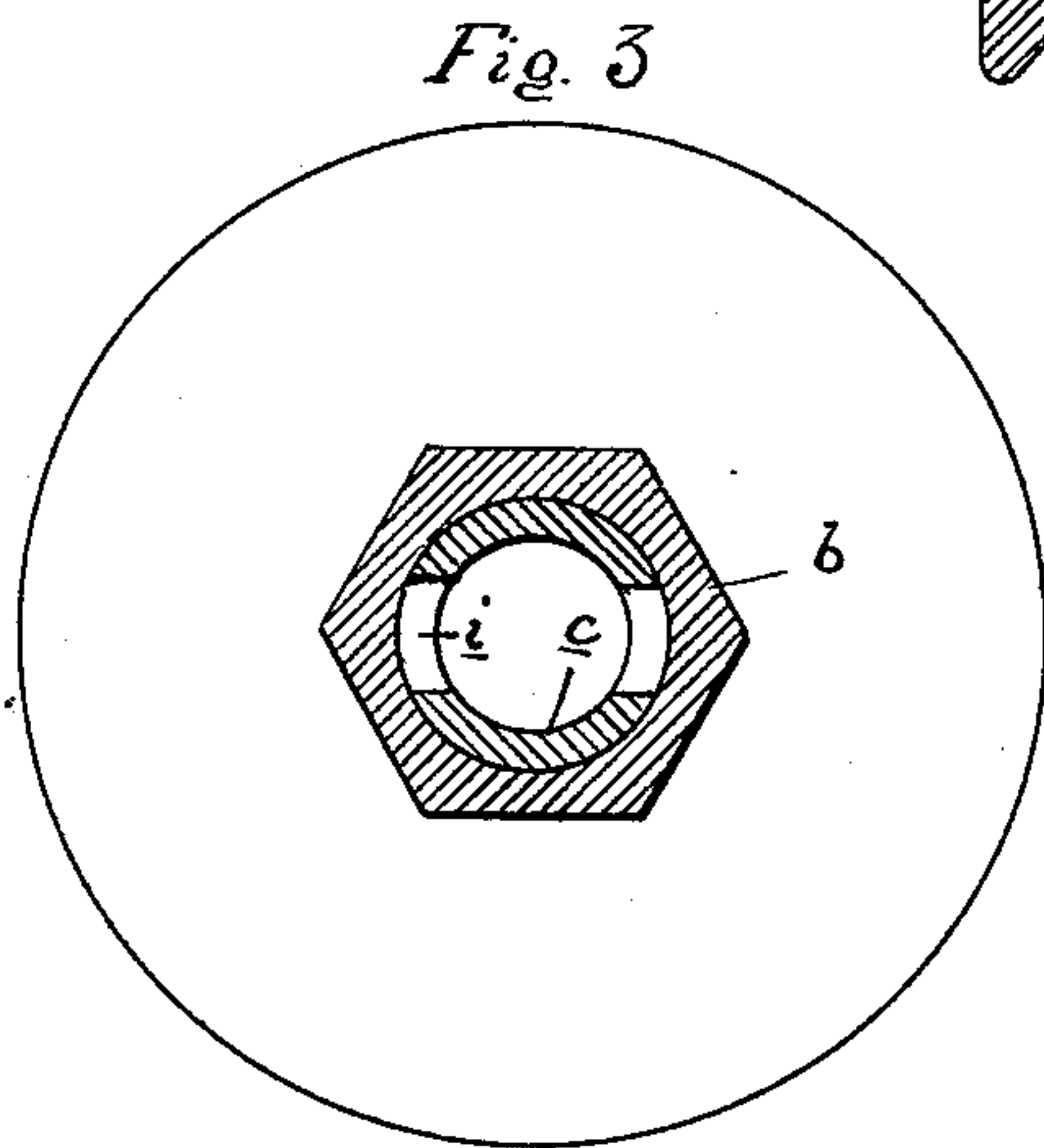
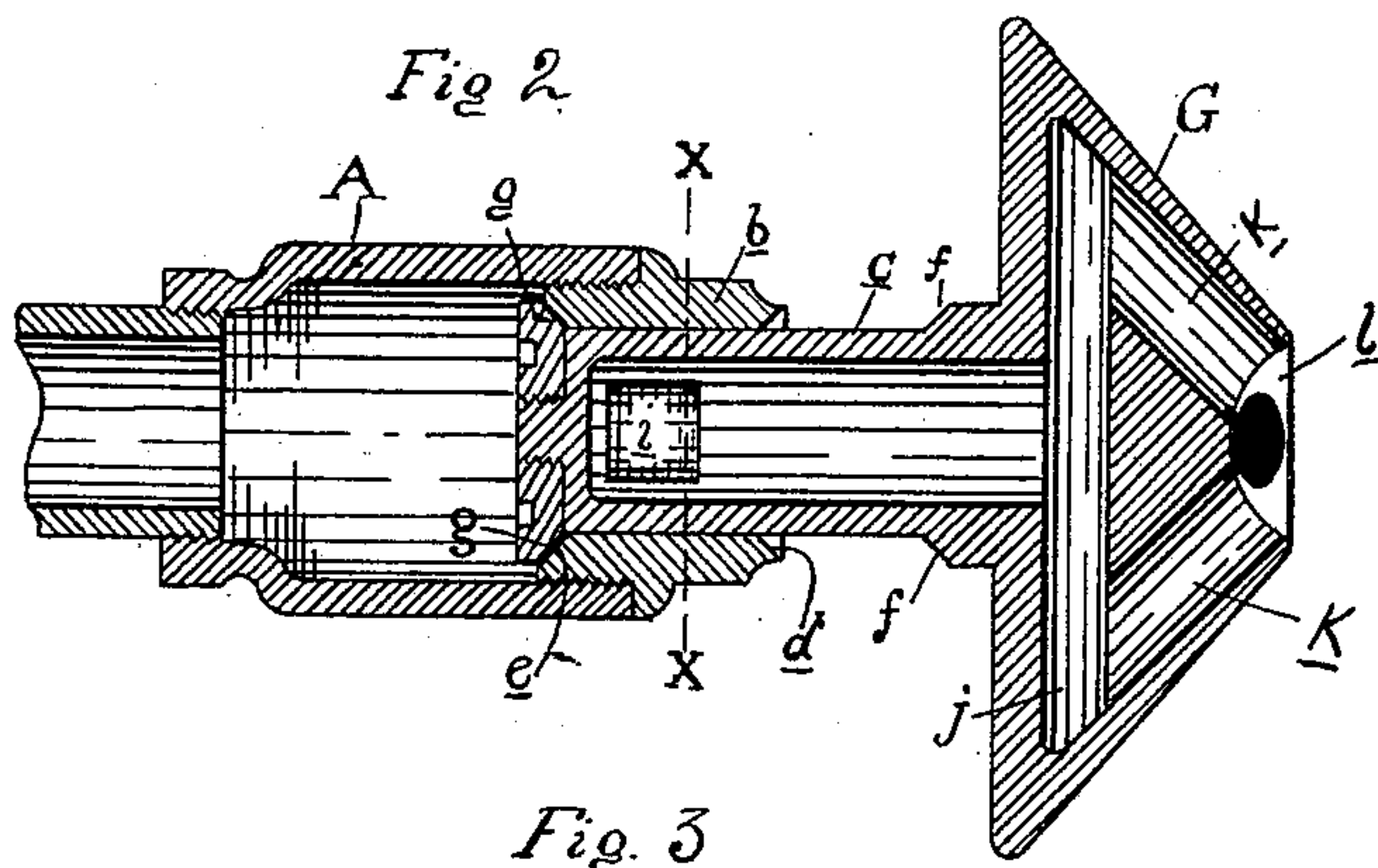
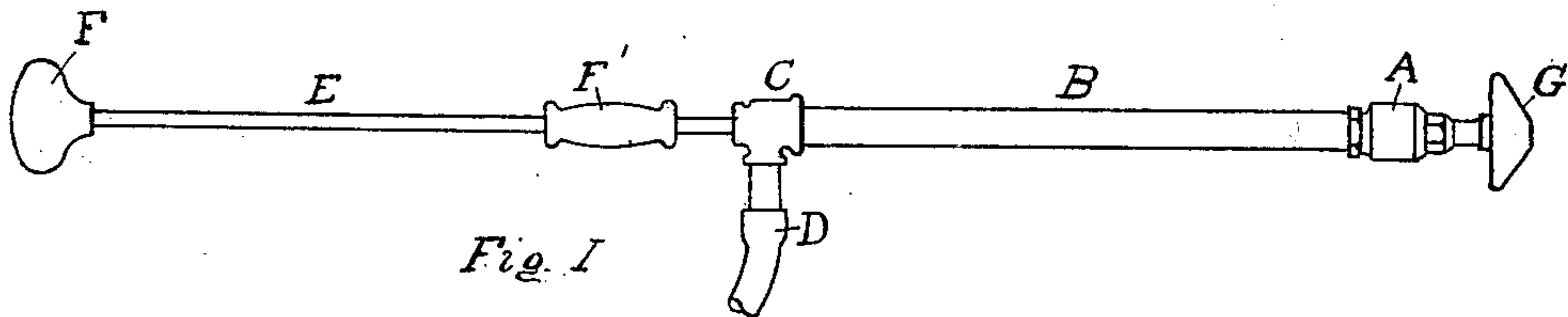


(No Model.)

H. KEES.
FLUE CLEANER.

No. 373,461.

Patented Nov. 22, 1887.



Witnesses:
R. M. Hulbert.
H. S. Sprague

Inventor:
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By J. W. Robertson
Att'y.

UNITED STATES PATENT OFFICE.

HERMAN KEES, OF DETROIT, MICHIGAN, ASSIGNOR OF TWO-THIRDS TO
HERMAN SCHWEIM AND FRED BAISCH, BOTH OF SAME PLACE.

FLUE-CLEANER.

SPECIFICATION forming part of Letters Patent No. 373,461, dated November 22, 1887.

Application filed June 3, 1887. Serial No. 240,181. (No model.)

To all whom it may concern:

Be it known that I, HERMAN KEES, of Detroit, in the county of Wayne and State of Michigan, have invented new and useful Improvements in Flue-Cleaners; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, which form a part of this specification.

This invention relates to certain new and useful improvements in flue-cleaners of that class wherein live steam is used as the agent to remove the scales and soot.

The invention consists in the peculiar construction, arrangement, and operation of the head or steam-nozzle, whereby provision is made to control the steam automatically in such manner that when the cleaner is inserted into a boiler-flue the nozzle will automatically operate to permit the steam to issue, while the withdrawal of the cleaner will act to shut off the steam, all as hereinafter described.

Figure 1 is a view of the cleaner. Fig. 2 is a vertical central section through the head or nozzle. Fig. 3 is a cross-section on line *x x* in Fig. 2.

In the accompanying drawings, which form a part of this specification, A is the head of the cleaner, which is attached to a tube, B, through which the steam is conducted into the nozzle, and which is provided with a suitable coupling, C, for joining it with a hose-connection, D, through which the steam is taken from any suitable source of supply.

E is a rear extension, by means of which the device is handled in operation, and this extension carries the fixed handle F and sliding handle F', both preferably of wood, for convenient and safe operation.

The head consists of a fixed and of a removable portion, which latter carries the nozzle, G, proper. The fixed portion consists of a hollow shell screw-threaded at both ends, one end for screwing it to the tube B and the other end to receive the cap *b*, which latter is centrally apertured and provided with shoulders or valve-seats *d e*.

The nozzle G is provided with a hollow cylindrical stem, *c*, which slides into the aper-

ture of the cap and has a longitudinal play therein, which is limited by the shoulders or valve-seats *f g*, which correspond, respectively, with the fixed valve-seats *d e*, formed on the cap *b*.

One or more steam-ports, *i*, are formed in the stem *c* and communicate with the nozzle G, which is cone-shaped and provided with a hollow base, *j*, and a series of apertures, *k*, which converge from the outer portions of said hollow base toward the apex of the cone and jointly terminate in a common flaring discharge-opening, *l*.

In practice, steam being admitted into the device through the hose-connection D, the pressure of said steam acting against the imperforate end of the stem *c* forces said stem into the position shown in Fig. 2, wherein the steam is normally prevented from passing out through the ports *i*, the valve-seats *g e* forming a steam-tight joint at the same time. If the device is now pushed by the operator into a boiler-flue, the frictional resistance of the head G (provided the latter is of proper size) forces the stem *c* into the shell, thereby opening the valve-ports *i* to the admission of the steam, which finds its way out through the hollow base *j* and apertures *k* and issues in the form of a very effective fan-shaped jet, owing to the peculiar formation of the apertures in the head. Upon the withdrawal of the device the head G immediately resumes its former relative position with the shell and the steam is again shut off. The device will be found therefore very convenient and economical in the use of steam, and its automatic operation greatly expedites the work of the operator.

What I claim as my invention is—

1. In a flue-cleaner, a steam-nozzle, G, provided with a hollow cylindrical stem having lateral steam-ports and sliding within a fixed portion, whereby the steam-ports in said stem are normally closed by the pressure of the steam, substantially as described.

2. In a flue-cleaner, a movable steam-nozzle, G, connected with a fixed portion, said nozzle sliding within said fixed portion by means of a hollow cylindrical stem laterally apertured and provided with shoulders or

valve-seats corresponding with similar valve-seats on the fixed portion to form steam-tight joints, substantially as described.

3. In a flue-cleaner, the conical nozzle G, provided with the hollow base *j*, and a plurality of converging apertures, *k*, extending from said base to the apex, with the flaring discharge-orifice *l*, all substantially as described.

4. In a flue-cleaner, the combination of the fixed shell having valve-seats *d e*, the sliding nozzle G, having hollow cylindrical stem *c*, steam-apertures *i*, and valve-seats *f g*, all arranged to operate substantially as described.

HERMAN KEES.

Witnesses:

HERMAN SCHWEIM,
ADOLPH BARTHEL.