(No Model.)

J. B. CHRISTOFFEL.

COILED WIRE BRUSH.

No. 422,117. Patented Feb. 25, 1890.

Fig. 1.

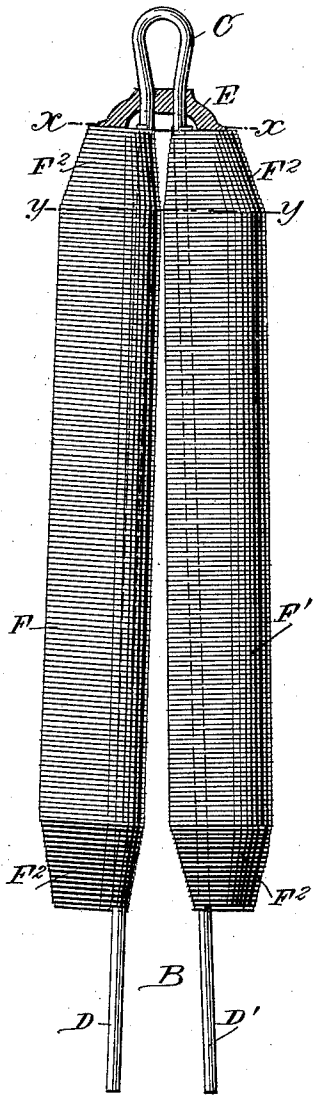


Fig. 2.

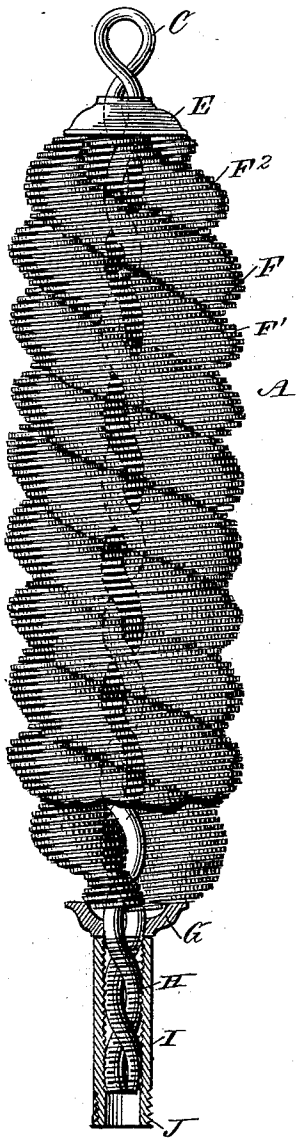


Fig. 4.

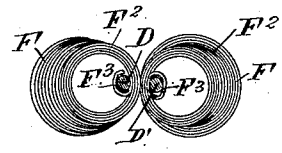


Fig. 3.

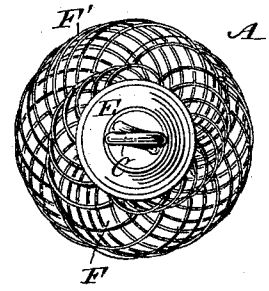
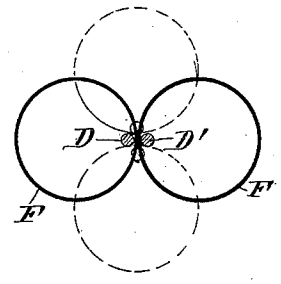


Fig 5.



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UNITED STATES PATENT OFFICE.

JOHN B. CHRISTOFFEL, OF BROOKLYN, NEW YORK, ASSIGNOR TO ANNA CHRISTOFFEL, OF SAME PLACE.

COILED-WIRE BRUSH.

SPECIFICATION forming part of Letters Patent No. 422,117, dated February 25, 1890.

Application filed December 13, 1889. Serial No. 333,632. (No model.)

To all whom it may concern:

Be it known that I, JOHN B. CHRISTOFFEL, of Brooklyn, in the county of Kings and State of New York, have invented a new and Improved Coiled-Wire Brush, of which the following is a full, clear, and exact description.

The invention relates to coiled-wire brushes, such as shown and described in the United States Letters Patent No. 138,317, granted to me April 29, 1873.

The object of the present invention is to provide a new and improved coiled-wire brush which is simple and durable in construction, very flexible and effective in operation, and especially designed for cleaning flues, tubes, &c.

The invention consists of two or more twisted wires and one or more spring-wires coiled around the said twisted wires in spiral shape to form a cylindrical brush with tapering ends.

The invention also consists of certain parts and details and combinations of the same, as will be hereinafter fully described, and then pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a side elevation of the improvement with parts in section and in position before the twisting of the wires. Fig. 2 is a side elevation of the improvement with parts broken out and parts in section. Fig. 3 is a plan view of the same. Fig. 4 is a sectional plan view of the same on the line *x x* of Fig. 1, and Fig. 5 is a like view of the same on the line *y y* of Fig. 1.

The improved wire brush A is provided with a wire B, bent upon itself to form the loop C and the shanks D and D′. A washer or collar E is provided with two apertures, through which pass the shanks D and D′, said washer resting near the loop C, as is plainly shown in Figs. 1 and 2. Spring-wires are formed into coils F and F′ of cylindrical shape, with the ends F^2 tapering to form cones, as shown in Fig. 1. Each of the wires is bent at its end to form an eye F^3, adapted to engage the respective shanks D or D′, which shanks pass through the said cylindrical coils, as shown in Fig. 1.

When the parts are assembled, as shown in Fig. 1, the shanks D and D′ are twisted by suitable machinery, so that the coils F and F′ are formed into spirals having the shape of their respective shanks D or D′. The brush thus formed is cylindrical in its middle and slightly tapering at each end, so as to permit of easily introducing the brush into the tube to be cleaned.

On the lower ends of the coils is fitted a washer G, held on the outer ends of the shanks D and D′, which lower ends are provided with a screw-thread H, on which screws an internally-threaded sleeve I, abutting against the washer G, so as to hold the latter in place. An external thread J is formed on the outer end of the sleeve I for connecting it with a handle to conveniently move the brush in and through the tubes to be cleaned.

The washer E serves principally to hold the two shanks D and D′ the same distance apart when the said shanks are twisted, and the washer also serves to hold the shanks in position when they are untwisted, in order to give more flexibility to the coils F and F′ after the twisting has taken place.

It will further be seen that the two washers E and G, by resting against the cone-shaped ends of the coils, hold the latter in place when the brush is moved through the tube, and the coils are pressed toward the washer G in moving inward and toward the washer E in moving the brush outward in the tube to be cleaned. The thread on the twisted shanks D and D′ permits of conveniently fastening a handle on the brush, so as to move the latter with great ease in and through the tubes to be cleaned.

Having thus fully described my invention, I claim as new and desire to secure by Letters Patent—

1. In a coiled-wire brush, the combination, with twisted wires, of spring-wire coils held spirally on the said twisted wires in the form of cylinders tapering at their ends, substantially as shown and described.

2. In a coiled-wire brush, the combination, with twisted wires and coils of spring-wire

held spirally on the said twisted wires, of washers held on the cone-shaped ends of the said coils, substantially as shown and described.

3. In a coiled-wire brush, the combination, with twisted wires, of a washer having two apertures through which pass the said wires, and coils of spring-wire held spirally on the said twisted wires, substantially as shown and described.

4. In a coiled-wire brush, the combination, with twisted wires, of a washer having two apertures through which pass the said wires, coils of spring-wire held spirally on the said twisted wires, and a second washer held on the other end of the said coils of wire, substantially as shown and described.

5. In a coiled-wire brush, the combination, with twisted wires, of a washer having two apertures through which pass the said wires, coils of spring-wire held spirally on the said twisted wires, a second washer held on the other end of the said coils of wire, and a nut screwing on the threaded ends of the said twisted wires to hold the said second washer in place, substantially as shown and described.

6. In a coiled-wire brush, the combination, with a coiled wire formed at one end into a loop and provided at its other end with a thread, of a washer held on the said twisted wire near its loop, coils of spring-wire held spirally on the said twisted wire, a second washer held on the lower end of the said twisted wire, and a sleeve screwing on the said threaded end of the twisted wire against the said second washer, substantially as shown and described.

JOHN B. CHRISTOFFEL.

Witnesses:
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