

No. 4,399.

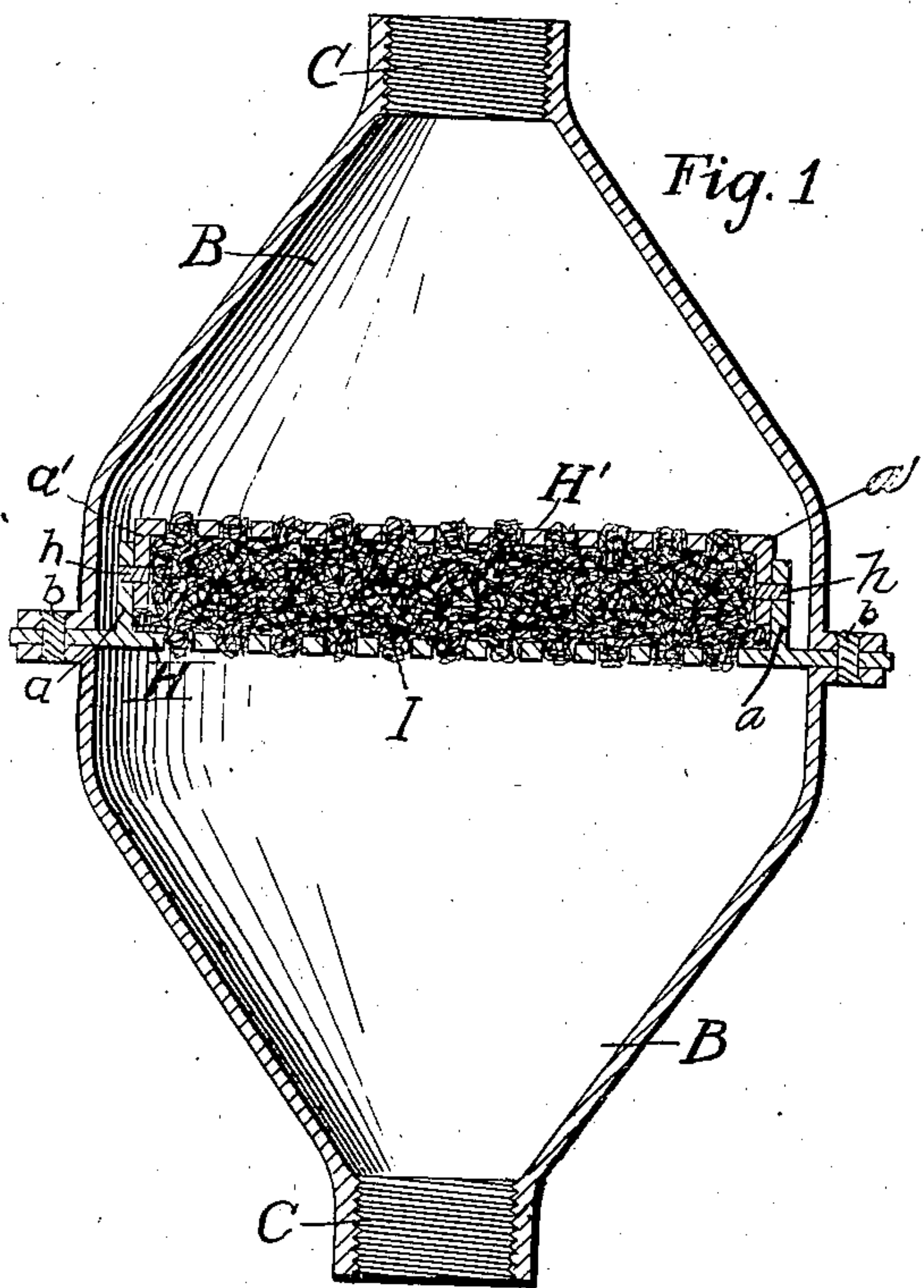


Fig. 1

Fig. 3.

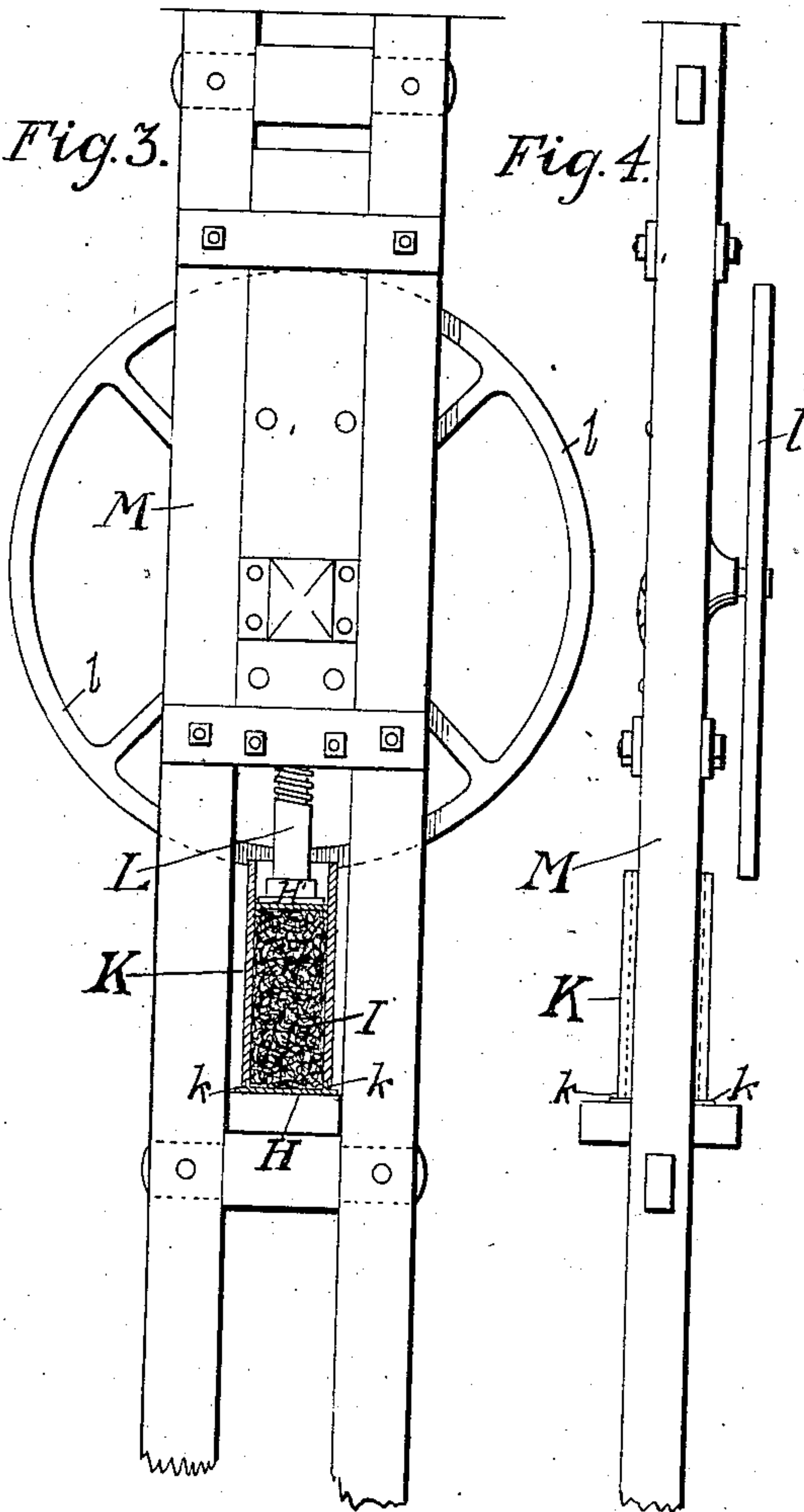


Fig. 4.

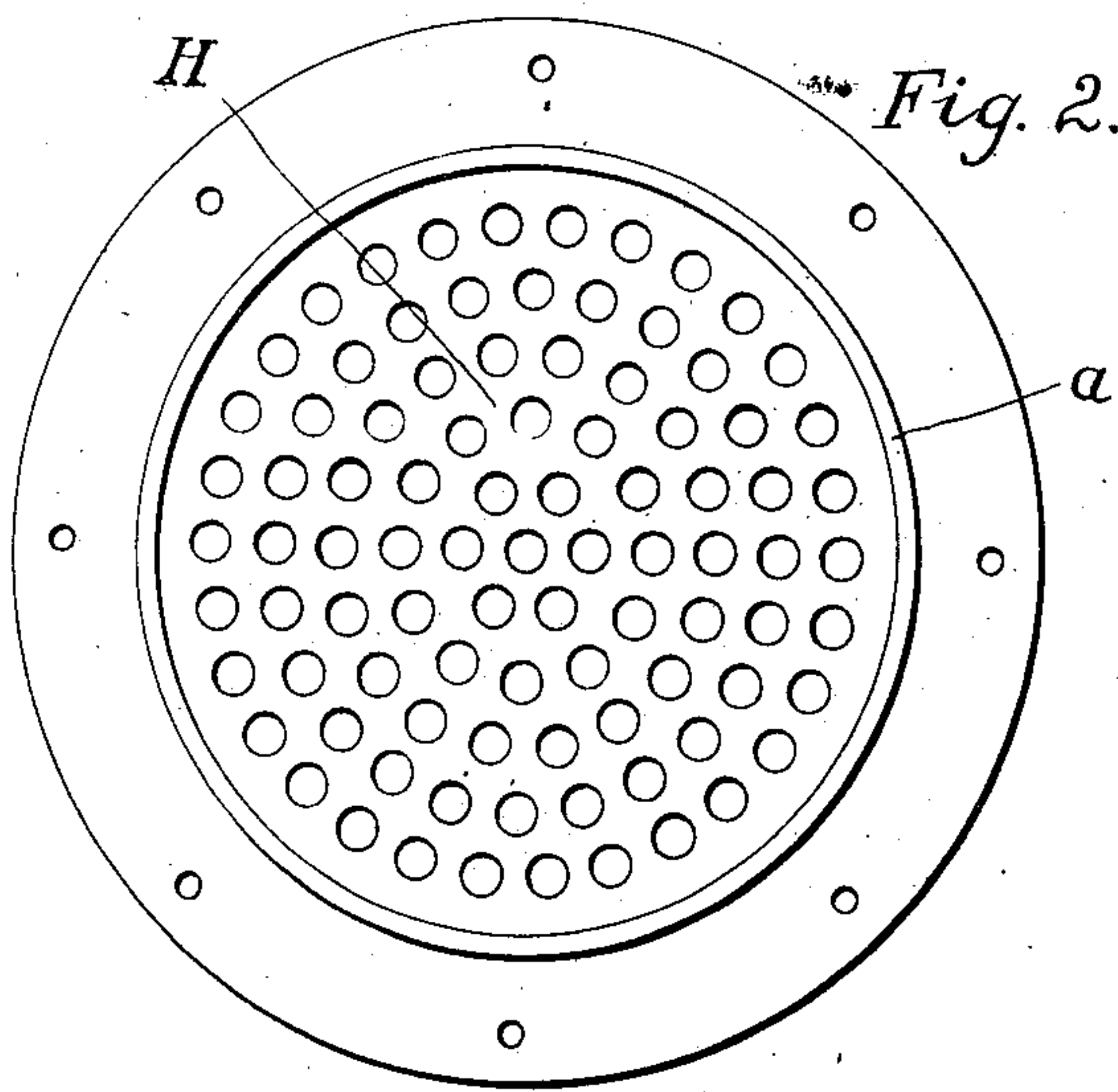


Fig. 2.

Jennison's

Diaphragm Filter

New York Dec 1845

Patented March 7 1846

UNITED STATES PATENT OFFICE.

WILLIAM H. JENNISON, OF NEW YORK, N. Y.

FILTER.

Specification of Letters Patent No. 4,399, dated March 7, 1846.

To all whom it may concern:

Be it known that I, WILLIAM H. JENNISON, of the city, county, and State of New York, have invented new and useful Improvements in Filters for Filtering Water and other Liquids, and that the following is a full, clear, and exact description of the principle or character of my invention which distinguishes it from all other things before known and of the manner of making, constructing, and using the same, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1 is a vertical section of the filter; Fig. 2, a plan of the filtering diaphragm; Fig. 3, front elevation of the press employed in compressing the sponge, representing the part which operates on the sponge in section; and Fig. 4, a side elevation of the same. The same letters indicate like parts in all the figures.

Of the various substances which have been employed as filtering media sponge has heretofore been deemed the least useful from the circumstance that in its natural or slightly compressed state its pores readily admit, and become clogged with the impurities, and in a very short time impede the passage of the liquid, and after these impurities have filled up the pores it is very difficult to remove them; but by a series of experiments I have ascertained that by submitting well cleaned sponge to a pressure of about five thousand pounds, and retaining it in this compressed state it will admit of the passage of water or other liquid through it and retain the impurities outside. Having ascertained this fact, I have applied sponge thus compressed to the filtering of water and other liquids with great advantage in the following manner. The sponge is torn into small fragments and properly cleansed to remove all the impurities, and then in a moistened state I compress it under a pressure of about five thousand pounds and confine it between two perforated metallic plates forming a diaphragm which is placed in a case with a chamber on either side so that the water or other liquid can be carried through it, first in one direction, and then in the other, so that the impurities which are deposited alternately on its opposite surfaces shall be readily carried off by the water or other liquid.

In the accompanying drawings, (B B)

represent a metallic case composed of two frustums of inverted cones with their bases provided with flanges (*b, b*) which are riveted, bolted, or otherwise secured together, and embrace a metallic disk (*H*). The ends of this conical case are tapped at (*c, c*) to fit onto a supply pipe so that it can be reversed end for end, or to receive two pipes that the supply of water may be reversed. The disk (*H*) is perforated, and outside the perforations it is provided with a rim (*a*) within which fits the rim (*a'*) of another metallic disk (*H'*). The sponge (*I*) powerfully compressed, as above stated, is contained between these two disks which are secured by pins (*h*) passing through the rims (*a, a'*). This constitutes the entire filter which may be applied to a pipe or pipes for supplying the water or other liquid in any desired manner.

The method which I have pursued of compressing the sponge between the diaphragms is as follows: I provide a cylinder (*K*) of sufficient diameter to receive the outside of the rim of the disk (*H*) as at *k*, and of such a length that it will contain the quantity of sponge (*I*) put in one filter; the cylinder has several slots (*k, k*) in it at the lower end. Having laid the disk (*H*) with its rim upward I slip on to it that end of the cylinder which has the slots in it; the cylinder passing down and resting on the rim of the disk. I next proceed to fill the cylinder with sponge, which should previously have been washed to free it from sand and limy matter, and torn into moderately small pieces to make the density of the mass uniform when compressed; upon the top of the sponge I place the other disk (*H'*) with its rim downward, and, applying a pressure to it by the piston (*L*), I force it down the interior of the cylinder, until it comes to its proper position in the cup of the lower disk, when, as is obvious, all the sponge is compressed into the space between the two disks and their rims. Before the pressure is removed I pass a drill through the slots at the end of the cylinder, and drill holes through the rims of the disks to receive the pins which keep them together as before stated. (*M*) represents the frame of the press which I employ for this purpose, and (*N*) a wheel by which the power is applied to the screw piston (*L*), in manner well known and which therefore needs no representation. I have simply described

the mode which I have employed of compressing the sponge but do not claim the jack screw as of my invention as other modes may be resorted to.

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

Forming a filtering medium, for filtering water and other liquids, of sponge compressed under a sufficient pressure to prevent sediment from entering the pores

thereof, and permit pure water, under pressure, to pass through, as described, the sponge thus compressed being confined and retained between two perforated plates, as described.

WM. H. JENNISON.

Witnesses:

GEO. BAKER,
PETER W. KRUNKEL.