

No. 750,873.

PATENTED FEB. 2, 1904.

N. MARSHALL.
INSULATING SLEEVE AND METHOD OF MAKING SAME.

APPLICATION FILED JUNE 6, 1902.

NO MODEL.

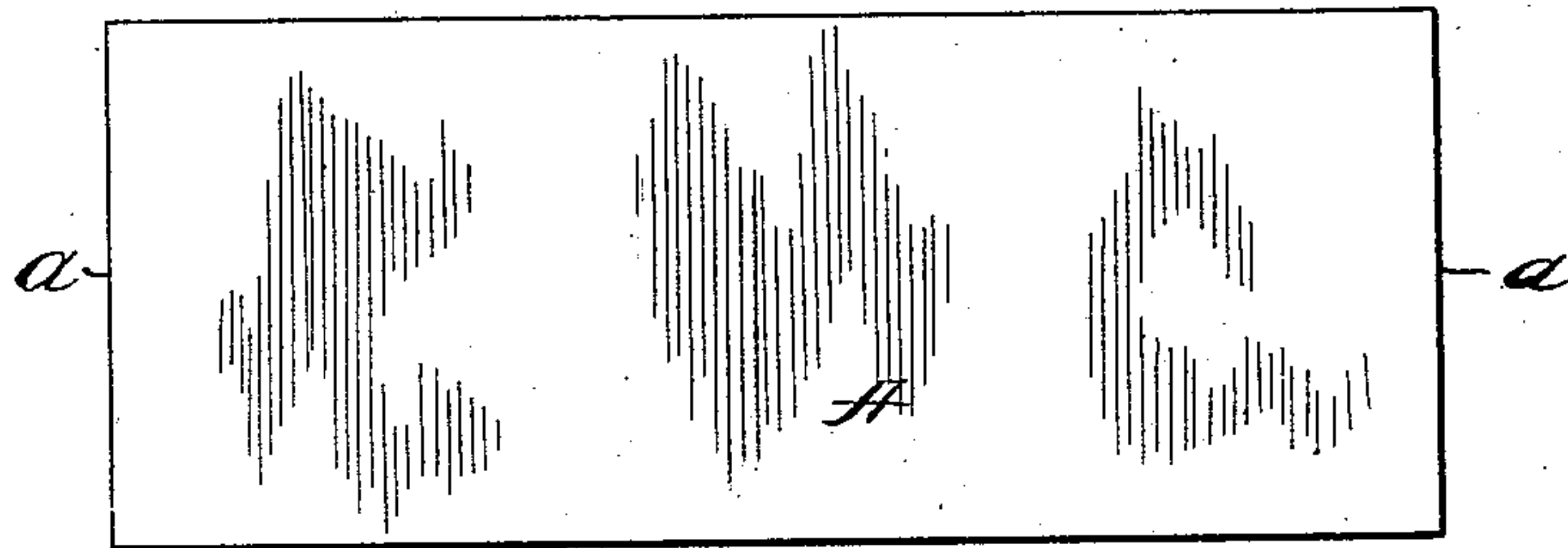


Fig-1-

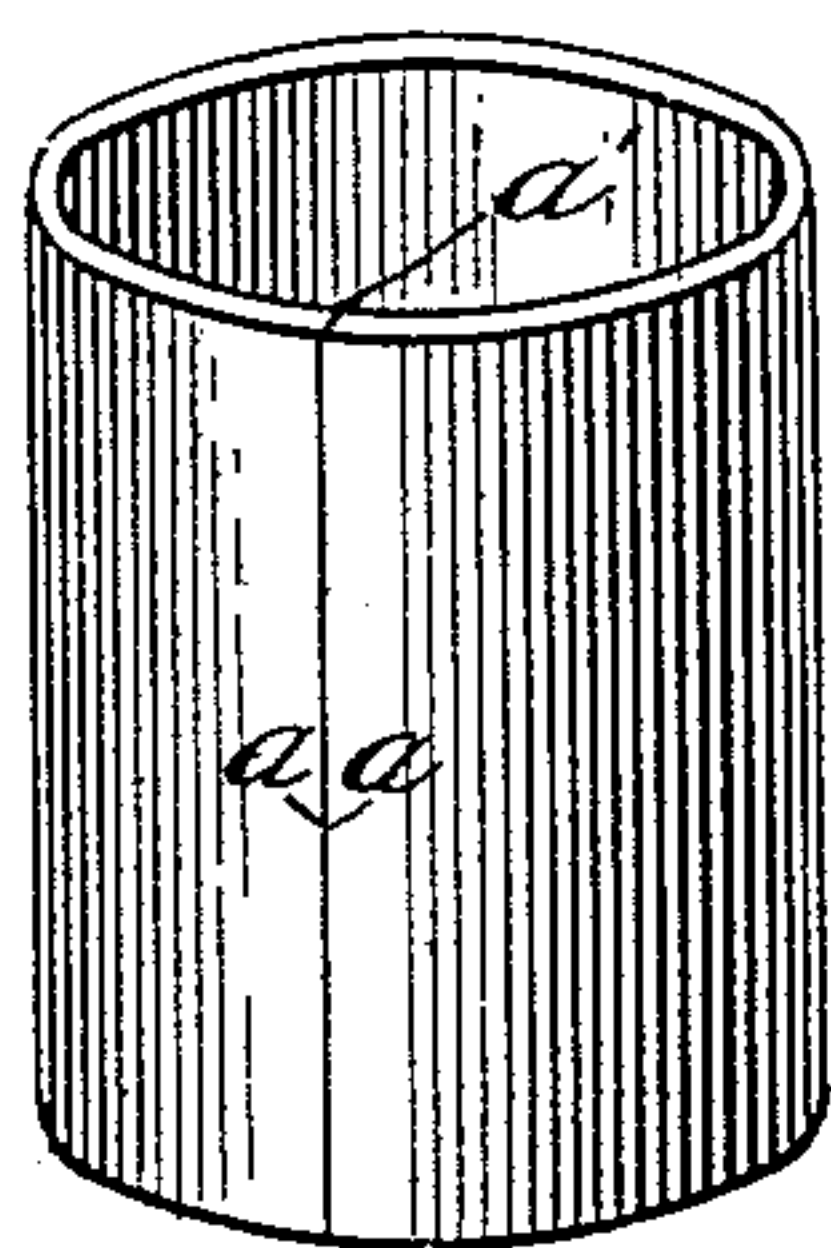


Fig-2-

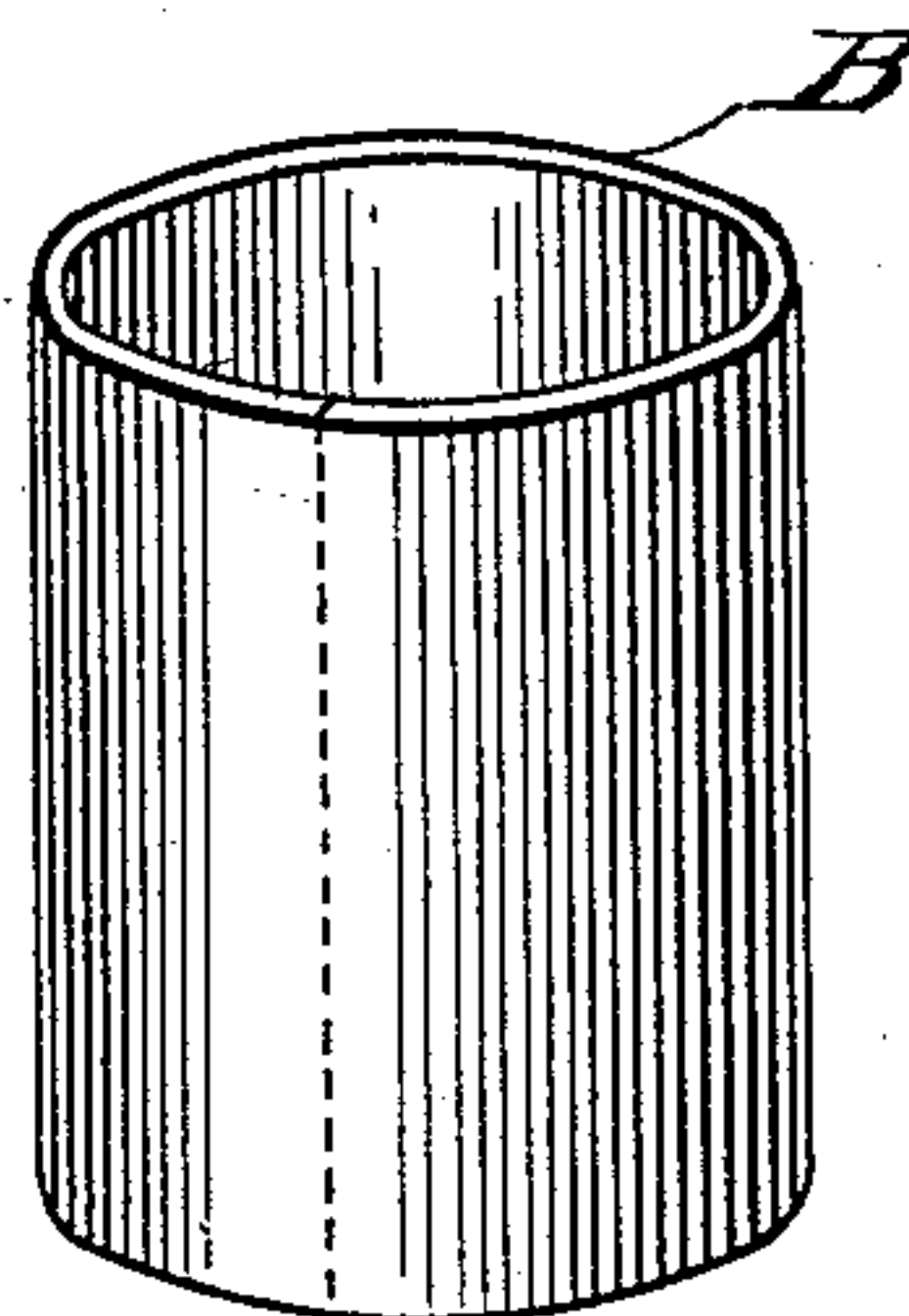


Fig-4-

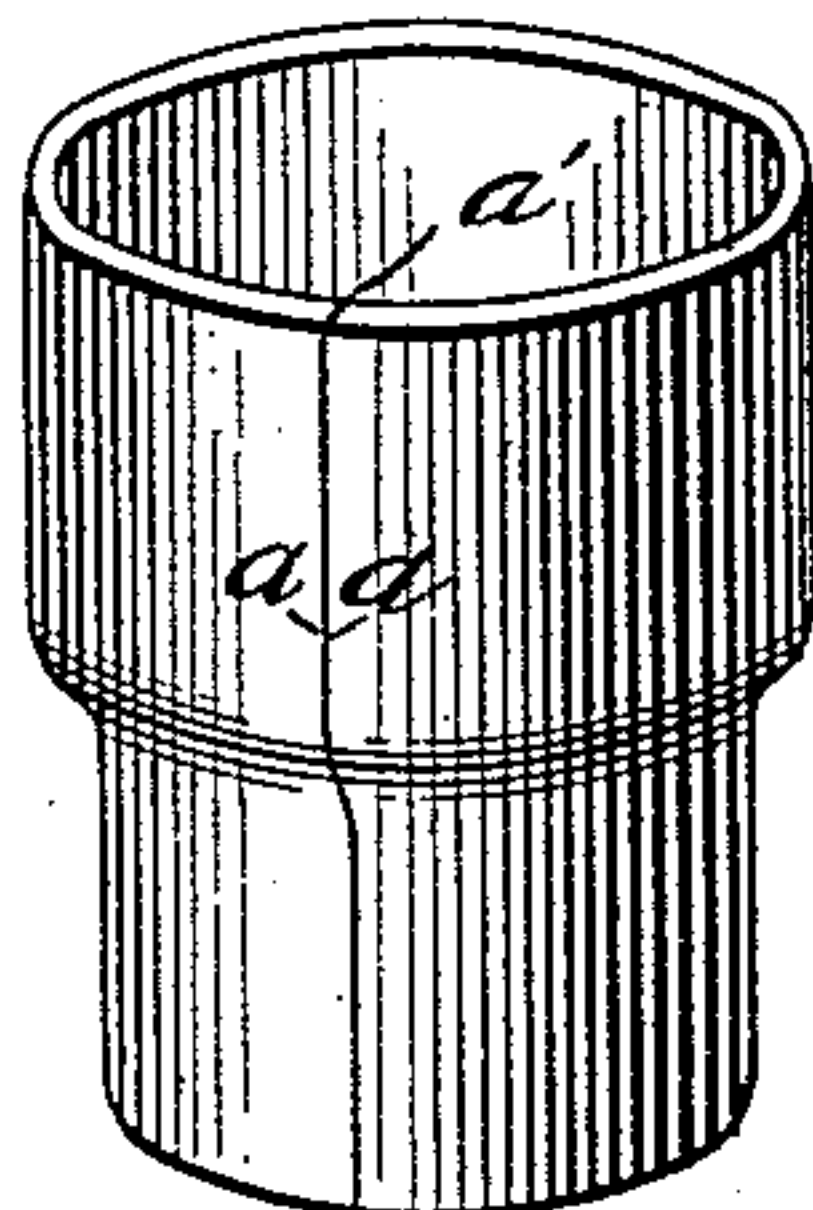


Fig-3-

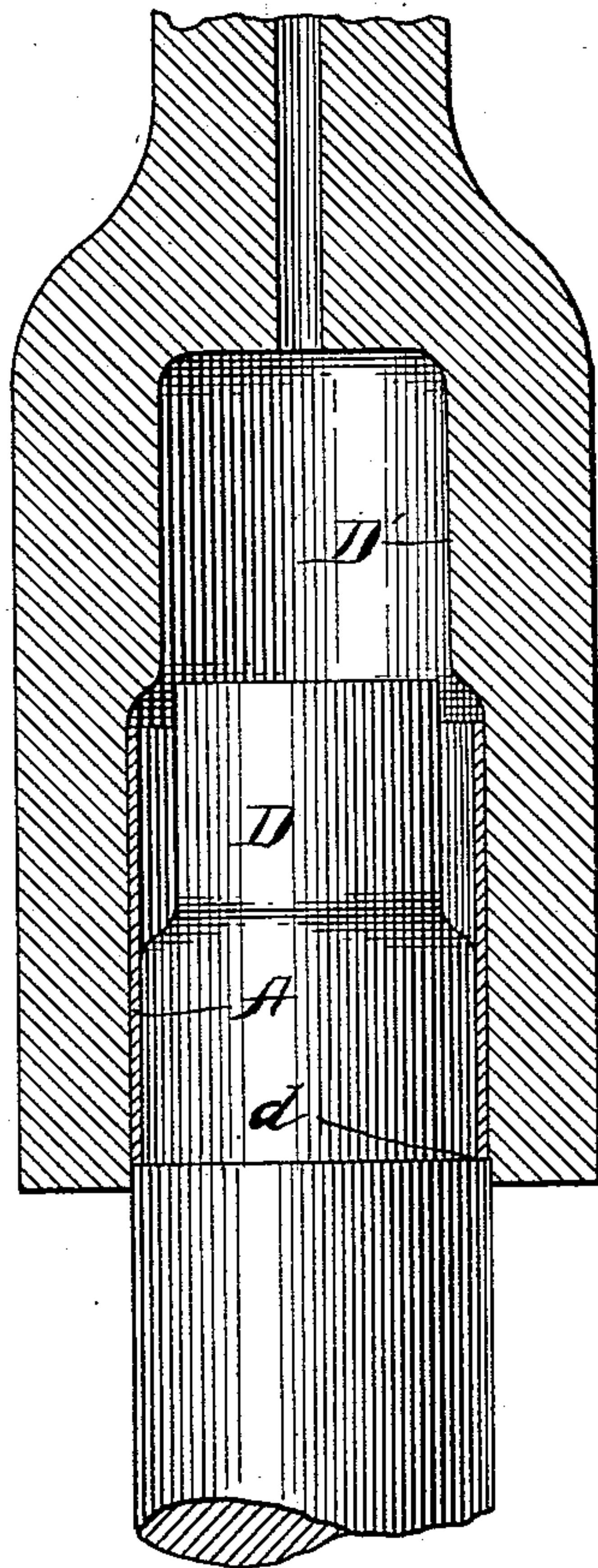


Fig-6-

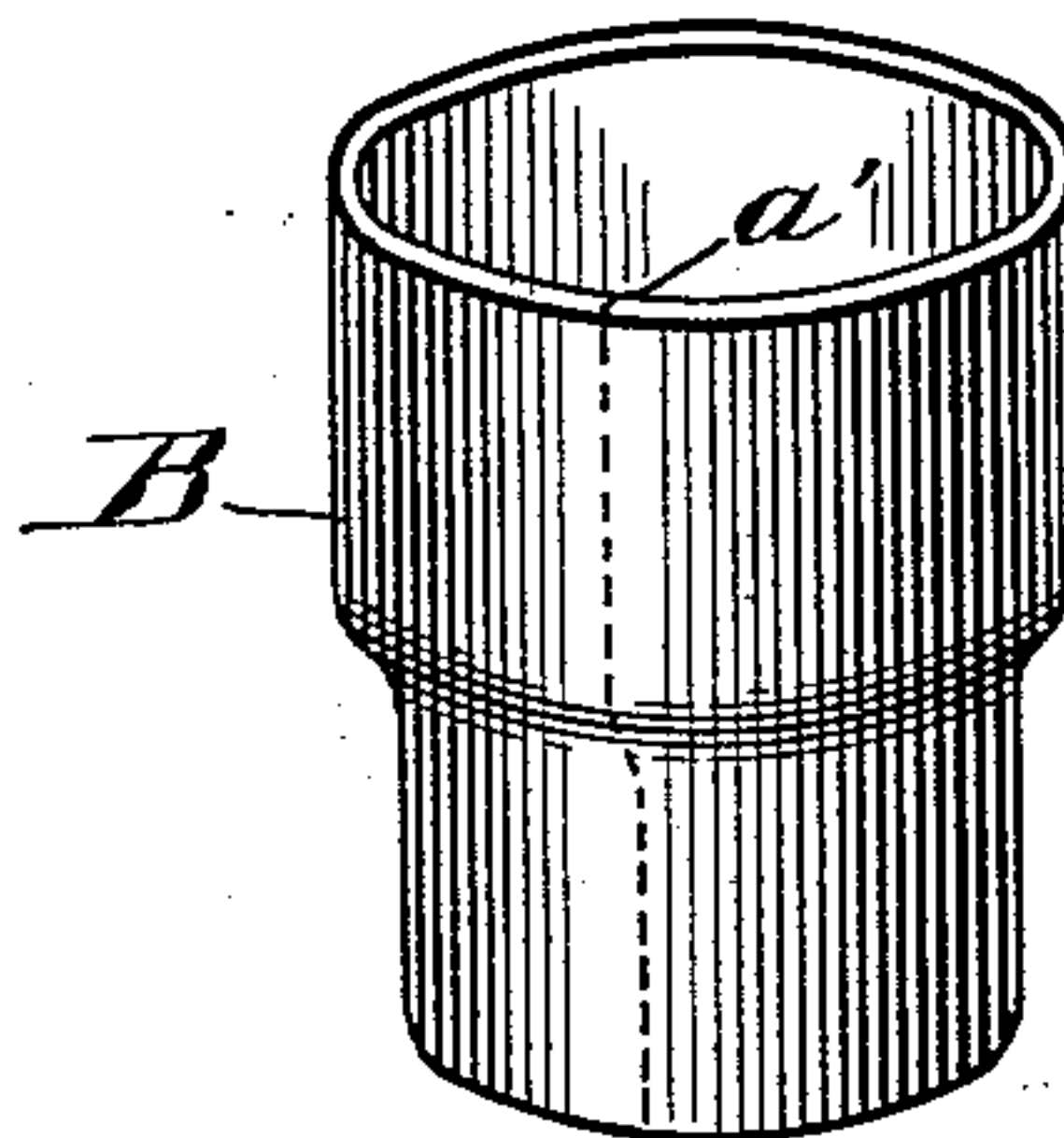


Fig-5-

WITNESSES:

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INSULATING-SLEEVE AND METHOD OF MAKING SAME.

SPECIFICATION forming part of Letters Patent No. 750,873, dated February 2, 1904.

Application filed June 6, 1902. Serial No. 110,479. (No model.)

To all whom it may concern:

Be it known that I, NORMAN MARSHALL, of Newton, in the county of Middlesex and State of Massachusetts, have invented certain
5 new and useful Improvements in Insulating-Sleeves and Methods of Making the Same, of which the following is a specification.

My invention relates to insulating sleeves or linings for incandescent-lamp sockets, the
10 end portions of which are of different diameters. As heretofore manufactured insulating-sleeves of this shape have usually been formed from sections of fiber tubing by subjecting the tube-section to the action of dies which draw
15 down the tube to a smaller diameter for about one-half its length. Sleeves thus formed meet the structural requirements for a satisfactory socket-lining; but owing to the comparative high cost of the fiber tubing and the waste in
20 cutting the same into sections the sleeves or linings formed by this method are comparatively expensive. It has also been proposed to produce insulating-linings from sheet fiber by forming a blank of such form that when
25 it is bent into shape the ends of the blank will meet in a line extending from end to end of the lining. I believe, however, that with the methods heretofore employed it has been impracticable to produce from sheet fiber a sleeve
30 which meets the practical requirements for a satisfactory socket-lining by reason of the difficulty in so shaping the blank that the ends of the blank will form a close joint when the blank is bent and formed to bring the ends to-
35 gether. If the ends of the blank do not meet in a perfect line, so as to make a close joint, then there are small openings through the lining along the joint between the ends of the blank through which electrical connection
40 might be made by small wires or other foreign matter. Linings having such a joint are therefore unsatisfactory.

It is my object to produce from sheet material an insulating-sleeve for incandescent-lamp sockets which shall meet all the practical requirements and which may be produced at much less cost than the linings formed from fiber tubing.

To this end my invention consists in the insulating-sleeves hereinafter described and

claimed and in the methods of forming the same.

I have discovered that a satisfactory insulating-sleeve which will satisfy all the requirements of an insulating-lining for lamp-sock-
55 ets may be formed from sheet material—such as insulating fiber, for instance—by bending a blank into cylindrical form, covering the joint between the ends of the blank with an insulating material, and subjecting the blank
60 to the action of suitable dies which will reduce the diameter of the cylinder for a portion of its length. In carrying out this process the insulating material may be placed inside or outside of the bent blank and may
65 be a thin narrow strip extending along the joint or may be a strip wound about the periphery of the bent blank, and the strip of insulating material may be applied either before or after the dies have shaped the bent
70 blank. In case the strip is applied after the sleeve has been shaped by the dies the sleeve may be again subjected to the dies to firmly unite the strip and blank and to give the sleeve an even and continuous surface. The sleeve
75 thus produced very closely resembles in appearance the sleeve formed from fiber tubing, may be produced at materially less expense, and is equally efficient in meeting all the practical requirements for a satisfactory lining for
80 lamp-sockets.

So far as that part of my invention already described is concerned, I may use a blank of any shape which will result in an approximately close joint between the abutting ends
85 of the blank after it has been bent into cylindrical form and subjected to the action of the dies. To get the best results, however, I prefer to employ a new method of bending and forming the sheet material into a cylindrical
90 sleeve having two cylindrical portions of different diameters by which a practically perfect and close joint is formed between the abutting ends of the blank. This method is based upon my conception and discovery that a cyl-
95 inder formed by bending up a sheet of insulating fiber until the ends substantially abut throughout their length may by the action of dies be drawn down to a smaller diameter for a portion of its length without breaking down
100

the cylinder or disturbing the relation of the abutting ends of the blank, except to more intimately press them together, so that they make a more perfect joint. The joint between the ends of the blank is so perfectly and closely formed by this method that the sleeve may be successfully used without covering the joint with insulating material, although a stronger and better lining is produced by the addition of the insulating-covering. In case the insulating-covering is not used the edges of the joint may be and preferably are held together by introducing a cement between the abutting ends of the blank either before or after the blank has been submitted to the action of the dies.

In the drawings I have illustrated the steps which I employ in practicing my methods to produce my preferred form of insulating-sleeve.

Figure 1 shows a form of blank which may be shaped into a sleeve by my preferred method. Fig. 2 shows the blank bent into cylindrical form. Fig. 3 shows same blank after dies have acted thereon. Fig. 4 shows a blank with a strip applied to cover the joint before the dies have acted. Fig. 5 shows same blank after dies have acted. Fig. 6 shows the dies employed.

In forming my improved sleeve I prefer to cut the sheet fiber into rectangular blanks A, such as shown in Fig. 1. This blank I bend into cylindrical form, so that the ends *a* may be brought together, as in Fig. 2. I secure a thin strip of insulating material, preferably a strong paper strip B, over the joint *a'*. This may be done by winding a strip about the blank, as shown in Fig. 4, or by securing a narrow strip along the joint either inside or outside or both inside and outside of the cylinder. The blank is then placed on the male die D, where it is supported on a ledge *d*. The female die D' is then forced down over the male die, the large diameter of the die passing beyond the shoulder before the smaller part begins to act on the blank, so that the blank is firmly retained in position. As the smaller part of the female dies acts on the blank thus held the upper end of the blank is drawn down to a smaller diameter without disturbing the relation of the abutting ends *a*, except to press these ends intimately together, so that they form a close joint, which is covered by and held together by the insulating-strip.

Instead of securing the strip over the joint before the dies draw the blank into shape, the blank, as indicated in Fig. 2, may be placed on the male die and subjected to the action of the die D'. In this case the blank will be drawn into the form shown in Fig. 3. This sleeve may be used as it comes from the dies, or the strip of insulating material may be secured over the joint *a'* and the blank again subjected to the dies.

I prefer in bending the blank into cylin-

drical form to so bend the blank that when the ends are abutted there will be a tension tending to hold the ends together. This facilitates the application of the blank to the male die in case the insulating-strip is not used or is not applied until after the action of the dies, and also relieves the strip from strain when it is used and results in a stronger and hence more satisfactory joint.

In the claims I have enumerated the steps of my methods in the order in which I prefer to perform them; but it will be understood that the claims are intended to cover the series of steps enumerated whether performed in the exact order in which they are enumerated or not.

It will be observed that by drawing down the cylinder, with the edges of the blank abutting, these abutting edges are necessarily jammed together with considerable force, thereby intimately shaping them to each other in such manner as to make a closer joint than could be obtained by bringing the edges together in any other manner.

What I claim, and desire to secure by Letters Patent, is—

1. The method of forming a sleeve of insulating material having cylindrical end portions of different diameters, consisting in bending a blank into cylindrical form, covering the joint between the ends of the blank with an insulating material, and reducing the diameter of the cylinder for a portion of its length, substantially as described.

2. The method of forming a sleeve of insulating material having end portions of different diameters, consisting in forming a rectangular blank, bending said blank into cylindrical form with the ends abutting and drawing down the cylinder to a smaller diameter for a portion of its length, substantially as described.

3. The method of forming a sleeve of insulating material having end portions of different diameters, consisting in forming a rectangular blank, bending said blank into cylindrical form with the ends abutting, covering the joint with insulating material, and drawing down the cylinder to a smaller diameter for a portion of its length, substantially as described.

4. A cylindrical insulating-sleeve having end portions of different diameters, formed of insulating material and having a joint or seam running its full length with edges abutting, said abutting edges being intimately shaped to each other to form a close joint.

5. An insulating-sleeve formed of insulating material and having end portions of different diameters and a joint or seam running its full length with edges abutting, said abutting edges being intimately shaped to each other to form a close joint, and insulating material connecting said abutting edges.

6. The method of forming a sleeve of insu-

lating material having end portions of different diameters, consisting in bending a resilient blank into a cylinder with edges abutting, the abutting edges being held in contact
5 by the elastic tendency of the cylinder, and then reducing the cylinder to a smaller diameter for a portion of its length.

7. As an improved article of manufacture, an insulating-sleeve consisting of a cylinder
10 of resilient insulating material, the cylinder being reduced to a smaller diameter for a portion of its length and having its edges held normally in close contact by the resiliency of the cylinder.

8. As an improved article of manufacture, 15 an insulating-sleeve having end portions of different diameters constructed of resilient material, whose edges are normally held in contact by the resiliency of the material, and a connecting insulating-strip secured over said 20 normally closed joint.

In testimony whereof I have affixed my signature in presence of two witnesses.

NORMAN MARSHALL.

Witnesses:

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