

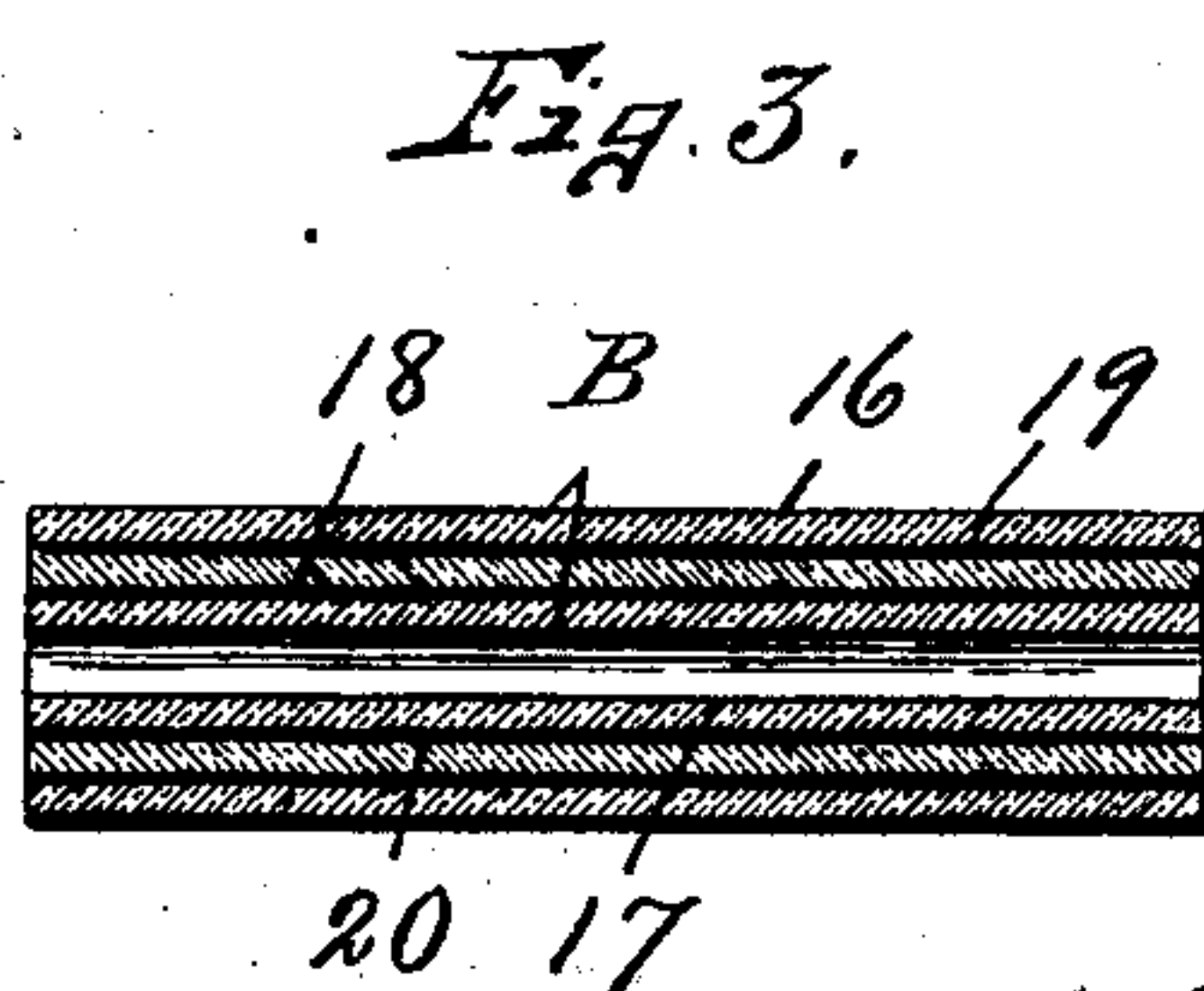
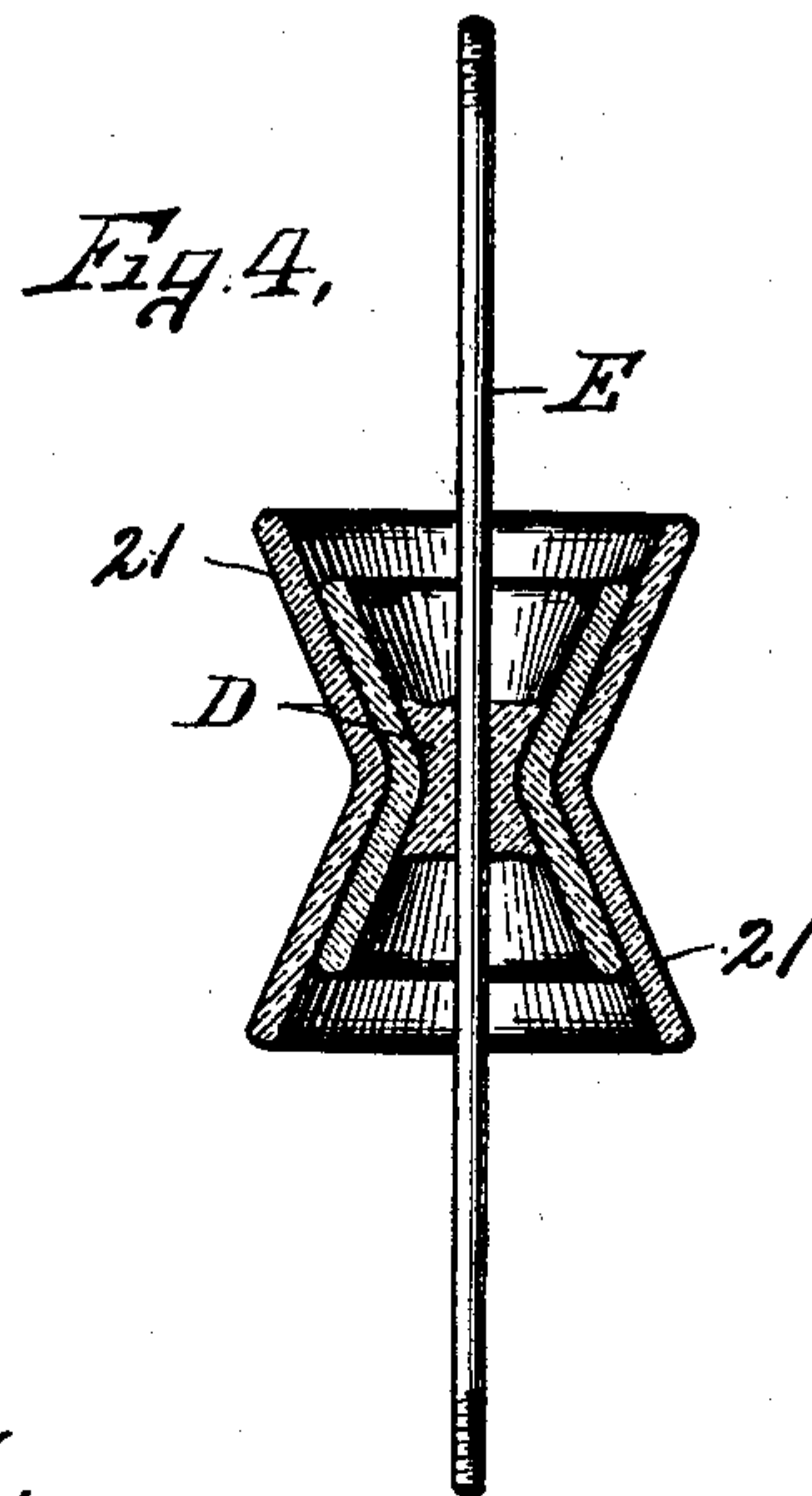
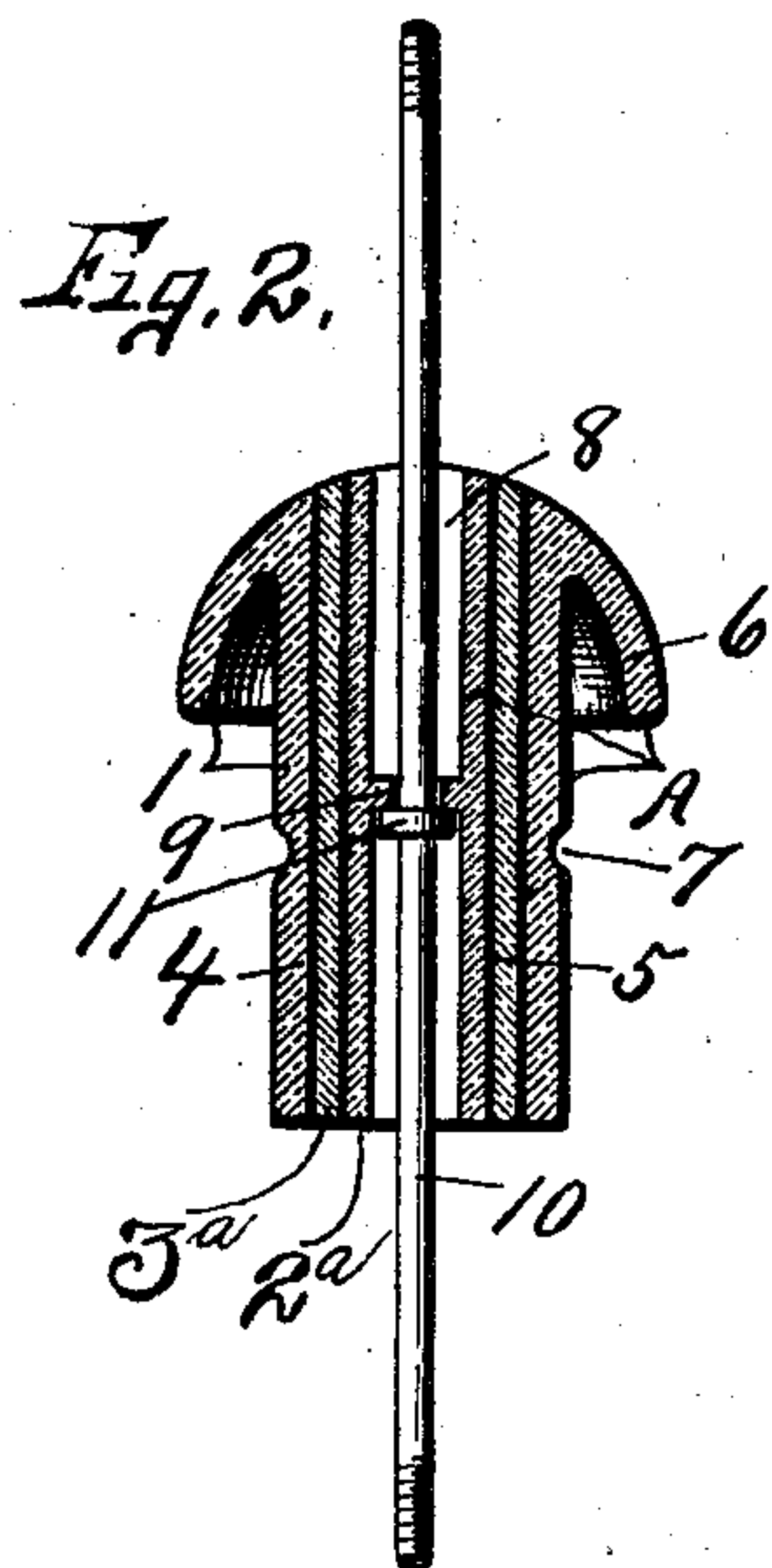
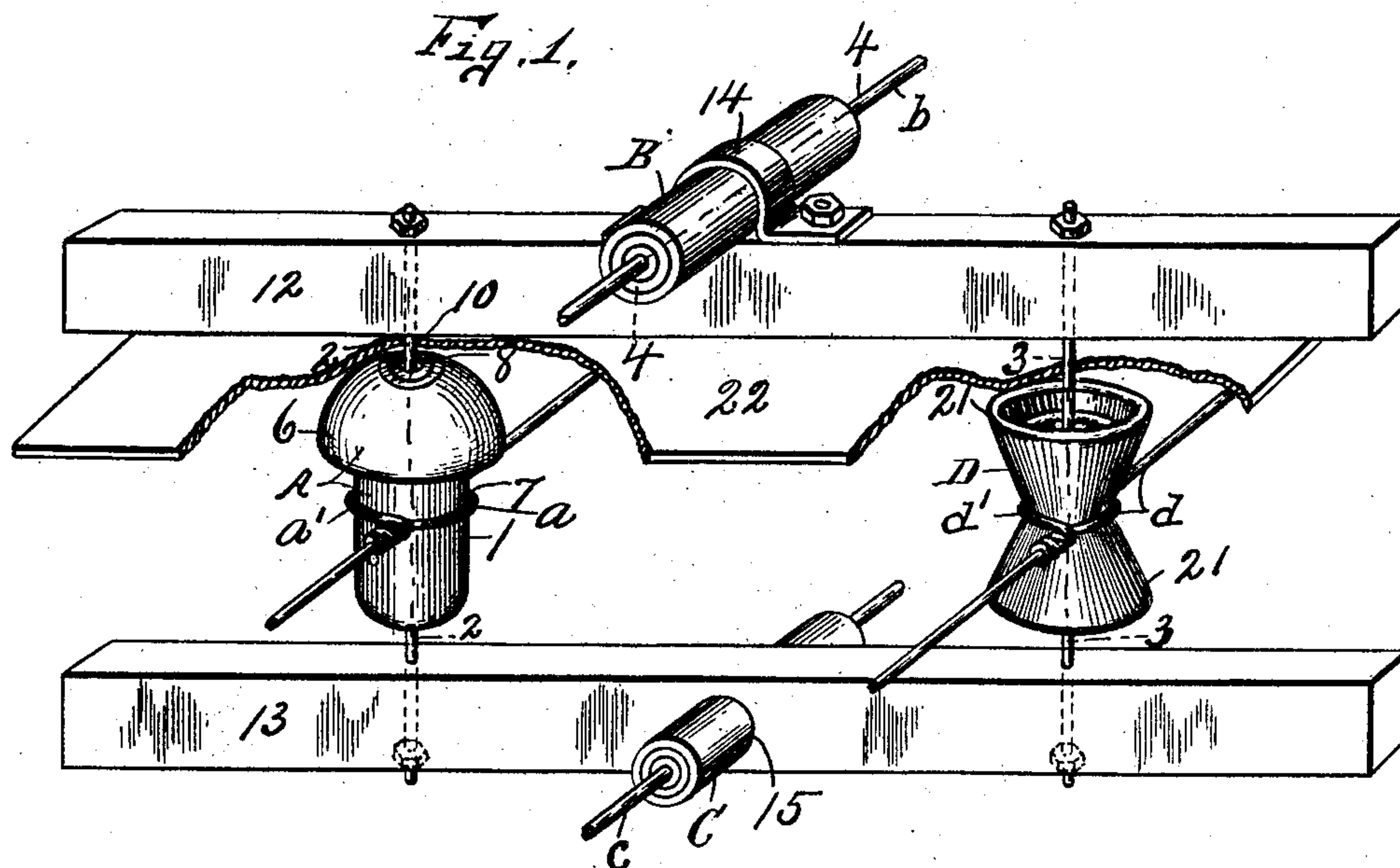
No. 758,986.

PATENTED MAY 3, 1904.

F. M. LOCKE.
TUBULAR INSULATOR.

APPLICATION FILED NOV. 11, 1901.

NO MODEL.



WITNESSES:
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UNITED STATES PATENT OFFICE.

FRED M. LOCKE, OF VICTOR, NEW YORK.

TUBULAR INSULATOR.

SPECIFICATION forming part of Letters Patent No. 758,986, dated May 3, 1904.

Application filed November 11, 1901. Serial No. 81,916. (No model.)

To all whom it may concern:

Be it known that I, FRED M. LOCKE, of Victor, in the county of Ontario, in the State of New York, have invented new and useful
 5 Improvements in Tubular Insulators, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

This invention relates to improvements in
 10 insulators, and refers more particularly to tubular insulators which are open at both ends and adapted to receive either the electric conductor or a suitable supporting member.

The object of my invention is to provide a
 15 simple and efficient insulator for general insulating purposes adapted to be used on poles and cross-arms and in the walls and floors of buildings.

Another object is to produce an insulator
 20 which is adapted for high-voltage service to prevent any leakage or short-circuits to the support therefor and which may be manufactured at a minimum cost.

To this end the invention consists in the
 25 combination, construction, and arrangement of the parts of an insulator, as hereinafter fully described, and pointed out in the claims.

Referring to the drawings, Figure 1 is a perspective view of a pair of cross arms or beams
 30 and a series of insulators of different forms carried thereby. Figs. 2, 3, and 4 are sectional views taken, respectively, on lines 2 2, 3 3, and 4 4, Fig. 1.

Similar reference characters indicate corresponding parts in all the views.

It is well known that in the installation of electric light and power systems the general tendency in all departments is toward an increased electric energy or current voltage, and
 40 the class of insulators in general use in such systems are found to be inefficient in the tests to which they are subjected in not being able to resist penetration by the current. This is particularly true of the single-tube type of insulators so commonly used in building and
 45 also in pole or street service and is frequently the direct cause of disastrous fires and personal injuries. I have sought to overcome this inefficiency without materially increasing
 50 the cost of manufacture by providing an in-

ulator composed of two or more tubes of suitable insulating material—such as glass, porcelain, or other vitreous or glaze substances—arranged one within the other, and fused, glazed, cemented, or otherwise secured together
 55 by any insulating material.

In the drawings I have shown a series of tubular insulators A, B, C, and D, each being different in form or mounting, but having the structural similarity of being composed of a
 60 plurality of tubes arranged one within the other and secured together by layers of filling of insulating material. The form of these insulators may be varied indefinitely to meet
 65 any special requirements or commercial demands, so long as they are tubular and composed of separate sections arranged one within the other and secured together.

The form A is adapted to be supported in an upright position for insulating and supporting
 70 either vertical or horizontal conductors, or both, and preferably consists of outer, inner, and intermediate tubes 1, 2^a, and 3^a, each of which may be formed of the same or different insulating material and are secured
 75 together by interposed layers 4 and 5, representing the fusing of the adjacent faces of the tubes or layers of glaze, cement, or equivalent insulating material. The outer tube 1 is provided with a hood or inverted cup 6 and
 80 an annular groove 7, the hood 6 serving to protect the underlying parts of the insulator from the elements when exposed to the weather and also serving as a suitable stop
 85 or rest for the insulator when used in the floors or ceilings of a building or in connection with any other support, and the annular groove 7 serves to receive a conductor *a* and a tie-wire *a'*. The inner tube 2^a is formed of
 90 suitable insulating material and is provided with a lengthwise opening 8 and an annular rib 9, receiving a rod or tie-bolt 10, having a shoulder 11 for engaging the rib 9 and supporting the insulator, although it is evident
 95 that the insulator may be otherwise supported and the lengthwise opening 8 used to receive and support an electric conductor—as, for instance, when the insulator is inserted in a floor or ceiling of a building. It is also apparent that this insulator may be used to con-
 100

nect crossing wires and hold them insulated one from the other. The intermediate tube 3^a is preferably formed of suitable insulating material and fused, glazed, or otherwise secured to the inner and outer tubes 1 and 2^a. In the drawings I have shown this tie-rod 9 as connecting upper and lower arms 12 and 13, which may be the cross-arms of the pole or the parts of a building, the manner of supporting the insulators forming no part of my present invention.

The insulators B and C are substantially identical in construction, one being secured by a suitable strap or clamp 14 to one of the arms, as 12, and the other being shown as inserted in an opening 15 in the other arm, 13. Each of these insulators is similar to the insulator 1 and consists of outer, inner, and intermediate tubes 16, 17, and 18, of insulating material, secured together by layers or filling 19 and 20, of suitable insulating material, the inner tube being adapted to receive the conductors *b* and *c*. Although I have shown these insulators B and C as arranged in a horizontal position to receive and support horizontal conductors, it is apparent that they may be arranged vertically or at any angle to conform to the direction of the conductor.

The insulator D also consists of outer, inner, and intermediate tubular shells of insulating material open at both ends to receive a supporting-rod E, the homologous sides of the shells being parallel, which may be a conductor, if desired. In assembling the tubular shells of this insulator I first cast the inner shell and then mold over the same the intermediate shell and mold over the latter the outer shell. This insulator is provided with outwardly-flaring ends 21, being of less diameter

at its intermediate portion to receive and support a conductor *d* and its tie-wire *d'*. These flaring ends serve to prevent any surface leakage of the current over the insulator, or if there was any tendency to such leakage the liability of a short-circuit from the end edges of the insulator to the supporting rod or piece would be reduced to a minimum. In order to further protect the pole-mountings, I usually provide a roof or suitable hood 22, which serves to prevent the direct action of the elements upon the insulators and the conductor connections.

The operation of my invention will now be readily understood upon reference to the foregoing description and the accompanying drawings, and it will be noted that the essential feature of my invention consists in forming an insulator of two or more tubular sections arranged one within the other and cemented, fused, or otherwise secured to each other to form a substantial integral body.

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

1. An insulator comprising a plurality of shells arranged within each other, each of said shells being inclined inwardly from its ends.

2. An insulator comprising a plurality of shells arranged within each other, each of said shells being inclined inwardly from its ends, and a tie-rod adapted to engage the inner shell and support the insulator.

In witness whereof I have hereunto set my hand this 7th day of November, 1901.

FRED M. LOCKE.

Witnesses:

C. A. MOORE,

W. A. HIGINBOTHAM.