

No. 630,988.

Patented Aug. 15, 1899.

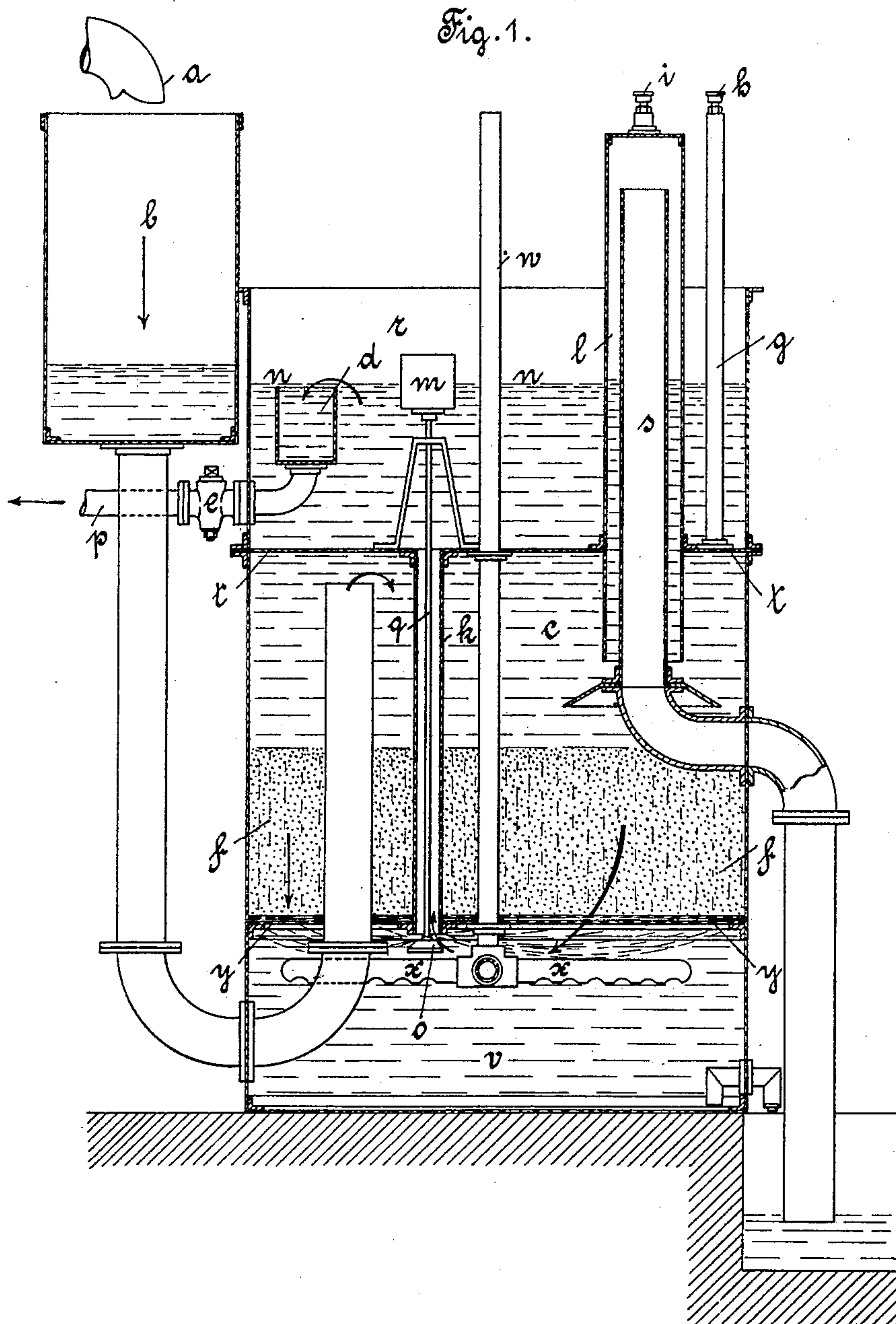
H. REISERT.

FILTER.

(Application filed Apr. 14, 1899.)

(No Model.)

2 Sheets—Sheet 1.



Witnesses:
Max Wescher
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UNITED STATES PATENT OFFICE.

HANS REISERT, OF COLOGNE, GERMANY.

FILTER.

SPECIFICATION forming part of Letters Patent No. 630,988, dated August 15, 1899.

Application filed April 14, 1899. Serial No. 713,055. (No model.)

To all whom it may concern:

Be it known that I, HANS REISERT, a subject of the King of Prussia, German Emperor, and a resident of Cologne, in the Province of the Rhine, Kingdom of Prussia, German Empire, have invented new and useful Improvements in Automatic or Self-Cleansing Filters, (for which I applied for a patent in Germany on September 19, 1898,) of which the following is a specification.

My invention relates to improvements in means for cleansing filter material by the backflow of filtered water and means for sucking air through the filter material in order to assist the water in cleansing the filter material.

In the accompanying drawings, Figure 1 shows the apparatus during the filtering operation. Fig. 2 shows the same during the cleansing operation of the filter material.

The water to be filtered flows through a pipe *a* into the reservoir *b*, and from there into the chamber *c* above the filter-bed *f*. The latter rests upon the perforated bottom *y*. The water rushes through the filter stuff *f* from top to bottom, passes on into the chamber *v*, and is fed from there through the pipe *k* into the reservoir *r*. It flows off through the cup *d* and the waste-pipe *p*, so that the level *n* is uniformly maintained. The filter stuff *f* offers a continually-increasing resistance to the inrush of water in proportion to the mass of silt left behind, so that in the cylinder *b* the level of the unfiltered water must continually rise, while that of the filtered water in the reservoir *r* remains the same. Further, in the reservoir *r* a receiver *l* is arranged, which above is closed and stands in close connection with the chamber *c*. In this receiver *l* there is a pipe *s*, which discharges underneath the filter apparatus into a silt-room. The connection of the receiver *l* and the pipe *s* which discharges underneath the filter, together produce a siphon, for there will be a sucking action set up as soon as within the receiver *l* the rising water reaches the upper mouth of the pipe *s*. Now exactly as the unfiltered water in the cylinder *b* rises proportionally to the silt retained in the filter, so the level in the unfiltered water in the receiver *l* rises until it reaches the opening of the pipe *s*. At this moment the siphon *l s* commences working and sucks the filtered

water out of the receiver *r* through the pipe *k* and through the filter stuff *f* from bottom to top. At the same time air is sucked through the air-pipe *w*. By the perforated pipe *x* this air is distributed under the filter material, and it passes the same, together with the filtered water. By the use of a combination of air and water for digging up and cleansing the filter material a much better result is obtained than by the use of water alone. The air sucked through the filter material gathers under the air-tight bottom *t* and causes, as soon as it reaches the opening of the receiver *l*, the discontinuation of the cleansing process by entering the siphon *l s*. The diameter of the receiver *l* is large enough to suck water and air in nearly the same quantities.

After the working of the siphon has been stopped by the entrance of the air the filtering process begins again. The air which gathered in the room *c* underneath the bottom *t* passes out through the pipe *g* and the outlet-valve *h*, while the air in the receiver *l* passes out through the outlet-valve *i*. These valves are naturally constructed in that way that they do not allow any air to enter, but only to leave, the apparatus.

In order to effect the cleansing of the filter material without its being caused by the silt in the filter material and the rising of the unfiltered water the following arrangement is provided: In the chamber *r* a float *m* is provided, which is connected by the bar *g* with the conical valve *o*. Further, a cock *e* is arranged on the waste-pipe *p*. By turning off this cock the filtered water will rise in the reservoir *r* and lift the float *m*, so that the valve *o* will be closed and no more water can enter the reservoir *r*. In consequence thereof the water will rise in the receiver *l* and will soon reach the upper mouth of the pipe *s*. The siphon *l s* consequently commences working and the cleansing of the filter material begins.

I am aware that self-cleansing filters are known and described already in the English Letters Patent to James Wilson, No. 19,515, and others. I am also aware that the use of air for cleansing filter material is not new, but is described already in the English Letters Patent to myself, No. 24,526. That is why I do not claim these things broadly; but

What I claim as my invention is—

1. In an automatic or self-cleansing filter the combination of an air-tight room *c* above the filter material with a siphon, connecting
5 this room with a silt-room below the filter, said siphon consisting of a receiver *l* provided with a valve *i* for allowing air to leave, but not to enter this receiver, and a pipe *s* leading from the top of this receiver to the
10 silt-room.

2. In an automatic or self-cleansing filter the combination with an air-tight room *c* above the filter material and a siphon connecting this room with a silt-room below the filter,
15 said siphon consisting of a receiver *l*, provided with a valve *i* for allowing air to leave, but not to enter this receiver, and a pipe *s* leading from the top of this receiver to the silt-room, of a perforated pipe *x*, provided be-
20 low the filter material and connected with the atmosphere by an air-pipe *w*.

3. In an automatic or self-cleansing filter the combination with an air-tight room *c* above the filter material and a siphon, connecting
25 this room *c* with a silt-room below the filter, said siphon consisting of a receiver *l*, provided with a valve *i* for allowing air to leave, but not to enter this receiver, and a pipe *s* leading from the top of this receiver to the
30 silt-room, of a perforated pipe *x*, provided below the filter material and connected with the atmosphere by an air-pipe *w*, and means for effecting the commencing of the cleansing operation by closing the outlet-valve for the filtered water, consisting of a float *m*, connect-
35 ed by a bar *q* with a valve *o*.

In witness whereof I have hereunto set my hand in presence of two witnesses.

HANS REISERT.

Witnesses:

MAX WESCHER,
HERMANN JUNGK.