

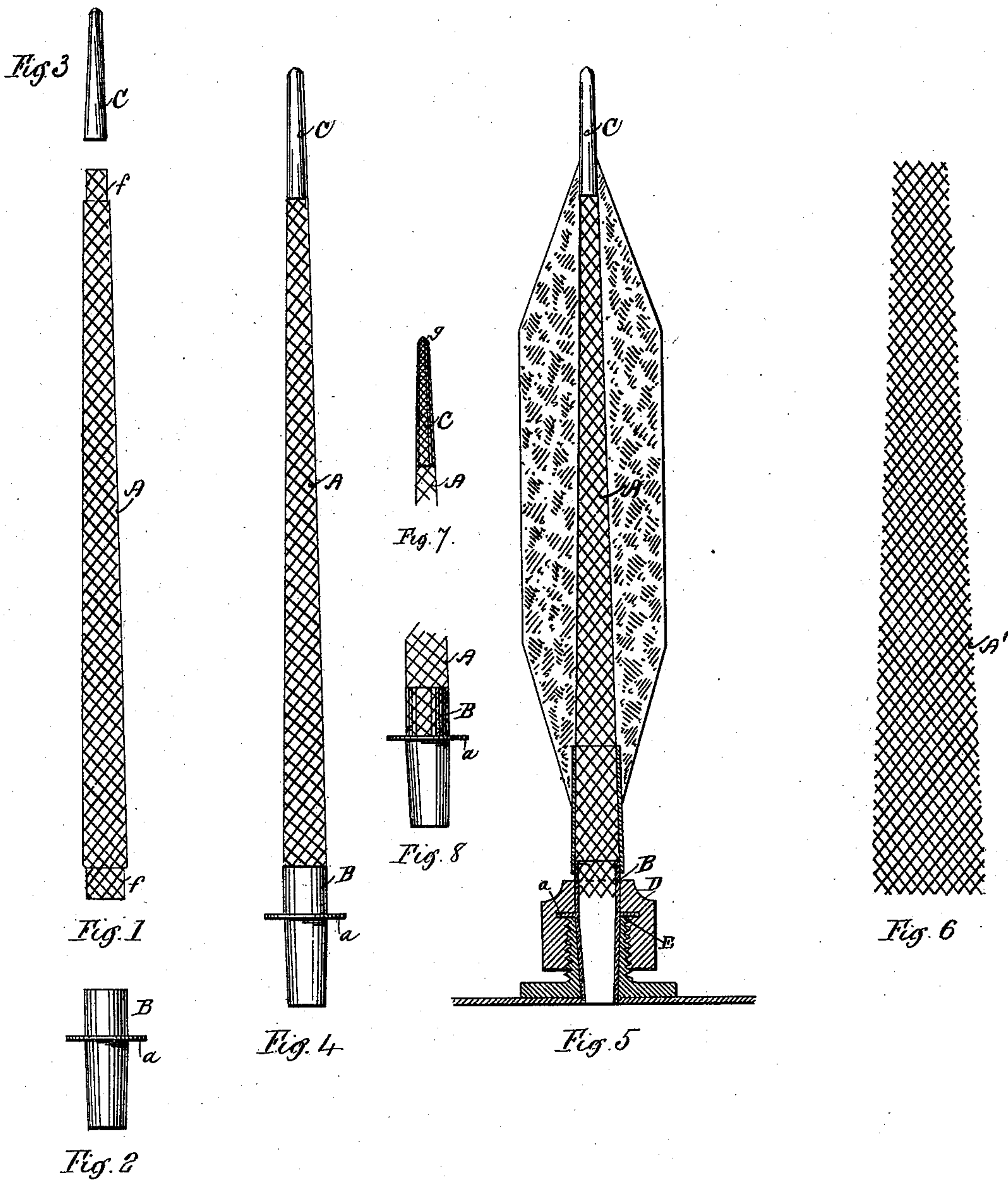
(No Model.)

W. L. PECK.

HOLLOW SPINDLE FOR DYEING YARN IN COPS.

No. 408,668.

Patented Aug. 6, 1889.



Witnesses  
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# UNITED STATES PATENT OFFICE.

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## HOLLOW SPINDLE FOR DYEING YARN IN COPS.

SPECIFICATION forming part of Letters Patent No. 408,668, dated August 6, 1889.

Application filed March 5, 1889. Serial No. 301,978. (No model.)

*To all whom it may concern:*

Be it known that I, WALTER L. PECK, a citizen of the United States, residing at Providence, in the State of Rhode Island, have invented a new and useful Improvement in Hollow Spindles for Dyeing Yarn in Cops, of which the following is a specification.

The object of my invention is to provide a cheaply-constructed and highly-efficient hollow spindle for the purpose of dyeing yarn in cops by the forced passage of the dyeing-liquor, either outward from the hollow spindle or inward to the same through the body of the cop; and it consists in forming the external surface of the body of the spindle of braided or woven wire, as hereinafter fully set forth.

Figure 1 represents an elevation of a piece of circular wire braid from which the reticulated body of my improved spindle is formed. Fig. 2 represents the tube by means of which the spindle can be properly attached to the pipes or vessels through which the dyeing-liquor is made to pass. Fig. 3 represents the terminating tip of the spindle. Fig. 4 represents an elevation of my improved hollow spindle. Fig. 5 represents a longitudinal section of the spindle mounted for use. Fig. 6 represents a plan view of a tapering strip of wire-cloth from which the reticulated body of my improved hollow spindle can be formed. Fig. 7 is a detail view showing a modification in which the terminating tip is inclosed by the circular braid. Fig. 8 is a detail view showing a modification in which the end of the attaching-tube is also inclosed by the wire braid.

In the accompanying drawings, A represents a piece of circular wire braid, preferably made in tapering form by braiding upon a tapering mandrel, and having its end portions *ff* compressed so as to enter the bore of the attaching-tube B and the terminating

tip C. The outer surface of the wire braid A lies in a line with that of the tube B and tip C, and the several parts are secured to each other by means of solder. The tube B is preferably provided with the flange *a*, by means of which the spindle can be firmly held in its working position, as shown in Fig. 5, the flange *a* being held between the nut D and the seat E.

Instead of employing a piece of circular wire braid A a piece of wire-cloth A', Fig. 6, may be employed to form the reticulated body of the hollow spindle, the said piece of wire-cloth being rolled into slightly-tapering form and attached to the tube B and tip C, as described.

Heretofore hollow spindles for this purpose have been formed from a tube perforated with small holes, leaving a considerable area of metal in contact with the yarn of the cop, whereas by my improvement I greatly reduce the contact-surface, so that the operation of forcing the dyeing-liquor through the cop to color the yarn will be facilitated, and a hollow spindle constructed according to my improvement can be made with comparatively little cost. Fig. 7 shows the terminating tip C as inclosed by the braid A, the braid at the end *g* being closed over the tip and secured by solder or otherwise, and Fig. 8 shows the attaching-tube B as entering the cavity of the braid, so that the braid can be secured to the exterior of the tube B.

I claim as my invention—

The hollow spindle having a tube adapted for attachment, a terminating tip, and a reticulated wire body, which connects the tube and tip, substantially as described.

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Witnesses:

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