W. E. LAWRENCE & C. E. L. HOLMES.

BRUSH.

No. 192,833. Patented July 10, 1877.

Fig. 1.

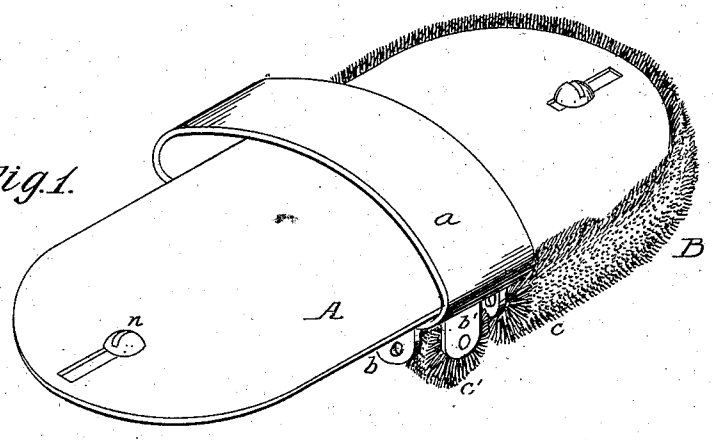


Fig. 2.

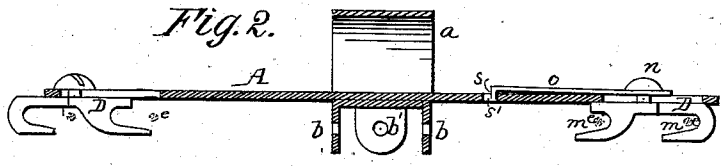


Fig. 3.

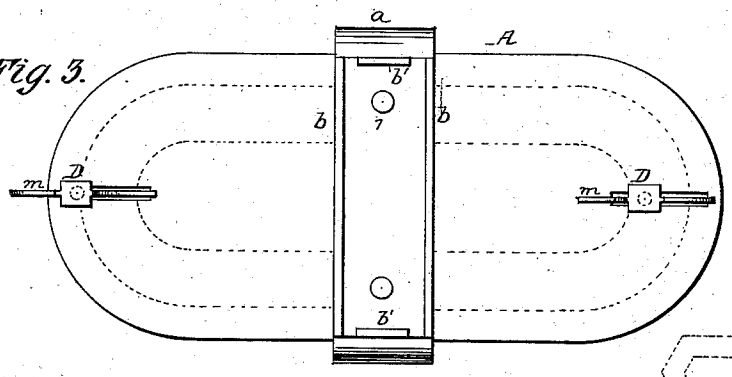


Fig. 4.

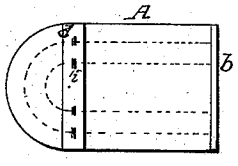


Fig. 5.



Attest:

Howard Zeudy.

Fred Benjamin

Inventors:

W. E. Lawrence

C. E. L. Holmes

By their attorney

Charles E. Foster

N. PETERS, PHOTO-LITHOGRAPHER, WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

WILLIAM E. LAWRENCE AND CHARLES E. L. HOLMES, OF NEW YORK, N. Y.

IMPROVEMENT IN BRUSHES.

Specification forming part of Letters Patent No. **192,833**, dated July 10, 1877; application filed June 21, 1877.

To all whom it may concern:

Be it known that we, WILLIAM E. LAWRENCE and C. E. L. HOLMES, of the city, county, and State of New York, have invented certain Improvements in Brushes, of which the following is a specification:

A is the back of the brush, which may be of any suitable material, but consists, preferably, of a single sheet of metal thick enough to retain its shape, but thin enough to yield somewhat at the end under the pressure of the hand, which is passed beneath the handle *a*, as usual. It will be apparent, however, that the brush may be provided with a side handle or grasping-handle at the back, or both, or any other suitable arrangement of handles may be employed.

At the under side of the back A are cross-pieces *b*, for the reception of the ends of the twisted-wire shafts *e* of the brush-cylinder *c*, each of which is bent to the U-shaped form shown, and as indicated in dotted lines, Figure 3, one cylinder being arranged within the other, and all together forming the brushing-face B.

Where the brush is rounded at both ends, as in Figs. 1 to 3, the U-shaped cylinders are duplicated, as shown, and a straight cylinder, *c'*, is supported by brackets *b'* between the plates *b b*, so as to form a continuous brushing-face. Where the brush is round only at one end, the plate or flange *b* is at the rear, Fig. 4.

The bent portions of the brush-cylinders may be secured in any suitable manner—as, for instance, by staples *i*, driven into a wooden cross-piece, *d*, attached to the back, Fig. 4. It is desirable, however, to secure the cylinders detachably to the back, and for this purpose I provide the back with a slide, D, having hooks *m*, which, when the slide is pushed inward, catch beneath the shafts *e* of the cylinders, as shown in Fig. 2, and hold them in place.

A button, *n*, on a pin projecting from the slide, may be employed to facilitate the adjustment of the latter; or a screw-pin may be used, so as to secure the slide after adjustment; or a spring-plate, *o*, with a lip, *s*, which catches in a notch, *s'*, in the back, may be used. The cylinders *c* are so arranged, in relation to the back-plate A, that the bristles will extend across the edge of said plate, and above the back, as shown in Fig. 1.

By bending the cylinders to the U-shaped form as described, parallel to each other and one within the other, an extremely close and solid brushing-face is produced, the density of the face being increased at pleasure by bringing the shafts of the cylinders closer together, and interlocking the bristles. The bending of the cylinders also produces a brushing-face rounded at the ends, and free from the angular corners, which result from the use of parallel straight cylinders, while the projecting of the bristles across the edge and above the back always interposes a portion of the brush between the said edge and the object to which the brush is applied, preventing the abrasion or wounding of the latter.

The cross-cylinder C' not only closes the gap between the bent cylinders, but it further covers and conceals the cross-pieces *b b*.

Owing to elasticity of the back, the latter will yield somewhat to the pressure of the hand, and permit the brush to be used with more comfort and less fatigue than where the back is perfectly rigid. Owing to the detachability of the bent cylinders, any one of them, when worn at the under face, may be removed, reversed, and again applied, thus renewing the face of the brush, and, when necessary, the entire face may be renewed by substituting new cylinders for those which have been worn on both sides.

Instead of bending the cylinders to an exact U shape, they may be bent to different approximate forms, as shown in the diagram, Fig. 5.

We claim—

1. The combination, in a brush, of a flexible metallic back, A, brushing-face B, and handle *a*, for the purpose set forth.

2. The combination of the back A and a brushing-face, one portion of which extends across and above the edge of the back, for the purpose set forth.

3. The combination, in a brush, of the back A and a series of bent brush-cylinders, ar-

ranged one within the other, beneath and secured to the back, substantially as specified.

4. The said bent cylinders arranged beneath the back A, with interlocking bristles, as set forth.

5. The said bent cylinders locked detachably to the under face of the back A, for the purpose specified.

6. The combination of the bent cylinders *c*, the straight cylinders *c'*, and the back A, as set forth.

7. The combination of the back A, flanges *b*, and adjustable locks D, for the purpose set forth.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

CHAS. E. L. HOLMES.
WM. E. LAWRENCE.

Witnesses:
F. D. BAKER,
J. H. JOHNSON.