

No. 776,392.

PATENTED NOV. 29, 1904.

W. E. HARMON.
STRAINER FOR WELL TUBES.
APPLICATION FILED AUG. 10, 1904.

NO MODEL.

2 SHEETS—SHEET 1.

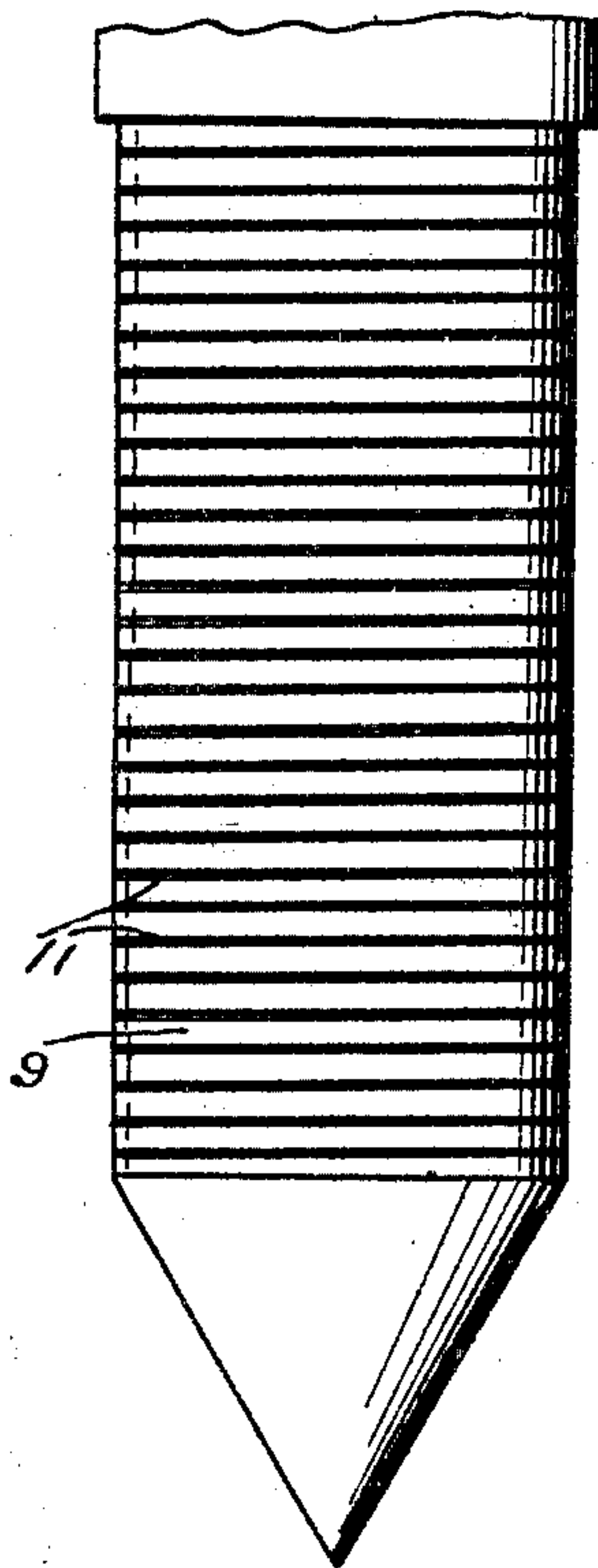


Fig. 1.

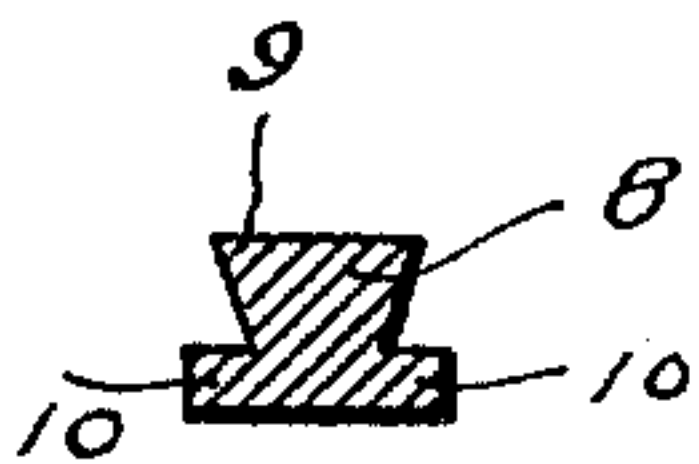


Fig. 5.

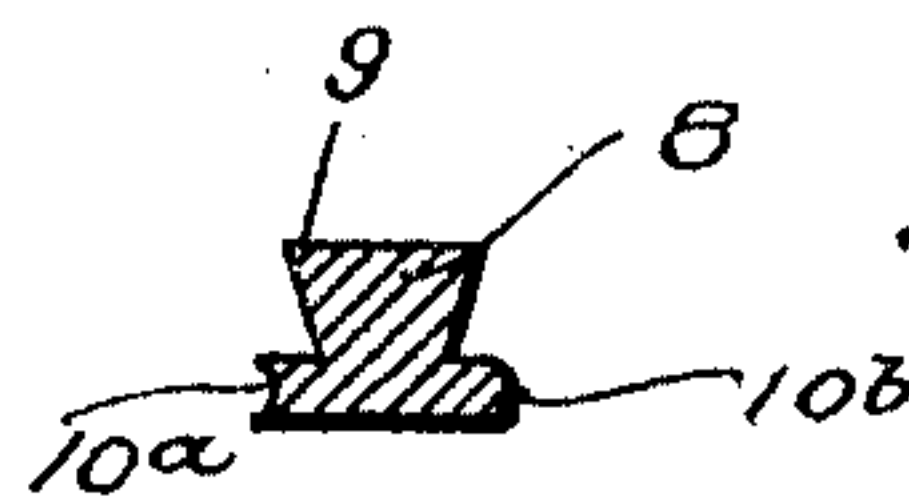


Fig. 6.

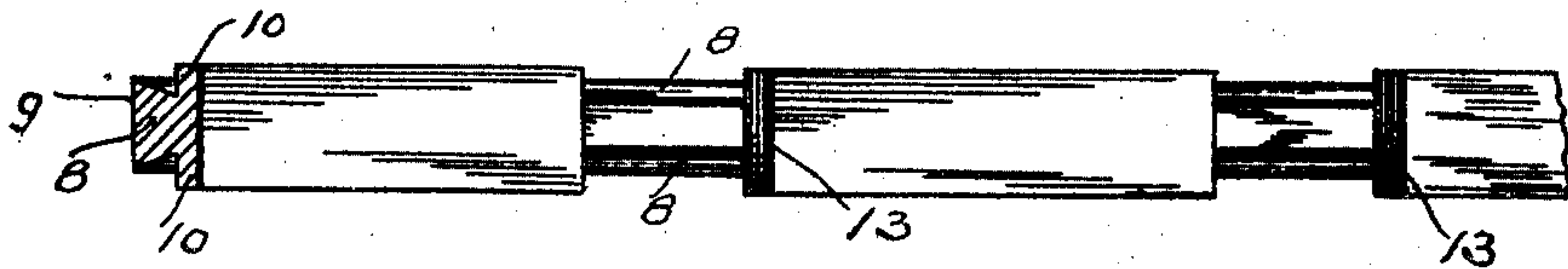


Fig. 7.

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2 SHEETS—SHEET 2.

Fig. 2.

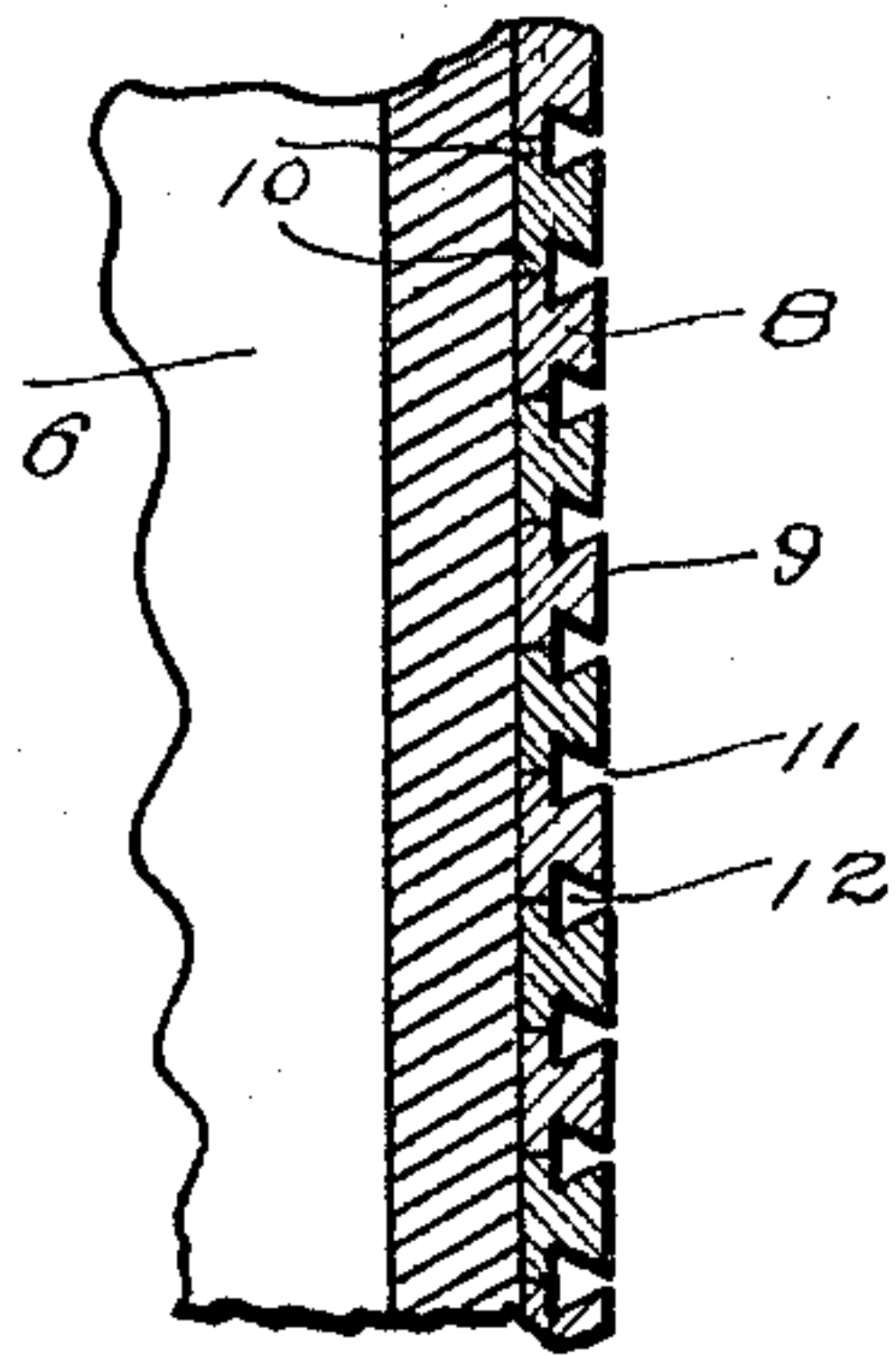
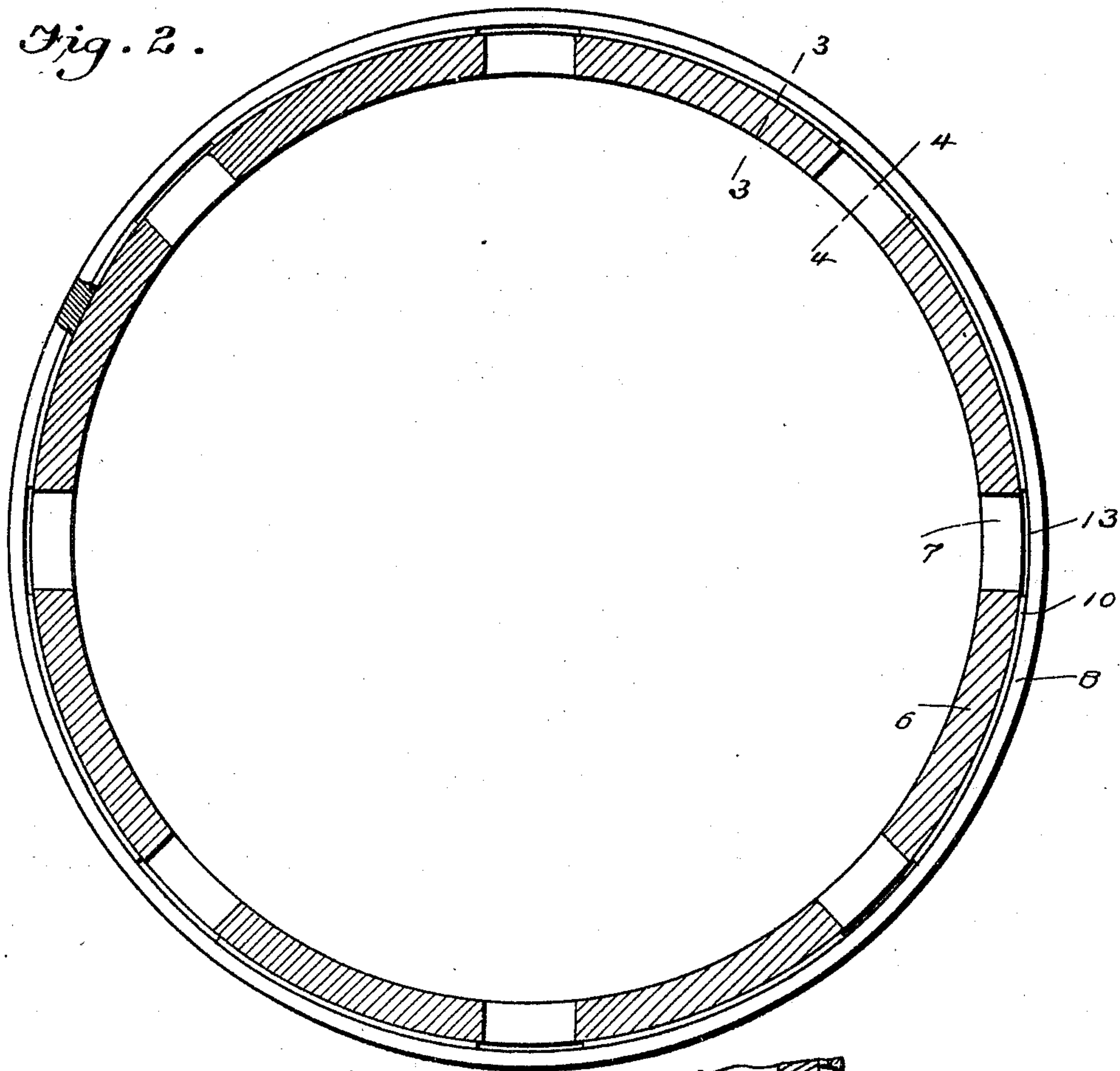


Fig. 3.

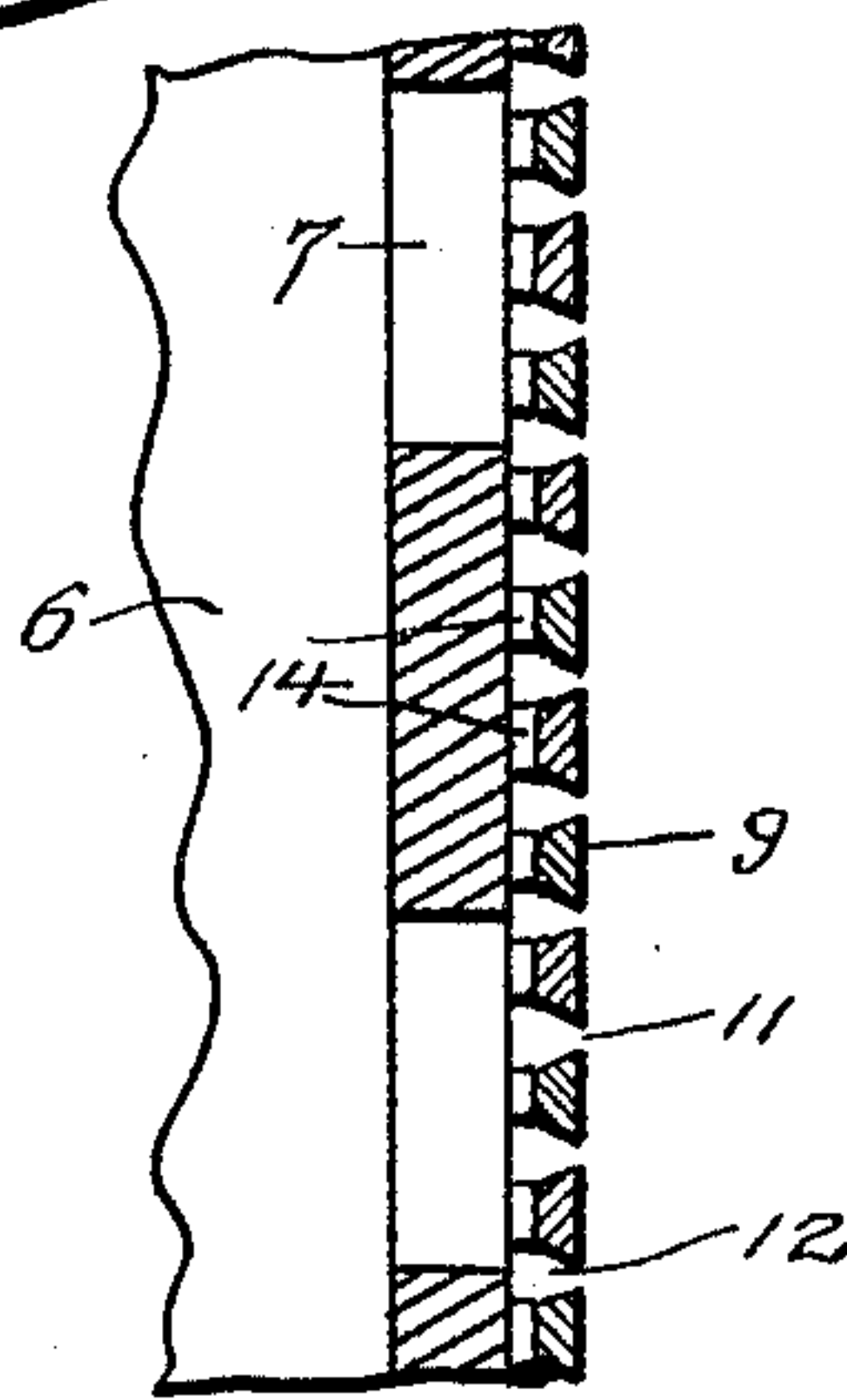


Fig. 4.

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UNITED STATES PATENT OFFICE.

WILLIAM ELLIS HARMON, OF HOUSTON, TEXAS.

STRAINER FOR WELL-TUBES.

SPECIFICATION forming part of Letters Patent No. 776,392, dated November 29, 1904.

Application filed August 10, 1904. Serial No. 220,272. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM ELLIS HARMON, a citizen of the United States, residing at Houston, in the county of Harris and State of Texas, have invented new and useful Improvements in Strainers for Tube-Wells, of which the following is a specification.

This invention is an improved strainer or screen used on tube-wells, and the improvement results particularly from the shape of the wire used in forming the strainer and from the manner in which it is wound upon the pipe. Such strainers have heretofore been formed by perforated pipe wound with wire, but have a defect that it is practically impossible to space the wire apart accurately or regularly, so that the straining-spaces are unequal, preventing the flow of liquid entirely at some points or allowing too much flow at other points, so that sand or other matter is forced into the pipe. My invention obviates this defect and embodies the use of a truncated triangular wire having at the bottom thereof an outstanding flange on each side. This wire is wound around a perforated pipe, and the flanges being cut away over the perforations liquid drawn between the outer edges of the wire enters through the perforations. The width of the flanges is such that when placed in contact one upon the other as the wire is wound upon the pipe a narrow slit of predetermined size is left between the outer edges of the wire, through which slit the liquid may enter.

Further objects and improvements will be evident from the following specific description and the accompanying drawings.

In the drawings, Figure 1 is a side elevation of a screen complete. Fig. 2 is a horizontal section. Fig. 3 is a vertical section through the wall of the strainer on the line 3 3 of Fig. 2. Fig. 4 is a similar section on the line 4 4. Fig. 5 is a cross-section of the wire. Fig. 6 is a cross-section of a modified form of wire. Fig. 7 is a perspective view showing the inner side or base of a piece of the wire.

Referring specifically to the drawings, 6 indicates the pipe or core upon which the wire is wound. This pipe has longitudinal lines of

holes 7, the lines of holes being equal spaces apart around the pipe. It is desirable that the holes be equal distances apart around the pipe; but it is not essential that the holes be equal distances apart lengthwise of the pipe, since lengthwise passages are provided under the wire between the holes; but preferably the holes may be made equal distances apart in all respects. The wire is wound upon the outside of the pipe, and its shape is best shown in Figs. 5 and 7, with a modified form shown in Fig. 6. It consists of an outer triangular truncated portion 8, one of the sides, 9, of which forms the outer face, and the opposite or inner truncated corner has projecting from each side a laterally-extending flange 10, which forms the base or inner side of the wire. This base is somewhat wider than the face 9, so that when the wire is wound upon the pipe with the flanges 10 of the various turns in contact a space or slit is left between the outer corners, as indicated at 11, and through this space the liquid enters, and the triangular or undercut shape forms passages, as indicated at 12, which, as the wire is wound spirally, extend in a continuous spiral around the strainer. The wire is wrapped with its flanges 10 close together. It is obvious that if the flanges 10 were continuous the openings in the pipe would be closed. Therefore the flanges are cut away at intervals across the base of the wire, as indicated at 13. These cuts or recesses are made a distance apart equal to the distance between the longitudinal lines of perforations in the pipe 6. Consequently as the wire is wrapped on the pipe continuous longitudinal waterways, as indicated at 14, will be formed, located between the body portion of the wire and the pipe and extending lengthwise between the several holes of each line of holes and across the passages 12, as clearly indicated in Fig. 4, thereby allowing a flow of liquid from all of the circumferential passages 12 into the longitudinal passages 14 and thence through the holes 7 into the pipe 6.

In the modified form shown in Fig. 6 the flanges instead of being square, as in the other figures, are respectively concave and convex at the edges thereof, as indicated at 10^a and

10^b. This construction is advantageous, as when the wire is wrapped around the pipe and is pressed together the convex edge of one wire will fit into the concave edge of the other, which will tend to prevent the wire from flying out from the pipe in case of breakage of the wire at any point after the same is laid. This increases the life of the strainer and serves to hold the various turns of wire in place and in order.

It is obvious that when wire of the shape or shapes described above is laid on the pipe it is done regularly and evenly, and the spaces between all the turns of wire are equal, and, furthermore, there is no chance for the spaces to become unequal, at least while the wire remains in place on the pipe. The base of the wire produced by the flanges is broader than the top thereof. Consequently there is an absence of canting or twisting of the wire, which has been a defect incident to the use of irregular or angular shaped wire for this purpose. The longitudinal and circumferential passages 14 and 12, produced in the manner above described, give a large intake capacity. If one of the holes 7 becomes stopped up, it is evident that the liquid can escape through the longitudinal passages 14 to the next hole, and the same is true with respect to the stoppage of any of the passages 12. If the holes 7 be placed exactly the same distance apart circumferentially, the cut-out portions 13 may with safety be made before the wire is applied to the pipe, or, if desired, the flanges can be cut away as the wire is wound, which will insure bringing the cut-out portions in exact alinement with the holes and with each other.

If desired, the pipe may first be wrapped with wire and the flanges then removed from the inside of the pipe through the holes 7 therein; but this leaves no longitudinal wa-

terways 14, and the construction described above is to be preferred.

What I claim as new, and desire to secure by Letters Patent, is—

1. A strainer for well-tubes, comprising a pipe having a series of perforations in longitudinal lines, and a wire wrapped thereon having on its inner side recesses forming passages extending lengthwise along the pipe between the perforations, and circumferential slits between the wires, leading to said passages.

2. A strainer for well-tubes, comprising a pipe having perforations, and a wire wrapped thereon, the wire having slits therebetween, and recesses extending across the base or inner side of the wire, producing longitudinal passages leading from the slits to the perforations.

3. A strainer for well-tubes, comprising an inner perforated pipe, and a wire wrapped thereon, the base of the wire having a laterally-extending flange on each side, one of the flanges having a concave edge and the other having a convex edge, which edges fit together on adjacent turns of wire, the faces of the successive turns having a slit therebetween, and the flanges having openings therethrough connecting said slit and perforations.

4. A wire for wrapping well-tube strainers, having a base of greater width than its body, and undercut sides above the base, the edges of the base being formed to interlock with the edges of adjacent turns.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

WILLIAM ELLIS HARMON.

Witnesses:

W. J. TIDWILL,

A. T. HUNNELLEY.