

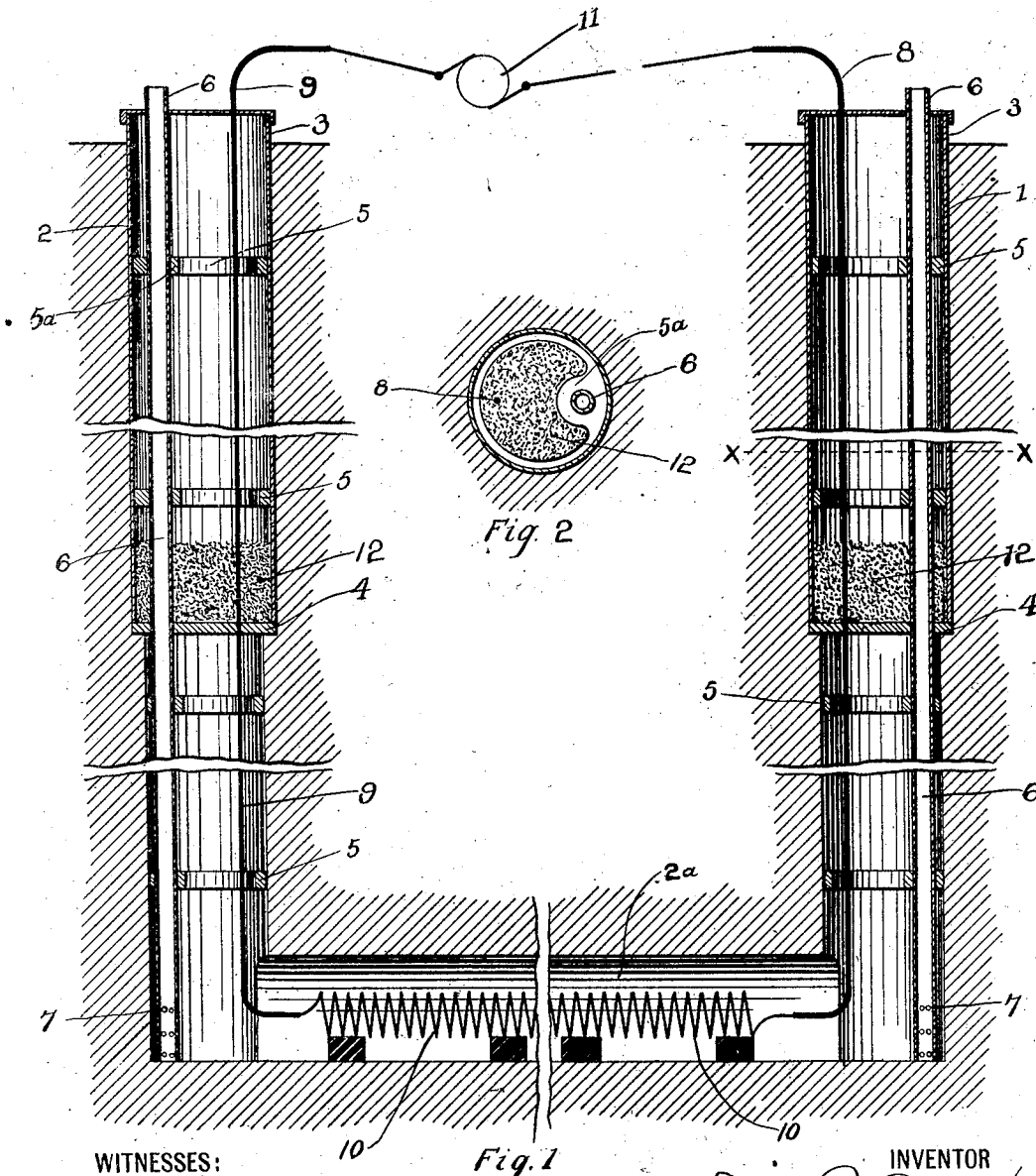
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D. R. BAKER.

PROCESS OF EXTRACTING AND RECOVERING THE VOLATILIZABLE CONTENTS
OF SEDIMENTARY MINERAL STRATA.

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No. 849,524.

Specification of Letters Patent.

Patented April 9, 1907.

Application filed June 23, 1902. Serial No. 112,742.

To all whom it may concern:

Be it known that I, DELOS R. BAKER, a citizen of the United States, residing at Delaware, in the county of Delaware and State of Ohio, have invented a certain new and useful Improvement in Processes of Extracting and Recovering the Volatilizable Contents of Sedimentary Mineral Strata, of which the following is a specification.

My invention relates to the process of extracting and collecting the volatilizable contents of sedimentary strata; and the object of my invention is to provide a simple and effective process whereby the volatilizable contents of sedimentary strata in place in the earth may be extracted and recovered. This object I accomplish in the manner illustrated in the accompanying drawings, in which—

Figure 1 represents a vertical section through two earth-wells which I employ in the manner hereinafter described, and Fig. 2 is a transverse section through one of said wells on line *xx* of Fig. 1.

Similar numerals refer to similar parts throughout the several views.

My process consists in placing in earth-wells having more or less imperfect electrical ground conduction naturally or artificially existent between them wire or other conductors of electricity from some source thereof and in completing the circuit between said conductors through the said ground connection, my object being to gain thereby a thermic effect upon the contents of portions of said strata intervenient between or circumjacent to said wells, whereby the said contents may be extracted and recovered without the labor and expense of mining said strata by mechanical means and of subsequently reducing it in suitable apparatus at the earth's surface.

In the drawings I have illustrated a means of carrying out this process which may be described as follows:

1 and 2 represent wells or channels of communication between said strata and the surface of the earth, each of which is provided with a water-tight casing 3, which, as shown in the drawings, may extend from the upper ends of said wells to a suitable depth therein, the lower ends of each of said casings meeting or connecting with a horizontally-disposed plate or sealing-diaphragm 4. The lower end

portions of the wells are connected through the medium of a tunnel, such as is indicated at 2^a; but said tunnel is an alternative communication between said wells in default of natural communication through the seams, veins, pores, and other natural openings in said strata and is not a part of what I claim as my invention. At intervals within each of the wells or channels I provide guide-rings 5, each of said guide-rings being formed with an inward projection, such as is indicated at 5^a. Through openings formed in said projections 5^a and in the sealing-diaphragms 4 pass pipes 6, these pipes extending, preferably, to the bottoms of the wells or channels 1 and having their lower portions perforated, as indicated at 7. Leading from the earth's surface through the well 1 to the lower end thereof is a wire 8, said wire passing through a suitable opening in the sealing-diaphragm 4. Leading through and to the lower portion of the well 2 is a similar wire 9. Said wires 8 and 9 may terminate at the inner ends of the wells in a pervious stratum and the connection between the same be accomplished by natural resistance elements, such as mineralized water, which may exist in or be introduced into the said stratum or as metallic substances finely disseminated through the strata. In default of natural communication between said wells and in case of the provision of the artificial communication 2^a the electric circuit alternatively may be completed by the introduction into tunnel 2^a of a metallic resistance element 10, suitably supported, as shown; but said element 10 in said tunnel 2^a is not a necessary part of my invention nor claimed as such.

The wires 8 and 9 at the earth's surface may connect with a dynamo, such as indicated at 11, or with any other suitable source of electricity.

In order to provide an effective separation between the upper and lower portions of each of the wells, I have provided the sealing-diaphragms 4, upon which may be deposited a desirable quantity of dry and pulverized clay or its equivalent, as indicated at 12.

By the operation upon the strata in place of the heat which results from the passage of the current through the said strata the volatilizable contents of said strata are ex-

tracted, and such contents thus extracted may be by suitable means withdrawn through the outlet-pipes 6 to the surface of the earth, where they may be collected or
5 suitably disposed of.

It is obvious that the channels of communication 1 and 2 and their contained wires and pipes may have any desired inclination or may be horizontal, and I do not desire in
10 this application to limit myself to any angle of inclination of said channels.

As will be understood, the process herein described affords a simple and reliable means for effecting the extraction of the volatilizable contents of the sedimentary strata in
15 place.

As examples of the volatilizable contents of sedimentary strata susceptible to the operations above specified I may mention the
20 hydrocarbons, native metals—such as mercury, bismuth, antimony, arsenic, zinc, &c., sulfur, both native and in composition, iron pyrite, mispickel, galena, redruthite, argentite, blende, &c., chlorids of the metals and
25 alkalies—such as calomel, sylvite, chlorite, cerargyrite, salmiac, &c.—oxids of the metals, such as arsenolite, &c., sulfids of the metals, such as cinnabar, &c., inorganic acids in composition, such as carbonic dioxid, &c.,
30 and any volatilizable minerals produced by the chemical action upon the constituents of said strata of mineralizing agents employed to effect said artificial ground conduction. Examples of the latter class would be chlorids, such as ferrous and ferric chlorid, produced by action of chlorine or of hydrochloric acid introduced into said strata, &c.

Having now fully described my invention,

what I claim, and desire to secure by Letters Patent, is—

1. The herein - described process for extracting and recovering the volatilizable contents of sedimentary strata in place in the earth, consisting of the provision of two
40 earth-wells from the earth's surface to said subterranean strata in place, the transmission by means of conductors in said wells and by means of ground conduction between said wells through said strata of a current of electricity, the withdrawal in gaseous form from
45 one of said wells of the products of the operation of said current upon the contents of said strata and the recovery of the withdrawals.

2. The herein - described process for extracting and recovering the volatilizable contents of sedimentary strata in place in the earth, consisting of the provision of two
50 sealed earth-wells from the earth's surface to said subterranean strata in place, the transmission by means of conductors introduced into said wells and by means of ground conduction between the sealed portions of said wells through said strata of a current of electricity, the withdrawal in gaseous form from
55 one of said wells through a channel communicating between the sealed portion of said well and the earth's surface of the products of the operation of the said current upon the contents of said strata in place and the
60 recovery of the withdrawals.

DELOS R. BAKER.

In presence of—

A. L. PHELPS,
W. L. MORROW.