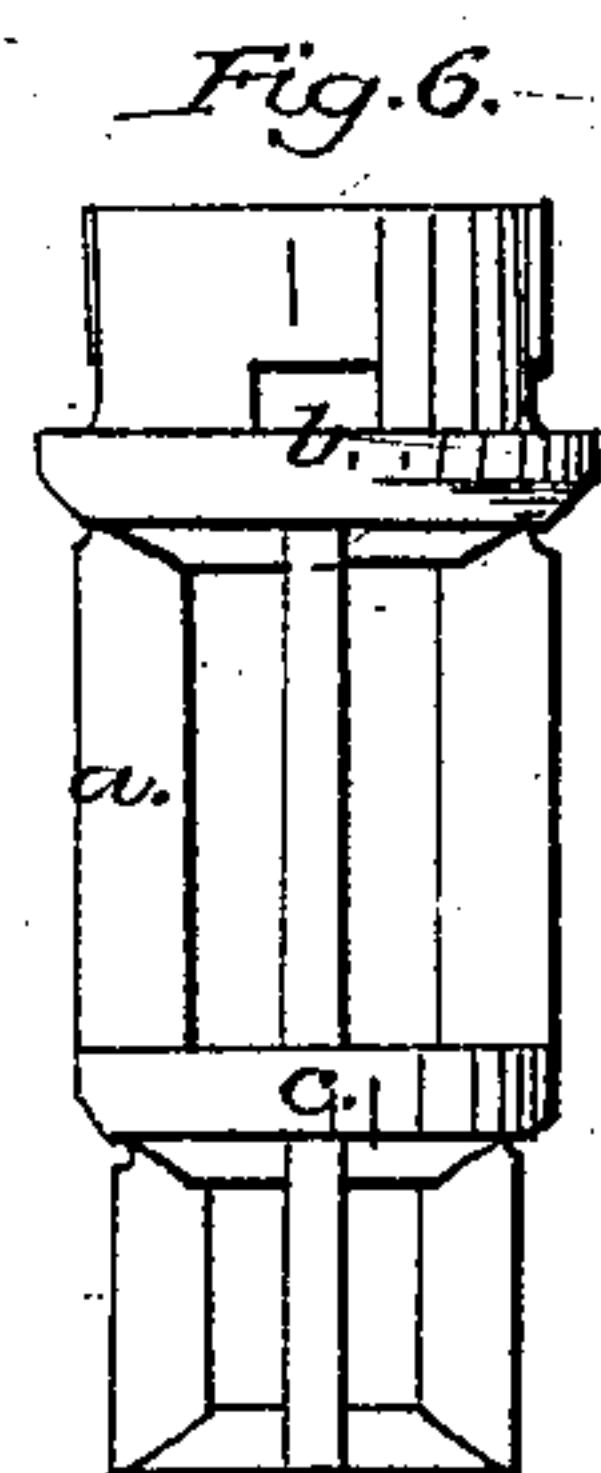
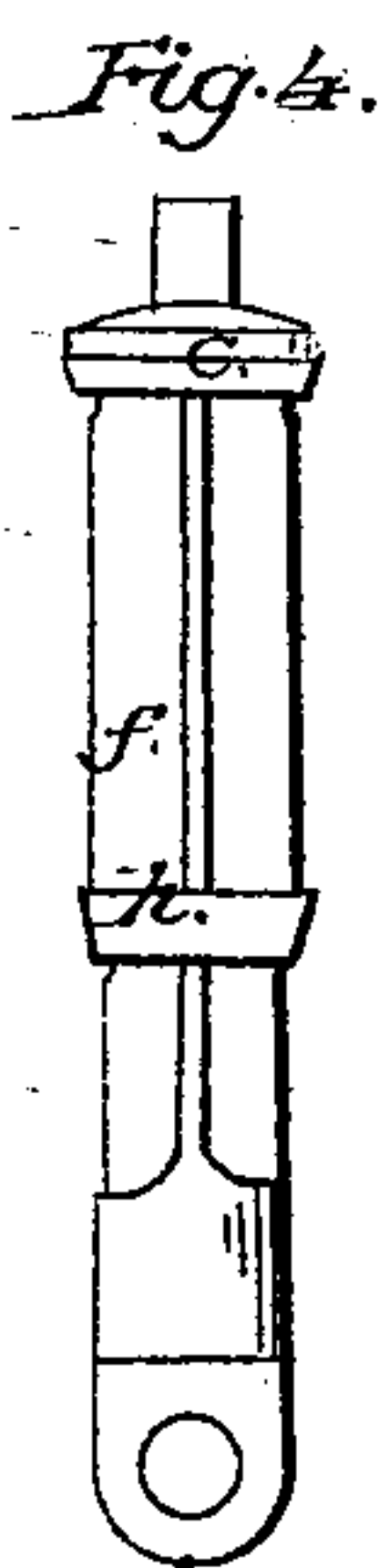
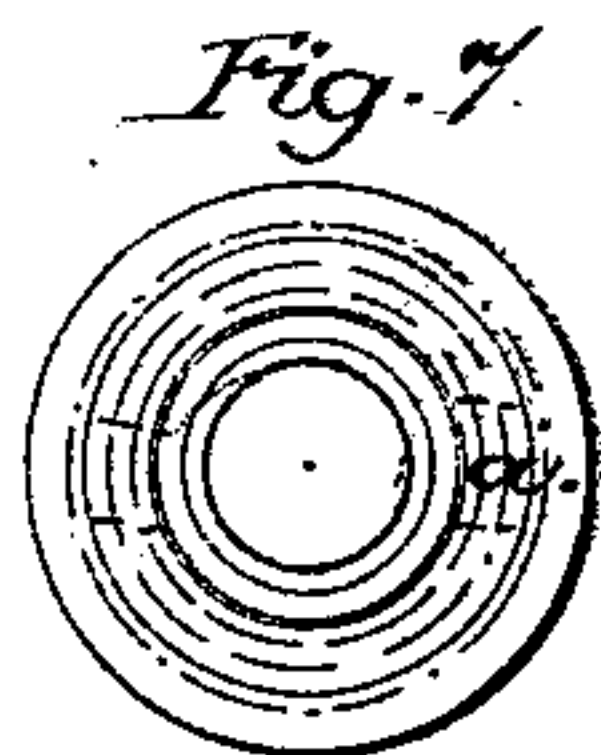
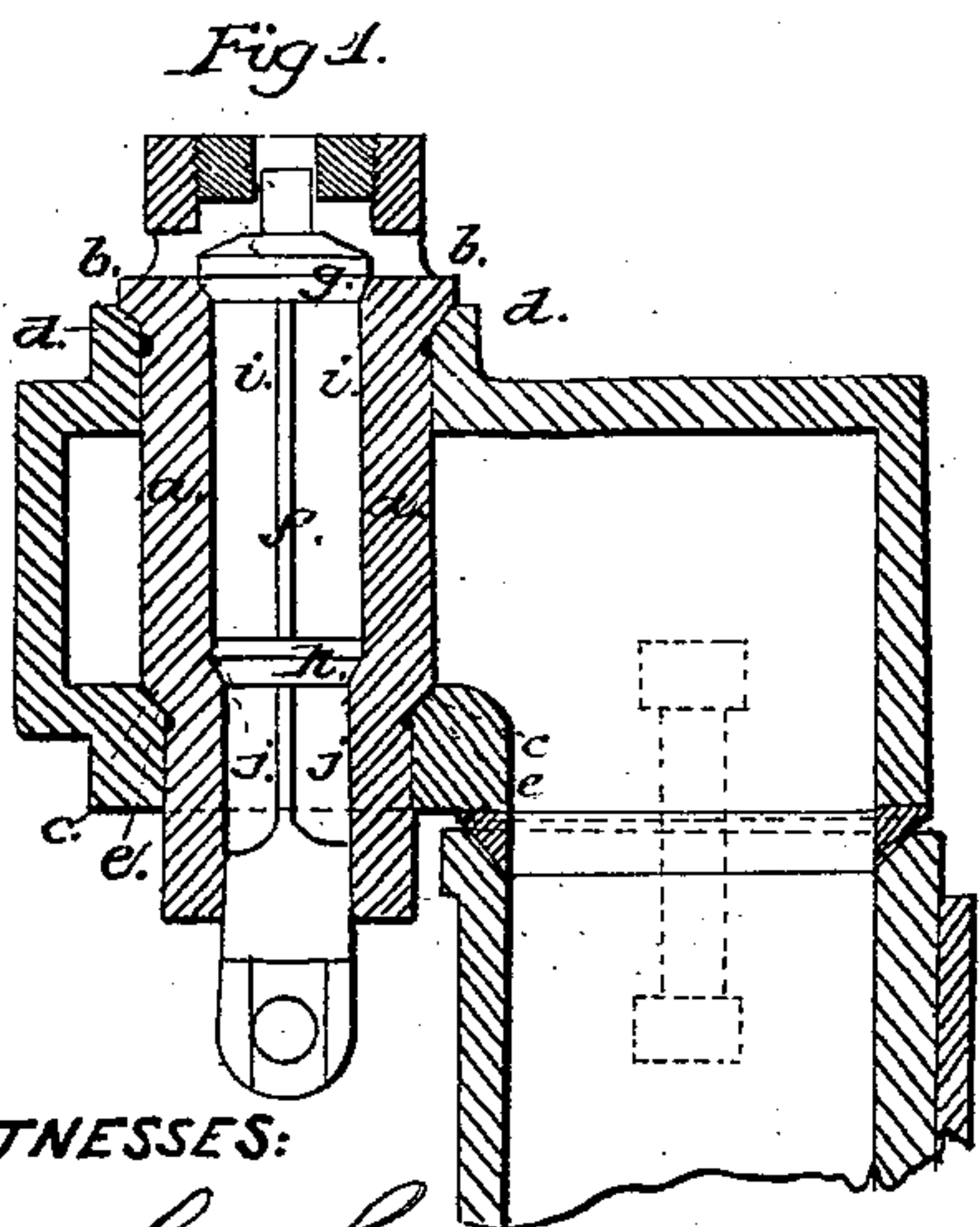
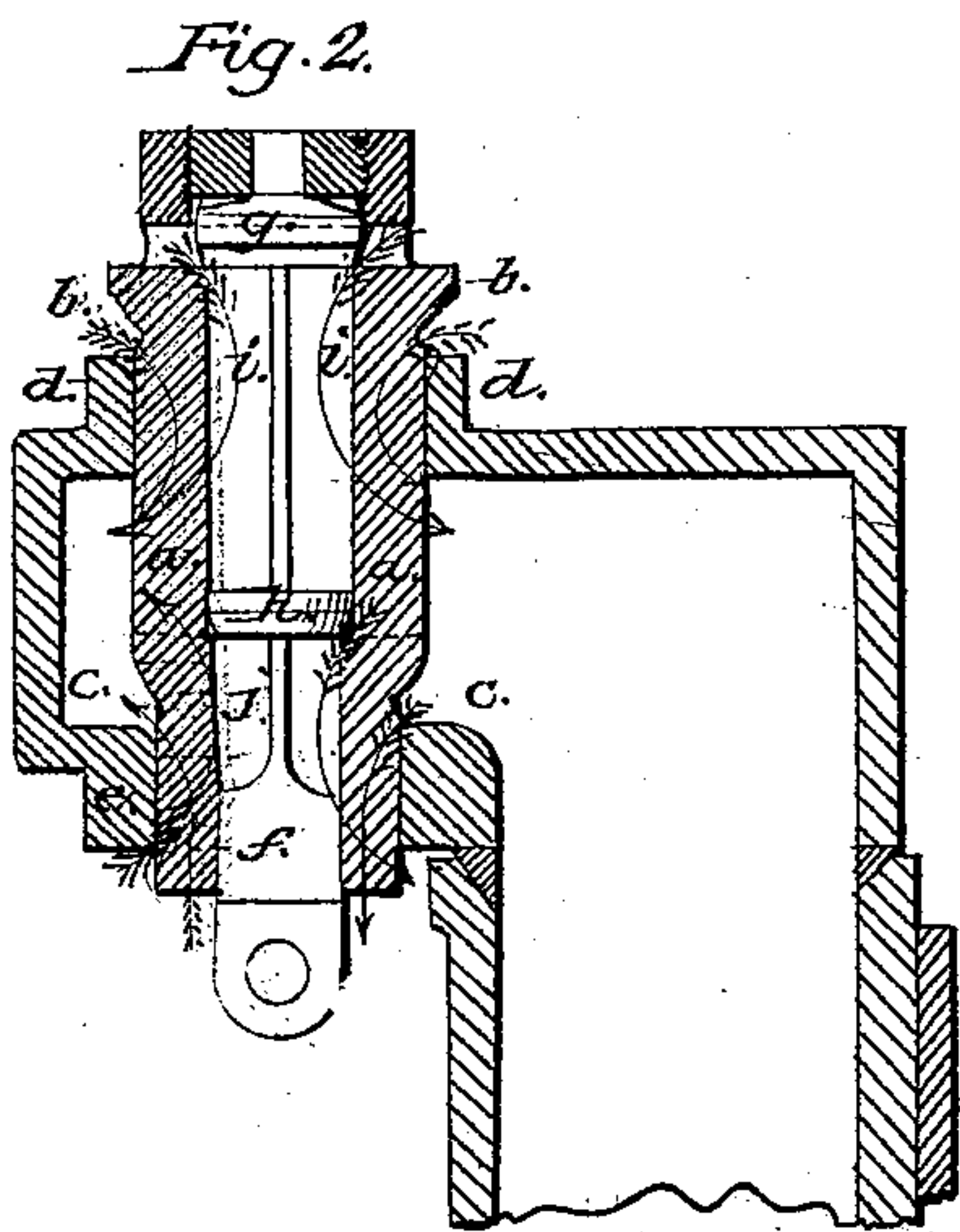
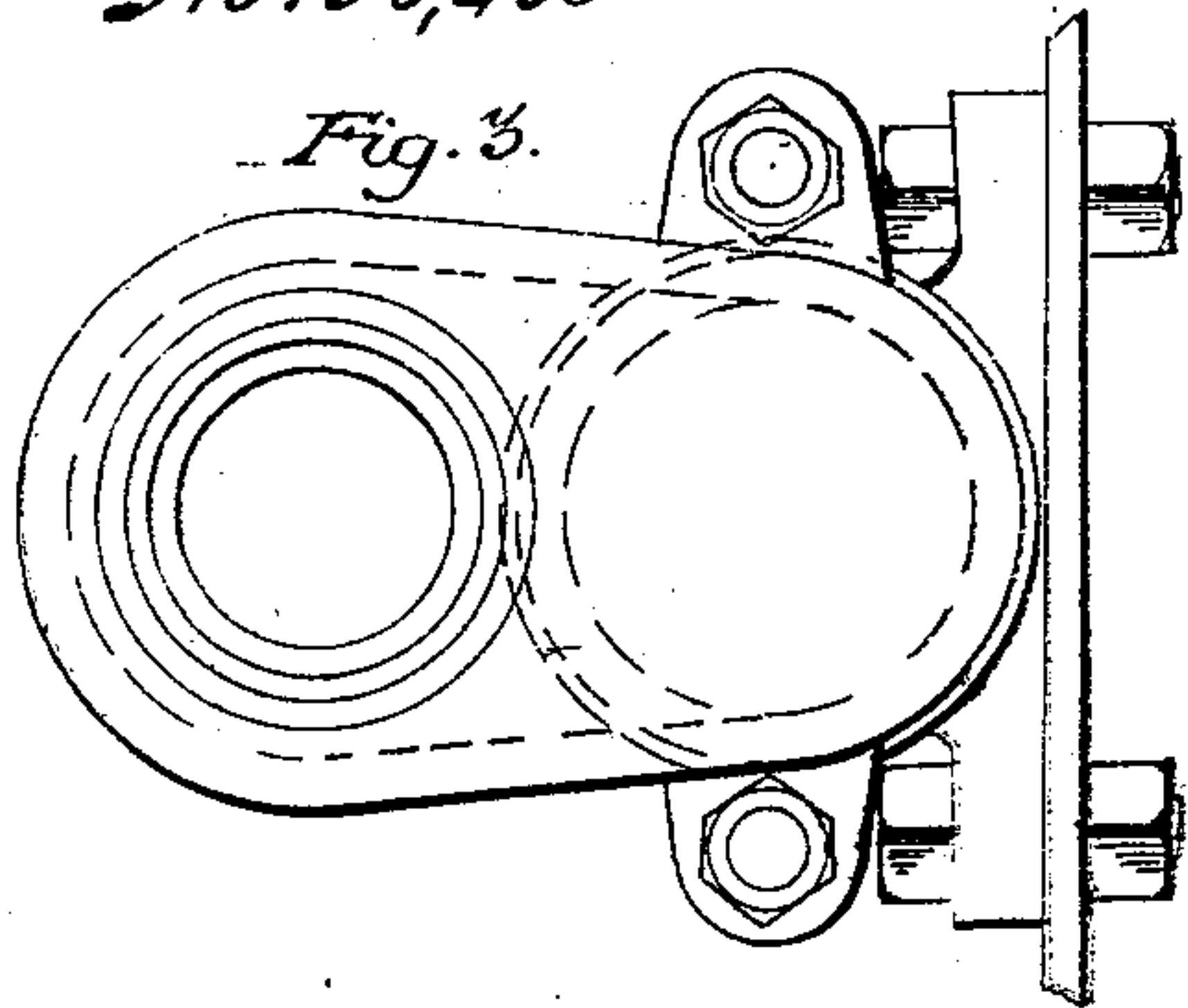


G. F. Morse,

Throttle Valve.

No. 96,463.

Patented Nov. 2, 1869.



WITNESSES:

Henry C. Honston
Wm. Franklin Jewey

INVENTOR:

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GEORGE F. MORSE, OF PORTLAND, MAINE.

Letters Patent No. 96,463, dated November 2, 1869.

IMPROVEMENT IN STEAM-ENGINE PUPPET-VALVES.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, GEORGE F. MORSE, of Portland, in the county of Cumberland, and State of Maine, have invented a new and useful Double-Puppet Throttle-Valve; and I hereby declare the following to be a full, clear, and exact description thereof, which will enable others to make and use my invention, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a side sectional elevation, the valve being close.

Figure 2 is the same, the valve being opened.

Figure 3 is a top plan of the valve-opening.

Figure 4 is a side elevation of the smaller or interior valve.

Figure 5 is a top view of the same.

Figure 6 is a side elevation of the greater valve.

Figure 7 is a top view of the same.

My invention relates to a throttle-valve, so constructed that it may be opened with greater ease and more gradually than the ordinary form of valves, as at present made.

My invention consists in making the valve of two parts, one smaller than the other, the said smaller one being within or near by the larger, with attachments for opening, so arranged that the smaller is first opened, and after it has attained its full opening, the larger one is then subsequently opened also, the opening of the smaller facilitating the opening of the larger, and the successive action of the two rendering the opening more gradual.

In the ordinary slide throttle-valve the pressure on the valve renders the opening more or less difficult, although in this valve the opening is gradual.

In the ordinary puppet throttle-valve the pressure against opening is considerable, and inasmuch as that pressure is instantly relieved when the valve is opened, the tendency is to open the valve wide and suddenly.

This gives the engine too much steam, and causes

jerking of the train of cars, or slipping of the driving-wheels, when the valve is used on a locomotive-engine. Moreover, considerable force is necessary to open the valve.

With my improved double-puppet throttle-valve these inconveniences do not occur, because the smaller valve is made so small that the pressure of steam against its opening is easily overcome, and the area of its opening is so small, there is no danger of jerking the train or slipping the driving-wheels of the engine.

When the smaller valve is fully open, the larger immediately commences to open, and the pressure upon it has been partially relieved by the escape of the steam through the smaller aperture.

Thus the larger valve opens to its full extent, being aided by the opening of the smaller valve, and the full area of opening required by the engine is obtained without difficulty.

In the accompanying drawings—

a is the larger valve, and its two parts *b c*, to fit the seats *d e*.

f shows the smaller valve, with its two parts *g h*, to fit the seats *i j* within the larger valve *a*.

The operation is clearly indicated in figs. 1 and 2, and the opening of the smaller valve, to aid in and render more gradual the opening of the larger, is more particularly shown in fig. 2.

In the accompanying drawing, the smaller valve is indicated as within the larger one.

What I claim as my invention, and desire to secure by Letters Patent, is—

The double-puppet throttle-valve, as described, having the valve of smaller area to operate first, and the valve of larger area to operate subsequently, substantially in the manner described.

GEO. F. MORSE.

Witnesses:

WM. H. CLIFFORD,
HENRY C. HOUSTON.