

Z. VON WESSELY.  
METHOD OF CLEANSING FILTER BEDS.  
APPLICATION FILED JULY 14, 1908.

944,527.

Patented Dec. 28, 1909.

Fig. 1.

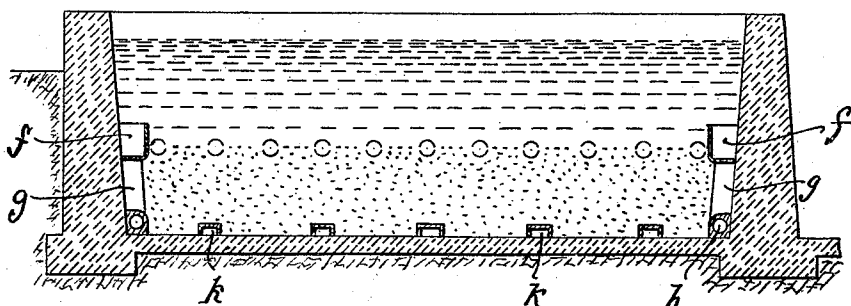
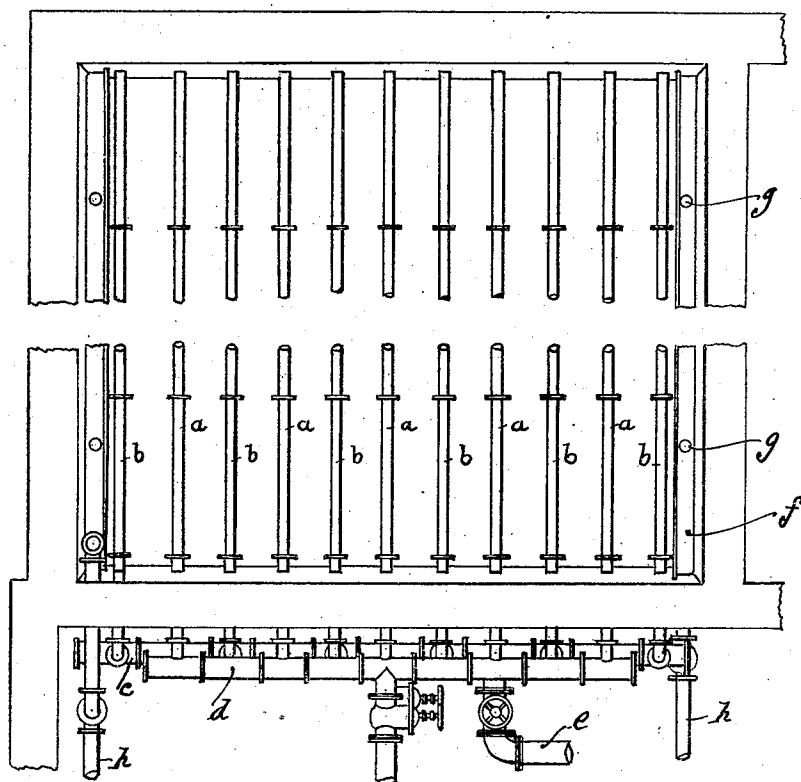


Fig. 2.

Witnesses  
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# UNITED STATES PATENT OFFICE.

ZDENKO VON WESSELY, OF PRAGUE, AUSTRIA-HUNGARY.

METHOD OF CLEANSING FILTER-BEDS.

944,527.

Specification of Letters Patent.

Patented Dec. 28, 1909.

Application filed July 14, 1908. Serial No. 443,538.

*To all whom it may concern:*

Be it known that I, ZDENKO VON WESSELY, subject of the Emperor of Austria-Hungary, residing at Prague, in the Empire of Austria-Hungary, have invented certain new and useful Improvements in Methods of Cleansing Filter-Beds, for which application has been made in Germany, dated February 25, 1907.

10 This invention relates to an improved process of cleaning sand in filter beds.

Sand filters have hitherto been cleaned by washing, water and air being alternately or simultaneously conveyed through the sand bed in a stream in the opposite direction to the flow when filtering.

25 The process of cleaning the sand in sand filters, which forms the object of the present invention is based on the use of water or air under pressure, which is conducted into the interior of the sand bed, but the present process differs from those already known in that the cleaning of the sand can be effected at various levels, particularly in the uppermost layers of the sand, in which the so-called filter film is formed by the gradual deposition of the substances retained.

30 The process consists in the sand at the desired levels of the bed being turned over and thrown to and fro by water or air currents, in order to wash away and rub off the particles of dirt adhering to the sand, not only by the movement of the water or mixture of air and water flowing around the sand grains, but also by the friction of the surfaces of the separate sand grains one on another produced by this movement.

35 The following example is given as indicating the manner in which the process is carried out.

40 An apparatus illustrating the invention is shown in the accompanying drawing, in which—

45 Figure 1 is a plan view; and Fig. 2 a cross section.

Two sets of pipes are arranged at a suitable depth in the filter bed. These pipes *a* and *b* are parallel and all at the same level and the members of the two sets are disposed alternately. Discharge apertures are arranged along the sides of the pipes so that water or air may be discharged later-

ally therefrom. Controlling valves are provided so that the two sets may be supplied with the cleaning fluid alternately. 55

When the surface of the sand of the filter is to be cleaned and any filter film deposited thereon removed, the water level is first lowered in the filter, so that the flushing pipes, being approximately in the plane of the surface of the filter sand, are at a very small distance below the water level. The cleansing fluid (water or air) is then admitted under pressure to one of the sets of pipes and being discharged from the side apertures therein throws away the sand situated adjacent thereto laterally while a hollowing out takes place by hydraulic action beneath and beside the pipes. The sand thus thrown aside lodges on the adjacent pipes which are not in operation. If now, after shutting off the supply from the one set of pipes, the cleansing fluid is admitted to the other set, the sand deposited over these pipes will be thrown back again toward the other pipes. Thus by the alternate discharge of water or air under pressure from the two series of pipes, the sand is thrown to and fro from one flushing pipe to the other until it has reached the desired degree of purity. 80

I declare that what I claim is:—

1. A process of cleaning the sand in filter beds, which consists in applying alternate currents of cleansing fluid by means of alternately operated perforated pipes arranged in proximity to each other exactly at the level of the surface of the filter sand, so that the latter, by the action of the fluid under pressure, is alternately scooped out in proximity to the pipes which are in operation and accumulated over the pipes which are temporarily out of operation, the operation being reversed when the cleansing fluid is passed through the other perforated pipes, substantially as hereinbefore set forth. 85

2. A process of cleaning the sand in filter beds which consists in applying currents of cleansing fluid to the sand so as to move the sand thereby, and causing said currents to flow alternately in opposite directions so as to give a to and fro movement to the sand substantially as described. 95

3. A process of cleaning sand in filter beds which consists in applying cleansing fluid to 100

the sand in the form of parallel rows of jets  
and at intervals reversing the direction of  
the jets operating upon each part of the  
sand, so that the sand during the washing is  
5 constantly thrown to and fro by the jets,  
substantially as described.

In witness whereof, I have hereunto signed

my name this 30th day of June 1908, in the  
presence of two subscribing witnesses.

ZDENKO VON WESSELY.

Witnesses:

ROBERT W. HEINGARTNER,  
AUGUST FUGGER.