

(No Model.)

T. HAYNES.
FAUCET.

No. 387,162.

Patented July 31, 1888.

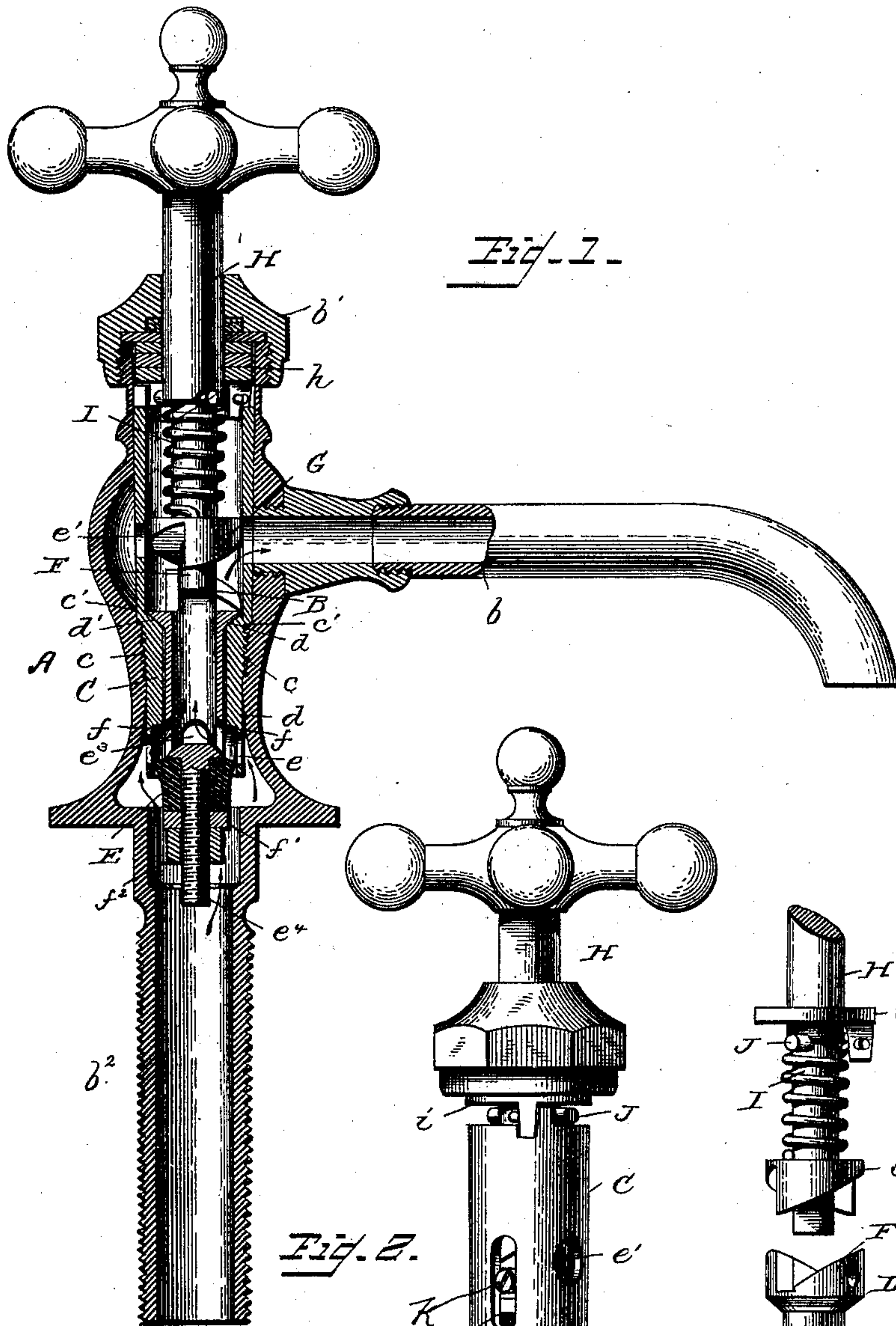


Fig. 2.

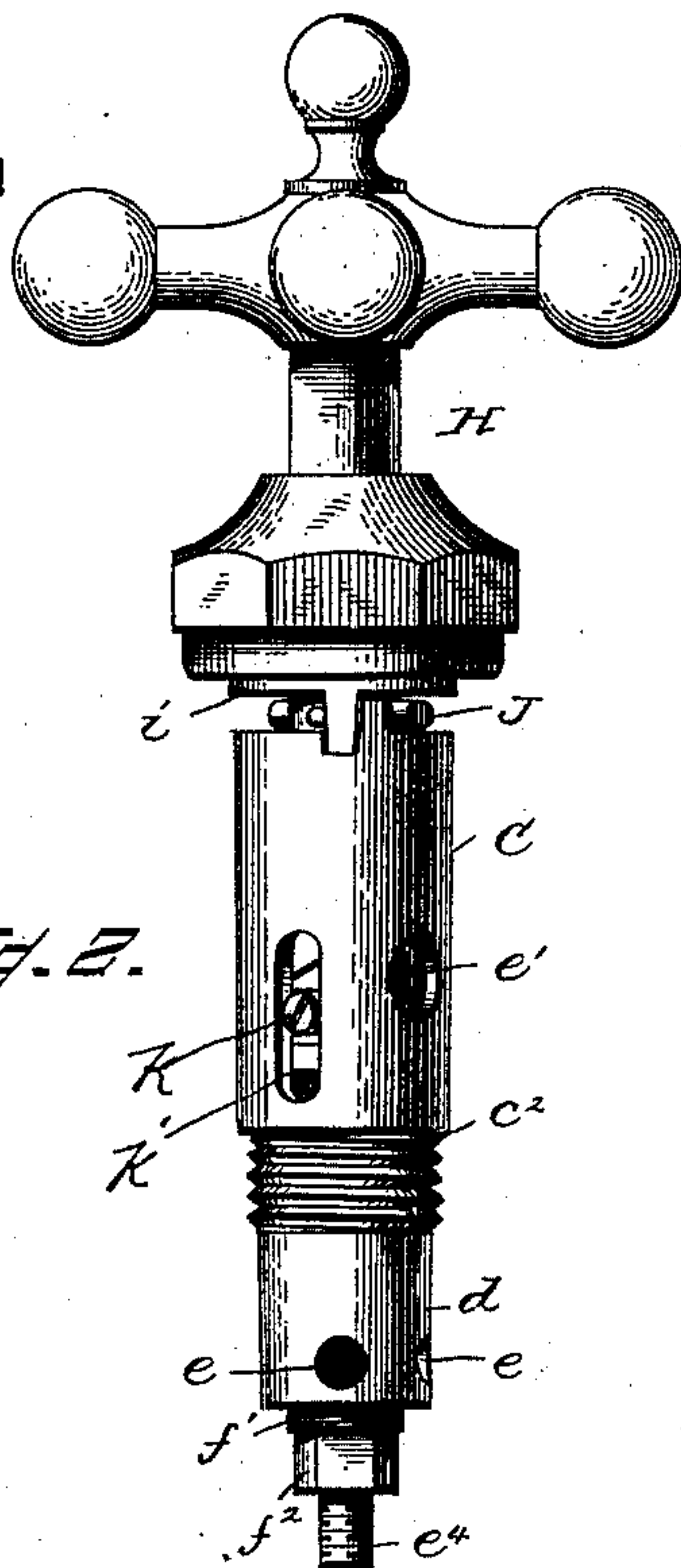


Fig. 4.

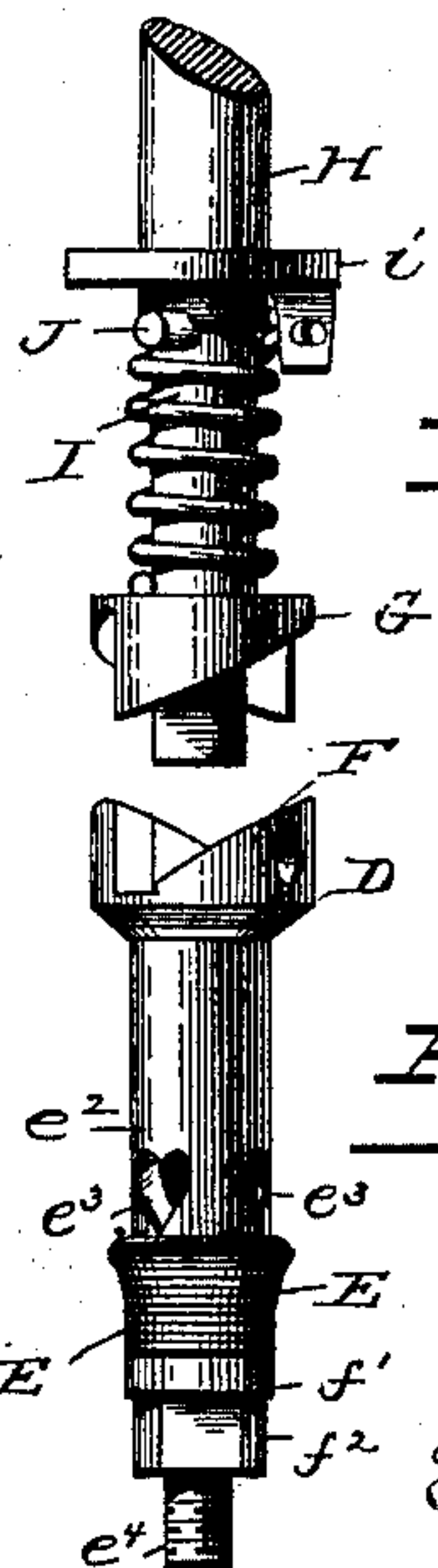
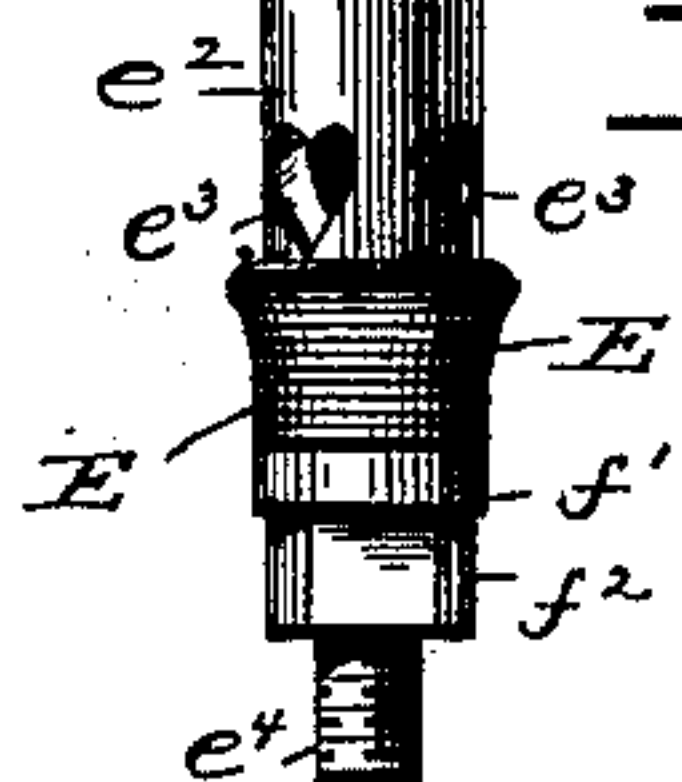


Fig. 3.



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UNITED STATES PATENT OFFICE.

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FAUCET.

SPECIFICATION forming part of Letters Patent No. 387,162, dated July 31, 1888.

Application filed August 5, 1887. Serial No. 246,194. (No model.)

To all whom it may concern:

Be it known that I, THOMAS HAYNES, a citizen of the United States, residing at Kansas City, in the county of Jackson and State of Missouri, have invented certain new and useful Improvements in Faucets; and I do 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, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

My invention relates to improvements in faucets; and it consists of the peculiar combination and construction of devices, as will be hereinafter fully described, and particularly pointed out in the claims.

The object of my invention is to provide a faucet with an improved valve which is automatically forced to its seat independently of the operating-spindle and solely by the pressure of the water or other liquid thereon to cut off the escape of water through the spout of the faucet.

A further object of my invention is to provide an operating-spindle with means which engage the valve and force the same from its seat when the spindle is depressed by hand to permit water to flow through the spout.

In the accompanying drawings, Figure 1 is a vertical central longitudinal sectional view of a faucet embodying my improvements with the valve closed. Fig. 2 is a side elevation of the valve, the shell thereof and the operating-spindle removed from the case of the faucet. Figs. 3 and 4 are detached views of the valve and spindle respectively.

Referring to the drawings, in which like letters of reference denote corresponding parts in all the figures, A designates a faucet embodying my invention. The faucet is provided with the inclosing shell or casing B of the usual pattern, having a horizontally-projecting spout, *b*, a removable cap, *b'*, which is screwed over the upper end of the shell to close that end of the same, and a vertical tubular extension, *b²*, at the lower end of the shell, through which the water from a pipe or other source of water-supply enters the shell.

For the purpose of holding the valve shell C of my invention securely in place the inclosing-case A is provided at a point below the spout *b* with interior screw-threads, as at *c*, and an annular shoulder or ledge, *c'*, which is arranged above the screw threads, as shown.

The valve shell C is made tubular in form, and at or near its middle it is exteriorly threaded and provided with an annular ledge, *c²*. The shell is inserted in the open upper end of the case B and rotated by any suitable means, so that the screw-threads engage and the shoulders abut together to securely hold the valve-shell in place within the inclosing shell or case.

The valve-shell is contracted in diameter at its lower extremity, as at *d*, and formed with an interior annular valve-seat, *d'*, at a point above the contracted end of the shell. The lower contracted end of the shell is formed with inlet-ports *e*, through which the water surrounding the lower extremity of the valve-shell enters, and one or more outlet-ports, *e'*, are formed in the upper portion of the valve-shell above the seat *d'* therein and opposite the inner end of the discharge-spout *b*.

As the valve-shell is fixed or secured in the inclosing-case at an intermediate point of its length, water is prevented from passing through and between the two shells; but the water can pass through the interior of the valve-shell with freedom when the valve is forced from its seat, the water passing in and out of the inlet and discharge ports *e e'* at opposite ends of the valve-shell.

D designates the valve, which is made of such a diameter as to snugly fit or rest on the valve-seat on the valve shell. The valve has a depending tubular stem, *e²*, which extends a short distance into the contracted end of the valve-shell to a point below an annular ledge or shoulder, *f*, on the inner wall of the valve-shell when the valve rests on its seat. The lower extremity of the tubular extension of the valve has inlet-ports *e³* formed therein at a point above a head which closes the lower end of the same, and from said extension depends a threaded solid stem or rod, *e⁴*, on which is affixed a packing, E. This packing is made in the form of a rubber or other elastic block, and it is of greater diameter than the

lower annular shoulder, f , of the valve-shell, against which shoulder the valve-packing impinges when the valve is elevated by the pressure of the water against the valve and packing. The packing works freely in the contracted end of the valve-shell and out of contact with the same, and the packing is held securely in place by means of a washer, f' , and a nut, f^2 , which are screwed on the threaded stem of the valve, as shown.

The valve has a central opening or port which aligns with the bore or passage in the tubular extension to permit the water which enters the ports of the lower end of the extension to escape through the valve, and the upper surface of the valve, at the perimeter thereof, is formed with inclined shoulders which provide a cam, F , against which impinges or upon which rides a similar cam, G , which is formed on the lower extremity of the vertical operating-spindle H . The spindle passes through the fixed cap b' and has a knob or handle at its upper end, and a packing, h , is fitted around the spindle below the cap to be housed within the latter. A coiled spring, I , encircles the spindle to normally return the same, so that the inclined faces of the cams impinge against one another and the cams are locked together, and one end of this coiled retracting-spring is connected to the cam on the spindle, while the opposite end of the spring is secured to a disk or washer, i , which is fitted on the spindle beneath the packing h . A stop-pin, J , passes horizontally through the spindle at a point below the disk or washer i , and the ends of the stop-pin are extended beyond the spring to ride on the upper edge of the valve-case, the latter being provided with integral lugs or shoulders i , which are arranged in the paths of the ends of the stop-pin, to be struck by the latter, and thereby limited in their movement. The operating-spindle can be readily given a half or quarter turn in one direction by hand-pressure to disengage or separate the inclined faces of the cams; but the further movement of the spindle in the same direction is limited by the ends of the stop-pin striking against the lugs or shoulders, and when the hand-pressure is removed from the spindle the latter is automatically returned by the coiled retracting-spring to its normal position, in which the cams are locked together.

The valve is capable of vertical movement or play in the valve-shell, and it is guided in this movement by means of a pin or screw, k , which is fixed to the valve and rides in a vertical slot, k' , formed in the valve-shell, as shown in Fig. 2.

The operation of my invention is as follows: The pressure of the water in the extension of the inclosing-case of the faucet against the lower end of the valve and the packing thereof normally elevates the valve from its seat, so that the ports in the lower extremity of the tubular extension of the valve are housed in

the valve-shell above the shoulder f thereof, and the packing is pressed against the said shoulder to prevent the water from passing into the tubular extension of the valve, the inclined faces of the cam on the valve impinging against the corresponding faces of the cam on the spindle. In this position the water which enters the lower end of the valve-shell through the inlet-ports thereof is prevented from passing through the valve and the discharge-spout of the faucet. To operate the faucet, hand-pressure is applied to the knob of the operating-spindle to give the latter a quarter or half turn and cause the cam G to ride upon the cam F and depress the valve to its seat, so that the packing is forced from the annular shoulder f to leave a space around the same, and through which the water flows into and through the ports in the tubular extension of the valve. The water rises in the valve and flows through and around the cams, which have been separated by the rotation of the spindle, and thence around the spindle, up the valve-case, and through the outlet-ports of the latter through the discharge-spout. When the hand-pressure is removed from the spindle, the latter is rotated a quarter or half turn by the spring to bring its cam into position to engage or lock with the cam of the valve, and the pressure of the spindle-cam having been released from the valve-cam the valve is raised by the pressure of the water thereon to its normal position and the flow of water cut off.

I do not desire to confine myself to the details of construction and form and proportion of the parts herein shown and described as an embodiment of my invention, as I am aware that changes and modifications can be made therein without departing from the spirit or sacrificing the advantages of my invention.

I am aware that it is not new, broadly, to provide a faucet with an axially-turning spindle capable of endwise movement in the shell to depress an endwise-movable valve which is normally elevated by a coiled spring interposed between the lower end of the valve and a shoulder on the valve-shell; and I am also aware that it is not new to provide an endwise-movable valve adapted to be closed solely by the pressure of water thereon. My invention is distinguished from these devices in that I connect the reciprocating valve with the valve-shell in such manner that the valve is prevented from turning on its axis when the spindle is turned axially to depress the valve, and thus prevent the valve from turning with the spindle when the cams are engaged and insure a positive downward movement of the valve, the connection of the valve with the shell being a loose one to adapt the valve to be elevated and closed solely by the pressure of the water thereon and to be guided in the shell to cause its cam to engage the cam of the spindle when the latter is released. By the use of the torsional spring and the stop-pin on the spindle, which is normally forced against lugs on

the valve-shell by the tension of the spring, the spindle is held in such position that the cams will properly engage when the spindle is released and the valve elevated, so that the parts are in position for instant use.

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

1. In a faucet, the combination, with a valve-shell and an axially-turning valve-stem having a cam, of a reciprocating valve, also having a cam and connected to said shell, to be thereby limited to endwise movement therein and guided by the shell, so that the pressure of the water on the valve normally elevates the same and causes its cam to engage the cam of the spindle, and a torsional spring connected to the spindle to hold and return the same to a position in which the two cams interlock when the spindle is released, substantially as described.

2. In a faucet, the combination, with a valve-shell and an axially-turning spindle having a cam, of a reciprocating valve having a loose pin-and-slot connection with the valve-shell and a cam on its upper end, a torsional spring connected to the spindle, and a stop-pin fixed to the spindle and normally pressed against stop-lugs on the valve-shell by the tension of the spring, to thereby hold the spindle in such position as to cause the two cams to interlock when the valve is elevated by the pressure of the water thereon, substantially as described.

3. In a faucet, the combination, with a fixed valve-shell, of a reciprocating valve having a loose pin-and-slot connection with the shell to guide the valve in a direct line and permit it to be elevated solely by the pressure of water thereon, said valve having a longitudinal passage which extends centrally through the cam on the upper extremity thereof, and with lateral inlet-ports which open into the lower end of said passage, an axially-turning spindle having a cam, a torsional spring connected to the spindle, and a pin fixed to the spindle to limit the axial movements of the same, substantially as described.

4. In a faucet, the combination, with a valve-shell, of a hollow valve having a pin-and-slot connection with the shell, an axially-turning spindle, and a torsional spring connected to the spindle, the meeting ends of the valve and spindle having cams located in the horizontal plane of the outlet-spout of the faucet, whereby, when the cams are separated to depress the valve, the water flowing through the latter escapes through the spaces between the opposing edges of the cams, substantially as described.

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

THOMAS HAYNES.

Witnesses:

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R. T. COOMBS.