

No. 627,784.

Patented June 27, 1899.

C. H. SEWALL.  
CONDUIT FOR ELECTRICAL CONDUCTORS.

(Application filed Apr. 24, 1899.)

(No Model.)

Fig. 1.

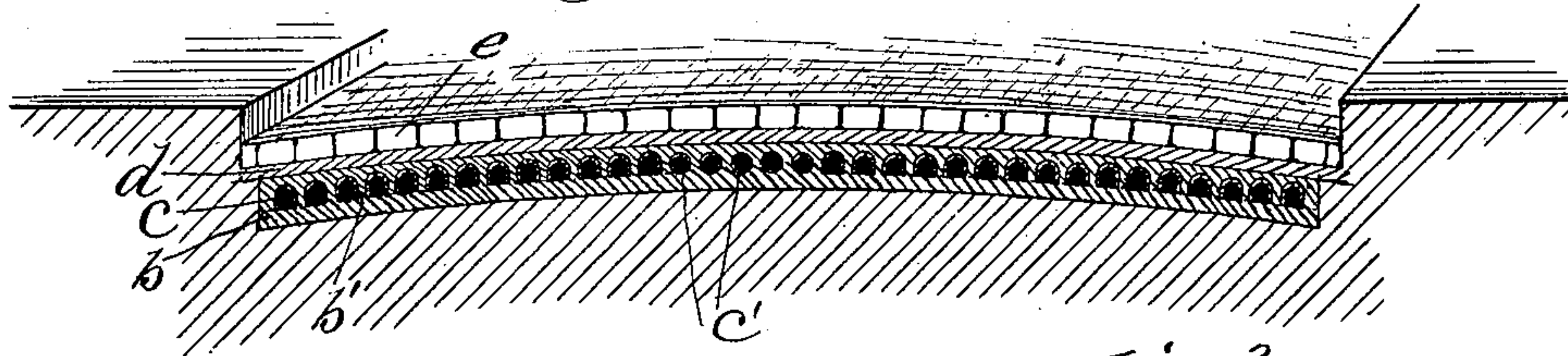


Fig. 2.

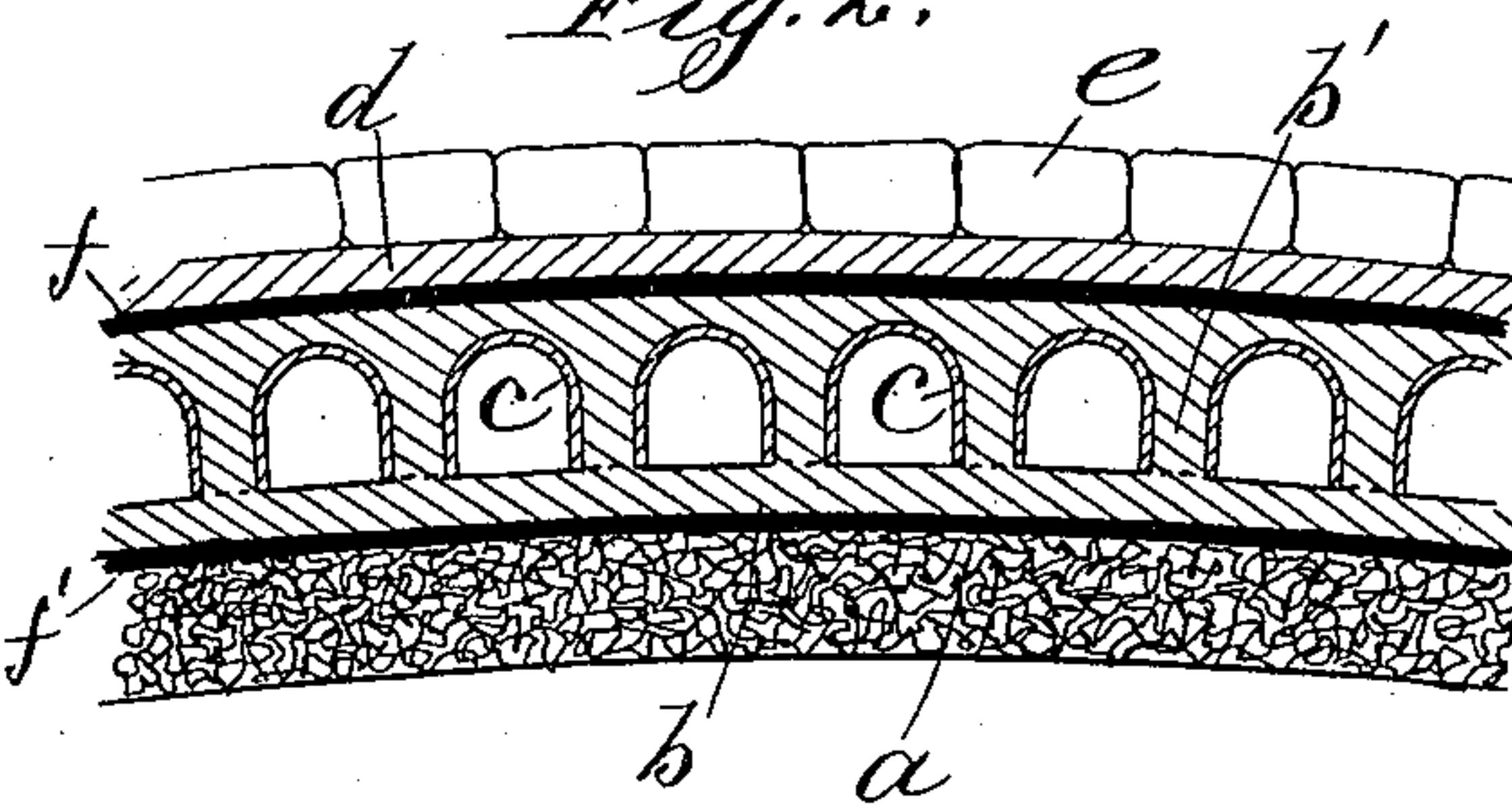


Fig. 4.

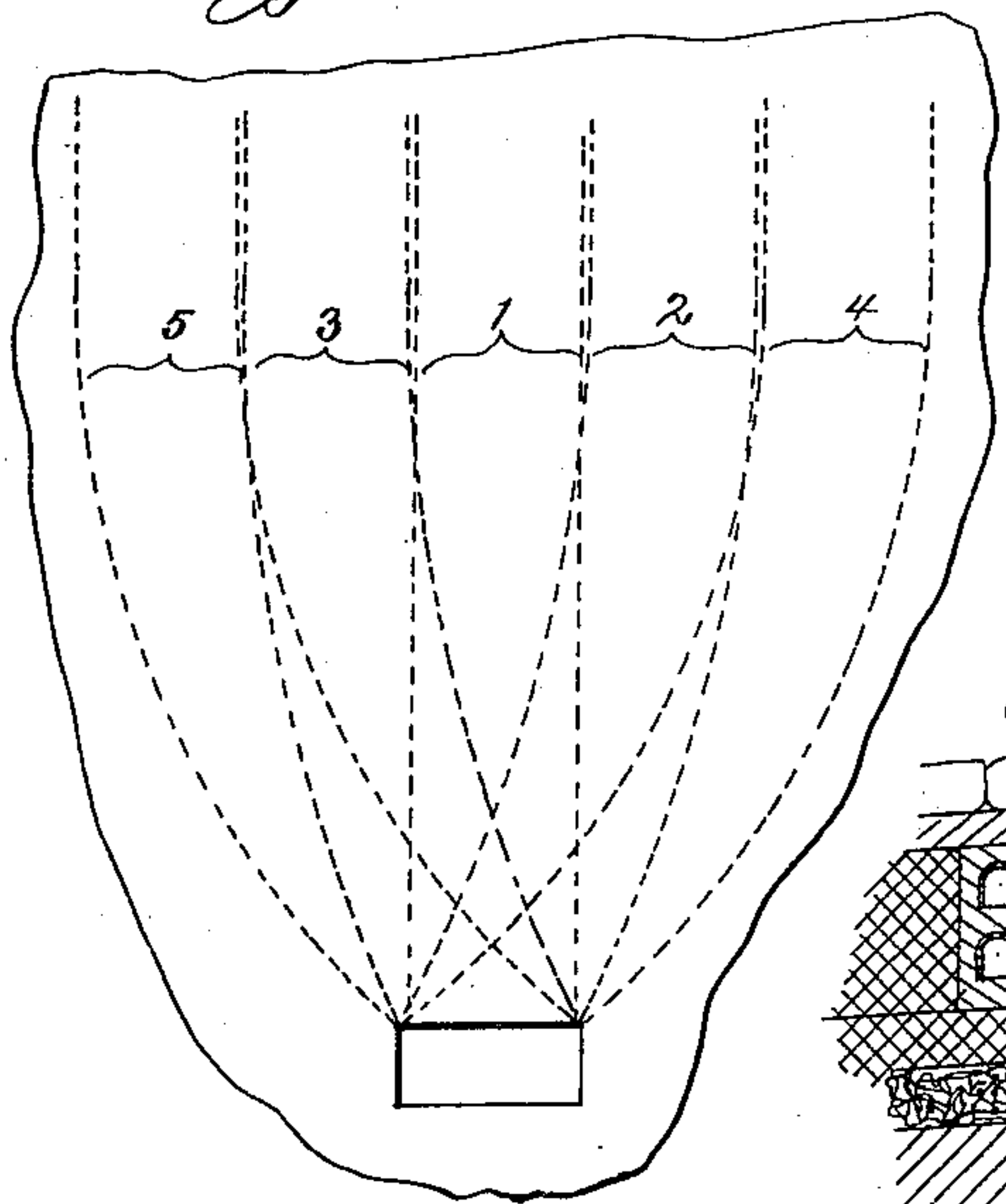


Fig. 3.

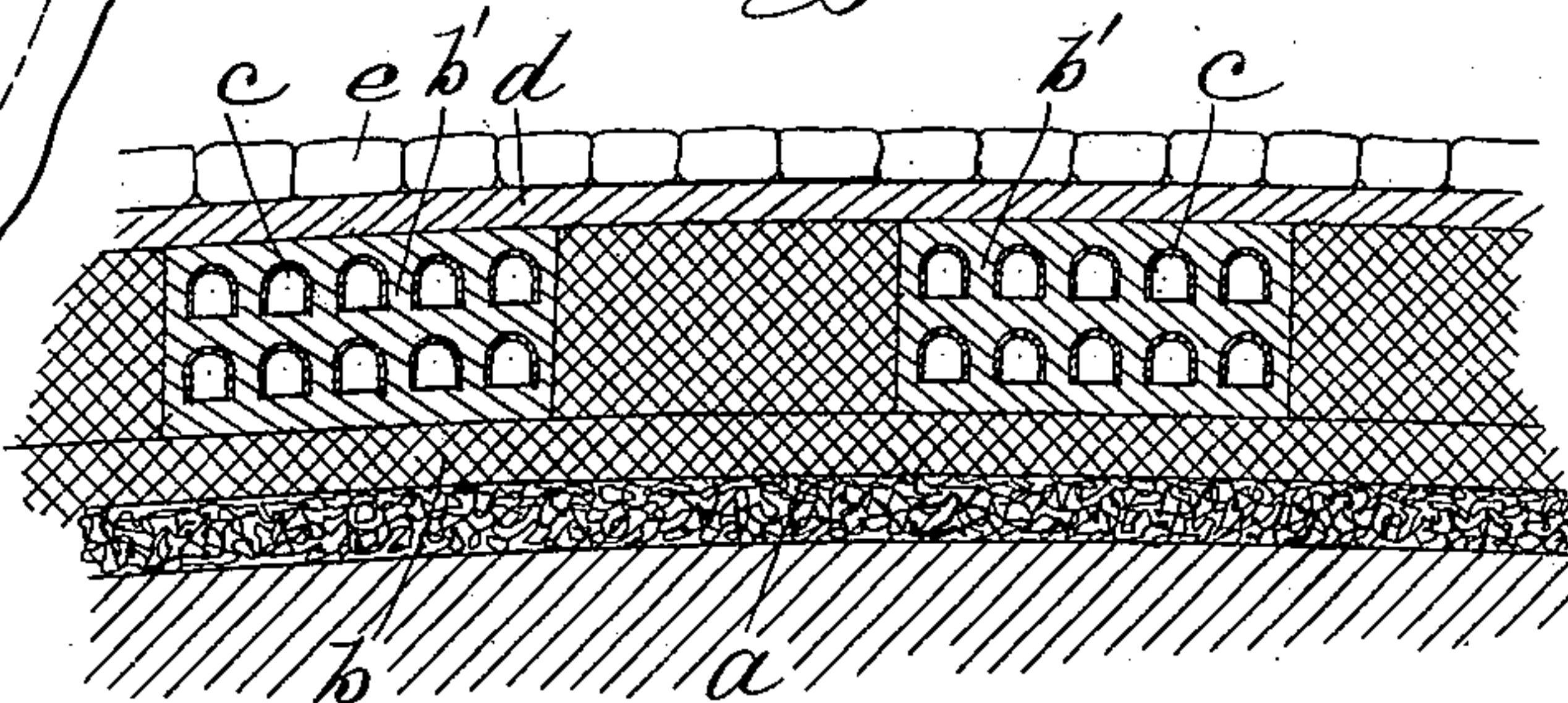
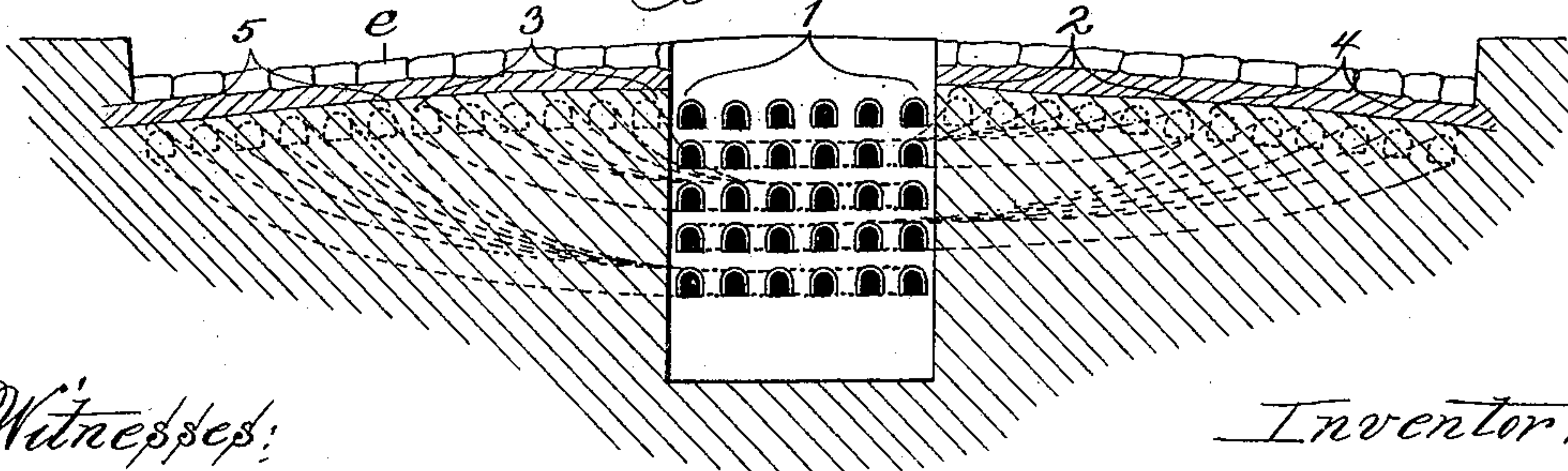


Fig. 5.



Witnesses:

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# UNITED STATES PATENT OFFICE.

CHARLES H. SEWALL, OF CHICAGO, ILLINOIS.

## CONDUIT FOR ELECTRICAL CONDUCTORS.

SPECIFICATION forming part of Letters Patent No. 627,784, dated June 27, 1899.

Application filed April 24, 1899. Serial No. 714,249. (No model.)

*To all whom it may concern:*

Be it known that I, CHARLES H. SEWALL, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in Conduits for Electrical Conductors, of which the following is a full, clear, concise, and exact description, reference being had to the accompanying drawings, forming a part of this specification.

My invention relates to conduits for electrical conductors and the like, my object being to provide a form of conduit which shall be cheap in installation, readily accessible, and possess many points of advantage over structures heretofore employed.

Conduits have usually been placed in the streets from five to twelve feet beneath the roadway, necessitating the digging of trenches in the street and the removal of the paving in laying the conduits and in gaining access thereto for the purpose of repairing the same. Furthermore, conduits have been laid in the large cities by such diverse interests and in such an unsystematic manner that in many streets it is impossible to lay further conduits or readily gain access to those already laid.

It is the special object of the present invention to provide a form of conduit for streets which will not be open to this objection and which may readily provide for future growth in the demand for conduit service without excessive additional cost.

In accordance with my invention the conduits are formed within the material of the pavement itself, being supported within or upon the foundation of the pavement and being placed beneath the stones, bricks, macadam, asphalt, or other material forming the roadway of the paving. In my Patent No. 603,745, granted May 10, 1898, I have described a form of conduit in which inverted channels are laid upon a floor of concrete or similar material, over which a second body of concrete or like material is placed, the two bodies of concrete setting to form practically a single mass which effectively incloses the inverted channels, the interiors of which constitute the conduits. I propose in practice to form the floor of concrete, as above, and

build up the conduit system, and upon the top of this to place the bricks, asphalt, or other material forming the roadway-paving, the conduits thus forming the foundation or support of the pavement. Where desired, an additional foundation may be provided beneath the foundation material carrying the conduits. Inverted channels of arch shape lend themselves peculiarly well to the formation in this manner of a strong foundation for the paving, since the concrete between the sides of the inverted channels forms a series of vertical columns or beams which support arched roofs, thus forming, in effect, a monolithic arched structure, which is the strongest possible construction which can be employed to accommodate conduits or passages there-through. While I consider this structure employing arched inverted channels preferable, other forms of channels may be employed with good effect or the conduits may be formed in any of the usual ways and still retain important features of my invention. The series of conduits may extend throughout the whole or a portion of the width of the street or may be laid in such manner as to leave spaces at intervals laterally for the digging of trenches to permit the laying or repairing of gas and water pipes or conduits of the old style. At intervals along the street—that is, at every street intersection or at alternate street intersections or at greater or less distances—manholes may be provided to permit the drawing in and out of the cables. While the manholes may extend throughout the width of the street, I preferably form the manhole of a width such that it extends across only a portion of the width of the street, and in order to enable the conduits to the left and to the right of the line of the manhole to enter the manhole such conduits are deflected laterally and downward as the same approach the manhole, so as to enter the manhole at a different level. In this manner conduits extending even the whole width of the street may conveniently enter a manhole of one-fifth the width of the street, or even less. A conduit is thus formed which constitutes a part of the paving and which can be laid at the time the street is improved and paved without considerable addi-



tional first cost and may thus be owned and rented by the municipality. As the sewers and gas and water pipes are usually laid before the street is paved, new streets may thus be laid out without being subsequently torn up to permit the laying of the conduits for various purposes, and old streets at the time of repaving may be provided with sufficient conduit capacity to accommodate future demands. The hollow paving, moreover, lends an elasticity not present in solid structures, which, it is believed, will prolong the life of the paving. The paving-foundation inclosing the ducts will cost but little more than if laid solid. The additional cost of laying arches is partially compensated by saving of material which would otherwise be necessary to fill the openings. There is also compensation in increased elasticity of the paving itself.

I have illustrated my invention in the accompanying drawings, in which—

Figure 1 is a cross-section of a street-paving embodying my invention. Fig. 2 is a partial sectional view of a modification thereof on a larger scale. Fig. 3 is a sectional view of another modification. Fig. 4 is a plan view showing the manner in which the conduits enter the manhole. Fig. 5 is a sectional view of the same.

Like letters and numerals refer to like parts in the several figures.

The body of concrete or similar material *b* is provided with a floor formed upon the surface thereof, upon which rest the inverted channels *c*, which are covered and inclosed by a body of concrete or similar material *b'*, which after setting forms itself integral with the body of material *b*. Upon the top of this body of concrete the layer of sand *d* or other material is placed, upon which rest the blocks *e* or other material, which constitutes the paving or roadway of the pavement. Instead of building the conduits of inverted channels they may be constructed in any other desired manner—as, for instance, by providing a series of circular openings *c'* through the body of concrete, as shown toward the middle of the roadway in Fig. 1.

In Fig. 2 the concrete bodies *b* and *b'* are illustrated as resting upon a supplemental foundation *a*. I have also illustrated in this figure layers *f f'* of asphalt or other insulating material placed above and beneath the material immediately inclosing the conduits to prevent the access of extraneous electrical currents to the cables in the conduits.

In Fig. 3 I have illustrated a modification wherein two tiers of conduits are formed, while spaces are left between the conduits, whereby trenches may be dug for the laying of pipes or conduits of the old style.

In Figs. 4 and 5 I have illustrated the manner in which the conduits communicate with the manhole, the width of the manhole being

such that it extends throughout a portion only of the width of the street. The series of conduits 1 pass directly into the manhole, while the series of conduits 2, which lie to the right of the series 1, are deflected laterally and downward to enter the manhole just beneath the series 1. Likewise the series 3 upon the left are deflected downward and to the right to enter the manhole just below the series 2. Likewise the series 4 and 5 are laterally and downwardly deflected to enter the manhole at lower levels.

As shown in Fig. 4, the curves of the conduits as the same enter the manhole are gradual in order that the cable may be readily drawn into and out of the conduits without binding against the walls thereof.

Having described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination with the foundation material of a street-pavement, of a conduit formed therein and a roadway or paving supported thereon, substantially as described.

2. The combination with the foundation of a pavement comprising a body of concrete, or similar material, inclosing a conduit, of a roadway or paving supported thereon, substantially as described.

3. The combination with the foundation of a pavement comprising a body of concrete, or similar material, having a floor formed on the surface thereof, of inverted channels resting thereon, a body of concrete, or similar material inclosing said channels, and a paving or roadway supported upon said second body of concrete, substantially as described.

4. The combination with the foundation material of a street-pavement, of a series of conduits formed therein and extending throughout the width of the street, and a paving or roadway supported upon said foundation material, substantially as described.

5. The combination with a series of conduits arranged side by side of a manhole with which said conduits communicate, the conduits which are out of line with the manhole being deflected laterally and to a different level to enter the conduit at a different level, substantially as described.

6. The combination with a series of conduits arranged side by side, of a manhole with which said conduits communicate, the conduits in line with the manhole entering the same direct, while the conduits which are out of the line of the manhole are curved laterally and downward to enter the manhole at a lower level, substantially as described.

7. The combination with the foundation material of a street-pavement, of a series of conduits formed therein, a paving or roadway resting thereon, and a manhole with which the conduits communicate, the conduits which are out of the line of the manhole being deflected laterally and downwardly to enter the



manhole at a lower level, substantially as described.

5 8. The combination with a series of conduits lying side by side, of a manhole with which the same communicate said manhole being of less width than the series of conduits and having the conduit-openings arranged in horizontal rows, substantially as described.

In witness whereof I have hereunto subscribed my name in the presence of two witnesses.

CHARLES H. SEWALL.

Witnesses:

W. CLYDE JONES,  
M. R. ROCHFORD.