

No. 707,611.

Patented Aug. 26, 1902.

C. MONJEAU.

SAND SCREEN FOR WELL TUBES.

(Application filed Feb. 25, 1902.)

(No Model.)

Fig. 1.

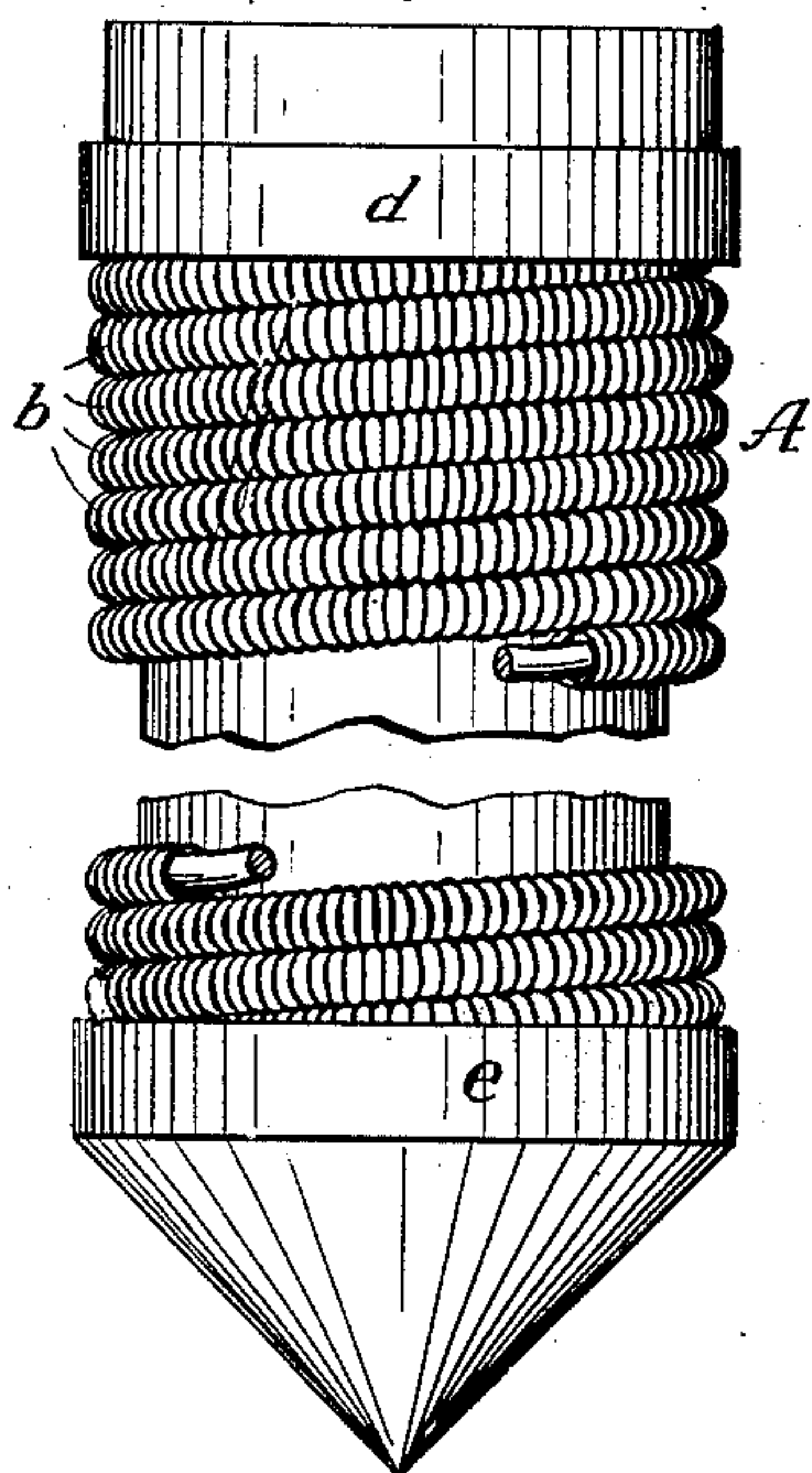


Fig. 2.

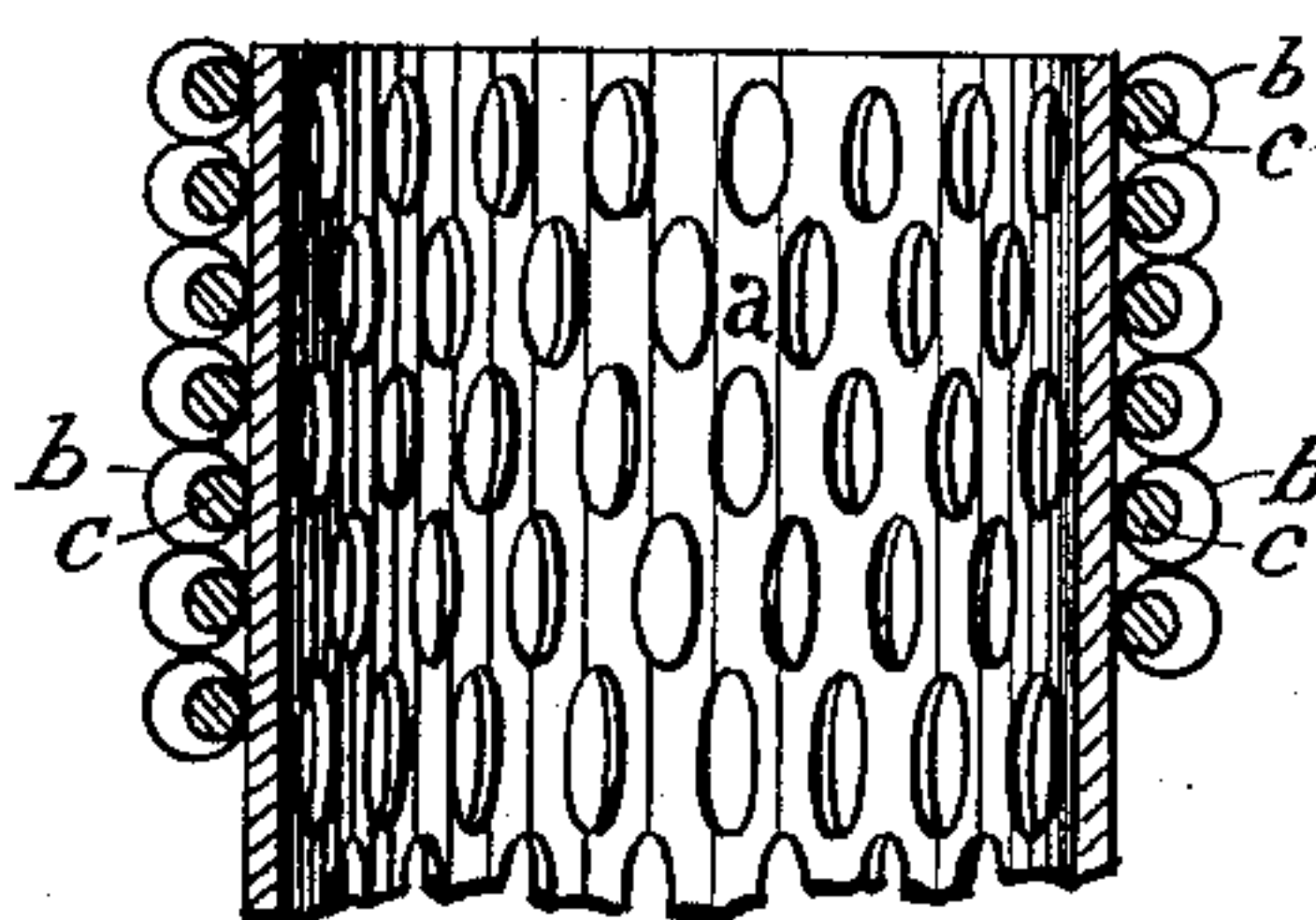


Fig. 3.

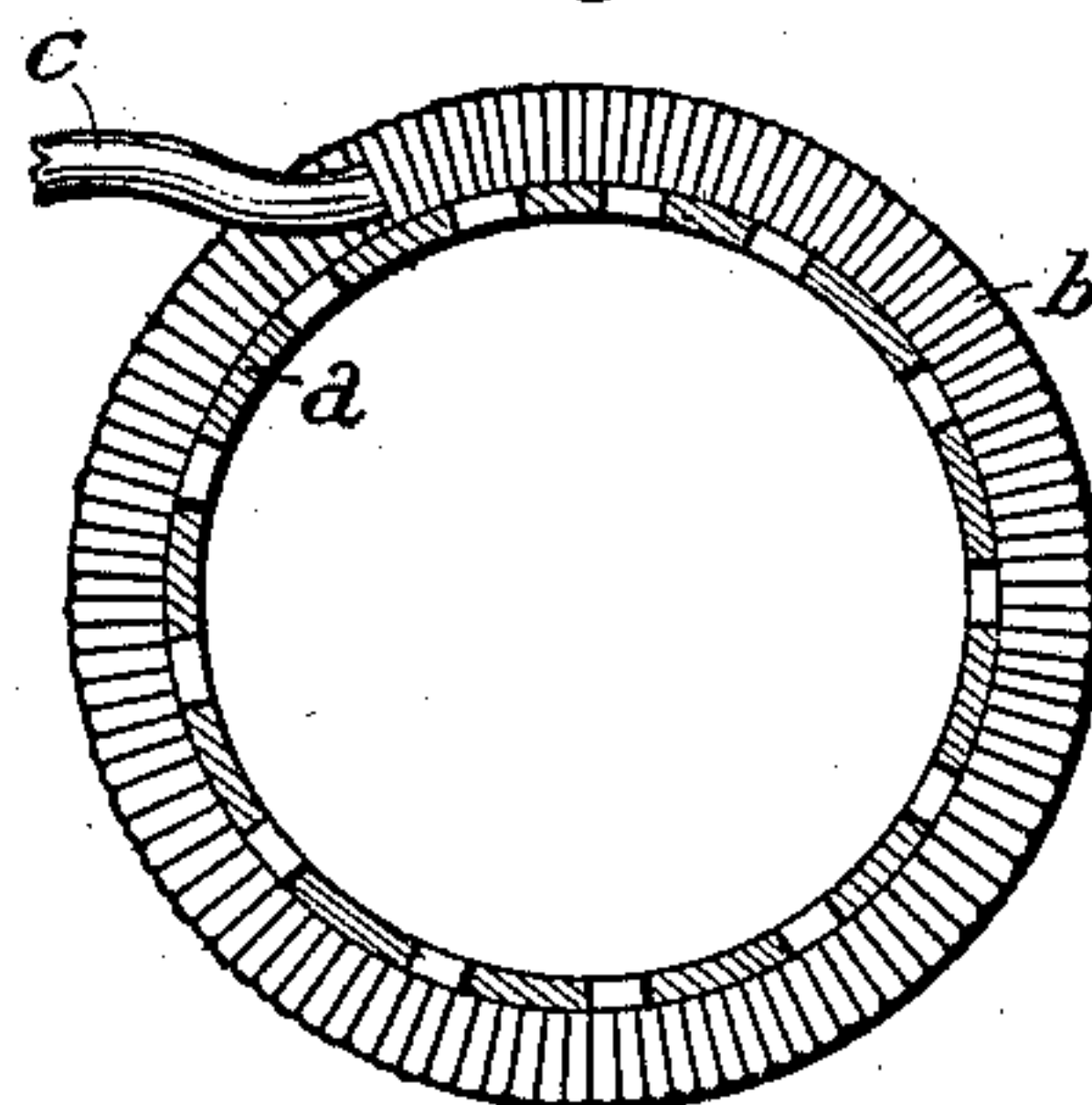


Fig. 5.

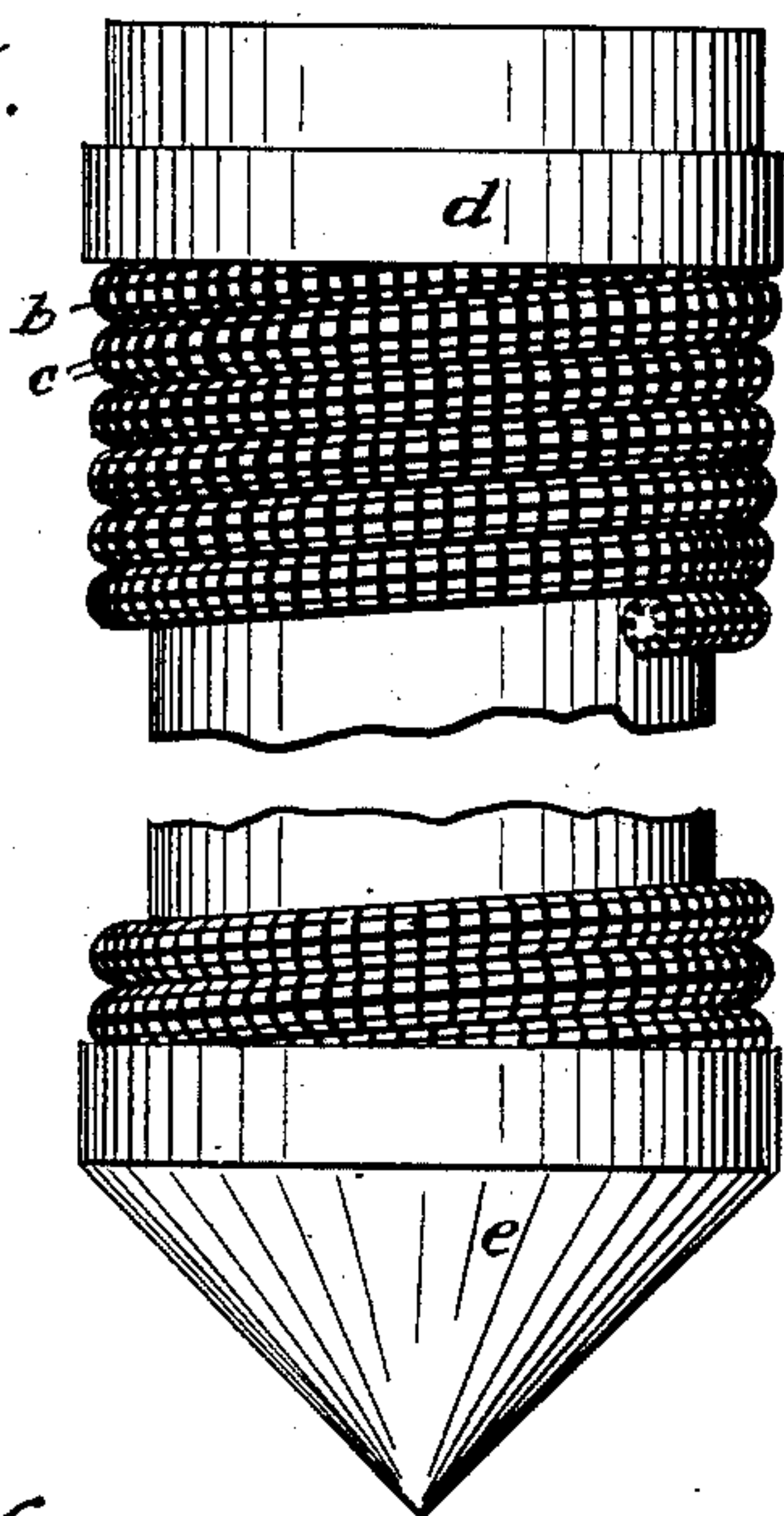
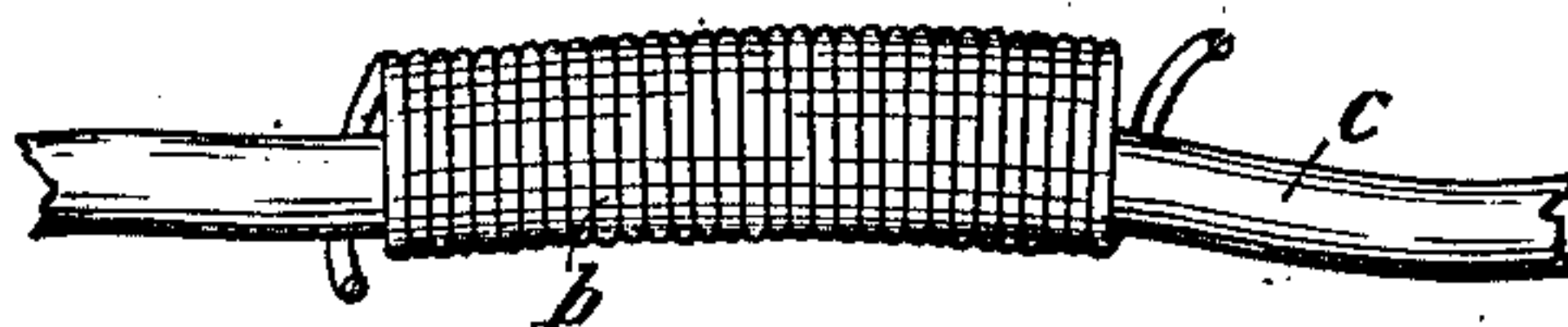


Fig. 4.



Witnesses

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UNITED STATES PATENT OFFICE.

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SAND-SCREEN FOR WELL-TUBES.

SPECIFICATION forming part of Letters Patent No. 707,611, dated August 26, 1902.

Application filed February 25, 1902. Serial No. 95,549. (No model.)

To all whom it may concern:

Be it known that I, CLEOPHAS MONJEAU, a citizen of the United States, residing at Middletown, in the county of Butler and State of Ohio, have invented new and useful Improvements in Sand-Screens for Well-Tubes, of which the following is a specification.

My invention relates to so-called "sand-screens" or "tube-well points," intended to be attached as terminals to tubes sunk in the earth and terminating in water-bearing strata from which water is pumped to the surface. Whatever be the character of the strata from which water is thus drawn the flow of water to the receiving-terminal of the pump-tube carries more or less sand or "silt," which would unless screened out be drawn into the pumping mechanism and injure or destroy the same, and it is therefore important to screen the same at the point of intake. One form of such screens heretofore used consists of a perforated cylindrical core having a strip of metal wound spirally about the same with a corresponding spiral screening-slit formed by offsetting the contiguous edges of the strip.

My invention in a broad sense is an improvement on this class of screens, its object being to provide an efficient, practical, and economical structure having a relatively increased water-receiving capacity without sacrifice of the efficiency of the screening function. This I accomplish by providing the normal spiral screening-slits in such structures with lateral "feeders" in those intervening surfaces which ordinarily possess no screening function. For example, in a screen such as above indicated having a spiral screening-slit between the offset edges of a flat strip wound spirally about a perforated core I produce these feeders by channeling the outer surface of the strip to a limited depth, both lengthwise and crosswise, the lengthwise channels being feeders to the crosswise channels and the latter communicating directly with the main spiral slits leading to the perforated core.

As a preferred form, having in view the practical efficiency and durability of the device and its economical construction, I attain the foregoing objects by winding upon a perforated cylindrical core a tubular wire coil—

that is, a coil of small diameter wound with spirals in contact, producing a continuous surface of such coil from end to end of the perforated core. A holding-wire within the core of slightly less diameter than the internal diameter of the coil furnishes the means of screwing the coil firmly to the perforated core, and suitable caps at the ends of the core complete the structure. In thus winding the wire coil spirally upon a cylindrical base the outer side of the coil is forced open between spirals into minute cross-openings, forming feeders into the general spiral channel within the coil which communicates with the spiral channel between and at the under side of the coils, due to the general cylindrical form of the coil, with which also the minute radial openings between the general spirals of the coil communicate. The feeding-channels thus created are broadly considered the equivalents of those of the construction first described, yet the structure embodying the spirally-wound coil is in many respects essentially new, as I believe, in this class of structures.

My invention is illustrated in the accompanying drawings, in which—

Figure 1 is a general side elevation of my improved strainer in preferred form complete; Fig. 2, a partial axial cross-section showing construction; Fig. 3, a horizontal cross-section showing construction; and Fig. 4, a view of a portion of the wire coil detached, showing projecting ends of the binding-wire; Fig. 5, a general side elevation of the modified construction first referred to in the foregoing statement of invention.

Referring now to the drawings, A designates the tube-point or sand-screen of my invention, constructed as follows: The base-core is a cylindrical tube *a* of convenient length and perforated in any convenient manner, about which is spirally wound and secured a coil of wire *b* of relatively small diameter. The coil *b* is first prepared by winding a wire upon a mandrel, with whirls in close contact, forming a hollow cylinder of indefinite length, which is afterward cut in suitable lengths for the purpose in view. To secure the coil firmly to the core *a*, I insert within the wire coil *b* an independent binding-wire *c*, somewhat less in diameter than the in-

ternal diameter of the coil, which serves as a holding element to secure the coil *b* firmly to the periphery of the core *a* by winding under tension independently of the coil, but holding the coil securely at all points of its length against the base *a*. The ends of the wire *c* may be secured by bending and hooking in suitable apertures of the core *a* and soldered or brazed, as may be necessary. Suitable caps *d* and *e* are provided, the upper one, *d*, forming the means of attachment to the pump-tube and the lower one, *e*, terminating in a point or otherwise, as desired. The whirls of the wire in the coil *b* normally lie in contact, and the described mode of attaching the same to the core *a* is such as not to draw them apart, excepting that by the curvature of the core the whirls are drawn slightly apart at the outer sides, forming a multitude of screening-openings scarcely visible to the eye and forming a most effective screen for sand, yet in the aggregate presenting an unusually large area of opening to the inlet of water into the general spiral channel within the coil and thence to the spiral interstice at the under side between adjacent coils, and so to the perforations of the core. By this construction a considerable addition to the screening-surface is brought into use, thereby largely increasing the water capacity, besides enhancing the screening efficiency.

An approximation of the results may be attained by the modification shown in Fig. 5, in which a wire or strip *b'* is grooved circumferentially either in parallel or in spirals and crossed by longitudinal grooves *c'* of approximately the same depth. These grooves are

as fine as may be made conveniently, and, as will be readily understood, they form a system of lateral feeders for the spiral interstices between contiguous edges of the main strip *b'*.

I claim as my invention and desire to secure by Letters Patent of the United States—

1. A "tube-point" sand-screen for tube-wells, consisting of a perforated cylindrical core having spirally wound thereon a hollow strip of any suitable cross-section, leaving a substantially continuous spiral opening between contiguous edges, said strip being provided with external channels communicating with said spiral opening, and a binding element extending through the spiral opening and holding the coil, substantially as set forth.

2. A "tube-point" sand-screen for tube-wells consisting of a perforated cylindrical core having spirally wound thereon a continuous tubular coil of wire, and a binding-wire extending longitudinally through the coil, substantially as set forth.

3. A "tube-point" sand-screen for tube-wells consisting of a perforated cylindrical core having spirally wound thereon a continuous tubular coil of wire, said coil containing an interior binding-wire of less diameter than the opening through the coil, substantially as set forth.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

CLEOPHAS MONJEAU.

Witnesses:

LLOYD T. BRUNSON,
CHAS. HERBERT JONES.