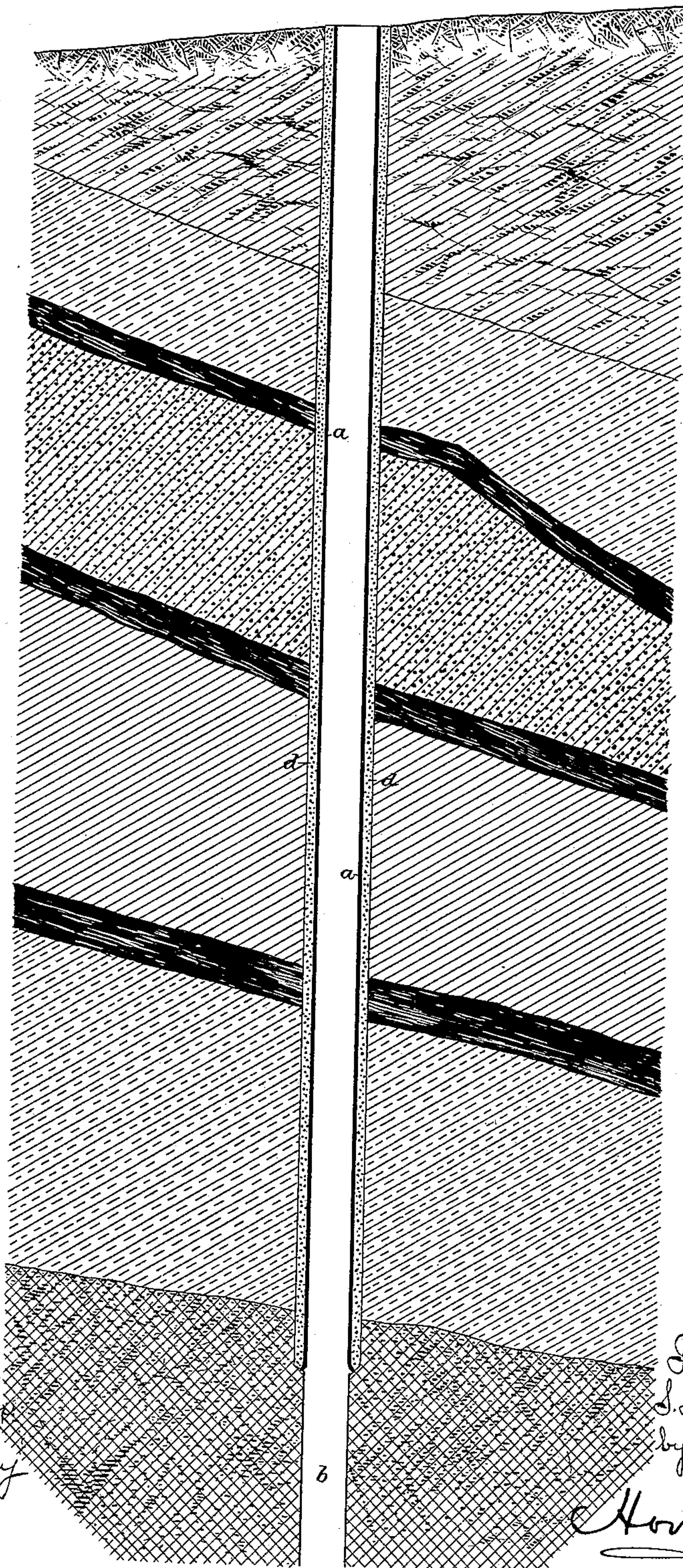


(No Model.)

S. McEACHEN.
PROTECTING WELLS.

No. 326,439.

Patented Sept. 15, 1885.



Witnesses:
George O. Sibley
Harry Drury

Inventor:
S. McEachen
by his Attys.

Horrocks and Co.

UNITED STATES PATENT OFFICE.

SAMUEL McEACHEN, OF SCRANTON, PENNSYLVANIA.

PROTECTING WELLS.

SPECIFICATION forming part of Letters Patent No. 326,439, dated September 15, 1885.

Application filed August 11, 1885. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL McEACHEN, a citizen of the United States, residing in Scranton, Lackawanna county, Pennsylvania, have
5 invented certain Improvements in Protecting Wells, of which the following is a specification.

The main object of my invention is to prevent the contamination of water obtained from
10 wells in localities where the strata from which good water is derived are overlaid with strata containing sulphur-water, a further object being to protect from the deteriorating or destructive influences of the sulphur-water wire
15 ropes, pipes, &c., contained in a bore passing through the upper strata. These objects I attain in the manner which I will now proceed to describe, reference being had to the accompanying drawing, the figure in which
20 is a sectional diagram illustrating my invention.

In numerous localities—such, for instance, as the anthracite-coal regions of the State of Pennsylvania—the strata from which good
25 water can be obtained are overlaid with coal measures and other strata in which sulphur-water is present. Hence good water cannot be obtained from wells in such localities, owing to the fact that the wells are contaminated by
30 sulphur-water flowing into the same from the upper strata, and this defect cannot be remedied by the usual plan of casing or piping the upper portion of the well, for the sulphur-water is such as to rapidly destroy such casing, and
35 when wire ropes, pipes, &c., are contained in bores passing through such upper strata they rapidly deteriorate, and are in a short time destroyed. In carrying out my invention, therefore, I preferably enlarge the bore of all
40 that portion of the well which is within the upper strata containing sulphur-water, this enlarged bore containing a pipe, *a*, which forms a continuation of the main bore *b* of the well in the lower strata, and I fill the space between
45 said pipe and the bore of the well with hydraulic or other cement, *d*, this cement being impermeable to the sulphur-water, and therefore forming an effectual shield or guard,

whereby the access of the sulphur-water to the pipe *a* is cut off and the destruction of
said pipe prevented.

If desired, the bore of the well may be uniform throughout, and the pipe *a* may be less in diameter than the bore, so as to provide a space around the same for the reception of
55 cement, the joint at the lower end of the pipe being formed by expanding the same, or by means of a seed-bag or other well-known device for the purpose.

I claim as my invention—

1. The mode herein described of preventing
the access of sulphur-water to bores passing through strata containing such water, said mode consisting in providing the bore with a pipe or casing less in diameter than the bore,
65 and filling the space between said pipe or casing and the bore with cement impermeable to sulphur-water, as set forth.

2. The mode herein described of preventing
the contamination of wells passing through
70 coal measures or other strata containing sulphur-water, said mode consisting in providing that portion of the bore which is within said sulphur-water strata with a pipe or casing
less in diameter than the bore, and filling the
75 space between said pipe or casing and the bore with cement impermeable to sulphur-water, all substantially as specified.

3. The mode herein described of preventing
the contamination of wells passing through
80 coal measures or other strata containing sulphur-water, said mode consisting in enlarging the bore of that portion of the well passing through said strata, inserting a pipe forming a continuation of the main bore, and filling
85 the space between said pipe and the enlarged bore with cement impermeable to sulphur-water, as specified.

In testimony whereof I have signed my name to this specification in the presence of two sub-
90 scribing witnesses.

SAML. McEACHEN.

Witnesses:

J. M. POORE,
E. F. BOYLE.