

H. J. JOHNSON.
STEAM BOILER FLUE CLEANER.

Patented May 24, 1898.

Fig. 1.

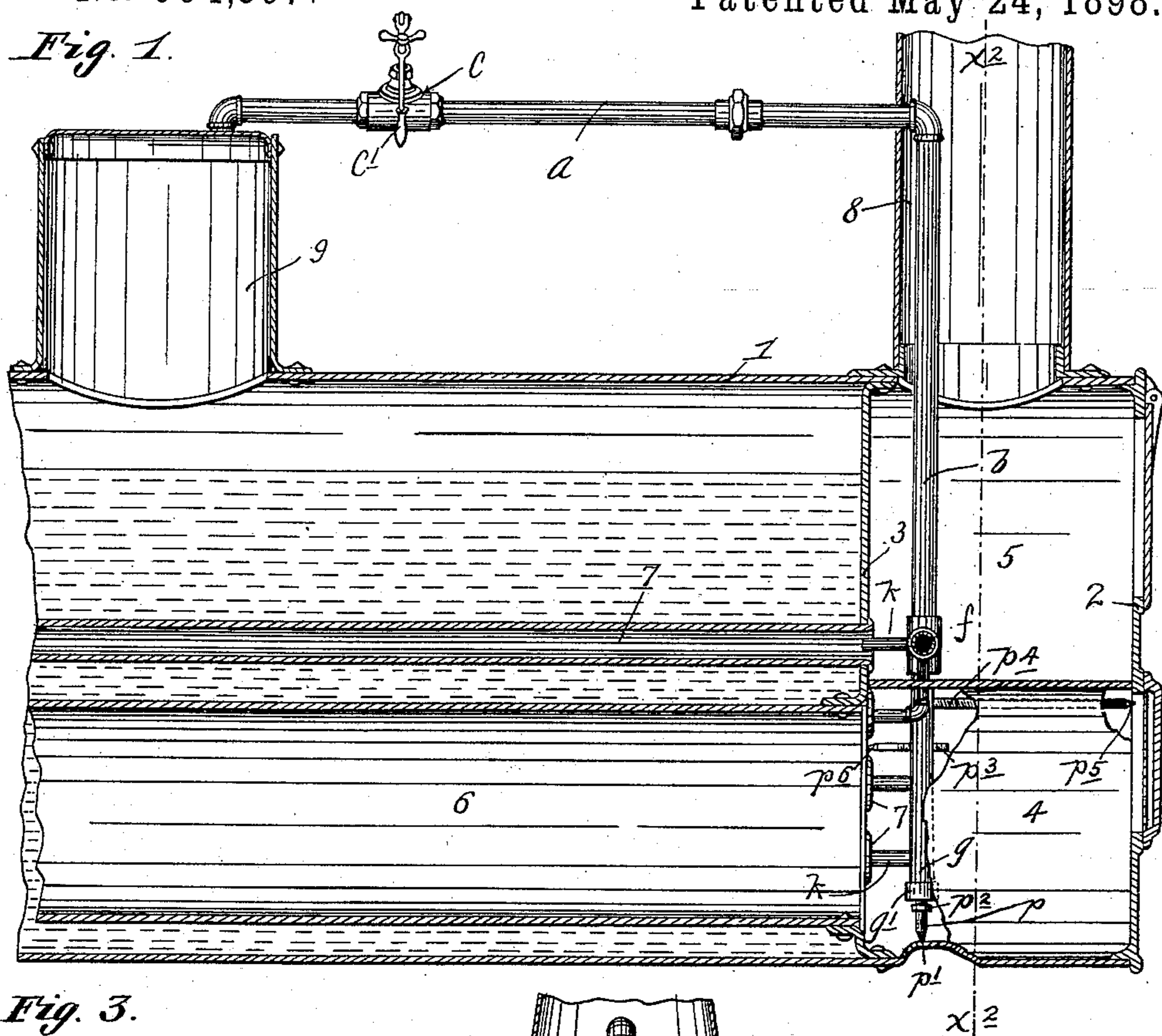


Fig. 3.

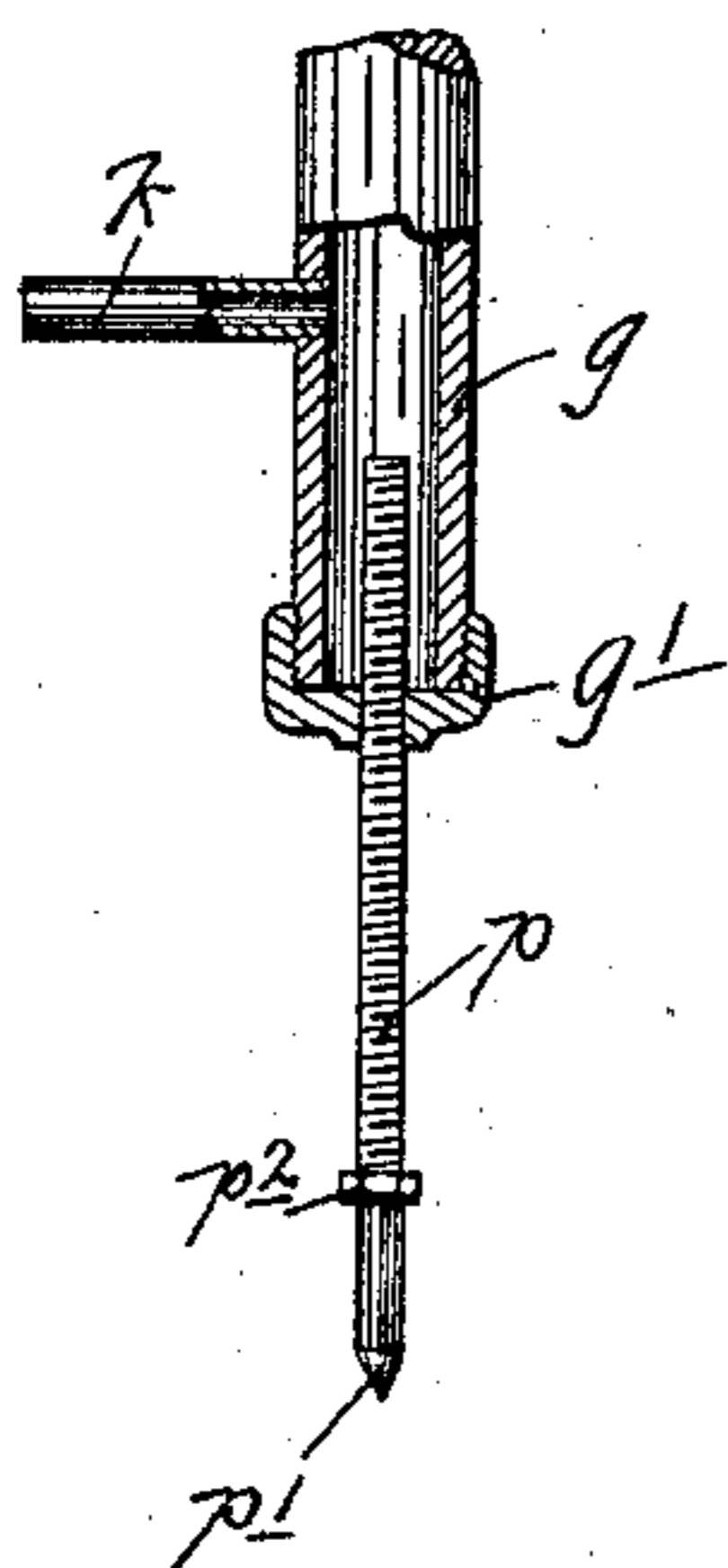
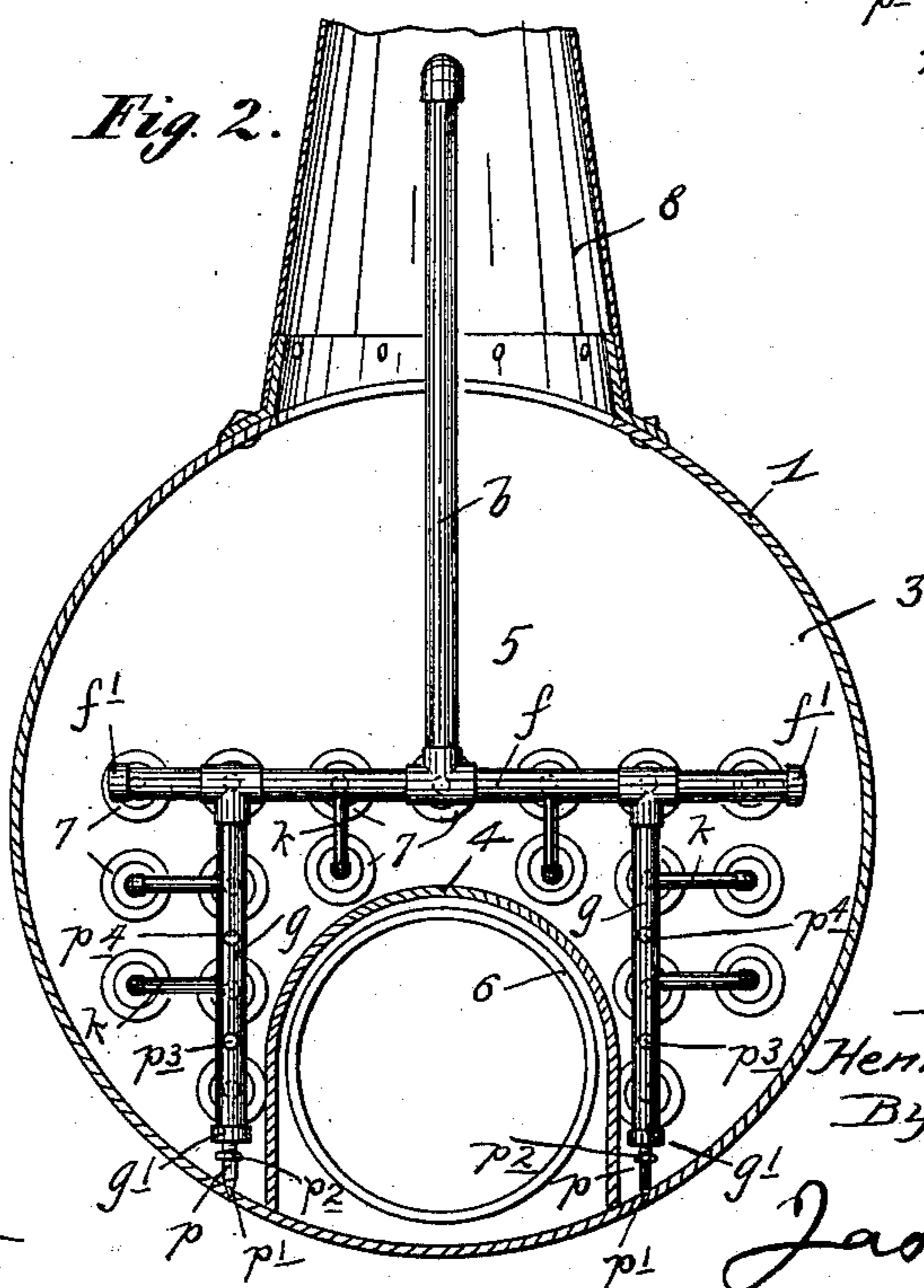


Fig. 2.



Witnesses

C. F. Kilgore

J D Merchant

Inventor

Henry T. Johnson.
By his Attorney

^{g₂}
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UNITED STATES PATENT OFFICE.

HENRY J. JOHNSON, OF FARGO, NORTH DAKOTA.

STEAM-BOILER-FLUE CLEANER.

SPECIFICATION forming part of Letters Patent No. 604,397, dated May 24, 1898.

Application filed July 26, 1897. Serial No. 645,943. (No model.)

To all whom it may concern:

Be it known that I, HENRY J. JOHNSON, a citizen of the United States, residing at Fargo, in the county of Cass and State of North Dakota, have invented certain new and useful Improvements in Permanent Steam-Boiler-Flue Cleaners; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention is in the nature of an improvement on that type of permanent steam-boiler-flue cleaners which is disclosed in a patent to one Joseph T. Thompson, No. 541,027, issued June 11, 1895.

The device disclosed in the invention above referred to, while perfectly operative, was, nevertheless, subject to the serious objection that it was liable to be shifted out of position, so that the nozzles would not be properly centered with the flues. Furthermore, when the very strong and sudden impulse or steam-pressure was thrown onto the nozzles in the flue-cleaning action the back kick or reaction would tend to throw the nozzle-bearing section outward or away from the flues, and in this manner the nozzles would be thrown out of line with the axial centers of the respective flues into which they are positioned to operate. In either case when the nozzles are thrown out of axial line with the centers the efficiency of the cleaner or flue-cleaning device is materially decreased. By my invention I provide simple and efficient means for rigidly securing or anchoring the nozzle-containing section of the cleaner in properly-set working position within the boiler.

The preferred form of my said invention is illustrated in the accompanying drawings, wherein, like characters indicating like parts throughout the several views—

Figure 1 is a longitudinal vertical section taken centrally through a boiler to which a flue-cleaner provided with my improved anchoring devices is applied, some parts of said boiler being broken away. Fig. 2 is a transverse vertical section taken on the line $x^2 x^2$ of Fig. 1; and Fig. 3 is a detail view, partly in side elevation and partly in section, show-

ing the lower end of one prong of the flue-cleaner.

1 indicates the main shell of a boiler, 2 one of the boiler-heads, 3 one of the flue-sheets, 4 the fire-box, 5 the smoke-box, 6 the main or direct flue, 7 the return-flues, 8 the smoke-stack, and 9 the dome, which parts are all of the ordinary construction and make up what is known as a "return-flue boiler."

The cleaner shown comprises the following:

A horizontal pipe a extends from the dome 9 into the stack 8 and is provided with a downturned or vertical section b . The said section a is provided with a quick-acting valve c , which is operated by a hand-lever c' . The vertical pipe-section b is provided at its lower end with a horizontal pipe-section f , which extends transversely of the boiler in both directions from the said section b . The ends of the horizontal pipe-section are closed by caps f' . Said horizontal pipe-section f is provided with a pair of depending vertical prongs or pipe-sections g , which extend one on each side of the fire-box 4. The lower ends of these depending pipe-sections g are closed by caps g' .

k indicates the series of discharge nozzles or nipples, which extend some from the pipe-section f and some from the pipe-sections g . These discharge nozzles or nipples are positioned with their free ends in axial line, one with each of the return-flues 7.

To hold the parts above described rigidly in their set positions, I employ a pair of extensible feet or spuds, preferably in the form of screw-threaded rods p , which work with screw-threaded engagement through caps g' of the depending pipe sections or prongs g . Preferably the lower ends of the legs or spuds p are formed conical, as indicated at p' , and they may also be provided with an angular portion p^2 , to which a wrench may be applied. The conical ends p' are adapted to engage depressions or seats formed in the boiler-shell 1, or if such seats are not provided the points will themselves form seats, so that they cannot possibly slip sidewise. By means of a wrench applied to the angular portion p^2 the leg or spud p may be forced downward to adjust itself to the size of the boiler and rigidly

hold the nozzle-bearing sections against vertical movement.

Through each depending pipe-section g , longitudinally of the boiler, I pass two extensible arms or rods p^3 and p^4 . Both of these rods or arms p^3 p^4 have screw-threaded engagement with the pipe-section g and are provided at their ends with conical points p^5 p^6 , respectively. The conical points p^5 of the rods p^3 extend inward and are adapted to engage with the boiler-head 2, while the conical points p^6 of the rods p^4 extend outward and are adapted to engage the flue-sheet 3. When these rods p^3 and p^4 are extended so as to engage the boiler-head 2 and the flue-sheet 3, as just described, the nozzle-bearing sections of the cleaner will be rigidly held against movement in all directions, either longitudinally or transversely of the boiler.

The anchoring devices above described serve to anchor or rigidly secure the flue-cleaner in working position and also afford very simple and efficient means of adjustment to boilers varying in diameter and smoke-box space.

It will of course be understood that various alterations in the specific details above described may be made without departing from the spirit of my invention.

What I claim, and desire to secure by Letters Patent of the United States, is as follows:

1. The combination with a boiler, of a flue-cleaning device involving nozzled pipe-sections suspended within the smoke-box or similar compartment, and one or more ex-

tensible or adjustable rods or spuds adapted to be extended for engagement with a fixed part of the boiler, substantially as described.

2. The combination with a boiler, of a flue-cleaning device involving nozzled pipe-sections suspended within the smoke-box or similar compartment, and adjustable or extensible rods or spuds, at least one projecting downward, one forward, and one rearward, for contact with fixed parts of the boiler, substantially as described.

3. The combination with a boiler, of a flue-cleaning device involving the pipe-sections f and g provided with the discharge-nozzles k , and the extensible arms or spuds p working through the lower closed ends of said pipe-sections g , substantially as described.

4. The combination with a boiler, of a flue-cleaning device involving the pipe-sections f and g with discharge-nozzles k , the extensible screw-threaded rods or spuds p working through the lower closed ends of said pipe-sections g , and the screw-threaded extensible arms or spuds p^3 p^4 , the former extending forward, and the latter extending rearward from said pipe-sections g , for engagement, respectively, with the boiler-head 2 and flue-sheet 3, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

HENRY J. JOHNSON.

Witnesses:

LILLIAN C. ELMORE,
F. D. MERCHANT.