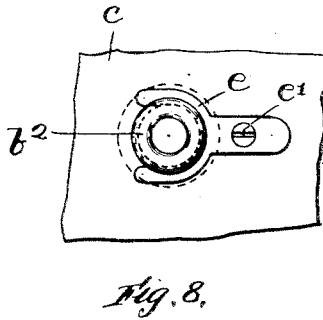
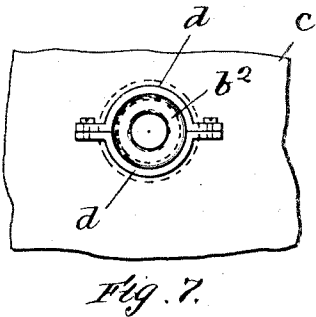
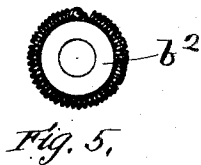
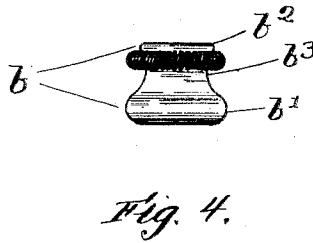
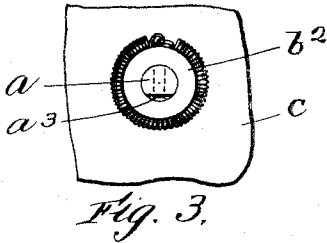
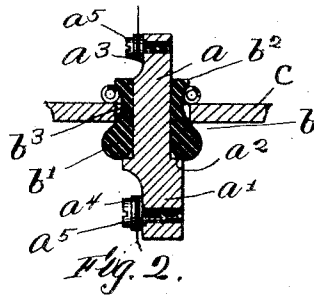


INSULATING BUSHING FOR ELECTRIC CONDUCTORS AND BINDING POSTS.
APPLICATION FILED APR. 15, 1910.

1,010,592.



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UNITED STATES PATENT OFFICE.

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INSULATING-BUSHING FOR ELECTRIC CONDUCTORS AND BINDING-POSTS.

1,010,592.

Specification of Letters Patent.

Patented Dec. 5, 1911.

Application filed April 15, 1910. Serial No. 555,807.

To all whom it may concern:

Be it known that I, FREDERICK W. COLE, of Newton, in the county of Middlesex and State of Massachusetts, have invented an
5 Improvement in Insulating-Bushings for Electric Conductors and Binding-Posts, of which the following is a specification.

This invention relates to insulating bushings for electric conductors, binding-posts, and other things, and has for its object the construction of a bushing adapted to be projected through a hole in a case or other object, and to be securely held in place, which is self-adjusting to objects of different thick-
15 nesses.

The bushing embodying my invention may be composed of ceramic or non-carbonizable material having high insulating properties, such as porcelain.

20 In the preferred embodiment of my invention the self-adjusting tubular bushing comprises a cylindrical body having an enlargement at each end, both of which may be made conical, one of said enlargements
25 being made smaller than the other to admit of the bushing being projected through a hole in an object, and a retaining-device, preferably yielding, adapted to be arranged on the body, as for instance on the
30 conical portion of the smaller enlargement thereof, and which also engages the object and acts to hold the bushing firmly in place.

Various forms of retaining-devices may be employed, adapted to embrace or engage the contracted neck of the bushing. The bushing is especially well suited to receive and serve as an insulating support for a binding-post, which may be arranged there-
35 in and extended therethrough, and, if desired, the binding-post may be secured thereto by cement or otherwise.

Figure 1 is a side view of an insulating bushing embodying this invention having a binding-post arranged in it, Fig. 2 is a
45 vertical longitudinal section of the same, Fig. 3 is a plan view of the same, Fig. 4 is a side view of the insulating bushing and retaining-device thereon, the binding-post being removed, Fig. 5 is a plan view of the
50 same, Fig. 6 is a detail of one form of retaining-device which may be employed, Figs. 7 and 8 are details of other forms of retaining-devices which may be employed.

As here shown *b* represents an insulator

which is made as a tubular bushing. It is
55 composed of porcelain, or other ceramic or equivalent non-carbonizable material having high insulating properties. It is made of a length to extend through a hole in an object *c*, and to project more or less at each
60 side thereof. It comprises a cylindrical body having conical enlargements at each end. The conical enlargement *b'* is larger than the hole through the object, and the conical enlargement *b''* is made smaller than
65 said hole to admit of the smaller end of the bushing being projected through the object by an endwise movement. The body portion between said enlargements *b'* and *b''* is represented at *b'''*.
70

While the preferable form of bushing is composed of porcelain, yet, so far as my invention is concerned, it may be composed of any other insulating material.

This bushing is held in position by a suit-
75 able retaining-device, which, as here shown, embraces or engages its body portion *b'''*. As represented in Fig. 6, said retaining-device consists of a spirally-coiled wire-spring bent into circular form and connected together at
80 its ends, thereby forming an elastic ring which may be passed over the end of the bushing to embrace the body portion *b'''*. Said ring is made larger in diameter than the hole through which the bushing projects,
85 so that, when sprung on to the bushing and disposed between the smaller enlargement thereof and the object, it engages the conical portion of said enlargement and also the object and acts to yieldingly hold the bush-
90 ing in position. The bushing is thus yieldingly engaged and securely held in position. Such a retaining-device is especially well suited for a bushing made of porcelain, al-
95 though it is applicable to a bushing made of any other material.

In Fig. 7 a pair of clips *d, d*, are employed as the retaining-device, which, when connected together, embrace the body of the bushing, and when disposed between the
100 smaller enlargement thereof and the object, will act to hold the bushing in position. Said retaining-device is not, however, of a yielding character like the form shown in Fig. 6.
105

Referring to Fig. 8, another modified form of retaining-device is shown, consisting of a forked plate *e*, attached to the case

by a screw e' , or otherwise, the forked end of said plate engaging or embracing the bushing. Said plate, if made of yielding material, will act to yieldingly support the bushing, although it does not yieldingly engage it. The above modified form of retaining-device will suffice to show that my invention is adapted to the employment of many different forms of retaining-devices.

10 The forms shown in Figs. 6 and 7, it will be noted, are not connected with or attached to the object, hence may be applied without providing the object with means for receiving any attaching-means; whereas, the form 15 shown in Fig. 8 requires the object to be provided with a screw-threaded hole for an attaching-screw. The form shown in Fig. 6 or some substantial equivalent thereof is preferred.

20 In all the forms shown the bushing is self-adjusting to objects of different thicknesses through which it projects, so that notwithstanding slight variations in thickness, it will accommodate itself thereto.

25 While the tubular bushing may be employed for electric-conductors and other things, it may serve as an insulating-support for a binding-post.

Referring to Figs. 1, 2 and 3, a binding- 30 post is arranged in the bushing which consists of a cylindrical or other shaped stem or shank a , having an enlarged cylindrical or other shaped head a' , with a shoulder a'' formed at the junction of said head and 35 stem. The stem is made smooth; that is to say, it is devoid of the usual screw-threads. The head and also the lower end of the stem are or may be slabbed off to provide flat faces, represented respectively at a^3 , a^4 , 40 against which the under sides of the heads of the binding-screws a^5 may bear, or washers arranged under said heads, which binding-screws extend through transverse holes in the post. Said binding-screws will serve 45 as means for connecting the circuit-wires

with the binding-post. The binding-post is designed to be held in the bushing by cement, yet, so far as other features of my invention are concerned, said post may be otherwise constructed or fastened in any 50 usual or suitable manner.

I claim:

1. A self-adjusting bushing comprising a body having an enlargement at each end, the enlargement at one end being conical 55 and smaller than the enlargement at the other end to admit of the bushing being projected through a hole in an object, and a retaining-device adapted to be arranged on the conical portion of said smaller enlargement and in engagement with the object, 60 substantially as described.

2. A self-adjusting tubular bushing comprising a body having an enlargement at each end, the enlargement at one end being conical and the enlargement at the other end 65 being smaller than the aforesaid enlargement to admit of the bushing being projected through a hole in an object, and a retaining-device adapted to be arranged on 70 said body in engagement with both the smaller enlargement and the object, substantially as described.

3. A self-adjusting bushing comprising a body having a conical enlargement at each 75 end, the enlargement at one end being smaller than the enlargement at the other end to admit of the bushing being projected through a hole in an object, and a retaining-device adapted to be arranged on the 80 conical portion of said smaller enlargement and in engagement with the object, substantially as described.

In testimony whereof, I have signed my name to this specification, in the presence of 85 two subscribing witnesses.

FREDERICK W. COLE.

Witnesses:

B. J. NOYES,
H. B. DAVIS.