(No Model.)

2 Sheets—Sheet 1.

W. NERACHER.

FILTER.

No. 332,422. Patented Dec. 15, 1885.

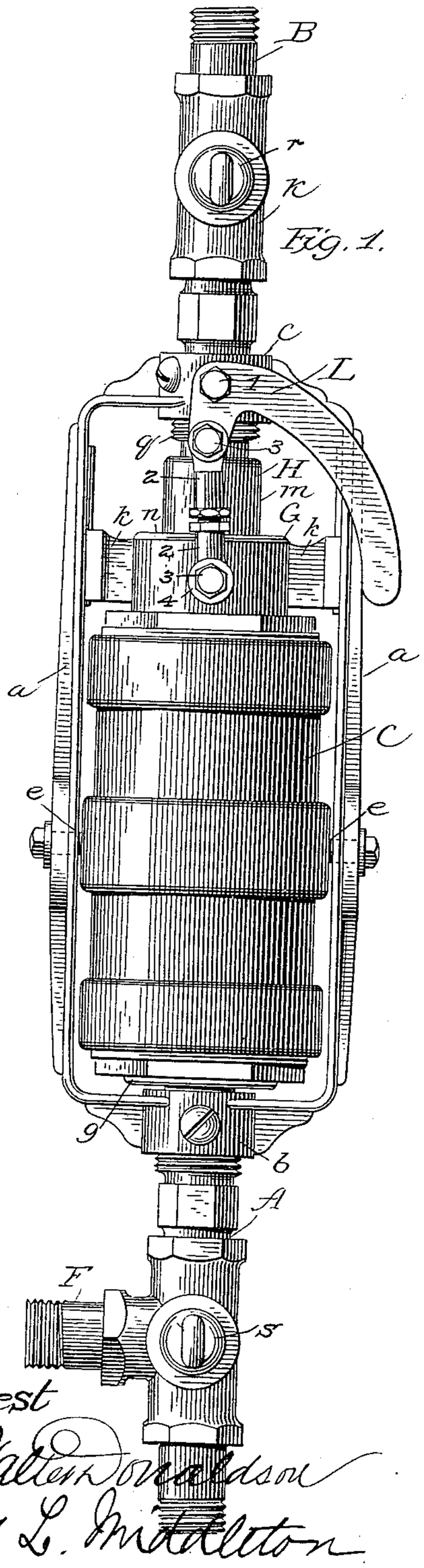

Fig. 1.

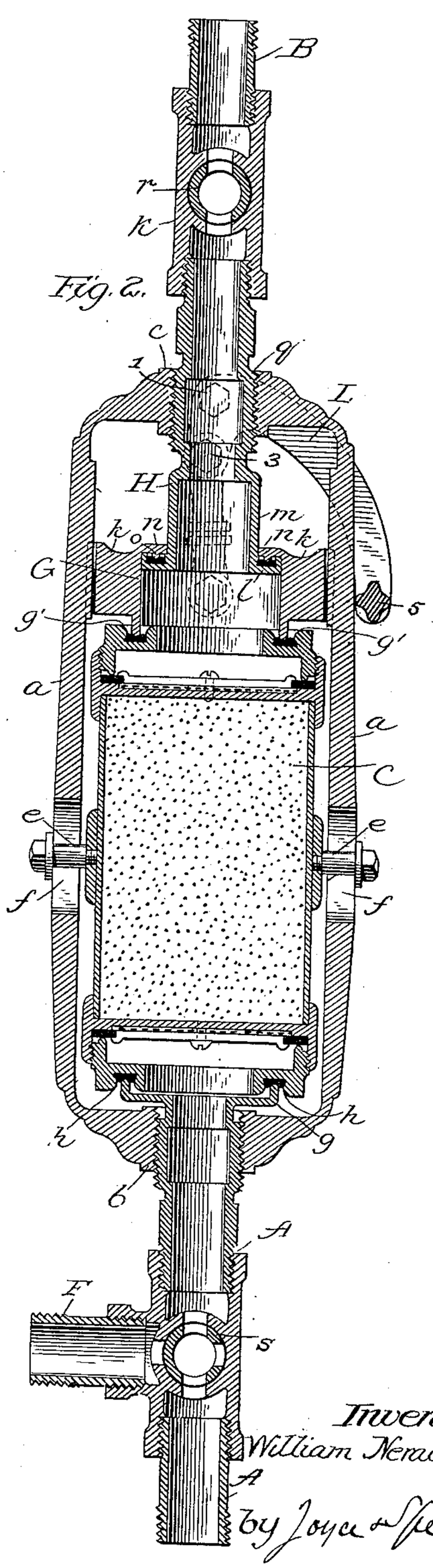

Fig. 2.

Attest
Walter Donaldson
F. L. Middleton

Inventor
William Neracher
by Joyce & Spear
Attys.

(No Model.)

2 Sheets—Sheet 2.

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FILTER.

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Fig. 3.

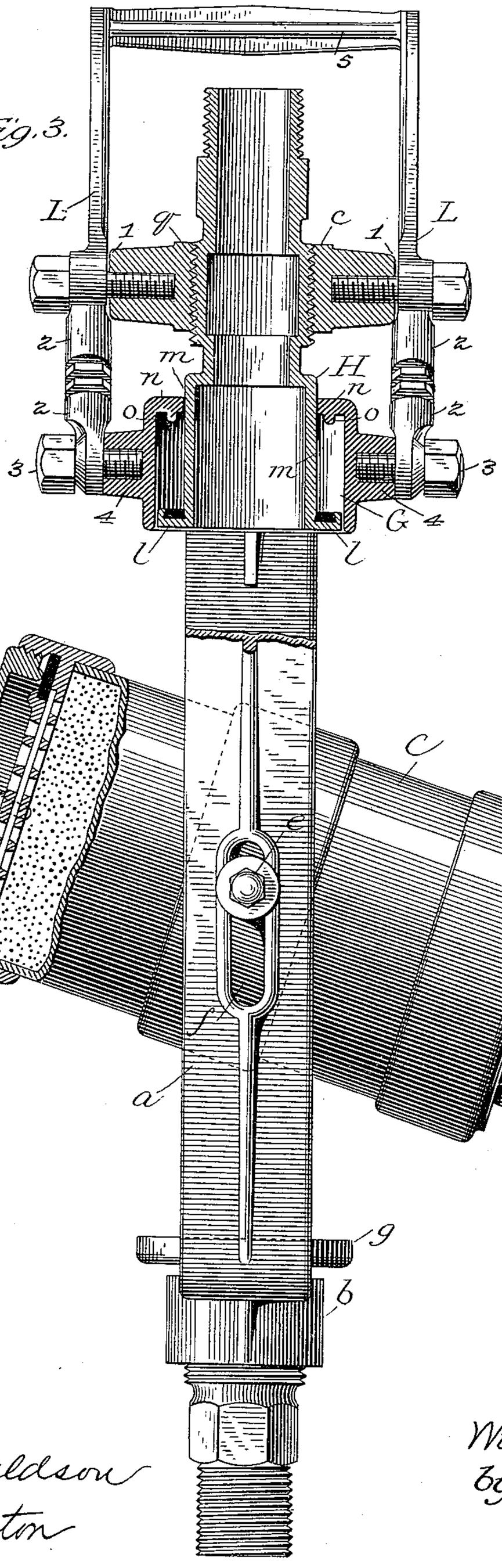

Fig. 4.

Attest:
Walter Donaldson
F. L. Middleton

Inventor
William Neracher
by Joyce & Kear
Attys

UNITED STATES PATENT OFFICE.

WILLIAM NERACHER, OF CLEVELAND, OHIO.

FILTER.

SPECIFICATION forming part of Letters Patent No. 332,422, dated December 15, 1885.

Application filed February 19, 1885. Serial No. 156,434. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM NERACHER, of Cleveland, in the county of Cuyahoga and State of Ohio, have invented a new and useful Improvement in Filtering Apparatus; and I do hereby declare that the following is a full, clear, and exact description of the same.

My invention relates to filters of that class which are adapted to be connected to the supply-pipe which conveys water to the delivery-faucet in houses or other buildings where filtered water is required for use.

The object of the invention is to provide convenient and effectual means for cleaning the filter when it has become foul.

In the accompanying drawings, Figure 1 shows a side elevation of my improved filter and its immediate connections. Fig. 2 shows the same apparatus in central longitudinal section. Fig. 3 is an elevation, partly in section, showing the filter swung to one side and the clamping mechanism raised. Fig. 4 represents a detail view.

In these drawings, C represents the filter; B, the pipe leading from the main to the filter, and A the pipe leading from the filter. Upon the pipe is supported a frame consisting of side bars, *a a*, connected at each end to collars *b c*, which collars are screwed upon sleeves on the pipes. Within this frame is pivoted the filter C on trunnions *e e*, which trunnions are adapted to turn and slide in elongated bearing-slots *f f* in the bars *a a*. On these trunnions the filter may be turned and reversed, and may also slide, for a purpose hereinafter explained.

The filter may be of any approved construction and of any external shape fitted to the position which it is designed to occupy. I prefer to make it of cylindrical shape, and in construction the same as the filter shown in the application filed by me in the United States Patent Office on the 14th day of February, 1885, No. 155,962.

In one end of the frame I place an annular seat, *g*. This is mounted on a hollow stem threaded to fit the hole in the collar *b*, this stem being connected to the house-pipe. An annular groove, *h*, is made in the head of the filter and provided with packing, against which the edge of the seat *g* fits when the filter is brought into line with the pipe. When in this position, the stem of the seat may be turned to bring the seat into close contact with the packing, forming a water-tight connection between the filter and the pipe. The other head of the filter is provided with a similar groove and packing-ring, *g'*, adapted to form a water-tight joint, with a sliding connection, which unites the filter to the pipe leading to the water-main. This sliding connection consists of a ring, G, the edges of which bear against the packing in the head of the filter. The ring has a true cylindrical internal surface, and is provided with wings *k k*, the ends of which are grooved to slide in feathers on the sides *a a*. A section of pipe formed especially for the purpose (marked H) has a flange, *l*, fitted exactly to the internal surface of the ring G. The pipe H has a smooth cylindrical surface, *m*, next to the flange *l*, and is fitted to slide within the overhanging flange *n* of the ring G. The flange *l* has an annular packing-groove, and the flange *n* has a corresponding annular rib, *o*, so that when the ring G is forced in, the rib *o* bears upon the packing and forms a water-tight connection between the pipe-section and the ring. The pipe-section H is connected to the supply-pipe by section K. The section H has a threaded portion, *q*, fitted to the threaded hole in the collar *c*, so that the pipe H is moved by turning in the collar. The ring G is connected to bell-crank levers L, which levers are pivoted on the collar at 1 1. The connection is formed between the short arms of these levers and the ring G by means of links 2 2, bolts 3, and the studs 4 on the ring. The ends of the long arms of the bell-crank lever are connected by handle 5, and the parts are preferably so shaped that when the handle 5 is pressed down against the side *a* the pivoted bolts 3 are carried slightly past the central line of the pivoted points 1, 3, and 4, and thus the ring is locked to the filter and presses the seats to the packing at both ends. The pipe-section H having been properly adjusted, the same movement presses the flange *l* with its packing against the rib *o*. A two-way cock, *r*, is provided in the pipe B, for shutting off water when the filter is to be reversed. A three-way cock, *s*, is provided in the pipe A at the junction between said pipe and the pipe F, which leads to the sewer. The links 2 are

made extensible, to provide for the proper adjustment of the parts.

It will be understood that the filter is to be located in the pipe at some accessible and convenient point. With the parts properly adjusted, the water is permitted to run until the filter has become clogged or works imperfectly. The filter is then to be reversed. This is done by first closing the cock *r*, pulling upon the handle 5, and thereby raising the ring G and removing it from the end of the filter. It has sufficient play to allow the filter to be shifted endwise to clear the seat on the other end and then to swing on its trunnions to a reversed position. The other end is then pressed to the seat *g*, and the handle 5 is brought down to the locked position heretofore described. In this position the filtered material accumulated at the receiving end of the cylinder in the first position is now on the discharge end and is washed away by the current. While this washing process is going on the cock *s* is open to allow the foul water to flow to the sewer. As soon as the water is found to run clear the cock *s* is turned to let the water onto the faucets.

I claim—

1. In combination with a water-supply pipe, a frame connected to the pipe, a reversible filter mounted in said frame, movable endwise therein and between the ends of the supply and discharge pipe, combined with movable connections for forming water-tight joints between the filter and the pipe at one end and fixed connections at the other, substantially as described.

2. In connection with a water-supply pipe, a frame connected to the pipe, a reversible filter mounted between the ends of said pipe on trunnions working in elongated bearings in said frame, combined with a fixed seat at one end, a movable seat at the other, and a lever for operating the parts carrying the movable seat, whereby the water-tight joints are formed, substantially as described.

3. In combination with the frame and reversible filter mounted in trunnions, which turn and slide in said frame, a fixed seat and packing at one end, a guided ring, G, and its seat fitted to the packing of the filter, the flange *n* on said ring, and a flange, *l*, on the pipe-section H, said ring being provided with operating-levers, all substantially as described.

In testimony whereof I have signed my name to this specification in presence of two subscribing witnesses.

WILLIAM NERACHER.

Witnesses:

J. B. THOMPSON,

F. L. MIDDLETON.