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N. F. CARRYL.  
BRUSH.

(Application filed Dec. 30, 1897.)

(No Model.)

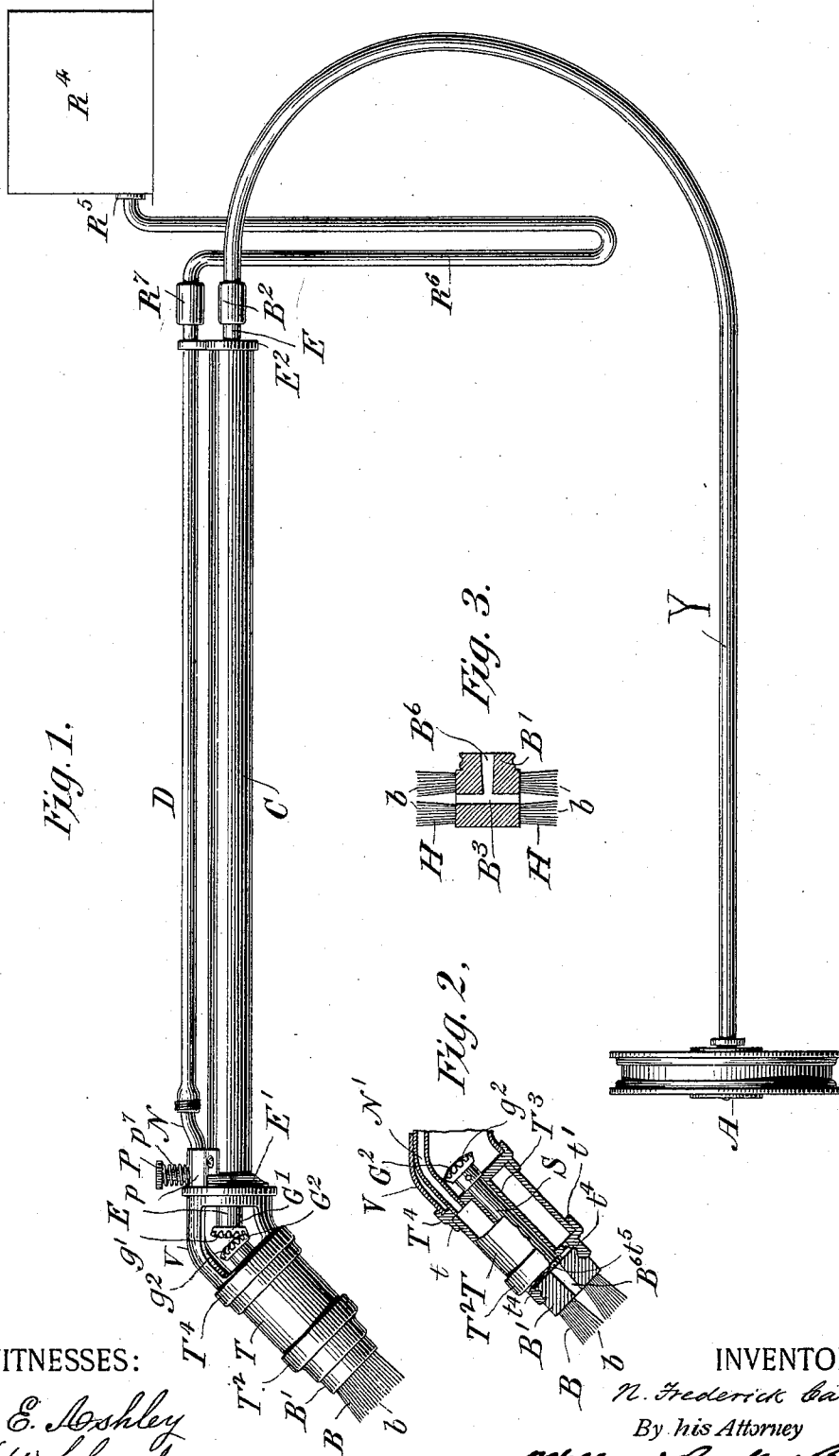


Fig. 1.

Fig. 2.

Fig. 3.

WITNESSES:

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# UNITED STATES PATENT OFFICE.

NATHAN FREDERICK CARRYL, OF NUTLEY, NEW JERSEY, ASSIGNOR TO  
JAMES R. HAY, OF SAME PLACE.

## BRUSH.

SPECIFICATION forming part of Letters Patent No. 617,316, dated January 10, 1899.

Application filed December 30, 1897. Serial No. 664,530. (No model.)

*To all whom it may concern:*

Be it known that I, NATHAN FREDERICK CARRYL, a citizen of the United States of America, and a resident of Nutley, county of Essex, and State of New Jersey, have invented certain new and useful Improvements in Apparatus for Cleaning, Painting, and Polishing, of which the following is a specification.

My invention relates to an improved apparatus for cleansing and painting all classes of surfaces, and the same is primarily designed to provide a system by which a brush or other cleansing or painting tool and the liquid or material supplied to it can be operated automatically by any convenient motive power and be readily portable.

The object of the present invention is to provide a simple, compact, easily-operated, and reliable mechanism which will polish, clean, or paint metal, stone, wood, and other similar surfaces in place without reference to their precise position or situation.

The further object to be obtained is to provide mechanism which will produce quicker and better results.

The system which is embodied in the present invention may be briefly characterized as consisting of, first, a motor driven from a suitable source of power, capable of being readily transported to supply the desired power; second, a flexible shaft capable of being rotated by the motor to permit of the ready removal, transportation, and manipulation of the tool; third, a suitable tool which will vary in form from time to time, according to the precise function which the apparatus is designed to carry out, but which will be of the same general type, and, fourth, a tank or other receptacle at a convenient point from which the paint, water, or other fluids are automatically and, if desired, continuously supplied to the tool where used for painting purposes, or from which sand or other scouring substances are supplied to it when it is used as a scouring or polishing device, either by gravity or by a suitable pump.

It will be apparent that the precise character and nature of the tool as used in the system outlined above will vary from time to time, according to the precise nature of

the work which is to be performed by it. Thus, for example, in place of a tool consisting of wire or bristles forming a rotary brush a tool with a pumice-stone surface or with a sandpaper surface or supplied with a face composed of any other substance which will cleanse, scour, or polish may be employed, and it will be further apparent that the same may be used either with or without the addition of fluids or powders for facilitating the operation. Where it is desired, however, merely to paint and not to scour, clean, or polish, a brush composed of hog or other bristles of suitable character, with suitable devices for supplying the paint or coloring fluid to the brush, is employed.

The invention will be best understood by reference to the accompanying sheet of drawings, which form a part of this specification, and in which similar letters refer to similar parts throughout the several views.

In the drawings, Figure 1 is a longitudinal elevation of the invention, showing it provided with an ordinary painting-brush. Fig. 2 is a vertical longitudinal section showing the method of attaching the brush. Fig. 3 is a view of a modified form of brush having a hub-feed with brushes on either side.

In the primary form of apparatus shown in Fig. 1, A represents a motor, which may be of any desired character, but which is preferably a rotating air-motor. Y represents a flexible shaft, which is composed of a wire cable of any of the well-known forms, covered with leather or rubber. C represents the handle of the tool, which contains a shaft E in its interior, which rotates freely in the journal-boxes E<sup>1</sup> and E<sup>2</sup> at either end of the handle. The flexible shaft Y is attached to the outer end of the shaft E by a coupling B<sup>2</sup> or by means of any other suitable connection. The inner extremity of the shaft E terminates in a beveled gear-wheel G', which is cast or otherwise formed upon a sleeve which fits over the end of the shaft and is attached thereto in any convenient manner. This beveled gear-wheel G' is provided upon its surface with gear-teeth g', which are preferably cut on its surface at an angle of forty-five degrees. The gear-wheel G' and its auxiliary gear-wheel G<sup>2</sup> are incased in a hollow bent

frame V, which is attached to and forms a part of the handle of the tool. The tool itself consists of an outer casing T, which terminates in a head or chuck T<sup>2</sup>, into which is screwed the brush head or butt B', carrying bristles *b* of wire or hog-hair or a disk for polishing or grinding. The outer casing T carries a collar T<sup>4</sup>, which is attached permanently to the bent casing V, as shown. The casing V is bent at any convenient angle, according to the precise position in which the tool is to be used, and serves to connect it with the handle C.

The head T<sup>4</sup> has an extended sleeve T<sup>3</sup> through its center, through which passes the auxiliary shaft S. This shaft rotates freely in the sleeve T<sup>3</sup> and is provided at one end with a gear-wheel G<sup>2</sup>, which is similar to the gear-wheel G', and is provided with a series of teeth *g*<sup>2</sup> *g*<sup>2</sup>, which mesh into and engage with the teeth *g*' *g*' upon the gear-wheel G'. The effect of the rotation of the shaft E is to rotate the shaft S by means of the engagement of the gear-wheels G' and G<sup>2</sup>. Any other connection between the shaft E and its auxiliary shaft S forming the proper angle can be employed, each as a universal joint. The shaft S is rigidly fixed to the head or chuck T<sup>2</sup> by suitable screws *t*<sup>2</sup>, so that the latter will rotate with it. The butt B' of the brush contains in its center a passage B<sup>6</sup>, through which fluid, sand, or other coloring or cleansing material may be admitted to the brush through openings *t*<sup>1</sup> *t*<sup>1</sup> in the face of the head T<sup>2</sup>. If now the liquid fluid or other substance used be supplied to the interior of the case T in any convenient manner, it will pass out through the openings *t*<sup>1</sup> *t*<sup>1</sup> to the brush, according as its flow is regulated. The supply of liquid or cleaning substance to the chamber T is effected by means of a pipe N, entering from the source of supply. This pipe is connected with a second pipe N', entering the chamber T, as shown in Figs. 1 and 2. For the purpose of controlling and regulating the amount of liquid or other substance admitted through the pipe N' and thence into the brush a puppet or piston valve P is provided, sliding vertically up and down in a suitable seat in a casting *p* on the head E', into which the pipe N enters, and through which casting the pipe N is connected with the pipe N'. The puppet-valve is held in its seat by a spring *p*<sup>1</sup> in such position as to keep the connecting-valve closed and the supply cut off until it is compressed by the hand of the operator.

The brush is composed of a butt or a head B', made of wood or metal, containing in its center a passage B<sup>6</sup>, through which the material is supplied to it. Bristles are attached to the head in any convenient manner, preferably by means of wires in the usual way. The butt or head B' is screwed or otherwise attached to the head or chuck T', as shown in Fig. 2.

In place of the form of brush shown in Figs.

1 and 2 the brush in Fig. 3 may be used for certain purposes. In this form the brush H is provided with peripheral bristles *b* and is fed by a channel B<sup>3</sup>, at right angles to the main feed-channel B<sup>6</sup>, in the same manner as in the other form of brush. The paint, liquid, or cleansing medium to be supplied to the tool is contained in a suitable reservoir or receptacle R<sup>4</sup>, placed at any convenient point and connected with the tool by means of a flexible pipe R<sup>6</sup> of suitable length. The flexible pipe R<sup>6</sup> terminates in a cap R<sup>7</sup>, fitting over the extremity of the supply-pipe D. The pipe D terminates at its other extremity in a large cap fitting over the pipe end, which enters the puppet-valve P, as shown in Fig. 1, and through which the materials from the pipe D are supplied to the valve. This pipe is preferably coupled at one end to the bottom of the reservoir at a nipple R<sup>5</sup>, opening into its interior, and at the other end to the supply-pipe D on the handle of the tool. The reservoir R<sup>4</sup> is preferably placed a sufficient distance above the point at which the tool is to be operated to create a pressure sufficient to cause the medium to flow continuously through the tool.

The operation of the tool is as follows: The reservoir R<sup>4</sup> is first of all so disposed with reference to the surface to be treated that the cleansing or painting medium flows from it by gravity or be conveniently pumped into it. The operator, taking the handle C in his hands, ascends the scaffold or other convenient point from which the surface to be cleaned or painted can be reached. Power is then supplied to the motor A in any convenient manner, and as the flexible shaft Y is of any desirable length it is thereupon caused to rotate and imparts its motion to the shaft E, which in turn rotates the shaft S, which imparts its motion to the brush B. The operator grasps and holds the tool by the handle C and applies the brush B to the surface to be treated in the same way as he would apply an ordinary brush. The supply of the medium from the reservoir R<sup>4</sup> is regulated by the pressure of the finger of the operator upon the valve P. As long as the valve is pressed down the supply is continuous. When it is released, the supply is cut off. As the connections between the tool, on the one hand, and the reservoir and motor, on the other, are flexible, and if they are of suitable length, the free movement of the tool in all directions is made possible and it can be brought to act on all kinds of irregular corners and surfaces at any angle as readily as if it were an ordinary hand-tool. When all points which can be reached from the scaffold have been treated, the scaffold is set up at a different point and the operation is continued. In this way if the connections between the reservoir and the motor are of sufficient length a large amount of surface may be treated without moving either the one or the other.

In case it is found inconvenient for any

reason, to use an elevated reservoir the same result may be accomplished by connecting the tool in any desired manner with any convenient form of pump placed at any convenient point which will permit of a constant and continuous flow of the medium into and through the tool.

I claim as my invention—

1. The combination of a motor; a flexible shaft rotated by the motor; a casing in which the shaft terminates; a chuck or head in the casing, rotated by the shaft; an interchangeable tool which will cleanse, scour or paint, arranged to fit into said chuck; devices which automatically supply a cleansing or coloring medium of suitable character, to the tool, continuously or intermittently, as it is rotated; and devices for controlling the supply of the medium.

2. The combination of a motor; a flexible shaft rotated by said motor; a suitable handle containing in its interior a shaft to which the flexible shaft is attached at one end; a casing attached to the extremity of the handle at the other end; a chuck or head in the casing, rotated by the shaft; a suitable brush fitting into the extremity of said chuck and capable of being withdrawn and replaced by other tools for other purposes.

3. The combination of a motor; a flexible shaft rotated by said motor; a suitable handle containing in its interior a shaft to which the flexible shaft is attached at one end; a casing attached to the extremity of the handle at the other end; a chuck or head in the casing, rotated by the shaft; a brush fastened in said chuck; a pipe or duct in the casing, connecting with an opening in the chuck, through which a suitable coloring or cleansing medium is supplied to the brush; and devices for continuously supplying the medium, substantially as described.

4. The combination of a motor; a flexible shaft rotated by said motor; a suitable handle containing in its interior a shaft to which the flexible shaft is attached at one end; a casing attached to the extremity of the handle at the other end; a chuck or head in the

casing, rotated by the shaft; a pipe or duct in the casing, connecting with an opening in the chuck, through which a suitable coloring or cleansing medium is supplied to the brush or tool at its center; and devices for continuously supplying the medium, substantially as described.

5. The combination of a motor; a flexible shaft rotated by said motor; a suitable handle containing in its interior a shaft to which the flexible shaft is attached at one end; a casing attached to the extremity of the said handle, bent to assume a convenient angle; a chuck or head in the casing; a brush fastened in said chuck rotated by the shaft; a pipe or duct in the casing, connecting with the chuck, through which a suitable coloring or cleansing medium is supplied to the brush; devices for continuously supplying the medium to the brush; and devices for regulating and controlling the flow of the medium, substantially as described.

6. The combination of a motor; a flexible shaft rotated by said motor; a suitable handle containing in its interior a shaft to which the flexible shaft is attached at one end; a casing attached to the extremity of the handle at the other end, containing in its interior a hollow chamber; a chuck or head at the extremity of said casing, rotated by the shaft, containing an opening through which the cleansing medium is supplied to the brush; a brush fitting into the extremity of the said chuck, rotated by the shaft; devices for continuously supplying the cleansing medium to the brush; and a pipe or duct from the source of supply, entering the hollow chamber and closed by a valve controlled by the hand of the operator, through which the medium enters the chamber.

In testimony that I claim the foregoing as my invention I have signed my name, in presence of two witnesses, this 28th day of December, 1897.

N. FREDERICK CARRYL.

Witnesses:

WILLARD PARKER BUTLER,  
HENRY H. GRAFF.