

A. BALL.
Cop Tube.

No. 235,196.

Patented Dec. 7, 1880.

Fig. 1.

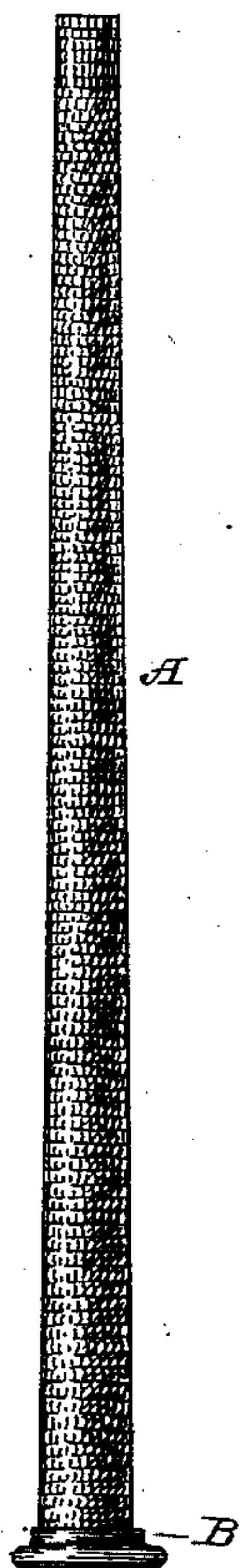


Fig. 2.

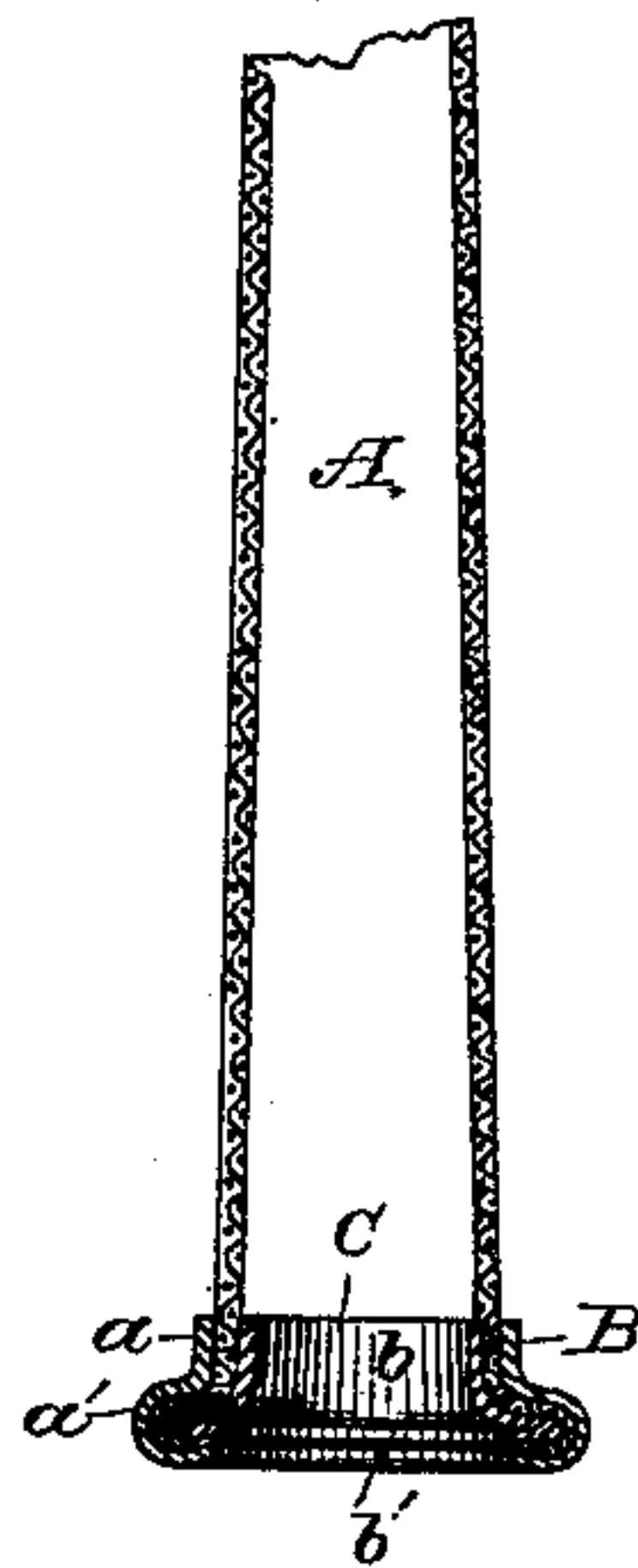


Fig. 3.

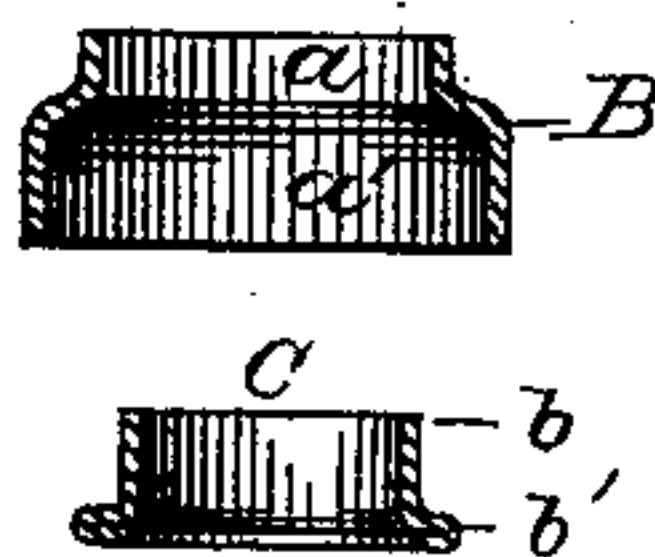
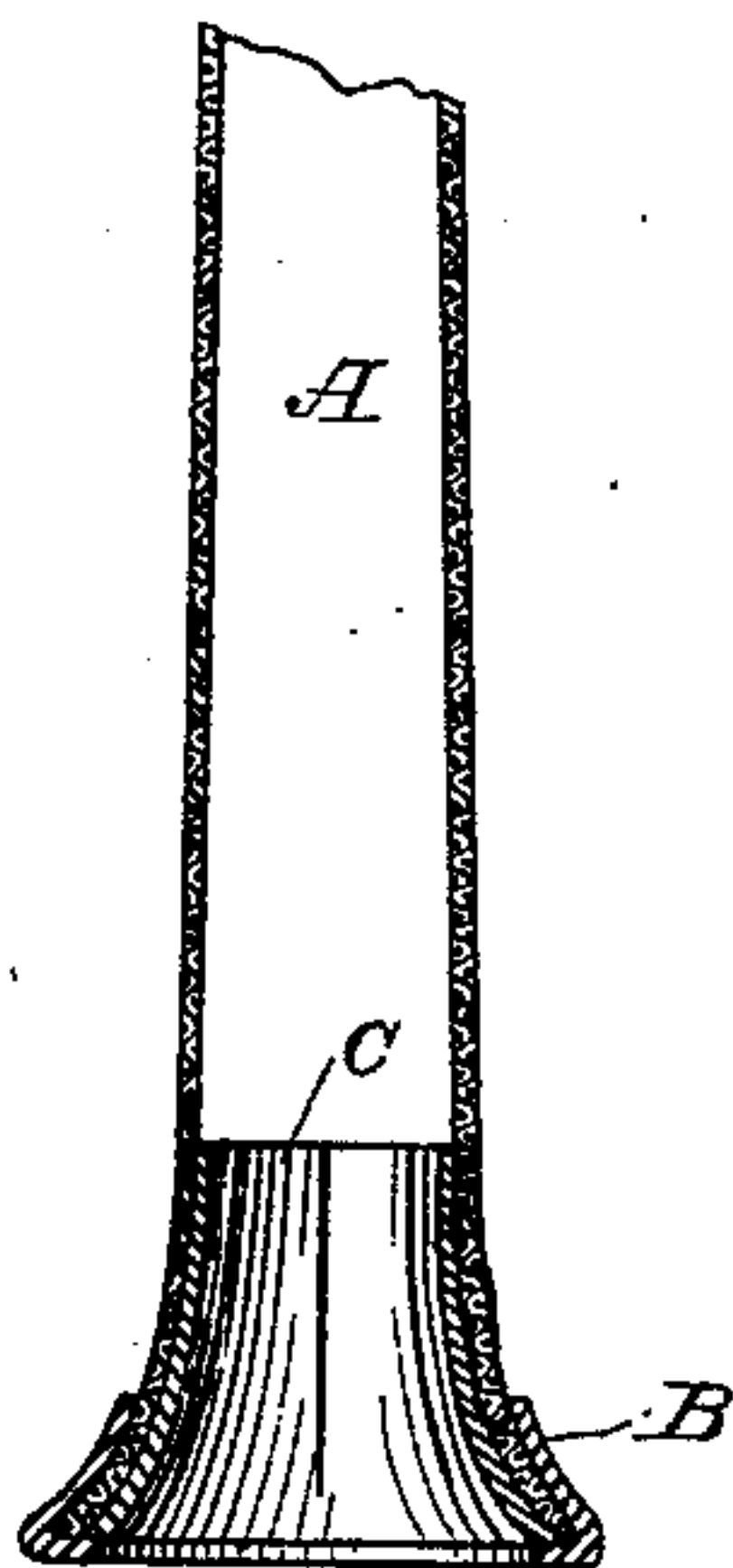


Fig. 4.



Attest:

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his atty.

UNITED STATES PATENT OFFICE.

ALBERT BALL, OF CLAREMONT, NEW HAMPSHIRE.

COP-TUBE.

SPECIFICATION forming part of Letters Patent No. 235,196, dated December 7, 1880.

Application filed November 13, 1879.

To all whom it may concern:

Be it known that I, ALBERT BALL, of Claremont, in the county of Sullivan and State of New Hampshire, have invented a new and Improved Cop-Tube; and I do hereby declare that the following is a full and exact description of the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

10 The improvement in woven, braided, or knit cop-tubes described in this specification consists in a metallic flange at the larger end upon the outside of the cop-tube, pressed and secured upon and over a small ring placed upon
15 the inside of the larger end of the cop-tube, whereby such end of the cop-tube is clamped between the two rings and securely held and prevented from raveling or fraying.

In the drawings, Figure 1 is a view of the
20 cop-tube complete; Fig. 2, an enlarged section of the larger end of the same; Fig. 3, separate views of the clamping-flange ring and inner ring, and Fig. 4 a modification of the clamping flange and ring.

25 A represents the tube proper, B the flange, and C the inner ring.

The clamping-flange B is made out of thin metal, with a body, *a*, of about the size of the cop-tube, over which it is fitted, and with a
30 flange, *a'*, extending outwardly. The ring C has also a body, *b*, of about the size of the interior of the larger end of the cop-tube, with a flange, *b'*, extending outwardly.

The ring C is placed inside the larger end of
35 the cop-tube, so that its flange *b'* distends the same, which projects a little beyond it.

By suitable mechanism which forms no part of this application the flange *a'* of the clamping-flange B is pressed down over both the
40 end of the cop-tube proper and over the flange *b'* of the ring C, and thus both the clamping-

flange B and the ring C are secured together, with the end of the cop-tube firmly held between them, so that it cannot ravel or fray.

In the modification shown in Fig. 4 the
45 clamping-ring has no body like that before designated by the letters *a* and *b*, but the inner ring has a body rather longer than that previously described, and when the two are clamped together both the clamping-flange
50 and the ring are left with a bell-shaped mouth, with a space between the clamping-flange and the ring, which serves also, by its elastic nature, to assist in holding the tube upon the spindle. This metallic fastening may be a
55 little larger than the body of the tube at its larger end, so that portion of the tube may not bind or gripe upon the spindle.

It is apparent that this sort of fastening need not be confined to woven, braided, or
60 knit cop-tubes, or to their larger ends; but is applicable to a great variety of flexible cop-tubes of various materials, and to either or both ends of the same.

It is also evident that the inner ring, C, 65 need not be made of metal, as any other material of suitable strength would answer the same purpose, although possibly not so efficiently.

Having thus described this invention, what
70 is claimed as new therein is—

A woven, knit, or braided cop-tube, with one or both ends secured by the clamping device B C, constructed and arranged substantially as described.

75 This specification signed and witnessed this 30th day of April, 1879.

ALBERT BALL.

Witnesses:

JOHN R. SHAW,
J. DUNCAN UPHAM.