

No. 629,387.

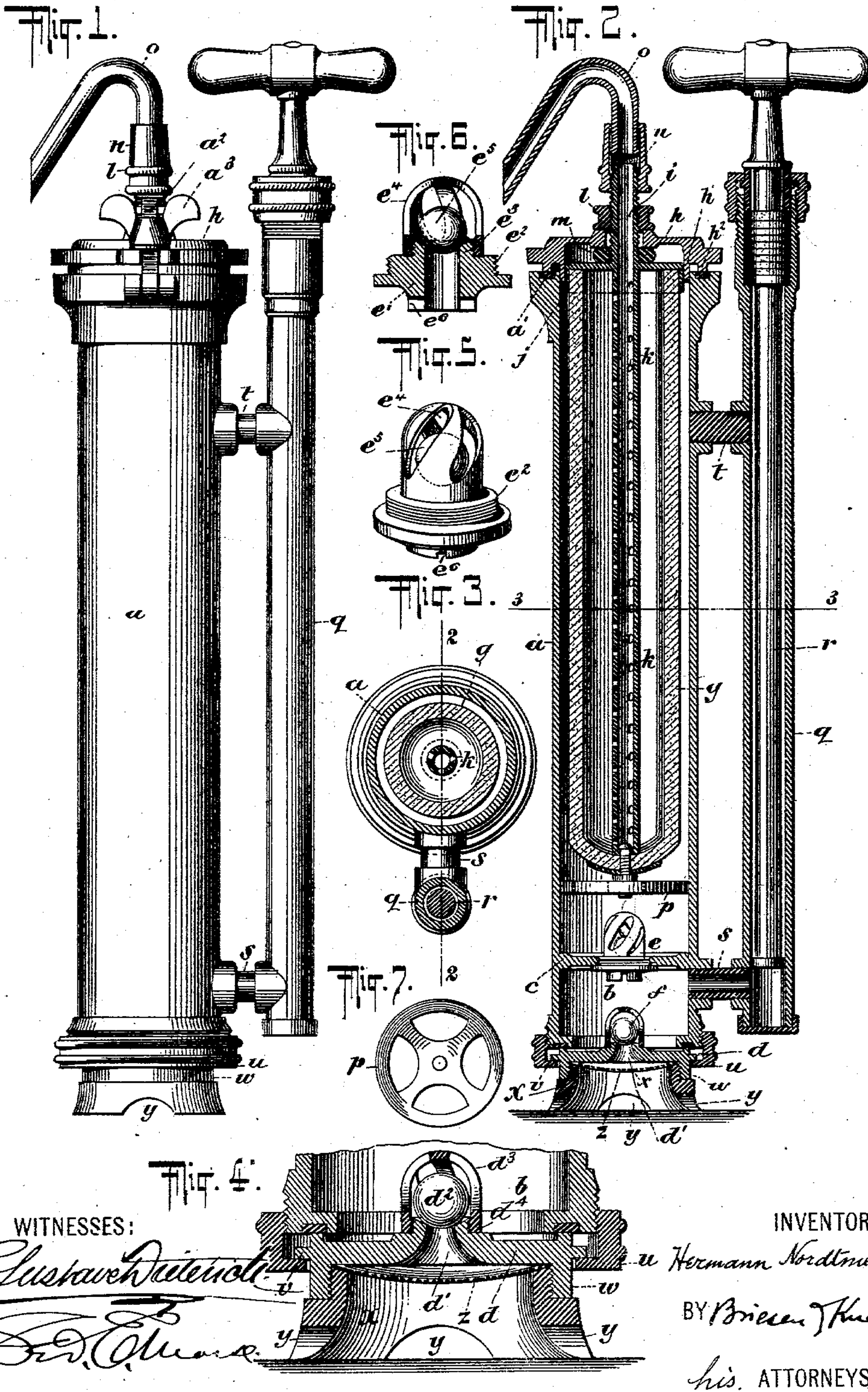
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H. NORDTMEYER.

FILTER PUMP.

(Application filed Feb. 24, 1899.)

(No Model.)



WITNESSES:

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HERMANN NORDTMEYER, OF CELLE, GERMANY, ASSIGNOR TO AUGUST GIESE, OF NEW YORK, N. Y.

FILTER-PUMP.

SPECIFICATION forming part of Letters Patent No. 629,387, dated July 25, 1899.

Application filed February 24, 1899. Serial No. 706,639. (No model.)

To all whom it may concern:

Be it known that I, HERMANN NORDTMEYER, a subject of the King of Prussia, Emperor of Germany, and residing at Celle, Province of Hanover, in the Kingdom of Prussia, Germany, have invented certain new and useful Improvements in Filter-Pumps, of which the following is a specification.

My invention relates to filter-pumps, and has for its general object to produce a practical filter-pump especially adapted to the use of soldiers in the field, travelers, explorers, and for other purposes.

My invention will be described with the aid of the accompanying drawings, forming part hereof, wherein I have illustrated a filter-pump embodying my invention.

In the drawings, Figure 1 is an elevation of the filter. Fig. 2 is a transverse vertical section through the filter-pump on line 2 2 of Fig. 3. Fig. 3 is a horizontal section on line 3 3 of Fig. 2. Fig. 4 is an enlarged transverse sectional view of the lower part of the apparatus, showing the construction of the inlet-valve and the lower part of the pump-chamber. Fig. 5 is an elevation of the outlet-valve of the pump-chamber. Fig. 6 is a vertical central section of said valve, and Fig. 7 is a detail face view of the filter-cylinder supporting and guiding disk viewed flatwise.

In the drawings, *a* represents the filter-barrel, provided at the bottom with a pump-chamber *b*. This pump-chamber *b* is bounded by the circular wall of the filter-barrel and by the apertured partitions *c d*, provided with valves *e f*, hereinafter fully described. A filter-cylinder *g* is suitably suspended within the filter-barrel *a*, preferably by the suspending devices shown. The cap or cover *h* has a plurality of rims or collars *h' h''*, the inner of which, *h'*, is adapted to enter the upper end of the filter-barrel *a* and the outer of which is adapted to rest upon a rubber packing-ring *a'*, seated in the end of the filter-cylinder. This cap or cover is slotted, as shown in Fig. 1, and is held in place on the filter-barrel by screws *a''*, pivoted to the filter-barrel, entering the slots in the cap or cover *h* and provided with wing-nuts *a'''* for firmly seating the cap or cover *h* on the barrel. The cap or cover *h* is axially apertured for the passage of a hanger for the

filter-cylinder *g*, comprising the pipe *i*, provided with the rimmed flange *j*, to which the filter-cylinder is secured. The pipe *i* is exteriorly screw-threaded at its upper end and extends within the cylinder *g*, the portion inside the cylinder being provided with apertures *k* for the entry of water into the pipe. The pipe *i* and its attachments are supported in the head *h* by a nut *l*, a packing-ring *m* intervening between the head *h* and the flange *j*. A nipple *n* is screwed upon the upper end of the pipe *i* and carries a nozzle *o*, moving loosely therein, which is the delivery-pipe for the filtered water. Secured concentrically to the lower end of the filter-cylinder *g* is an apertured disk or spider *p*. (Shown in side view in Fig. 2 and in plan in Fig. 7.) This disk performs a two-fold useful function—viz., when the cylinder is in place, as shown in Fig. 2, the disk steadies the cylinder in the barrel and prevents vibration thereof, and when the cylinder and its connected parts are taken out of the barrel and laid on its side on the ground or other plane surface the disk will rest upon the ground and will support the cylinder *g* clear of the ground. Located at the side of and substantially parallel to the barrel *a* is a pump comprising a pump-barrel *q*, piston *r*, connecting-pipe *s*, which pipe connects the pump-barrel *q* with the pump-chamber *b*, and a connection *t* of suitable form for supplementing the pipe *s* in mechanically connecting the pump to the filter-barrel *a*. The partition *d* is secured to the filter-barrel *a* water-tight by a threaded ring *u*, screwed in the lower part of the barrel, taking over a flange *v* on the partition. This partition is likewise provided with an internally-screw-threaded annulus *w*, into which is screwed a threaded foot-piece *x*, provided with lateral passages *y*. A strainer *z* is held in place between the foot-piece and partition. The central aperture *d'* of the partition *d* is provided with a suitable inlet-valve *f*, shown in the present instance as a ball-valve, comprising the ball *d''*, enveloped by a retaining-cage *d'''*, screwed upon the nipple *d''*, formed on the partition *d*. The central aperture of the partition *c* is provided with a suitable outlet-valve *e*, herein shown as comprising the apertured plug *e'*, exteriorly

screw-threaded at e^2 to fit the aperture in the partition and also screw-threaded on the reduced portion e^3 to receive the threaded ball-retaining cage e^4 , which prevents displacement of the ball e^5 . The plug is provided with tool-engaging means—such, for instance, as the slot e^6 —whereby a screw-driver or other tool may be applied thereto to seat the plug in the partition c or to remove it therefrom.

10 The operation of the device is as follows: The apparatus may be set up in a pool of water or other source of water-supply, the lateral passages in the foot-piece permitting the inward flow of the water. Upon operating
15 the pump, at the rise of the piston water will enter the pump-chamber and pump through the inlet-valve f . Upon the descent of the piston the valve f will close and water will pass by the outlet-valve e from the pump-
20 chamber into the filter-barrel. The water will then pass through the walls of the filter-cylinder g into the interior thereof, being thereby filtered, and will pass out of the apparatus by the pipe i and delivery-nozzle o .
25 The pump, in combination with the valved pump-chamber, acts alternately as a suction-pump to draw water into the pump-chamber and pump and as a force-pump to expel the water therefrom and through the filter-cyl-
30 der, pipe i , and delivery-nozzle.

The advantages of this structure will be manifest. It will be readily seen that it affords a means whereby a supply of pure water may be derived from a pool, stream, or
35 other source of water, any impurities or contaminations of the water being filtered out by the passage of the water through the filter-cylinder g , which is preferably made of kieselguhr, the fossil meal found in the mines
40 of Hanover, in Germany.

The apparatus is usually made in portable

form, about eighteen inches long, so that it may be easily transported. When used in the military service, to which use it is peculiarly adapted, one or two of the structures
45 may be carried in the general equipment of each company or battery, the apparatus being so light that it may be included in the mess-gear of the company-cooks without inconvenience.
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What I claim, and desire to secure by Letters Patent, is—

1. In a transportable filter-pump, the combination of an upright filter-barrel provided with a filtering element and a delivery-pipe,
55 a pump-chamber at the lower end of the filter-barrel provided with automatically-operating inlet and outlet valves and an upright pump secured at the side of the filter-barrel and communicating with the pump-chamber
60 between the valves thereof, whereby the pump operates alternately as a suction and force pump to draw water into the pump-chamber and to force it therefrom through the filtering element and delivery-pipe.
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2. In a filter-pump, the combination of a tubular filtering element, means for suspending the same in a filter-barrel by its upper end and an apertured disk or spider of substantially the same diameter as the interior of the
70 filter-barrel secured to the filtering element, whereby when the filtering element is supported on its side the disk or spider will support it free from contact with the supporting-surface, and when the filtering element is in
75 place in the apparatus the disk or spider will serve to prevent vibration of the free end of the filtering element.

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Witnesses:

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