

I. N. TERRILL.

WELL.

APPLICATION FILED NOV. 14, 1910.

1,031,596.

Patented July 2, 1912.

3 SHEETS-SHEET 1.

Fig. 1.

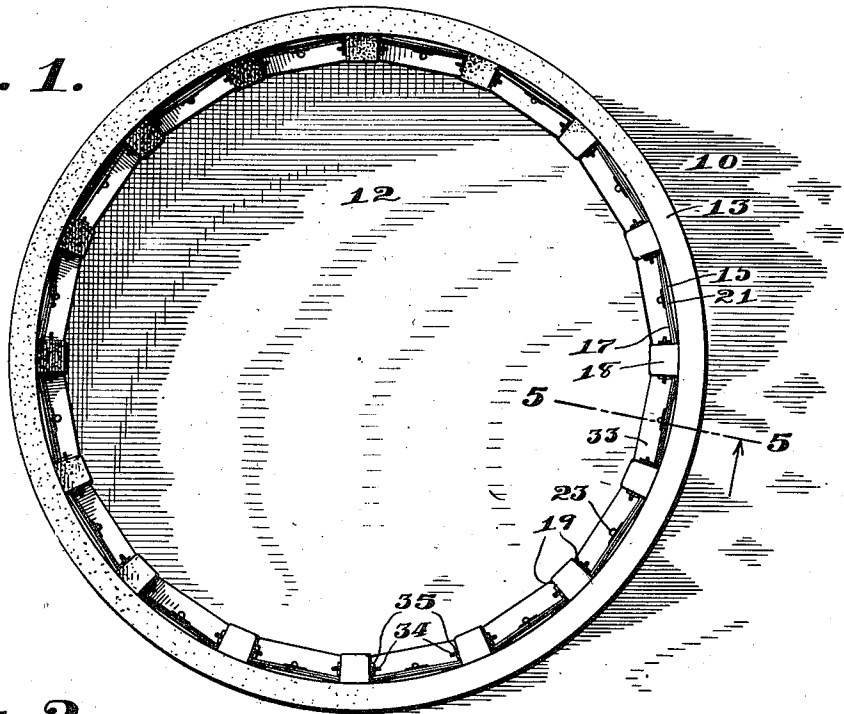
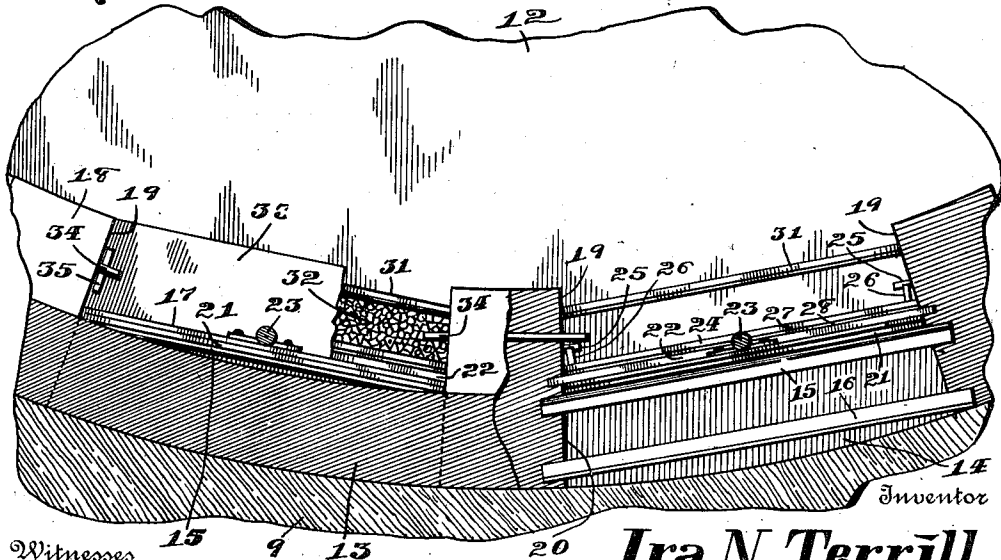


Fig. 2.



Witnesses

N. C. Adams.

J. E. Adams

Ira N. Terrill.

By *Frank P. Shepard,*

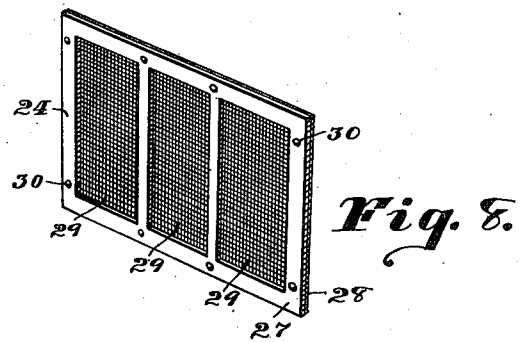
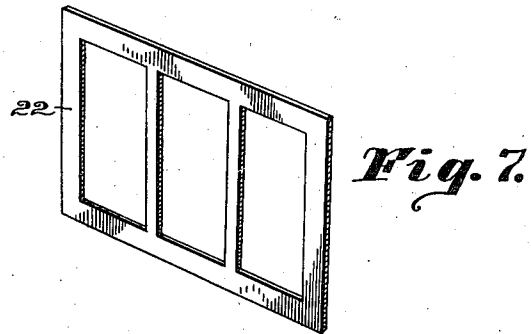
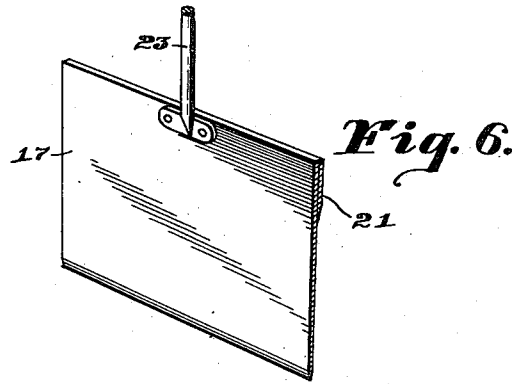
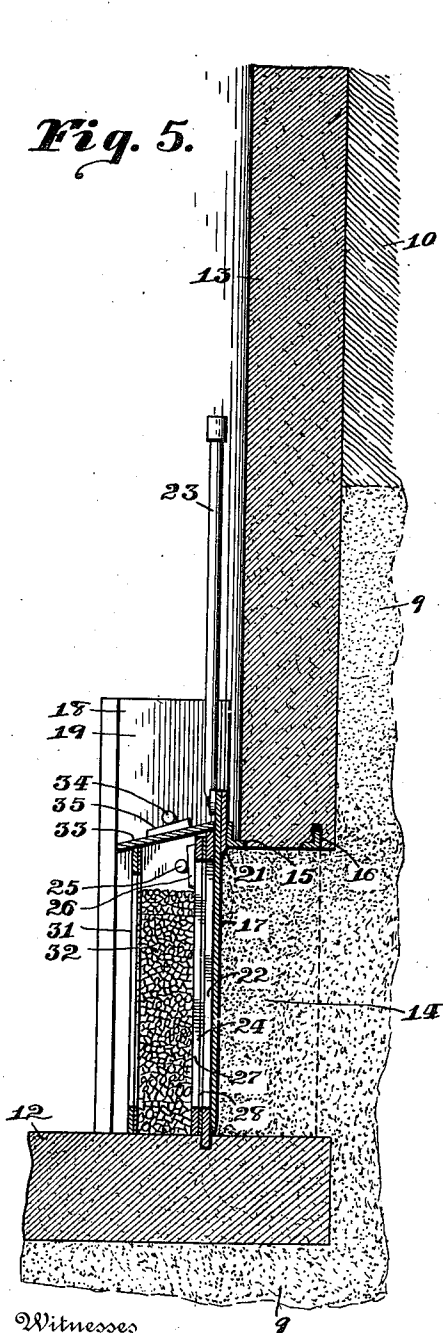
Attorney.

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3 SHEETS—SHEET 3.



Witnesses
H. Adams.
J. Adams.

Inventor
Ira N. Terrill.
By Frank P. Shepard,
Attorney.

UNITED STATES PATENT OFFICE.

IRA N. TERRILL, OF OKLAHOMA, OKLAHOMA.

WELL.

1,031,596.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, IRA N. TERRILL, a citizen of the United States, residing at Oklahoma city, in the county of Oklahoma and State of Oklahoma, have invented certain new and useful Improvements in Wells, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings.

In certain localities the earth's surface is underlain by a stratum of quick-sand, or quick-sand and gravel, through which flows water, this stratum always being underlain with clay, rock, or some stratum impervious to water.

In wells heretofore used in obtaining water from water-bearing sand, trouble has been encountered in keeping quick-sand and silt from washing into the well; and where water carries substances of cementing qualities the sand immediately around the well becomes hardened into rock, thus partly or wholly shutting off the water from the well.

An object, therefore, of the invention is to overcome these difficulties.

Another object is to screen and filter the water as it flows into the well.

Another object is to provide means for temporarily shutting out the water and sand for purposes of cleaning or repairing the well.

A further object is to afford access to the sand around and near the well in order to break up and remove any solidified formation which would prevent a free flow of water into the well.

Other objects and advantages of the invention will be set forth in the ensuing description.

Referring to the drawings: Figure 1 is a plan view of a well embodying my improvements. Fig. 2 is an enlarged sectional view, taken on a horizontal plane near the bottom of the well. Fig. 3 is a perspective view showing a portion of the earth and a portion of the wall of the well broken away to expose construction. Fig. 4 is an enlarged perspective view of portions at the bottom of the well which are omitted in Fig. 3. Fig. 5 is a sectional view on same scale as Fig. 2, taken on the line 5-5 of Fig. 1. Figs. 6, 7, and 8, are perspective views, respectively, of a gate, an iron frame, and a screen.

Referring to the several figures, in all of which like characters of reference designate

like parts, the earth formation herein shown has a stratum 9 of quick-sand underlying the upper stratum 10 of soil formation. This stratum 9 of quick-sand is underlain by a stratum 11 of impervious clay or rock, and when this stratum of clay or rock is not at too great a depth to be reached it forms the bottom of the well. When this impervious stratum 11 is at too great a depth, a bottom 12 of masonry, concrete, sheet steel, or other material impervious to water is footed in the quick-sand stratum 9 to support other parts of the well.

The well is provided with an outer wall 13 of concrete, masonry, or other suitable material, this wall resting upon the edges of the bottom 12. The lower edge of the wall 13 is provided with a number of openings 14, of which there are sixteen in this instance, the lower edges of these openings being the upper surface of the bottom 12. The upper edge of each opening 14 is provided with lintel bars 15 and 16 which act as a reinforcing support for the wall 13 above it. These lintel bars 15 and 16 are not circular, but extend as a chord to the curvature of the wall 13, the inner one 15 forming an outer guide for a vertically-movable gate 17 later described, so that the central portion of said gate clears the inner surface of said wall in moving vertically. The wall 13 is provided with buttresses 18 between the openings 14, the side faces 19 of said buttresses standing on radial lines of the well and being an inward continuation of the sides 20 of said openings. The upper ends of the buttresses 18 are preferably horizontal; so that they may support any scaffolding that may be used while cleaning or repairing the well. In order to close the openings 14 against the entrance of water and sand while cleaning or repairing the well, each opening is provided with the sheet-iron gate 17 aforesaid, which is arranged to slide vertically along the inner surface of the wall 13 in contact with the inner lintel bar 15. The upper edge of the outside surface of this gate 17 is provided with a metal cleat 21 having a beveled lower edge, so as to fit tightly against the inner lintel bar 15 only when in closed position. This allows the gate 17 to work freely after it is started toward open position. The gate 17 is supported against the inward pressure of the water and sand by a rectangular metal frame 22, shown separately in Fig. 7, which

is permanently embedded in the sides of the buttresses 18 and in the bottom 12, the gate being provided at its upper edge with a vertical operating rod or handle 23 for opening and closing it.

A screen 24, shown separately in Fig. 8, is mounted inwardly of the frame 22 in each opening 14, and is held outward against said frame by iron pins 25 embedded in the buttresses 18, wedges 26 being inserted down between said pins and screen to clamp the latter against said frame. Each screen 24 consists of two iron frames 27 and 28 with wire screen 29 interposed between them, this screen being so thin that it does not show in the sectional views, and bolts or rivets 30 extend through said frames and screen to clamp them permanently together. A second or inner screen 31, similar to the outer screen 24, is mounted removably in each opening 14, and the space between said inner and outer screens is filled with charcoal 32 or any other suitable filtering substance, a small amount of this filtering substance being omitted in Fig. 5 to expose the pin 25 and wedge 26 above referred to. In packing this filtering substance in, the inner screen 31 is crowded inwardly of the well until stopped by wedging the converging surfaces 19 of its adjacent buttresses 18. The filtering substance 32 is covered by a sheet-iron plate 33 which fits between the converging surfaces 19 of the buttresses 18, the inner edge of this plate resting upon the inner screen 31 while its outer edge rests upon the upper edge of the frame 22 and in contact with the upper part of the gate 17. This plate 33 is held downward onto the screen 31 and frame 22 by iron pins 34 embedded removably in the buttresses 18, wedges 35 being inserted between said pins and plate to clamp the latter against said screen and frame.

After the screens 24 and 31 have been set in place, and the filtering substance 32 packed between them, and after the plate 33 has been put in place over said filtering substance and clamped down as described, the gate 17 is opened upward, allowing the water and sand outside to flow against the outer screen 24 and allowing the water to flow through said screen, through the filtering substance, and through the inner screen 31 to fill the well.

To clean the well, the gates 17 are closed downward against the bottom 12, the lower edges of said gates being sharpened in order to pass down easily through the sand outside of the frame 24. After closing the gates 17 the plates 33 are removed from place and the filtering substance 32 dug or removed from between the screens 31 and 24. These screens 31 and 24 are then removed and the well cleaned or repaired, one gate 17 at a time being opened upward tem-

porarily if necessary to break and dislodge any solid formation immediately outside of said gate. After cleaning the well, the screens 24 and 31 are set in place and fresh filtering substance 32 packed between them, the plates 33 then being put in place and fastened. The gates 17 are then opened and the well fills with water which is purified by passing in through the screens and filtering substance.

The foregoing being a full, clear, and exact description of the invention, what I claim and desire to secure by Letters Patent is:—

1. A well casing comprising an impervious wall lining the well, said wall having an opening, a gate arranged to slide within the casing to close said opening, a lintel bar extending across the top of the opening, said bar being adapted to support the portion of the wall above said opening, and form a guide for the outer surface of the gate.

2. A well casing comprising an impervious wall lining the well, said wall having an opening, a lintel bar extending across the top of the opening, a gate adapted to move vertically along the inner surface of the wall for closing said opening, the gate having a cleat across its outer surface in position to contact the lintel bar when said gate is in closed position.

3. A well casing comprising an impervious wall lining the well, said wall having an opening, a lintel bar extending across the top of the opening, a gate adapted to move vertically along the inner surface of the wall for closing said opening, the gate having a cleat across the upper portion of its outer surface to contact the lintel bar, the lower edge of said cleat being beveled toward the surface of the gate.

4. A well casing comprising an impervious wall lining the well, said wall having an opening, a lintel bar extending across the top of said opening, a frame mounted inwardly of the inner surface of said wall in front of said opening, a gate adapted to slide down between said bar and frame for closing said opening, and a cleat extending across the upper portion of the outer surface of the gate in position to bear against said lintel bar when said gate is in closed position.

5. A well casing comprising an impervious wall lining the well, said wall having an opening, a lintel bar extending across the top of the opening to reinforce the wall above said opening, a frame mounted inwardly of the inner surface of said wall in front of said opening, and a gate adapted to slide down between said bar and frame for closing said opening.

6. A well casing comprising an impervious wall lining the well, said wall having an

opening, the wall having a buttress on its inner surface at each side of said opening, a frame embedded in said buttresses in front of said opening, and a gate adapted to slide down between the inner surface of the wall and the outside surface of said frame to close said opening.

7. A well casing comprising an impervious wall lining the well, said wall having an opening, a frame mounted inwardly of the inner surface of the wall in front of said opening, a gate adapted to close over said opening, a screen mounted inwardly of said frame, and means for removably clamping said screen against said frame.

8. A well casing comprising an impervious wall lining the well, said wall having an opening, a frame mounted inwardly of the inner surface of the wall in front of said opening, a gate adapted to close over said opening between the wall and said frame, a screen mounted inwardly of said frame, and wedge-controlled means for holding said screen in contact with said frame.

9. A well casing comprising an impervious wall lining the well, said wall having an opening, a screen arranged in front of said opening, filtering means arranged inwardly of said screen, and a gate adapted to close said opening.

10. A well casing comprising an impervious wall lining the well, said wall having an opening, the inner surface of the wall having a buttress at each side of said opening, a frame embedded in the sides of said buttresses, a screen arranged on the inner side of said frame, and a gate adapted to close down between said frame and said opening.

11. A well casing comprising an impervious wall lining the well, the wall having an opening, the inner surface of the wall being provided with a buttress on each side of said opening, a screen spanning the space between said buttresses at said opening, and pins embedded in the buttresses for retaining said screen in place.

12. A well casing comprising an impervious wall lining the well, the wall having an opening, the inner surface of the wall having a buttress at each side of said opening, a frame mounted in front of said opening and having its edges embedded in said buttresses, a screen mounted in contact with the inner surface of said frame, pins embedded in the buttresses inwardly of said screen, and wedges interposed between said pins and screen to hold the latter against said frame.

13. A well casing comprising an impervious wall lining the well, said wall having an opening, the inner surface of the wall having a buttress at each side of said opening, a frame mounted in front of said opening with its edges embedded in the buttresses,

a screen mounted inwardly of and in contact with said frame, a second screen mounted inwardly of and spaced from the first screen, and a filtering substance filling the space between said screens and the buttresses.

14. A well casing comprising an impervious wall lining the well, said wall having an opening, the inner surface of the wall having a buttress at each side of said opening, the sides of said buttresses being on lines radiating from a common point in the well, a frame mounted in front of said opening with its edges embedded in said buttresses, a screen mounted inwardly of and in contact with said frame, a second screen mounted inwardly of and spaced from the first screen, the edges of the second screen contacting the converging sides of the buttresses, and a filtering substance filling the space between said screens and the buttresses.

15. A well casing comprising an impervious wall lining the well, said wall having an opening, the inner surface of the wall having a buttress at each side of said opening, the sides of said buttresses being on lines radiating from a common point within the well, a frame mounted in front of the opening and having its edges embedded in the buttresses, a screen mounted inwardly of and in contact with said frame, pins in the buttresses for holding said screen, wedges interposed between said pins and screen, a second screen mounted inwardly of and spaced from the first screen, the edges of the second screen contacting the converging surfaces of the buttresses, a filtering substance packed between said screens, and a removable cover over said filtering substance.

16. A well casing comprising an impervious wall lining the well, the wall having an opening, the inner surface of the wall having a buttress at each side of said opening, a frame mounted in front of the opening with its edges embedded in the buttresses, filtering means arranged inwardly of said frame, a plate covering said filtering means, pins in the buttresses above said plate, and wedges inserted between said pins and the plate.

17. A well casing comprising an impervious wall lining the well, said wall having an opening, the inner surface of the wall having a buttress at each side of the opening, the sides of said buttresses being on lines radiating from a common point within the well, a frame mounted in front of the opening and having its edges embedded in the buttresses, a gate adapted to close down between said frame and the opening, a screen mounted inwardly of and in contact with said frame, pins in the buttresses for holding said screen, wedges interposed between said pins and screen, a second screen mounted inwardly of and spaced from the first screen, the edges of the second screen

contacting the converging surfaces of the
buttresses, a filtering substance packed be-
tween said screens, a cover mounted over the
filtering substance and resting upon said
5 screens, pins inserted in the buttresses above
said cover, and wedges inserted between said
pins and said cover.

Witness my hand this 31 day of October,
1910.

IRA N. TERRILL.

Witnesses:

H. C. ADAMS,
J. C. ADAMS.