Richardson & Hughes,

Water Filter.

No. 52,204. Patented Jan. 23, 1866.

Fig: 1.

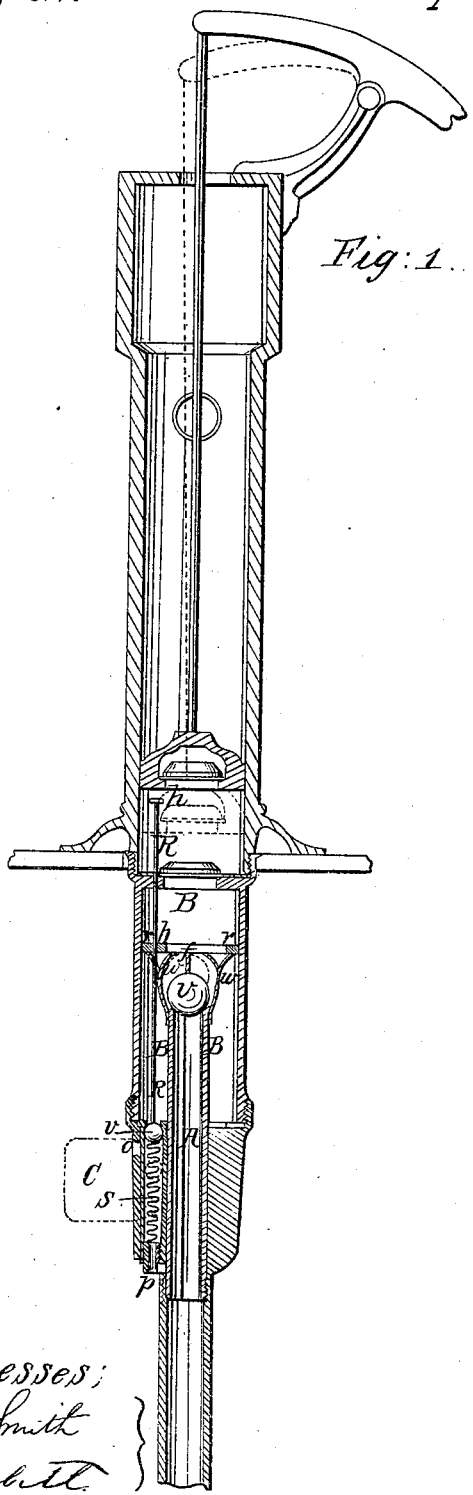


Fig: 2.

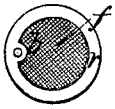
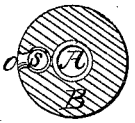


Fig: 3.



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UNITED STATES PATENT OFFICE.

S. D. RICHARDSON AND T. S. HUGHES, OF SYRACUSE, NEW YORK.

IMPROVEMENT IN PUMP-FILTERS.

Specification forming part of Letters Patent No. **52,204**, dated January 23, 1866.

To all whom it may concern:

Be it known that we, SPENCER D. RICHARDSON and THOMAS S. HUGHES, of the city of Syracuse, New York, have invented a new and Improved Pump-Filter; and we do hereby declare that the following is a full, clear, and exact description of the construction of the same, and the form thereof when complete, reference being had to the annexed drawings, making a part of this specification, in which—

Figure 1 represents a vertical sectional view of all the parts with the attachment to the pump and pipe. Fig. 2 represents a perspective view of the wire-gauze sieve. Fig. 3 represents a horizontal sectional view of the bottom of the chamber B, showing how the same is perforated with the openings for the tube A and the valve *v'*, and also the opening O for the sand and gravel to escape.

The letters used represent the same parts wherever they occur.

To enable others skilled in the art to make and use our invention, we will proceed to describe the construction of the filter and its form when ready for use.

The principal object of this filter is for use in what are called "driven wells." At the bottom of the pump-pipe in that class of wells various inventions have been tried to prevent the sand and gravel from passing into the pipe, some using a tube perforated or slotted near the bottom, and some a filter made with wire sections and screwed on the bottom. None of these inventions, however, completely answer the purpose of keeping out the sand and gravel, and one of the chief obstacles to a common use of such wells is the fact that enough will still get into the pipe to clog and obstruct the working of the pump-valves. To obviate this difficulty we have constructed a pump-filter which is designed to be placed directly below the valves of any common pump, and forming a part of the pump-pipe, with the ends screwed into the pipe below and the pump above.

We make a tube, A, passing up into the hollow chamber B. At the top of the tube A is the loose valve *v*, made of rubber or other suitable material, to fit into the top of the tube, and held to its place by means of the small wires *w w*, enough of the wires being used to accomplish that purpose. Above the wires, and attached thereto, is the wire-gauze sieve *f*, with a rim, *r*, large enough to snugly fit the pipe and with a perforated boss, *b*.

When the pump is operated the suction will raise the valve *v*, and if any sand or gravel is brought up it will pass through into the hollow chamber B. It is there stopped by the sieve *f*, and will naturally fall to the bottom of the chamber B.

In order to pass off the sand and gravel from the chamber B, we use the discharge-valve *v'*, supported by the spring S, (which may also be of rubber,) and with the lower part of the spring attached to the hollow plug *p*, to let any sand or gravel escape that may have got into the opening below the valve *v'*. This valve is operated by the rod R, which extends from a point just above the lower valve of the pump, and passing through it and the boss *b*, is made to fit into the top of the valve *v'*. The top of this rod will pass to a point below the upper valve of the pump far enough, so that when the plunger is thrown down its full extent it will press upon the head *h*, and thus, by the operation of the pump in dropping the plunger, the valve V' is opened and the sand and gravel let out into the chamber C at the opening *o*. This chamber should be located deep enough to ordinarily avoid the effect of the frost. The sand and gravel may also be discharged by a rod passing down on the outside of the pipe, and operated by a spring valve or faucet opened by hand.

What we claim as our invention is—

1. The tube A, running up into the chamber B, with the parts *v*, *w*, *f*, *r*, and *b* attached thereto.

2. The same parts described in said claim, in combination with any form of pump in common use, made and operated substantially as and for the purposes described.

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Witnesses:
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