No. 690,457. Patented Jan. 7, 1902.

C. S. PARKER.

FILTER.

(Application filed Sept. 21, 1900. Renewed July 3, 1901.)

(No Model.)

Fig. 1.

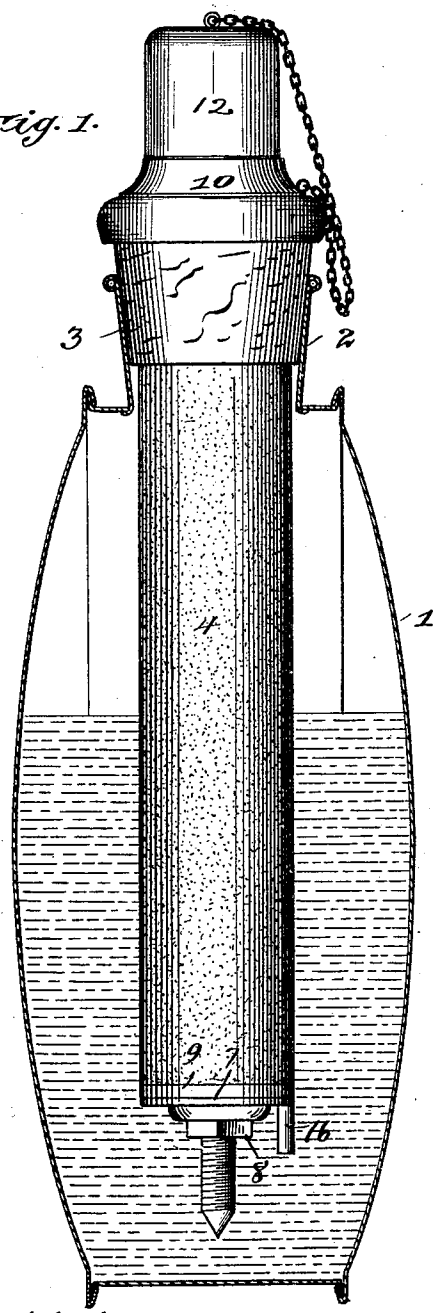
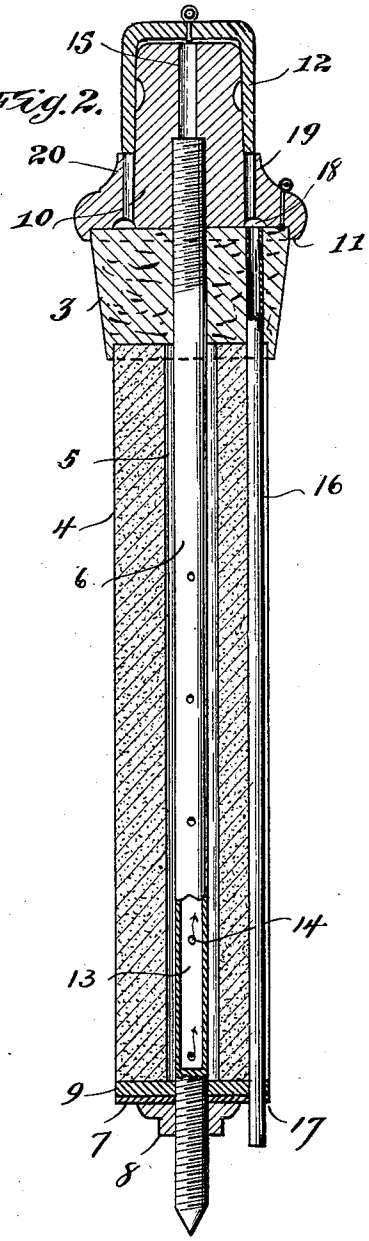


Fig. 2.



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UNITED STATES PATENT OFFICE.

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FILTER.

SPECIFICATION forming part of Letters Patent No. 690,457, dated January 7, 1902.

Application filed September 21, 1900. Renewed July 3, 1901. Serial No. 67,011. (No model.)

To all whom it may concern:

Be it known that I, CAROLINE SMITH PARKER, of Chicago, Illinois, have invented certain new and useful Improvements in Filters, of which the following is a specification.

This invention relates to improvements in portable filters, and refers more specifically to an improved filtering device more particularly adapted for use in canteens.

The object of the invention is to provide improvements in the details of construction of a filtering device of the character referred to, including the provision of an improved mouthpiece or stopper which occupies the mouth of the canteen, improved means of supporting the filtering-body proper from said mouthpiece or stopper, improved means for venting the canteen at the time its contents are being withdrawn, and the provision of means whereby both the discharge-passage or mouthpiece proper and the vent-opening are closed or sealed by a single detachable cap.

To the above ends the invention consists in the matters hereinafter described, and more particularly pointed out in the claims, and the same will be readily understood from the following description, reference being had to the accompanying drawings, in which—

Figure 1 is a vertical sectional view through the body of the canteen, showing my improved filtering device in side elevation seated therein. Fig. 2 is an axial sectional view of the filtering device detached from the canteen.

It is to be understood that the filter forming the subject of this invention is capable of use in connection with any suitable receptacle which is provided with a mouth or nozzle-opening, within which the filter may be seated and whereby it may be suspended to depend within the receptacle. As shown in the present instance, the filter is adapted to fit within a canteen, (designated as a whole 1,) which may be of any ordinary or suitable construction, and is provided with the usual mouthpiece 2, adapted to receive a suitable stopper.

3 designates as a whole a stopper-body, which may be of any suitable material, adapted to close the mouth of the canteen and to form a suitable support for the parts hereinafter described, said body, as shown herein, being made of cork.

4 designates as a whole the filtering-body proper, which is formed of a rigid porous material, adapted to filter the water by its passage therethrough, said filtering-body being preferably constructed of natural stone, known as "Tripoli" stone, and being made cylindric and hollow or provided with a central bore 5, extending axially throughout its length. Inasmuch as said material is of a fragile nature means are provided for supporting it in such a manner as to reduce to a minimum the danger of its becoming broken, such means consisting of a rigid hollow rod or support 6, arranged to extend through the bore of the filtering-body and connected with the latter at its lower end by means of a clamping-washer 7, which is held in clamped engagement with the end of the filtering-body by means of the nut 8, threaded upon the lower end of the rod. In order that a water-tight joint may be formed between the clamping-washer and the end of the filtering-body, a compressible washer or packing 9, preferably of rubber, is interposed between the washer and the end of the filtering-body. At its upper end the support 6 extends upwardly through the stopper-body and is threaded into a nozzle or mouthpiece 10, formed of hard rubber or of analogous suitable material. The mouthpiece 10 is desirably, and as shown herein, arranged to rest directly upon the upper surface of the stopper-body 3 and is made somewhat larger than the latter at its base and provided with an overhanging flange 11, which incloses the upper end of the cork and serves to protect the latter, as well as serving to seat the mouthpiece more firmly upon the stopper-body. The upper end of said mouthpiece is reduced to a size suitable to be taken into the mouth of the user and is provided with a covering-cap 13, preferably also of hard rubber and arranged to fit accurately thereon, so as to form a water-tight closure when in position upon the mouthpiece.

The support 6 is made hollow throughout its principal length or to a point approximately coincident with the lower end of the filtering-body, as indicated at 13, but is closed

at its lower end, and is provided at intervals throughout its height with inlet-apertures 14, which afford communication between the space within the filtering-body and the hollow of the support. The mouthpiece 10 is provided with an axial bore or discharge-passage 15, arranged to register with the bore of the hollow support, so that the liquid entering through the filtering-body and passing thence into the hollow support is free to flow out through the mouthpiece.

In order to afford suitable ventage, so that the liquid may flow or be drawn out freely, I have provided an improved construction, as follows: 16 designates a vent-tube having its upper end seated in the stopper-body 3 and arranged to extend downwardly alongside of the filtering-body and through an aperture 17, formed in one side of the clamping-washer 7, the filtering-body being preferably grooved throughout its length to receive said vent-tube, so that the latter may lie flush with its cylindric outer surface. The upper end of said vent-tube is arranged flush with the upper surface of the stopper-body and communicates at this point with an annular groove 18, formed in the under surface of the mouthpiece, as indicated clearly in the sectional figure. From the annular groove 18 a plurality of vents or passages 19 extend upwardly through the body of the mouthpiece, opening through the shoulder 20, formed at the juncture of the main body of the mouthpiece with the reduced portion thereof, the lower edge of the removable cap 12, which fits upon said mouthpiece, being constructed to fit accurately against this shoulder and to thereby close said vent-passages 19 when in position upon the mouthpiece.

The operation of the device constructed as described will be entirely obvious and need not therefore be described in detail. It is to be noted, however, that the mouthpiece is so shaped that the liquid may be readily sucked up from the canteen by placing the mouth over the mouthpiece, or, on the other hand, the liquid may be readily poured from the canteen by inverting the latter. It is to be noted that when the canteen is inverted the vent-pipe will afford free ventage to the space above the liquid, so as to permit the latter to flow freely. It is to be noted in this connection also that by reason of the provision of the annular groove 18 no attention is required in assembling the mouthpiece upon the supporting-body, since some part of said groove is certain to register with the vent-pipe, and likewise the provision of the plurality of vent-passages extending up from said annular groove through the body is of importance, since it insures that one or more of these openings will be in such position as not to be closed by the lips of the user.

It will be seen that a device constructed in accordance with my invention may apply to almost any receptacle provided with a suitable mouth or nozzle and that the fragile material of which the filtering-body is composed is firmly supported and clamped between rigid supports, which reduce to a minimum the liability of its becoming broken. Obviously the device may be removed from the liquid-receptacle for the purpose of cleansing or replenishing the latter with the utmost facility.

I claim as my invention—

1. In combination, a stopper body or support adapted to be seated in the neck of a canteen or the like; a filter consisting of a hollow body of rigid porous material; means for supporting said filter-body from the stopper-body, comprising a hollow support extending through the filter-body and having one end engaged in said stopper-body; a clamping device threaded upon the opposite end of said hollow support in bearing with the end of the filter-body; and a rigid mouthpiece seated upon the upper end of the stopper-body and provided with a discharge-passage communicating with the interior of the hollow support, said hollow support being provided at points within the filter-body with inlet-openings, substantially as described.

2. In combination, a stopper body or support adapted to be seated in the neck of a canteen or the like; a filter consisting of a hollow body of rigid porous material; means for supporting said filter-body from the stopper-body, comprising a hollow support extending through the filter-body and having one end engaged in said stopper-body; a clamping device threaded upon the opposite end of said hollow support in bearing with the end of the filter-body; a rigid mouthpiece seated upon the upper end of the stopper-body and provided with a discharge-passage communicating with the interior of the hollow support; inlet-openings affording communication between the interior of the filter-body and the interior of the hollow support; and a venting device consisting of a tube arranged to extend downwardly through the stopper-body alongside of, and external to, the filter-body, and a passage communicating with the upper end of said tube and extending upwardly through the mouthpiece; substantially as described.

3. In combination, a stopper body or support adapted to be seated in the neck of a canteen or the like; a filter consisting of a hollow body of rigid porous material; means for supporting said filter-body from the stopper-body, comprising a hollow support extending through the filter-body and having one end engaged in said stopper-body; a clamping device threaded upon the opposite end of said hollow support in bearing with the end of the filter-body; a rigid mouthpiece seated upon the upper end of the stopper-body and provided with a discharge-passage communicating with the interior of the hollow support; inlet-openings affording communication between the interior of the filter-body and the interior of the hollow support; a venting de-

vice comprising a tube having its upper end seated in the stopper-body and its lower end extended through the clamping-support at the lower end of the filter-body; an annular groove formed in the under side of the mouthpiece concentrical with the hollow support, and in communication with said vent-pipe; vent-passages communicating with said annular groove and extending upward through the body of the mouthpiece; and a removable cap adapted to close the discharge-passage of the mouthpiece and the vent-passages of the latter, when applied to the mouthpiece; substantially as described.

4. In combination, the stopper-body 3; the mouthpiece 10 seated upon the upper end of said stopper-body; the filter-body 4; the hollow support 6 extending through the filter-body, the stopper-body, and threaded within the mouthpiece; the clamping device threaded upon the lower end of said hollow support, and between which and the stopper-body the filter-body is clamped; the discharge-passage communicating with the upper end of the hollow extension and extending through the mouthpiece; the inlet-apertures arranged at intervals throughout the length of the hollow extension; the vent-pipe 16 extending through the stopper-body and through the clamping-support; the annular groove in the under surface of the stopper-body communicating with said vent-pipe; the vent-passages communicating with said groove and extending thence through the stopper-body; and the removable cap arranged and combined, substantially as set forth.

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