

No. 762,496.

PATENTED JUNE 14, 1904.

E. A. SMITH.
COMPOSITE PILE.

APPLICATION FILED JAN. 21, 1901.

NO MODEL.

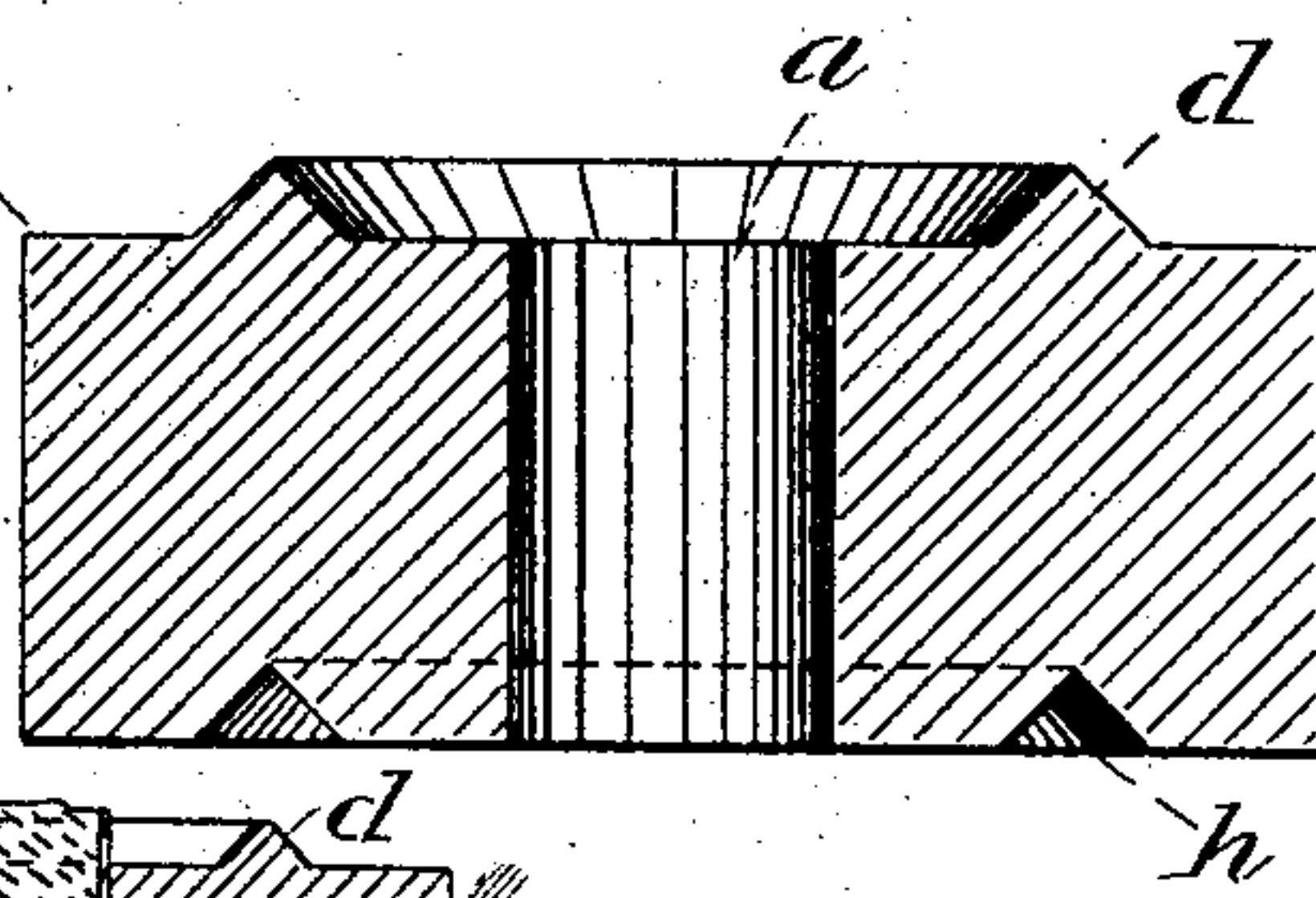
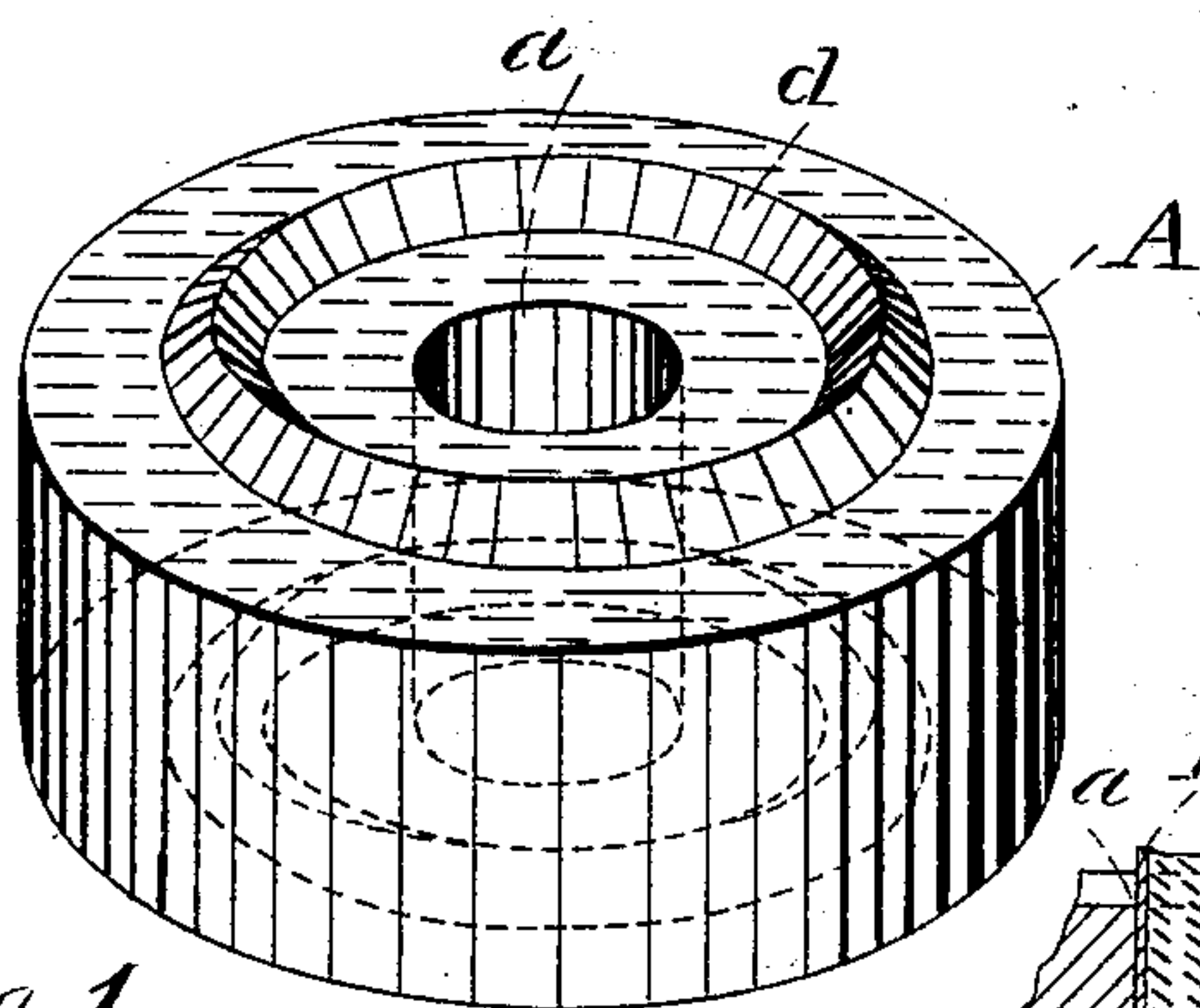
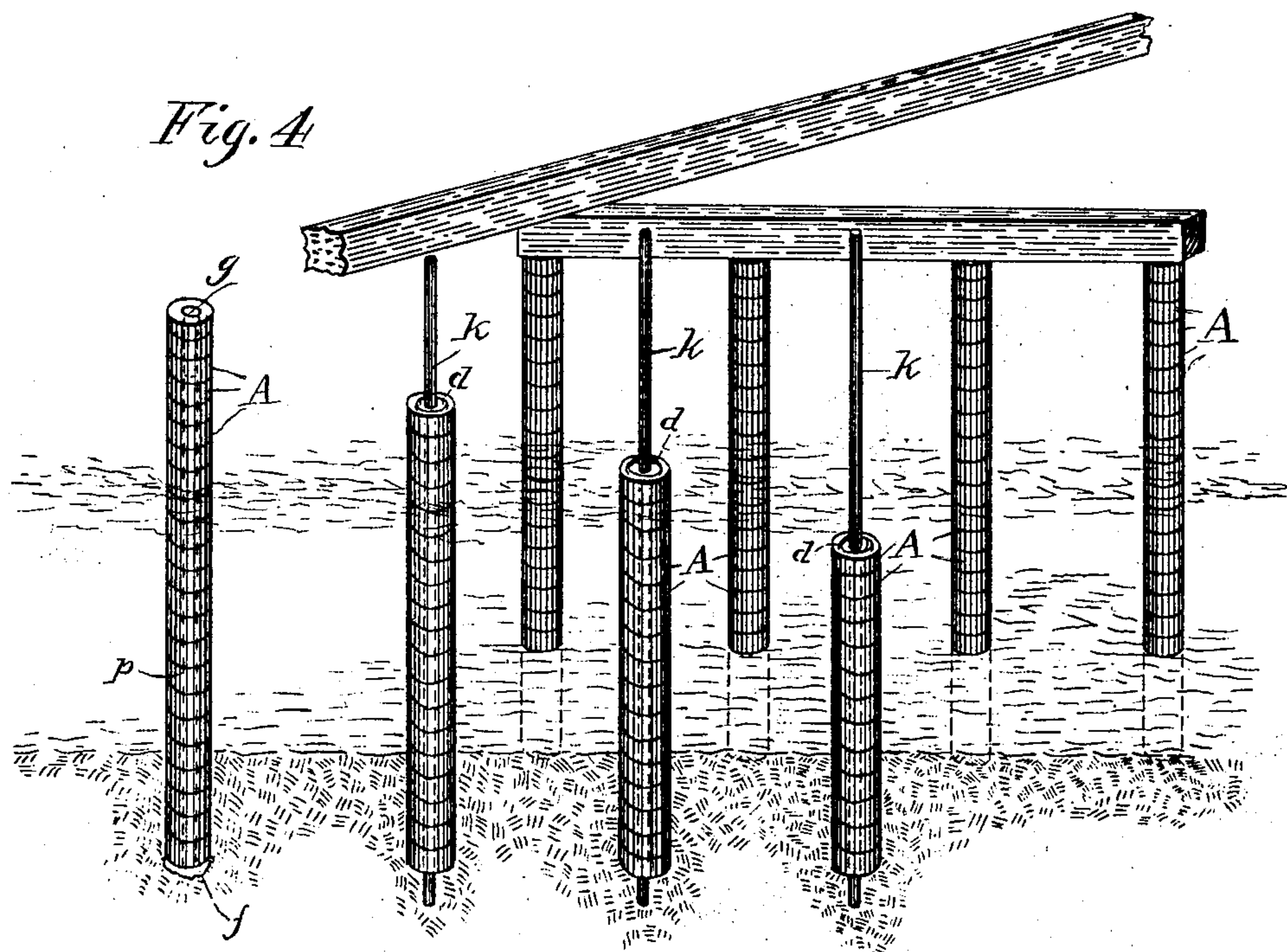
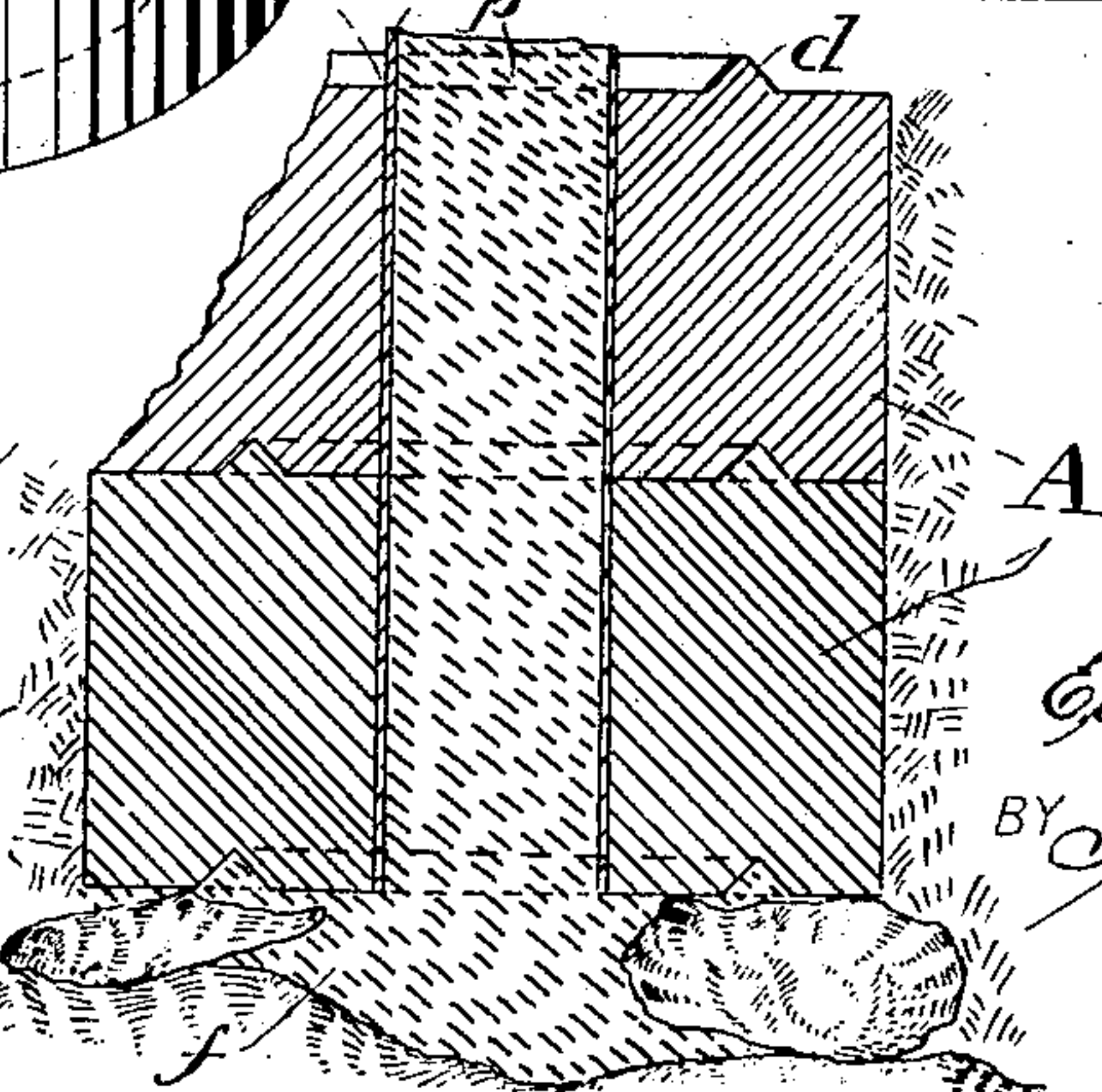


Fig. 3



WITNESSES:

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COMPOSITE PILE.

SPECIFICATION forming part of Letters Patent No. 762,496, dated June 14, 1904.

Application filed January 21, 1901. Serial No. 44,212. (No model.)

To all whom it may concern:

Be it known that I, EDMUND AUGUSTINE SMITH, a citizen of the Dominion of Canada, (but having made oath of my intention to become a citizen of the United States of America,) and a resident of the city of Colby, in the county of Kitsap, in the State of Washington, have invented certain new and useful Improvements in Composite Piles, of which the following is a specification.

My invention relates to improvements in composite piles, and has special reference to structural members of this class which are composed of abutting sections; and I have for the objects thereof to provide a composite pile of inexpensive manufacture, proof against the ravages of subaqueous insects, and comprising features of simplicity, durability, and general efficiency, which render its installation inexpensive, rapid, and simple.

The above and other desirable objects I attain by the construction, combinations, and arrangements of parts, as disclosed on the accompanying drawings, set forth in the following specification, and especially pointed out in the appended claims.

With reference to the accompanying drawings, which form a part of this specification, Figure 1 is a perspective view of one of the component sections from which the pile is constructed indicating the preferred form thereof. Fig. 2 is a diametrical section of same. Fig. 3 is a similar section at the base of a composite pile indicating one method of setting same; and Fig. 4 is a perspective view of a portion of an incomplete wharf, showing the preferred manner of constructing and setting the composite piles.

Like characters of reference designate corresponding parts throughout the several views of the drawings.

With reference to the drawings heretofore described the reference character A indicates one of the sections of the improved composite pile, which is preferably rendered circular in form to better insure the breaking of the waves, deflect drifting debris, and expedite the insulation of the pile. The section A preferably comprises a clay body conveniently brought to a desired form and then subjected to heat

of the required intensity to render the body of requisite hardness to sustain a predetermined load and in the present embodiment consists of the same material of which pottery-ware is composed and is preferably likewise vitrified to conveniently render the pile more durable. All of the sections included in each composite pile are preferably substantially alike in form, but for convenience can be different in thickness to conveniently terminate the pile at the requisite elevation. Each section A is conveniently formed with a suitable guideway, as *a*, adapted to insure the proper setting thereof in constructing the pile and consisting in the present embodiment of a bore concentric to the periphery of the section, which bore also reduces the liability of cracking or warping of the clay body in baking and provides for a continuous opening through the pile longitudinally, in which a suitable core is readily installed to render the pile more stable. In the preferred embodiment each section A is conveniently made disk-like in form and of little depth compared with the diameter thereof, and suitable projections and indentures are conveniently provided on the body thereof to interlock the sections as the pile is constructed. The portions for interlocking the sections comprise in the present embodiment suitable tongues and grooves, as *d* and *h*, respectively, which are conveniently formed on opposite faces of the body of each section, so that the tongue on one body will enter the groove in the other when sections are resting together. These tongues and grooves are preferably of annular form and of equal diameter and are formed concentric to the guideway *a* of the sections to insure the matching thereof in constructing the pile. They are also conveniently rendered substantially V shape in transverse section to facilitate the proper fitting of the sections upon each other and insure self-restoration of the pile in case the abutting members or sections thereof should be momentarily tipped or tilted slightly from alinement by side blows or pressure, in which case the V form of the tongues and grooves will serve to guide the sections to their proper positions when the pressure is removed.

Piles or like supporting members of a structure are conveniently formed from the sections, as A, by placing upon each other the requisite number of said sections to form the desired length of pile. This operation is conveniently facilitated by first establishing guides, as *k*, at the desired points and then threading each section thereon by the guideway *a*, when they will slip downward and interlock as promoted by the angularity of the tongues and grooves, and the weight of the sections will cause the pile to settle until it establishes itself in a firm setting, and after a row of piles are completed the guides can be withdrawn and the sill of the superstructure fitted in place in any suitable manner, as indicated in Fig. 4.

If desired, each pile can be entered into the ground by a hydraulic jet conveniently operated through the opening formed by the guideways *a*, in which case the guide *k* is preferably composed of a tubular section whose external diameter is approximately equal to that of the said guideways and internal diameter sufficient to accommodate the size of the jet-conduit, which is conveniently operated in the usual manner at the base, but at the center of the pile, as permitted by said opening, instead of at one side, and thus insures the pile sinking plumb. If the guide *k* comprise a tubular section, cement can be passed therein to the base of the pile, and if the ground upon which the pile rests be uneven, as disclosed in Fig. 3, the cement will pass into the cavities beneath the pile and when set will form a firm even footing, as *f*, therefor, with a core, as *p*, extending into the said pile for the more firm setting thereof, or, if desired, the guide *k* can be first removed from the pile and the cement passed to the base thereof in the opening formed by the bores *a* and said opening filled with cement to form a core, terminating adjacent the top of the pile to increase the rigidity thereof, and a suitable wooden plug, as *g*, Fig. 4, is tightly fitted in the top end of said opening, to which the stringers of the superstructure are conveniently spiked.

The top surface of the upper or cap section of each pile is preferably rendered smooth for the better setting of the stringers or sills of the superstructure, and the guides *k* are preferably formed of metal to conveniently render the pile more substantial when combined therewith and afford a stiff guide of minimum diameter, which permits the bores *a* of the sections to be made comparatively small, and thereby render the bodies thereof of greater weight and the abutting surfaces of the sections substantially wide for the better fitting of said parts.

As previously stated, the sections A are preferably composed of earthy material, as pottery-clay, or they can comprise other ma-

terials, as found desirable, though the clay body is much preferred, as the pile is thus rendered proof against the ravages of teredos or like subaqueous worms and the corrosive effects of salt water and the cost of manufacture of the sections and the installation of the piles greatly reduced.

It will be understood that piles or like structural members embodying the sections A are constructed in various ways, according to the nature of the superstructure they are to support and the condition of the soil in which they are to rest, as they can be left with or without a core, and the core can be composed of cement or metal or a combination of both and in either case terminate in a footing formed by the passing of a portion of cement from the coreway into the cavities at the base of the pile.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent of the United States, is—

1. A structural member of the nature indicated, comprising abutting disk-like sections, each composed of a homogeneous piece of pottery-ware and formed with an integral annular tongue on one face and a like depression or groove in the opposite face adapted to interlock with corresponding groove and a tongue, respectively, of opposing sections.

2. A structural member of the nature indicated comprising abutting disk-like sections each composed of a homogeneous piece of pottery-ware and formed with a central opening and an integral annular tongue concentric thereto on one face and a similar groove or depression on the other face.

3. A structural member of the nature indicated, comprising abutting sections, each composed of pottery-ware, and having a bore forming a coreway longitudinally said member and portions adapted to interlock with opposing sections, and a core poured in said way and extending into footing beneath the member.

4. A structural member of the nature indicated, comprising abutting sections, each composed of pottery-ware and having a bore forming a continuous coreway longitudinally said member and portions formed thereon adapted to interlock with the contacting surfaces of opposing sections, a tube in said way and a poured core of cement in said tube.

5. A structural member of the nature indicated, comprising abutting sections, each composed of pottery-ware and having a bore forming a continuous coreway longitudinally said member and a tongue on one and a like groove in the other face, a tube in said way and a poured core in said tube extending into a footing beneath the member.

6. A structural member of the nature indicated, comprising abutting disk-like sections, each composed of a homogeneous piece of pottery-ware formed with a central bore and an

integral annular tongue substantially V shape in cross-section on one and a like groove in the other face thereof concentric said bore.

5 7. A structural member of the nature indicated, comprising abutting disk-like sections, each composed of a homogeneous piece of pottery-ware and formed with a central bore forming a coreway longitudinally said member and an integral annular tongue substantially V
10 shape in cross-section on one and a like groove or depression in the other face thereof concentric said bores and a poured core in said way extending into a footing beneath the member.

15 8. A structural member of the nature indicated, comprising sections, each composed of pottery-ware and formed with a central bore longitudinally said member and an annular tongue substantially V shape in cross-section on one and a like groove in the other face
20 thereof concentric said bore, a tube in said bore and a poured core in the tube extending into a footing beneath said member.

9. A structural member of the nature indicated, comprising abutting sections, each com-

posed of pottery-ware and having a bore forming a coreway longitudinally said member, a
25 tube in said way and a footing to said member poured through said tube and extending upwardly therein to form a core.

10. A structural member of the nature indicated, comprising abutting sections, each composed of pottery-ware and having a bore forming a continuous coreway longitudinally said
30 member and a tongue on one and a like groove in the other face, a tube in said way and a
35 poured core in said tube extending into a footing beneath the member.

11. A structural member of the nature indicated, having a tube longitudinally thereof and a footing for said member poured through
40 said tube after positioning the member and extending up into said tube.

Signed by me at Seattle, Washington, this
12th day of November, 1900.

EDMUND AUGUSTINE SMITH.

Witnesses:

C. A. MCKENZIE,

FRANK E. ADAMS.