so that the valve receives the full force of the steam, and, further, the valve is readily detached from the guide for repairs, or it can readily be ground to its seat on removing the outer shell.

While I show the valve projections as

being threaded to receive the threaded caps and guide, these projections could be turned up to fit said caps and guide sufficiently tight so as to be removed therefrom when required.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:

1. The combination, in a safety valve, of an outer shell having a threaded mouth, a hollow base having an exteriorly threaded flange therefor, an inwardly projecting cylindrical column rising from said base and integral therewith, and having a valve seat on its upper end, a valve for said seat having upper and lower threaded projections central therewith, a guide for the valve having an upper surface provided with a threaded hole central therewith adapted to engage with the upper threaded projection of the valve, said guide embracing the column so as to steady the valve in its vertical movements, a cap nut engaging said upper threaded projection of the valve and resting on the guide, a compression spring resting on the upper surface of said cap nut, means for exerting a tension on said spring, a cap nut engaging the lower threaded projection of the valve, for the purpose set forth.

2. In a safety valve, a hollow base and a hollow column projecting therefrom and having a valve seat at its upper end, a valve therefor, a skeleton guide for said valve embracing the column comprising vertical ribs, the upper end of said ribs having depressions opposite the seat so as to permit of a free escape of steam, for the purpose set forth.

3. In a safety valve of the character described, a hollow base, an outer shell connected thereto, said base having a hollow column rising therefrom and within the shell and having at its upper end a valve seat, a valve therefor, said valve having central projections and centers in said projections, a guide mounted on one of said projections and embracing the column, a cap for the end of said projection, a pressure spring bearing on said cap, and a protecting cover for the other of said valve projections, for the purpose set forth.

Signed at New Haven in the county of New Haven and State of Connecticut this 3rd day of November A. D. 1906.

JAMES FRASER.

Witnesses:

PETER D. GIBBONS,
ADELBERT BREWSTER.