(No Model.)

G. KOEPPEL.

FILTERING AND PURIFYING WATER IN WELLS.

No. 264,463. Patented Sept. 19, 1882.

Fig 1.

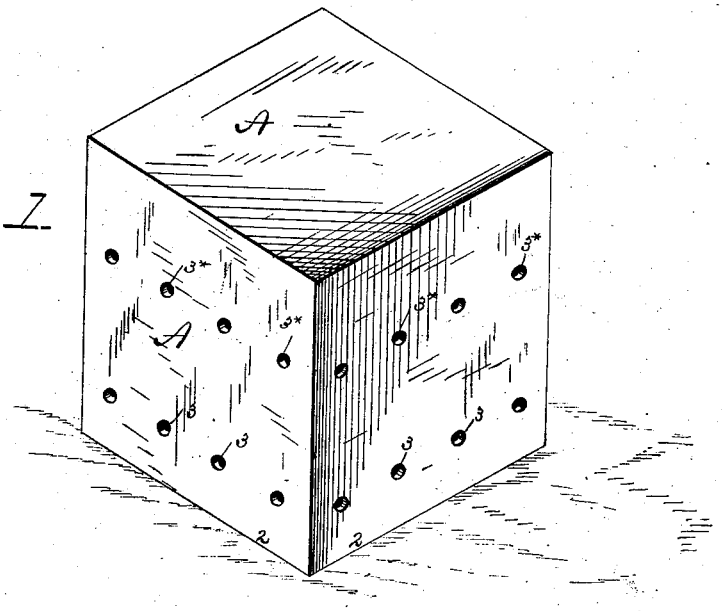


Fig 2.

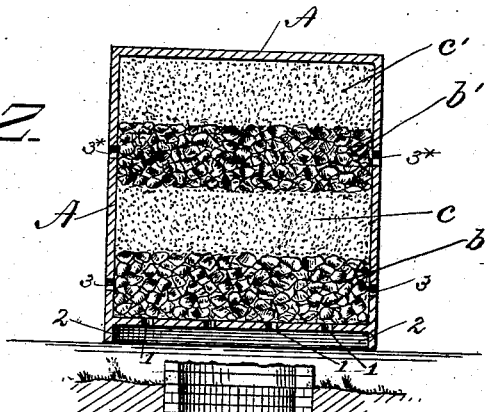
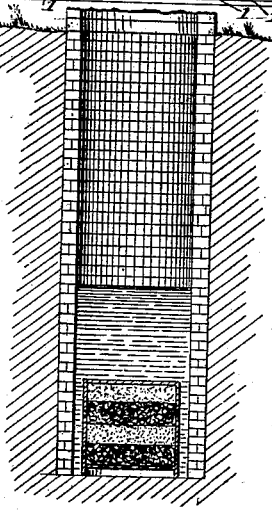


Fig 3.



Witnesses.
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UNITED STATES PATENT OFFICE.

GEORGE KOEPPEL, OF ALMA, WISCONSIN.

FILTERING AND PURIFYING WATER IN WELLS.

SPECIFICATION forming part of Letters Patent No. 264,463, dated September 19, 1882.

Application filed May 13, 1882. (No model.)

To all whom it may concern:

Be it known that I, GEORGE KOEPPEL, a citizen of the United States, residing at Alma, in the county of Buffalo and State of Wisconsin, have invented certain new and useful Improvements in Filtering and Purifying Water in Wells; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters or figures of reference marked thereon, which form a part of this specification.

My invention consists in a novel means for purifying water in wells, and more especially those wells in which the water is alkaline.

Figure 1 is a perspective view; Fig. 2, a vertical section; and Fig. 3 shows the apparatus on a reduced scale in place at the bottom of a well.

A is a box, made of suitable size and of any shape—round, square, or otherwise—and adapted to the diameter of the well into which it is to be sunken. Ordinarily it would be of about say four feet in length, breadth, and height. The box is perforated through the bottom with any desired number (say sixteen) of holes, 1, of a size from a half-inch to an inch in diameter, as may be found expedient, and this bottom should rest on or be provided with a rim, 2, at its perimeter, of an inch or more in depth, for the purpose of supporting the box and leaving a clear space between the same and the ground or mud at the bottom of the well, and thus preventing the mud from clogging the bottom perforations. The sides of the box are also perforated, but only at certain parts, as will be presently explained, so that the water may enter and pass out of the box to be purified, but not so as to carry away the sand, with which the box is supplied in layers, alternating with layers of charcoal made from oak. Supposing the box to be as above stated, (four feet in height and four feet in diameter or breadth,) I first put in it about one foot in depth of charcoal, *b*, and the side holes or perforations, 3, can admit the water direct to this charcoal. The next layer, of about one foot in depth, is of sand, *c*; but there are no side perforations at the height corresponding with the layer of sand. Above this layer of sand is another similar layer of charcoal, *b'*, and above this charcoal another similar layer or stratum of sand, *c'*, the latter about filling the box, side holes or perforations, 3*, admitting water to the second layer of charcoal, but that part of the side of the box which surrounds the sand stratum *c'* having no holes or perforations. The sides (or vertical wall or walls) of the box, it will thus be seen, are perforated only at the height of the respective layers of charcoal and not at the height of the layers of sand. The sand is thus kept to its place, and the water has free passage through and through the charcoal, to become purified of its alkaline or other objectionable qualities, which are absorbed by the charcoal; and it is also cleansed by the sand. The box should be as nearly as practicable of the same diameter or measure as the diameter of the well, so that when lowered to its place at the bottom of the well it shall, by the weight of the box and contents, force the water through the alternate layers of coal and sand.

When the filtering-case has been, as before stated, sunk to the bottom of the well and submerged it can remain at rest as long as desired. The water which lies above the top of the case may be drawn up for use as needed, either by ordinary well-buckets or otherwise; and this action, as well as the inflowing of water from the subterranean water-sources, induces currents through the box, as heretofore stated, the case or box, as already described, being adapted in size and form, as nearly as practicable, to fill the area of the well. The box may be raised and lowered again or lifted out of the well, as desired, for any purpose, and the contents can of course be readily renewed, if and when needed.

The top of the box should be covered, not only to keep the top layer of sand to place, but also the better to insure the forcing of the water through the charcoal and sand when the box is lowered or being lowered.

It will be observed that my device is applicable for wells of ordinary construction, and that no forced currents or conduits are needed to convey water to the box or to lead it off after being purified, and no valves, levers, or other artificial appliances are required to let on or cut off the water, as my device is simply de-

posited, as above stated, in the still water of the well, and, by reason of its construction and contents, performing its duty of purifying the water before it is drawn up for use. The charcoal, besides its general purifying character, serves as an absorbent of the alkali when the water is alkaline.

I claim—

The described apparatus for purifying water in wells, consisting of a box or case having a raised and perforated bottom and containing alternate deep layers of charcoal and sand, the charcoal being at the bottom and having side perforations located on a level with the charcoal only to permit the passage of water through the box directly to and from the charcoal only and thence to and through the sand.

GEORGE KOEPPEL.

Witnesses:
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